



Wyong
Shire
Council
CENTRAL COAST

Planning Proposal

145 Johns Road Wadalba

File No. RZ/1/2013

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Background

The site is a single lot, and is zoned RU6 - Transition under WLEP 2013.

Council at its meeting held 28 August 2013, resolved the following:

That Council incorporate Planning Proposal RZ/1/2013 with the broader East Wadalba Precinct rezoning (RZ/2/2013) to ensure an improved strategic outcome for urban development in the Wadalba area which will occur at no cost to Council.

A Gateway Determination was received for the broader East Wadalba Urban Land Release Planning Proposal on 20 December 2013 (which includes 145 Johns Road, Wadalba). The Department of Planning and Environment (DP&E) advised Council as part of the Gateway Determination, that Council should monitor progress of the East Wadalba Urban Land Release Planning Proposal. DP&E indicated that if delays were encountered a revised Gateway Determination to split 145 Johns Road, Wadalba into a separate Planning Proposal may be requested.

Several requests have been made by the owner of 145 Johns Road Wadalba to proceed as a separate Planning Proposal. Council staff declined those earlier requests in order to enable the broader East Wadalba Urban Land Release Planning Proposal the opportunity to commence. No funding agreement has been formalised with the Wadalba East Land Owners Group (WELOG) to further progress the East Wadalba Urban Land Release Planning Proposal. Consequently, Council has agreed to progress the Planning Proposal for 145 Johns Road as a separate Planning Proposal.

On 10 December 2014 Council resolved the following:

That Council prepare a Planning Proposal to amend Wyong Local Environmental Plan 2013, WLEP pursuant to Section 55 of the Environmental Planning and Assessment (EP & A) Act, 1979 (generally in accordance with Attachment 1).

That Council forward the Planning Proposal to the Department of Planning and Environment (DP&E) accompanied by a request for a "Gateway Determination", pursuant to Section 56 of the EP & A Act, 1979.

That Council require, subject to the "Gateway Determination" that the landowner enter into a Funding Agreement with Council in accordance with Council's Planning Proposal Procedure to recover the costs involved in further progressing the proposal.

That Council authorise the General Manager (or delegate) to sign the Funding Agreement for the rezoning.

That Council enter into a Voluntary Planning Agreement (VPA) which will require:

- a *Dedication and rehabilitation of wildlife corridor land on terms acceptable to Council.*
 - b *Dedication of land at no cost for the realignment of Johns Road*
 - c *Funding of commissioning, maintenance and decommissioning of a temporary sewer pump station by the proponents to service the development.*
-

That Council authorise the General Manager (or delegate) to negotiate and execute all documentation in relation to the finalization of the VPA.

That Council undertake community and government agency consultation, in accordance with the requirements attached to the "Gateway Determination".

That Council prepare appropriate Development Control Plan provisions and amend Section 94 Contributions Plans (if required) to support the development of the land subject to this Planning Proposal.

That Council request DP&E to modify the East Wadalba Land Release Area Gateway Determination to enable 145 Johns Road Wadalba proceed as a site specific planning proposal.

That Council consider a further report on the results of the community and agency consultation.

Part 1 Objectives or Intended Outcomes

The objective of this proposal is to rezone the subject site (Lot 27 DP 663622, Johns Road, Wadalba) from RU 6 – Transition to R2 - Low Density Residential and E2- Environmental Conservation. A small sliver of SP2 – Infrastructure (Local Roads) will also be created for future roadworks.

The intended outcome of the proposal is to enable future residential development of the subject site and protect wildlife linkages and environmentally significant land.



FIGURE 1 – 145 Johns Road Wadalba – Subject Land

Part 2 Explanation of Provisions

Amendment to Wyong LEP 2013

A number of map amendments to Wyong LEP 2013 will be required as part of the rezoning of Lot 27 DP 663622 to rezone land from RU 6 - Transition to R2- Low Density Residential, E2 – Environmental Conservation and SP2 Infrastructure (Local Road). The following mapping amendments will be required.

Existing Provision	Proposed Amendment
Zone Map	Amend zone map to rezone the site to R2 Low Density Residential and E2 Environmental Conservation Zone and SP2 Infrastructure (Local Road)*
Minimum Lot Size Map	Amend the minimum lot size map as per the following for each zone identified above: R2 – 450m ² E2 – 40,000m ²
Urban Release Area Map	Amend Urban Land Release Area Map to include site.
Land Reservation Acquisition Map	Identify area of land for acquisition for road widening purposes fronting 145 Johns Road, Wadalba.

* Further information will be required to refine the final zone boundaries, minimum lot size, urban release area map and land acquisition areas for road widening purposes can be determined.

Part 3 Justification

Section A – Need for the Planning Proposal

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

The land is currently zoned RU 6 - Transition under Wyong Local Environmental Plan 2013 and is identified under the North Wyong Shire Structure Plan (NWSSP) as a green corridor surrounding land is identified for residential purposes (See Figure 2). The neighbouring residential land has been identified as a medium term release priority meaning that it is expected that the land will be released before 2027. The proposal will assist in securing a green corridor linkage through in the Wadalba area. The Planning Proposal will need to be supported by further technical studies and input from the Office of Environment and Heritage (OEH) to confirm the dimensions of the wildlife corridor.

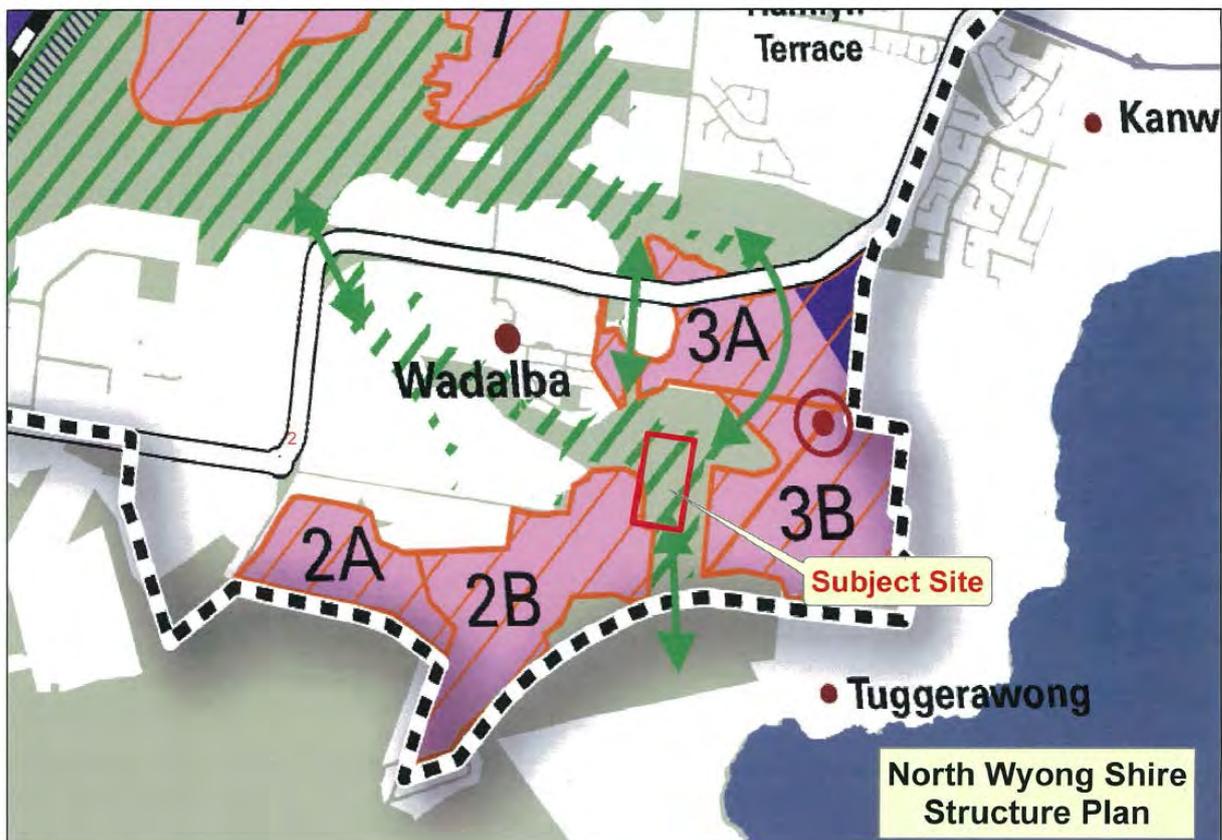


FIGURE 2: Relationship of site to North Wyong Shire Structure Plan

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

On 28 August 2013 Council initially resolved to include the rezoning of 145 Johns Road, Wadalba into the broader Wadalba East Urban Land Release Planning Proposal. At the time, both rezonings were in the process of being assessed by Council. However, progress with the broader precinct rezoning for the Wadalba Urban Release Area stalled and Council has been unable to progress the rezoning past the Gateway Determination stage. Agreement has not yet been reached on funding studies and payment of Council's rezoning fee with the proponent.

The owner of 145 Johns Road, has requested that Council separate the site from the broader precinct rezoning process and proceed with it as a site specific rezoning. This option has been requested due to delays with the broader precinct rezoning process. The subject site adjoins existing corridor/residential areas and could readily be excluded from the Wadalba East Rezoning process.

A VPA will be required at an early stage to ensure the dedication of wildlife corridor areas at no cost to Council. Council will also require dedication of property for the realignment of Johns Road and require the costs of commissioning, decommissioning and maintenance of a temporary sewer pump station to be borne by the proponent.

Subject to confirmation by technical studies, proceeding with this Planning Proposal (separate from broader area) is considered to be the best means of achieving the objectives and intended outcomes. The Planning Proposal will also assist Council in securing a future link to the Wadalba Wildlife Corridor connecting native fauna habitats present in remnant vegetation to the south of Johns Road, Wadalba.

Section B – Relationship to strategic planning framework

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

Central Coast Regional Strategy

The Central Coast Regional Strategy (CCRS) was released in June 2008 and provides the base planning framework for the growth of the Central Coast Region over the next 25 years (2006-2031).

The CCRS identifies that an additional 39,500 dwellings will be required to accommodate an anticipated population growth of 71,100 persons. 16,000 of these new dwellings will be required to be accommodated within new release or 'Greenfield' areas. Part rezoning of the site to residential will contribute towards achieving these targets.

The proposal will contribute to achieving the overall housing target set by the Strategy.

North Wyong Shire Structure Plan

The North Wyong Shire Structure Plan (NWSSP) was developed in response to the CCRS to identify land within the northern portion of Wyong Local Government Area suitable for residential and employment purposes and identify land requiring protection for environmental, landscape and resource attributes. The plan was endorsed in October 2012.

The subject site is not located within a future investigation precinct but is located between Precinct 2B and Precinct 3B as provided in the NWSSP. The entire site has been identified as a "Green Corridor" in the NWSSP. The rezoning proposal makes a partial contribution to securing this wildlife corridor. Further discussions will need to occur between Council and OEH following detailed flora and fauna studies to agree on final dimensions of the corridor.

4 Is the planning proposal consistent with a council's local strategy or other local strategic plan?

Wyong Settlement Strategy

Wyong Council's Settlement Strategy (WSS) was prepared to support the preparation of Council's Standard Instrument (SI) LEP 2013. The land use component of this strategy has been endorsed by the Department of Planning and Environment (DP&E). The Wyong Shire Settlement Strategy supports the provisions of the NWSSP with respect to this site.

Wyong Shire Council Community Strategic Plan 2030

An assessment of the proposal against the 8 objectives and key actions of the Wyong Shire Council Community Strategic Plan 2030 has been undertaken (refer to Supporting Documentation – Assessment & Endorsement) (see Attachment 1C). The proposal is consistent with relevant objectives of the plan.

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

The proposal has been assessed having regard for relevant State Environmental Planning Policies (SEPPs) as follows:

- SEPP 44 – Koala Habitat
- SEPP 55 – Contaminated Land

It is considered that the proposal is generally consistent with the aims and objectives of the requirements of the above SEPPs. Assessment of the proposal against the relevant SEPPs is detailed in Attachment 1D.

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

The proposal has been assessed against relevant Section 117 Ministerial Directions. The assessment in full is contained within Attachment 1E of this report.

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?

The main ecological issues with the proposal are discussed under the following sub-headings.

Threatened species and meeting legislative requirements

The vegetation present on site does not qualify as an Endangered Ecological Community or Endangered Population.

The NSW Wildlife Atlas Database shows a number of threatened species being recorded in similar habitat nearby. Some preliminary ecological work has been undertaken by the proponent (see Attachment 5B). Further consultation will be undertaken with the NSW Office of Environment and Heritage (OEH) to confirm flora and fauna survey requirements to support the rezoning of the land.

This will also need to be supported by detailed vegetation and habitat mapping. This program will need to target relevant threatened species listed under Commonwealth and State threatened species legislation.

Wildlife Corridor

The site forms a key part of a major wildlife corridor. The corridor connects the Wadalba Wildlife Corridor (WWC) to Tacoma/Tuggerawong Wetlands. This wildlife corridor is identified in the NWSSP and Wadalba Corridor Plan of Management (See Figure 2). The applicant has outlined their preferred position for the corridor. Council’s Senior Ecologist – Property Management has reviewed the proposal and has recommended some adjustments to the proposed position of the E2 Environmental Conservation Zone boundary to improve connectivity outcomes (see Figure 4). It is apparent that a portion of the site has urban development potential, however, further consultation will need to occur between the Office of Environment and Heritage, Council and the proponent before the final dimensions of the corridor can be agreed. This issue will need to be resolved before public exhibition of the Planning Proposal.

The relationship of 145 Johns Road to the broader Wadalba East Urban Land Release Rezoning is shown in Attachment 1F.

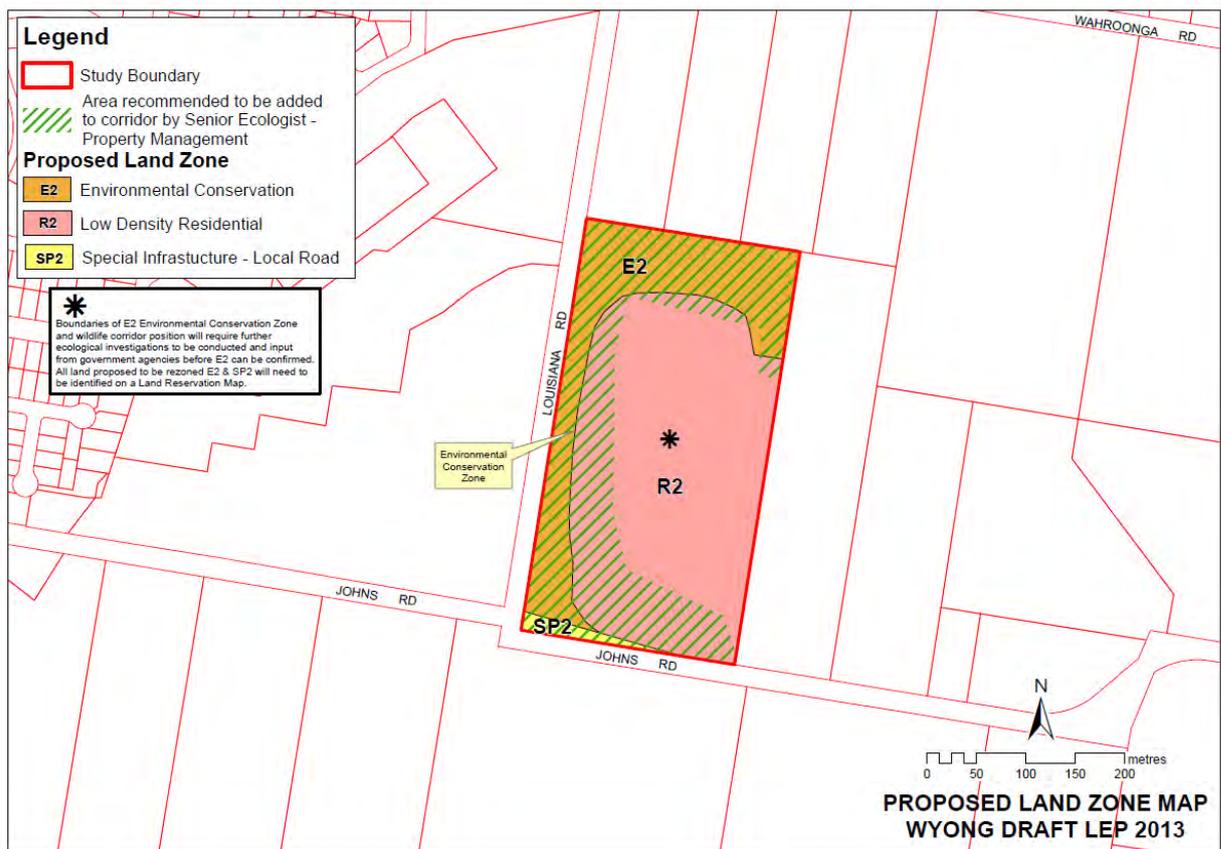


FIGURE 4: Wildlife Corridor Boundaries

Management of Corridor Land

Council's Property Management Unit has examined the rezoning proposal and is agreeable "in principle" to accept the ownership and management responsibility of the extension to the Wadalba Wildlife Corridor over part of the subject land as it represents a logical extension of Council owned land within the Wadalba Corridor.

Council will require the land to be transferred in acceptable condition and that a 10 year maintenance contribution will be required to accompany any land transfer. These details will need to be agreed in a Voluntary Planning Agreement (VPA) to Council's satisfaction.

Land condition will require further assessment but generally require the land to be rubbish and contamination free and less than 30% weed cover upon transfer. The contribution package would be calculated dependant on the on-ground work required to maintain the land for 10 years so that it doesn't reinfest other parts of the wildlife corridor with weeds, creating an increased maintenance burden for Council.

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

Bushfire

The site has been identified as consisting of Category 2 Bushfire Prone Vegetation as well as being within a bushfire buffer zone (see Figure 5).

Asset protection zones cannot be established until such time as a formal development concept is prepared including the type, bulk and scale of the residential development.

Future development will need to adopt appropriate Asset Protection Zones (APZ's) and incorporate these requirements into future street layouts and dwelling setbacks. If APZ's are to be considered they must be located outside of conservation areas.

An assessment of the proposal against Planning for Bushfire Protection 2006 and the NSW Rural Fire Service will be required.

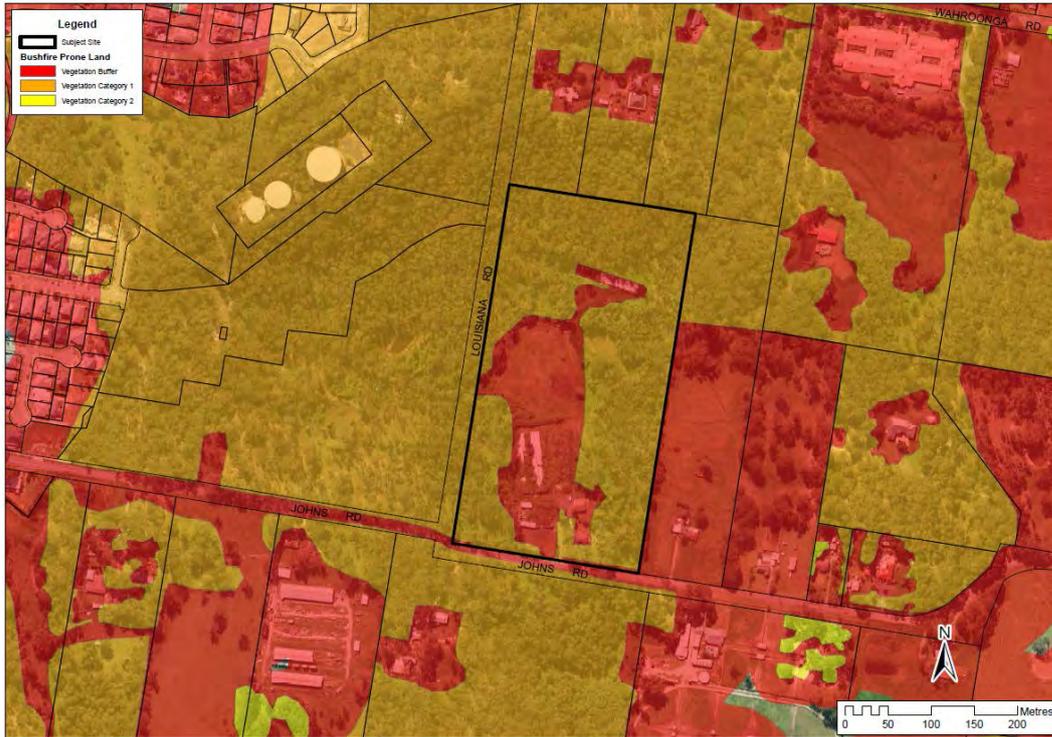


FIGURE 5 – Bushfire Prone area

Stormwater Management

The site has two drainage lines (identified blue lines) traversing the site. Council’s Team Co-Ordinator Engineering Assessments has advised that a stormwater management plan will be required to ensure that overland flows are appropriately managed and considered in any future development concept.

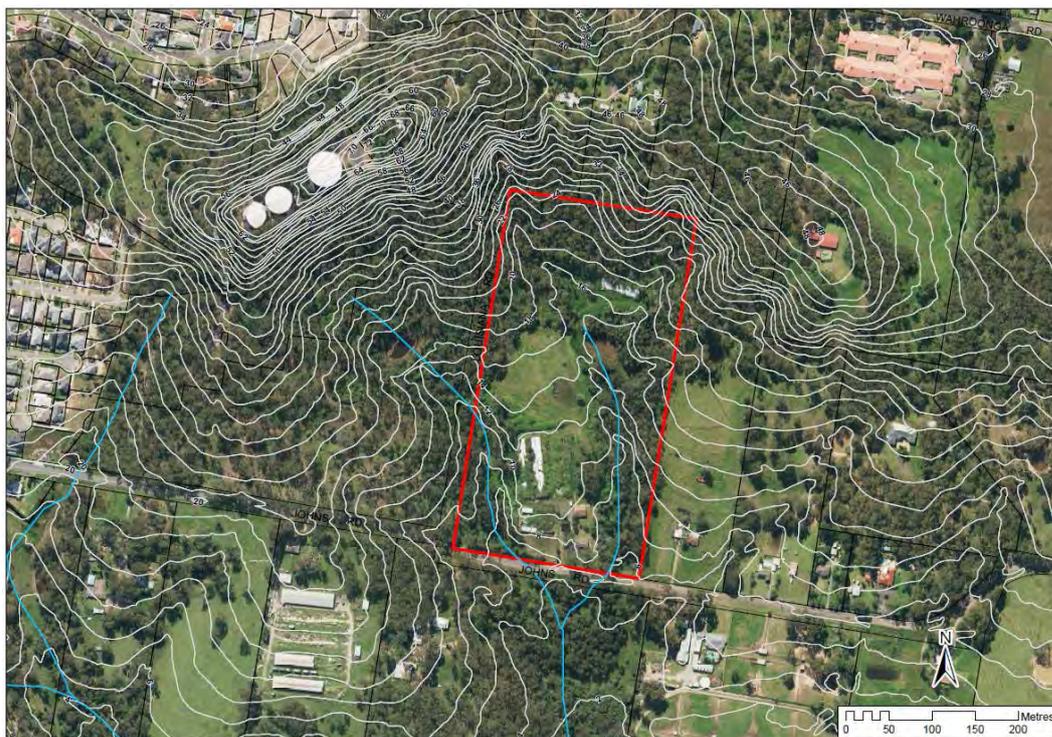


FIGURE 6 – Topography and blue lines

Contaminated Land Assessment

Given the historic use of the property as a poultry farm a preliminary contaminated land assessment will be required addressing the requirements of SEPP 55 - Contaminated Land.

Mine Subsidence

The site occurs in a Mine Subsidence District. The Mine Subsidence Board (MSB) will be consulted and any issues raised will be addressed as the Planning Proposal is further developed.

Traffic generation

The subject site is located on the corner of Johns Road and an unformed section of Louisiana Road. Details of how additional traffic resulting from the proposal will be managed haven't been provided, however, due to the small size of the development any impact will be minimal on the existing road network.

Council's Transportation Engineer has advised there is no objection to the proposal in principal provided that:

- The applicant dedicates, at no cost to Council, sufficient land at the south western corner of the site to enable the realignment of Johns Road to remove the series of curves adjacent to the western boundary of the property. This may involve a triangular section of land at least 20 metres wide by 120 metres long.
- The realignment of Johns Road, to remove the curves identified above. This will also involve relocation of services, including power poles.
- Works to remove the embankment to the east of the current access road. The works are to include adjustment to any services, including power poles.
- A transport and traffic report shall also be required identifying:
 - a the impact on Johns Road and the Pacific Highway/Johns Road intersection created by the development, and
 - b the works required to accommodate this additional traffic.
 - c The applicant providing confirmation that the cost of the works will be at full cost to the proponent.

Public Transport

The site is directly adjacent to an existing bus stop which is regularly serviced by Busway Buses. Taxi transportation is also available. The site is not within walking distance to a train station.

9 *How has the planning proposal adequately addressed any social and economic effects?*

Aboriginal Archaeology and European Cultural Heritage

There are some locations within close proximity to the site (within the existing Wadalba Wildlife Corridor) which contain sites identified on the Aboriginal Heritage Information Management System (AHIMS).

A detailed Aboriginal archaeological assessment will be required to be undertaken. This will involve a desktop review of relevant registers, community consultation and broad site assessments in accordance with Aboriginal cultural heritage consultation requirements for proponents 2010. The proponent has submitted some preliminary information that was prepared for a dwelling DA on the site to support the Planning Proposal (see Attachment 5C).

Social

The rezoning of the land will create a demand for community, cultural and recreational services.

The Shire Wide Contributions Plan (library stock, performing arts centre, public art commissions, regional open space and shire cycleway network and administration costs) will apply to future development of the land. The development will generate an increase in the demand for these services and facilities and will be required to contribute under the Plan and meet its share of the cost of these services.

The site is considered to be well located for accessibility to local education and recreation facilities, in addition to local and regional shopping amenities.

In general the following facilities are provided within 2km of the subject site:

- Supermarket and speciality shops including a Medical Centre;
- Wyong Hospital
- High School and Primary School;
- Preschool/childcare centre; and
- Two neighbourhood shopping centres.

Economic

The proposal will generate additional opportunities for residential land to be made available. Appropriate management measures have been identified to ensure the development funds any specific infrastructure, facilities or services not funded through contributions plans.

Street and Development Layout

A preliminary Development Concept Plan showing an indicative subdivision pattern will need to be developed before the proposal is placed on public exhibition. This should be finalised following consultation with government agencies (namely OEH and the RFS). Minor amendments may be required to relevant sections of Wyong DCP, 2013.

The indicative subdivision pattern will need to consider a number of issues:

- Topographic constraints
- Bushfire APZ requirements
- Exclude overland floodways from development areas and management of stormwater flows
- Odour and noise issues associated with location of temporary pump station
- Road geometry and road safety

Section D – State and Commonwealth Interests

10 Is there adequate public infrastructure for the planning proposal?

Water

The site can be serviced by water.

Sewer

The current sewer servicing strategy in this location involves the construction of a gravity main to transfer sewage to a proposed lift station south of Johns Road – the lift station is not proposed to be constructed until such time as the surrounding area is developed (as part of the East Wadalba Land Release Area).

There is potential for this site to be serviced by a temporary sewage pump station (SPS). As this strategy is contrary to Council's Development Servicing Plan for the area all the capital, ongoing operational (including power, maintenance, septicity control) and future decommissioning costs of the SPS and associated rising main must be borne by the developer, with contributions for downstream infrastructure still applicable. No credit will be given for these temporary works to offset sewerage contributions payable.

Roads

The proposal will only generate a small amount of additional traffic onto Johns Road due to the small amount of land being rezoned residential.

A small area in the south western portion of the site is required to enable the realignment of Johns Road. This will allow removal of the series of curves adjacent to the south western boundaries of the property. The proponent will be required to ensure this land is provided at no cost to Council including the relocation of any services including power poles. Once this area has been defined it will be identified SP2 – Infrastructure (Local Roads) and included on Land Reservation Acquisition Map

Electricity, Telecommunications and Gas

Electricity, telecommunications and gas are readily available in the locality.

Stormwater

A stormwater management plan will be required to ensure that overland flows are appropriately managed and considered in any future development concept to support the Planning Proposal. This might involve the provision of some stormwater management infrastructure to be placed onsite.

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

Agency consultation will be undertaken in accordance with any conditions and nominated agencies identified within a Gateway Determination to proceed with the proposal.

Part 4 Mapping

The following maps are provided in Attachment 4 to support the Planning Proposal.

Map No.	Map Title
✓	Locality Plan
✓	Proposed Zoning – Map
	Minimum Lot Size – Map (to be drafted)
	Urban Release Areas – Map (to be drafted)
	Land Reservation Acquisition – Map (to be drafted)

** Mapping for the proposed Zoning, Minimum Lot Size, Urban Release Areas and Land Reservation Acquisition will be subject to further investigative studies. These maps are to be finalised prior to community consultation occurring.*

Part 5 Community Consultation

It is recommended that the proposal be publicly exhibited for a period of 28 days. Depending on the timing of approval, the exhibition may be concurrent with Wyong LEP 2013.

Notification of the public exhibition is recommended to be placed in the Central Coast Express Advocate and written notification sent to owners adjacent to the site. Notices will be placed on Council's website and a link attached to Council's new ePanel initiative.

The Planning Proposal, Gateway Determination, and supporting studies will be made available on Council's website, at Council's Administration Building in Hely Street Wyong.

A public hearing is considered unlikely to be necessary.

Part 6 Project Timeline

Action	Period	Start Date	End Date
Anticipated commencement date (date of Gateway Determination)	1 month	23 January 2015	23 February 2015
Anticipated timeframe for the completion of required technical studies and Voluntary Planning Agreement	8 months	1 January 2015	1 October 2015
Timeframe for government agency consultation (pre and post exhibition as required by Gateway determination)	1 month	5 March 2015	5 April 2015
Commencement and completion dates for public exhibition	28 days	15 October 2015	15 November 2015
Dates for public hearing (if required)	N/A	N/A	N/A
Timeframe for consideration of submissions*	12 weeks	15 November 2015	15 February 2016
Timeframe for consideration of a proposal post exhibition*	12 weeks	15 November 2016	15 February 2016
Date of submission to the Department to finalise LEP	N/A	N/A	N/A
Anticipated date RPA will make the plan (if delegated)	1 week	15 February 2016	22 February 2016
Anticipated date RPA will forward to the Department for notification	1 week	22 February 2016	28 February 2016

* Includes period required for Council reporting and drafting of amending LEP instrument

Attachments and Supporting Documentation

Document	Attached
1 Assessment and Endorsement	
a Council Reports and Minutes	
• 28 August 2013 – Council report on 145 John Rd, Wadalba	
• 10 December 2014 – Council report on Johns Rd, Wadalba	
b Central Coast Regional Sustainability Assessment	
c Wyong Shire Council Community Strategic Plan Assessment	
d Assessment of State Environmental Planning Policies	
e Section 117 Ministerial Direction Assessment	
f Relationship of 145 Johns Road to broader Wadalba East Planning Proposal	
2 Land Use Tables – Wyong LEP 2013	
3 Agency Responses (to be provided post Gateway Determination)	
4 Mapping	
a Locality Plan	
b Proposed Zone Map	
c Proposed Minimum Lot Size Map	
d Urban Land Release Area Map	
e Lot Reservation Acquisition Map	
5 Supporting Studies	
a Request for Rezoning by A-Consult	
b Ecological Assessment, 145 Johns Rd, Wadalba	
c Aboriginal Cultural Heritage Assessment	

Attachment 1a

Council Reports

28 August 2013 & 10 December 2014

3.1 RZ/1/2013 Rezone Land at 145 Johns Road Wadalba

TRIM REFERENCE: RZ/1/2013 - D03422502
MANAGER: Martin Johnson, Manager Strategic Development
AUTHOR: Chris Ferry; Strategic Planner

This report relates to a rezoning application (Planning Proposal) which seeks to rezone land at 145 Johns Road Wadalba from 10(a) Investigation Precinct Zone to Low Density Residential and Environmental Conservation. A review of information submitted has concluded that the proposal has merit but lacks strategic justification. Further as the timing of this proposal and broader East Wadalba rezoning will be compatible, the incorporation of this single lot planning proposal into the East Wadalba proposal would optimise the development potential of this lot and the broader precinct. Both rezonings require the resolution of a number of strategic issues namely provision of infrastructure and positioning boundaries of the wildlife corridor and realignment of Johns Road.

Applicant:	Aconsult
Owners:	Zaychan Pty Ltd
Proposal No:	RZ/1/2013
Description of Land:	Lot 27 DP 663622
Zoning:	10(a) Investigation Precinct Zone
Existing Uses:	Residential Dwelling and Disused Poultry Sheds

RECOMMENDATION

That Council incorporate Planning Proposal RZ/1/2013 with the broader East Wadalba Precinct rezoning (RZ/2/2013) to ensure an improved strategic outcome for urban development in the Wadalba area which will occur at no cost to Council.

ORDINARY MEETING HELD ON 28 AUGUST 2013

RESOLVED unanimously on the motion of Councillor BEST and seconded by Councillor VINCENT:

1095/13 ***That Council incorporate Planning Proposal RZ/1/2013 with the broader East Wadalba Precinct rezoning (RZ/2/2013) to ensure an improved strategic outcome for urban development in the Wadalba area which will occur at no cost to Council.***

FOR: COUNCILLORS BEST, EATON, GRAHAM, GREENWALD, MATTHEWS, NAYNA, TAYLOR, VINCENT AND WEBSTER

AGAINST: NIL

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BACKGROUND

The site is a single lot, and is zoned 10(a) Investigation Precinct Zone under Wyong Local Environmental Plan 1991 (WLEP 1991). For the purposes of this report the land will be identified as “the site”.

Existing development on the site consists of a single storey residential dwelling, a masonry shed and disused poultry sheds. The site has been cleared of over 70% of vegetation with some native vegetation returning. Two watercourses cross the site generally in a north south direction with two 900mm twin culverts located along the Johns Road frontage.

The intent of this report is to inform Council of the proposed rezoning and in this instance seek Council support to incorporate this proposal into the broader East Wadalba Precinct proposal.

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CURRENT STATUS

The Site



Figure 1 145 Johns Road Wadalba – ‘The Site’

The entire site is zoned 10(a) (Investigation Precinct Zone) under WLEP 1991.

The site is rectangular in shape (Figure 1), rural residential properties are located south and east of the site and an approved residential subdivision is located to the west of the site (DA/1082/2011) which also provides a section of the Wadalba Wildlife Corridor adjoining the unformed Louisiana Road to the west. The Wadalba Reservoir is located to the north-west of the site.

The relationship of the site to the ‘East Wadalba Precinct’ proposal is shown in Attachment 1.

THE PROPOSAL

The proposal seeks to amend WLEP 1991 by rezoning the land part 2(a) (Residential Zone) and part 7(a) (Conservation Zone). Should draft Wyong Local Environmental Plan 2013 be made prior to the initialisation of this proposal the zoning would amend the new plan and the Standard Instrument zones of R2 Low Density Residential and E2 Environmental Conservation would apply.

ASSESSMENT

In support of the application, a draft Planning Proposal has been submitted by the applicant.

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The draft Planning Proposal has been reviewed considering:

- The strategic support for the rezoning.
- Any additional information required for Council to adequately consider the merit of the proposal.
- Additional information that may be required for forwarding to the Department of Planning and Infrastructure as part of the Gateway process.

ISSUES ANALYSIS

The planning proposal submission has been assessed having regard for the following matters:

Flora and Fauna
Bushfire
Climate Change
Mine Subsidence
Aboriginal Archaeology and European Cultural Heritage
Contaminated Land and Acid Sulfate Soils
Flooding and Drainage
Noise and Acoustics
Traffic and Transport
Social and Economic Impact
Servicing

The most significant issues for consideration relate to flora and fauna, road widening/realignment and sewer servicing.

Flora and Fauna

The site has been utilised for poultry farming for many years. The area proposed for residential development is predominantly cleared of native vegetation. Some areas on the northern and western portions of the site contain remnant vegetation and are proposed to be zoned for conservation purposes as part of this proposal. There is significant vegetation located on the eastern boundary of the site which could provide an equally effective corridor link. Although no threatened flora or fauna have been identified on the site, this site is the location for the critical link of the Wadalba Wildlife Corridor (WWC) which provides habitat for the endangered squirrel glider and connectivity to the Tacoma Wetlands located South of Johns Road.

The proposal states that the land allocated for the extension to the WWC will be sufficiently wide which is to ensure a functioning corridor. However an agreed width for a regional corridor cannot be confirmed by the Office of Environment and Heritage, therefore it is difficult to determine if the proposal will provide an effective corridor.

Remnant vegetation that is within the proposed environmental zone requires rehabilitation and removal of invasive weeds such as Lantana. Should this proposal be included in the broader East Wadalba precinct proposal the costs of rehabilitation could be shared by all landowners.

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Road Widening/Realignment

Sufficient land at the south western corner of the site is required to enable the realignment of Johns Road to remove the series of curves adjacent to the western boundary of the property. This may involve a triangular section of land at least 20 metres wide by 120 metres long. The proponent would be required to ensure this land is provided at no cost to Council including the relocation of any services including power poles. Should this proposal be included in the broader East Wadalba precinct proposal the costs could be shared by all landowners.

Sewer Servicing

The current sewer service in this location involves the construction of a gravity main to transfer sewerage to the proposed lift station south of Johns Road – the lift station is not proposed to be constructed until such time as the surrounding area is developed. An alternative would be for the proponent to bear the costs of construction, ongoing operation / maintenance and decommissioning of a temporary pump station located near the western boundary of the site. By incorporating this proposal into the broader precinct proposal it would eliminate the need for a temporary pump station.

LOCAL PLANS, POLICIES AND STRATEGIES

Wyong Local Environmental Plan 1991 and Wyong Standard Instrument Local Environmental Plan

The subject site is currently zoned 10(a) (Investigation Precinct Zone) under Wyong LEP 1991. The objectives of this zone are:

- (a) to protect native vegetation, maintain ecological processes and biological diversity within land that is under investigation for conservation purposes, and
- (b) to protect rural land that, after detailed environmental investigations, may be suitable for ecological conservation or future urban development, and
- (c) to prohibit development that it is likely:
 - (i) to lead to the premature and sporadic subdivision of land, or
 - (ii) to inhibit the potential for urban expansion in selected areas, particularly the urban fringe, or
 - (iii) to prejudice the present environmental quality of the land, or
 - (iv) to generate significant additional traffic or create or increase a condition of ribbon development on any road, relative to the capacity and safety of the road, and
- (d) to ensure that any interim development is carried out in a manner that minimises risks from natural hazards, minimises degradation of environmental values, functions efficiently, does not prejudice other economic development and does not detract from the scenic quality of rural areas, and
- (e) to allow mining to occur in an environmentally acceptable manner.

Council's Standard Instrument LEP proposes to zone the site RU6 Transition. The objectives of the RU6 zone are as follows:

- To protect and maintain land that provides a transition between rural and other land uses of varying intensities or environmental sensitivities.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To ensure that interim land uses do not adversely impact upon the conservation/or development potential of land identified for future investigation within the North Wyong Shire Structure Plan and / or Wyong Settlement Strategy.

Draft Wyong Settlement Strategy 2012

Council's draft Settlement Strategy (SS) was publicly exhibited between 9 January 2013 and 20 February 2013. The SS:

- *Establish(es) the strategic direction and framework for the Wyong (Local Government Area) LGA and inform the preparation of Wyong LEP 2012 and Wyong DCP 2012: Development Provisions for Wyong Shire;*
- *Provides a blueprint for the growth of the (Local Government Area) LGA with accessible and reliable transport, a strong regional economy, a vibrant community and a healthy natural environment; and*
- *Provides an analysis of demand, supply and nature of land and identifies where additional land may need to be set aside for residential, business and commercial development while retaining the LGA's enviable natural environment;*

Key planning considerations for the release of future urban land, including infill development as identified by the SS requires that development be:

- Undertaken in an orderly manner and shall be consistent with the timeframes of the NWSSP and Council's Settlement Strategy;
- Not occur until such time that adequate transportation, utility, community and recreational infrastructure can be guaranteed including matters for consideration identified in Part 6 of Wyong SI LEP;
- Facilitate the creation of social hubs that satisfy the needs of the community, including cultural, educational, health and recreation facilities;
- Incorporate the principles of Healthy Spaces and Places, Crime Prevention Through Environmental Design, and the Universal Design Principles for Accessible Environments;
- Provide for appropriate housing choice. This may be assisted by the incorporating the findings of the Affordable Housing study.

It should be noted that although the draft Settlement Strategy has been endorsed by Council, it has not yet been endorsed by the DoPI.

The draft Wyong Shire Settlement Strategy has recommended this site be retained as an urban investigation precinct and has been identified as a "Strategically located, constrained site" subject to further investigation and offset strategies to define conservation requirements and development potential.

This site requires more detailed investigation, ideally as part of the greater East Wadalba Precinct rezoning to determine its environmental value, wildlife corridor boundaries, development potential and appropriate zoning and development controls to achieve a balance between development and biodiversity conservation within the broader context of the Settlement Strategy, Central Coast Regional Strategy and NWSSP.

Development Control Plan

Any development of the subject site being undertaken as a result of the rezoning will be required to be consistent with relevant controls of DCP 2005, or pending timing of DCP 2012 (now DCP 2013), in particular, the following Chapters:

DCP 2005	DCP 2012
- 61: Car Parking;	- Chapter 2.1: Dwelling Houses and Ancillary Structures
- 66: Subdivision;	- Chapter 2.3: Dual Occupancy Development
- 67: Engineering Requirements for Development;	- Chapter 2.11: Parking and Access
- 69: Controls for Site Waste Management;	- Chapter 3.1: Site Waste Management
- 58: Dual Occupancy Development;	- Chapter 3.2: Water Sensitive Urban Design
- 100: Quality Housing;	- Chapter 3.3: Floodplain Management
- 99: Building Lines;	
- 13: Conservation Areas for Wyong Shire	- Chapter 3.6 Conservation Areas for Northern Wyong Shire

STATE LEGISLATION, POLICIES, PLANS AND STRATEGIES

Central Coast Regional Strategy

The Central Coast Regional Strategy (CCRS) was released by the DoPI in July 2008. The CCRS identifies the population potential of the Central Coast expected over the next 25 years, and expected employment capacity targets. The strategy also identifies actions to ensure ongoing growth and prosperity of the region, including actions for centres and housing, economy and employment, environment and natural resources, natural hazards, water supply, regional infrastructure and regional transport.

Incorporation of this proposal within the investigation of the broader East Wadalba Precinct will ensure the provision of a mix of housing types in accordance with the Central Coast Regional Strategy ‘Centres and Housing’ outcomes. In addition the incorporation of the two proposals will assist in creating an attractive, adaptable, and self-reliant community.

North Wyong Shire Structure Plan

The North Wyong Shire Structure Plan was developed to provide a high level land use strategy to guide ongoing development and planning for infrastructure and services in the North Wyong Shire Area. The NWSSP identifies greenfield residential development and all of the Central Coast region’s greenfield employment land to 2031.

The site is not located within a future investigation precinct but is located between Precinct 2B and Precinct 3B as provided in the NWSSP. The entire site has been identified as a “Green Corridor” in the NWSSP.

Because of this, the site should be included in this broader East Wadalba Precinct rezoning to ensure that strategically identified development precincts are developed in accordance with the NWSSP precinct staging plan.

The planning proposal shows some consistency with the NSSWP as it provides a corridor extension the WWC but not in the same configuration as that depicted in the Structure Plan.

Regional Economic Development and Employment Strategy (REDES) 2010

The Regional Economic Development and Employment Strategy (REDES) is a partnership between the NSW Government, Regional Development Australia Central Coast (RDACC), Gosford City Council and Wyong Shire Council.

Whilst the proposal will not directly supply long term employment opportunities, short term opportunities would be created through associated planning and construction work.

Section 117 Directions

The proposal has been assessed against relevant Section 117 Ministerial Directions. The assessment in full is contained within Attachment 2 of this report. The proposal is considered to be consistent with the applicable Directions, subject to the outcomes of a number of further investigations.

The following table provides an overview of the consistency of the proposal against the applicable Section 117 Directions.

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<i>Number</i>	<i>Direction</i>	<i>Applicable</i>	<i>Consistent</i>
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	Y
1.4	Oyster Aquaculture	N	N/a
1.5	Rural Lands	N	N/a
Environment & Heritage			
2.1	Environmental Protection Zones	Y	TBD
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

3.1 RZ/1/2013 Rezone Land at 145 Johns Road Wadalba (contd)

Number	Direction	Applicable	Consistent
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	N	N/a
3.6	Shooting Ranges	N	N/a
Hazard & Risk			
4.1	Acid Sulfate Soils	Y	Y
4.2	Mine Subsidence and Unstable Land	Y	Y
4.3	Flood Prone Land	N	N/a
4.4	Planning for Bushfire Protection	Y	Y
Regional Planning			
5.1	Implementation of Regional Strategies	Y	Y
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
5.5	Development in the Vicinity of Ellalong, Paxton and Millfield (Cessnock LGA)	N	N/a
5.6	Second Sydney Airport: Badgerys Creek	N	N/a
Local Plan Making			
6.1	Approval and Referral Requirements	Y	Y
6.2	Reserving Land for Public Purposes	Y	Y
6.3	Site Specific Provisions	Y	Y
Metropolitan Planning			
7.1	Implementation of the Metropolitan Strategy	N	N/a

State Environmental Planning Policies

The proposal has been assessed having regard for relevant State Environmental Planning Policies (SEPPs) as follows:

- SEPP 44 – Koala Habitat
- SEPP 55 – Contaminated Land

It is considered that the proposal is generally consistent with the aims and objectives of the requirements of the above SEPPs. Assessment of the proposal against the relevant SEPPs is detailed in Attachment 3.

OPTIONS

Option 1: Proceed to Gateway Determination as a standalone Planning Proposal

This option would provide one possibility for the extension to the WWC and provide additional residential land. A Voluntary Planning Agreement would be required at an early stage to ensure the dedication of the continuation of the WWC at no cost to Council, dedication of a section of the property for the realignment of Johns Road and ensure the costs of commissioning, decommissioning and maintenance of a temporary sewer pump station are borne by the proponent. The applicant believes that this option would best serve their interests as it would avoid any possible delay caused by resistance or any dispute over funding from other landowners within the East Wadalba Precinct. This is not the preferred option because by incorporating the two proposals Council is able to better manage issues such as the boundaries of the WWC and realignment of Johns Road.

Option 2

Incorporate this planning proposal RZ/1/2013 with the broader East Wadalba proposal RZ/2/2013 for Precincts 2A, 2B and 3A received by Council on 14 June 2012.

In August 2011 the Minister for Planning and Infrastructure announced the state government would review potential land owner nominated housing sites over 100 hectares which could be developed within three years at no additional cost to the government. The Wadalba Lobby Group submitted the East Wadalba Precinct which included Precincts 2A, 2B and 3A as identified in the (NWSSP). In March 2013 the Minister for Planning and Infrastructure provided advice that of the 29 sites nominated seven sites were identified for immediate action. Included in these sites was the East Wadalba Precinct. Strategically the inclusion of this single allotment proposal within the broader precinct will provide for better management of issues such as flora and fauna, transport and sewer servicing. This will also ensure that the proposal is advanced on the basis that there will be no cost to Council.

This is the preferred option

Option 3 Not Proceed with Rezoning at all

The site is identified within the NWSSP as a '*Green Corridor and Habitat Network*'. It is timely that this proposal has aligned with the processing and assessment of the East Wadalba Precinct zoning. Incorporation of the site into the greater East Wadalba Precinct is of strategic significance particularly in respect to resolving WWC boundaries and maximising development potential of sites affected by WWC. Therefore this option is not supported

Link to Community Strategic Plan (CSP) (2030)

The proposal can be directly linked to the following objectives of the plan:

1. Communities will be vibrant, caring and connected with a sense of belonging and pride in their local neighbourhood.
 - (e) Developing and implementing the Wyong Shire-wide Settlement Strategy.
3. Communities will have access to a diverse range of affordable and coordinated facilities, programs and services.

- (f) Maximise the access to, and potential for, new and existing facilities/infrastructure to support growth.
4. Areas of natural value in public and private ownership will be enhanced and retained to a high level in the context of ongoing development.
- (a) Preserving threatened and endangered species as well as ecological communities and biodiversity.
 - (c) Ensuring all development areas create or maintain tree covered ridgelines and waterways

The CSP identifies a number of essential services which must be provided. These are delivered by Council through a number of Principal Activity Areas. The assessment of the impacts of land use strategies and rezonings is incorporated within the Environment and Land Use 'Principal Activity Area' which aims to *support(s) the natural and built environment on both private and public land. This is done by providing strategic planning and policy as well as controls over land-use in order to maintain a high quality of life and natural environment. Through this activity Council seeks to promote sustainable use of natural resources on the Central Coast.*

Budget Impact

There are no immediate budget impacts, as progress of the Planning Proposal is being funded by the requisite accompanying Phase 1 fee. Further assessment work conducted by Council will be funded by the proponent who will be required to enter into a funding agreement with Council. Should the site be incorporated into the East Wadalba Precinct rezoning as recommended there may be cost saving to the applicants. The East Wadalba Precinct proposal has been supported by Council on the basis that Council incurs no costs for the provision of infrastructure.

CONSULTATION

The proposal was referred to a cross section of Council staff representing diverse interests including:

- Ecology;
- Transport/Accessibility;
- Wastewater/Sewer;
- Developer Contributions;
- Service Infrastructure; and
- Social Planning.

Comments received have informed the assessment of the proposal and the need for any additional investigative studies.

GOVERNANCE AND POLICY IMPLICATIONS

Refer to discussion relating to Local Plans, Policies and Strategies

MATERIAL RISKS AND ISSUES

The assessment of the proposal has been undertaken having regard for the requirements of relevant and current legislation, regulations, assessment/survey methodologies, mapping and modelling (including available baseline information), demographics and best practices. This assessment is considered to fulfil Council's requirements under Section 733 of the *Local Government Act 1993*.

CONCLUSION

The proposed rezoning has considerable merit given the location of the site in relation to the existing residential development and the strategic Wadalba Wildlife Corridor link.

However to ensure the orderly and timely delivery of urban land including the determination of the extension to the Wadalba Wildlife Corridor, it is considered that this proposal (RZ/1/2013) should be incorporated into the broader East Wadalba Precinct RZ/2/2013 planning investigations. Incorporation of this site into the broader East Wadalba Precinct rezoning will ensure greater equity of development and conservation outcomes through a precinct based rezoning process.

ATTACHMENTS

- | | | |
|---|---|-----------|
| 1 | Relationship of RZ/1/2013 to Wadalba East Precinct Rezoning | D03609031 |
| 2 | Section 117 Ministerial Directions Assessment RZ/1/2013 | D03575559 |
| 3 | State Environmental Planning Policy Assessment RZ/1/2013 | D03575530 |

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2.3 RZ/1/2013 - Commence Preparation of Planning Proposal at 145 Johns Road, Wadalba

TRIM REFERENCE: RZ/1/2013 - D11761756
MANAGER: Tanya O'Brien, Manager
AUTHOR: Scott Duncan; Senior Strategic Planner

SUMMARY

This report relates to a rezoning application (Planning Proposal) which seeks to rezone land at 145 Johns Road Wadalba from RU 6 – Transition to R2 - Low Density Residential and E2- Environmental Conservation and SP2 Infrastructure.

Applicant:	Aconsult
Owners:	Zaychan Pty Ltd
Proposal No:	RZ/1/2013
Description of Land:	Lot 27 DP 663622, 145 Johns Road, Wadalba
Zoning:	RU6 - Transition
Proposed Zoning	R2 - Low Density Residential, E2- Environmental Conservation and SP2 Infrastructure (Local Road)
Existing Uses:	Residential Dwelling and Disused Poultry Sheds

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RECOMMENDATION

- 1 That Council prepare a Planning Proposal to amend Wyong Local Environmental Plan 2013, WLEP pursuant to Section 55 of the Environmental Planning and Assessment (EP & A) Act, 1979 (generally in accordance with Attachment 1).
- 2 That Council forward the Planning Proposal to the Department of Planning and Environment (DP&E) accompanied by a request for a "Gateway Determination", pursuant to Section 56 of the EP & A Act, 1979.
- 3 That Council require, subject to the "Gateway Determination" that the landowner enter into a Funding Agreement with Council in accordance with Council's Planning Proposal Procedure to recover the costs involved in further progressing the proposal.
- 4 That Council authorise the General Manager (or delegate) to sign the Funding Agreement for the rezoning.
- 5 That Council enter into a Voluntary Planning Agreement (VPA) which will require:
 - a Dedication and rehabilitation of wildlife corridor land on terms acceptable to Council.
 - b Dedication of land at no cost for the realignment of Johns Road

2.3 RZ/1/2013 - Commence Preparation of Planning Proposal at 145 Johns Road, Wadalba (contd)

- c Funding of commissioning, maintenance and decommissioning of a temporary sewer pump station by the proponents to service the development.*
- 6 *That Council authorise the General Manager (or delegate) to negotiate and execute all documentation in relation to the finalization of the VPA.*
- 7 *That Council undertake community and government agency consultation, in accordance with the requirements attached to the "Gateway Determination".*
- 8 *That Council prepare appropriate Development Control Plan provisions and amend Section 94 Contributions Plans (if required) to support the development of the land subject to this Planning Proposal.*
- 9 *That Council request DP&E to modify the East Wadalba Land Release Area Gateway Determination to enable 145 Johns Road Wadalba proceed as a site specific planning proposal.*
- 10 *That Council consider a further report on the results of the community and agency consultation.*

ORDINARY MEETING HELD 10 DECEMBER 2014

RESOLVED unanimously on the motion of Councillor NAYNA and seconded by Councillor BEST:

- 1372/14** *That Council prepare a Planning Proposal to amend Wyong Local Environmental Plan 2013, WLEP pursuant to Section 55 of the Environmental Planning and Assessment (EP & A) Act, 1979 (generally in accordance with Attachment 1).*
- 1373/14** *That Council forward the Planning Proposal to the Department of Planning and Environment (DP&E) accompanied by a request for a "Gateway Determination", pursuant to Section 56 of the EP & A Act, 1979.*
- 1374/14** *That Council require, subject to the "Gateway Determination" that the landowner enter into a Funding Agreement with Council in accordance with Council's Planning Proposal Procedure to recover the costs involved in further progressing the proposal.*
- 1375/14** *That Council authorise the General Manager (or delegate) to sign the Funding Agreement for the rezoning.*
- 1376/14** *That Council enter into a Voluntary Planning Agreement (VPA) which will require:*
 - a** *Dedication and rehabilitation of wildlife corridor land on terms*

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acceptable to Council.

- b Dedication of land at no cost for the realignment of Johns Road*
- c Funding of commissioning, maintenance and decommissioning of a temporary sewer pump station by the proponents to service the development.*

1377/14 *That Council authorise the General Manager (or delegate) to negotiate and execute all documentation in relation to the finalization of the VPA.*

1378/14 *That Council undertake community and government agency consultation, in accordance with the requirements attached to the "Gateway Determination".*

1379/14 *That Council prepare appropriate Development Control Plan provisions and amend Section 94 Contributions Plans (if required) to support the development of the land subject to this Planning Proposal.*

1380/14 *That Council request DP&E to modify the East Wadalba Land Release Area Gateway Determination to enable 145 Johns Road Wadalba proceed as a site specific planning proposal.*

1381/14 *That Council consider a further report on the results of the community and agency consultation.*

FOR: COUNCILLORS BEST, EATON, GRAHAM, GREENWALD, MATTHEWS, NAYNA, TROY,
VINCENT AND WEBSTER

AGAINST:

NIL

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BACKGROUND

The site is a single lot, and is zoned RU6 - Transition under WLEP 2013.

Council at its meeting held 28 August 2013, resolved unanimously on the motion of Councillor Best and seconded by Councillor Vincent:

1095/13 *That Council incorporate Planning Proposal RZ/1/2013 with the broader East Wadalba Precinct rezoning (RZ/2/2013) to ensure an improved strategic outcome for urban development in the Wadalba area which will occur at no cost to Council.*

A Gateway Determination was received for the broader East Wadalba Urban Land Release Planning Proposal on 20 December 2013 (which includes 145 Johns Road, Wadalba). The Department of Planning and Environment (DP&E) advised Council as part of the Gateway Determination, that Council should monitor progress of the East Wadalba Urban Land Release Planning Proposal. DP&E indicated that if delays were encountered a revised

2.3 RZ/1/2013 - Commence Preparation of Planning Proposal at 145 Johns Road, Wadalba (contd)

Gateway Determination to split 145 Johns Road, Wadalba into a separate Planning Proposal may be requested.

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Several requests have been made by the owner of 145 Johns Road Wadalba to proceed as a separate Planning Proposal. Council staff declined those earlier requests in order to enable the broader East Wadalba Urban Land Release Planning Proposal the opportunity to commence. As a result of no funding agreement being formalised with WELOG and no formal commencement of East Wadalba Urban Land Release Planning Proposal, Council staff agreed the assessment of the Planning Proposal for 145 Johns Road as a separate planning proposal could proceed.

The land proposed to be rezoned has been identified in the North Wyong Shire Structure Plan (NWSSP) as a green corridor and surrounding areas are proposed for residential. The neighbouring residential land has been identified as a medium term release priority meaning that it is expected that the land will be released before 2027. (See Attachment 2).

The proponent contends that part of the site is suitable for urban development while retaining the western vegetated section in an environmental zone to ensure functionality of the wildlife corridor identified in the NWSSP.

CURRENT STATUS

The Site



Figure 1 - 145 Johns Road Wadalba – ‘The Site’

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2.3 RZ/1/2013 - Commence Preparation of Planning Proposal at 145 Johns Road, Wadalba (contd)

The site is rectangular in shape (See Figure 1), rural residential land uses are located south and east of the site and an approved residential subdivision is located to the west of the site (DA/1082/2011) which also provides a section of the Wadalba Wildlife Corridor adjoining the unformed Louisiana Road to the west. The Wadalba Reservoir is located to the north-west of the site.

Existing development on the site consists of a single storey residential dwelling, a masonry shed and disused poultry sheds. Over 70% of the site has been cleared with some native vegetation returning. Two watercourses cross the site generally in a north south direction with two 900mm twin culverts located along the Johns Road frontage.

The Proposal

This draft Planning Proposal was originally considered by Council on the 28 August 2013 and it was resolved to include the rezoning proposal as part of a broader rezoning proposal for the Wadalba East Urban Land Release Area.

The relationship of the site to the 'East Wadalba Precinct Planning Proposal' is shown in Attachment 3.

The proposal seeks to amend WLEP 2013 by rezoning the site to R2 Low Density Residential and E2 Environmental Conservation through a site specific Planning Proposal.

ISSUES ANALYSIS

The Planning Proposal acknowledges that a number of specialist reports will be required. An overview of the main issues associated with the subject site is provided.

Wildlife Corridor

The site forms a key part of a major wildlife corridor. The corridor connects the Wadalba Wildlife Corridor (WWC) to Tacoma/Tuggerawong Wetlands. This wildlife corridor is identified in the NWSSP and Wadalba Corridor Plan of Management (See Attachment 2). The applicant has outlined their preferred position for the corridor. Council's Senior Ecologist – Property Management has reviewed the proposal and has recommended some adjustments to the proposed position of the E2 Environmental Conservation Zone boundary to improve connectivity outcomes. It is apparent that a portion of the site has urban development potential, however, further consultation will need to occur between OEHL, Council and the proponent before the final dimensions of the corridor can be agreed. This issue will need to be resolved before public exhibition of the Planning Proposal.

Threatened species and meeting legislative requirements

Some preliminary ecological work has been undertaken by the proponent. Further consultation will be undertaken with OEHL to confirm flora and fauna survey requirements to support the rezoning of the land. This will also need to be supported by detailed vegetation and habitat mapping. This program will need to target relevant threatened species listed under Commonwealth and State threatened species legislation.

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Management of Corridor Land

Council's Property Management Unit advises that it is agreeable "in principle" to accept the ownership and management responsibility of the extension to the Wadalba Wildlife Corridor over part of the subject land as it represents a logical extension of Council owned land within the Wadalba Corridor.

Council will require the land to be transferred in acceptable condition and that a 10 year maintenance contribution will be required to accompany any land transfer. These details will need to be agreed in a Voluntary Planning Agreement (VPA) to Council's satisfaction.

Land condition will require further assessment but generally require the land to be rubbish and contamination free and less than 30% weed cover. The contribution package would be calculated dependant on the on-ground work required to maintain the land for 10 years so that it doesn't reinfest the other parts of the wildlife corridor with weeds, creating an increased maintenance burden.

Bushfire

The site is classified as "bushfire prone land". Future development will need to adopt appropriate Asset Protection Zones (APZ's) and incorporate these requirements into future street layouts and dwelling setbacks. If APZ's are to be considered they must be outside the corridor lands. An assessment of the proposal against Planning for Bushfire Protection 2006 and the NSW Rural Fire Service will be required.

Contaminated Land Assessment

Given the historic use of the property as a poultry farm a preliminary contaminated land assessment will be required addressing the requirements of SEPP 55 Contaminated Land.

Stormwater Management

The site has two drainage lines (identified blue lines) traversing the site. Council's Team Co-Ordinator Engineering Assessments has advised that a stormwater management plan will be required to ensure that overland flows are appropriately managed and considered in any future development concept to support the Planning Proposal.

Aboriginal Archaeology and European Cultural Heritage

There are some locations within close proximity to the site (within the existing Wadalba Wildlife Corridor) which contain sites identified on the Aboriginal Heritage Information Management System (AHIMS).

A detailed Aboriginal archaeological assessment will be required to be undertaken. This will involve a desktop review of relevant registers, community consultation and broad site assessments in accordance with *Aboriginal cultural heritage consultation requirements for proponents 2010*.

Water and Sewer Servicing

The site can be serviced by water.

The current sewer servicing strategy in this location involves the construction of a gravity main to transfer sewage to the proposed lift station south of Johns Road – the lift station is not proposed to be constructed until such time as the surrounding area is developed (as part of the East Wadalaba Land Release Area).

There is potential for this site to be serviced by a temporary sewage pump station (SPS). As this strategy is contrary to Council's Development Servicing Plan for the area all the capital, ongoing operational (including power, maintenance, septicity control) and future decommissioning costs of the SPS and associated rising main must be borne by the developer, with contributions for downstream infrastructure still applicable. No credit will be given for these temporary works to offset sewerage contributions payable.

A potential short term arrangement to service the subject site and the site located to the west (155 Johns Road) with a shared temporary SPS and rising main may provide advantages to the developers for sharing the associated costs.

Road Widening/Realignment

A small area in the south western portion of the site is required to enable the realignment of Johns Road. This will allow removal of the series of curves adjacent to the south western boundaries of the property. The proponent will be required to ensure this land is provided at no cost to Council including the relocation of any services including power poles. Once this area has been defined it will be identified SP2 – Infrastructure (Local Roads) and included on Land Reservation Acquisition Map

Mine Subsidence

The site occurs in a Mine Subsidence District. The Mine Subsidence Board (MSB) will be consulted and any issues raised will be addressed as the Planning Proposal is further developed.

Development Concept

A preliminary Development Concept Plan showing an indicative subdivision pattern will be required demonstrating how the site will be developed. This should be finalised following consultation with government agencies namely OEH and the RFS.

LOCAL PLANS, POLICIES AND STRATEGIES

Wyong Local Environmental Plan 2013

The current site is zoned RU6 – Transition. The proposal will amend Wyong LEP 2013 by creating an R2- Low Density Residential and E2 – Environmental Conservation Protection Zone over the site. Zone and mapping provisions will be created which are consistent with this document.

STATE LEGISLATION, POLICIES, PLANS AND STRATEGIES

Central Coast Regional Strategy and North Wyong Shire Structure Plan

The Central Coast Regional Strategy (CCRS), released in June 2008, provides the base planning framework for the growth of the Central Coast Region over the next 25 years (2006-2031).

The CCRS identifies that an additional 39,500 dwellings will be required to accommodate an anticipated population growth of 71,100 persons. 16,000 of these new dwellings will be required to be accommodated within new release or 'Greenfield' areas. Part rezoning of the site to residential will contribute towards achieving these targets.

The NWSSP was developed to provide a high level land use strategy to guide ongoing development and planning for infrastructure and services in the northern part of Wyong Shire.

The subject site is not located within a future investigation precinct but is located between Precinct 2B and Precinct 3B as provided in the NWSSP. The entire site has been identified as a "Green Corridor" in the NWSSP, (see Attachment 2). The rezoning proposal makes a partial contribution to providing the corridor. Further discussions will need to occur between Council and OEH following detailed flora and fauna studies to agree on final dimensions of the corridor.

Section 117 Directions

The proposal has been assessed against relevant Section 117 Ministerial Directions. The assessment in full is contained within Attachment 4 of this report. The proposal is considered to be consistent with the applicable Section 117 Directions, subject to the outcomes of a number of further investigations. The proposal is considered to be reasonably compliant with inconsistencies likely to be justified by future reports.

State Environmental Planning Policies

The proposal has been assessed having regard for relevant State Environmental Planning Policies (SEPPs) as follows:

- SEPP 44 – Koala Habitat
- SEPP 55 – Contaminated Land

It is considered that the proposal is generally consistent with the aims and objectives of the requirements of the above SEPPs. Assessment of the proposal against the relevant SEPPs is detailed in Attachment 5.

OPTIONS**Option 1: Proceed to Gateway Determination as a standalone Planning Proposal - Recommended**

It was initially resolved by Council to include the rezoning for 145 Johns Road, Wadalba into the broader Wadalba East Urban Land Release Planning Proposal as both rezonings were in the process of being assessed by Council. However, progress with the broader precinct rezoning for the Wadalba Urban Release Area appears to have stalled and Council has been unable to progress the rezoning past the point of Gateway Determination stage. Agreement has not yet been reached on funding studies and payment of Council's rezoning fee with the proponent.

The owner of 145 Johns Road, has requested that Council separate the site from the broader precinct rezoning process and proceed with it as a site specific rezoning. This option has been requested due to delays with the broader precinct rezoning process. The subject site adjoins existing corridor/residential areas (See Attachment 3) and could readily be excluded from the Wadalba East Rezoning process.

A VPA will be required at an early stage to ensure the dedication at no cost to Council, dedication of property for the realignment of Johns Road and ensuring the costs of commissioning, decommissioning and maintenance of a temporary sewer pump station are borne by the proponent.

In order to facilitate development outcomes in accordance with the CCRS and deliver the wildlife corridor this is the preferred option.

Option 2 - Continue to incorporate the Planning Proposal RZ/1/2013 with the Wadalba East Urban Land Release Planning Proposal – Not Recommended

Continued inclusion of 145 Johns Road, Wadalba within the Wadalba East Urban Land Release rezoning could provide for more co-ordinated management of issues such as flora and fauna, transport and sewer servicing. However, this would only make sense if funding arrangements were in place to fund and further progress the project. Given the delays experienced to date this option is not recommended.

Option 3 – Defer for an additional 3 months - Not Recommended

The proponent has been waiting to progress this Planning Proposal for approximately 18 months. It is considered unreasonable to delay this project by a further 6 months by continuing to link it to the East Wadalba Urban Link Release Planning Proposal that has yet to commence.

STRATEGIC LINKS**Wyong Shire Council Strategic/ Annual Plan**

The proposal is consistent with Wyong Shire Council's Strategy Annual Plan.

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Long term Financial Strategy and Asset Management Strategy

Council will require the final agreed portion of the wildlife corridor to be transferred to Council in an acceptable condition and that a 10 year maintenance contribution will be required to accompany any land transfer.

The site will require the construction, ongoing operation / maintenance and decommissioning of a temporary pump station to service the land. The full costs of which will be borne by the proponent.

These outcomes will be secured through a VPA.

GOVERNANCE AND POLICY IMPLICATIONS

Refer to discussion relating to Local Plans, Policies and Strategies

MATERIAL RISKS AND ISSUES

The assessment of the proposal has been undertaken having regard for the requirements of relevant and current legislation, regulations, assessment/survey methodologies, mapping and modelling (including available baseline information), demographics and best practices. This assessment is considered to fulfil Council's requirements under Section 733 of the *Local Government Act 1993*.

BUDGET IMPACT

There are no immediate budget impacts. The proponent will be funding the assessment of the rezoning and will be required to enter into a funding agreement.

CONSULTATION

The proposal was referred to a cross section of Council staff representing:

- Ecology;
- Transport/Accessibility;
- Wastewater/Sewer;
- Property Development
- Developer Contributions;
- Service Infrastructure; and
- Social Planning.

Comments received have informed the assessment of the proposal and the need for any additional investigative studies.

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CONCLUSION

The proposed rezoning has merit and could assist with the achievement of a strategic wildlife corridor linkage at Wadalba. Due to the delays in progressing the broader Wadalba East Urban Land Release Planning Proposal (which the current rezoning forms a part), it is considered appropriate for the rezoning to be separated from this process and considered as a standalone Planning Proposal, subject to the proponent meeting the full costs of the rezoning process and addressing the matters raised in this report.

ATTACHMENTS

1	Amended Wadalba East LEP 2013 Zone Map	D11782456
2	Relationship of site to NWSSP - Map	D11763203
3	Relationship of RZ/1/2013 to Wadalba East Precinct Rezoning - Map	D11784065
4	Section 117 Ministerial Directions Assessment RZ 1/2013	D11763234
5	State Environmental Planning Policy Assessment RZ/1/2013	D11763236

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Attachment 1b

**Central Coast Regional Strategy
Sustainability Assessment**

Criteria	Requirements	Consistency (Y/N)	Comments
<p>Infrastructure Provision Mechanisms in place to ensure utilities, transport, open space and communication are provided in a timely and efficient way.</p>	<p>Development is consistent with the CCRS, the relevant residential strategy, North Wyong Structure Plan (NWSSP), applicable regional infrastructure plan, Metropolitan Strategy and relevant section 117 directions.</p> <p>The provision of infrastructure (utilities, transport, open space and communications) is costed and economically feasible based on government methodology for determining infrastructure contribution.</p> <p>Preparedness to enter into development agreement</p>	<p>TBD</p>	<p>All development sites are subject to the NWSSP.</p> <p>The proposal is in close proximity to major road networks. Further assessment to ensure Consistency with applicable Section 117 Sections will be subject to the outcomes of additional investigative studies.</p> <p>The Proponent is willing to enter into a Voluntary Planning Agreement to ensure the provision of infrastructure such as a temporary sewage pump station to service the site.</p>

<p>Access Accessible transport options for efficient and sustainable travel between homes, jobs, services and recreation to be existing or provided.</p>	<p>Accessibility of the area by public transport and appropriate road access in terms of: Location/land use: to existing networks and related activity centres. Network: the areas potential to be serviced by economically efficient public transport services. Catchment: the area's ability to contain or form part of the larger urban area which contains adequate transport services. Capacity for land use/transport patterns to make a positive contribution to achievement of travel and vehicle use goals No net negative impact on performance of existing sub regional road, bus, rail, ferry and freight management.</p>	<p>Y</p>	<p>The precinct is accessible to the Pacific Highway and which is well serviced by the public services and is proximate to Wyong Township (which has a railway station).</p>
<p>Housing Diversity Provide a range of housing choices to ensure a broad population can be housed.</p>	<p>Contributes to the geographic market spread of housing supply, including any government targets established for housing for the aged or disabled or affordable housing.</p>	<p>Y</p>	<p>The rezoning proposal will provide additional residential land which is expected to mostly take the form of low density residential housing.</p>
<p>Employment Lands Provide regional/local employment opportunities to support the Central Coast's expanding role in the wider regional and NSW economies.</p>	<p>Maintains or improves the existing level of subregional employment self containment. Meets subregional employment capacity targets.</p>	<p>Y</p>	<p>The rezoning proposal is essentially residential in nature and will provide opportunities for home occupations/businesses exist and will likely be pursued at a modest scale.</p>
<p>Avoidance of Risk Land use conflicts and risk to human health and life is avoided.</p>	<p>Where relevant, available safe evacuation route (flood and bushfire). No residential development within the 1:100 floodplain. Avoidance of physically constrained land. High Slope Highly erodible Avoidance of land use</p>	<p>Y</p>	<p>Thorough investigative studies will be undertaken to determine constraints, e.g. flooding, contaminated land and bushfire assessments will be undertaken to further support the Planning Proposal.</p>

	conflicts with adjacent, existing or future land use and rural activities planned under the Regional Strategy.		
<p>Natural Resources</p> <p>Natural resource limits are not exceeded/environmental footprint minimised.</p>	<p>Demand for water does not place unacceptable pressure on infrastructure capacity to supply water and environmental flows. Demonstrates most efficient/suitable use of land</p> <p>Avoids identified significant agricultural land</p> <p>Avoids impacts on productive resource lands, extractive industries, coal, gas and other mining, fishing and aquaculture.</p> <p>Demand for energy does not place unacceptable pressure on infrastructure capacity to supply energy. Requires demonstration of efficient and sustainable supply solution.</p>	Y	<p>The land is identified within existing servicing plans which provide for planned increases in the population of this locality.</p> <p>No significant agricultural production will be affected by the proposal.</p>
<p>Environment Protection</p> <p>Protect and enhance biodiversity, air quality, heritage and waterway health.</p>	<p>Consistent with the approved Regional Conservation Plan.</p> <p>Maintains or improves areas of regionally significant terrestrial and aquatic biodiversity. This includes regionally significant vegetation communities, critical habitat, threatened species, populations, ecological communities and their habitat.</p> <p>Maintains or improves existing environmental conditions for air quality.</p> <p>Maintains or improves existing environmental conditions for water quality and quantity.</p> <p>Consistent with community water quality objectives for recreational water use and river health.</p> <p>Consistent with catchment and stormwater</p>	Y	<p>Thorough investigative studies will be undertaken to determine the extent of constrained land within the study area, in addition to land of high conservation value.</p> <p>Consultation will be required with the Office of Environment and Heritage to discuss biodiversity, threatened species and regional wildlife corridor planning considerations.</p> <p>This will include seasonal flora and fauna surveys, Aboriginal Archaeology Assessments.</p> <p>A stormwater management strategy will also be developed to</p>

	management planning. Protects areas of Aboriginal cultural heritage values.		ensure downstream wetlands are not adversely impacted by future urban expansion.
Quality and Equity in Services Quality health, education, legal, recreational, cultural and community development and other government services are accessible.	Available and accessible services.	Y	Services such as health, education and recreation facilities are located within 2km of the site.

Attachment 1c

Wyong Shire Council Community Strategic Plan

Wyong Shire Community Strategic Plan

Objectives & Actions	Applicable (Y/N)	Assessment/Comment
1. Communities will be vibrant, caring and connected with a sense of belonging and pride in their local neighbourhood		
1a - Expanding and supporting programs that increase participation among all ages	N	Not Applicable
1b - Expanding and supporting programs and activities that encourage and enhance neighbourhood connections	N	Not Applicable
1c - Encouraging and valuing genuine youth and seniors participation in the community	N	Not Applicable
1d - Expanding and resourcing children and family service programs	N	Not Applicable
1e - Developing and implementing the Wyong Shire-wide Settlement Strategy	N	Not Applicable
1f - Improving the effectiveness of the system of connections that tie towns/suburbs and facilities of the Shire together as well as connecting to the wider region	N	Not Applicable
1g - Implementing the Regional Strategy for the Central Coast that will guide appropriate development, maintain the lifestyle and environment and include Government intervention to provide more than 45,000 jobs in the next 25 years (Regional Strategy)	Y	The proposal is broadly consistent with the CCRS and will assist Council in meeting residential dwelling targets for the Central Coast.
1h - Planning and delivering a new Town Centre at Warnervale including a new railway station and transport interchange (Regional Strategy)	N	Not Applicable

Objectives & Actions	Applicable	Assessment/Comment
1i – Having residents as active participants in setting the direction of their communities	N	Not applicable
1j – Ensuring communities are safe and have a clear perception of security	N	Not Applicable
1k – Providing individuals with access to a variety of housing types that enable residents to buy or rent accommodation locally	Y	The rezoning will provide additional housing opportunities.
1l – Taking a long-term integrated approach to the provision of both new and existing infrastructure	Y	The proposal supersedes the timing identified for this area. The site will require a temporary sewage pump station to be constructed to service the development. This will be constructed at the landowners expense.
2. 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.		
2a - Ensuring public and private bus services are timely, clean, safe and affordable	N	Not Applicable
2b - Upgrading train and public transport services between Newcastle and Sydney Central ensuring the service is safe, timely and reliable	N	Not Applicable
2c - Improving and linking the bicycle/shared pathway network and related facilities to encourage more cycling opportunities	Y	Future development of the site will require this issue to be addressed through subsequent detailed subdivision design.
2d - Improving commuter parking at railway stations	N	Not Applicable
2e - Improving commuter hubs along the freeway	N	Not Applicable
2f - Creating a better public transport system including new outer suburban train carriages, upgrades of the Tuggerah station, rail	Y	The site is located on a local bus route.

Objectives & Actions	Applicable	Assessment/Comment
maintenance upgrades and better local bus services (Regional Strategy)		
2g - Ongoing upgrading of roads in the region including The Entrance Road and Pacific Highway (Regional Strategy)	N	Not applicable.
2h - Improving the M1 links to Sydney to three lanes in each direction in partnership with the Federal Government (Regional Strategy)	N	Not Applicable
2i – Providing an integrated transport system that satisfies users’ needs	N	Not Applicable
2j – Supporting commuters and their families	Y	The proposal is well situated to provide easy access to major transport routes of the Pacific Highway and is within 5 Km of Wyong Railway Station.
2k – Supporting the development of a regional airport within the Shire	N	Not Applicable
3. Communities will have access to a diverse range of affordable and coordinated facilities, programs and services.		
3a - Providing and maintaining local and regional community facilities for recreation, culture, health and education	N	Not applicable
3b - Providing and maintaining a range of community programs focused on community development, recreation, culture, environment, education and other issues	N	Not Applicable
3c - Providing recurrent funding for community support and development services	N	Not Applicable
3d - Promoting community facilities to help maximise their benefits and use	N	Not Applicable
3e - Balancing the varying provision of facilities and amenities between	Y	Open space and community facilities required to support the

Objectives & Actions	Applicable	Assessment/Comment
towns/suburbs to enhance the quality of life in the Shire		future development of the subject site are to be identified in existing Section 94 Contribution Plans. The development will be required to contribute towards the cost of these facilities.
3f - Maximising the access to, and potential for, new and existing facilities/infrastructure to support growth	Y	Open space and community facilities required to support the future development.
3g – Supporting people in the community to lead healthy, active lifestyles	Y	Future development of the site will require this issue to be addressed, including servicing of the site by the local bus company, and the provision of internal cycleways which link to the external road network.
3h – Providing access to basic and specialist health care services to all community residents	N	Not Applicable
4. The community will be well educated, innovative and creative. People will attain full knowledge potential at all stages of life.		
4a - Generating community awareness and behavioural change about the value of ongoing education	N	Not Applicable
4b - Creating programs that encourage lifelong learning for everyone	N	Not Applicable
4c - Creating and maintaining programs to actively encourage community involvement in educational institutions	N	Not Applicable
4d - Establishing and maintaining a committed network of education, community, business and government representatives	N	Not Applicable
4e - Providing programs and services which respond to changes in the field of education in Wyong Shire	N	Not Applicable

Objectives & Actions	Applicable	Assessment/Comment
4f – Accessing a range of post school, tertiary, and degree based educational facilities. Promote innovation in areas important to the local and regional economy	N	Not Applicable
4g – Providing education, training and skills development that reflect the region’s specific employment needs	N	Not Applicable
4h – Ensuring that all students and educational institutions have access to high quality services and technological resources	N	Not Applicable
5. Areas of natural value in public and private ownership will be enhanced and retained to a high level in the context of ongoing development.		
5a - Preserving threatened and endangered species as well as ecological communities and biodiversity	Y	The subject site provides a key wildlife corridor linkage linking Council owned land within the Wadalba Wildlife Corridor and adjoining areas of native vegetation to the south of Johns Road
5b - Expanding and continuing programs focused on restoring degraded natural areas in our community	Y	Areas of this site within future wildlife corridor will eventually be included in the Wadalba Corridor Plan of Management.
5c - Ensuring all development areas create or maintain tree covered ridgelines and waterways	Y	The future subdivision concept plan for the site will need to be developed to maintain tree cover along ridge lines.
5d - Developing and implementing strategies to reduce the Shire’s Environmental Footprint	N	Not Applicable
5e - Developing and implementing a Natural Resource Management Strategy for Wyong Shire	N	Not Applicable
5f – Ensuring sustainable development that is sympathetic to the local setting and reflects community values	Y	The

Objectives & Actions	Applicable	Assessment/Comment
6. There will be a sense of community ownership of the natural and built environment through direct public involvement with programs and services.		
6a - Improving and promoting public access to environmental areas	N	Not Applicable
6b - Establishing and maintaining projects and programs to encourage more active participation in community based environmental activities	N	Not Applicable
6c - Creating and promoting a network of renowned bush trails	Y	There is the potential for a portion of the conservation land to have bush trails placed in appropriate locations which are linked to future trails in other parts of the Wadalba Wildlife Corridor.
6d - Establishing a community event based around our lakes and beaches	N	Not Applicable
6e - Developing and implementing a tree planting program	N	Not Applicable
6f - Creating, maintaining and promoting a series of community gardens	N	Not Applicable
6g - Supporting and encouraging volunteer groups and champions	N	Not Applicable
6h – Maintaining and making available information about the environment and environmental change	N	Not Applicable
6i – Community awareness of sustainability and environmental issues impacting Wyong Shire	N	Not Applicable
7. There will be a strong sustainable business sector and increased local employment built on the Central Coast's business strengths		
7a - Providing a coordinated approach to business generation, employment and development for the region	N	Not Applicable
7b - Identifying and leveraging the competitive advantages of Wyong	N	Not Applicable

Objectives & Actions	Applicable	Assessment/Comment
Shire		
7c - Supporting the growth of the Shire as a competitive major business sector while reducing the alienation of towns/ suburbs that can result from regional pressures	N	Not Applicable
7d - Actively promoting the business benefits of Wyong Shire. Creating a single executive level voice to attract employment generating development to the Central Coast and negotiating in liaison with all relevant agencies	N	Not Applicable
7e - Establishing and maintaining a strategic database on business and economic trends on the Central Coast	N	Not Applicable
7f - Establishing and maintaining key industry networking roundtables	N	Not Applicable
7g - Regularly identifying Central Coast businesses that are innovative and creative with high growth potential ("gazelles")	N	Not Applicable
7h - Supporting the development of a major Conference Centre in the Shire	N	Not Applicable
7i - Ensuring adequate and appropriate employment land in the Shire	N	Not Applicable
7j - Sourcing tourist attractions across the Shire	N	Not Applicable
8. Information communication technology will be consistent with world's best practice and adaptive to technological advances across all sectors.		
8a – Advocating for the provision of high speed broadband throughout Wyong Shire	N	Not Applicable
8b - Developing and implementing guidelines to ensure all residences	N	Not Applicable

Objectives & Actions	Applicable	Assessment/Comment
and businesses as well as commercial and educational centres can be quickly linked to fibre-optic telecommunications networks		

Attachment 1d

Assessment of State Environmental Planning Policy

State Environmental Planning Policy Assessment

SEPP	Comment
SEPP No. 44 – Koala Habitat	
<p>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:</p> <p>(a) by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and</p> <p>(b) by encouraging the identification of areas of core koala habitat, and</p> <p>(c) by encouraging the inclusion of areas of core koala habitat in environment protection zones</p>	<p>As the area subject to the proposal is greater than 1 hectare, the provisions of State Environmental Planning Policy 44 – Koala Habitat are triggered.</p> <p>Should the proposal be supported by the Gateway, an assessment under SEPP 44 will be required to be undertaken by the proponent.</p>
SEPP No. 55 – Contaminated Land	
<p>Aims:</p> <p>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</p> <p>(a) by specifying when consent is required, and when it is not required, for a remediation work, and</p> <p>(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</p> <p>(c) by requiring that a remediation work meet certain standards and notification requirements.</p>	<p>The site has historically been used as a poultry farm.</p> <p>Should the proposal proceed beyond a Gateway determination, the proponent will be required to undertake a preliminary contaminated land assessment to comply with the provisions of SEPP 55.</p>

Attachment 1e

Section 117

Ministerial Directions Assessment

Section 117 Ministerial Directions Assessment

Direction	Comment
Employment & Resources	
1.1 Business & Industrial Zones	
<p>Aims to encourage employment growth in suitable locations, protect employment land in business and industrial zones and to support the viability of identified strategic corridors.</p> <p>Applies when a planning proposal affects land within an existing or proposed business or industrial zone.</p>	<p>Not Applicable.</p> <p>The proposal does not affect land within an existing or proposed business or industrial zone.</p>
1.2 Rural Zones	
<p>Aims to protect the agricultural production value of rural land.</p> <p>Applies when a planning proposal affects land within an existing or proposed rural zone.</p>	<p>This direction states that a Council must not rezone land from a rural to an urban purpose.</p> <p>The proposal will remove an area of land zoned RU6 – Transition and the site has historically been used as a poultry farm. The existing RU-6 – Transition Zone has been used over Council’s Urban Land Release Areas.</p> <p>Director-General approval may be required to address this Section 117 Direction due to loss of rural land.</p>
1.3 Mining, Petroleum Production and Extractive Industries	
<p>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.</p> <p>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</p>	<p>Applicable.</p> <p>Consultation will be undertaken with the MSB on how the proposal will impact on resource extraction in the future. It is considered that the site will have development similar to that of land to the west therefore mineral extraction will not adversely affect the site, or the proposal.</p> <p>It is considered that the proposal is consistent with this direction.</p>

Direction	Comment
such development.	
1.4 Oyster Aquaculture	
<p>Aims to ensure that Priority Oyster Aquaculture Areas and oyster aquaculture outside such an area are adequately considered, and to protect Priority Oyster Aquaculture Areas and oyster aquaculture outside such an area from land uses that may result in adverse impacts on water quality and the health of oysters and consumers.</p> <p>Applies when a planning proposal could result in adverse impacts on a Priority Oyster Aquaculture Areas or current oyster aquaculture lease in the national parks estate or results in incompatible use of land between oyster aquaculture in a Priority Oyster Aquaculture Area or current oyster aquaculture lease in the national parks estate and other land uses.</p>	<p>Not Applicable.</p> <p>The Planning Proposal is not located in Priority Oyster Aquaculture Areas and oyster aquaculture outside such an area as identified in the <i>NSW Oyster Industry Sustainable Aquaculture Strategy</i> (2006)</p>
1.5 Rural Lands	
<p>Aims to protect the agricultural production value of rural land; and facilitate the orderly and economic development of rural lands for rural and related purposes.</p> <p>Applies to local government areas to which State Environmental Planning Policy (Rural Lands) 2008 applies and prepares a planning proposal that affects land within an existing or proposed rural or environment protection zone.</p>	<p>Not Applicable.</p> <p>This direction does not apply to the Wyong LGA.</p>
Environment & Heritage	
2.1 Environmental Protection Zones	
<p>Aims to protect and conserve environmentally sensitive areas.</p> <p>Applies when the relevant planning authority prepares a planning proposal.</p>	<p>Applicable.</p> <p>The site has been identified as a green corridor in the NWSSP.</p> <p>Further consultation with OEH will be required to agree on the sizing and function of the wildlife corridor.</p> <p>A more detailed examination of the consistency of the proposal will be required as the proposal is</p>

Direction	Comment
	developed post Gateway Determination.
2.2 Coastal Protection	
<p>Aims to implement the principles in the NSW Coastal Policy.</p> <p>Applies when a planning proposal applies to land in the coastal zone as defined in the <i>Coastal Protection Act 1979</i>.</p>	<p>Not Applicable.</p> <p>The site is not within the Coastal Zone.</p>
2.3 Heritage Conservation	
<p>Aims to conserve items, areas, objects and places of environmental heritage significance and indigenous heritage significance.</p> <p>Applies when the relevant planning authority prepares a planning proposal.</p>	<p>Applicable.</p> <p>The proposal does not identify an impact on any European or Indigenous heritage items or objects.</p> <p>Further assessment of Aboriginal archaeological heritage matters will be required post Gateway Determination.</p> <p>It is therefore considered that the proposal is likely to be consistent with this Direction (subject to this being confirmed by further Aboriginal heritage assessment).</p>
2.4 Recreational Vehicle Areas	
<p>Aims to protect sensitive land or land with significant conservation values from adverse impacts from recreational vehicles.</p> <p>Applies when the relevant planning authority prepares a planning proposal.</p>	<p>Applicable.</p> <p>The proposal does not seek to enable development for recreational vehicle use. It is therefore considered that the proposal is consistent with this Direction.</p>
Housing, Infrastructure and Urban Development	
3.1 Residential Zones	
<p>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</p>	<p>Applicable.</p> <p>The proposal seeks to rezone the site to enable subdivision to create an additional residential</p>

Direction	Comment
<p>housing has appropriate access to infrastructure and services, and to minimise the impact of residential development on the environmental and resource lands.</p> <p>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.</p>	<p>land.</p> <p>The proposal is located adjacent to an existing residential area, therefore is able to access and augment existing services and infrastructure for any new subdivision.</p> <p>Additionally, Council's Transportation, Water & Sewer and Design Engineers have identified that the required services (water, sewer, power, roads etc) for the proposal are available to the site.</p> <p>In respect of Sewer, the proponent will be required to provide temporary pumping station should development occur prior to the construction of the proposed pumping station south of Johns Road which will service the development.</p> <p>It is therefore considered that the proposal is consistent with this Direction.</p>
<p>3.2 Caravan Parks and Manufactured Home Estates</p>	
<p>Aims to provide for a variety of housing types and provide opportunities for caravan parks and manufactured home estates.</p> <p>Applies when the relevant planning authority prepares a planning proposal.</p>	<p>Applicable.</p> <p>The planning proposal does not seek to rezone land to provide for caravan parks or manufactured home estates</p> <p>It is therefore considered that the proposal is consistent with this Direction.</p>
<p>3.3 Home Occupations</p>	
<p>Aims to encourage the carrying out of low impact small business in dwelling houses.</p> <p>Applies when the relevant planning authority prepares a planning proposal.</p>	<p>Applicable.</p> <p>The proposal does not seek to prohibit home occupations. It is therefore considered that the proposal is consistent with this Direction.</p>
<p>3.4 Integrating Land Use & Transport</p>	
<p>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;</p>	<p>Applicable.</p> <p>It is considered that the proposal is consistent with the aims, objectives and principles of Improving Transport Choice – Guidelines for Transport and Development.</p> <p>The proposal is in close proximity to a well</p>

Direction	Comment
<p>supporting efficient and viable public transport services; and provide for efficient movement of freight.</p> <p>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.</p>	<p>serviced bus stop. Further assessment to ensure availability of alternative transport choices will be undertaken during the Development Application process.</p> <p>It is therefore considered that the proposal is consistent with this Direction.</p>
3.5 Development Near Licensed Aerodromes	
<p>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 mitigation measures so that the development is not adversely affected by aircraft noise.</p> <p>Applies when a planning proposal creates, alters or removes a zone or provision relating to land in the vicinity of a licensed aerodrome.</p>	<p>Not Applicable.</p> <p>The proposal does not seek to create, alter or remove a zone or provision relating to land in the vicinity of a licensed aerodrome.</p>
3.6 Shooting Ranges	
<p>Aims to maintain appropriate levels of public safety and amenity when rezoning land adjacent to an existing shooting range, to reduce land use conflict arising between existing shooting ranges and rezoning of adjacent land, and to identify issues that must be addressed when giving consideration to rezoning land adjacent to an existing shooting range.</p> <p>Applies when a relevant planning authority prepares a planning proposal that will affect, create, alter or remove a zone or a provision relating to land adjacent to and/ or adjoining an existing shooting range.</p>	<p>Not Applicable.</p> <p>The proposal is does not propose to affect, create, alter or remove a zone or a provision relating to land adjacent to and/ or adjoining an existing shooting range.</p>
Hazard & Risk	

Direction	Comment
4.1 Acid Sulfate Soils	
<p>Aims to avoid significant adverse environmental impacts from the use of land that has a probability of containing acid sulfate soils.</p> <p>Applies when a planning proposal applies to land having a probability of containing acid sulfate soils on the Acid Sulfate Soils Planning Maps.</p>	<p>Applicable.</p> <p>A desktop mapping exercise has identified that the potential for acid sulfate soil on the proposal site is unknown. Should the proposal be endorsed by the Gateway, the proponent will be required to undertake an acid sulfate soil assessment.</p> <p>It is therefore considered that this proposal will be consistent with this Direction.</p>
4.2 Mine Subsidence & Unstable Land	
<p>Aims to prevent damage to life, property and the environment on land identified as unstable or potentially subject to mine subsidence.</p> <p>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.</p>	<p>Applicable.</p> <p>Consultation will be undertaken with the MSB on how the proposal will impact on resource extraction in the future. It is considered that the site will have development similar to that of land to the west therefore mineral extraction will not adversely affect the site, or the proposal.</p> <p>It is considered that the proposal is consistent with this direction.</p>
4.3 Flood Prone Land	
<p>Aims to ensure: development on flood prone land is consistent with NSW Government's Flood Prone Land Policy and principles of the Floodplain Development Manual 2005; and provisions of an LEP on flood prone land are commensurate with flood hazard and include consideration of the potential flood impacts both on and off the subject land.</p> <p>Applies when a planning proposal creates, removes or alters a zone or provision that affects flood prone land.</p>	<p>Not Applicable.</p> <p>The site of the proposal is not identified as being flood prone land.</p>
4.4 Planning for Bushfire Protection	
<p>Aims to protect life, property and the environment from bushfire hazards, and encourage sound management of bushfire prone</p>	<p>Applicable.</p> <p>The site of the proposal contains Category 2 bushfire prone vegetation and bushfire buffer</p>

Direction	Comment
<p>areas.</p> <p>Applies when a planning proposal affects or is in proximity to land mapped as bushfire prone land.</p>	<p>zones.</p> <p>A bushfire threat assessment report for the land proposed to be zoned residential should be prepared identifying appropriate APZs.</p> <p>It is therefore considered that the proposal is consistent with this Direction.</p>
Regional Planning	
5.1 Implementation of Regional Strategies	
<p>Aims to give legal effect to the vision, land use strategy, policies, outcomes and actions contained within regional strategies.</p> <p>Applies when the relevant planning authority prepares a planning proposal that is located on land addressed within the Far North Regional Strategy, Lower Hunter Regional Strategy, Central Coast Regional Strategy, Illawarra Regional Strategy & South Coast Regional Strategy.</p>	<p><i>Applicable.</i></p> <p>The entire site has been identified as a “Green Corridor” in the NWSSP. The rezoning proposal makes a partial contribution to achieving this outcome, but further discussions will need to occur between Council and OEH to agree on final dimensions of the corridor before consistency can be demonstrated.</p> <p>Further assessment and consultation will be required before consistency with this Direction can be demonstrated.</p>
5.2 Sydney Drinking Water Catchments	
<p>Aims to protect water quality in the hydrological catchment.</p> <p>Applies when a relevant planning authority prepares a planning proposal that applies to Sydney’s hydrological catchment.</p>	<p>Not Applicable.</p> <p>The proposal is not located within Sydney’s hydrological catchment.</p>
5.3 Farmland of State and Regional Significance on the NSW Far North Coast	
<p>Aims to: ensure that the best agricultural land will be available for current and future generations to grow food and fibre; provide more certainty on the status of the best agricultural land, assisting councils with strategic settlement planning; and reduce land use conflict arising between agricultural use and non-agricultural use of farmland caused by urban encroachment into farming areas.</p> <p>Applies to Ballina, Byron, Kyogle, and Tweed Shire</p>	<p>Not Applicable.</p> <p>The proposal is not located within the Far North Coast Region.</p>

Direction	Comment
Councils, Lismore City Council and Richmond Valley Council.	
5.4 Commercial and Retail Development along the Pacific Highway, North Coast	
<p>Aims to manage commercial and retail development along the Pacific Highway, North Coast.</p> <p>Applies to all councils between and inclusive of Port Stephens and Tweed Shire Councils.</p>	<p>Not Applicable.</p> <p>The proposal is not located between Port Stephens and Tweed Shire Councils.</p>
5.8 Second Sydney Airport: Badgerys Creek	
<p>Aims to avoid incompatible development in the vicinity of any future second Sydney Airport at Badgerys Creek.</p> <p>Applies to land located within the Fairfield, Liverpool and Penrith City Council and Wollondilly Shire Council Local Government Areas.</p>	<p>Not Applicable.</p> <p>The proposal is not located within the Fairfield, Liverpool and Penrith City Council or Wollondilly Shire LGA.</p>
Local Plan Making	
6.1 Approval and Referral Requirements	
<p>Aims to ensure that LEP provisions encourage the efficient and appropriate assessment of development.</p> <p>Applies when the relevant planning authority prepares a planning proposal.</p>	<p>Applicable.</p> <p>The planning proposal does not seek to include provision which require concurrence from other agencies.</p> <p>It is therefore considered the proposal is consistent with this Direction.</p>
6.2 Reserving Land for Public Purposes	
<p>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.</p> <p>Applies when the relevant planning authority prepares a planning proposal.</p>	<p>Applicable.</p> <p>The proposal seeks to create land for public purposes, being the extension of the Wadalba Wildlife Corridor, the proponent will be required to dedicate that land to Council via a VPA and land management commitments for a period of time.</p> <p>It is therefore considered the proposal is consistent with this Direction.</p>

Direction	Comment
6.3 Site Specific Provisions	
<p>Aims to discourage unnecessarily restrictive site specific planning controls.</p> <p>Applies when the relevant planning authority prepares a planning proposal to allow particular development to be carried out.</p>	<p>Applicable.</p> <p>The proposal does not seek to enable a specific use on the site which is not permissible under the proposed R2 Low Density Residential or E2 Environmental Conservation).</p> <p>It is therefore considered the proposal is consistent with this Direction.</p>
Metropolitan Planning	
7.1 Implementation of the Metropolitan Strategy	
<p>Aims to give legal effect to the vision, land use strategy, policies, outcomes and actions contained in the Metropolitan Strategy.</p> <p>Applies when the planning authority within a Metropolitan Local Government Area prepares a planning proposal.</p>	<p>Not Applicable.</p> <p>This Direction does not apply to Wyong LGA.</p>

Attachment 1f

Relationship of 145 Johns Road to broader Wadalba East Planning Proposal

Legend

 Study Boundary

Proposed Land Zone

 E2 Environmental Conservation

 R1 General Residential

 R2 Low Density Residential

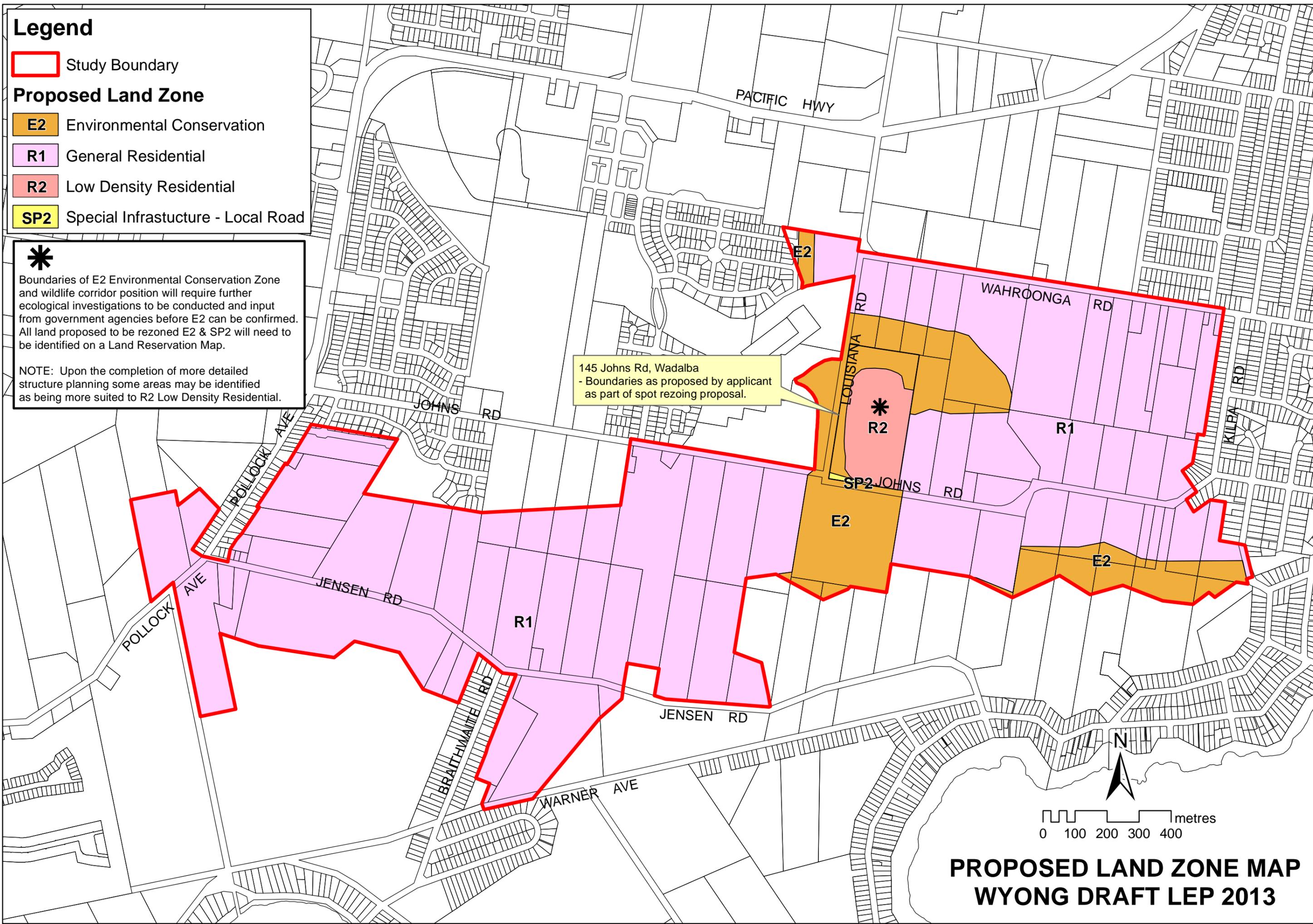
 SP2 Special Infrastructure - Local Road



Boundaries of E2 Environmental Conservation Zone and wildlife corridor position will require further ecological investigations to be conducted and input from government agencies before E2 can be confirmed. All land proposed to be rezoned E2 & SP2 will need to be identified on a Land Reservation Map.

NOTE: Upon the completion of more detailed structure planning some areas may be identified as being more suited to R2 Low Density Residential.

145 Johns Rd, Wadalba
- Boundaries as proposed by applicant as part of spot rezoning proposal.



**PROPOSED LAND ZONE MAP
WYONG DRAFT LEP 2013**

Attachment 2

Land Use Tables

Wyong LEP

02 Land Use Tables Wyong LEP

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

Zone SP2 Infrastructure

1 Objectives of zone

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.
- To recognise existing railway land and to enable future development for railway and associated purposes.
- To recognise major roads and to enable future development and expansion of major road networks and associated purposes.
- To recognise existing land and to enable future development for utility undertakings and associated purposes.

2 Permitted without consent

Nil

3 Permitted with consent

Roads; The purpose shown on the [Land Zoning Map](#), including any development that is ordinarily incidental or ancillary to development for that purpose

4 Prohibited

Any development not specified in item 2 or 3

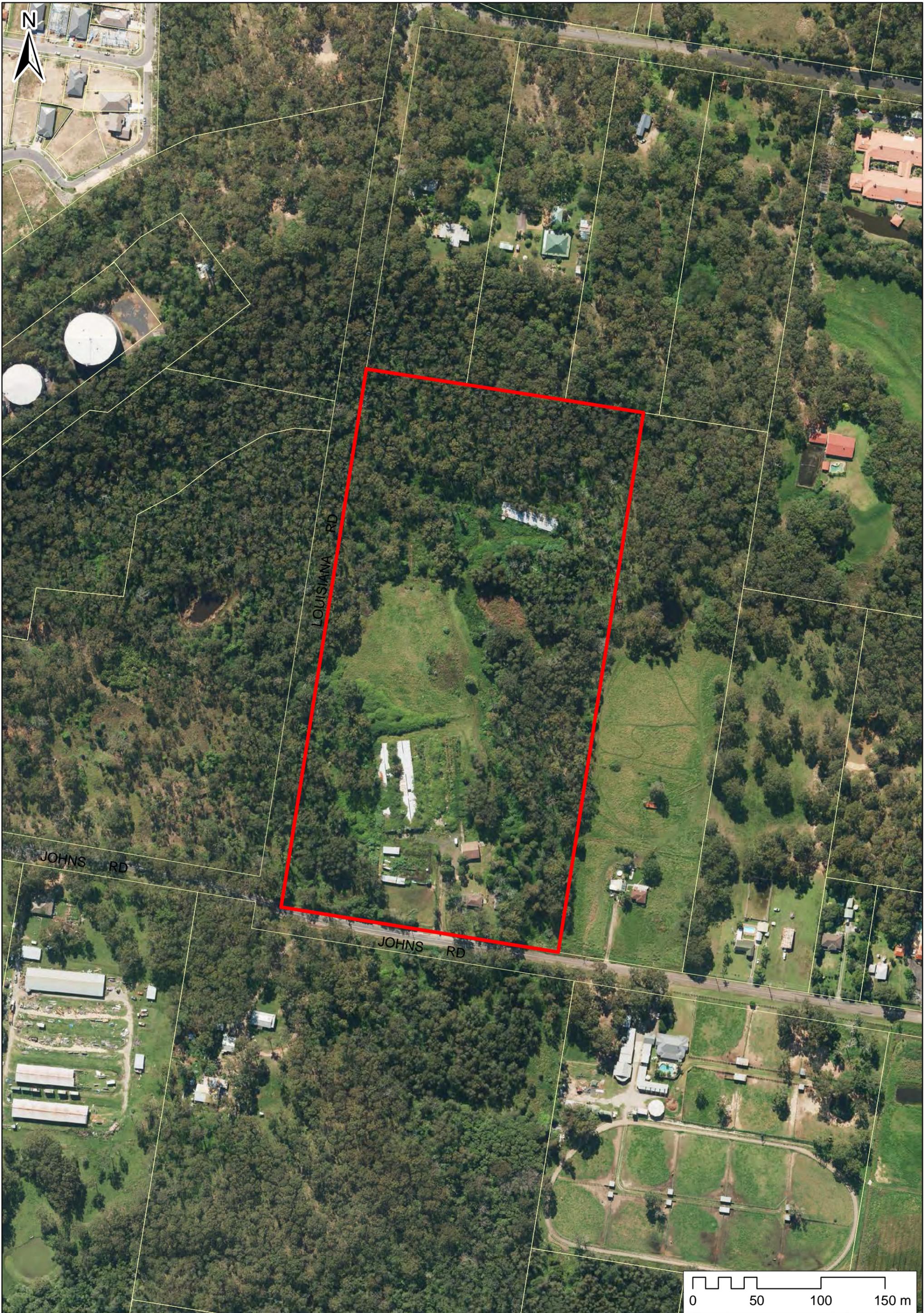
Attachment 3

Agency Responses

(Responses to be included once consultation has been conducted)

Attachment 4a

Locality Plan



LOUISIANA RD

JOHNS RD

JOHNS RD

0 50 100 150 m

Attachment 4b

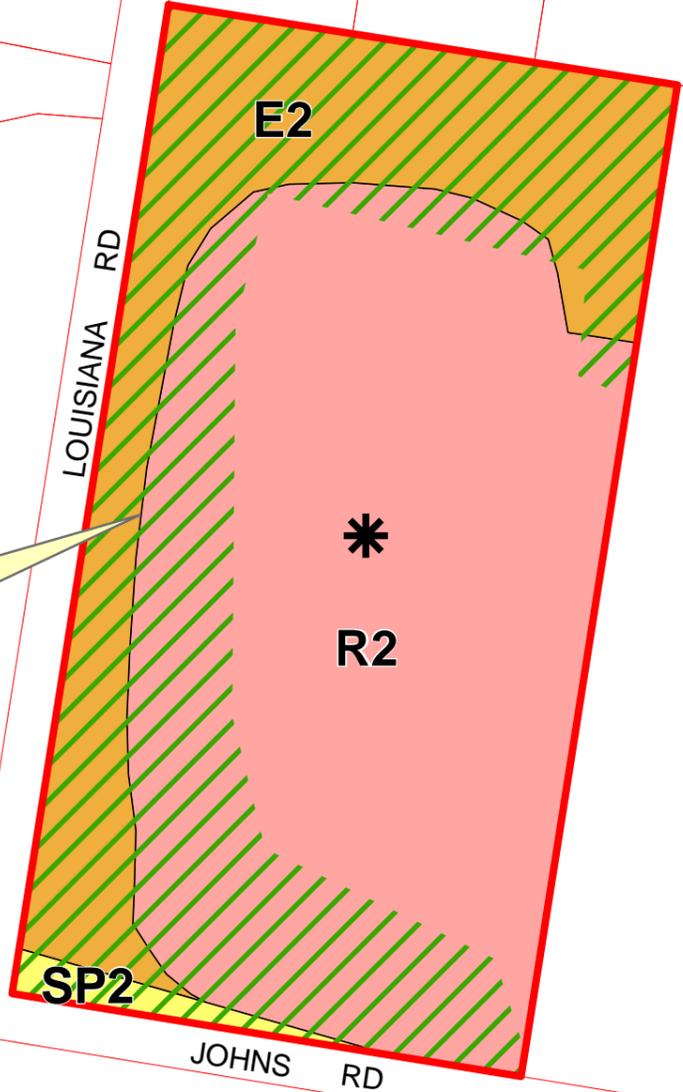
Proposed Zone Map

Legend

-  Study Boundary
-  Area recommended to be added to corridor by Senior Ecologist - Property Management
- Proposed Land Zone**
 -  E2 Environmental Conservation
 -  R2 Low Density Residential
 -  SP2 Special Infrastructure - Local Road

 Boundaries of E2 Environmental Conservation Zone and wildlife corridor position will require further ecological investigations to be conducted and input from government agencies before E2 can be confirmed. All land proposed to be rezoned E2 & SP2 will need to be identified on a Land Reservation Map.

Environmental Conservation Zone



**PROPOSED LAND ZONE MAP
WYONG DRAFT LEP 2013**

Attachment 4c

Proposed Minimum Lot Size Map

(Map to be included once zone boundaries have been determined)

Attachment 4d

Urban Land Release Area Map

(Map to be included once zone boundaries have been determined)

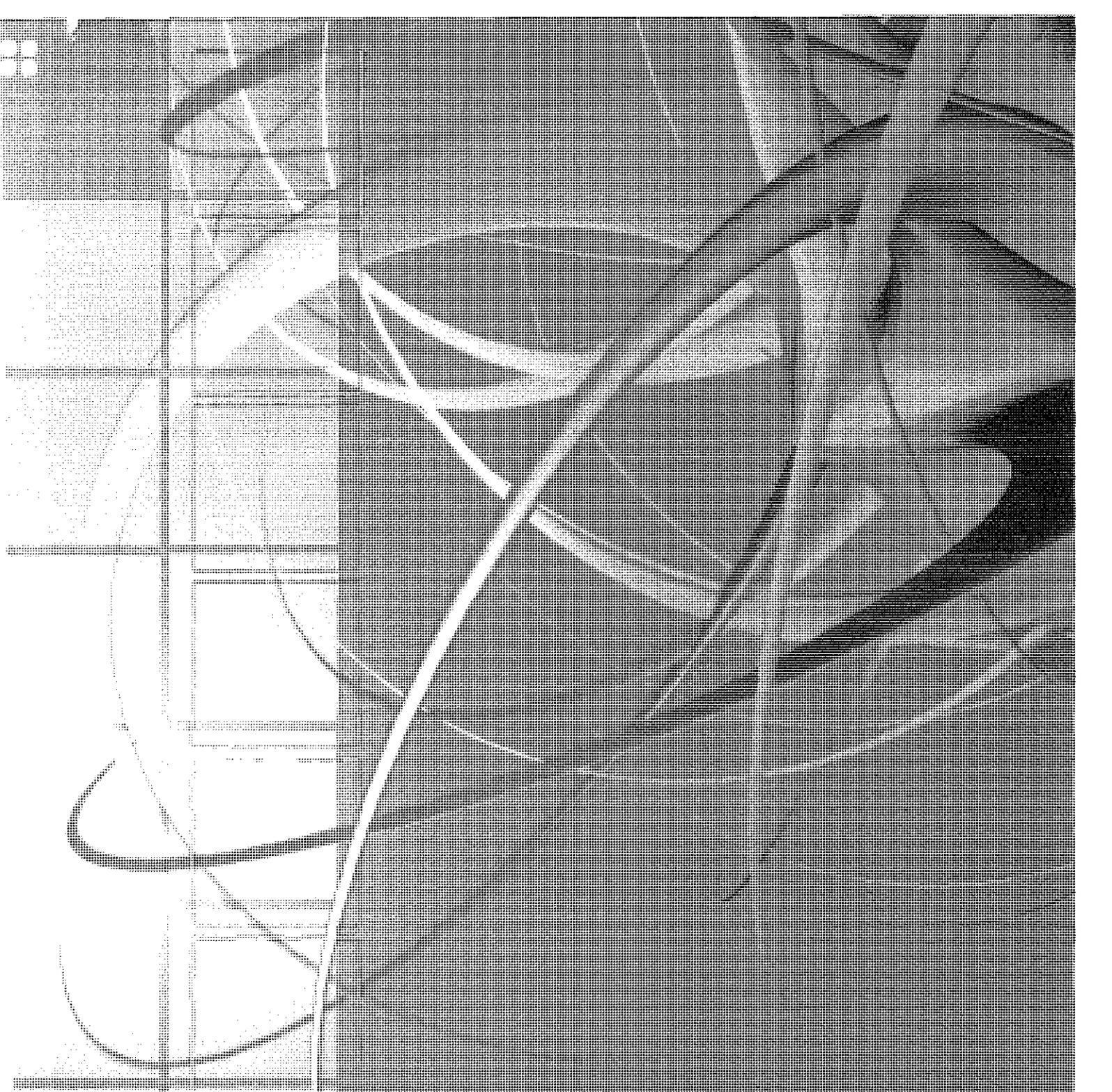
Attachment 4e

Lot Reservation Acquisition Map

(Map to be included once zone boundaries have been determined)

Attachment 5a

**Request for Rezoning
by A-Consult**



Planning Proposal
Spot Rezoning under Wyong LEP, 1991

Lot 27 DP 663622

No. 145 John's Road, WADALENA



Planning Proposal

Spot Rezoning under the Wyong Local
Environmental Plan, 1991

Lot 27 DP 663622

No. 145 Johns Road, Wadalba

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Introduction

This report documents and explains the intended effect of a proposed Local Environmental Plan that seeks Council's support to rezone the subject site for the purpose of identifying those lands to be set aside for conservation purposes and those areas of the subject site available for more intensive forms of urban development. This document sets out the justification for making the Plan and the intended outcome.

We seek support for a gateway determination to be forwarded to the Minister in specifying whether the Planning Proposal is to proceed. We believe this Planning Proposal ensures that there is sufficient justification to enable the Planning Proposal to proceed. The proposal ensures a high level of strategic planning merits being consistent with the objectives applied under Council's Wyong Local Environmental Plan 1991 to Investigation zones which seek to ensure that rural land is protected after detailed environmental investigations to ensure land that may be suitable for ecological conservation or future urban development is realised.

The preparation of a Planning Proposal is the first step in preparing a Local Environmental Plan; in this case, amending the Wyong Local Environmental Plan, 1991. A Planning Proposal is a document that explains the intended effect of the proposed Local Environmental Plan and the justification for making it. This Planning Proposal has been prepared in accordance with Section 55 of the Environmental Planning & Assessment Act, 1979 and the Department of Planning and Infrastructure Guidelines "A Guide to Preparing Local Environmental Plans" and "a Guide to Preparing Planning Proposals".

This Planning Proposal addresses matters that must be considered to deliver and amending Local Environmental Plan that rezones certain land at Lot 27 DP 663622 No. 145 Johns Road, Wadalba.

The Site

The Planning Proposal applies to certain land located at Lot 27 DP 663622 at No. 145 Johns Road, Wadalba (please refer to Attachment 1 – Locality Plan). The subject site occupies approximately 9.3 hectares with primary frontage to Johns Road.

In accordance with the provisions of the Wyong Local Environmental Plan, 1991, the subject site is currently zoned 10(a)(Investigation Precinct Zone). Please refer to Attachment 2 – Council's Current Zoning Map Extract).

The subject site is bounded generally to the north and east by land zoned a consistent 10(a) (Investigation Precinct Zone); to the west by an unformed Louisiana Road and to the south by Johns Road. The subject site is located upon a northern alignment, typically at a higher elevation to the existing Johns Road carriageway. The site possesses a southerly aspect and is considered moderately steep in the more northern portions of the site.

The subject site contains gradients of less than 10% to its lower areas, relevant to the location of the previously approved dwelling upon the subject. The ridgeline exists approximately 100m to the sites northern boundary.

The subject site has had a long history for use as a commercial poultry operation in accordance with the previous rural/agricultural zoning of the site. The poultry farm operated as Farmborough Poultry; being a commercial cage egg business resulting in the construction and associated development of seven large poultry sheds, ancillary structures, caretakers residence (still existing) internal roads, modification and diversion of streams, construction of dams, associated infrastructure and generally, the clearing and modification of over 70% of the original native vegetation cover that would have previously existed.

We are advised by our client's ecological consultants that 30% of the subject site consists of previously, largely cleared woodland, which is now regenerating along the northern elevated areas as well as two minor streamlines that loosely align with the eastern and western boundaries of the subject site. Please refer to Attachment 10 - being a topographic detail of the subject site).

The subject site is a regular, rectangular shaped parcel of land currently indicating on the sites Section 149 Certificate as being land located within a proclaimed mine subsidence district (under the Mines Subsidence Compensation Act, 1961) as well as some or all of the land being considered bushfire prone. We ask Council to refer to Attachment 12 being a copy of the current 149 Certificate relevant to the site as well as Attachment 13 and Attachment 14 being an extract from Council's Mapping System of both the subject site in context of the bushfire prone nature of the subject site as well as mine subsidence.

Background

The preparation of this Planning Proposal results from protracted discussions and meetings with Council officers of Wyong Shire Council since rezoning of the land which occurred in 2003.

As a brief history, regarding amendments to Council's Local Environmental Plan, we provide that on the 25th of February, 2000 Local Environmental Plan No. 121 was gazetted which effectively amended the Wyong Local Environmental Plan, 1991 to rezone the subject site, and surrounding land, into three (3) separate zones; being 2(b) Multiple Dwelling Residential, 7(a) Conservation and 1(c) Rural Holdings. Following this, the land was again rezoned in 2003 under Local Environmental Plan No. 135, with the 2(b) land rezoned to 2(e) and the 1(c) zone applying to the subject site being rezoned to 10(a) Investigation Precinct.

The subject site remains currently zoned 10(a) Investigation Precinct Zone in accordance with the provisions of Council's Wyong Local Environmental Plan, 1991.

The current zoning of the subject site basically achieves two things, that is, to rezone land from an existing zoning, with a clear land use potential, to that of a somewhat vague zoning that did not include any clear land use potential and no clear land owner expectation either apparent or implied.

During the process of rezoning the subject site to Investigation, it was identified that the subject site and several adjoining properties held strategic importance insofar as, looking to provide a strategic conservation outcome as identified, at the time, under the Wyong Conservation Strategy (WCS). During this process, the Wadalba Wildlife Corridor was established (resulting in the Wyong Conservation Strategy being shelved).

In considering the subject site, the land is originally identified as a crucial linking unit of the whole Wadalba Wildlife Corridor that was established in 2004. We are advised by our client's ecological consultant that the subject site is the only natural linkage point possible; east of the F3, between the northern and southern portions of the whole Wyong Shire and beyond.

This Planning Proposal is mindful of the historical rezoning of the subject site which has consequently resulted in an investigation zoning applying to the property.

The current owners are in the process of ensuring that the subject site achieves maximum developable outcome and at the same time, gains benefits from the earlier processes whilst making a fair contribution to the ongoing functionality of the this strategic Wadalba Wildlife Corridor.

Following a decision by the current owners of the subject site, a meeting was held with Wyong Shire Council officers on the 27th of August, 2012. At this meeting, a number of matters were discussed including all relevant background resulting in the current zoning of the subject site, in context of the previously adopted Wadalba Wildlife Corridor. As a consequence of this meeting, and in discussions with the various managers within Wyong Shire Council, the owners of the site were invited by Wyong Shire Council officers to provide an application via the new Gateway Process for a rezoning application to be submitted relevant to the subject site in order for the matter to progress. This Planning Proposal document makes clear the owners intention seeking to secure a successful rezoning process which will enable Council, and the owners of the subject site, to realise the importance of ensuring those areas of the subject site suitable for conservation and providing a link to ensure the intended outcomes of the Wadalba Wildlife Corridor are met whilst also seeking to secure any urban development potential which the subject site encompasses.

The current planning proposal seeks a change in the current zoning under the Wyong Local Environmental Plan, 1991 from 10(a) Investigation Precinct Zone to Zone 2(a) Residential – Part and Zone 7(a) Conservation Zone – Part. Please refer to Figure 4 detailed in the ecological investigation accompanying this application as prepared by Australian Environmental Services.

PART ONE – Objectives or Intended Outcomes

This part provides a concise statement which sets out the intended outcome of the planning proposal. It is a statement on what is planned to be achieved.

The objective of this planning proposal is to rezone segments of the subject site from 10(a) Investigation Precinct Zone to 7(a) Conservation land and 2(a) Residential land.

The 7(a) Conservation land will permit conservation of those portions of the subject site to facilitate an extension to the Wadalba Wildlife Corridor as a strategic link, as detailed in the ecological study accompanying this report. Rezoning of that portion of the subject site to 2(a) Residential will permit future subdivision and residential development of the land, consistent with a more intensive or urban use of suitably available land.

The subject land comprises the following allotments:-

Lot 27 DP 663622 No. 145 Johns Road, Wadalba.

Specific Objectives

- a) To identify those areas of the subject site suitable for re-zoning to Conservation land to facilitate satisfaction of the aims, intent and objectives of the Wadalba Wildlife Corridor extension (Proposed Stage 2);
- b) To identify those areas of the subject site suitable for re-zoning to facilitate an urban use without compromising those areas of the subject to be set aside for Conservation land;

- c) To rezone the subject site to facilitate satisfaction of the objectives applied to the 10(a)(Investigation Precinct Zone), that is, to protect rural land that, after detailed environmental investigations, may be suitable for ecological conservation or future urban development;
- d) To rezone the subject site consistent with both strategic regional environmental planning for the surrounding neighbourhood;
- e) To rezone land to ensure a consistency with development upon surrounding and adjoining land; and
- f) To ensure the conservation values of the subject site are suitably identified and protected under the proposed rezoning of land for conservation purposes.

PART TWO – Explanation of Provisions

The following explanation provides an explicit statement of how the intended outcome, described in Part One, will be achieved.

Amendment of the Wyong Local Environmental Plan, 1991, Attachment 11 – Depicts the proposed rezoning footprint with the areas proposed for future residential (2(a) Residential) and those proposed for conservation zoning (7(a)) highlighted on the map prepared by the office of Barry Hunt and Associates and in consultation with Figure 3 included within the ecological study prepared by Australian Environmental Surveys accompanying this report.

PART THREE – Justification

This part sets out the case for the changing the zoning of the subject land, as described in Part One.

Section A – The Need for the Planning Proposal

1) *Is the Planning Proposal the result of any strategic study or report?*

Comment

The Draft North Wyong Structure Plan (NWSD-Department of Planning and Infrastructure, 2010) is a strategic planning document that flows from the Central Coast Regional Strategy (Regional Strategy 2008) which seeks to protect the environmental qualities of the Central Coast by focusing on future growth in existing urban areas within the North Wyong neighbourhood.

The Regional Strategy basically identifies the structure plan area (predominately being east of the Sydney to Newcastle F3 Freeway) which will accommodate the majority of the regions new greenfield development up until 2031. Please refer to Attachment 7- Map Extract from North Wyong Structure Plan.

The structure plan is considered to be a high level strategic planning framework that implements the regional strategy which will, and has, guided future local planning, including the revision of the new Draft Wyong Local Environmental Plan, 2012 and Draft Development Control Plan, 2012 in consultation with the Settlement Strategy currently on public exhibition.

The North Wyong Structure Plan is considered to be broad brush in its “defined mapping” however its intent is to provide for a “green corridor” that ensures connectivity between native bushland parcels thereby

providing for biodiversity conservation. The document, in the vicinity of the subject site, depicts corridor connectivity which logically results from the existing Wadalba Wildlife Corridor. The intent of this depiction, by design, is primarily to cater for arboreal mammals (squirrel gliders in particular) and birds, in general.

On that basis, the Planning Proposal before Council is not the result of a strategic study or report however is consistent with the broader aims, objectives and intent of the Draft North Wyong Structure Plan.

The Planning Proposal before Council results from an application by the current owners of the subject site to rezone the subject land from an investigation zoning to both conservation and residential zones.

2) Is a Planning Proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

Comment

This Planning Proposal is a strategic response by the owners of the subject site to seek the support of Council in recognising the fundamental importance of identifying those areas of the subject site suitable for conservation purposes in order to ensure the functionality of the Wadalba Wildlife Corridor continues. The urgency of the Planning Proposal partly results from that application lodged by ADW Johnson, upon land comprising Lots 229 and 230 in DP 1105837, which seeks approval for residential allotments, drainage reserves and corridor open space as part of an addition to the Wadalba Wildlife Corridor.

The resultant removal of vegetation upon Lots 229 and 230 in DP 1105837, unless accompanied by protection and enhancement of suitable areas of the subject site to facilitate an integral link, as part of an extension to the Wadalba Wildlife Corridor, may potentially jeopardise the overall functioning that the Wadalba Wildlife Corridor was set to achieve. The Planning Proposal also seeks to achieve a developable outcome for the owners of the subject site in realising those areas of the property available for residential or urban development. As detailed in the ecological study accompanying this application, the subject site is, in large part, cleared and degraded of much of its natural ecological attributes as a result of agricultural activities.

The subject site supports various forms of exotic weed infestation which, if remain unchecked, have the ability and likelihood to invade to those areas identified for conservation and which have the ability to provide a contribution to a functional and viable corridor. If the subject site, including those existing exotic species upon the subject site remain unchecked, then the strategic importance with respect to both wildlife corridor connectivity values is jeopardised.

In accordance with the Investigation zoning of the site, and in consultation with advice received from our client's qualified ecological consultant, there are portions of the subject site identified and suitable to be set aside for conservation purposes and those available and suitable for future residential development. As detailed in the ecological study accompanying this report, the areas set aside for residential use do not have any potential for regeneration for the purposes of conservation whilst those areas set aside and identified for conservation purposes is land that has the ability to contribute to an important regenerated bushland which will make an integral contribution to an already identified ecological corridor.

Consequently, it is considered that proceeding with a Planning Proposal to rezone land is the most appropriate mechanism of ensuring those lands able to make a worthwhile conservation contribution to an extension of the Wadalba Wildlife Corridor are realised whilst also realizing the real developable areas of the subject site available for urban purposes consistent with the current investigation zoning of the site. Furthermore, the decision to proceed with this rezoning is based on town planning grounds. The proposed segregation of uses, that is, for conservation and that for urban purposes, is considered to be consistent with

the existing residential allotment pattern whilst also contributing to that open space as an addition to the Wadalba Wildlife Corridor on Lots 229 and 230 in DP 1105837 in consultation with the unformed Louisiana Road easement.

Adjoining land to the west is currently identified as the unformed "paper" Louisiana Road. This land is zoned 10 (a) Investigation Precinct zone whilst adjoining this land, further to the west, lands contain multiple zonings of 2(e) Urban Release Area zone, 1(c) Non Urban Constrained Lands zone and 7(a) Conservation zone. Land adjoining the subject site, to the north and east are zoned 10(a) Investigation zone whilst the subject site adjoins Johns Road along the southern boundary.

It is proposed to rezone the subject site to both 7(a) Conservation land; consistent with lands adjoining to the west and 2(a) Residential; consistent with permissible uses within the 2(e) zone; albeit the 2(a) zone provides for a more low density form of "urban" or "residential" development. Adjoining and surrounding lands to the east of the subject site maintain a 10(a) Investigation zoning however under the North Wyong Structure Plan those lands (Precinct 3B) are identified and earmarked as Proposed Residential areas. In accordance with such "broad brush mapping" the subject site, and the rezoning of lands, is entirely consistent with what the North Wyong Structure Plan envisages insofar as providing for a "green corridor", partially set upon the subject site, as well Residential areas.

Development currently permissible upon the land to be rezoned for Conservation purposes (7(a)) and that for Residential purposes (2a)), in accordance with the provisions of the Wyong Local Environmental Plan, 1991, are detailed in the following table, as compared to the current permissible uses in the 10(a) zone.

LAND USE COMPARISON TABLE		
PERMISSIBLE USES (with development consent)- in accordance with the provisions of the Wyong Local Environmental Plan, 1991		
Existing Zone -10(a) Investigation	Proposed Zone- 7(a) Conservation	Proposed Zone-2(a) Residential
		Advertisements
Agriculture	Agriculture	
Bushfire Hazard Reduction	Bushfire Hazard Reduction	Bushfire Hazard Reduction
		Child care centres
Communications facilities	Communications facilities	Communications facilities
Community facilities	Community facilities	Community facilities
		Detached dual occupancies
	Dams	
Drainage	Drainage	Drainage
	Dual Occupancy buildings	Dual Occupancy buildings

Dwelling houses	Dwelling houses	Dwelling houses
		Education establishments
		Exhibition homes
Flood mitigation works		Flood mitigation works
		General stores
		Group homes
Home businesses	Home businesses	Home businesses
		Hospitals
Mining		
Nutrient control facilities	Nutrient control facilities	Nutrient control facilities
		Palliative day care centres
		Places of worship
Recreation areas	Recreation areas	Recreation areas
		Transitional group homes
Roadside stalls		
Utility installations	Utility installations	Utility installations

The intention of the owner in creating Residential land is to look at carrying out development of such lands consistent with the type and scale of development permissible uses within the 2(a) zone and surrounding patterns of subdivision; both existing and as anticipated in releasing new lands for urban housing supply. The existing allotment is mapped as being bushfire prone (please refer to Attachment 12 - Extract of Council's Bushfire Mapping) such that any future subdivision of this land would be deemed "integrated Development" and require referral to the NSW Rural Fire Service and the issuance of a Bushfire Safety Authority. Given that those portions of the subject site to support a 2(a) Residential zoning are largely cleared and those adjacent areas to the east, it is not anticipated that this would be an issue that would be an impediment to future subdivision.

As detailed in the Minutes of the Meeting carried out with relevant Council officers on the 27th of August, 2012, the subject site faces certain challenges for water and sewerage services to cater for future development of that land for residential purposes; subject to the intensity of development. Mr. Mark Dowdell of Council did highlight, at the meeting, that such infrastructure issues should be able to be overcome with adequate engineered solutions being conscious of and designing in accordance with the final outcome for development upon that land located on Lots 229 and 230 DP 1105837 lying west of the subject site.

Consequently, it is considered that proceeding with a Planning Proposal to rezone the land is the appropriate mechanism of ensuring ecological security and functional longevity of the Wadalba Wildlife Corridor whilst providing a reasonable development outcome for the owners of the site. Furthermore the decision to proceed with this rezoning is based on sound planning grounds. The rezoning arrangement, catering for both Conservation and Residential land components is consistent with the type scale and pattern of development in the surrounding area. The Planning Proposal; and subsequent rezoning of land, will facilitate “infill” residential development that is consistent with development in the locality and the broader intentions detailed as part of the Regional Strategy for the area. The Planning Proposal has merit and should proceed on the basis of the aforementioned planning grounds.

Alternative Approaches

As detailed in the minutes of the pre-lodgement meeting held at Council on the 27th of August, 2012 Mr Scott Duncan advised that it “might be more cost effective if the land was rezoned as part of the broader precinct investigation”.

In accordance with Mr Duncan’s suggestion, we note that reference is being made to the Wadalba East – Owners Lobby Group who have prepared a submission to the NSW Department of Planning and Infrastructure seeking support for the release of Precincts 2A, 2B & 3B, in the short term (rather than medium term) as part of the State Government’s overall strategy for housing supply to service the local areas. The investigation area for which the Lobby Group acts comprises approximately 225 ha. and is generally located between Wahroonga Road, Kanwal through to Jensen Road, Tacoma. The Department of Planning and Infrastructure refers to Precinct’s 2A, 2B & 3B whereas Wyong Shire Council identifies such precincts as 8B and 8C. The subject site, as part of this application, is included within what Council refers to as Precinct 8B. Please refer to Attachment??- Map Extract identifying the subject site located within Precinct 8B.

We are advised that the NSW Government Cabinet Taskforce on housing supply currently has the Wadalba East Lobby Group’s proposal in hand which is under consideration however, the taskforce has not as yet processed the matter insofar as looking to include the release of Precinct 2A, 2B and 3B in the short term rather than the medium term under the Draft North Wyong Structure Plan.

Our clients, as owners of the subject site, were originally involved in and represented as part of the Wadalba East Owners Lobby Group however based upon the unique argument that the subject site represents, that is, being an imperative and pivotal parcel of land strategically important in providing a connective or linking conservation corridor, a decision was made to approach and discuss a planning proposal being prepared specifically relevant to the subject site rather than the property being included within the overall study area of the Wadalba East-Owners Lobby Group.

The subject site was considered to be a “stand out” parcel of land as conservation values of those portions of the subject site needed to be considered, in the short term, in order for the Wadalba Wildlife Corridor to continue to function; in accordance with the underlying tenet of ‘maintained ongoing corridor functionality’ enshrined in the original NSW government assumed concurrence agreement relevant to the Wadalba Wildlife Corridor lands. The planning proposal before Council is therefore considered to be the best, most efficient and most time effective approach for delivering the desired outcome.

Section B- Relationship to Strategic Planning Framework

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

The key strategic planning framework, at the State level, is embodied in the North Wyong Structure Plan (NWSP) which was developed following release of the Central Coast Regional Strategy in 2008. The NWSP identifies:

- 20 future development precincts with a potential capacity for almost 17,000 new homes and up to 17,100 new jobs;
- A network of possible green corridor and habitat areas;
- Around 1,500 hectares of strategically located land that will be further investigated to identify an appropriate balance between conservation and development potential;
- Additional development areas that will support the establishment of the Wyong Employment Zone and Warnervale town centre sites;
- Potential new centres at Wadalba East, Lake Munmorah and Gwandalan;
- Sufficient land to meet the regional strategy targets with additional capacity should a high demand for land occur.

The structure plan is a high level land use strategy that does not change the zoning of any land however is a Plan that guides the future direction for local land use in the North Wyong area including the revision of the new Wyong LEP 2012 and DCP 2012 and Settlement Strategy currently on exhibition. The Plan covers an area of around 11,500 hectares.

The key directions for the Wadalba area are embodied within several key outcomes. The relevant directions, under this Planning Proposal, being to meet goals of achieving a viable green corridor whilst also contributing to the housing supply as part of identified future residential release areas.

This Planning Proposal complies with the requirement that LGAs are to plan for housing capacity targets in existing areas whilst ensuring viable green corridors as a backdrop to future urban development.

4) *Is the planning proposal consistent with the local council's strategy or other local strategic plan?*

Wyong Council adopted, on the 23rd of May, 2012 a Strategic Plan 2012-16 which references Council's Community Strategic Plan (2030) endorsed by Council in June, 2011. The two documents follow Council's Residential Development Strategy which was adopted on the 11th of December, 2002.

The Wyong Local Environmental Plan, 1991 has the following objectives that uphold the principles of the strategic plans and which are considered relevant to the proposal.

(2) The objectives of this plan are:

(a) in relation to population and housing:

- (i) to provide opportunity for the development of a wide range of housing stock commensurate with the changing characteristics of the Shire's population,*
- (ii) to encourage residential development that will achieve efficient use of existing physical and social infrastructure,*

- (iii) *to provide for new urban development in areas that can be economically serviced and that are environmentally suitable,*
 - (iv) *(Repealed) and*
- (b) *in relation to employment and economic development:*
- (i) *to facilitate employment generating development which will contribute to the economic and social growth of the Shire of Wyong, and*
 - (ii) *to provide for appropriate home-based employment opportunities, and*
 - (iii) *to encourage mixed use development in appropriate locations,*
- (c) *in relation to retailing and commerce, to maintain and reinforce the viability of commercial centres in a manner appropriate to their functional role,*
- (d) *in relation to leisure and tourism, to provide for appropriate open space and tourist development opportunities and to allow for the development of a variety of recreation and leisure activities commensurate with the size and preference of the population and the Shire's role as a tourist location,*
- (e) *in relation to community services, to allow for the provision of a variety of community facilities appropriate to the needs of the people of the Shire of Wyong,*
- (f) *in relation to transport:*
- (i) *to delineate the arterial road network and to facilitate the free flow of traffic thereon,*
 - (ii) *to provide for additions to a realignments of the road network, and*
 - (iii) *to provide for regional aerodrome facilities,*
- (g) *in relation to rural and environmental areas:*
- (i) *to protect environmentally sensitive areas from development and minimise adverse impacts of urban development on the natural environment,*
 - (ii) *to restrict development within flood prone areas in order to minimise flood damage and obstruction to flood waters, and*
 - (iii) *to encourage use of land having a high agricultural potential for that purpose and as much as possible direct non-agricultural purposes to land of lesser agricultural potential,*
- (h) *in relation to conservation, to protect, conserve and provide for the enhancement of items of environmental heritage,*
- (i) *in relation to administration, to provide guidance in the facilitation and management of development in Wyong through enunciation of the Council's environmental planning objectives, and*

(j) in relation to tree preservation:

- (i) to minimise land degradation, and*
- (ii) to conserve trees and native vegetation, and*
- (iii) to ensure that development and land management practices do not have adverse effects on water catchments, water quality and important ecosystems such as streams, estuaries and wetlands.*

(iv)

The Planning Proposal before Council is said to be consistent with the Objectives that Council's LEP seeks to uphold insofar as rezoning land to accommodate both residential land which will aid in satisfying population and housing objectives of the Shire whilst protecting those areas of the site for Conservation purposes consistent with the Objectives applied to rural and environmental areas and tree preservation.

The proposal is considered minor yet consistent, in context of planning strategies for development within the Wyong Shire.

5) *Is the planning proposal consistent with applicable State Environmental Planning Policies?*

Note:

Not relevant – This provision or planning instrument does not apply to the Draft Amendment Local Environmental Plan.

Consistent – This provision or planning instrument applies; the Draft Amendment to Local Environmental Plan meets the relevant requirements and is in accordance with the provision or planning instrument.

Justifiably Inconsistent - This provision or planning instrument applies, and is considered to be locally inappropriate.

Please see Figure 1 - State Environmental Planning Policies in force Table within the appendices to this document

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

Note:

Not relevant – This provision or planning instrument does not apply to the Draft Amendment Local Environmental Plan.

Consistent – This provision or planning instrument applies; the Draft Amendment to Local Environmental Plan meets the relevant requirements and is in accordance with the provision or planning instrument.

Justifiably Inconsistent - This provision or planning instrument applies, and is considered to be locally inappropriate.

Please see Figure 2 - Directions under Section 117(2) Table within the appendices to this document.

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?*

A flora and fauna assessment/ Ecological Study of the subject site has been carried out by a Mr. Ross Wellington of Australian Environmental Surveys, in consultation with past ecological investigations of the subject site prepared by a Mr. Richard Wells of Worldata. A copy of Mr. Wellington's study accompanies this submission. Council has, on record, copies of the ecological investigation completed by Mr. Richard Wells of Worldata in support of DA No. 713/2011, approved by Council on the 26th of May, 2012.

The assessment revealed that no endangered ecological communities, threatened floral and/or faunal species, or locally significant species were found on the site that would be affected as a result of support being provided for the proposed rezoning of lands, as detailed.. The assessment concluded that there is *not likely to be any significant effect on any endangered ecological community, threatened species or their habitats.*

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

There are no other likely environmental effects, as a direct result of the planning proposal. The subject site has been identified as being mapped:-

- Bushfire prone;
- Within a mines subsidence district;
- Informally as "Stage 2" extension to the Wadalba Wildlife Corridor;
- Supporting identifiable watercourses; and
- Potential acid sulphate soils.

The current proposal will not impact on any area that can be considered as currently contributing to any existing corridor for wildlife movement and in fact proposes to rezone as Conservation, those areas deemed as having worthy characteristics for contributing to corridor connectivity in the locality. The current proposal is for a land use zone change which will not directly impact on any vegetation; however subsequent subdivision proposals (or the like) will need to consider the extent to which any vegetation removal may be required.

Development of those parts of the subject site for a more intensive form of "urban" development will need to address the environmental and natural opportunities and constraints the subject site possesses.

Future design and development of the identified "urban" land areas, as detailed under this proposal, will be limited to sufficiently detailing and addressing those opportunities and constraints.

Separately this Planning Proposal, and the areas of the site intended for rezoning to both residential and conservation, provides a necessary platform for the owners of the subject site, in consultation with

Council, to appropriately identify and protect (and enhance) areas of the site able to contribute to the conservation and ongoing functionality of the Wadalba Wildlife Corridor through aiding in the creation of a viable wildlife corridor.

Council includes within the Minutes of the Pre- Rezoning Meeting carried out on the 27th of August, 2012, recommendations as to the *submission of technical studies to accompany this Phase 1 Planning Proposal* including:-

- Preliminary archaeological investigation

Comment

Council suggested, within the Minutes of the Pre-Rezoning Meeting on the 27th of August, 2012, that the preparation of a Preliminary Archaeological Investigation Report be carried out. In accordance with Council's advice and being conscious of the Local Aboriginal Land Council – Darkinjung, an Aboriginal Cultural Heritage Assessment Report was commissioned and carried out by the Darkinjung Local Aboriginal land Council. A copy of that report accompanies this submission.

Council, in reviewing that document, will note that, generally speaking, that potential impacts upon aboriginal artefacts and relics result from development which includes vegetation clearing and soil excavation. These impacts have the ability to expose soil and/or expose or destroy any potential aboriginal cultural heritage sites. Potential erosion may also expose aboriginal cultural heritage sites and/or material. Other negative impacts to consider include labour accessing the site, treadage, transporting materials, construction tools and damage from machinery which also has the potential to expose and/or destroy artefacts on top of, or below the soil surface.

If we consider the description of the impact provided by the Darkinjung in their Aboriginal Cultural Heritage Assessment Report, the potential for impact is limited to "works" being carried out.

The application before Council does not include the carrying out of any works and rather, seeks a rezoning of land to permit future works to be carried out within each respective zone, that is, rehabilitation and/or enhancement works within the Conservation portion of the land with a Residential or urban type of development to occur on the 2(a) portion of the subject site. Any works or development proposed on either portion of the site to be rezoned to either 7(a) Conservation or 2(a) Residential will be subject to both the recommendations of the rezoning application as well as *in accordance with* Council's Development Control Plan and statutory controls. In that regard, the rezoning poses no potential to significantly impact upon any potential or known aboriginal cultural heritage sites, artefacts or relics and rather, seeks to have land rezoned to permit certain future development and activities upon and within each respective zone.

We note the methodology of surveying the site has been outlined within the Aboriginal Cultural Heritage Assessment Report with the results of that survey effort indicating "...no aboriginal cultural heritage sites or places were found on the assessment site". We appreciate that this may be of a result of the visual and physical inaccessibility of certain portions of the subject site due to the invasive nature of lantana, privet and other exotic species. We are happy to accept the recommendations within the report regarding future development of land upon the subject site within each respective zone.

In conclusion, it appears in reviewing the Aboriginal Cultural Heritage Assessment Report that no objection is held to the rezoning of land with an acknowledgment that vast areas of the subject site have been utilised, historically, for a variety of agricultural land uses that have disturbed the site which may

have, historically, destroyed aboriginal relics and/or artefacts that may have existed on-site some time ago. Nevertheless, we acknowledge the recommendations contained within the Aboriginal Cultural Heritage Assessment Report and believe that any future development proposed upon the subject site, for either conservation enhancement works (or similar) or residential development upon the area of the site to be rezoned to 2(a) Residential ensures that Council, in considering the affects of the rezoning upon potential aboriginal cultural heritage are assured that future development of the site will be restricted by the recommendations contained within the Aboriginal Cultural Heritage Assessment Report and in accordance with Council's Development Control Plan requirements and statutory controls.

- **Preliminary Phase 1 & 2 Contaminated Land Assessment**

Comment

We note in the document titled "A Guide to Preparing Planning Proposals" that it is not expected that a proponent will provide comprehensive information to support a request for a Planning Proposal. The Gateway may include a requirement for additional information or determine that additional work on a particular aspect of the proposal is required however, detailed information including undertaking technical studies will not need to be carried out before the Gateway provided the need for such investigations, and an approach for addressing the issues, is suitably identified within the Planning Proposal. Following an assessment, the Gateway determination is able to then confirm the studies and consultation required and the timeframe for these to be completed.

In considering the current Planning Proposal a Preliminary Phase 1 & 2 Contaminated Land Assessment Technical Study has not been commissioned, at this point in time, as suggested by Council in consideration of the owners of the subject site seeking to confirm support for their intentions for rezoning of the land to accommodate both conservation and urban development.

We are advised by a Mr Larry Cook of Larry Cook & Associates being an Environmental Scientist and Geo-Scientist that a Phase 1 and Phase 2 Contaminated Land Assessment is able to be carried out in order to satisfy Council's concerns regarding historical land use practises on-site however in discussion with the office of Aconsult, recommends that such studies are able to be completed relatively easily should Council be of the mind to support the Planning Proposal hence the guidelines to preparing Planning Proposal's highlighting the level of detail required in a Planning Proposal being proportionate to the *complexity of the proposed amendment*.

Should Council be of a mind to support the Planning Proposal, Mr Larry Cook is able to carry out Phase 1 and Phase 2 Contaminated Land Assessment to confirm any potential contamination issues. Given the anecdotal evidence available for the subject site being historically used from the late 60's to the early 70's up to approximately 10 years ago for a poultry growing operation, the potential contamination issues are considered to be limited to typical actions such as potentially fuel storage tanks and possibly limited chemical usage for clean out and the like however, no obvious contamination issued are apparent from a visual walk over of the site nor in consultation with available aerial photography.

Our client's ,as owners of the land, are happy to accept Council's requirement for carrying out preliminary Phase 1 and Phase 2 Contaminated Land Assessment if Council are of the mind to support rezoning of the land for both conservation and urban purposes.

- **Preliminary Traffic Matters Report**

Comment

In making enquiries of Council, we note that Johns Road in its current form and in consideration of the volume of traffic for which the road caters is classified as a local road. The volume of traffic catered for along Johns Road is commensurate with the current zoning of the surrounding land, with Council having carried out no major nor predictive studies to cater for future volumes of traffic which may seek to utilise this local road; based upon no major Planning Proposal's before Council that would necessitate such studies being carried out.

It may be that, in future, Johns Road could be classified to (say) a collector road in consideration of the thoroughfare that Johns Road provides as a link to Murrawal Road leading directly into the Wyongah neighbourhood. Such a reclassification would be borne out of (for example) the release of lands in the immediate vicinity of Johns Road which would enable a more intensive form of residential development however, at this point in time, no such proposals are formally before Council and as such, Johns Road will remain unaltered catering for local traffic volumes without the need for any upgrading works. Discussions were held with Council's Mr Steven McDonald who confirmed our understanding of the current classification of Johns Road.

In consideration of the Planning Proposal before Council under this application, we submit that the Rezoning Application to facilitate both conservation land and low density residential; if we were to apply a maximum development potential to the land, that is, residential subdivision, does not necessitate the preparation of a Traffic Study until such time as a concept is developed for future redevelopment of that portion of the site earmarked for rezoning to residential use. It should be noted, however, that the volume of traffic catered for along Johns Road, in a local capacity, is able to accommodate the anticipated additional loading which would result from (say) a residential subdivision of that portion of the subject site earmarked for residential use without the need for any further road upgrades or modifications.

Should Council deem the owner of the land to further develop a development concept along that portion of the site earmarked for 2(a) residential use, the owners would be in a much more informed position to brief a qualified Traffic Consultant to carry out a Preliminary Traffic Matters Report that would be prepared based upon a feasible site development consent that would look to address several issues including traffic, bushfire, vegetation, etc.

In that regard, we submit that our client's would be more than happy to further discuss with Council the further development of a concept for residential use within that defined portion of the subject site in order to facilitate the preparation of a realistic traffic matters report. We submit that the current Planning Proposal is able to proceed on the basis that Johns Road, being a local road with limited volumes of traffic is more than capable of catering for nominal increase traffic utilising that local road.

- Preliminary Bushfire Assessment

Comment

In accordance with our client's Development Application lodged seeking approval for a single dwelling-house (Development Application No. 713/2011) approved in May, 2012, a Bushfire Hazard Assessment Report was prepared by the office of Building Code and Bushfire Hazard Solutions Pty Ltd.

That document was prepared in consideration of accommodating a single dwelling-house and ancillary structures to address the bushfire prone nature of the subject site including existing vegetation and layout.

We are advised that the highest bushfire attack level for development upon those areas identified for residential use would be from the north and north-east however, the future design including necessary asset protection zones, construction levels and the like is not able to be established until such time as a site concept plan has been developed outlining the particular type and scale of development to be supported upon the subject site. We can assure Council that all necessary internal access roads, asset protection zones, setbacks, as well as construction levels for future occupation of the land is able to be designed in order that the recommended strategies from the bushfire consultant are able to be accommodated within the boundaries of those lands identified for rezoning for residential use.

We are assured by the office of Building Code & Bushfire Hazard Solutions that any future residential development upon those portions of site so identified is able to suitably address the relevant Australian Standards and Building Code of Australia requirements including necessary fire fighting water supplies, property access, evacuation, as well as the establishment of asset protection zones to ensure the future protection of development upon the subject site subject to the intensity of development proposed. Council is able to access the bushfire assessment carried out by Building Code & Bushfire Hazard Solutions submitted in support of Development Application 713/2011 which provides relevant details as to the slope, topography and bushfire prone nature of the subject site. The location of the dwelling approved under Development Application 713/2011 was located towards the rear portions of the subject site and generally adjacent to the more vegetated areas of the site. In that regard, the location of this dwelling-house is, for all intents and purposes, suggested as being a worst case scenario in context of building and planning for bushfire protection. On that basis, we submit that the balance of the land is able to be suitably designed to address the relevant bushfire opportunities and constraints that the subject site presents.

- **Ecological Assessment**

Comment

As detailed previously, the office of Australian Environmental Surveys has prepared an ecological assessment in support of the Planning Proposal before Council. A copy of that document accompanies this submission. Given the history of development in the surrounding area which has resulted in the creation of what is referred to as the Wadalba Wildlife Corridor and, on the basis of the subject land being originally identified as part of process as a crucial linking unit of the whole Wadalba Wildlife Corridor established in 2004, it was considered necessary to engage the services of a qualified Ecologist with a detailed understanding and involvement formation of the Wadalba Wildlife Corridor to prepare an Ecological Assessment which supports rezoning of the subject site for the purposes of conservation land and residential land.

The report prepared primarily documents the ecological values of the subject site as well as its potential corridor connectivity values and wider values for conservation. The assessment identifies the legislative and policy framework within which the rezoning application sits and also elaborates elsewhere on the associated historical, and at times complex, sequence of events which have resulted in application now being made to ensure the ongoing functionality of the Wadalba Wildlife Corridor, whilst providing a development outcome for the owners of the subject site consistent with the intention, aims and objectives of the current 10A Investigation zoning of the subject site.

The conclusions of the ecological assessment detail that that the current Planning Proposal is ecologically benign with the proposed residential zone being applied to the most disturbed areas of the subject site and those areas retained whereby native vegetation is able to be incorporated into a conservation zone and set aside for contribution to the Wadalba Wildlife Corridor.

The corridor contribution resulting from rezoning of part of the subject site for conservation purposes has the effect of widening of the existing vegetated area earmarked for conservation zoning such that it approximates a corridor width concordant with the subregional corridor width of 350m. Please refer to the Australian Environmental Surveys Ecological Assessment for details in this regard.

Our client's Ecological Consultant conclude that in order for the overall Wadalba Wildlife Corridor to likely function for squirrel gliders, the entire width of the area proposed as a corridor link to the south will require some form of rehabilitation and habitat enhancement. It is recommended that the resultant and overall corridor should be located across all lands ultimately contributing to the corridor width at this point and thus comprise ADW Johnson lands to the west, the Louisiana Road easement adjacent, as well as the component proposed for rezoning to conservation as part of No. 145 Johns Road, Wadalba, the subject site.

Although recognised habitats of threatened flora and fauna species occurs on the subject site and on lands adjacent to the subject site, none of these known areas are to be significantly affected by the proposed rezoning and rather, will be contained within what has been earmarked for conservation land.

The ecological investigation of the site indicates that development of even a large part of the subject site for residential purposes is not only feasible but would also provide a viable mechanism for a satisfactory ecological outcome for the broader Wadalba area by inclusion of the areas, identified for conservation zoning, contributing to the corridor functionality. Extensive areas of the property are in a highly degraded ecological state with approximately 60% of the land considered suitable for rezoning as residential development owing to its disturbed state.

In conclusion, the Planning Proposal before Council establishes and maintains a continuance in connectivity of the Wadalba Conservation Corridor as an intra-regional corridor to the south and also secures a critical component of the Wadalba Wildlife Corridor, the North Wyong Structure Plan, the Central Coast Regional Conservation Strategy (in development) and the Wyong Conservation Strategy. The Planning Proposal also contributes and is consistent with all state, national and international measures/initiatives that endeavour to ensure connectivity conservation for bio-diversity and associated climate change goals and imperatives.

9) How has the planning proposal adequately addressed any social and economic effects?

The planning proposal is unlikely to have any negative social or economic effects. The land to be rezoned for residential purposes will provide for a relatively minor addition to the stock of land and housing in the Wadalba neighbourhood whilst those lands to be set aside for conservation purposes recognises the potential for contribution by all land holders and the importance of maintaining, reconnecting and restoring habitats and ecosystems across all tenures; all being carried out at no costs to the community.

Overall the proposal will provide a net community benefit for the following reasons:-

- It constitutes an appropriate use of the land that is in keeping with the surrounding residential and conservation (Wadalba Wildlife Corridor) character.
- The proposal will contribute to Council's requirement to facilitate new dwelling growth, in accordance with the Subregional Strategy target/s.
- It is located within the existing Wadalba town area;

- The proposal will have a negligible impact on infrastructure patronage in the area. The additional demand will be minor and is capable of being absorbed by existing services subject to adequate engineering solutions;
- The proposal will not result in any significant environmental impacts.
- It will create local employment through construction jobs, during future development of those areas earmarked for residential development, which will benefit the local economy.
- The site will offer adequately serviced and available residential building lots within proximity to existing and surrounding local support services, schools, shops, hospitals, public transportation nodes;
- The planning proposal constitutes a logical extension of the existing pattern of development in the locality to create a desirable living environment whilst securing the conservation potential of the subject site in contributing to the Wadalba Wildlife Corridor. It will protect the biodiversity of plants and animals in the LGA at this site which has been determined as not having any significant impact on threatened species or habitat.
- The proposal will see the development of land to a use and density which is consistent with adjoining lands.

Section D - State and Commonwealth Interests

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

As confirmed with Mr. Mark Dowdell at the Pre- Rezoning meeting; although the subject site has certain challenges for water and sewage services such infrastructure issues should be able to be overcome with adequate engineered solutions. Details of the final engineering solutions for infrastructure, including water and sewage, to service the proposed ADW Johnson subdivision of lands adjoining the unformed Louisiana Road to the west of the subject site, will dictate engineering solutions for such infrastructure to service the residential development of land upon the subject site. Although there may be a current shortfall in service provision to the subject site the existing public infrastructure is considered adequate and will absorb increased patronage associated with the proposal. The land proposed for rezoning has access to all necessary utilities on the existing road frontage; subject to extension and engineering solutions. The site is set within an existing urban release area and will not place unreasonable additional demands on the public infrastructure.

Future stormwater facilities are required to consider the water quality and quantity given the existence of wetland areas downstream of the subject site. Wetting and drying cycles would need to be considered. Engineering solutions to address these requirements would accompany any future development application for development of those portions of the subject site earmarked for residential rezoning.

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

One of the aims of the plan making process is to reduce the number of unnecessary referrals to Government agencies. In accordance with the stipulations of preparing a Planning Proposal the following State and Commonwealth agencies have been nominated as required to be consulted including an

outline of particular land use issue of site conditions which trigger the need for such referrals. We note that the proposed agency consultation will be confirmed with the Gateway Determination.

The following authorities were consulted to provide preliminary views:-

Authority Consulted	Comment Provided
Wyong Shire Council	A pre-lodgement meeting was held with Wyong Shire Council on the 27 th of August, 2012. No objection was raised to lodgement of the Planning Proposal subject to preparation of documentation relied upon in supporting the Phase 1 Planning Proposal. Please refer to attachment 15 being a copy of the Minutes of the meeting held with Council.
Mr Gary Hopkins at the Department of Planning & Infrastructure – Gosford office	No objection
Mr Algis Sutas of the NSW Office of Water – Gosford Office	No objection
Karen Thumm & Richard Bath of the NSW Department of Environment & Heritage – Newcastle Office	No objection
Dan Keating – Hunter Central Rivers Catchment Management Authority – Gosford Office	No objection

Government Agencies & Authorities to be Consulted	Need for Referral
Ausgrid	Availability of electricity supply to service proposed residential allotments. Any new connections to future allotments must comply with Ausgrid's network standards
NSW Rural Fire Service	To be consulted in response of any objection raised to

Attachment 1 – Locality Plan



Suggested Stops
1 North Coast Drive
2 Sun Lane
3 Old Agricultural Road

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Figure 1 - State Environmental Planning Policies in force Table

State Environmental Planning Policies in force	Not Relevant	Consistent	Justifiably Inconsistent
·SEPP 1 Development Standards		√	
·SEPP 4 Development without consent and Miscellaneous Complying		√	
·SEPP 6 Number of Storeys in a building		√	
·SEPP 14 Coastal Wetlands	√		
·SEPP 15 Rural Landsharing Communities	√		
·SEPP 19 Bushland in Urban Areas		√	
·SEPP 21 Caravan Parks	√		
·SEPP 22 Shops & Commercial Premises	√		
SEPP 26 Littoral Rainforests	√		
·SEPP 29 Western Sydney Recreation Area	√		
·SEPP 30 Intensive Agriculture		√	
·SEPP 32 Urban Consolidation (Redevelopment of Urban Land)	√		
·SEPP 33 Hazardous & Offensive Development		√	
·SEPP 36 Manufactured Home Estates		√	
·SEPP 39 Spit Island Bird Habitat	√		
·SEPP 44 Koala Habitat Protection		√	
SEPP 47 Moore Park Showground	√		
·SEPP 50 Canal Estate Development	√		
·SEPP 52 Farm Dams & Other works in Land & Management Plan Areas	√		
·SEPP 55 Remediation of Land		√	
·SEPP 59 Central Western Sydney Economic and Employment Area	√		
·SEPP 60 Exempt & Complying Development	√		
·SEPP 62 Sustainable Aquaculture	√		
·SEPP 64 Advertising & Signage	√		
·SEPP 65 Design quality of Residential Flat Development	√		
·SEPP 70 Affordable Housing (Revised Schemes)	√		
·SEPP 71 Coastal Protection	√		
·SEPP Affordable Rental Housing 2009	√		
·SEPP (Building Sustainability Index: BASIX) 2004	√		
·SEPP (Exempt & Complying Development Codes) 2008	√		
·SEPP (Housing for Seniors or People with a Disability) 2004	√		
·SEPP Infrastructure 2007	√		
·SEPP (Kosciuszko National Park – Alpine Resorts) 2007	√		
·SEPP (Kurnell Peninsula) 1989	√		
·SEPP (Major Development) 2005	√		
·SEPP (Mining, Petroleum Production and Extractive Industries) 2007	√		
·SEPP (Penrith Lakes Scheme) 1989	√		
·SEPP (Rural Lands) 2008	√		
·SEPP SEPP 53 (Transitional Provisions) 2011	√		
·SEPP (State and Regional Development) 2011	√		
·SEPP (Sydney Drinking Water Catchment) 2011	√		
·SEPP (Sydney Region Growth Centres) 2006	√		
·SEPP (Temporary Structures) 2007	√		
·SEPP (Urban Renewal) 2010	√		
SEPP (Western Sydney Employment Area) 2009	√		
SEPP (Western Sydney Parklands) 2009	√		

Figure 2 - Directions under Section 117(2) Table

Directions under Section 117(2)	Not Relevant	Consistent	Justifiably Inconsistent
1. EMPLOYMENT AND RESOURCES			
1.1 Business and Industrial Zones	√		
1.2 Rural Zones	√		
1.3 Mining, Petroleum Production and Extractive Industries	√		
1.4 Oyster Aquaculture	√		
1.5 Rural Lands	√		
2. ENVIRONMENT AND HERITAGE			
2.1 Environmental and Protection Zones		√	
2.2 Coastal Protection	√		
2.3 Heritage Conservation		√	
2.4 Recreation Vehicle Areas	√		
3. HOUSING, INFRASTRUCTURE AND URBAN DEVELOPMENT			
3.1 Residential Zones	√		
3.2 Caravan Parks and Manufactured Home Estates	√		
3.3 Home Occupations	√		
3.4 Integrating Land Use and Transport	√		
3.5 Development Near Licensed Aerodromes	√		
4. HAZARD AND RISK			
4.1 Acid Sulphate Soils		√	
4.2 Mine Subsidence and Unstable Land		√	
4.3 Flood Prone Land		√	
4.4 Planning for Bushfire Protection		√	
5. REGIONAL PLANNING			
5.1 Implementation of Regional Strategies		√	
5.2 Sydney Drinking Water Catchments	√		
5.3 Farmland of State and Regional Significance	√		
5.4 Commercial and Retail Development along the Pacific Highway, North Coast	√		
5.5 Development in the vicinity of Ellalong, Paxton & Millfield (Cessnock LGA)	√		
5.6 Sydney to Canberra Corridor (Revoked 10 July, 2008 – see amended direction 5.1)	√		
5.7 Central Coast (Revoked 10 July, 2008 – see amended direction 5.1)	√		
5.8 Second Sydney Airport: Badgery's Creek	√		
6. LOCAL PLAN MAKING			
6.1 Approval and Referral Requirements		√	
6.2 Reserving Land for Public Purposes		√	
6.3 Site Specific Provisions		√	
7. METROPOLITAN PLANNING			
7.1 Implementation of the Metropolitan Strategy	√		

Attachment 2 – Current Zoning Map Extract



- Suggested Cites**
- 1. Environmental Protection
 - 2. Conservation
 - 3. Development

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- 6. CONSERVATION**
- 1. Conservation & Recreation Zone
 - 2. Wildlife Conservation Reserve Zone
 - 3. State Conservation Reserve Zone

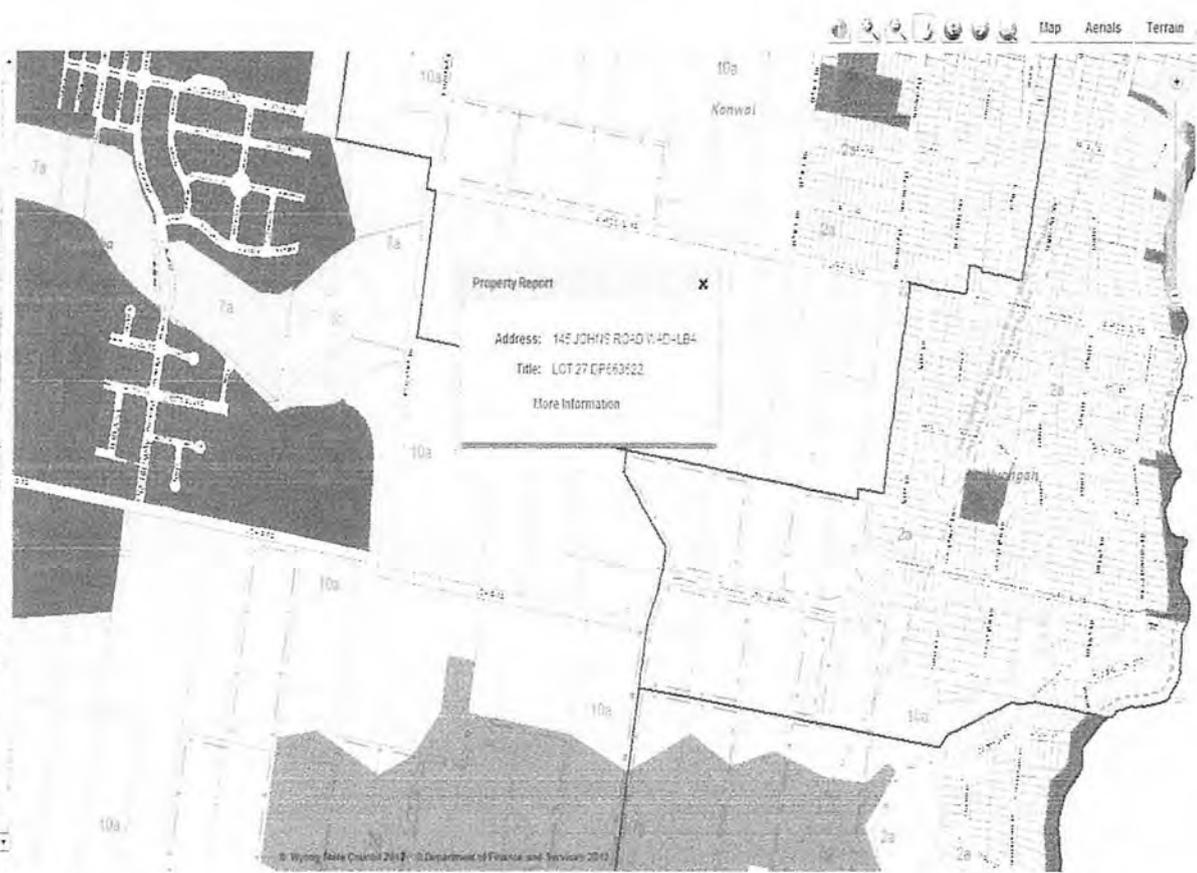
- 7. ENVIRONMENTAL PROTECTION**
- 1. Environmental Protection Zone
 - 2. State Environmental Protection Zone
 - 3. State Environmental Protection Zone
 - 4. State Environmental Protection Zone
 - 5. State Environmental Protection Zone
 - 6. State Environmental Protection Zone
 - 7. State Environmental Protection Zone
 - 8. State Environmental Protection Zone

- 8. NATIONAL PARKS**
- 1. National Park Zone

- 10. INVESTIGATION**
- 1. Investigation Zone

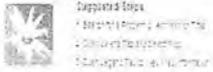
- 1. Investigation Zone
- 2. Investigation Zone
- 3. Investigation Zone
- 4. Investigation Zone
- 5. Investigation Zone
- 6. Investigation Zone
- 7. Investigation Zone
- 8. Investigation Zone

More Information



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Attachment 3 – Draft Zoning Map Extract – RU6 – Transition



Search by: Address 145 JOHNS ROAD Find Clear

Help Contact Us Download

Results Layers Legend Close

- EC Local Centre
- E3 Commercial Core
- B4 Mixed Use
- B5 Business Development
- B6 Enterprise Corridor
- B7 Business Park
- E1 National Parks and Nature Reserves
- E2 Environmental Conservation
- E3 Environmental Management
- E4 Environmental Living
- I1 General Industrial
- I2 Light Industrial
- R1 General Residential
- R2 Low Density Residential
- R3 Medium Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU1 Primary Production
- RU2 Rural Landscape
- RU3 Forestry
- RU4 Rural Small Holdings
- RU5 Village
- RU6 Transition
- SP1 Special Activities
- SP2 Infrastructure
- SP3 Tourist
- NT Natural Waterways



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Attachment 4 – Aerial Photographs of Subject Site – No. 145 Johns Road, Wadalba



Suggested Maps
1 Search by Property Address (10)
2 Compare Properties (10)
3 Compare Titles (10)

Search by: Address ▾ 145 JOHNS ROAD Find Clear

Help | Contact Us | Disclaimer

Results Layers Legend Close

Map Aerials Terrain



Attachment 5 - Acid Sulphate Soils Mapping – Wyong Shire Council



- Suggested Steps
- 1. Click on 'Plan' in the top right corner
 - 2. Click on 'Map' in the top right corner
 - 3. Click on 'Layers' in the top right corner

Search by: Address 145 JOHNS ROAD Find Clear

Help | Contact Us | Disclaimer

Results Layers Legend Close

ACID SULPHATE SOILS - PLANNING MAPS

© 2010 Department of Planning

- Class 0 All Works
- Class 1 Works below ground surface
- Class 2 Works beyond 1m below ground surface
- Class 3 Works beyond 2m below ground surface
- Class 4 Works beyond 3m below ground surface
- Class 5 Works within 50m of adjacent Class 1-4

[More Information](#)



Wyong Shire Council 2012 © Department of Planning and Services 2012 © 2010 Department of Planning

Attachment 6 – Terrain Mapping – Wyong Shire Council



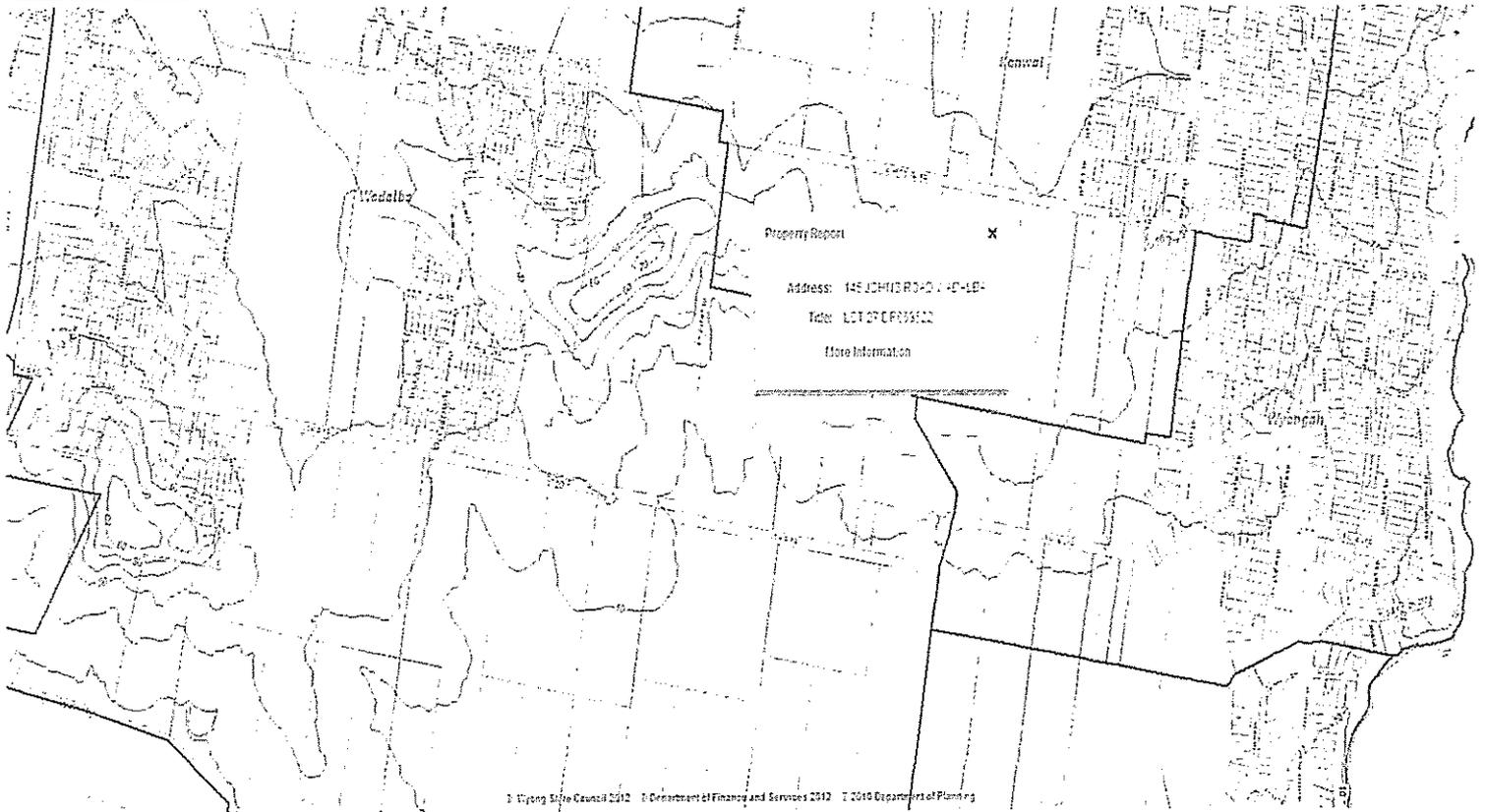
Wyong Shire Council
145 Johns Road
Woolahra NSW 2256
Phone: 02 4343 1111
www.wyong.nsw.gov.au

Search by: Address ▾ 145 JOHNS ROAD Find Clear

Map | Details | Details

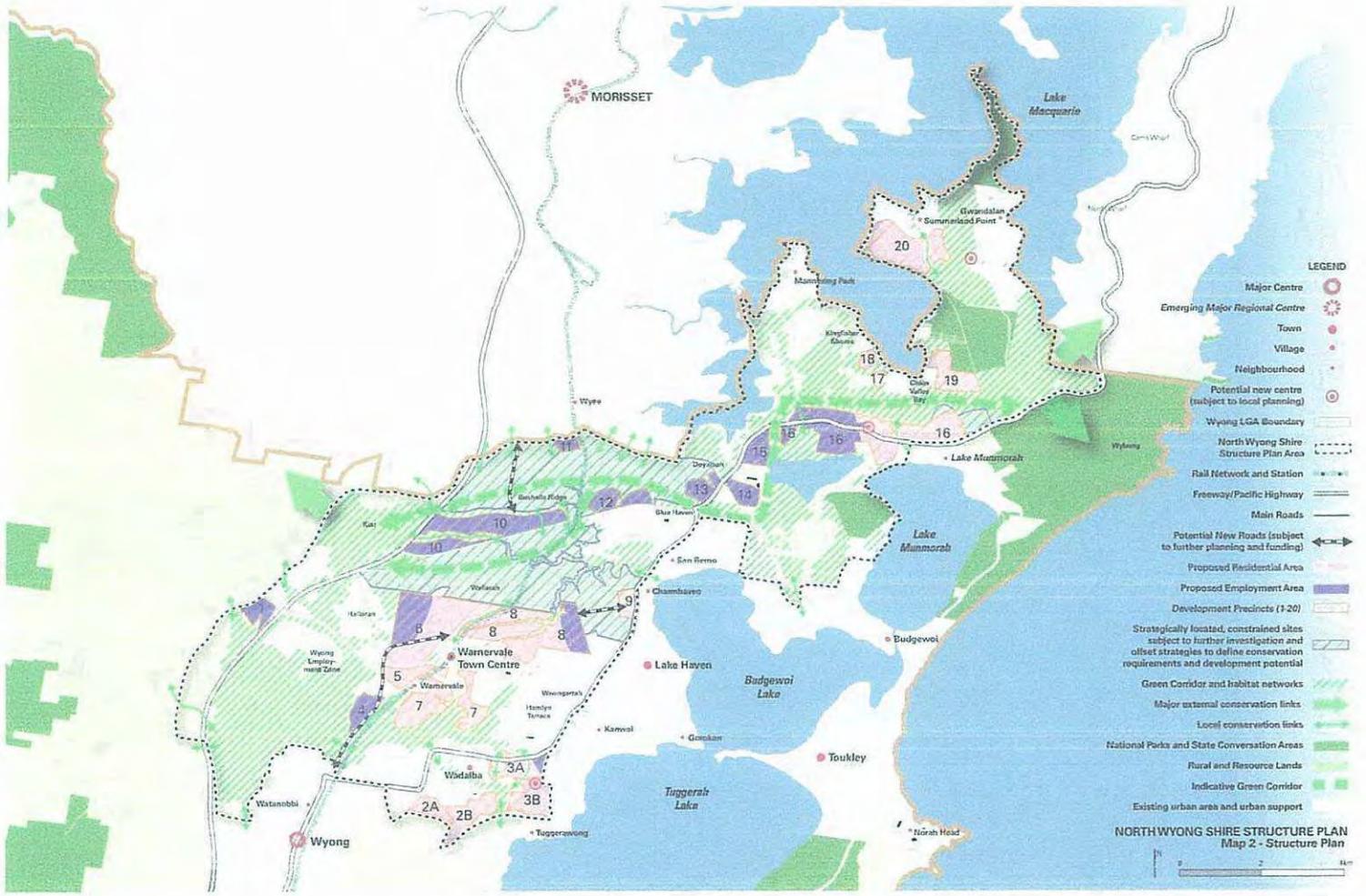
Results Layers Legend Close

Map Aerial Terrain



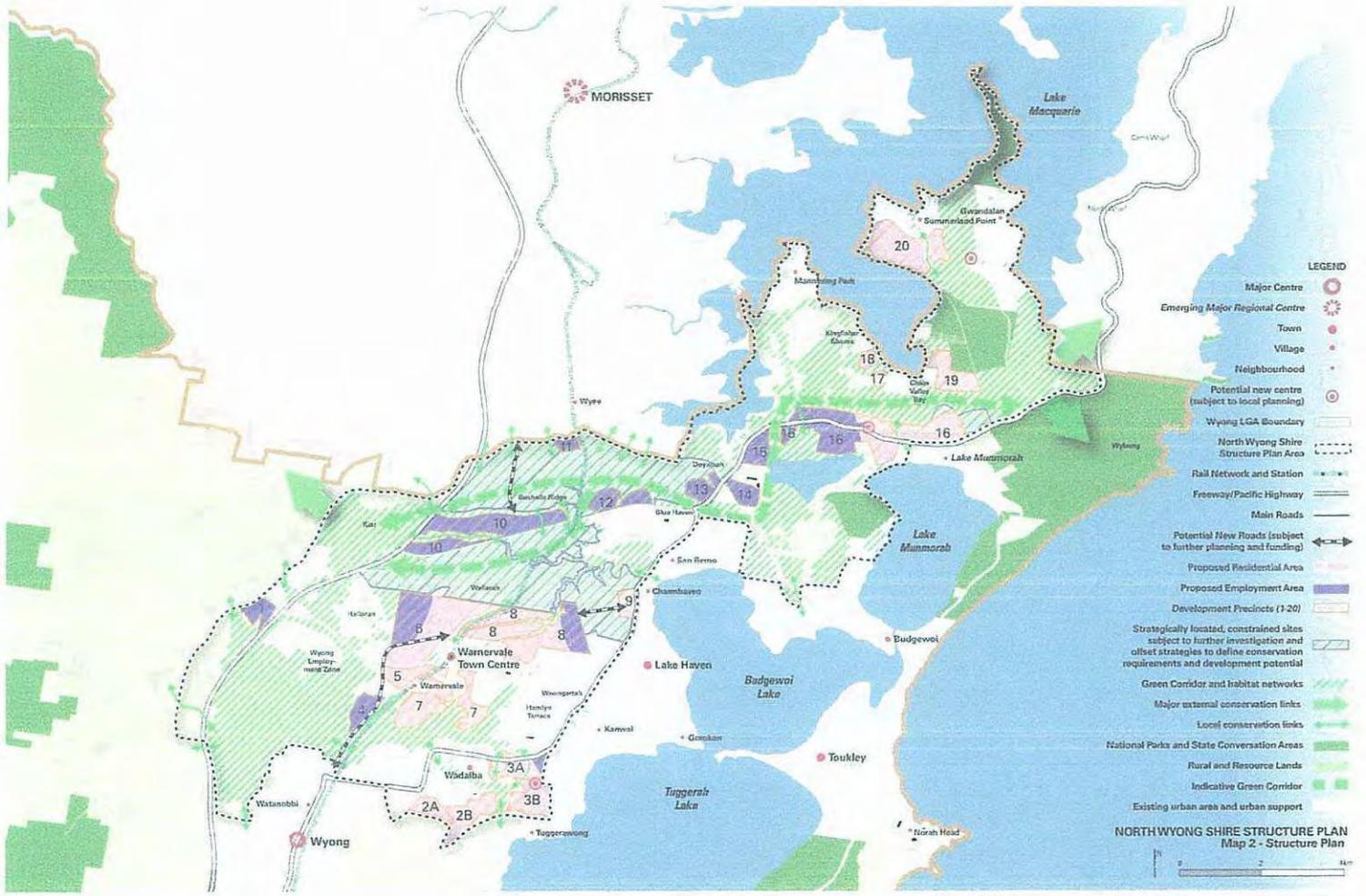
© Wyong Shire Council 2012 © Department of Finance and Services 2012 © 2010 Department of Planning

Attachment 7 – North Wyong Shire Structure Plan Mapping



Attachment 8 – Precinct 8B Residential Development Strategy Mapping

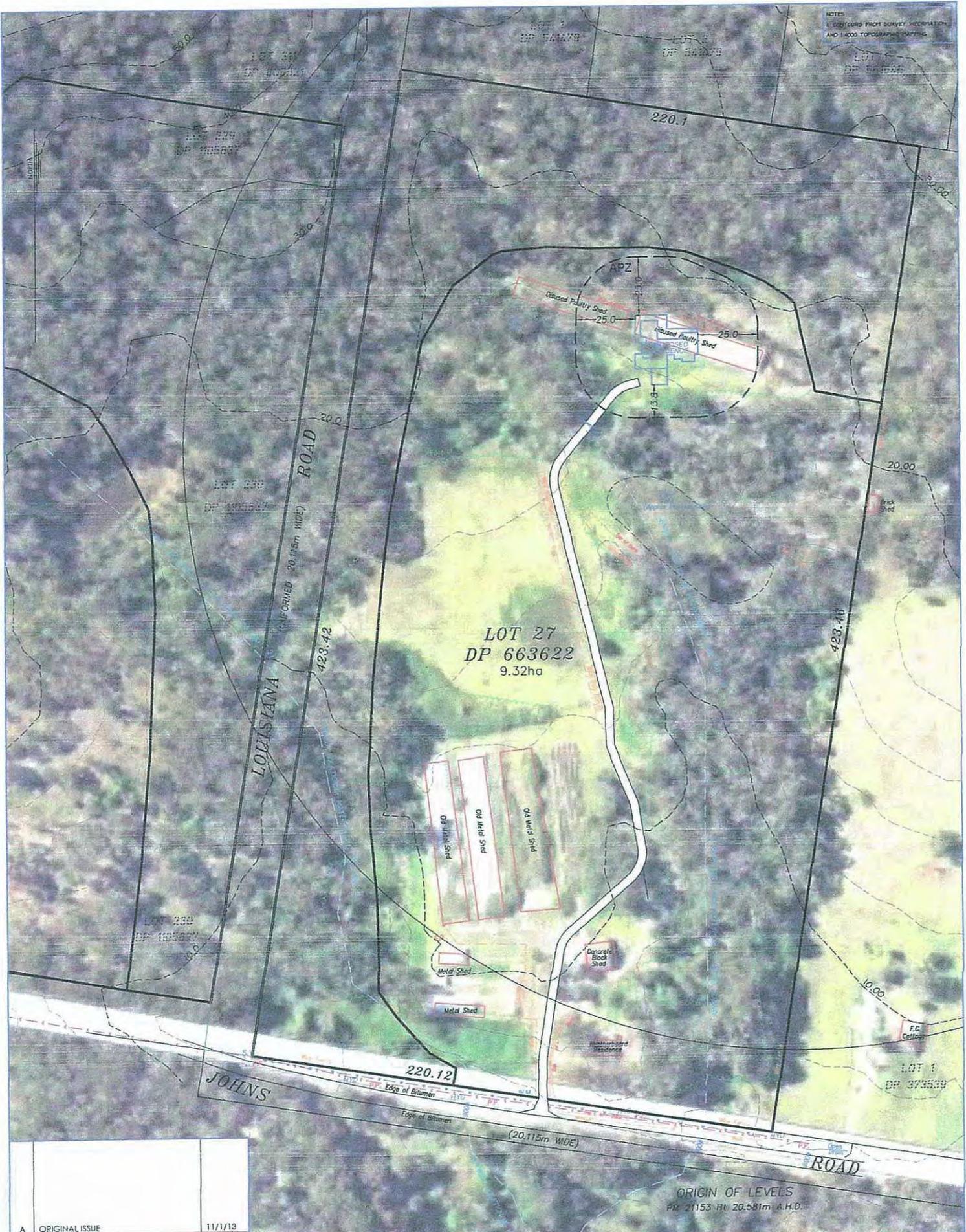
Attachment 9 – Staging Plan – North Wyong Structure Plan Mapping



Attachment 10 – Topographic Detail



Attachment 11 - Amendment of the Wyong Local Environmental Plan, 1991



A	ORIGINAL ISSUE	11/1/13
	AMENDMENTS	DATE

REGISTERED SURVEYOR	
DRAWN	KDM
DATE	11/1/13
SURVEYED	MJM
DATE	21/11/11

Barry Hunt Associates

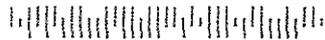
REGISTERED SURVEYORS AND
 LAND DEVELOPMENT CONSULTANTS
 SUITE 4, 1 BOUNTY CL., TUGGERAH 2259
 P.O. BOX 4144, BAY VILLAGE, 2261
 PHONE (02) 43539644 FAX (02) 43533855
 Email - admin@surveyors.com.au



LOCALITY:	JOHNS ROAD WADALBA L.G.A. WYONG
CLIENT:	ZAYCHAN PTY LTD
PROJECT:	RURAL DEVELOPMENT

PLAN:	PROPOSED CORRIDOR WITH AERIAL IMAGE				
LOT	27	DP	663622	AREA	9.32ha
DATUM	AUSTRALIAN HEIGHT DATUM	SCALE	1:1000		
CAD REF:	3731CORRIDOR	SHEET	2 OF 2		

Attachment 12 – Section 149 Certificate



Mr B R Grant
PO Box 137
SYLVANIA SOUTHGATE NSW 2224

SECTION 149(2) PLANNING CERTIFICATE

This Planning Certificate is issued on 19 May 2011 in respect to the land described below, pursuant to s.149 of the Environmental Planning and Assessment Act 1979

Fee paid: \$40.00
Receipt No: 7372756
Receipt Date: 19 May 2011

DESCRIPTION OF LAND COUNTY OF NORTHUMBERLAND

Property Address: 145 Johns Road, WADALBA NSW 2259
Property Description: Lot 27 DP 663622
Property Owner: Zaychan Pty Ltd

1 RELEVANT PLANNING INSTRUMENTS AND DEVELOPMENT CONTROL PLANS

1.1 Environmental Planning Instruments which apply to the land

Wyong Local Environmental Plan 1991

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004

State Environmental Planning Policy (Major Development) 2005

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Affordable Rental Housing) 2009

State Environmental Planning Policy No 50 – Canal Estates

State Environmental Planning Policy No 55 – Remediation of Land

State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004

1.2 Proposed Environmental Planning Instruments which will apply to the land and

is or has been the subject the subject of community consultation or public exhibition

The land is not subject to any Draft Local Environmental Plans.

1.3 Development Control Plans

Development Control Plan 2005 applies to this land

2 ZONING AND LAND USE

a Identity of the Zone

Lot 27 DP 663622

10A Investigation Precinct Zone

For each of the environmental planning instruments referred to in clause 1, please refer to the attached land use table to determine:

- b development that may be carried out within the zone without the need for development consent,
- c development which may not be carried out within the zone except with development consent and
- d development which is prohibited within the zone

e Development Standards applying to the land

Nil

f Critical Habitat

Nil

g Conservation Area

Nil

h Environmental Heritage

Nil

2A ZONING AND LAND USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (SYDNEY REGION GROWTH CENTRES) 2006

Not applicable

3 COMPLYING DEVELOPMENT

Whether or not the land is land on which complying development can be carried under each of the codes for complying development because of the provisions of clause 1.17A (c) and (d) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2006*?

1. PART 3 – GENERAL HOUSING CODE
 - a Complying Development under the General Housing Code may be carried out on the land.

2. PART 3A – RURAL HOUSING CODE
 - a Complying development under the Rural Housing Code may be carried out on the land providing the land is not less than the minimum lot size for the erection of a dwelling house under the Wyong Local Environmental Plan 1991.

3. PART 4 – HOUSING ALTERATIONS CODE
 - a Complying development under the Housing Alterations Code may be carried out on the land.

4. PART 4A – GENERAL DEVELOPMENT CODE
 - a Complying development under the General Development Code may be carried out on the land.

5. PART 5 – GENERAL COMMERCIAL AND INDUSTRIAL CODE
 - a Complying development under the General Commercial and Industrial Code may be carried out on the land.

6. PART 6 – SUBDIVISIONS CODE
 - a Complying development under the Subdivisions Code may be carried out on the land.

7. PART 7 – DEMOLITION CODE
 - a Complying development under the Demolition code may be carried out on the land.

4 COASTAL PROTECTION ACT 1979

This land is within the coastal zone as defined by the Coastal Protection Act however there are no notices under Sections 38 or 39 of this Act.

4A CERTAIN INFORMATION RELATING TO BEACHES AND COASTS

1. An order has not been made under Part 4D of the Coastal Protection Act 1979 on this land or on any public land adjacent to this property in relation to emergency coastal protection works. If an order has been made previously, Council is fully satisfied that the order has been complied with.
2. Council has not been notified under section 55X of the Coastal Protection Act 1979 that emergency coastal protection works have been placed on the land or public land adjacent to this property.
- . There is no information under section 56B that affects this land.

4B ANNUAL CHARGES UNDER LOCAL GOVERNMENT ACT 1993 FOR COASTAL PROTECTION SERVICES THAT RELATE TO EXISTING COASTAL PROTECTION WORKS

The owner (or any previous owner) of the land has not consented in writing to the land being subject to annual charges under section 496B of the Local Government Act 1993 for coastal protection services that relate to existing coastal protection works.

5 MINE SUBSIDENCE

The land is within a proclaimed Mine Subsidence District under the Mine Subsidence Compensation Act 1961. The approval of the Mine Subsidence Board is required for all subdivision and building, except for certain minor structures. Surface development controls are in place to prevent damage from old, current or future mining. It is strongly recommended prospective purchasers consult with the Mine Subsidence Board regarding mine subsidence and any surface development guidelines. The Board can assist with information about mine subsidence and advise whether existing structures comply with the requirements of the Act.

6 ROAD WIDENING OR ROAD ALIGNMENT

1. DIVISION 2 OF PART 3 OF THE ROADS ACT 1993
The land is not affected by road realignment or road widening under the above.
2. ENVIRONMENTAL PLANNING INSTRUMENT
The land is not affected by road realignment or road widening under the above.
3. COUNCIL RESOLUTIONS
The land is not affected by road widening or road re-alignment under the above.

7 COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES TO RESTRICT DEVELOPMENT DUE TO RISK

This land is not affected by a policy that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding).

7A FLOOD RELATED DEVELOPMENT CONTROLS

Development on this land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or senior housing) and for other purposes are not subject to flood related development controls.

Words and expressions in this clause have the same meaning as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006*

8 LAND RESERVED FOR ACQUISITION

The following environmental planning instruments and proposed environmental planning instruments make provisions for the acquisition of land by a public authority as referred to in Section 27 of the Act:

Wyangong Local Environmental Plan 1991
State Environmental Planning Policy (Major Development) 2005

9 CONTRIBUTION PLANS

This land is subject to the Section 94 Contributions Plan for Wyong Shire No. 11 - Shire wide Infrastructure, Services and Facilities – July 2007.

The land is subject to Section 94 Contributions Plan No 1 – Wyong District and Part Rural West District.

The land is subject to Section 94 Contributions Plan No 7A – Warnervale District.

9A BIODIVERSITY CERTIFIED LAND

The land is not "biodiversity certified land" within the meaning of Part 7A of the Threatened Species Conservation Act 1995.

10 BIOBANKING AGREEMENTS

Council has not been notified by the Director-General of the Department of Environment, Climate Change and Water of an agreement issued under Part 7A of the Threatened Species Conservation Act 1995.

11 BUSHFIRE PRONE LAND

The information currently available to Council indicates some or all of the land is shown as bush fire prone land according to the Act.

12 PROPERTY VEGETATION PLAN

This land is not subject to a property vegetation plan under the Native Vegetation Act 2003.

NOTE: The advice provided in this section is based on notification by the Hunter Central Rivers Catchment Management Authority of the approval of a plan. Further information about property vegetation plans should be obtained from that Authority

13 ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Council has not been notified of an Order issued under the Trees (Disputes between Neighbours) Act 2006.

NOTE: This advice is based on information provided by the Land and Environment Court.

14 DIRECTIONS UNDER PART 3A

Not Applicable

15 SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

Council is not aware of there being a valid Site Compatibility Certificate issued by the director-General of the Department of Planning in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning.

16 SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE

Council is not aware of there being a valid Site Compatibility Certificate issued by the director-General of the Department of Planning in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning.

17 SITE COMPATIBILITY CERTIFICATES FOR AFFORDABLE RENTAL HOUSING

Council is not aware of there being a valid Site Compatibility Certificate issued by the director-General of the Department of Planning in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning.

18 CONTAMINATED LAND MANAGEMENT ACT 1979

Not Applicable

19 NATION BUILDING AND JOBS PLAN (STATE INFRASTRUCTURE DELIVERY) ACT 2009

Nil

For any enquiries regarding this Certificate please contact Council's Customer Contact Centre on 4350 5555.

A handwritten signature in black ink, appearing to read 'Tim Butler', written in a cursive style.

Tim Butler
Signed on Behalf of Council

LAND USE TABLE

Zone No 10 (a) (Investigation Precinct Zone) Wyong Local Environmental Plan 1991 (as amended)

1 Objectives of zone

The objectives are:

- (a) to protect native vegetation, maintain ecological processes and biological diversity within land that is under investigation for conservation purposes, and
- (b) to protect rural land that, after detailed environmental investigations, may be suitable for ecological conservation or future urban development, and
- (c) to prohibit development that it is likely:
 - (i) to lead to the premature and sporadic subdivision of land, or
 - (ii) to inhibit the potential for urban expansion in selected areas, particularly the urban fringe, or
 - (iii) to prejudice the present environmental quality of the land, or
 - (iv) to generate significant additional traffic or create or increase a condition of ribbon development on any road, relative to the capacity and safety of the road, and
- (d) to ensure that any interim development is carried out in a manner that minimises risks from natural hazards, minimises degradation of environmental values, functions efficiently, does not prejudice other economic development and does not detract from the scenic quality of rural areas, and
- (e) to allow mining to occur in an environmentally acceptable manner.

2 Without development consent

Home occupations.

3 Only with development consent

Agriculture; bushfire hazard reduction; communications facilities; community facilities; drainage; dwelling-houses; flood mitigation works; home businesses; mining; nutrient control facilities; recreation areas; roadside stalls; utility installations.

4 Prohibited

Any purpose other than a purpose included in item 2 or 3 of the matter relating to this zone.

Attachment 13 – Council’s Bushfire Mapping

Suggested Data
145 JOHNS ROAD
145 JOHNS ROAD

Search by: Address 145 JOHNS ROAD Find Clear

Results Layers Legend Close

BUSHFIRE PRONE LANDS

VEGETATION CATEGORIES

- Vegetation Category 1
- Vegetation Category 2
- Battle

WATERWAYS

Vegetary Report
Address: 145 JOHNS ROAD (45-46)
Title: LCT 27 DP699622
More Information

© Wyong Shire Council 2012 | Department of Planning Services 2012

Attachment 14 – Council’s Mine Subsidence Mapping

Expanded Dock
Home Address
Home Address
Home Address

Search by: Address 145 JOHNS ROAD Find Clear

Map Aerials Terrain

Results Layers Legend Close

MUNE SUBSIDENCE DISTRICTS

Department of Finance and Services 2012

- Hue Mar
- Swansea North Entrance
- Swansea North Entrance No 1
- Wyong

Map Information

Property Report

Address: 145 JOHNS ROAD WACHIBA

Title: LOT 27 DP63122

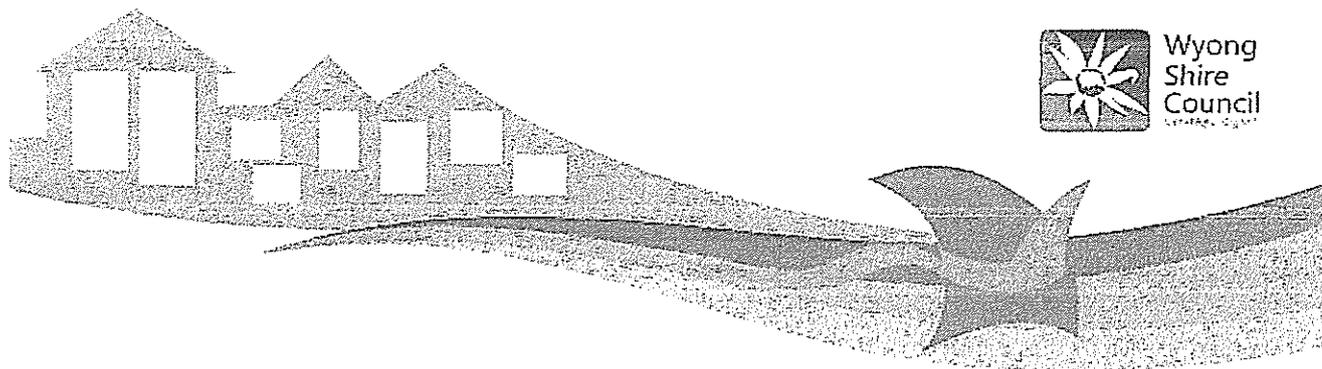
More Information

NORTH ENTRANCE

NORTH ENTRANCE NO 1

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Attachment 15 – Council’s Pre-Lodgement Meeting Minutes



Pre-Lodgement Meeting, 145 Johns Road, Wadalba
Lot 27, DP 663622, Zoned 10(A) Investigation

27 August 2012

Attendees

Lorelle Fitzpatrick (LF) – Principal, Aconsult

Ross Wellington (RW)- Private Consultant, Environmental

Barry Hunt (BH) – Private Consultant, Surveying

Mark Dowdell (MD) – Principal Development Design Engineer,
WSC

Vanessa McCann (VM) – Ecologist, WSC

Ken Gerschler (KG) – Principal Development Planner-Client
Management, WSC

Meeting Objective:

- Discuss history and planning issues affecting 145 Johns Road, Wadalba.
- Discuss the anticipated level of documentation that would be required by Council for Phase 1 (Planning Proposal) of the rezoning application process.

Meeting Issues and Results:

- KG welcomed parties to meeting at 11:00hrs. KG advised that Martin Johnson, Council's Manager or Land Use Planning & Policy Development was unable to attend the meeting due to an unanticipated commitment. KG advised LF that Council would calculate and bill proponents for staff resources allocated to today's meeting. LF acknowledged this.
- KG asked LF to provide background and anticipated outcome for the pre-lodgement meeting. LF advised the parties of previous discussions with Martin Johnson, inclusive of the ecological/connectivity strategic importance and it had been decided that a pre-lodgement meeting should be held.
- LF advised the parties that Council had given consent for a new dwelling to be located towards the rear of the property. The development application associated with the dwelling contained a large number of studies that could prove helpful with the rezoning application.
- KG presented several maps generated by Council's Geographic Information System (GIS) including January 2010 aerial, zoning boundaries and concept coverage for subdivision proposed immediately west of the subject property. These maps were for discussion purposes and were not tabled or shown to the externals during the meeting discussions.
- VM spoke briefly about what is typically considered by Council ecologists and identified that there was a lack of information provided in advance of this meeting.
- RW described his involvement with government in the preparation of the 2003-2004 Wyong Conservation Strategy and associated documents. RW described in detail his prior involvement as a member of the Tuggerah Lakes CMC (Precursor to the CMA) where in consultation with Council Staff, had developed the Shire-wide Wyong Conservation Strategy. RW further outlined the relationship of the 2003-2004 Wyong Conservation Strategy to the progression of development along Johns Road. RW mentioned that the current owners of 145 Johns Road were (at that time-2003) dealing with deceased estate issues and were unable to avail themselves at the assumed concurrence and the associated rezoning and potential development outcomes over the subject land although at the time it was strategically recognised and intended to apply/cover this allotment. RW explained that there could be adverse ramifications from the design of the subdivision shown on the GIS map. The subdivision is currently under assessment by Council and RW has made submissions.
- MD spoke about infrastructure issues. The subject property has some significant challenges for water and sewage service however these should be able to be overcome with adequate engineered solutions.
- MD explained that the design of suitable infrastructure would be dependent upon the intensity of future development in the area; particularly along Johns Road.
- MD identified that proposed stormwater facilities would need to consider water quality and quantity given the existence of wetland areas downstream. Wetting and drying cycles would need to be considered.
- MD suggested that Scott Duncan, Council's Senior Strategic Planner be consulted as he has significant familiarity with the Wadalba area. KG will follow up with Scott Duncan.
- Discussions returned to ecological matters. VM explained that any rezone lodgement would need to respect that the existing corridor plans remain in effect.
- LF and BH enquired if Council had a preference for a maximum number of residential lots for the subject property if it were to be rezoned. BH advised that the recent Development Application for Dwelling contained an indicative lot layout. KG advised that Council would not be able to provide a number but suggested that the proponent arrive at a number after the environmental constraints were subtracted from the gross lot areas.
- LF asked KG to ascertain the level of documentation that would be necessary to lodge the rezoning application with Council.
- KG advised parties that there would be three steps to be progressed by Council at the conclusion of today's pre-lodgement meeting. Step 1- KG to prepare and distribute minutes of the meeting. Step 2- KG would consult with Scott Duncan to get information about the issues discussed in today's meeting. Step 3- KG would prepare a recommendation for the level of documentation for submittal of a rezoning application.
- Meeting concluded at 11:56 a.m.

Actions Arising:

ACTION 1: KG advised parties that there would be three steps to be progressed by Council at the conclusion of today's pre-lodgement meeting. Step 1- KG to prepare and distribute minutes of the meeting. Step 2- KG would consult with Scott Duncan to get information about the issues discussed in today's meeting. Step 3- KG would prepare a recommendation for the level of documentation for submittal of a rezoning application.

Follow-up:

KG met with Scott Duncan on 31 August and 26 October 2012 to discuss issues brought forth from the pre-lodgement meeting.

Scott Duncan advised:

- The Wadalba Plan of Management is available on the Internet and should be considered in the application.
- Lands east of the subject property along Johns Road could eventually redevelop into residential areas. Proponent should check with NSW Department of Planning.
- The width of the wildlife corridor should be discussed with OEH staff before submitting a rezoning application with Wyong Shire Council.
- If there is a conservation offer or dedication, there will need to be clarification as to which party is to take ownership. There may be a Voluntary Planning Agreement involved and if so, details are to be provided.
- There may be aboriginal sites in this area.
- The former chicken shed on the property may have contamination issues.
- Scott Duncan advised that it might be more cost-effective if the land was rezoned as a part of the broader precinct investigation.

Recommendation:

The rezoning process at Wyong Shire Council contains three phases and it is understood that the proponent intends to submit a phase 1 planning proposal. It is recommended that the proposal include the following:

Preliminary Archaeological Investigation Report

Preliminary Phase 1 & 2 Contaminated Land Assessment

Preliminary Traffic Matters Report

Preliminary Bushfire Assessment

Ecologic Assessment

It is further understood that there may be existing reports and associated documentation that could be relied upon to support the phase 1 planning proposal. As the phase 1 planning proposal is a "gateway" application, Council will consider previous information provided it is logically referenced and explained.

Council does possess a large number of records that may relate to the subject and adjoining properties. To obtain copies, please visit Council's website at www.wyong.nsw.au to obtain the appropriate access to information forms.

Finalised Minutes 26 October 2012

By K. Gerschler

PART 5 COMMUNITY CONSULTATION

Typically, a Gateway Determination will specify the community consultation that must be undertaken on the Planning Proposal. The consultation will be tailored to specific proposals.

It is noted in the document "A Guide to Preparing Local Environmental Plan's" low impact proposals typically have an exhibition period applied of 14 days. All other Planning Proposal's (including proposal to reclassify land) attracts an exhibition period of 28 days.

The low impact planning proposal is considered to be a Planning Proposal that, in the opinion of the person making the Gateway Determination is:-

- Consistent with the pattern of surrounding land use zones and/or land uses;
- Consistent with the strategic planning framework;
- Presents no issues with regard to infrastructure servicing;
- Not a *Principle Local Environmental Plan*;
- Does not reclassify public land.

In accordance with "The Guide to Preparing Local Environmental Plan's", we submit that the Planning Proposal before Council is considered to be a *low impact proposal* and should be exhibited for a period of 14 days.

We note public exhibition of the Planning Proposal is generally undertaken in the following manner:-

- Notification in the newspaper that circulates in the area affected by the Planning Proposal;
- Notification on the website of the relevant Planning Authority, in this case, Wyong Shire Council;
- Notification in writing to affected and adjoining land owners, unless Council is of the opinion that the number of land owners makes it *impractical* to notify them.

Council has the ability to undertake additional consultation if this is deemed appropriate or necessary. This may include but is not limited to broad consultation by letter, open days or public forum.

We note the written notice must:-

- Give a brief description of the objectives or intended outcomes of the Planning Proposal;
- Indicate the land affected by the Planning Proposal;
- State where and when the Planning Proposal can be inspected;
- Give the name and address of the Council for the receipt of submissions;

- Indicate the last date for submissions;
- Confirm whether the Minister has chosen to delegate the making of the Local Environmental Plan to Council.

During exhibition period, the following material will be made available for inspection:-

- The Planning Proposal, in the form approved for community consultation by the Gateway Determination;
- The Gateway Determination;
- Any information or technical information relied upon by the Planning Proposal.

We note that Community Consultation will only be considered complete when Council has considered any submissions made concerning the proposed Local Environmental Plan and the report of any public hearing into the proposed Local Environmental Plan (Environmental Planning & Assessment Act, 1979-Section 57(8)). We note that the plan making process does not require community consultation be undertaken prior to a proponent lodging a request with Council to prepare a Planning Proposal. On that basis, at this point of the Planning Proposal, community consultation has not been undertaken however, we await Council's advice considering whether it is appropriate to seek the general views of the community to assist in further defining the intent of the Planning Proposal prior to submitting it to Gateway.

In accordance with best practise, a pre-lodgement consultation was carried out with Council as the relevant planning authority as it considered that the proposal to rezone the subject site for the purposes of conservation and residential land is considered to be significant in order to ensure the on-going functionality of the Wadalba Wildlife Corridor.

Attachment 5b

Ecological Assessment

145 Johns Rd, Wadalba

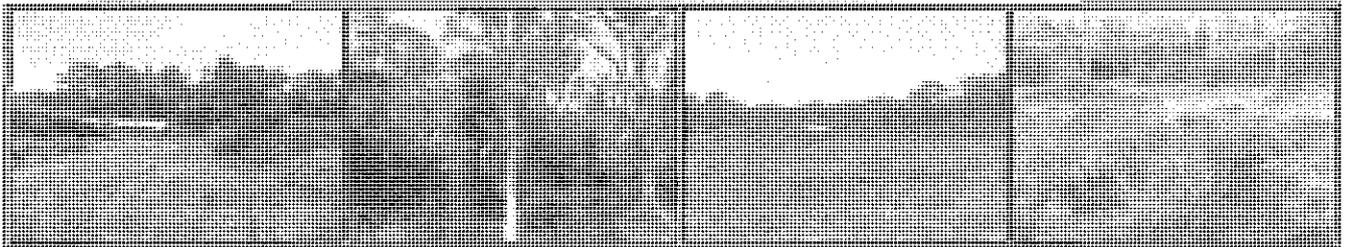
**Ecological Assessment for a Proposed Rezoning
Application**

**145 Johns Road, WADALBA, NSW
WYONG LOCAL GOVERNMENT AREA**

by

Ross Wellington

January 2012



AES - Australian Environmental Surveys



**10/138 Ettalong Beach, NSW
0407 489 489**

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1 Introduction and Background

This report documents the ecological implications determined via assessment for a potential future development outcome on 145 Johns Road (Lot 27 DP 663622), Wadalba, NSW – the subject land.

The subject land has had a long prior history of use under the Wyong Local Environment Plan, 1991 as a commercial poultry operation and previously with rural/agricultural zoning. It has operated as *Farnborough Poultry*, a commercial cage-egg business that resulted in the construction and associated development of large sheds (7), ancillary structures, caretaker's residence, internal roads, modification and diversion of streams, construction of dams, established, associated infrastructure and generally the clearing and modification of over 70% of the original native vegetation cover that would have previously existed. The other 30% of the subject land consists of previously largely cleared woodland, now regenerating, along the northern elevated area and two minor stream lines that loosely align with the eastern and western boundaries of the subject land.

The cleared and relatively flatter areas between, and surrounding, the poultry facilities were also pasture improved and used for grazing and enriched with on-site supplies of poultry manure for this purpose.

This intensive agricultural operation took place over a period of approximately 30 years or more from the late 60s-early 70s up to approximately 10 years ago when the poultry growing operation was wound back to a more domestic supply, scale of intensity. The site has consequently been allowed to deteriorate; in the sense that weed infestations and the unchecked growth of introduced/exotic pasture grasses has gone on unmanaged ever since with the site only used as a rental residence and sometime greyhound rearing and training facility.

During this time a number of other things have also happened:

1. The site has been, in large part, cleared and degraded of much of its natural ecological attributes as a result of the agricultural activities;
2. Wyong Shire has been identified as a major urban growth area in State and Regional Planning Strategies;
3. Wyong Shire Council has undertaken various strategic planning initiatives, including various environmental and ecological investigations, in support of associated strategic conservation assessment planning measures, (albeit some killed off by political intervention during that process);
4. Various development fraternity led initiatives have also been undertaken in response to some of the above government actions, these have had the intent of fast-tracking development outcomes for some selective members and/or a more cynical spoiling goal for others or for other such strategic purposes;
5. The subject land has been implicated in the identification of lands with strategic importance with respect to both wildlife corridor connectivity values as well as its potential future residential uses in keeping with the character of similar land uses present and proposed in the vicinity (current and future).



During or as an outcome of these processes the subject land was rezoned as part of amendments made to the Wyong LEP from a rural/agricultural zone to an Investigations zoning. This was done ostensibly to achieve two things: (a) to re-zone land from an existing zoning with a clear landuse potential, to a somewhat amorphous zoning with no clear cut landuse potential but also; (b) with no clear landowner expectation apparent or implied.

Obviously, to gain landowner acceptance of such rezoning required that landowners be given some hope of a potential windfall land value increase outcome, where some or all of their land (so identified), was then proven to be suitable for a more intensive residential landuse zoning.

During this process, the subject land, and several adjoining properties with similar strategic importance, were subject to a concerted effort by several developers to gain a total residential development outcome and that would also strategically thwart any simultaneous attempt to gain a connected strategic conservation outcome across most of the Shire, in effect with the apparent intent of preventing any reincarnation of the Wyong Conservation Strategy (WCS) from being possible.

These efforts were partially parried by strategic planning staff within Wyong Shire Council with assistance from the Office of Environment and Heritage (OEH, then DEC).

This resulted in the strategic use of a little used clause within the *Environmental Planning and Assessment Regulation, 2000*, which elegantly enabled both developer/landowners and both tiers of government to have outcome certainty (development and conservation) and at the same time have a costly layer of bureaucracy (SIS) removed from the process.

Consequently, the Wadalba Wildlife Corridor was established, (as a subset of the broader, but now politically foiled, Wyong Conservation Strategy). The implicated landowner/developer consortium, established at the same time, also had as an outcome a rezoning and several residential development approvals by AV Jennings, Westminster Homes and Johnson Partners, in partnership.

The subject land was originally identified as a crucial linking unit of the whole Wadalba Wildlife Corridor that had been established in 2004 (in fact the only natural linkage point possible, east of the F3, between the northern and southern portions of the whole Shire and beyond). The subject landowner was approached to participate in the consortium, so formed, to achieve the benefits of the "assumed concurrence" provided to WSC and the other consortium members.

Unfortunately, the subject landowner was terminally ill, and unable to participate beyond the initial meeting and subsequently was deceased (2002) during the later rezoning and formal Wadalba Wildlife Corridor establishment process.

The subject land was consequently rezoned to an Investigations Zone instead of to part residential and part conservation zonings, and the parcel is now held in a superannuation fund.

Consequently, mindful of all of the above, the fund is now in the process of ensuring that the subject land achieves its maximum developable outcome and at the same time gains benefit from the earlier processes and makes a fair contribution to the ongoing functionality of the strategic Wadalba Wildlife Corridor at that location.

The landowner's representatives, Bruce Grant (Company Secretary, Zaychan Pty Ltd ATF), Planners (A-Consult), Surveyors (Barry Hunt Associates Pty Ltd) and Ecologists (AES and Worldata) have met with Wyong Shire Council (several times), NSW Planning and Infrastructure, NSW Office of Water



and Office of Environment and Heritage. These meetings primarily endeavoured to gain some insights into the collective preferred option of these agencies with respect to the design and ideal width of retained or potential corridor connectivity values provided by the subject land in its strategic location. Unfortunately, we were unable to be provided by these agencies with necessary details in this respect. What advice was forthcoming amounted, in effect, to advising the subject landowners to plan and design (on its land) and on everyone else's behalf, the strategic 'intra' or 'sub-regional' wildlife corridor to maintain the connectivity for the whole regions biodiversity, as well as determine any constraints to this connection that a rezoning footprint on part of the land might cause.

Consequently, the subject land owners have done a number of things:

- Submitted a Development Application for a single dwelling, the only permissible use under the existing amorphous Investigation Zoning that might value add to the property. After a somewhat tortuous and overly onerous assessment process for what was only a single dwelling application that DA has now been approved (DA No. 713/2011 approved on the 16th of May, 2012);
- Immediately made comment on an advertised pending Development Application on the adjoining property to the west, as it was viewed as not having conformed to the "assumed concurrence" by way of footprint concordance nor having met associated assumed concurrence conditions or the underlying tenet of 'maintained ongoing corridor functionality' enshrined in the original NSW government assumed concurrence agreement; approval of this DA, with no other strategic action by WSC, was considered likely to result in severing and cessation of any corridor functionality once constructed and also, as it stands, potentially illegal;
- Sought a formal partnership with the Hunter Central Rivers Catchment Management Authority to improve the values of the proposed conservation zone (corridor) subject land components for the obvious benefit of regional biodiversity conservation and in doing so demonstrate this proponents bone fides and intent with respect to ensuring corridor functionality.

Subsequently, a further meeting with WSC (27th of August, 2012 in Council offices) was held and at this meeting a number of things were discussed including, all the above background, of which many of the current staff were totally unaware. As a consequence of this final meeting the subject landowner and representatives were invited by Wyong Shire Council to provide an application via the new 'Gateway Process' for a rezoning application of the subject land to be progressed. The landowner was also advised that the level of ecological investigations and other assessment documentation provided with the original single dwelling DA was considered adequate for this process to occur.

This report primarily documents the ecological values of the subject land as well as its potential corridor connectivity values and wider values for conservation. It identifies the legislative and policy framework within which this rezoning application sits and also elaborates elsewhere on the associated historical, and at times complex, sequence of events alluded to briefly above.

It is against this backdrop that this ecological assessment report has been prepared to re-document the ecological values of the subject land primarily using the earlier survey findings and assessments (Worldata, 2011; AES 2012).



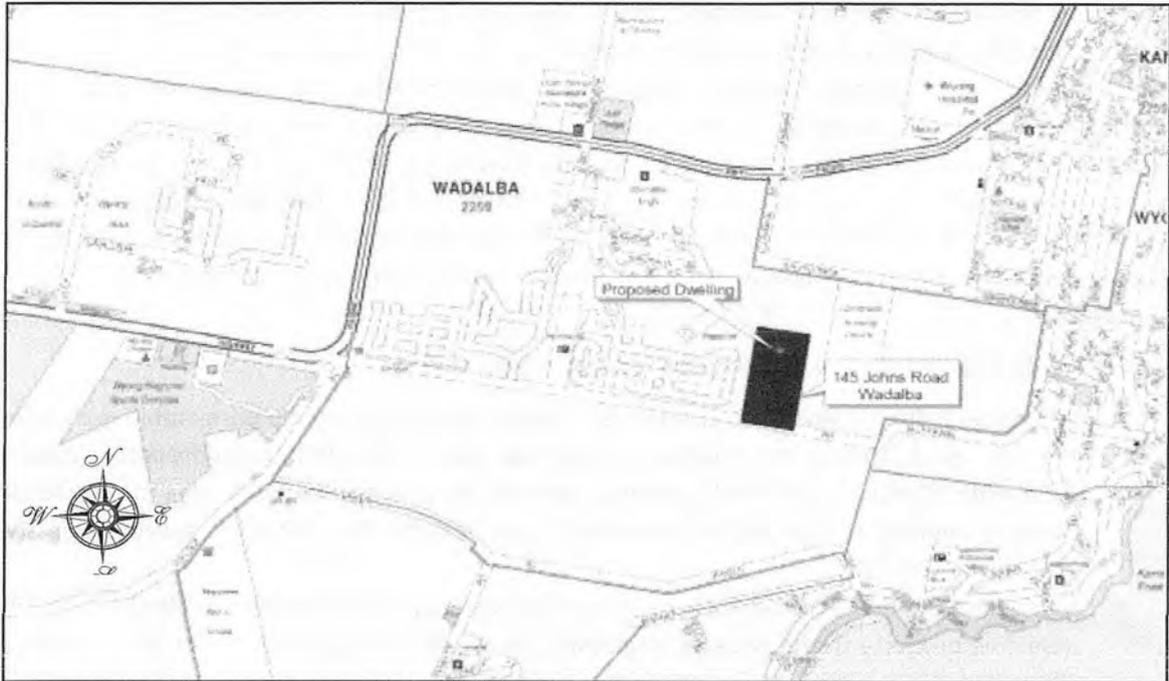


Figure 1 depicts a locality map of the subject land within Wyalong Shire.

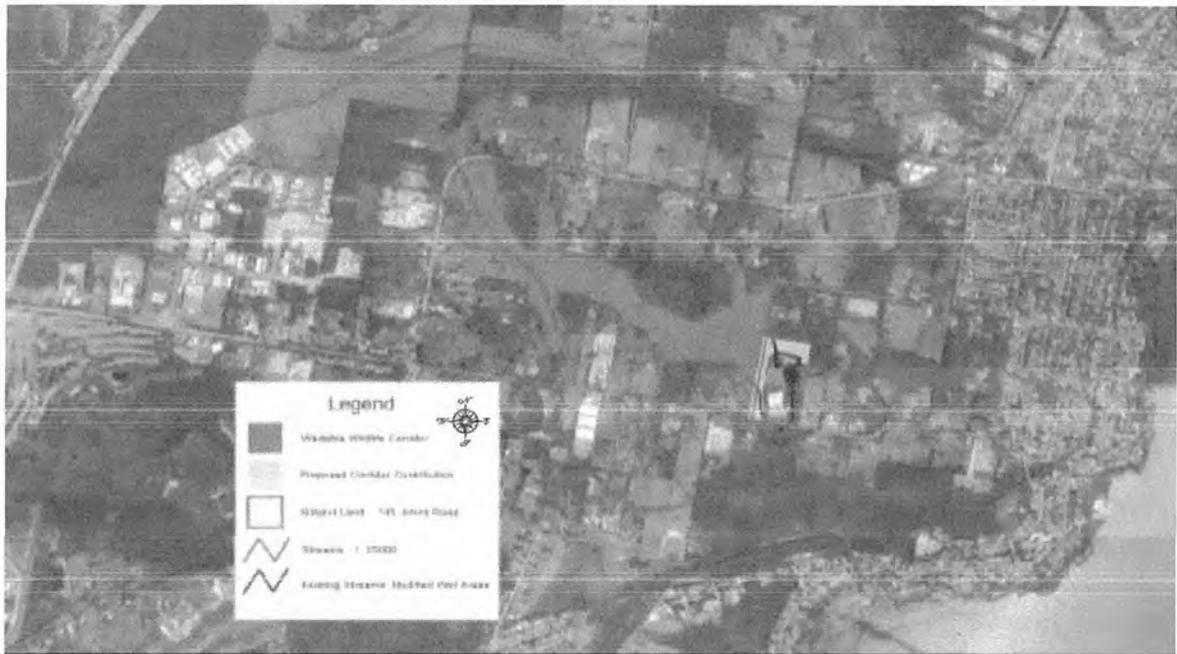


Figure 2 identifies the subject land and the Wadalba Wildlife Corridor



Figure 3 depicts the proposed rezoning footprint with the areas proposed for future residential and conservation zoning with approval

2 Site Description and Location

The land is a 9.32 ha parcel located at 145 Johns Road Wadalba, NSW in the Wyong Local Government Area (LGA), Lot 27 DP 663622, hereafter – the *subject land* (Location Map - Figure 1). The subject land is located within Precinct 8b and is zoned 10(a) *Investigation Precinct Zone*, under *Wyong Local Environmental Plan, 1991*. The subject land, and other surrounding and interconnecting parcels, have had remnant native vegetation fragmented over time because the predominant, generally prevailing land use in the surrounding area, has been, until recently, rural-residential and lifestyle living. Much of the surrounding area therefore has been cleared over time or under scrubbed, which is typical of this form of development. Some native vegetation still remains along steeper sections of the Precinct (including the northern part of the subject land) as well as along minor riparian corridors.

The subject land, by contrast, has been used for many decades as an intensive poultry farm operation (cage egg production) formerly known as *Farnborough Poultry* but most of the large production sheds are now utilized as storage sheds or have been partially dismantled to footing/foundation level. The majority of the subject land has been cleared and maintained cleared/slashed since the commencement of the poultry operation in the 1960s. Consequently, it is mostly devoid of native vegetation except for that which remains or has regenerated along the small (1st order) and modified drainage lines that border the subject lands western and eastern boundaries as well as the elevated area of its northern boundary. The eastern drainage line has been historically

the most heavily modified with dam construction and total diversion of the upper parts of the creek line (Figure 3).

The landowner – Zaychan Pty Ltd, recently commissioned an overall ecological assessment (Worldata, 2011) in support of a single dwelling, (permissible under the current Wyong LEP 1991), as well as to support other possible proposals such as subsequent rezoning and residential subdivision development. Following review of this document Wyong Shire Council requested further information with respect to the implications of the location of the single dwelling building envelope and the potential implications of its placement on possible future site uses - both for future residential development and potential conservation corridor contributions.

Council, in its consideration of the single dwelling DA, conceded that the subject lands landuse capability included components of the site as having potential for both these uses. Furthermore, in its correspondence, Council also required that additional information be provided on a further specific habitat assessment of the vegetated areas with respect to Squirrel Gliders *Petaurus norfolcensis* habitat values present and/or any indication of utilisation of the site by that species. Consequently the landowners engaged Australian Environmental Surveys (AES) to provide this further information and to further provide a specific survey outcome for the target species (AES, 2012). Just prior to this latter, supplementary ecological investigation some Lantana control measures were undertaken by the landowner that provided access to a previously inaccessible constructed 'farm' dam located on the eastern drainage line. This dam has a fringing border of Typha and other emergent macrophytes and so during the supplementary targeted threatened species survey and assessment an additional threatened species was also assessed as a prudent measure. The additional species surveyed and assessed, was the threatened Green and Golden Bell Frog *Litoria aurea*, which had been previously detected to the immediate west of the Pacific Highway and also at Pollock Avenue to the south, (AES, 2012).

During the single dwelling DA process, the proponent had several meetings with Wyong Shire Council staff in an effort to ascertain Council's wider views/vision for future landuse in the precinct and hence for the subject land as well. The intent of the sought advice was to assist the proponent in designing a parsimonious future development direction for the site and, at the same time, satisfy other strategic considerations such as wildlife corridor connectivity and residential development potential, and through this, the subject lands possible integration with existing and other future adjoining residential developments. As no such advice was forthcoming the proponent sought and succeeded in having meetings with NSW Department of Planning and Infrastructure (DoPI), NSW Office of Water (NOW) and the Office of Environment and Heritage (OEH). Each of these agencies formally responded with the standard advice that the matter was a decision for Council, despite recognising/conceding informally the strategic importance of components of the subject land for wider regional strategic conservation planning. In particular, this significance relates to the effective workability or otherwise redundancy of the recently approved North Wyong Structure Plan, the associated Central Coast Regional Strategy and the Central Coast Regional Conservation Strategy, under development by OEH, as well as other State and National strategies and initiatives. The implications and significance of the subject land's strategic position are further expounded upon and discussed elsewhere herein within a review section on corridor ecology, strategic connectivity conservation and climate change adaptive strategies at all scales. This overview has been prepared



to assist with this specific assessment process given the lack of any similar (available) analysis by government for the locality.



Figure 4 site aerial view and proposed new zonings

3 Legislative, Regulatory, Planning and Policy Framework

A number of Acts, Instruments and Policy and procedural documents are implicated by this proposal and have been given due consideration in undertaking this study in relation to the proposed landuse capability assessment.

3.1 *Environment Protection Biodiversity Conservation Act 1999 (EPBC Act - Commonwealth)*

The Commonwealth (EPBC Act) provides a national scheme for protecting the environment and conserving biodiversity values – deemed Matters of National Environmental Significance (NES). Approval from the Commonwealth Environment Minister is required under the EPBC Act if an action (which can include a project, development, undertaking or activity) will, or is likely to, have a significant impact on matters considered to be of national environmental significance (NES). The Commonwealth has prepared Significant Impact Guidelines (SIG) for the threatened Green and Golden Bell Frog (GGBF) (EPBC Act Policy Statement 3.18, DEWHA 2009a; b) that outlines matters relating to habitat quality, previous records (of the only Commonwealth listed threatened species potentially implicated during this assessment) and survey effort required to maximise detection probability. These policy documents were considered along with the broader NES EPBC Act Significance Assessment Policy (DEWHA, 2009c) and the general threatened amphibian survey and significant impact assessment guidelines (SEWPaC, 2011). The targeted survey effort replications and habitat survey undertaken during assessment of the subject land (AES, 2012) form a component of this report and addresses and gives appropriate consideration to the DEWHA requirements.

3.2 *Environmental Planning and Assessment Act, 1979 (EP&A Act - NSW)*

The NSW *Environmental Planning and Assessment Act 1979 (EP&A Act)* is the principal planning legislation for the State, providing a framework for the overall environmental planning and assessment of development proposals and/or activities. Various other legislation and instruments, such as the NSW *Threatened Species Conservation Act 1995 (TSC Act)*, are integrated with the *EP&A Act* and have been, where relevant, reviewed separately. Through its various parts and subsidiary instruments, this legislation regulates development and other activities generally within the State. The current proposal is for a change in the current zoning under the current Wyong Local Environment Plan 1991 from 10(a) *Investigation Precinct Zone* to Zone 2(a) *Residential Zone* – part and Zone 7(a) *Conservation Zone* – part (Figure 4). Wyong Shire Council will be the determining authority however recent changes to the Act provide a new gateway and review process. This report provides the assessment of the ecological values of the subject land to assist with the assessment of land capability and other values in relation to this rezoning application.

Amendments to s34A of the EP&A Act may require Council to consult with the CEO of the Office of Environment and Heritage (OEH) and other agencies prior to preparing or amending a local environmental plan if listed critical habitat or threatened species, populations or ecological communities, or their habitats, will or may be affected by amendment to the plan. This proposal requires such a plan amendment consequently requiring a gateway process assessment/application to be made.



Sections 77A EP&A Act requires the concurrence of the CEO of the Office of Environment and Heritage (OEH) where consent is required for development on either critical habitat, or likely to significantly affect a threatened species, population or ecological community, or its habitat.

Protected species being those that are not listed as threatened and which are referred to in the *National Parks and Wildlife Act 1974*. They include all native fauna and some native plant species. Protected species have been referred to in this document as incidental observations during the threatened species habitat assessments, and the extent to which they may provide food sources or habitat components for the specific threatened species under consideration and in determining the vegetation community associations present. Protected species however, can still be a relevant consideration for development assessment under s 79C (1) EP&A Act.

The primary trigger initiating the preparation of a flora and fauna assessment for a development application is "Will the proposed development affect native vegetation or fauna habitat?", and under s5A;

In the case of threatened species, populations and ecological communities, and their habitats, whether there is likely to be a significant effect on those species, populations or ecological communities, or their habitats.

This report addresses s5A as part of its formal s5A (Seven Part Test) assessment and as recommended in the OEH assessment of significance guidelines (DECC, 2007 - Appendix B).

Part 3, s55 and s56 of the Act provides for the making of a planning proposal.

- s55 requires that after a proponent (landowner or developer) makes an application for a planning proposal to be considered the relevant planning authority (usually a Council) is to prepare an explanation of and justification for the proposed instrument/amendment - the planning proposal.
- s56 outlines the Gateway determination requirements.

3.2.1 The Gateway Process

The new plan-making process for Local Environmental Plans (LEPs), commenced on Friday 2nd November 2012.

Two key changes in the process were put in place.

The first provides for applicants (namely landowners or developers) and councils to request a review of decisions made at key stages during the process of assessing and deciding on a proposal to rezone land.

The second provides for councils to finalise particular kinds of LEPs.

In July 2009, the 'gateway' plan-making process was first introduced.

This process has the following benefits:

- assists in meeting the NSW Government's target of a 50 percent overall reduction in the time taken to produce LEPs
- provides clear and publicly-available justification for each plan at an early stage
- ensures vital NSW and Commonwealth agency input is sought at an early stage

- replaces the former 'one size fits all' system, under which all LEPs large and small were subject to the same rigid approval steps, with one that better tailors assessment of the proposal to its complexity
- improves linkage between long-term strategic planning documents, such as regional and metropolitan strategies.

3.2.1.1 Steps in the Process

The gateway process has the following steps:

1. Planning proposal — the relevant planning authority (in this case Wyong Shire Council) is responsible for the preparation of a planning proposal, which explains the effect of and justification for the plan. If initiated by the Minister (rather than the local council which is mostly the case) the Minister can appoint the Director-General of the Department of Planning or a joint regional planning panel to be the relevant planning authority.
2. Gateway — The Minister (or delegate) determines whether the planning proposal is to proceed. This gateway acts as a checkpoint to ensure that the proposal is justified before further studies are done and resources are allocated to the preparation of a plan. A community consultation process is also determined at this time. Consultations occur with relevant public authorities and, if necessary, the proposal is varied.
3. Community consultation — the proposal is publicly exhibited (generally low impact proposals for 14 days, others for 28 days). A person making a submission may also request a public hearing be held.
4. Assessment — The relevant planning authority considers public submissions and the proposal is varied as necessary. Parliamentary Counsel then prepares a draft local environmental plan — the legal instrument.
5. Decision — With the Minister's (or delegate's) approval the plan becomes law and is published on the NSW legislation website.

3.2.1.2 Reviews of Decisions

In the interests of fairness and accountability, two gateway process review mechanisms were introduced in October 2012. These mechanisms allow an independent body to review some decisions by councils and the department.

In particular:

Pre-Gateway reviews: may be requested by a proponent if a council has not supported, or not made a decision within 90 days of submission of a planning proposal. These reviews are informed by advice from joint regional planning panels.

Gateway reviews: may be requested by a council or proponent following a gateway determination by the department, but before community consultation on the proposal has commenced. These reviews are informed by advice from the Planning and Assessment Commission (PAC).

3.2.1.3 Tracking a Plan or Review

An online tracking system database of all planning proposals and reviews is available to enable the proponent, authorities and the public to track to progress of a plan or review.



The Central Coast Office of the NSW Department of Planning and Infrastructure (DoPI) was contacted and Regional Planner Garry Hopkins was consulted with respect to the sites potential to contribute (in part) to the corridor values in the locality and make possible an important part of the 'Green Corridor' depicted in the North Wyong Structure Plan. The specific advice received (and as also stated within the document), was that the Green Corridor is to be considered indicative only and should not be seen as specifically implicating any specific land parcel (partly or wholly) as being enshrined in any future corridor contribution and the fine scale planning required to achieve the Green Corridor was to rest with Wyong Council.

3.3 Threatened Species Conservation Act 1995 (TSC Act - NSW)

The TSC Act provides for the Conservation of Biodiversity values in NSW. It provides for biodiversity conservation via a number of mechanisms including interaction via s5A of the EP&A Act. It provides for the listing of Endangered and Vulnerable Species, Endangered Populations and Endangered and Vulnerable Ecological Communities as well as Key Threatening Processes. Consideration and assessment of impacts on these listed entities is required for development proposals or other activities as an interaction with the EP&A Act. A major feature of the TSC Act is integrating the conservation of threatened species into the development control process under the EP&A Act Amendments to the EP&A Act (s 5A) list seven factors to be considered in deciding if there is likely to be a significant effect on threatened species, populations and ecological communities, or their habitats, and if a species impact statement is required.

This document adequately addresses these matters and TSC Act listed entities are each herein given consideration as being potential, likely or unlikely and on the basis of habitat analysis and survey. A short list of these species known or likely to occur within a radius of 5km were then subject to an expert analysis to produce the 'subject' species and therefore given a more detailed assessment as necessary (Appendix B).

Whilst the need for requesting Director Generals Requirements has not been considered warranted as a an outcome of this assessment for any of the implicated threatened species considered 'subject' (Appendix B), OEH were consulted in any case outside of its normal statutory role in an endeavour to provide the best possible planning outcome for the site and locality. Conservation Manager Richard Bath and Conservation Assessment Officer Karen Thumm were both consulted informally with respect to the subject land, its attributes, potential corridor contributions and the generally degraded and unsuitable conservation characteristics of the majority of the subject land.

3.4 Water Management Act 2000 (WM Act)

The NSW *Water Management Act 2000* has replaced the provisions of the *Rivers and Foreshores Improvement Act 1948*. The *Water Management Act 2000* and *Water Act 1912* control the extraction of water, the use of water, the construction of works such as dams and weirs and the carrying out of activities in or near water courses and water bodies in New South Wales. These 'Water sources' are defined very broadly and include any river, lake, estuary or place where water occurs naturally on or below the surface of the ground as well as coastal waters.

If a 'controlled activity' is proposed on 'waterfront land', an approval is required under the Water Management Act (s91).

3.4.1 Controlled activities

- the construction of buildings or carrying out of works;
- the removal of material or vegetation from land by excavation or any other means;
- the deposition of material on land by landfill or otherwise; or
- any other activity that affects the quantity or flow of water in a water course.

'Waterfront land' is defined as the bed of any river or lake, and any land lying between the river or lake and a line drawn parallel to and forty metres (40m) inland from either the highest bank or shore (in relation to non-tidal waters) or the mean high water mark (in relation to tidal waters). It is an offence to carry out a controlled activity on waterfront land except in accordance with an approval.

Guidelines have been provided for the protection of core riparian areas/zones (CRZs) under the Act are as outlined in Table 1 below. Specific Guidelines for certain controlled activities can be found at <http://www.water.nsw.gov.au/Water-licensing/Approvals/Controlled-activities/Controlled-activities/default.aspx>

Table 1 Water Management Act CRZ Widths

Types of Watercourses	CRZ Width
Any first order ¹ watercourse and where there is a defined channel where water flows intermittently	10 metres
Any permanent flowing first order watercourse, or any second order ¹ watercourse where there is a defined channel where water flows intermittently or permanently	20 metres
Any third order ¹ or greater watercourse and where there is a defined channel where water flows intermittently or permanently. Includes estuaries, wetlands and any parts of rivers influenced by tidal waters.	20 – 40 metres ²

¹ as classified under the Strahler System of ordering watercourses and based on current 1:25,000 topographic maps.

² merit assessment based on riparian functionality of the river, lake or estuary, the site and long-term land use.

This application of what constitutes riparian areas under the WM Act replaces the former Department of Infrastructure Planning and Natural Resources (DIPNR) categorisation of watercourses (ie: Category 1, 2 and 3 which was based on a Riparian Corridor Management Study (DIPNR, 2004).

The riparian areas that occur on the subject land are first order tributaries mapped in accordance with 1:25 000 map sheet (Gazetted Stream, see Figure 3) but are not further discussed in relation to the WM Act other than in relation to their potential to provide habitat values for certain species and for wildlife connectivity value. Nevertheless, possible future works/development that may follow a rezoning will need to give due consideration to the various Guidelines as they relate to potential triggering of a controlled activity under the WM Act. The NSW Office of Water, within the Department of Primary Industries (DPI), currently administers the WM Act and Algis Sutas of the



Central Coast NOW Office in Gosford has been informally consulted about the subject land and the current proposal.

3.5 *Wyong Local Environment Plan 1991*

The Wyong Local Environmental Plan 1991 (LEP), (WSC 1991) outlines allowable development within each landuse zoning and any other special provisions. The plan provides definitions for understanding what land uses and building/development types are allowed on any particular piece of land. It also provides planning controls that may apply to a particular site, such as properties that have a heritage listing or important environmental and other significant values.

Planning Reforms implemented by the NSW State Government has required each council in NSW to prepare a new LEP, which is consistent with a Standard Instrument. Wyong Council has now formulated a revised LEP to conform to the new standard instrument template (Draft Wyong LEP 2012) and which was placed on public exhibition on 9th January-2013, (along with the draft Wyong DCP 2012 and the draft Settlement Strategy). Whilst on public exhibition the draft plan is open to public comments which are required to be considered prior to the 2012 LEP coming into force following approval by the Minister for Planning and Infrastructure which will likely not be before mid 2013. Meanwhile, planning and development approvals will be subject to the existing Wyong LEP 1991 which will remain in force until the new LEP is adopted. Generally the new draft LEP 2012 will be given some consideration in the assessment of proposals but the existing LEP 1991 prevails in the interim.

Under the existing Wyong LEP 1991 the subject land is currently zoned -
Zone 10 (a) Investigation Precinct Zone

1 Objectives of zone

The objectives are:

- (a) to protect native vegetation, maintain ecological processes and biological diversity within land that is under investigation for conservation purposes, and
- (b) to protect rural land that, after detailed environmental investigations, may be suitable for ecological conservation or future urban development, and
- (c) to prohibit development that is likely:
 - (i) to lead to the premature and sporadic subdivision of land, or
 - (ii) to inhibit the potential for urban expansion in selected areas, particularly the urban fringe, or
 - (iii) to prejudice the present environmental quality of the land, or
 - (iv) to generate significant additional traffic or create or increase a condition of ribbon development on any road, relative to the capacity and safety of the road, and
- (d) to ensure that any interim development is carried out in a manner that minimises risks from natural hazards, minimises degradation of environmental values, functions efficiently, does not prejudice other economic development and does not detract from the scenic quality of rural areas, and
- (e) to allow mining to occur in an environmentally acceptable manner.

Under the current Wyong LEP 1991 it is herein proposed that the subject land be considered for rezoning into two different land use zones in accordance with that depicted in Figure 4.

The zones proposed are:

Zone 2(a) Residential Zone

1 Objectives of zone

The objectives are:

- (a) to provide land primarily for detached housing generally not exceeding a height of 2 storeys and with private gardens in an environment free from commercial and other incompatible activities and buildings; and
- (b) to provide for other uses, but only where they:
 - (i) are compatible with the residential environment and afford services to residents at a local level, and
 - (ii) are unlikely to adversely affect residential amenity or place demands on services beyond the level reasonably required for detached housing, and
- (c) to provide for home-based employment where such will not:
 - (i) involve exposure to view from any public place of any unsightly matter, or any raw material, equipment, machinery, product or stored finished goods, or
 - (ii) have a material adverse impact on residents.

Zone 7(a) Conservation Zone

1 Objectives of zone

The objectives are:

- (a) to restrict the type and scale of development which will be carried out on land possessing special aesthetic, ecological or conservation values to that compatible with such environments, and
- (b) to allow such development where:
 - (i) it can be demonstrated that it can be carried out in a manner that minimises risks from natural hazards, functions efficiently, does not prejudice other economic development and does not detract from the scenic quality of the land referred to in the objective specified in paragraph (a), and
 - (ii) it is unlikely to have a significant detrimental effect on the growth of native plant communities, the survival of native wildlife populations or the provision and quality of habitats for both indigenous and migratory species, and
 - (iii) it is unlikely to have an adverse impact on the region's water resources.

The Wyong LEP 1991 is currently supported by Wyong Shire Council's 2005 Development Control Plan (DCP), which gives additional details on particular development types. The existing DCP 2005 has been reviewed and a revised draft of the DCP (2012) has just been placed on public exhibition.

Other strategic planning has also been undertaken in recent times by the NSW Government (DoPI) in the form of the Central Coast Regional Strategy and the North Wyong Structure Plan (NWSP) (DoPI,



2010), the latter document implements the Strategy and has informed the new drafts of the LEP and DCP and will have zoning implications for the subject land in the future. The NWSP was recently approved by the Minister after a public exhibition phase and consultation between DoPI, WSC, OEH and other agencies, the Plan was approved by the Minister-Planning and Infrastructure .

Meanwhile a Shire-wide Settlement Strategy has also been placed on Public Exhibition and provides an opportunity for land use activities that may have been previously prohibited or discouraged from consideration, in appropriate locations.

3.6 Wyong Development Control Plan 2005 (DCP)

Development Control Plans apply to a specific type of development or land area and thoroughly outline guidelines and controls. NSW local government areas are required to have one Development Control Plan (DCP). Section 74C of the Environmental Planning and Assessment Act 1979 (EP&A Act) and the EP&A Regulations 2000 require the DCP to be consistent with Wyong Local Environment Plan 1991, as amended. In the event of any inconsistency, the provisions of the LEP are to prevail. Wyong Shire Council's DCP has been broken into individual chapters or sections that relate to specific areas or issues (WSC, 2005).

However the DCP does not apply to developments identified under the exemptions outlined in Part 4 of Development Control Plan No 14 - Vegetation Management; or those which are provided for by Clause 5.1 of Development Control Plan No 30 – Wetlands; or development which satisfies the minor development checklist in Council's Flora and Fauna Guidelines for Development, Development Control Plan No 13 – Interim Conservation Areas.

In any case Chapters with potential significance for the current and subsequent proposals include Chapter 13 – Interim Conservation Areas, Chapter 14 - Tree (Vegetation) Management and Chapter 30 – Wetlands - these may trigger/require specific ecological assessment reports, outside the stated exemptions.

The objective of Chapter 13 of the WSC DCP 2005 is to protect and conserve remaining natural areas and wildlife corridor opportunities until such time as detailed ecological studies have been fully completed to allow land use decisions to be made within conservation investigation lands.

The current proposal will not impact on any area that can be considered as currently contributing to any existing corridor for wildlife movement and in fact proposes to rezone as Conservation, those areas deemed as having worthy characteristics for contributing to corridor connectivity in the locality. The current proposal is for a land use zone change which will not directly impact on any vegetation, however subsequent subdivision proposals will need to consider the extent to which any vegetation removal may be required.

The objective of Chapter 14 of the WSC DCP 2005 is to provide a framework for the protection of trees and native vegetation in Wyong Shire and to set out Council's requirements with respect to the management of trees and the removal of vegetation. The amount of vegetation required to be removed in relation to this proposal is zero however potential tree/vegetation losses that may occur as a result of future subdivision proposals in areas indicated for rezoning to a residential landuse zone would be required to consider this Chapter. The current rezoning proposal has endeavoured to minimise tree losses by way of the rezoning footprint and also envisages, through concept planning,



that areas proposed for rezoning as conservation will have some vegetation rehabilitation component and some areas proposed for a change to a residential zone may be required for detention and during such concept development tree losses would be minimised and offset where unavoidable. A separate *Planning for Bushfire* Assessment Report addresses requirements under the NSW Rural Fires Act 1997 and its subsidiary planning instruments, (RFS, 2006).

The objective of Chapter 30 of the WSC DCP 2005 is to protect Wyong's natural wetland areas and maintain the ecological sustainability of all wetland functions and the conservation values of these environments for the benefit of present and future generations. The specific objectives of this chapter of the DCP are to:

- protect important wetland habitat and discourage development proposals that have the potential to fragment, pollute, disturb or diminish the environmental values of such areas;
- maintain the functions of low lying lands for the purpose of improving downstream water quality for the benefit of the Tuggerah Lakes and Lake Macquarie systems;
- encourage land use practices and environmental design measures that enhance the sustainability of wetlands functions and values; and
- provide clear information on Council's requirements for the submission of relevant environmental information for development proposals which are affected by Wyong's Wetland Management System.

The subject land contains three areas that conform to a broad definition of 'wetland' areas but are all human constructed features and not natural wetlands. These areas are depressions that have been constructed as dams or detention diversion areas and have been in situ for many decades. They were constructed as part of the existing commercial poultry farm operations. They have however become, to varying extent, naturalised over time and provide habitat for certain aquatic and semi aquatic species.

Technically they are unlikely to conform to Councils' Chapter 30 definition of natural wetland areas. The current proposal does not impact directly on any of these areas but all are implicated within the proposed zone change to a residential zoning. Concept plan development for (say) a future subdivision proposal, post rezoning, will require development of alternative detention structures to *maintain flows and provide water quality considerations*. It is envisaged that any new detention structures scoped as part of future site concept planning would include appropriate frog friendly landscape considerations (as employed elsewhere within the Wadalba Wildlife Corridor to the west) and any subdivision proposal would implement best practice with respect to Erosion and Sediment Control and Water Sensitive Urban Design (WSUD) principles.

3.7 Wyong Council Fauna and Flora Survey Guidelines for Development

Wyong Shire Council requires that a Flora and Fauna Assessment Report be prepared and submitted with:

- any application to prepare a Local Environment Plan (LEP) under Part 3
- any development application under Part 4



- or any application for any activity under Part 5 of the Environmental Planning and Assessment Act 1979 (NSW) if the proposed plan, development or activity is likely to affect native vegetation and/or fauna habitat.

Wyong Shire Council considers areas of native vegetation, dead trees, hollow-bearing trees, caves, bush rock and rocky outcrops, wetlands, streams, lakes, ponds and dams as fauna habitat requiring consideration and assessment where present.

The objectives of the Wyong Council Flora and Fauna Guidelines (WSC 1999) are to:

- Improve the quality of decision-making with regard to threatened species;
- Streamline the development application process and reduce the time needed to obtain information about flora and fauna;
- Set down the procedures for assessment of flora and fauna in rezoning and development applications;
- Standardise the quality of work by flora and fauna consultants for development applications in the NSW Central Coast area; and
- Incorporate flora and fauna issues into planning to initiate control measures and contribute to environmental protection.

These objectives give recognition to the fact that development activities have the potential to impact upon the habitat of many protected and threatened species, some of which occur within a restricted number of local government areas or even components of a single LGA such as Wyong Shire.

The lack of knowledge on the distribution of protected and threatened species may in part reflect the varied and often inadequate sampling methods. Guidelines for flora and fauna surveys provide a minimum standard, and require consultants to have appropriate knowledge, skills, experience and/or qualifications with certain threatened species. This will increase information on the distribution and abundance of these species in the Central Coast area.

The Flora and Fauna Guidelines also state:

“Where suitable habitat occurs in a study area for Squirrel Gliders, a habitat assessment must be conducted and included in the Flora and Fauna Report”.

They further state that if any threatened species, population or ecological communities are likely to occur in the study area, then applicant’s need to have regard for s5A of the *Environmental Planning and Assessment Act 1979*, which details seven factors (7 Part Test) that need to be considered to assess whether a development is likely to significantly affect the threatened species, populations or ecological communities, or their habitats.

The ecological investigations previously undertaken (Worldata, 2011; AES, 2012) provide the survey and assessment findings that address this issue through formal s5A Assessments (Appendix B).

3.8 Office of Environment and Heritage Threatened Species Survey Guidelines

The former NSW National Parks and Wildlife Service (NPWS) (then part of the Department of Environment and Conservation – DEC, *et seq.* now OEH) prepared working guidelines (DEC, 2004) for threatened species survey and assessment for terrestrial animals and plants, based on a report prepared under contract and through a series of workshops with consultants, government agencies and other relevant practitioners and stakeholders. These guidelines were developed to assist in impact assessment and management of threatened biodiversity and have relevance to any animal and/or plant survey within NSW.

The intent of the Threatened Biodiversity Survey and Assessment Guidelines is for them to be adapted to fit the requirements of individual animal and plant surveys by outlining broadly the preferred field techniques, considerations, relevant legislation, and relevant method of impact assessment for threatened biodiversity. The intent of the Guidelines is also to assist applicants, proponents, investigators and decision-makers by identifying their responsibilities, outlining relevant procedures and providing considerations for the interpretation of results.

The OEH/DEC guidelines are complemented by profiles for specific species, populations and communities as well as with specific environmental impact assessment profiles and guidelines for same. These are and have been being compiled by the OEH (and its various *priorae sequentia*) as well as by the Commonwealth. The environmental impact assessment profiles and guidelines contain ecological information to assist in the survey and assessment of individual species, populations and ecological communities. The Guidelines and profiles reflect current knowledge and are subject to review and update as new information becomes available.

The potential for a proposed development, activity or action to have a significant effect on threatened biodiversity varies from proposal to proposal and location to location. The guidelines are designed to facilitate a consistent and systematic approach when deciding whether a significant impact is likely and are to be adapted where necessary and considered as a recommended approach rather than a precise prescription as the case may be.

The surveys undertaken in support of this proposal (Worldata, 2011; AES, 2012) report on the methodology undertaken which was further influenced by consideration of Wyong Shire Council's Flora and Fauna Survey Guidelines (WSC, 1991) in combination with the OEH/DECC Threatened Biodiversity Survey Assessment Guidelines (DECC 2007) as well as species specific guidelines provided by DEC (DEC, 2005) and the Commonwealth (DEWHA, 2009a; b & c) and where relevant modified on the basis of site specifics and expert opinion as intended.

3.9 Wyong Shire Squirrel Glider Management Plan

The objectives of the Wyong Shire Squirrel Glider Conservation Management Plan are to:

- Improve knowledge and awareness of the distribution and habitat requirements of the Squirrel Glider in Wyong Shire;
- Identify threats to Squirrel Gliders in Wyong Shire;
- Clarify the conservation status of the Squirrel Glider in Wyong Shire; and
- Identify recovery actions and conservation targets for sustaining a viable population of Squirrel Gliders in Wyong Shire.



Wyong LGA (along with the adjoining Lake Macquarie LGA) is recognised for having a substantial number of threatened species however of these, most have greatest concentrations of records in other regions of the State. The Squirrel Glider however, has been found to be more abundant in Wyong Shire and Lake Macquarie than elsewhere in NSW and Wyong has the largest population currently known. Consequently, the Wyong SG population is considered to be of State and National significance because of this large size (Smith, 2002; NSW Scientific Committee, 2006).

This resulted in WSC commissioning a SG Management Plan for the LGA and which includes a habitat assessment template for use by consultants and WSC in assessing reports prepared as part of the DA assessment process.

This report gives due consideration to the Wyong Shire Squirrel Glider Management Plan and includes a habitat assessment in accordance with the Plan, Appendix B.

3.10 NSW Green and Golden Bell Frog (GGBF) Recovery Plan

Over a number of years OEH and its organisational predecessors (NPWS, DEC, DECC & DECCW) in accordance with the TSC Act and EPBC Act undertook the preparation of a National Recovery Plan for the GGBF. A draft was prepared and placed on public exhibition in 2005. This Plan is still awaiting finalisation and adoption at both levels of government but, in the interim, has undergone partial implementation. The Plan recognises that the species was at least once a significant element of the biota within Wyong LGA and notes the species occurrence across the LGA. The Tuggerah Lakes Catchment Management Committee (CMC, now part of Hunter Central Rivers CMA), recognizing the iconic status of the species, adopted the GGBF as a Catchment logo for Tuggerah Lakes, and images of which are now displayed on catchment signage across the Shire. Unfortunately the most recent confirmed sightings of the species in the LGA are some 18 years old (Wellington, 1993; DEC 2005), with the nearest observations at this time being to the west of the subject land near the Lucca Road Industrial Estate and to the south on margins of the wetland to the east of Pollock Avenue.

Due to the lack of confirmed records in more recent times WSC staff (privately consider that the GGBF is now likely extinct in the Shire (G. Staines, pers. comm.) and OEH have not proceeded with further investigations or Recovery Plan implementation initiatives until such time as the species is redetected.

Nevertheless section 69 of the TSC Act requires that Ministers and Directors General of Public Authorities take actions available to them to implement measures included in a recovery plan, on lands for which they are responsible, and are also not to make decisions that are inconsistent with the provisions of a recovery plan.

Consequently this species is given due consideration and assessment herein in relation to the current proposal and future concept plan development would also give consideration to provision or enhancement of suitable habitat for this species should existing constructed water features be modified or removed.



3.11 NSW GGBF Environmental Impact Assessment Guidelines

The GGBF Environmental Impact Assessment Guidelines (NPWS, 2003) were developed to assist authors of Species Impact Statements, development and activity proponents, and determining and consent authorities, who are required to prepare or review assessments of likely impacts on threatened species pursuant to the provisions of the *Environmental Planning and Assessment Act 1979*.

The guidelines provide information regarding determining habitat suitability, extent, survey methodology, effort and timing, among other details about the species ecology. This information is framed towards assisting decision makers and environmental consultants in both providing and considering information relevant to development applications. The EIA Guidelines for the GGBF are also provided as an appendix within the GGBF Recovery Plan (DEC, 2005).

These guidelines (in conjunction with expert opinion) were given consideration in the survey methodology and assessment undertaken for this proposal and are further discussed elsewhere herein.

3.12 EPBC Act Significant Impact Guidelines for the Vulnerable Green and Golden Bell Frog (Litoria aurea)

The Green and Golden Bell Frog (*Litoria aurea*) is listed vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This policy statement is intended to provide guidance for stakeholders in determining whether a proposed action is likely to have a significant impact on the species. The policy statement consists of two documents the key elements of which were developed during an expert workshop in 2008 attended by scientific experts, State and Territory Threatened Species Officers and environmental consultants. The two documents (DEWHA 2009a; b) should be read in conjunction with DEWHA 2009c. The key elements of this policy statement were formulated with input from scientific experts, State and Territory threatened species officers and environmental consultants.

The recommendations contained within these documents were considered (along with expert opinion and site specifics) in undertaking the targeted surveys and habitat assessment for this species in this report.

3.13 North Wyong Structure Plan

The draft North Wyong Structure Plan (NWSP – DoPI, 2010) is a strategic planning document that flows from the Central Coast Regional Strategy (Regional Strategy, 2008) which seeks to protect the environmental qualities of the Central Coast by focusing the majority of future growth in existing urban areas, within North Wyong.

The Regional Strategy identified that the Structure Plan area (predominantly east of the Sydney Newcastle F3 Freeway) will accommodate the majority of the region's new greenfield development to 2031. The Structure Plan is a high-level strategic planning framework that implements the Regional Strategy and will and has guided future local planning including the revision of the new Wyong LEP 2012 and DCP 2012 and Settlement Strategy currently on exhibition.



The Central Coast region and the Wyong Local Government Area (LGA) are characterised, to some extent, by dispersed settlement, interspersed by natural features that include bushland, creeks and coastal lakes. This presents challenges for infrastructure provision and other servicing. Wyong LGA is situated between the growing metropolitan centres of Sydney and Newcastle and has been identified as a future major growth area. The region has already been identified as one of the fastest growing LGAs in the state.

The Structure Plan footprint area is located within close proximity to the centres of Gosford regional city and the Tuggerah-Wyong major town centre.

The Regional Strategy identifies a number of objectives for the Structure Plan, including:

- Identify sufficient land for housing and employment targets identified in the Regional Strategy to be met;
- Include a staging and sequencing plan to inform planning and infrastructure investment;
- Identify opportunities for new and expanded employment nodes, particularly in locations with good access to existing and planned transport infrastructure;
- Consider key infrastructure requirements to support new land release and to ensure that these areas contribute to State and local infrastructure costs; and
- Ensure future 'greenfield' development in Wyong LGA takes account of current and potential future mining issues.

The Structure Plan area is more than 11,500 hectares in size. The area includes the only future greenfield residential development precincts on the Central Coast and most of the region's potential greenfield employment precincts. The existing settlement pattern of the area comprises predominantly detached one and two storey homes in a suburban setting with several smaller retail and commercial centres.

The key constraints to the future development of land within the study area are (a) flooding and potential sea level rise, (b) biodiversity, and (c) potential and existing extractive resource areas as well as mine subsidence.

This Plan, whilst broad brush in its 'defined mapping', is intended to provide for a Green Corridor that ensures connectivity between native bushland parcels and so provides for biodiversity conservation. In the vicinity of the subject land the NWSP depicts corridor connectivity and logically continues on from the existing Wadalba Willdife Corridor. Its intent, by design, is primarily for arboreal mammals (Squirrel Gliders in particular) and birds in general (G. Hopkins pers. comm., NSW DoPI).

4 Corridors and Conservation Initiatives

4.1 General Ecological Considerations

Corridors and the connectivity of habitat they provide for wildlife are a widely recognised approach in ensuring that fauna and flora population components of any ecological community, in the broadest biological and ecosystem functionality sense, remain viable.



Viability is generally regarded as the likelihood or prospect for a given species/ecological entity to continue in the wild indefinitely or conversely to go extinct or for a given population to become locally extirpated. Population viability analysis (PVA) is a complex science aimed at calculating actual survival likelihood over some time scale. These modelled calculations/estimates are usually undertaken using software applications and computer aided interpolations. They require, as critical inputs, a detailed understanding of various aspects of the ecology and life cycle components for any given species. Such analyses require specific inputs including factors such as population dynamics, demographics, movement patterns, spatial territory/home range requirements and fecundity/K values etc. All these attributes are rarely available for any entity and consequently, to understand the likely viability of a whole system or community, at any scale, requires an understanding of the sum total of viabilities of each and every component element. It also requires consideration of the interactions between sympatric elements/species that include predator prey, symbiotic and/or other synergistic or anti-synergistic relationships. Unfortunately such a detailed understanding of a community/ecosystem is rarely, if ever, available no matter how simple the system under consideration.

Similarly, no system ever exists in total isolation of other systems, with interactions occurring to lesser or greater degree across various spatial scales (site, locality or region). All these factors may be relevant to a particular biological entity (species/population/community) that is being given consideration, usually at some specific local or regional spatial scale.

The habitats provided by any piece of land (in natural condition or otherwise) and then subsequently utilised by various wildlife elements is a consequence of such things as its size, shape, condition and historical/stochastic factors as well as, and likely most importantly, a sites connectivity to other such areas. It is also an accepted fact even by those with the most fundamental understanding of ecology, that a parcel of land will provide various biotic and abiotic factors/niche values necessary for the viability of a particular species to continue at a certain location. Coupled with this is the concomitant biological vigour, adaptability, characteristic or feature specialisations possessed by a particular species and the retained genetic variability necessary for a particular (and each and every) population of a species to breed, adapt, thrive and survive to ensure ongoing successful recruitment and hence persistence over time in a location.

Bio-geographers have traditionally endeavoured to categorise and map major global ecosystem units/types. This has usually been done to enable broad generalisations to be made about global coverage, losses and the remaining extent of each broad system type. However, in reality these categorisations are unlikely functional units and are thus usually subdivided at national, regional or local scales on the basis of either political jurisdictions or assumed/likely functionality. The subdivision of global ecosystem categories is often done on the basis of more refined vegetation community classifications. These are then often used to describe/delineate habitat preferences and make further distributional generalisations about individual species, groups of species or communities at a particular scale. Generally, most of these vegetation classifications reflect, to varying degree the underlying lithology, soils and climatic variables prevailing across some spatial scale. Where these units intersect with the ecological requirements and other limiting factors for a particular species, population or ecosystem component these can then assist in explaining or predicting a particular entities distribution across such units and used to describe or define habitat preference. These descriptions may then be used in the assessment of conservation status or



ecological impact regarding the likelihood of a species' continued existence at a particular site. That is, rarely are absolute population size or total numbers of an entity available, however based on sampled areas abundance numbers are then often utilised to extrapolate an overall measure and hence arrive at a survival risk and assign some level of threat value to either the species overall or to a local population facing some, generally human induced, risk from an activity or development.

It is against these biological functional realities that habitat for wildlife has undergone and is still undergoing significant change due to impact by humans. Such changes are primarily the result of massive human population growth and the insatiable appetite of this burgeoning population for resources, that usually translates into land area, and results in the competing interest for a particular site and thus being either retained for wildlife habitat or instead used to satisfy human needs such as living space, minerals/energy and agricultural product.

Hand in hand with direct impacts are the associated indirect impacts of factors like introduced species (including pathogenic species) that have occurred across the globe and particularly in Australia, contamination/pollution of air, soil and water, as well as the edge effect impact on retained wildlife habitat where it persists and abuts adjacent to other human activities. These and other threatening processes are generally either caused or exacerbated by human activity. Coupled with these is the retained capacity of wildlife populations, primarily through retained population genetic variability, to adapt to these altered/degraded/simplified environments. Such adaptive capacity is vital, particularly in the face of further potential climate change scenarios and now, a quite often fragmented habitat landscape. The prospect of such changed environments being due to an accelerated anthropogenic climate change scenario, with still yet unknown possible impacts on habitats and their unique biota that has evolved over millennia, heightens conservation concerns. Will wildlife have the genetic variability and hence adaptive capacity if environments change rapidly?

Connectivity of habitat elements ie corridors are thus considered the most likely and perhaps only way highly specialised ecosystem elements will be provided with the best adaptive chance to continue to adapt, evolve, survive and remain viable in nature in the face of all these changes and threats. Ex situ measures of conserving biodiversity are in their infancy, are highly expensive and generally considered to be an option of last resort. Translocations, reintroductions and supplementation of wild populations have also been trialled but results are not in on many of these experiments.

4.2 Global Considerations

The above understandings are not new. Scientists have understood and recognised the ecological losses that have been occurring across the planet. Species extinctions have also been well documented and the losses of critical ecosystem values at a global scale have been mapped and reported. As a consequence of these concerns international organisations have become established to widely highlight these concerns, to educate the community, change attitudes and garner support internationally at all levels.

4.2.1 World Conservation Strategy

The World Conservation Strategy was one such action developed as a collaborative effort between the International Union for the Conservation of Nature (IUCN) along with the United Nations

Environment Programme (UNEP) and the World Wide Fund for Nature (WWF) with support from the United Nations Educational, Scientific and Cultural Organization (UNESCO) and its global Food and Agriculture Organization (FAO). The IUCN has an ongoing track record for leading the way globally on conservation issues.

- In 1963 the IUCN Red List of Threatened Species (also known as the IUCN Red List or Red Data List), was founded and is the world's most comprehensive inventory of the global conservation status of biological species. Its conservation assessment criteria have also been used or influenced various national and provincial 'red' lists that may be enshrined in protective legislation at various levels of some governments and thus assess the risk of extinction of species/entities within a political management unit. These lists evaluate the extinction risk of thousands of species and subspecies and the criteria used are relevant to all species and all regions of the world. The aim being to convey the urgency of conservation issues to the public and policy makers, as well as help the international community to try to help reduce species extinction.

The goals of the Red List are to:

1. provide scientifically based information on the status of species and subspecies at a global level;
 2. draw attention to the magnitude and importance of threatened biodiversity;
 3. influence national and international policy and decision-making; and
 4. provide information to guide actions to conserve biological diversity.
- In 1974 the IUCN was also involved in obtaining the agreement of its member countries to sign a Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
 - In 1980 the IUCN set about formulating and publishing a set of objectives and priorities for action to address the then identified looming crisis in biodiversity conservation (together with its partner organisations), the result being the World Conservation Strategy (WCS).

Objectives of the WCS

1. Living Resource Conservation for Sustainable Development
2. Maintenance of Essential Ecological Processes and Life Support Systems
3. Preservation of Genetic Diversity
4. Sustainable Utilisation of Species and Ecosystems

Priorities for National Action

1. National and Sub-national (State/Territory) Biological Diversity (Biodiversity) Conservation Strategies
2. Policy making and the integration of conservation and development
3. Environmental planning and 'rational use' allocation
4. Improving capacity to manage - legislation and organisation



- In 1982 (October 28th) the IUCN sought and had adopted, by the United Nations General Assembly of member nations, its World Charter for Nature. This charter proclaimed six "*principles of conservation by which all human conduct affecting nature is to be guided and judged*".
 1. That mankind is a part of nature and all life depends on the uninterrupted functioning of natural systems which ensure the supply of nutrients and energy.
 2. That essential ecological processes, life support system and diversity of life forms which are being destroyed by excessive exploitation and habitat destruction by man must be protected.
 3. That the natural resources should be used in such manner which ensures the preservation of species and ecosystems for the benefit of present and future generations.
 4. That the genetic diversity on earth should not be compromised and that the population levels of all life forms wild or domesticated must be at least sufficient for the survival and to meet this end the necessary habitats should be safe-guarded.
 5. That an optimum sustainable productivity should be maintained from the ecosystems, organisms, resources of land, marine and atmosphere so that the system or their species should co-exist.
 6. That proper measures: at; national or international; individual and collective; private or public; levels should be adopted to protect nature and promote international co-operation.
- In 1991 at the Rio Summit' (Rio de Janeiro, Brazil) the UN Conference on Environment and Development (UNCED) formulated Agenda 21 which was then ratified.

The implementation of Agenda 21 was then, and is still, intended to invoke action at international, national, regional and local levels. Some national and state governments have since legislated or 'advised' local authorities to take steps to implement the plan locally, as recommended in Chapter 28 of the agenda. One of the fundamental underlying tenets of the document is the idea or concept of Ecologically Sustainable Development (ESD). ESD is the environmental component of sustainable development. It can be achieved partially through the use of the precautionary principle; ie if there are threats of serious or irreversible environmental damage; lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. Also important is the principle of intergenerational equity; ie the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. In order for this concept or observance to flourish, environmental factors must be more heavily weighted in the evaluation of assets and services so as to provide more incentive for the conservation of biological diversity and maintenance of ecological integrity. Australia is a signatory to Agenda 21 and 85 of its municipalities subscribe to the International Council for Local Environmental Initiatives (ICLEI), an organization that promotes Agenda 21 globally. Australia's membership is second only to that of the United States.

As a direct consequence of Australia being a signatory to Agenda 21 existing national or state and territory legislation was either amended or enacted to give observance to these principles.

Amendments are still being made that refine or enable actions that contribute positively to biodiversity conservation.

- At the national level the Endangered Species Protection Act 1992 was formulated, along with further strengthening amendments to the Wildlife Protection (Regulation of Exports and Imports) Act 1982, earlier enacted to give support to CITES.
- At the state level the NSW Endangered Fauna (Interim Protection) Act 1991 was formulated and gained assent. Similar amendments/enactments were brought down across other Australian States and Territory jurisdictions.
- Subsequently, other more rigorous and encompassing Acts and associated regulations have been developed that give further support and strength to these principles and to which Australia is a signatory. These include: development of the Commonwealth Environment Protection Biodiversity Conservation Act 1999, amendments to the NSW Environment Planning and Assessment Act 1979 and development of the NSW Threatened Species Conservation Act 1995 and Fisheries Management Act 1994. More detailed accounts of these and other instruments are outlined elsewhere herein. Ongoing amendments at the state level in NSW (and within some other Australian jurisdictions) have resulted in provision of other mechanisms that enable more strategic conservation outcomes and place actual monetary value on biodiversity attributes ie Biobanking and the Biocertification of planning instruments.
- Within the Central Coast region of NSW, Lake Macquarie and Gosford City Councils are now ICLEI members and, although Wyong Shire Council is not, the NSW EP&A Act 1979, along with other State legislation interactions, mandate the application of these principles for all local government areas in the state of NSW when exercising their consent/determining authority roles and when carrying out activities themselves.

Giving scientific weight and fundamental support to many of these initiatives has been research that gives recognition to Australia being one of seventeen countries described as being 'megadiverse'. These countries constitute less than 10% of the global surface, but support more than 70% of its biological diversity (Mittermeier *et al.*, 1988; Mittermeier, *et al.* 1997; Myer *et al.*, 2005).

These studies have resulted in 17 countries (25 hot spots) being identified, representing more than two-thirds of all (known) life forms and the majority of tropical rainforests, coral reefs and other priority systems. Further refined and ongoing assessment has identified that as many as 44% of all species of vascular plants and 35% of all species, in the four primarily terrestrial vertebrate groups, are confined to these hot spots and land areas that only comprise 1.4% of the total land surface area of the Earth (Mittermeier, *et al.* 1997; Myer *et al.*, 2005).

These studies recognise that conservation initiatives are far from capable of assisting all species under threat, primarily due to lack of resourcing, and thus places a premium on prioritisation.

Such analyses attempt to identify how we can best support the most species at the least cost and that this can be maximised by identifying the 'biodiversity hotspots' where exceptional concentrations of endemic species are undergoing large losses of habitat and that by focusing on



these hot spots we maximise the conservation benefits to the greatest proportion of the species identified at risk.

4.3 National Considerations – How have Australian Governments Responded?

Australia has almost always been at the forefront in responding to global initiatives and calls for global biodiversity conservation response, the Australian Government has been and is a signatory or responding participant and supporter in all the above summits and conferences and the outcomes therefrom.

Australia has not been immune to biodiversity declines and in fact has a poor record with respect to declines and extinctions of flora and fauna species and the responsibility for the unique suite of biota that inhabit the Australian continent we share.

The crisis in Australia's biodiversity decline was first given formal National recognition when the Commonwealth Government developed Australia's first biodiversity conservation strategy *The National Strategy for the Conservation of Australia's Biological Diversity* (DEST 1996).

Following identification by the Australian Government's Threatened Species Scientific Committee (TSSC), the Australian Government announced 15 national biodiversity hotspots in October 2003 and although international biodiversity hotspots, including parts of Australia, had been identified for some time, this was the first attempt to identify and refine biodiversity hotspot areas at the national scale.

To arrive at these hotspot designations the process which took place and outcomes which followed were:

- The TSSC held a workshop and invited biodiversity experts, including representatives from conservation groups, museums and representatives from all the lead state and territory conservation and natural resource management agencies.
- The experts first identified areas with many endemic species. They then assessed each of these areas for current conservation pressures and the possibility of future threats to biodiversity. Areas with many endemic species where the levels of stress or future threat were considered to be high were identified as hotspots.
- The hotspots were identified to increase public awareness of the cost-effectiveness of strategic and timely action to conserve biodiversity. In hotspot areas, it was recognised timely intervention (ie now) may prevent long-term and irreversible loss of these areas biotic values.
- The 15 areas identified are examples of locations that contain particularly high levels of biodiversity under threat.
- It was also recognised that other locations across the country may include areas of significant biodiversity, and that these additional areas may also become a focus of the *Maintaining Australia's Biodiversity Hotspots* (MABH) Programme.

Subsequent review and revision by the National Biodiversity Strategy Review Task Group established by the Natural Resource Management Ministerial Council (NRMMC) DSEWPaC (2010), resulted in a number of priority actions being recognised among which relevant considerations here are:

Connectivity Conservation - A management approach that focuses on the maintenance and restoration of functioning natural ecosystems across landscapes and marine areas, and requires systematic conservation planning that:

- identifies management responses at multiple scales
- uses *whole-of-landscape* (or *whole-of-seascope*) approach
- takes into account the dynamics of climate change.

Connectivity conservation is built around core habitats (also known as refugia), some of which are protected in reserves, which are linked and buffered across different land uses and marine and coastal zones in ways that maintain critical ecological and evolutionary processes and thereby strengthen the resilience of biodiversity.

Connectivity corridors are elements of the landscape which, by linking otherwise isolated areas, permit movement of organisms or genetic flows across the landscape. This is considered a more general term than 'wildlife corridors', which are strips of habitat that permit specific movement of animals between otherwise isolated patches of habitat.

4.3.1 Other Commonwealth Initiatives

An Australian **Climate Change Strategy** has also been developed that (among other things) recognises the essential requirement of building and maintaining a framework of connected landscapes to maximise the adaptive response capability of wildlife to changing environments in the face of potential rapid human induced/influenced climate change.

4.3.2 Comprehensive Regional Assessment (CRA) and CRA/RFA Process

The National Forest Policy Statement (NFPS) (Commonwealth of Australia 1992) is an agreement by the Commonwealth, State and Territory Governments on broad goals for the management of Australia's forests. It provides a national policy framework which promotes the conservation and sustainable management of forests. The goals embrace the concept of ecologically sustainable development, and the aim is to manage Australia's native forests to conserve biological diversity, heritage, and cultural values, and at the same time develop a dynamic, internationally-competitive forest products industry based on native forests managed on a sustainable basis. Major elements of the NFPS include a commitment to the development of a comprehensive, adequate and representative reserve (CARR) system, and implementation of strategies to protect old-growth forests and wilderness as part of the reserve system.

To achieve this required the undertaking of Comprehensive Regional Assessments (CRAs) across various components of each State and Territory. The outcome has been the development of various Regional Forest Agreements across all states and territories.

CRAs provided a framework for each regional forest agreement (RFA) and evaluated the economic, social, environmental and heritage values of forest regions and involved consultation with the full range of stakeholder and community groups.



- The \$115 million, Commonwealth driven, CRA process added volumes to Australia's knowledge of the country's forest uses and values - from complex ecosystems to mineral deposits, heritage values and importance to tourism and recreation.
- Each RFA involved at least 50 assessment projects in disciplines ranging from biology and zoology to economics and sociology.
- The CRAs provided all levels of governments with the information needed to make long-term decisions about forest use and sustainable development.
- In NSW, Eden (August 1999), North East [Upper and Lower] (March 2000) and Southern (April 2001), RFAs were developed.

One of the included outcomes of the RFAs (particularly in NSW) was a major addition to the CARR system through conversion of State Forest areas to the formal conservation reserve system.

4.3.3 Great Eastern Range Initiative and Alps to Atherton (A to A)

The Great Eastern Ranges Initiative is a ground breaking landscape-scale conservation corridor that stretches from the Grampians in Victoria to far north Queensland.

The Great Eastern Ranges Initiative is bringing together people and organisations to focus efforts to establish a conservation corridor along the mountainous regions of eastern Australia. It is a strategic response to mitigate the potential impacts of climate change, invasive species, land clearing and other environmental stresses on an area that contains our richest biodiversity.

The Great Eastern Ranges corridor stretches over 3,600 kilometres from the Grampians in Victoria to far north Queensland, including the Great Dividing Range and the Great Escarpment of Eastern Australia. In some places it includes adjacent areas that extend to the west and east to the coast. The corridor encompasses the longest adjoining mountain forests and woodland systems in Australia. Nearly two thirds of our threatened species and three quarters of our vegetation communities are found in the Great Eastern Ranges corridor. This area also contains catchments for the most reliable rainfall in eastern Australia, and which provides clean water to over 90% of eastern Australia.

The Great Eastern Ranges Initiative is based on connectivity conservation, an approach that recognises the need for ecological processes to operate over much greater scales than previously appreciated. By assessing these processes over multiple scales and harnessing the effort of many landholders and organisations to respond strategically, we create the best conditions to preserve, restore and build resilience in our environment.

After over 200 years of human development, the landscape of eastern Australia has changed significantly. Fences, roads, dams, industrial and agricultural lands, powerlines, towns and cities dissect the country, causing natural areas to become 'islands' within which plants and animals are isolated and from which they are sometimes unable to spread or move.



As a consequence:

- many interconnected ecosystems have been fragmented and degraded;
- the landscape's capacity to maintain unique plants, animals and Aboriginal cultural heritage has been reduced;
- it is harder for ecosystems to filter and clean air, produce unpolluted fresh water and maintain soil health;

Climate change will likely have a compounding adverse effect on many species and systems.

Practical 'Connectivity Conservation' is a relatively new approach on an old recognised theme.

It sets about maintaining and improving the linkage between landscapes and habitats (by various means), to help reduce the effects of fragmentation and climate change on plants and animals. However, supportive research has been the focus of considerable effort by scientists from around the world over many years and provides irrefutable evidence that corridors that maintain connectivity also maintain biodiversity and that the converse is also true.

Consequently 'Connectivity Conservation' is the focus of the *Great Eastern Ranges Initiative*. It is a socially-inclusive process, recognising the potential for contribution by all land holders and the importance of maintaining, reconnecting and restoring habitats and ecosystems across all tenures to assist with:

- reducing the rapid rate of decline in environmental health and species extinctions;
- increasing the resilience of ecosystems so Australia's unique native plants and animals are more able to deal with a range of threats.

Connectivity can be described as the connections of habitats in the landscape, facilitating the movement of species across the landscape and between habitats. Habitat connectivity is an important outcome of conservation. It allows species and communities to progressively adjust their ranges in response to threats such as climate change. Native species and communities may find it difficult to adapt to climate change in a highly modified or fragmented agricultural or urban landscape. Science has comprehensively demonstrated habitat fragmentation results in the decline and loss of species all over the world, and is a key component of Australia's high extinction rate.

The Great Eastern Ranges Initiative (GERI) is similar to a number of projects established in other countries over the last 10 years and has itself grown from an amalgam of other component initiatives such as (among others) the Alps to Atherton project.

GERI gives recognition to the existence of the major CARR system and other large forested areas (State Forests and other Crown Land) that create/sustain major refugia, but it also identifies the gap areas and the fundamental requirement of obtaining cooperation across all other tenures to achieve connectivity conservation in an otherwise already fragmented landscape.

Furthermore, GERI recognises that varieties of corridor connection possibilities are available and serve different types of species better than others. Nevertheless some connectivity maintained is better than none and can be best illustrated by one of its conceptual diagrams borrowed (in modified form) below.



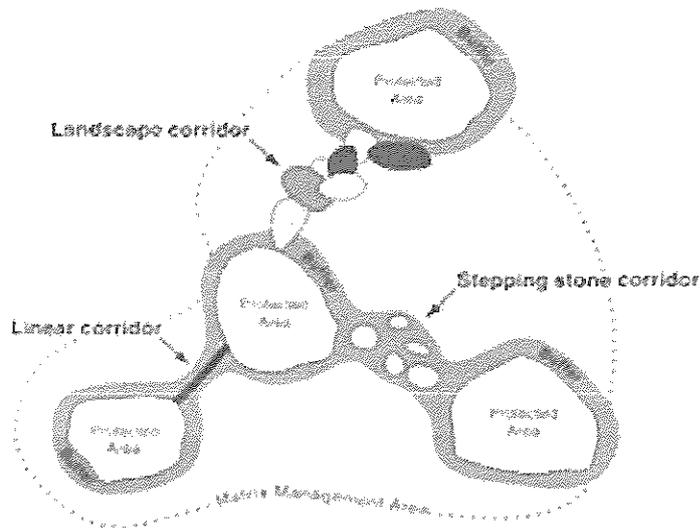


Figure 5 Corridor Models depicting variations possible to attain connectivity

5 NSW Government Initiatives

5.1 NSW Biodiversity Conservation Strategy

In 1999 the first NSW Biodiversity Strategy was released by the state government. It created a framework for a range of government agencies to work together, over a period of 4 years, to conserve biodiversity in NSW.

It enabled government, local communities, researchers and industry to work together to increase our knowledge and capacity to conserve biodiversity across NSW. Guided by the goal “to protect the biodiversity of NSW”, the Strategy presented a series of objectives under each key head for consideration, listed below.

- Identify and tackle threats to biodiversity
- Improve our knowledge of the State's biodiversity
- Involve landowners and communities in biodiversity conservation
- Manage natural resources better, for ecologically sustainable development
- Protect native species and ecosystems

This first NSW Biodiversity Strategy was the culminated work of many dedicated individuals and government agencies. The then NSW Department of Environment and Conservation (DEC) coordinated the implementation of the Strategy in cooperation with the:

- Australian Museum
- Department of Education and Training
- Department of Natural Resources
- Department of Local Government
- Department of Primary Industries (including Minerals, Agriculture, Fisheries and Forests)
- Zoological Parks Board

With the expiry of the first NSW Biodiversity strategy a discussion paper was developed and a draft NSW Biodiversity Strategy 2010-2015 was prepared by the former Department of Environment,



Climate Change and Water (DECCW) and the Department of Industry and Investment NSW (DI&I NSW). It aimed to provide a framework to coordinate and guide investment in biodiversity conservation in NSW.

The used to develop the new draft Strategy were:

- more effective targeting of existing public and private investment in biodiversity conservation to maximise outcomes through the identification of state scale priority area for investment
- use of existing regional structures and mechanisms to deliver biodiversity outcomes (such as the catchment management authorities, local government and other public authorities), avoiding the need for new arrangements
- acknowledgment of, and continuing support for, existing programs delivered by many government and non-government partners that result in significant outcomes for biodiversity conservation
- the importance of partnerships across public and private sectors to deliver biodiversity outcomes based on the best available science.

Following a period of public consultation and receipt of submissions the draft is understood to be currently awaiting finalisation.

5.2 NSW Climate Change Policy

NSW 2021 is a strategic policy that sets the Government's agenda for change in NSW. The plan provides the direction for the public sector for the next 10 years. Its goals, targets and actions will be integrated into the machinery of government, setting the priorities for funding, guiding decisions and focusing the day-to-day work of the public sector.

Its objectives are aligned to assisting local government, business and communities to build their resilience to future extreme events and hazards by helping them understand and minimise the impacts of climate change. It also provides linked actions integrated into the new (draft) Biodiversity Strategy to develop adaptive resilience in the States Biodiversity elements. Actions to deliver on this target include:

- completion of fine-scale climate change projections for NSW and make them available to local councils and the public by 2014
- work with government agencies and universities to deliver improved climate projections for NSW and the ACT.

5.3 Central Coast Biodiversity Strategy

A Central Coast Biodiversity Conservation Strategy is understood to be under development by the NSW Office of Environment and Heritage in conjunction with relevant Councils and other agencies. This document is understood to have been held in obedience for final drafting whilst other strategic planning documents/instruments have been under development. It is envisaged as being a culmination of strategic planning and will rely heavily on the work undertaken during the long history and development of the Lower Hunter and Central Coast Regional Environmental Strategy (LHCCREMS).



The Lower Hunter and Central Coast Regional Environmental Management Strategy was originally conceived in 1993 by Council Environmental Managers who felt that there was significant potential to work collaboratively, and more cost effectively, on environmental management issues of common regional concern.

It was agreed that formalising a strategic, coordinated partnership approach to these issues would provide greatest potential for effective outcomes and 1994, a steering committee was formed comprising senior staff and elected representatives from the then seven interested/member councils - Wyong, Gosford, Lake Macquarie, Newcastle, Port Stephens, Cessnock and Maitland.

Subsequently an extensive, 12 month community consultation process was undertaken throughout the region following the Agenda 21 model. This led to the finalisation of the Lower Hunter and Central Coast Regional Environmental Management Strategy (LHCCREMS). The strategy provided a comprehensive assessment and identification of key environmental management issues which required a regional approach, particularly in the light of anticipated future growth and development.

In early 1996 the strategy was endorsed by all seven Lower Hunter and Central Coast councils and \$140,000 in regional development funds was granted to resource the first year of implementation, allowing for the employment of a full time Project Coordinator hosted at Lake Macquarie Council.

In 1997, based on early successes and the perceived value of the collaborative approach, member councils committed their own funds to extend the implementation program.

By 2002 the LHCCREMS initiative had grown significantly. The Program employed a small team of five dedicated staff and attracted substantial external grant funding and partnerships each year. At around that time, the six Upper Hunter Councils (Singleton, Muswellbrook, Dungog, Gloucester, Muswellbrook, Great Lakes and Upper Hunter) and the more northerly Greater Taree Council joined the Program and it was rebadged as the Hunter and Central Coast Regional Environmental Management Strategy (HCCREMS). Hunter Councils Inc. was formed and agreed to host it on behalf of the member councils and the Program staff and operations then moved from Lake Macquarie City Council to Hunter Councils Inc., located in Thornton NSW.

This organisation still drives many of the fundamental and specific biodiversity research and planning initiatives for the region.

6 Regional Initiatives

6.1 *Wyong Conservation Strategy*

Wyong Shire Council in 1998 began working on a shire-wide conservation strategy, the Wyong Conservation Strategy (WCS). Its development triggered a plethora of ecological and other investigations in support of it. Wyong Shire Council led the way across NSW in developing such a strategic approach to the conservation of its unique biodiversity.

Studies included the development of detailed vegetation mapping, modelling and surveys for various threatened fauna and flora species and corridor identification/planning studies. It also developed targets for conservation of biodiversity elements, vegetation communities and habitat types based on interpolations of habitat extent prior to European settlement of the area. It used, then advanced,



computer based C-Plan interrogations of data to determine the most effective/parsimonious ways of achieving these targets.

In August 2003 Wyong Shire Council released its draft *Wyong Conservation Strategy*.

This document was the output of a massive amount of work by Strategic Planners within Council (Brian Bell and Scott Duncan, among others) in collaboration with experts and consultant ecologists over the five (5) intervening years since its commencement.

The intent of the strategy was to guide the future management of the Shire with respect to the protection and management of biodiversity values within the Wyong LGA.

The Strategy was devised to complement existing environmental programs in the Shire that also protect and enhance the natural environment. The Strategy provided a policy framework to allow the Shire's rich diversity of ecosystems, species and genetic diversity to be effectively conserved.

Council's State of the Environment Reports (SOE), to that point, had identified a downward trend for terrestrial biodiversity. A related project the State of the Shire (SOS), undertook a broader analysis of Wyong Shire's possible futures and considered other social and economic implications such as employment. Both these reporting processes showed that the local environment was (and still is) continuing to decline due to high population growth pressures.

The WCS recognised that protection of biodiversity and threatened species issues were the subject of Commonwealth and State government legislation but that the ultimate statutory controls created by this legislation cut across many of Wyong Shire Council's operations and put Council to the fore front of biodiversity management and decision making locally. The Wyong Conservation Strategy was thus strategically prepared to help Council meet its statutory obligations, accommodate future legislative changes and meet the demands raised by uncertainty issues flagged by powerful developer/political interests in the Shire.

The Strategy was based on detailed information collected from specific specialist studies and using Council's geographic information system, with inputs and advice from the (then) NSW National Parks and Wildlife Service (NPWS) and LHCCREMs (now Hunter Councils). The information was processed using computer software called C-Plan also developed by NPWS. The C-Plan process identified two different conservation zones that would meet biodiversity conservation targets devised for the Shire. The targets reflected the key ecological and threatened species considerations within Wyong Shire and, wherever possible, land chosen for conservation values did not possess strategic, social and/or economic importance to the Shire, or else where they were, became an exclusion from the study/strategy eg. Council owned land at Warnervale and some Councillor owned lands elsewhere.

The main strategy of conserving identified lands for biodiversity conservation was backed up by other actions, many of which were recognised as being applied, by sensitive approach, with respect to Wyong Council operations, such as planning, open space management and public education. Successful implementation of the Strategy was also recognised as requiring the co-operation of other government authorities and private land owners and need for assistance with, and promotion of, *private conservation initiatives, to be successful.*



Funding for the strategies implementation was an identified fundamental element but in the absence then of such later initiatives, like biobanking/offsetting and biocertification, funding opportunities were seen as being critical for its implementation success.

Development levies were also identified as one potential source of funding to address the environmental, social and economic programs that would be needed to deal with all aspects of the problems caused by rapid population growth. These same problems still persist.

The implementation of the Wyong Conservation Strategy was also viewed/intended to be the panacea for the otherwise outcome uncertainty perceptions clouding statutory biodiversity protection processes and other competing planning and approval processes for both Council and the development focused fraternity within the Shire.

It was absolutely clear that there was a need to go beyond the current site by site approach to conservation/development issues. The approach was strongly supported by various state government agencies and NGOs.

At the time (and to a large degree still) biodiversity issues were considered in the absence of any strategic link between individual sites and the broad conservation requirements outlined in the Strategy.

It was clear also that doing nothing was an unacceptable option as the scope and landscape of conservation issues was constantly increasing and changing with additional threatened species listings and availability of new and/or better environmental information and understandings.

The Wyong Conservation Strategy was to provide Council with a more effective framework for balancing the values of its environments against the desires of its growing and future community and the need for local economic well-being.

Specific objectives of the Wyong Conservation Strategy are (or were):

- To ensure that future planning decisions recognise conservation constraints and to ensure maximum consistency in meeting future challenges with threatened species legislation.
- To protect significant ecological communities and threatened species from habitat loss and threatening processes.
- To protect a diversity of landscapes, flora and fauna, and ecological processes.
- To protect and conserve plant communities of state, regional and local conservation significance.
- To provide and maintain important habitat linkages for wildlife movement and genetic exchange between populations.
- To ensure that the protection of biodiversity and threatened species considerations are properly integrated into Council's land use planning, environmental management, operational and other functions.
- To enhance community ownership in biodiversity conservation.

Unfortunately the WCS was then subject to the political pressures of influential landowner Counsellors and was shelved (indefinitely – Orkopolous and Beamer, 2003; Hansard, NSW Legislative Assembly, 15 October 2003, p.3933), despite having been worked on for five years by WSC staff and



contracted consultants. The strategy had identified that the expected losses to continuing urban development were estimated to be in the vicinity of 650 hectares of native vegetation and 137 hectares of regenerating vegetation (and by implication their contained biotic habitat values). But Councillors (some with an undeclared vested interest), voted successfully that the WCS would not apply to private land, effectively killing the project and its desired outcomes.

Fortuitously, one of the studies commissioned by WSC into corridor values and connectivity (Payne, 2002) identified and provided an analysis and mapping that depicted future locations of local, regional and inter-regional wildlife corridors throughout the LGA and between the Wyong LGA and other LGAs to the north (Lake Macquarie) and south (Gosford) and northwest (Cessnock). The study commissioned, provided ground truthing to determine corridor viability for final assessment.

One such corridor - WSC20 (Payne, 2002) is primarily a drainage line between Johns Road and the Pacific Highway. The corridor was intended to provide a link to habitat, which was proposed to be (in part) rehabilitated on the Warnervale floodplain and would ultimately link to the east and south to the Tacoma wetlands. Both the Masked Owl *Tyto novaeseelandiae* and the Barking Owl *Ninox connivens* are known to occur in this vicinity. The Green and Golden Bell Frog *Litorio ourea* (the Tuggerah Lakes catchment logo) is also known from west and east of the Pacific Highway and one remnant patch of vegetation is known to support a population of the Squirrel Glider, *Petaurus norfolcensis*, but was considered unlikely viable in a modelling exercise (Smith, 2002), if development, as planned within the Wadalba Urban 'River' area was to proceed (Payne, 2002). Sloping land was identified as supporting Spotted Gum-Ironbark Forest and the creek itself supported primarily a closed Melaleuca Forest (Payne, 2002).

With the WCS shelved indefinitely, an official WCS strategic planning approach became untenable at the time. However, the then DEC (now OEH) using the draft WCS mapping as a blueprint with which to work unofficially, rejected providing concurrence to the DA by DA approach of developers along Johns Road to the west of the subject land. The immediate submission of a string of DAs targeting the last remaining connective link between the north and south of the Shire was viewed cynically by some, as a concerted effort by developers to permanently destroy connectivity possibilities and thus prevent any effective resurrection of the Wyong Conservation Strategy any time in the future. However, in 2004 the then DEC, provided landowners and WSC with an offer of an 'assumed concurrence' (conditional Clause 64, EP&A Regs 2000) in relation to lands comprising the Wadalba component (WSC20) of the, by then, defunct WCS. This WCS component became known as the Wadalba Wildlife Corridor and was subject to the development and implementation of a detailed Wadalba Wildlife Corridor Management Plan (WWC MP) as one of the conditions of the assumed concurrence.

6.2 Wadalba Wildlife Corridor

In 2004 the then Department of Environment and Conservation (DEC, now OEH) in consultation with Wyong Shire Council (WSC) identified areas considered desirable, from an ecological perspective, to be set aside as a wildlife corridor within the general Wadalba area. The then DEC, in consultation with WSC and the then Planning NSW (now DoPI), held a workshop/meeting with affected landowners in an endeavour to formulate a strategic outcome. The proposal provided both development outcome certainty for landowners as well as conservation/ecological outcome certainty for WSC and DEC and with concordance from Planning NSW (DoPI).



It was determined by the DEC (now OEH) that, given the extensive ecological investigations that had been carried out by various ecologists over a number of years in formulating the footprint of the preferred *Wyong Conservation Strategy* lands across the majority of the LGA, that it would be feasible to forgo the costly and repetitive development of Species Impact Statements (SIS). Consequently, a more elegant and strategic way of providing both sides of the ecological/development outcome debate with a positive win-win outcome was formulated. It provided a more parsimonious outcome with certainty and was achieved through the use of an, at the time, little used part of the *Environmental Planning and Assessment Regulations 2000* (cl. 64) resulting in a conditional 'assumed concurrence' being issued by DEC (now OEH) to Wyong Shire Council (WSC) to streamline the process of providing development consent across a number of land parcels simultaneously. It needs also to be realised that, at the time, amendments to the *NSW Threatened Species Conservation Act 1995* (Biocertification) that would provide for such strategic outcomes to be achieved by other means, had not then been enacted.

The net effect of the assumed concurrence (provided it was exercised in accordance with the accompanying conditions) was the 'switching off' of the EP&A Act and TSC Act requirement of preparing an SIS to accompany each DA on the implicated land and any subsequent requirement to refer a DA to the Minister for the Environment for formal Concurrence under the Acts, (much to the consternation of many conservationists/development objectors lacking a detailed understanding of the Legislation and Regulations when each DA was publicly exhibited).

Conditions provided for within the *Assumed Concurrence* (among others) included:

- setting aside a prescribed area of naturally vegetated land as a corridor across all implicated land parcels;
- developing a detailed and highly specific *Wadalba Wildlife Corridor Management Plan* (WWC MP) for identified corridor lands, including the rehabilitation and maintenance of degraded (weed infested/partially cleared) components;
- establishing an associated s94 contribution plan to fund ongoing (in perpetuity) management of the corridor as well as providing for due compensation to disadvantaged landowners whose land might be required to provide a disproportional amount of land to maintain corridor functionality; and
- planning for future connectivity of the corridor with other adjoining lands to ensure ongoing functionality of the corridor and a maintained connectivity between the northern and southern parts of the whole LGA east of the F3 Freeway.

The Wadalba Wildlife Corridor Management Plan, so developed, identifies in its contained mapping an indicative series of maps that depict part or all of the subject land at 145 Johns Road being required for extending corridor connectivity of the Wadalba Conservation Corridor.

The land subject to the provisions of this Management Plan include those areas within the Wadalba Wildlife Corridor MP and are as depicted therein (Conacher Travers, 2006), and consist of approximately 46 hectares of vegetated or partially vegetated land – some requiring rehabilitation and habitat enhancement measures.

Those areas planned for addition as later stages of the corridor to the south-east and north-west were not included within the provisions of the Wadalba Wildlife Management Plan but were



depicted in an idealised way that were indicative of future possible connectivity but not necessarily in any final form or enshrined in a fixed way. These south east lands, so depicted, include the subject land and the adjoining unformed/'paper' Louisiana Road easement. These same lands are also depicted in the North Wyong Structure Plan (NWSP) as an 'idealised' strategic connection further confirming that the NSW Government, through the DoPI and OEH, has a strong interest in seeing such linkages maintained.

As part of the original discussion surrounding maintained connectivity, at the time the WWC's establishment, was an assurance and 'spirit of intent' that connectivity would be maintained and not left in abeyance for some future time that would leave the corridor non-functional for some undetermined intervening period. Obviously this would have ecological imperatives for any fauna that might be reliant on migratory movements or to achieve patch size habitat threshold requirements and/or to satisfy life cycle necessities and habitat resource needs and so remain viable. Furthermore, these considerations were assumed by the DEC/OEH to be matters that would be addressed concomitantly and in an ongoing way in perpetuity. Unfortunately this does not appear to have been the case and the strategic location of several land parcels in the locality are now in the process of being subject to development pressures without the other strategic planning considerations, and WWC MP implementation measures, that should have occurred in the interim since 2004.

The Wadalba Wildlife Corridor Management Plan (Conacher Travers, 2006), further describes the corridor situation adequately. References cited in the quotation below are located therein.

"The Wadalba Urban Release Area is bound by the Pacific Highway in the north and west, Johns Road in the south and the formed and unformed sections of Louisiana Road in the east. The Wadalba Wildlife Corridor consists of an area of land that extends from the north-west corner to the south-east corner of the Wadalba Urban Release Area.

The Wadalba Wildlife Corridor (WWC) was initially identified for retention following assessment of proposals for several residential subdivisions within the Wadalba area. Flora and fauna surveys (Lesryk 1998a, 1998b, 1998c, 1998d 1999a, 1999b; Andrews Neil 2003, Conacher Travers 2001, 2002a, 2002b, 2002c, 2003, 2004) completed within the area identified a number of threatened species, including the Squirrel Glider, as occurring within the area. As part of developer agreements with Council areas of higher habitat quality previously zoned for potential development were rezoned 7(a) Conservation to form part of the WWC. Areas of land within the east of the Wadalba Urban Release Area were rezoned 7(a) Conservation to provide for the retention of habitats and provision of a wildlife corridor for local wildlife movement to the southeast and north-west of the Wadalba area. Bushland areas within the west of the Wadalba Urban Release Area were also identified for retention under Wyong Shire Councils DCP 49 Warnervale East/Wadalba North-West".

The subject land borders to the immediate east of the unformed section of Louisiana Road and fronts Johns Road and so abuts the area of the WWC lands and the associated residential rezoned land subsequently subdivided and released in association with the establishment of the WWC. The subject land was identified in 2004 as having this strategic connectivity value.

7 Corridor Theory

Provision of natural habitat of a quality and spatial configuration suitable to species' perceptions and needs, is the basic requirement of biodiversity conservation. Accordingly, habitat loss and fragmentation are heavily implicated in the decline and extinction of biodiversity worldwide (e.g. Noss *et al.*, 1997; Bennett, 1998; Dobson *et al.* 1999; Lindenmayer and Fischer, 2006). Evolving



efforts and approaches to address these threats have recognised and promoted habitat preservation and restoration, including enhanced habitat continuity or connectivity, as conservation planning priorities (e.g. Bennett 1998; Lindenmayer and Nix, 1993; Dobson *et al.*, 1999; Lindenmayer and Franklin, 2002). It therefore makes good sense to strategically direct conservation and restoration efforts in a way that maximise the benefits to biodiversity while minimising costs, including opportunity costs to society. This pragmatism has led to the adoption of conservation strategies that focus on maintaining or building efficient habitat networks.

A widely accepted conceptual model for regional landscape conservation planning (e.g. Noss, 1983; Mackey *et al.*, 1998; Soulé and Terborgh, 1999; Lindenmayer and Fischer, 2006) describes linked protected area networks, integrating large core areas, buffers and overall landscape connectivity, including corridor links, as essential elements, within the broader context of an integrated approach to regional conservation. It is important to note that, while the most ecologically intact areas must always form the basis for protected area networks, candidate core areas, buffers and corridors need not be free of past disturbances. Indeed, the positive correlation between the productivity of a site and its propensity to disturbance (Braithwaite *et al.*, 1984; Reed and Lunney, 1990; Pressey *et al.*, 1996; Eby *et al.*, 1999) means that many important areas have either been cleared or modified. These areas usually retain their inherent productivity, may support remnants of previous species assemblages, and may be candidates for ecological restoration (Recher, 1993; Saunders *et al.*, 1993; Simberloff *et al.*, 1999). For protected area networks to be more representative, they need to incorporate certain disturbed landscapes.

The tenets of landscape ecology engender a holistic consideration of ecological processes whereby all habitat patches within a landscape are connected, that is, they exchange biotic or abiotic material at some level, irrespective of our ability to quantify it. Whether that connectivity can or should be formally characterised and mapped as corridors, as part of endeavours to deal with practical concerns is still questioned (e.g. Simberloff and Cox, 1987; Beier and Noss, 1998). However, overall opinion is heavily weighted in favour of a significant role for corridors in regional conservation planning and management (for reviews see Bennett, 1998; Noss *et al.*, 1997). Habitat connectivity is a feature of natural environments and the available evidence indicates that corridors provide habitat and connectivity benefits in many instances (Beier and Noss, 1998; Lindenmayer and Franklin, 2002), assuming that they are of suitable size and shape (minimising edge effects and appropriate edge/area ratios), habitat type, and that they connect areas of substantial habitat value (Mackey *et al.*, 1998; Perault and Lomolino, 2000; Doerr *et al.*, 2007). Corridors are deemed to represent a particularly important subset of overall connectivity, and a part of the wider landscape matrix, where conservation efforts may be focused in order to maintain, or enhance, regional conservation potential. In the context of overall landscape connectivity, the suggested benefits of corridors include (Bennett 1998; Noss *et al.* 1997; Beier and Noss 1998; Lindenmayer and Franklin 2002; Doerr *et al.*, 2007):

- Providing habitat, such as residential habitat for some species and supplementary habitat for wide-ranging species;
- Assisting species to move through the landscape, including dispersing individuals, and nomadic and migratory species;

- Increasing immigration rates to habitat isolates; for example, by maintaining or enhancing genetic interchange between, and allowing re-colonisation of, meta-population elements; and
- Facilitating the continuity of ecological processes, such as flows of energy, nutrients, biota and abiotic matter via wind, water and animal vectors.

Habitat corridors can be made up of either contiguous habitat or a combination of habitat fragments (stepping stones) interspersed with less favourable habitat (Scotts and Drielsma, 2003; Lindenmayer and Fischer, 2006). They are roughly linear landscape features and function to provide connectivity for mobile organisms between areas of habitat that would otherwise be separated by less favourable habitat. For conservation benefits to accrue, a corridor must provide functional connectivity for the species concerned, reflected by their ability to inhabit it or move through it. Mobile organisms can access and disperse across the landscape through single intentional movements or through a series of semi-random steps that may involve more than a single generation.

In essence however, corridors are generally understood as being narrow connective areas that make possible the movement of certain species from one larger area of habitat to another, the utility being that perhaps two sub optimal areas become optimal and meet ecological needs when interconnected, for some species, usually those more mobile/vagile species elements.

7.1 *Corridor Widths – How wide do they need to be?*

The utility of a habitat corridor depends on its ability to act as a conduit for species movement and an entity for species foraging or dispersal. The ability of a corridor to provide these benefits is known to increase with width (e.g. Keller *et al.*, 1993; La Polla and Barrett, 1993; Mackey *et al.*, 1998; Lindenmayer and Franklin, 2002). As a general rule wide corridors are more effective than narrow corridors because:

- They better approximate interior forest conditions and minimise edge effects;
- They may maintain vegetation integrity and flora species composition over long periods thereby increasing their long-term conservation value as compared to narrow corridors;
- They may capture a wider array of habitat types, since they are most often associated with different topographic positions in the landscape. Consequently, they are more likely to provide for the habitat requirements of specialist species;
- They have a higher probability of supporting populations of resident animals than narrow corridors do (Lindenmayer and Franklin, 2002); and
- They have a reduced likelihood for transgression of weeds from the edges (Hamilton, 2005).

Lindenmayer and Franklin (2002) stress that although wide corridors carry particularly high conservation values narrow corridors may also be important in providing supplementary habitat and movement pathways as well as supporting particular values in some instances. For example, narrow corridors still promote the movement of some species and provide habitat for others. Narrow corridors may also be useful as nuclei in programs to restore and expand corridor systems. (eg. Crome *et al.*, 1994).



The *Key Habitats and Corridors Project* (Scotts, 2003) developed for landscape scale connection of habitats within forests and the formal reserve system, used the spatial requirements of 'priority' faunal species to determine minimum benchmark widths for regional corridors (500 metres minimum width) and sub-regional corridors (300 metres minimum width). These widths were generally expanded in the *Key Habitats and Corridors Project* mapping to tailor individual corridors to the documented or estimated home ranges of specific species for which a corridor was mapped. The result was that regional corridors ranged from 500 metres to 1,600 metres in width and sub-regional corridors ranged from 300 metres to 800 metres in width (Scotts and Drielsma, 2003; Scotts, 2003).

More recently Doerr *et al.* (2007), undertook a review of the general principles for connectivity restoration in Australian landscapes. This study proposed that corridors planned as "occupied corridors" (ie those providing habitat for species and progressive genetic interchange) need to be wide (e.g 350 - 650 m) and therein, evidence is presented that this facilitates functional connectivity. Doerr *et al.* (2007) also refer to a study conducted to consider 'edge effects' on corridors (Clarke and Oldland, 2007).

Edge effects in this context are the impacts on a corridor that are imparted, or influenced, by adjoining land uses. They include impacts such as introgression/penetration by weeds, chemical drift, feral predators and also problematic native species advantaged in fragmented and cleared landscapes. In this latter respect, Clarke and Oldland (2007) studied noisy miners as an edge effect impacting other native birds in habitat fragments. They found noisy miner affects (through harassment/competition/communal behaviour etc), are felt 150-300m in from the edge, suggesting corridors need to be a minimum of 350m and perhaps even a wider minimum of 650m wide to provide for just 50m of core high quality habitat when both sides of a connective corridor are considered.

Doerr *et al.* (2007) further proposed that 'unoccupied corridors' (typically narrower) and stepping-stone habitats (e.g. small remnants patches, paddock trees, fenceline and road easement stands) contribute to functional connectivity as well through pure movement of individuals. So local corridors, ie those with a minimum width of 100 metres and currently fragmented corridors may also still contribute in a positive/effective manner.

The outcome of this analysis would suggest that objective corridor planning anywhere, but in this context within the Wyong LGA and between it and other LGAs on the Central Coast, should be developed with standard widths for corridors of different character/purpose:

- Regional Corridors: minimum 650 metres width;
- Subregional Corridors: minimum 350 metres width; and
- Local Corridors: minimum 100 metres width.

7.2 *Wyong Conservation Strategy (Chapter 7 – Corridors)*

Wyong Shire Council conducted extensive mapping and analysis as part of the development of its Wyong Conservation Strategy, and depicts and discusses potential wildlife corridors across the Shire. The locations of these corridors have been ground truthed to determine viability (Payne, 2002).

Wildlife corridors for the Wyong LGA have been prepared from several studies. These studies include:

- Yarramalong Valley (Payne, 1995).
- Forresters Beach area (Payne, 2000).
- Riparian areas (Payne, 2001).
- Inter-regional corridors (Smith, Watson and Murray, 2002).

The interregional study (Smith, Watson and Murray, 2002) also involved the use of modelling.

Overall corridor design was based upon the presence of certain threatened species, mapping of relevant habitats and habitat components and the likely successful strategies that would be needed for the protection and management of threatened and significant species within these areas.

The earlier studies were based primarily upon connections between areas where vegetation was known to be prominent and could be incorporated into a particular habitat type categorisation and, from a practicality perspective, had a particular focus on riparian habitats.

As the project proceeded the focus expanded in scope to objectively, select the design corridor components based more on specific habitat identification that needed to be connected to support the selected indicator species. Thus existing fragment mapping, evaluation of corridor routes, selection of preferred corridors and corridor protection and management mechanisms/requirements were added to the analysis.

It is against this backdrop of International, National, State, Regional and Local Government agreements, legislation and policy that has resulted in the identified and requirement for a conservation corridor initiative in Wyong. The Wadalba Wildlife Corridor is a component of the broader Wyong Conservation Strategy (now viewed as being defunct by some) but further enshrined in the North Wyong Structure Plan (Green Corridors) and the Central Coast Conservation Strategy that is in development by OEH.

8 Squirrel Gliders

The Squirrel Glider *Petaurus norfolcensis* has been identified as a species of specific conservation significance within Wyong LGA. Together with the Lake Macquarie LGA, both LGAs have experienced some of the highest development pressures in NSW. Consequently these pressures have brought significant development related investigations and often resulted in more questions than answers being provided.

The net result of this is that these LGAs have been identified as possibly the centre of distribution of some of the most significant coastal populations of the species that had previously gone unrecognised (Smith, 2002).

In some other LGAs across the state regional populations of the species have noticeably declined to the point where they have been accorded increased protection under State Threatened Species Legislation (TSC Act) and identified and listed as Endangered Populations. This has occurred within



the Pittwater LGA in Sydney's northern beaches and the Wagga Wagga LGA on the NSW south west slopes (Claridge and van der Ree, 2004).

The Squirrel Glider is a medium-sized (190-300g) arboreal marsupial whose primary method of travel is by gliding between trees using a fold of connecting skin that extends between its arms and legs. Squirrel gliders are sparsely distributed in eastern Australia from Cape York Peninsula to western Victoria, both inland of the Great Dividing Range and along the eastern seaboard. The apparently separated coastal population occurs on the coastal side of the Great Dividing Range between southern Queensland and southern New South Wales (Menkhorst *et al.*, 1988). The species is found inland as far as the Grampian Ranges in Victoria and the Pilliga Scrub and the Coonabarabran areas of New South Wales (Quinn, 1995). Squirrel gliders typically occur in dry sclerophyll forests and woodlands below about 300 m in elevation (Menkhorst *et al.*, 1988; Bennett *et al.*, 1991; Rowston *et al.*, 2002; Smith and Murray, 2003), extending into coastal forests and slightly wetter swamp forest in northern New South Wales and Queensland (Rowston *et al.*, 2002; Smith and Murray, 2003). Trees with hollows are an essential habitat component because they are used as dens for shelter/nesting and raising young (Traill and Lill, 1997; van der Ree, 2000; Gibbons and Lindenmayer, 2002). The most effective strategy to recover the Squirrel Glider is considered to be a landscape scale approach across each region where the species has a substantial distributional remnant.

The current known distribution of the species indicates that, prior to clearing for agriculture and more recently residential developments, Squirrel Gliders were probably relatively common in woodland habitats below 300 m altitude across much of its New South Wales wide distribution. Indeed, squirrel gliders across the Central Coast Hunter region would probably have interacted as a single population unit. Therefore, managing Squirrel Gliders across this regional entity is likely to be a more ecologically defensible management unit than any political or LGA boundary ie say purely Wyong Shire.

Determining the current distribution and habitat requirements of Squirrel Gliders across the Central Coast Hunter Region was/is critical to the effective management of the species. This information has been since obtained from the various surveys undertaken in support of the Wyong Conservation Strategy as well as other studies undertaken in neighbouring Lake Macquarie and even Cessnock LGAs (Smith, 2000; 2002; Smith and Murray, 2004). These studies have variously incorporated potential habitat on public land as well as on private land. The studies having included site specific and local area studies coupled with modelling interrogations of presence absence data. This has enabled predictions to be made regarding the distribution of Squirrel Gliders and occupancy thresholds as well as optimal habitat refugia size likely to support viable SG populations across Wyong LGA and into adjoining Lake Macquarie LGA. The studies undertaken, took into account habitat type and quality, patch size and levels of landscape connectivity. Other records have enriched these understandings via various environmental impact studies and additional opportunistic sightings.

A desirable future understanding would be to determine a further refined distributional understanding of SGs across the Central Coast Hunter region so as to delineate the boundaries of populations and the extent to which populations are interconnected via the dispersal of individuals and flow of genes between regional subunits ie Wyong – Lake Macquarie in particular. Smith (2002) and Smith and Murray (2004) provide some of the fundamental population and distributional

information required to plan at this regional level and these studies have already made recommendations on intra-regional corridor requirements. Information is available on the gaps between woodlands that gliders are willing/likely to cross during their nightly foraging (van der Ree *et al.*, 2003; Smith and Murray, 2004), but the propensity to move across cleared land during dispersal is unknown. Genetic techniques are now able to directly measure dispersal through the identification of dispersing individuals, by assignment testing and parentage analysis (e.g. Goudet *et al.*, 2002). These studies provide the necessary methodologies for testing 'permeability' of specific perceived or actual distributional barriers. Restriction of the movement of individuals between populations is likely to be reflected in the genome of the species, with populations on each side of potential barriers (roads, cleared land) being genetically differentiated (Gerlach and Musolf, 2000; van der Ree *et al.*, 2006).

Threat abatement is likewise a high priority for managing and recovering Squirrel Gliders across the landscape. Most threats to the persistence of Squirrel Glider populations relate to the loss, fragmentation and degradation of habitat. While broadly similar issues may threaten all populations, certain threats are likely to differ in emphasis across the landscape. The loss of large hollow-bearing trees and scattered trees in paddocks may be prolific due to changing agricultural practices (Ozolins *et al.*, 2001). In another area, the widening of roads and installation of urban landuses through rezoning has resulted in clearing of vegetation that is a likely major process threatening the species in the Wyong LGA, along with weed infestations (Lantana) and underscrubbing exercises (legal or otherwise) that remove/eliminate foraging habitat (Banksias and Wattles). Regardless, major threats to the persistence of Squirrel Glider populations need to be identified through finer-scale distributional data acquisition, ongoing site monitoring and intra-regional corridor planning and monitoring.

On the Central Coast the network of highways, freeways, and other major roads is continually being expanded both linearly and in width as new roads are built and existing roads widened. The effects of these roads and increased traffic flows on the survival and movement of SGs has progressively become more significant. Significant areas of vegetation occur adjacent to existing roads or in unused road reserves and new roads will unavoidably dissect other vegetation remnants, potentially disrupting the movement of animals along these linear corridors. Similarly, the widening of existing roads will typically result in the removal of valuable habitat for wildlife and/or reduce the permeability of these areas and increase their barrier effects. It is unequivocal that roads and traffic reduce landscape connectivity and increase rates of mortality for many species of wildlife. Species that glide from tree to tree may be strongly affected by roads and traffic if the size of the gap between trees exceeds their gliding capability. Not only are wide roads likely to reduce crossing rates, but mortality may also be increased if gliders that do cross have poor landing opportunities.

Studies already undertaken using radio-tracked individuals in the vicinity of a new dual-carriageway freeway and an existing single-carriageway highway showed through radio-tracked fixes that animals were resident adjacent to roads and that the rate of road crossing varied by sex and road width. Females were never observed to cross wide carriageways, while a single male was located on opposite sides. Both females and males were capable of crossing narrow carriageways regularly. The road-crossing behaviour of the SG population in question was also clearly affected by the proportion of gliders crossing one or both roadways of a freeway was whether trees were present or absent from the centre median. Conversely only a single male crossed both lanes of the freeway



where trees were absent from the median. The almost complete lack of crossing at sites where median trees were absent was attributed to the wider gap in canopy ie 50 – 64 m V 5 – 13 m respectively. This suggests that traffic volume, in this instance up to 5,000 vehicles per day on each roadway, and the other characteristics of the freeway studied were not in themselves complete deterrents to road crossing by SGs. This study demonstrates that retaining and facilitating the growth of tall trees in the centre median of two-way roads may mitigate the barrier effect of roads on gliders, thus contributing positively to mobility and potentially to connectivity. This information will be essential for the assessment of road impacts on gliding species using population viability models.

These findings have implications for maintaining connectivity for SGs within the Wyong LGA and most particularly for this proposal with respect to maintaining wider connectivity with the Wadalba wildlife corridor and in particular across Johns Road to the south of the subject land. Besides the preliminary findings from this study, there is a relatively poor understanding of the ecological effects of roads and traffic in Australian ecosystems and on Australian wildlife in general.

In other pertinent studies on the required home ranges of SGs several monogamous social groups that were radio-tracked for almost a year revealed that small core parts of a family groups home range was used intensively and that home ranges of group members showed a high degree of overlap which, when combined, averaged approximately 6.7 ha. Habitat dominated by Coastal Banksia (*Banksia integrifolia*), a key winter nectar food resource in some locations, was over represented in the study compared to its availability generally. Conservation measures for this species involving habitat retention or restoration must be informed by recognition of what comprises a preferred local habitat and its distribution.

For corridors to function the following factors are required to be given consideration as per Smith, 2002, Smith and Murray, 2003; Smith and Faulding, 2008)

8.1 Habitat Requirements

8.1.1 Tree hollow (habitat tree) requirements

Glider colonies require multiple habitat trees within their home ranges & change nest sites frequently. Gliders may be excluded from all but small hollows (about 3-5 cm entrance diameter) by competitors. High glider density is only achievable in habitats with abundant hollow bearing trees (>4 habitat trees/ha). Smith and Murray, 2003; van der Ree, 2000).

8.1.2 Food plant requirements

Gliders require forest with winter flowering eucalypts (eg Spotted Gum, Swamp Mahogany) or specific winter flowering understorey shrubs (*Banksia* spp), or winter gum producing *Acacia* spp. (Smith and Murray, 2003)

8.1.3 Home range

Home range size varies according to habitat quality from about 1.5-10 ha, (Smith, 2002; Quin, 1995; van der Ree, 2000)

8.1.4 Life cycle

Squirrel Gliders nest in tree hollows and live in family groups which typically comprise a mature male, one or more adult females, & their associated offspring of the season. They typically live for 3-5 years, (Murray, 2007)

8.1.5 Maximum travel distance

The longest reported distance travelled by a glider in one night through suitable habitat is about 1.6 km. The maximum distance that gliders will move through unsuitable habitat is not known, (van der Ree and Bennet, 2003).

8.1.6 Gliding distance Descent

Gliding Distance Descent angle is a minimum of 31 degrees, so distance varies with launch height. As a general rule, the maximum gap crossing distance between trees is 1.8 times launch height minus 2m (assuming that the landing point is a minimum of 2m from the ground), (Jackson, 2000).

8.1.7 Gap crossing ability

Squirrel Gliders are reluctant to come to the ground to cross gaps. Gap crossing width depends on height of trees on either side of the gap. Probability of small habitat patches separated by road or clearing gaps being occupied by gliders in Wyong district is 50% for gaps of 35 m, 20% for gaps of 100 m and close to zero for gaps >250 m wide. For practical purposes, road gaps >35 m wide are considered a potential barrier to crossing, (Smith, 2002; van der Ree, 2000).

8.1.8 Minimum habitat size

The probability of patches being occupied by gliders decreases with remnant size. Modelling predicts that density and occurrence begins to decline when patch size falls below 100-1000 ha depending on time since isolation, remnant shape and distance to nearby habitat. In Wyong, the largest known remnant of suitable habitat without Squirrel Gliders is 30 ha. Habitats of less than 4 ha are considered unsuitable for permanent occupancy, small habitats (4-30 ha) are considered at high risk of local extinction, minor habitats (30-100 ha) are considered at moderate to low risk in the short term and high risk in the long term; and major habitats (100-1000 ha) are considered at no risk in the short term (50-100 years) and low to moderate risk in the long term, (Smith, 2002).

8.1.9 Average density

Varies with habitat quality from 0-1.6 animals/ha (average Smith, 2002 0.46/ha). Factors affecting density include habitat quality, disturbance effects eg severe wildfire, and density of suitable den trees. Density estimates are given for some of the LHCCREMS (2003) vegetation communities (Smith, 2002) and where densities across the LGA are also provided.

8.1.10 Effects of fire and succession

Effects of fire vary with habitat type, habitats with winter flowering or gum producing understorey plants (*Banksia*, *Acacia*) are likely to be most affected and may only carry peak glider densities 10 or more years after fire, (Smith & Murray, 2003).

Squirrel Gliders have been the keystone species used as the primary faunal entity against which the Wyong Conservation Strategy and subsidiary strategic planning instruments/documents have been framed for implementation. Consequently the above ecological requirements for the species need to be given consideration when further developing corridor components or in undertaking restoration/rehabilitation measures within the conservation framework of Wyong and the Central Coast region generally.

9 Assessment Methodology

The assessment involved the following key steps:

- Review of previous flora and fauna studies undertaken within the study area;
- Search of the NPWS Wildlife Atlas within a 5 km and 10 km radius of the study area to determine if any threatened species, populations or ecological communities listed under the



Threatened Species Conservation (TSC) Act 1995 had previously been recorded in the study area or surrounds and produce a predictive list;

- Targeted searches for threatened species and ecological communities potentially occurring in the study area. The flora survey was undertaken during 21st September, 22nd October and 20-21 November 2009 with additional visits in June, September and December 2010, and February and May 2011. This entailed the compilation of a list of all plants species encountered using opportunistic qualitative methods rather than quantitative line transect or plot-based surveys.
- Assessment of the likely impacts of the proposal on flora and fauna within the study area including assessment under Section 5A of the EP&A Act (7-part tests) where considered necessary based on expert appraisal of habitat potential and hence likelihood of occurrence.
- The site was initially surveyed opportunistically by two persons with extensive experience in surveying bushland remnants in the Sydney Geological Basin (Richard Wells and Trevor Hawkeswood). Later inspections were also undertaken during Spring and Summer of 2010 by Richard Wells and then by Ross Wellington in the late Summer of 2011 and subsequently in early 2012. Plants were identified along random transects (random meander method) that criss-crossed the entire site over several hours each day and all plant species detected were noted.
- It was not considered necessary to undertake a quadratic survey due to the vegetative condition of the area of the subject land proposed for rezoning to residential uses being in a degraded/disturbed state and the extensive coverage provided by the opportunistic transects within the smaller areas of natural vegetation that are proposed to be retained and rezoned in an environmental conservation zone.
- At the same time targeted searches were undertaken for threatened species over the entire site by carefully searching for tracks, scats and characteristic feeding notches on trees, as well as searching for suitable micro-habitats such as hollows, rock outcroppings, logs and other habitat components. A subsequent specific targeted survey using identified preferred methodologies for the Squirrel Glider and the Green and Golden Bell Frog were also undertaken. All additional opportunistic sightings were recorded for any non-threatened fauna also present on the property.

A number of management and mitigation measures are also recommended within this report to enhance the site's suitability for both wildlife conservation and potential development outcomes.

In response to Wyong Shire Council correspondence following several meetings with WSC personnel, a specific and targeted survey and site assessment was undertaken on the subject land to satisfy WSCs requirement to provide additional information.

The additional ecological information required, primarily related to determining potential impact on Squirrel Gliders *Petaurus norfolcensis* and identification of any potential or actual habitat for that species including movement corridor/connectivity habitat and consideration of the likelihood or otherwise for development options to compromise functionality of any corridor habitat present in the future. Several possible dwelling locations were considered and a 'preferred' location was subsequently relocated to the position ultimately granted approval (see Figure 3).



Consequently, using the various guidelines, expert opinion and knowledge of the site and its locality a level of survey effort was determined.

Survey effort was therefore restricted to three diurnal and nocturnal survey replications each separated by a day to expand the likelihood of interception and hence detection of the target species.

9.1 *Arboreal Mammals*

Techniques determined as adequate for diurnal mammals, in this instance, and with previously successful outcomes for this fauna group were spotlighting, stagwatching of potential den trees following diurnal inspections for scratch marks, scats and trees with hollows as well as an assessment of suitable understorey vegetation types known to be utilised for foraging.

9.1.1 Spotlight Searches

Spotlight searches for *Petaurus* gliders should target flowering trees as these provide a source of blossom and nectar. The smaller *Petaurus* gliders are often difficult to detect by spotlight as their eyes do not reflect brightly, and they often remain stationary when in the spotlight beam (Menkhorst *et al.*, 1988). Larger gliders such as the Yellow-bellied Glider and Greater Glider are more easily detected by spotlight. The minimum power rating for a spotlight should be 50 watts or more.

9.1.2 Stagwatching

Stagwatching involves direct counts of nocturnal animals emerging from tree hollows at dusk. The technique involves observers stationed beneath large hollow-bearing dead or living trees in a defined area and recording the identity and number of emergent animals following dusk for a period of about 40 minutes. This technique is useful as it provides an accurate measure of absolute abundance, as long as all individuals emerge following dusk and all individuals in a population or group den in tree hollows (Smith *et al.*, 1989).

9.1.3 Arboreal Trapping

Arboreal trapping though potentially useful was considered unnecessary in this instance based on the almost total lack of trees with hollows and almost no suitable understorey species known to be utilised for foraging by this species. Whilst trapping techniques have been variously described in survey guidelines for arboreal mammals eg York *et al.* (1991), Meggs *et al.* (1991) and Quinn (1993; 1995), it was determined that given the paucity of high quality habitat and the tiny scale of potential impact from the development that trapping would only be employed if other survey methodologies provided a stronger indication of presence or located the species.

9.1.4 Arboreal Hair Tubes

Arboreal hair tubes can be used to detect *Petaurus ssp* but the technique is not able to distinguish between *P. breviceps*, the Sugar Glider a non-threatened species from *P. narfolcensis*, the Squirrel Glider and target of this study. Consequently this technique was not applied.

All arboreal mammals and nocturnal birds observed or heard were confirmed to species and documented.

9.2 *Amphibians*

While amphibians (frogs) were not initially an identified issue, inspection of the subject land following a Lantana removal program revealed waterbodies (artificial wetlands) that had remained



unassessed. Whilst the repositioning of the proposed dwelling location did not in any way impact even indirectly on these bodies (provided sediment and erosion and waste water management plans are implemented as intended) however a contemporaneous survey for frogs and assessment was also undertaken to ensure that the ecological assessment covered frogs and therefore would provide an adequate assessment of other subsequent proposals such as this rezoning application.

Survey methodology, timing and effort were all planned and gave consideration to the various policies and guidelines outlined above.

Diurnal Searches of emergent vegetation and ground covers, dip-netting for tadpoles and call imitation and paly back methods were applied.

Nocturnal headlamp and spotlight surveys of all the 'wetland' areas was also undertaken including searches of fringing and surrounding vegetation, surface waters and an auditory survey following call-playback and call imitation methods had been applied. Three replicate surveys were undertaken each separated by a day to maximise interception and detection opportunities in the time frame available.

These supplementary targeted fauna survey and habitat assessments were undertaken on 15th, 17th and 19th November 2012 between 1700 Hrs and 2400 Hrs AEDST on each of the three survey repetitions.

Survey methodology for Squirrel Gliders included: hollow bearing tree location, tree examination/inspection for scratch marks and scats, stag watch on dusk and spot light searches. Incidental observations of any other arboreal mammals or nocturnal birds were also recorded.

Methodology employed conformed in part with WSC survey guidelines for Arboreal Mammals (Squirrel Gliders) however did not employ tree mounted Elliot trapping as a method as it was not considered warranted and it was determined that trapping would only be employed if other survey methods had provided stronger evidence of habitat utilisation or detected the species.

The additional amphibian surveys were undertaken at two locations on the subject land because these site attributes had only become apparent after an area of extensive Lantana (*Lantana camera*) growth had been removed and made these subject land locations accessible. Survey methodology for amphibians included diurnal scans of emergent vegetation, searching of any ground cover, call imitation, dip-netting for tadpoles and auditory survey with nocturnal searches with spotlight and headlamps. This methodology was also replicated tree times contemporaneously with arboreal mammal surveys. Survey methodology conformed to guidelines for amphibian survey (DECC 2009), Green and Golden Bell Frog Survey Guidelines (NPWS, 2003; DEC 2005; DEWHA 2009a; b), these methodologies also satisfy WSC's own survey guidelines (WSC, 1999a).

10 Results of Desk Top Assessment and Initial Surveys

Due to the proposed rezoning to residential being confined almost entirely to the parts of the subject land previously used for intensive poultry operations, it was not considered necessary to undertake a full flora and fauna study of the entire 9.32 ha property as the areas that still retain



native vegetation elements are proposed for rezoning to environmental conservation and retained.

However, it was felt appropriate to provide an overall environmental assessment of the available habitats on the subject land for terrestrial flora and fauna, in particular for threatened species protected under the NSW Threatened Species Conservation Act and the various protected matters under the Commonwealth EPBC Act.

A survey of the study area was therefore undertaken aimed principally at identifying the habitats present based upon its specific flora and vegetation structure, and the survey also included targeted searches for threatened species potentially occurring in the study area, two in particular. Intensive fauna surveys for only two targeted threatened species (GGBF and SG), were undertaken during habitat inspections, due to time constraints, areas likely to be subject to future negative impact, as well as the extent of previous large scale fauna and flora studies that have been undertaken within the immediate environs of the subject property as part of the Wadalba Wildlife Corridor Project.

The results of these definitive avifaunal surveys, nocturnal surveys for amphibians and mammals, searches for reptiles, and scat and track searches have nevertheless been considered and lists of threatened flora and fauna that have been recorded from the surrounding region have also been compiled (see Tables 2-4).

The following Tables provide an overview of existing knowledge of the occurrence of Threatened species at the Regional (CMA), and Local level (known from within either a 10 km or 5 km radius of the subject land).



Table 2. Threatened Fauna and Flora and Key Threatening Processes Known or Predicted to Occur within the Wyong CMA subcatchment. K= Known to occur from previous survey records; P=No Records, but Predicted to occur due to known presence of suitable habitat in the CMA as well as specimens records from nearby regions; ncn=no common name.

FAUNA

Birds

<i>Anseranas semipalmata</i>	Magpie Goose	V	K
<i>Botaurus plicifrons</i>	Australasian Bittern	V	K
<i>Burhinus grallarius</i>	Bush Stone-curlew	E	K
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V	K
<i>Calyptorhynchus lathami</i>	Glossy Black-cockatoo	V	K
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V	K
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E	K
<i>Grantiella picta</i>	Painted Honeyeater	V	K
<i>Irediparra gallinacea</i>	Comb-crested Jacana	V	K
<i>Ixobrychus flavicollis</i>	Black Bittern	V	K
<i>Lathamus discolor</i>	Swift Parrot	E	K
<i>Lophoictinia isura</i>	Square-tailed Kite	V	P
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V	K
<i>Neophema pulchella</i>	Turquoise Parrot	V	K
<i>Nettapus coromandelianus</i>	Cotton Pygmy-goose	E	K
<i>Ninox connivens</i>	Barking Owl	V	K
<i>Ninox strenua</i>	Powerful Owl	V	K
<i>Oxyura australis</i>	Blue-billed Duck	V	K
<i>Pandion haliaetus</i>	Osprey	V	K
<i>Pomatostomus t. temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V	K
<i>Ptilinopus magnificus</i>	Wompoo Fruit-dove	V	K
<i>Ptilinopus regina</i>	Rose-crowned Fruit-dove	V	K
<i>Ptilinopus superbus</i>	Superb Fruit-dove	V	K
<i>Pyrrholaemus sagittatus</i>	Speckled Warbler	V	K
<i>Rostratula benghalensis</i>	Painted Snipe	E	P
<i>Stagonopleura guttata</i>	Diamond Firetail	V	K
<i>Tyta novaehollandiae</i>	Masked Owl	V	K
<i>Tyto tenebricosa</i>	Sooty Owl	V	K
<i>Xanthomyza phrygia</i>	Regent Honeyeater	E	K
Mammals			
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V	K
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	K
<i>Dasyurus maculata</i>	Spotted-tailed Quoll	V	K
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	K



<i>Kerivoula papuensis</i>	Golden-tipped Bat	V	K
<i>Miniopterus australis</i>	Little Bentwing-bat	V	K
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	V	K
<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	V	K
<i>Myotis mocropus</i>	Large-footed Myotis	V	K
<i>Petaurus australis</i>	Yellow-bellied Glider	V	K
<i>Petaurus norfolcensis</i>	Squirrel Glider	V	K
<i>Phascolarctos cinereus</i>	Koala	V	K
<i>Planigale maculata</i>	Common Planigale	V	K
<i>Pseudomys gracilicaudatus</i>	Eastern Chestnut Mouse	V	K
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	K
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V	K
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V	K
<i>Vespadelus trougtoni</i>	Eastern Cave Bat	V	K

Frogs

<i>Crinia tinnula</i>	Wallum Froglet	V	K
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V	K
<i>Litoria aurea</i>	Green and Golden Bell Frog	E	K
<i>Litoria brevipalmata</i>	Green-thighed Frog	V	K
<i>Litoria littlejohni</i>	Littlejohn's Tree Frog	V	K

Reptiles

<i>Hoplocephalus bitorquatus</i>	Pale-headed Snake	V	K
<i>Hoplocephalus stephensii</i>	Stephens' Banded Snake	V	K
<i>Varanus rosenbergi</i>	Rosenberg's Goanna	V	K

FLORA

<i>Acacia bynoeana</i>	Bynoe's Wattle	E	K
<i>Angophora inopina</i>	Charmhaven Apple	V	K
<i>Astrotricha crassifolia</i>	Thick-leaf Star-hair	V	P
<i>Balaskion longipes</i>	Dense Cord-rush	V	P
<i>Caladenia porphyrea</i>	Red Orchid	E	K
<i>Caladenia tessellata</i>	Tessellated Spider Orchid	E	K
<i>Callistemon linearifolius</i>	Netted Bottle Brush	V	K
<i>Chamaesyce psammogeton</i>	Sand Spurge	E	K
<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid	V	K
<i>Cynanchum elegans</i>	White-flowered Wax Plant	E	K
<i>Darwinia glaucophylla</i>	ncn	V	K
<i>Diuris bracteata</i>	Orchid	E	K
<i>Diuris praecox</i>	Rough Double Tail Orchid	V	K
<i>Epacris purpurascens</i> var. <i>purpurascens</i>	ncn	V	K
<i>Eucalyptus comfieldii</i>	Camfield's Stringybark	V	K
<i>Eucalyptus oblonga</i>	Eastern population	E Pop	K
<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	ncn	V	K
<i>Eucalyptus p.</i> subsp. <i>Parramattensis</i>	E pop.-Wyong/Lake Macquarie	E Pop	K



<i>Genoplesium insignis</i>	Variable Midge Orchid	E	K
<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Small-flower Grevillea	V	K
<i>Hibbertia procumbens</i>	Spreading Guinea Flower	E	K
<i>Maundia triglachinoides</i>	ncn	V	K
<i>Melaleuca biconvexa</i>	Biconvex Paperbark	V	K
<i>Melaleuca graveana</i>	Grove's Paperbark	V	P
<i>Prostanthera oskonio</i>	Cut-leaf Mint-bush	E	K
<i>Prostanthera junonis</i>	Somersby Mintbush	E	K
<i>Rutidosia heterogama</i>	Heath Wrinklewort	V	K
<i>Senecia spathulatus</i>	Coast Groundsel	E	K
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E	K
<i>Tetradlea glandulosa</i>	ncn	V	K
<i>Tetradlea juncea</i>	Black-eyed Susan	V	K
<i>Zannichellia palustris</i>	ncn	E	K
<i>Thelymitra</i> sp. 'Adorata'	Wyong Sun Orchid	Critically E	K

Relevant Endangered Ecological Communities

Known or Predicted to occur within the Wyong CMA subcatchment

Freshwater wetlands on coastal floodplains of the NSW North Coast; Sydney Basin and South East Corner bioregions

Hunter Lowland Redgum Forest in the Sydney Basin and NSW North Coast Bioregions

Kincumber Scribbly Gum Forest in the Sydney Basin bioregion

Littoral Rainforest in the NSW North Coast; Sydney Basin and South East Corner Bioregions

Lower Hunter Spatted Gum - Ironbark Forest in the Sydney Basin Bioregion

River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast; Sydney Basin and South East Corner bioregions

Swamp oak floodplain forest of the NSW North Coast; Sydney Basin and South East Corner bioregions

Swamp sclerophyll forest on coastal floodplains of the NSW North Coast; Sydney Basin and South East Corner bioregions

Sydney Freshwater Wetlands in the Sydney Basin Bioregion

Key Threatening Processes

Identified as Operating in the Area of the Subject Land

Predation by feral cats

Predation by the European Red Fox

Competition and grazing by the feral European rabbit

Invasion of native plant communities by exotic perennial grasses

Invasion; establishment and spread of Lantana camara

Clearing of native vegetation

Ecological consequences of high frequency fires

Human-caused Climate Change

Loss and/or degradation of sites used for hill-topping by butterflies

Loss of Hollow-bearing Trees - key threatening process

Removal of dead wood and dead trees

Infection by Psittacine circoviral (beak & feather) disease affecting E psittacine species

Infection of frogs by amphibian chytrid fungus causing the disease chytridiomycosis

Infection of native plants by Phytophthora cinnamomi

Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners

These KTPs have been determined to be or are likely to be operating on the subject land.

For those threatened species deemed 'subject' threatened species in relation to this proposal a separate s5A assessment has been provided in Appendix B. A KTP table has also been provided as part of the assessment for each 'subject' Threatened Species, so determined, for which a s5A (7 Part Test) Assessment has been deemed relevant and hence prepared.



Table 3. Threatened Flora, Fauna and Endangered Ecological Communities Known from approximately 10 km radius of Study Site (excludes estuarine and marine species)

Notes: *= the Gang-gang Cockatoo (population) in the Hornsby and Ku-ring-gai Local Government Areas; **= *Eucalyptus parramattensis* C. Hall. subsp. *parramattensis* in Wyong and Lake Macquarie local government areas.

FAUNA		
Insecta		
Petaluridae		
<i>Petalura gigantea</i>	Giant Dragonfly	E1
Amphibia		
Pelodyadidae		
<i>Litoria aurea</i>	Green and Golden Bell Frog	E1
<i>Litoria brevipalmata</i>	Green-thighed Frog	V
<i>Litoria littlejohni</i>	Littlejohn's Tree Frog	V
Myobatrachidae		
<i>Crinia tinnula</i>	Wallum Froglet	V
<i>Pseudophryne australis</i>	Red-crowned Toadlet	V
Aves		
Acanthizidae		
<i>Pyrhalaemus sagittatus</i>	Speckled Warbler	V
Accipitridae		
<i>Circus assimilis</i>	Spotted Harrier	V
<i>Hamirastra melanosternon</i>	Black-breasted Buzzard	V
<i>Hieraaetus morphnoides</i>	Little Eagle	V
<i>Lophoictinia isura</i>	Square-tailed Kite	V
<i>Pandion haliaetus</i>	Osprey	V
Anatidae		
<i>Oxyura australis</i>	Blue-billed Duck	V
Ardeidae		
<i>Botaurus poiciloptilus</i>	Australasian Bittern	V
<i>Ixobrychus flavicollis</i>	Black Bittern	V
Burhinidae		
<i>Burhinus grallarius</i>	Bush Stone-curlew	E1
Cacatuidae		
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V
<i>Callocephalon fimbriatum</i>	(population)*	E2
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V
Ciconiidae		
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E1
Climacteridae		
<i>Climacteris picumnus</i>	Brown Treecreeper	V
Columbidae		
<i>Ptilinopus magnificus</i>	Wompoo Fruit-Dove	V



<i>Ptilinopus regina</i>	Rose-crowned Fruit-Dove	V
<i>Ptilinopus superbus</i>	Superb Fruit-Dove	V
	Jacanidae	
<i>Irediparra gallinacea</i>	Comb-crested Jacana	V
	Estrildidae	
<i>Stagonopleura guttata</i>	Diamond Firetail	V
	Meliphagidae	
<i>Grantiella picta</i>	Painted Honeyeater	V
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subsp.)	V
<i>Xanthomyza phrygia</i>	Regent Honeyeater	E1
	Neosittidae	
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V
	Petroicidae	
<i>Petroica boodang</i>	Scarlet Robin	V
<i>Petroica phaenicea</i>	Flame Robin	V
	Pomatostomidae	
<i>Pomatostomus t. temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V
	Psittacidae	
<i>Glossopsitta pusilla</i>	Little Lorikeet	V
<i>Lathamus discolor</i>	Swift Parrot	E1
<i>Neophema pulchella</i>	Turquoise Parrot	V
	Strigidae	
<i>Ninox connivens</i>	Barking Owl	V
<i>Ninox strenua</i>	Powerful Owl	V
	Turnicidae	
<i>Turnix maculosa</i>	Red-backed Button-quail	V
	Tytonidae	
<i>Tyto novaehollandiae</i>	Masked Owl	V
<i>Tyto tenebricosa</i>	Sooty Owl	V
	Mammalia	
	Burramyidae	
<i>Cercortetus nanus</i>	Eastern Pygmy-possum	V
	Dasyuridae	
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V
	Emballonuridae	
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V
	Molossidae	
<i>Mormopterus narfolkensis</i>	Eastern Freetail-bat	V
	Muridae	
<i>Pseudomys gracilicaudatus</i>	Eastern Chestnut Mouse	V
	Peramelidae	
<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot	



	(eastern)	E1
	Petauridae	
<i>Petaurus australis</i>	Yellow-bellied Glider	V
<i>Petaurus norfolcensis</i>	Squirrel Glider	V
	Phascolarctidae	
<i>Phascolarctos cinereus</i>	Koala	V
	Pteropodidae	
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V
	Vespertilionidae	
<i>Cholinolabus dwyeri</i>	Large-eared Pied Bat	V
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V
<i>Kerivoula papuensis</i>	Golden-tipped Bat	V
<i>Miniopterus australis</i>	Little Bentwing-bat	V
<i>Miniopterus s. oceanensis</i>	Eastern Bentwing-bat	V
<i>Myotis macropus</i>	Southern Myotis	V
<i>Nyctophilus timoriensis</i>	Greater Long-eared Bat	
	(South-eastern form)	V
<i>Scoteonax rueppellii</i>	Greater Broad-nosed Bat	V
<i>Vespadelus troughtoni</i>	Eastern Cave Bat	V
	Reptilia	
	Elapidae	
<i>Hoplocephalus bitorquatus</i>	Pale-headed Snake	V
<i>Hoplocephalus stephensii</i>	Stephens' Banded Snake	V
	Varanidae	
<i>Varanus rosenbergi</i>	Rosenberg's Goanna	V



FLORA

	Apocynaceae	
<i>Cynanchum elegans</i>	White-flowered Wax Plant	E1
	Asteraceae	
<i>Olearia cordata</i>	ncn	V
<i>Rutidosia heterogama</i>	Heath Wrinklewort	V
<i>Senecio spathulatus</i>	Coast Groundsel	E1
	Dilleniaceae	
<i>Hibbertia procumbens</i>	Spreading Guinea Flower	E1
<i>Hibbertia puberula</i>	ncn	E1
	Elaeocarpaceae	
<i>Tetratheca glandulosa</i>	ncn	V
<i>Tetratheca juncea</i>	Black-eyed Susan	V
	Ericaceae	
<i>Epacris p. purpurascens</i>	ncn	V
<i>Leucopogon fletcheri fletcheri</i>	ncn	E1
	Euphorbiaceae	
<i>Chamaesyce psammogeton</i>	Sand Spurge	E1
	Fabaceae (Caesalpinioideae)	
<i>Senna acclinis</i>	Rainforest Cassia	E1
	Fabaceae (Mimosoideae)	
<i>Acacia bynaeana</i>	Bynoe's Wattle	E1
<i>Acacia pubescens</i>	Downy Wattle	V
	Goodeniaceae	
<i>Velleia perfoliata</i>	ncn	V
	Juncaginaceae	
<i>Maundia triglochinosides</i>	ncn	V
	Lamiaceae	
<i>Prostanthera askania</i>	Tranquility Mintbush	E1
<i>Prastanthera cineolifera</i>	Singleton Mint Bush	V
<i>Prastanthera junanis</i>	Somersby Mintbush	E1
	Lindsaeaceae	
<i>Lindsaea fraseri</i>	Fraser's Screw Fern	E1
	Marsileaceae	
<i>Pilularia novae-hollandiae</i>	Austral Pillwort	E1
	Myrtaceae	
<i>Callistemon linearifolius</i>	Netted Bottle Brush	V
<i>Darwinia glaucophylla</i>	ncn	V
<i>Darwinia peduncularis</i>	ncn	V
<i>Eucalyptus camfieldii</i>	Heart-leaved Stringybar	V
<i>Eucalyptus glaucina</i>	Slaty Red Gum	V
<i>Eucalyptus p. decedens</i>	ncn	V
<i>Eucalyptus p. parramattensis</i>	population**	E2
<i>Kunzea rupestris</i>	ncn	V
<i>Melaleuca biconvexa</i>	Biconvex Paperbark	V



<i>Melaleuca deanei</i>	Deane's Paperbark	V
<i>Micramyrtus blakelyi</i>	ncn	V
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E1
	Orchidaceae	
<i>Caladenia porphyrea</i>	Red Orchid	E1
<i>Caladenia tessellata</i>	Thick Lip Spider Orchid	E1
<i>Corybas dowlingii</i>	Red Helmet Orchid	E1
<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid	V
<i>Dendrobium melaleucaphilum</i>	Spider orchid	E1
<i>Diuris bracteata</i>	ncn	E1
<i>Diuris praecox</i>	Rough Double Tail	V
<i>Genoplesium insignis</i>	Variable Midge Orchid	E1
<i>Rhizanthella slateri</i>	Eastern Underground Orchid	V
<i>Thelymitra sp. "adorata"</i>	Wyong Sun Orchid	E4A
	Poaceae	
<i>Ancistrachne maidenii</i>	ncn	V
	Polygonaceae	
<i>Persicaria elatior</i>	Tall Knotweed	V
	Proteaceae	
<i>Grevillea parviflora parviflora</i>	Small-flower Grevillea	V
<i>Grevillea parviflora supplicans</i>	ncn	E1
	Restionaceae	
<i>Baloskion longipes</i>	Dense Cord-rush	V
	Rutaceae	
<i>Asterolasia elegans</i>	ncn	E1
<i>Zieria invalucrata</i>	ncn	E1
	Sterculiaceae	
<i>Lasiopetalum jayceae</i>	ncn	V
	Thymelaeaceae	
<i>Pimelea curviflora var. curviflora</i>	ncn	V
	Zannichelliaceae	
<i>Zannichellio palustris</i>	ncn	E1

Table 3. Threatened Flora and Fauna Records Known from 5 km radius of Study Site at No 145 Johns Rd., Wadalba, NSW

Note: The DECCW Wildlife database has very few records for threatened flora and fauna from the Wadalba area, although some species have been recorded a number of times at a particular date. The following listing only refers to species/date/locality/observer records, and multiple observations with the same data are omitted. Some of the following records are from somewhat imprecise localities – eg “Wyong”, and probably were collected at locations well beyond the immediate vicinity of that town. Additionally, some records from the Wadalba and Warnervale areas preceded extensive urbanization and so may no longer be present at those particular sites.

FLORA

Asteraceae

Rutidosis heterogama, V. 25/11/2003 Stephen Bell, Adjacent Main Northern Railway, Warnervale

Rutidosis heterogama, V. 12/03/2003 Stephen Bell, Adjacent Main Northern Railway, Warnervale

Orchidaceae

Thelymitra sp. 'Adorata' Critically E. B. Brancourt. Wadalba.

Proteaceae

Grevillea parviflora subsp. *parviflora*, V, 10/12/2003 Stephen Bell Hamlyn Terrace extension area, between Louisiana Rd and Minnesota Rd Hamlyn Terrace

Juncaginaceae

Maundia triglochoides, V. 12/12/1978 W. L. Jacobs, Wyong. Swamp in centre of race course [Royal Botanic Gardens Herbarium Specimen Register]

Lamiaceae

Prostanthera askania, Tranquility Mintbush, E1, October 1916 E. Cheel. Wyong [Royal Botanic Gardens Herbarium Specimen Register; Note locality given was a general locality for the time of collection, and it probably doesn't refer to the Wadalba area given the Type Locality of this species]



FAUNA

Amphibia

Myobatrachidae

Crinia tinnula, Wallum Froglet, V. 18/08/1999 Lesryk Environmental Consultants Warnervale

Crinia tinnula, Wallum Froglet, V. 24-26/03/2003 Ecotone Ecological Consultants, Porters Creek Wetland, Warnervale

Pelodyadidae

Litoria ourea, Green and Golden Bell Frog, E1. 01/01/1992 Bruce J Knight, Wyong, Pollock Avenue at Rear of Hopetown Special School

Litoria aurea, Green and Golden Bell Frog, E1. 01/01/1993 Ross Wellington, Karakoa Dam

Litoria aurea, Green and Golden Bell Frog, E1. 01/01/1993, Ross Wellington O. 4,V,LDMPI0031527, Karakoa Wetland

Litoria aurea, Green and Golden Bell Frog, E1. 1984 Ross Wellington, Korakoa / North Wyong

AVES

Ardeidae

Botaurus poiciloptilus, Australasian Bittern, V. 27/09/1997 Allan K. Morris, Pacific Highway, North Wyong

Ixobrychus flavicollis, Black Bittern, V. 02/02/1985 Allan McBride, Wyong

Ixobrychus flavicollis, Black Bittern, V. Prior to 27/06/1905 [Australian Museum Specimen Register] Wyong, NSW

Ixobrychus flavicollis, Black Bittern, V. Prior to 31/12/2001. Wyong. [Australian Museum Specimen Register]

Ixobrychus flavicollis, Black Bittern, V. 21/07/1998 Tacoma [Australian Museum Specimen Register]

Ciconiidae

Ephippiorhynchus asiaticus, Black-necked Stork, E1. 13/03/1992 J Imrie, Wyong

Ephippiorhynchus asiaticus, Black-necked Stork, E1. 10-13/03/1994 Alan K. Morris, Racecourse Swamp, Wyong

Ephippiorhynchus asiaticus, Black-necked Stork, E1. 24/07/1990 DA Workshop, Surveyors & Planners Between McDonagh Rd & Warner Ave, Wyong

Ephippiorhynchus asiaticus, Black-necked Stork, E1. 01/01/1990 A K Morris, Tuggerah Lake/North Tacoma.

Ephippiorhynchus asiaticus, Black-necked Stork, E1. March 1977 A K & A D Morris, Wyong Swamp/Race Course Swamp

Ephippiorhynchus asiaticus, Black-necked Stork, E1. July 1977 A K & A D Morris, Wyong Swamp/Race Course Swamp

Ephippiorhynchus asiaticus, Black-necked Stork, E1. 09/12/1990 A K & A D Morris, Tuggerah lake/Nth Tacoma Area

Ephippiorhynchus asiaticus, Black-necked Stork, E1. 1993 F Van Gessel, Between McDonagh Rd & Warner Ave, Wyong



Ephippiorhynchus asiaticus, Black-necked Stork, E1. 1991 NSW Bird Report, Warnervale
Ephippiorhynchus asiaticus, Black-necked Stork, E1. between 15/06/1991 and 10/11/1991 NSW Field Ornithologists Club, Wyong

Haematopodidae

Haematopus longirostris, Pied Oystercatcher, V. October 1995 Alan K. Morris, Chittaway Bay/Chittaway Point South

Cacatuidae

Calyptorhynchus lathami, Glossy Black-Cockatoo, V. 21/02/1995 WIRES (Sydney/Gosford). Wyong

Psittacidae

Lathamus discolor, Swift Parrot, E1. 03/07/2002 Conacher Travers Environmental Consultants, Wyong
Lathamus discolor, Swift Parrot, E1. 09/07/2003 J. McLennan, Wyong Golf Club, Wyong
Lathamus discolor, Swift Parrot, E1. 04/06/2002 P Shelley, Wyongah, Darri Street/Mullawal Road
Lathamus discolor, Swift Parrot, E1. 09/11/1996 [Australian Museum Specimen Register]. Tacoma
Lathamus discolor, Swift Parrot, E1. 13/08/2002 Debbie Saunders, Gorokan, Marks Rd
Lathamus discolor, Swift Parrot, E1. 13/08/2002 Debbie Saunders, Tuggerawong, Cadonia Street
Lathamus discolor, Swift Parrot, E1. July 2002 B Branwhite, near Wadalba water tower, NE Wyong
Lathamus discolor, Swift Parrot, E1. 06/06/1996 Dellas Johnston, Tacoma
Lathamus discolor, Swift Parrot, E1. 09/11/1996 WIRES (Sydney/Gosford) Tacoma

Strigidae

Ninox strenua, Powerful Owl, V. 10/10/2001 Conacher Travers Environmental Consultants. Wadalba
Ninox strenua, Powerful Owl, V. 12-15/02/2002 Chris Thomson, Minnesota Road, Warnervale
Ninox strenua, Powerful Owl, V. 31/05/1997 Dellas Johnston, Found injured on ground at Fish Coop North Tacoma on Wyong Creek by WIRES
Ninox strenua, Powerful Owl, V. 09/05/2005 Boris Branwhite, W. Wadalba, John Rd Kanwal water reservoir
Ninox strenua, Powerful Owl, V. 11/05/2005 Boris Branwhite, Wadalba, John Rd Kanwal water reservoir
Ninox strenua, Powerful Owl, V. 21/11/2003 Conacher Travers Environmental Consultants, Pacific Highway, Wadalba

Tytonidae

Tyto novaehollandiae, Masked Owl, V. 07/10/1998 Pacific Hwy, Wyong [Birds Australia Atlas of Australian Birds]
Tyto novaehollandiae, Masked Owl, V. 03/10/2002 J King, Wadalba
Tyto novaehollandiae, Masked Owl, V. 10/10/2001 Conacher Travers Environmental Consultants, Wadalba
Tyto novaehollandiae, Masked Owl, V. 11/07/1995 WIRES (Sydney/Gosford) Wyong
Tyto novaehollandiae, Masked Owl, V. 28/09/1998 Tony Gardner, Pacific Highway, North Wyong
Tyto novaehollandiae, Masked Owl, V. 21/11/2003 Conacher Travers Environmental Consultants Pacific Highway, Wadalba



Tyto novaehollandiae, Masked Owl, V. 27/10/1991 NEWCASTLE - SYDNEY EXPRESSWAY, near Wyong, NSW [Australian Museum Specimen Register]

Tyta tenebricosa, Sooty Owl, V. 23/05/2005 Boris Branwhite, Wadalba, Johns Road. In the vicinity of Canwell reservoir

Tyto tenebricosa, Sooty Owl, V. 21/05/2005 Boris Branwhite, Wadalba, Johns Road. In the vicinity of Canwell reservoir

Tyto tenebricosa, Sooty Owl, V. 10/05/2005 Boris Branwhite, Wadalba, Johns Rd Kanwal water reservoir

Tyto tenebricosa, Sooty Owl, V. 11/05/2005 Boris Branwhite, Wadalba, Johns Rd Kanwal water reservoir

Meliphagidae

Grantiello picta, Painted Honeyeater, V. 15/01/1982 R Bigg, Wyong

Xanthomyza phrygia, Regent Honeyeater, E1. 02/08/2002 David Geering, Alan K. Morris, J Carpenter, South Tacoma

Xanthomyza phrygia, Regent Honeyeater, E1. 31/05/2003 J Carpenter, South Tacoma

Mammalia

Peramelidae

Isoodon obesulus obesulus, Southern Brown Bandicoot (eastern), E1. 08/06/1998 Wendy Farley, Cadonia Rd Tuggerawong, in backyard

Phascolarctidae

Phascolarctos cinereus, Koala, V. 15/12/1994 Alan K. Morris, Forster Avenue, Watanobi (Wyong).

Phascolarctos cinereus, Koala, V. 1916 M Winley, O. 4, V, WD4698, LJ555205, -33.24 S., X 151.44E,

Phascolarctos cinereus, Koala, V. 1967 Watt 33.26 S., X ,151.48 E.,

Petauridae

Petaurus australis, Yellow-bellied Glider, V. Prior to 24/07/1894 [Australian Museum Specimen Register] Wyong

Petaurus norfolcensis, Squirrel Glider, V. 04/08/1992 Dellas Johnston, Lot 72, Warnervale Rd, Warnervale

Petaurus norfolcensis, Squirrel Glider, V. 23/05/1993 G & A Gifford, 585 Pacific Highway, North Wyong

Petaurus norfolcensis, Squirrel Glider, V. April 1995 Dellas Johnston, Tuggerwong

Petaurus norfolcensis, Squirrel Glider, V. 1994 WILDLIFE ARC, Tacoma

Petaurus norfolcensis, Squirrel Glider, V. 29/07/1998 Conacher Travers Environmental Consultants, [Lake Macquarie area]

Petaurus norfolcensis, Squirrel Glider, V. 09/02/1998 Conacher Travers Env Cons., Lake Macquarie area]

Petaurus norfolcensis, Squirrel Glider, V. Between 18/08/1999 and 01/10/1999 LesryK Environmental Consultants Warnervale

Petaurus norfolcensis, Squirrel Glider, V. 06-09/12/1999 LesryK Environmental Consulta Wadalba



- Petaurus norfolcensis*, Squirrel Glider, V. 13-14/02/2003 Mathew Pauza, No description provided. [33.28 S., X 151.43 E.]
- Petaurus norfolcensis*, Squirrel Glider, V. Between 21/01/2003 and 07/02/2003 Ecotone Ecological Consultants, Lot 26 Johns Rd, Wadalba
- Petaurus norfolcensis*, Squirrel Glider, V. 03/10/2002 Dellas Johnston, South Tacoma, behind houses
- Petaurus norfolcensis*, Squirrel Glider, V. 09/10/2000 G Nelson, Pacific Highway, Warnervale
- Petaurus norfolcensis*, Squirrel Glider, V. 13/08/2001 G Nelson, Corner Virginia Rd and Pacific Highway, Wadalba
- Petaurus norfolcensis*, Squirrel Glider, V. 07/02/2001 Michael Murray, off John's Road Wadalba Wyong
- Petaurus norfolcensis*, Squirrel Glider, V. 09/02/2001 Michael Murray, off John's Road Wadalba Wyong
- Petaurus norfolcensis*, Squirrel Glider, V. 03/07/2002 Conacher Travers Environmental Consultants, Wyong, 33.27 S., X151.44 E.
- Petaurus norfolcensis*, Squirrel Glider, V. 18/12/2002 Conacher Travers Environmental, Wadalba
- Petaurus norfolcensis*, Squirrel Glider, V. 01/10/2001 Conacher Travers Environmental, Wadalba
- Petaurus norfolcensis*, Squirrel Glider, V. 10/10/2001 Conacher Travers Environmental, Wadalba
- Petaurus norfolcensis*, Squirrel Glider, V. 24/10/1995 WILDLIFE ARC, 57 Northcott Ave, Wyong
- Petaurus norfolcensis*, Squirrel Glider, V. 23/10/1995 Debbie Breen, 51 Northcott Ave., Wyong
- Petaurus norfolcensis*, Squirrel Glider, V. 19/04/1995 WIRES (Sydney/Gosford) Tuggerawong
- Petaurus norfolcensis*, Squirrel Glider, V. 01/10/1996 WIRES (Sydney/Gosford), Warnervale
- Petaurus norfolcensis*, Squirrel Glider, V. 22/10/1996 WIRES (Sydney/Gosford), Tuggerawong
- Petaurus norfolcensis*, Squirrel Glider, V. 08/01/1997 WIRES (Sydney/Gosford) Warnervale
- Petaurus norfolcensis*, Squirrel Glider, V. 23/08/1995 WIRES (Sydney/Gosford) Wyong
- Petaurus norfolcensis*, Squirrel Glider, V. 05/09/1995 WIRES (Sydney/Gosford) Warnervale
- Petaurus norfolcensis*, Squirrel Glider, V. 29/10/1995 WIRES (Sydney/Gosford) Kanwal
- Petaurus norfolcensis*, Squirrel Glider, V. 24/11/1995 WIRES (Sydney/Gosford) Kanwal
- Petaurus norfolcensis*, Squirrel Glider, V. 03/12/1995 WIRES (Sydney/Gosford) Wyong
- Petaurus norfolcensis*, Squirrel Glider, V. 21/11/2003 Conacher Travers Environmental, Pacific Highway, Wadalba
- Petaurus norfolcensis*, Squirrel Glider, V. Between 01/10/2004 and 31/12/2004 Conacher Travers Environmental, Warnervale Road, Hamlyn Terrace
- Petaurus norfolcensis*, Squirrel Glider, V. 04-13/10/2000 Conacher Travers Environmental, Warnervale
- Petaurus norfolcensis*, Squirrel Glider, V. 29/07/1998 J Travers, [33.24 S., X 151.45 E.]
- Petaurus norfolcensis*, Squirrel Glider, V. 09/02/1998 J Travers, [33.24 S., X 151.45 E.]
- Petaurus norfolcensis*, Squirrel Glider, V. 23/02/1979 G Townsend, 33.25 S., X 151.45 E.
- Petaurus norfolcensis*, Squirrel Glider, V. 09/12/1997 [Australian Museum Specimen Register] Chittaway Point

Pteropodidae

- Pteropus poliocephalus*, Grey-headed Flying-fox, V. Between 21/01/2003 and 07/02/2003 Ecotone Ecological Consultants, Lot 26 Johns Rd, Wadalba
- Pteropus poliocephalus*, Grey-headed Flying-fox, V. 12-15/02/2002 Chris Thomson, Minnesota Road, Warnervale



Pteropus poliocephalus, Grey-headed Flying-fox, V. 21/11/2003 Conacher Travers Environmental, Pacific Highway, Wadalba

Pteropus poliocephalus, Grey-headed Flying-fox, V. February 1937 Wyong, near Sydney [Australian Museum Specimen Register]

Emballonuridae

Saccolaimus flaviventris, Yellow-bellied Sheath-tail-bat, V. 01/10/2001 Conacher Travers Environmental, Wadalba

Molossidae

Mormopterus norfolkensis, Eastern Freetail-bat, V. 29/07/1998 Conacher Travers Env Cons. [Lake Macquarie area]

Mormopterus norfolkensis, Eastern Freetail-bat, V. 25/08/1998 Conacher Travers Env Cons., [Lake Macquarie area]

Mormopterus norfolkensis, Eastern Freetail-bat, V. Between 21/01/2003 and 07/02/2003 Ecotone Ecological Consultants, Lot 26 Johns Rd, Wadalba

Mormopterus norfolkensis, Eastern Freetail-bat, V. 01/10/2001 Conacher Travers Environmental, Wadalba

Mormopterus norfolkensis, Eastern Freetail-bat, V. 15/04/1998 Adam Fawcett, Mataram road and Sparks Road, Warnervale - private land between these roads east of creekline on Mataram Rd

Mormopterus norfolkensis, Eastern Freetail-bat, V. 07/05/1998 Adam Fawcett, Mataram Road and Sparks Rd Warnervale - private land between these roads east of creek on Mataram Rd

Mormopterus norfolkensis, Eastern Freetail-bat, V. 24/02/1998 Adam Fawcett, Mataram Rd and Sparks Rd Warnervale - Private land between these roads east of Creekline on Mataram Rd

Mormopterus norfolkensis, Eastern Freetail-bat, V. between 27/04/1999 and 01/05/1999 Ecotone Ecological Consultants, Louisiana and Warnervale Rd, Warnervale

Mormopterus norfolkensis, Eastern Freetail-bat, V. 21/11/2003 Conacher Travers Environmental, Pacific Highway, Wadalba

Mormopterus norfolkensis, Eastern Freetail-bat, V. recorded on 29/07/1998, and 25/08/1998 J. Travers, [33.24 S., X 151.45 E.]

Vespertilionidae

Falsistrellus tasmaniensis, Eastern False Pipistrelle, V. Between 01/10/2004 and 31/12/2004 Conacher Travers Environmental, Warnervale Road, Hamlyn Terrace

Miniopterus australis, Little Bentwing-bat, V. Between 12/02/2002 and 15/02/2002 Chris Thomson, Minnesota Road, Warnervale

Miniopterus australis, Little Bentwing-bat, V. 21/11/2003 Conacher Travers Environmental, Pacific Highway, Wadalba

Miniopterus schreibersii oceanensis, Eastern Bentwing-bat, V. Between 08/03/1994 and 14/03/1994 Ray Williams, Corner of Pacific Highway and Pollock Avenue, Wyong

Miniopterus schreibersii oceanensis, Eastern Bentwing-bat, V. Between 05/07/1998 and 05/07/1998 Conacher Travers Env Cons., [Lake Macquarie area]

Miniopterus schreibersii oceanensis, Eastern Bentwing-bat, V. 29/07/1998 Conacher Travers Env Cons., [Lake Macquarie area]



- Miniopterus schreibersii oceanensis*, Eastern Bentwing-bat, V. 25/08/1998 Conacher Travers Env Cons., [Lake Macquarie area]
- Miniopterus schreibersii oceanensis*, Eastern Bentwing-bat, V. Between 18/08/1999 and 01/10/1999 LesryK Environmental Consultants. Warnervale
- Miniopterus schreibersii oceanensis*, Eastern Bentwing-bat, V. Between 21/01/2003 and 07/02/2003 Ecotone Ecological Consultants, Lot 26 Johns Rd, Wadalba
- Miniopterus schreibersii oceanensis*, Eastern Bentwing-bat, V. 14/10/2002 Ecotone Ecological Consultants, Lot 27 & 28, Johns Road, Wadalba
- Miniopterus schreibersii oceanensis*, Eastern Bentwing-bat, V. 03/07/2002 Conacher Travers Environmental, Wyong
- Miniopterus schreibersii oceanensis*, Eastern Bentwing-bat, V. Between 12/02/2002 and 15/02/2002 Chris Thomson, Minnesota Road, Warnervale
- Miniopterus schreibersii oceanensis*, Eastern Bentwing-bat, V. 15/04/1998 Adam Fawcett, Mataram road and Sparks Road, Warnervale - private land between these roads east of creekline on Mataram Rd
- Miniopterus schreibersii oceanensis*, Eastern Bentwing-bat, V. 19/08/1997 Adam Fawcett, Mataram Rd and Sparks Rd Warnervale - Land between these roads to east of creek on Mataram Rd
- Miniopterus schreibersii oceanensis*, Eastern Bentwing-bat, V. 15/04/1998 Adam Fawcett, Lot 65 Louisiana Road, Warnervale
- Miniopterus schreibersii oceanensis*, Eastern Bentwing-bat, V. 21/11/2003 Conacher Travers Environmental, Pacific Highway, Wadalba
- Miniopterus schreibersii oceanensis*, Eastern Bentwing-bat, V. 05/07/1998, 29/07/1998, 25/08/1998 J Travers, W,1+,4,V,LVGI99062402,?,[33.24 S., X 151.45 E.]
- Myotis adversus*, Large-footed Myotis, V. Between 18/08/1999 and 01/10/1999 LesryK Environmental Consulta Warnervale
- Myotis adversus*, Large-footed Myotis, V. 20/01/2002 Robert Payne, Over dam feeding, at 33.25 S., X151.43 E.
- Myotis adversus*, Large-footed Myotis, V. 20/10/1996 Dellas Johnston, Wyong Creek, North Tacoma
- Myotis adversus*, Large-footed Myotis, V. 30/12/1996 Bronwyn Wood, Mc Donagh Road, Wyong
- Myotis adversus*, Large-footed Myotis, V. 21/11/1995 Tacoma [Australian Museum Specimen Register]
- Scoteanax rueppellii*, Greater Broad-nosed Bat, V. 28/10/2002 Wildthing Environ. Consultants, Woongarra
- Scoteanax rueppellii*, Greater Broad-nosed Bat, V. Between 21/01/2003 and 07/02/2003 Ecotone Ecological Consultants, Lot 26 Johns Rd, Wadalba
- Scoteanax rueppellii*, Greater Broad-nosed Bat, V. 14/10/2002 Ecotone Ecological Consultants, Lot 27 & 28, Johns Road, Wadalba
- Scoteanax rueppellii*, Greater Broad-nosed Bat, V. 01/10/1997 Ross Wellington, Robert Payne, Lucca Road, North Wyong. In industrial Estate
- Scoteanax rueppellii*, Greater Broad-nosed Bat, V. 10/10/2001 Conacher Travers Environmental, Wadalba
- Scoteanax rueppellii*, Greater Broad-nosed Bat, V. 01/10/2001 Conacher Travers Environmental, Wadalba



Scoteanax rueppellii, Greater Broad-nosed Bat, V. 24/02/1998 Adam Fawcett, Mataram Rd and Sparks Rd Warnervale - Private land between these roads east of Creekline on Mataram Rd, [33.24 S., X 151.47 E.]

Scoteanax rueppellii, Greater Broad-nosed Bat, V. 21/11/2003 Conacher Travers Environmental, Pacific Highway, Wadalba

Scoteanax rueppellii, Greater Broad-nosed Bat, V. Between 01/09/2000 and 07/09/2000 Conacher Travers Environmental, Woongarra

Scoteanax rueppellii, Greater Broad-nosed Bat, V. Between 31/10/2000 and 10/11/2000 Conacher Travers Environmental, Kanwal

Macropodidae

Thylogale stigmatica, Red-legged Pademelon, V. 15/02/1937 [Australian Museum Specimen Register] Wyong, N of Sydney [Australian Museum Specimen Register],

Thylogale stigmatica, Red-legged Pademelon, V. Prior to 06/06/1949 Wyong district N of Sydney [Australian Museum Specimen Register]

10.1 Flora Survey

Prior to field work on the site the NPWS Atlas of NSW Wildlife was examined for a five and ten kilometre radius of the study site and all threatened species of both flora and fauna occurring within this area are listed in Tables 3 and 4.

A botanical survey of the site was undertaken in order to determine the vegetation communities present on the property. The botanical survey was undertaken during 21 September, 22 October and November, 2009, and involved random transverses of all areas the property and recording all species of plants that were located. Subsequent site visits in 2010 and 2011 did not locate any additional species to those detected on our initial inspections.

Targeted searches were also undertaken for any of the listed threatened species that have been recorded in the general area.

Taxonomic determinations are based on Harden et al (1990-1993), and Robinson (1997) and Fairly and Moore (1995). All threatened species profiles of NSW NPWS for the Wyong LGA were also utilized. The description of the vegetation occurring on the subject land was classified according to Specht (1982).

The plant species diversity detected during our surveys for the subject land is listed in [Table 4](#).



Table 4. Flora species detected by opportunistic survey in the immediate vicinity of the proposed development site at No 145 Johns Road, Wadalba, NSW in September, October and November, 2009. An asterisk (*) indicates an exotic species.

Filicopsida

Adiantaceae

Adiantum aethiopicum

Azollaceae

Azolla pinnata

Dennstaedtiaceae

Pteridium esculentum

Dicotyledonae

Apiaceae

**Apium leptophyllum*

Apocynaceae

**Araujia hortorum*

Parsonsia straminea

Asclepiadaceae

**Asclepias curassavica*

Asteraceae

**Bidens pilosa*

**Cirsium vulgare*

Cotula australis

**Eupatorium sp.*

**Hypochoeris radicata*

**Lactuca serriola*

Ozothamnus diosmifolius

**Senecio madagascariensis*

**Soliva sessilis*

**Sonchus oleraceus*

Bignoniaceae

**Jacaranda mimosaeifolia*

Brassicaceae

**Brassica rapa*

**Rorippa nasturtianumaquaticum*

Campanulaceae

**Anagallis arvensis*

Caryophyllaceae

**Cerastium glomeratum*

**Stellaria media*

Casuarinaceae

Casuarina cunninghamii

Convolvulaceae

**Dichondra repens*

**Centella asiatica*

Cucurbitaceae



- **Cucurbita pepo*
- Euphorbiaceae
 - Glochidion ferdinandii*
- Fabaceae
 - Daviesia acicularis*
 - **Trifolium repens*
- Geraniaceae
 - **Geranium molle*
- Goodeniaceae
 - Goodenia sp.*
- Lamiaceae
 - Plectranthus parvifolius*
- Lauraceae
 - **Cinnamomum camphara*
- Malvaceae
 - **Malva parviflora*
 - **Sida rhombifolia*
- Moraceae
 - **Morus alba*
- Myrtaceae
 - Angaphora inapina*
 - Eucalyptus crebra* (?)
 - Eucalyptus eugenioides*
 - Eucalyptus maculata*
 - Melaleuca linearifolia*
 - Tristaniopsis conferta* (planted)
- Oleaceae
 - **Ligustrum sinense*
 - **Ligustrum lucidum*
 - **Ligustrum sp.*
- Onagraceae
 - **Epilobium labillardierianum*
- Phytolaccaceae
 - **Phytolacca octandra*
- Pittosporaceae
 - Pittosporum undulatum*
- Plantaginaceae
 - **Plantago lanceolata*
- Polygonaceae
 - **Persicaria praetermissa*
 - **Rumex crispus*
- Portulaccaceae
 - **Portulacca oleracea.*
- Proteaceae
 - Persoonia lanceolata*

- Ranunculaceae
 - **Ranunculus muricatus*
- Rosaceae
 - **Rubus fruticosus*
- Scrophulariaceae
 - **Lagerstroemia indica*
- Solanaceae
 - **Solanum mauritianum*
 - **Solanum nigrum*
 - **Solanum pseudocapsicum*
- Typhaceae
 - Typha orientalis*
- Urticaceae
 - **Urtica incisa*
- Verbenaceae
 - **Lantana camara*
 - **Verbena bonariensis*
 - **Verbena officinale*
- Monocotyledonae
 - Cyperaceae
 - **Cyperus sp.*
 - Carex appressa*
 - Gahnia erythrocarpa*
 - Juncaceae
 - Juncus usitatus*
 - Liliaceae
 - **Watsonia sp.*
 - Lomandraceae
 - Lomandra longifolia*
 - Phormiaceae
 - Dianella caerulea*
 - Poaceae
 - **Andropogon virginicus*
 - Aristida ramosa*
 - **Briza maxima*
 - **Briza minor*
 - **Chloris sp.*
 - **Cordatella selloeana*
 - **Cynodon dactylon*
 - **Eragrostis sp.*
 - **Ehrharta erecta*
 - **Lolium perenne*
 - Oplismenus aemulus*
 - **Pennisetum clandestinum*
 - Themeda australis*



10.2 *Vegetation Types and Species Detected*

A total of 85 species of plants were found on the subject land, of which 56 were exotic (66%). This extremely low native plant species diversity of the property is believed to be partly a result of past clearing, fire and agriculture, and it contrasts significantly with that of the complexity of these relatively undisturbed vegetation communities elsewhere on the Central Coast - where these communities have plant diversity in the hundreds of species.

The natural vegetation in the immediate vicinity of the proposed development comprised a Dry Open Sclerophyll Forest community dominated by *Eucalyptus maculata*, *E. eugenioides*, and along the drainage-lines by *Casuarina cunninghamii*.

There was low native species diversity at the time of our inspection, and a significant feature was the presence of extensive areas of *Lantana* within the remnants as well as a wide range of pasture and weed species across the site.

Large areas of previous cleared areas were also present, and was best considered as an open (pasture) grassland community dominated largely by exotic grasses, and with only scattered isolated native species being present.

The remnant bush land of the property was found to be relatively depauperate in native species, and this low species diversity was considered in part due to the past land-uses of the site, as well as the extent of *Lantana* and other weeds covering the site.

One plant species – *Angophora inopina* - that is listed as Threatened under the TSC Act (1995) [Vulnerable] and the EPBC (1999) [Vulnerable] was thought to have been found on the site, but is located in area proposed for conservation zoning and not near the areas proposed for residential rezoning and subsequent development.

One Endangered Ecological Community was found to exist along the immediate verges of the drainage lines on the eastern and western boundaries of the property.

The list of flora species detected on the subject land is provided in Table 4. One threatened plant species was thought to have been detected during the survey – *Angophora inopina* but was later, on re-examination confirmed to be Rough-barked Apple *Angophora floribunda*

The entire subject property is in a highly disturbed state from past agricultural use with remnant native vegetation being largely confined to the eastern and western boundaries of the property and the more elevated rear portion (north).

The existing vegetation conforms to three vegetation communities:

- The majority of the property comprises an unnatural (oldfield) community of exotic grass or pasture species with extensive areas of *Lantana* up to 6 metres high and privet, concentrated mainly within the front and central parts of the site.
- The most extensive community occurs mainly in the rear of the property and on parts of the non-perennial drainage-lines and comprises Coastal Foot-hills, Spotted Gum Forest. On superficial inspection, this community could be regarded as the EEC listed as *Lower Hunter Spotted Gum - Ironbark Forest in the Sydney Basin Bioregion*, but the community present on the subject property at Wadalba is a distinctive alliance in its own right, more correctly identified as *Coastal Foot-hills, Spotted Gum Forest* which does not conform floristically to the EEC definition of *Lower Hunter Spotted Gum - Ironbark Forest in the Sydney Basin*

Bioregion. This can be verified by comparing the original determination of this EEC, and that this community is not the *Lower Hunter Spotted Gum - Ironbark Forest in the Sydney Basin Bioregion* EEC has been confirmed by officers within the NPWS (DECCW).

- A small section of the western and eastern drainage-lines near the front of the property of Johns Rd also comprises a community represented by relatively tiny remnants of *Melaleuca* and *Casuarina* Swamp Forest and this is listed as an Endangered Ecological Community by the NSW Threatened Species Act (1995) - listed as *Swamp oak floodplain forest of the NSW North Coast; Sydney Basin and South East Corner bioregions*.

All communities present on the subject land must be acknowledged as being in a highly disturbed state. Indeed, it is likely that the remnant vegetation is in a state of decline and it is the view here, that its overall viability and integrity will degrade further unless aggressive management of the Lantana and other weeds is undertaken as soon as possible.

The entire property appears to have been previously cleared for almost its entirety of all forest decades ago and the present state of disturbance is reflected in its simplistic structure and floristics.

The canopy in most areas where trees are present is discontinuous in part, and could be generally regarded as sparse overall. The Spotted Gum Forest is also heavily damaged by Bell Miner/Psyllid die-back syndrome, resulting in large numbers of dead and dying trees throughout the community.

The native shrub layer is greatly reduced to almost non-existent in all communities over much of the property due to the dominance of Lantana.

Exotic weeds dominate the ground cover over the abandoned agricultural areas but native ground cover is more extensive in the elevated northern part of the property where Lantana is less prevalent. However, the presence of extensive weed growth on the property greatly reduces the habitat viability of the subject land for most native species of flora and fauna.

The property is also littered with abandoned buildings and rubbish from previous uses, and in recent times the pasture area has been used for grazing horses.

Although the management and restoration of the remnants on this property in its present state is possible, when or how this might occur is equivocal. It would likely require many decades of effort and considerable cost to restore the site to its original biodiversity and ecological functions – but this is probably an unrealistic aspiration. However, vegetation management and restoration strategies that are integrated with some sort of partial development outcome for the property could quickly result in an improved state for the site's overall biodiversity values.

From a vegetation point of view, the remnants of what could be interpreted as an Endangered Ecological Community (Swamp Oak Floodplain Forest) have been detected upon and near the subject land, and it is possible that some threatened flora species may be present in the more densely vegetated elevated parts of the property (not subject to future disturbance by the proposed rezoning or subsequent development). However, as no other threatened flora were detected during our searches, it is likely that some species if present would be in low numbers and/or confined largely to the soil seed bank. The eventual removal of the Lantana from this property might potentially result in the emergence of a much more diverse native flora understorey, and might possibly include a few threatened species that have already been previously detected several years ago in the adjacent Wadalba Wildlife Corridor lands.

Seven Part Tests of Significance (Section 5A, EP&A Act) are included in this report for the threatened entities actually detected on the property (see Appendix 1), but note the s5A assessment for Swamp Oak Floodplain Forest is included as an assessment but likely to actually represent Spotted Gum Iron Bark Forest a non threatened ecological vegetation community in Wyong.



Much of the property, using professional scientific opinion derived from the surveys undertaken, lacks significant limitations to a sensitive, or environmentally attuned residential development proposal for the identified components of the site given the extent of disturbance to this area.

10.3 Fauna Considerations

No systematic fauna surveys were undertaken at this stage on the subject land other than for the two identified subject threatened fauna species (SGs and GGBF) because of the minor likely impact of the proposal on native bushland and which is to be largely retained in a conservation zoning (subject to approval), although opportunistic observations were made on all birds, mammals, reptiles and frogs during the site visitations.

However, the known habitat conditions for a number of threatened species previously recorded from the general area were detected in the remnants of native vegetation on the site.

Three threatened birds (Brown Tree-creeper, Diamond Firetail and the Osprey), were detected on or near the subject land. Additionally, the possible presence of a number of other threatened mammals and birds on the site cannot be ruled out, as the available habitat conditions are consistent with their known habitat requirements and their detection in other surveys on nearby lands. However, such habitat is not to be affected by the proposed rezoning, as the proposal is to rezone the site with most of the native vegetation retained and included in a conservation zone, with the previously cleared and disturbed areas primarily forming the areas proposed for a residential zone change.

An examination of the trees within the remnants of bushland indicated some minor presence of arboreal mammal activity and the initial opinion was that these could represent either possums or gliders, given the known presence of these species in the near vicinity of the property. However during the targeted surveys for SGs only common species of possums were detected and therefore suggests the latter as likely species producing scratch mark indications.

Additionally, the habitats present on the subject site were assessed for the presence of other threatened species by searching for the diagnostic feeding notches of gliders, owl pellets, owl droppings (whitewash), bandicoot excavations, and mammal pellets around the bases of trees and potential roost sites, logs and any other ground cover present was also examined for reptiles and frogs as well.

All fauna detected is listed in Table 5.

Three threatened species of birds were detected (Brown Tree-creeper - *Climacteris picumnus victoriae*, Diamond Firetail - *Stagonopleura guttata*, and Osprey - *Pandion cristatus*).

Table 5. Fauna species detected by opportunistic survey in the immediate vicinity of the proposed development site at No 145 Johns Road, Wadalba, NSW in September, October and November, 2009. An asterisk (*) indicates an exotic species.

Amphibia

Pelodyadidae

Litoria fallax

Myobatrachidae

Limnodynastes peronii

Crinia signifera

Reptilia

Scincidae

Eulamprus quoyii

Saiphos equalis

Lampropholis delicata

Lampropholis guichenoti

Tiliqua scincoides

Elapidae

Pseudechis porphyriacus

Aves

Cacatuidae

Coccyzoida galerita

Psittacidae

Platycercus eximius

Maluridae

Malurus cyaneus

Meliphagidae

Manorina melanocephala

Manarina melanophrys

Lichenostomus melanops

Monarchidae

Grallina cyanoleuca

Corvidae

Corvus coronoides

Cracticidae

Gymnorhina tibicen

Columbidae

Geophaps lophotes

Pachycephalidae

Rhipidura fuliginosa

Orthonychidae

Psophodes olivaceus

Ploceidae

Stagonopleura guttata

Sylviidae

Acrocephalus stentoreus

Climacteridae

Climacteris picumnus victoriae

Hirundinidae

Hirundo neoxena



Phasianidae

Coturnix pectoralis

Accipitridae

Pandion cristatus

Halcyonidae

Dacelo novaeguineae

Mammalia

Canidae

**Canis familiaris* (Dog)

**Vulpes vulpes* (Fox)

Muridae

**Mus musculus* (Mouse)

**Rattus rattus* (Black Rat)

Leporidae

**Oryctolagus cuniculus* (Rabbit)

Note: The Osprey is listed as Vulnerable under the Threatened Species Conservation Act 1995 (as *P. haliaetus*). It is also listed as a Migratory and Marine species under the EPBC Act (1999). The Diamond Firetail is listed as Vulnerable under the TSC Act 1995, and the Brown Tree Creeper is also listed as Vulnerable under the TSC Act 1995.

It is considered likely that the above listing of vertebrate fauna for the site would be increased with a more intensive survey. Nevertheless, it was clear during our visits to the subject property that vertebrates of all groups were rather uncommon, and largely restricted to those adaptable or exotic species that are usually present in disturbed habitats.

10.4 Threatened Species Habitat Considerations

Examination of many trees on the site revealed that significant hollows were rare, being confined to the larger trees along the watercourses and the more elevated rear of the property, both areas well away from any proposed development site. It was considered that the remnant spotted gum forest represents good habitat for micro-chiropteran bats and it could be expected that a number of threatened bats could eventually be detected on or very near the property.

Given the type and extent of the remnant native vegetation on the property, the most important areas for any threatened flora and fauna that may be present, in our opinion, is the spotted gum forest on the hill at the rear of the property and in a narrow corridor along each of the non-perennial drainage-lines. However, neither of these parts of the property will be significantly affected by the proposed development.

Habitat for threatened fauna in the disturbed open areas is negligible although a number of native species in the surrounding woodlands could be expected to utilize the abandoned agricultural land for foraging purposes at times.

It is distinctly possible that some other threatened bird, bat and other mammal species could also potentially use parts of the site for foraging or roosting habitat. Given that the small extent of vegetation remaining on the site is presently in a highly disturbed state, it is unlikely that the property would provide critically important habitat at the regional level. The site also does not conform to potential koala habitat as per SEPP 44, and no signs of koalas were detected on the property.

The proximity of the subject land to the Wadalba Wildlife Corridor must also be considered in any evaluation of the site for any development application as the WWC is known to be utilized by a number of threatened species (see Conacher Travers, 2006). However, the existing remnants upon the site are in a highly degraded state and the vegetation of some surrounding properties probably plays an equal or greater role in maintaining or enhancing the viability of the habitats in the WWC.

10.5 *General Habitat Considerations*

During our site inspections it was apparent that the subject property had been seriously degraded ecologically from a variety of past and current disturbances. Evidence was found that clearly demonstrated that the site had been previously cleared in its entirety of native vegetation many decades ago – and probably on a number of occasions over the life of the holding.

The land was then subjected to various intensive agricultural uses – principally grazing by stock, market gardens, and most recently as a large scale poultry farm (chickens). The more elevated areas of the property were principally used for grazing, but this was largely abandoned years ago, and these parts appear to have subsequently regenerated into a mixed assemblage of dry open forest species, with a heavy growth of Lantana that now virtually covers the entire property beyond the remaining open grazing land.

The regeneration of the native vegetation of the subject property was considered to be poor on our survey and in particular, it was seriously retarded in places by the presence of extensive weed growth – principally Lantana (*Lantana camara*) and Privet (*Ligustrum spp.*); no doubt the type, extent and frequency of past disturbances has also influenced the state of regeneration on this property as well.

Although the site is fairly small in overall area and highly disturbed, the three ecological communities present as well as the *intermittent riparian drainage lines* would indicate that potential habitat for a wide range of native flora and fauna occurs on the subject land.

However the flora study that was undertaken indicated quite a low species diversity of native plant species present and a relatively high percentage of exotic weeds. Evidence was found of past selective logging on the site, and for the most part the forest condition was largely an even-aged regenerative stand, considered by the botanist to be around forty years of age.

A few much older remnant trees were probably retained as shade trees on the land or were in positions too difficult to clear and so have survived. These more mature trees contain significant hollows and represent important habitat for both threatened and non-threatened fauna. All of the significant trees are located in the more elevated parts of the site, with the exception of a few that are found along the drainage lines and will not be impacted upon by the proposed development.

Perhaps the most significant limiting factor to the habitat's long term suitability for wildlife relates to the extent of lantana. In places the lantana reached in excess of 6 metres in height and it collectively covers many acres of the property. It has significantly retarded the regeneration of native flora and presumably reduces the site's suitability for many fauna species as well.

Another significant feature of the site was the lack of new eucalypt sapling regrowth and the very poor diversity and density of the native ground-layer and mid-storey shrub-layer and we attribute this primarily to the density and extent of the lantana.



Another exotic species that is well established on the site is Privet, and to a lesser extent, small patches of Blackberry are also present. The cleared sections of the site (the introduced grassy ecosystem), has very limited tree growth and is extensively littered with tin and other debris related to its previous use as a chicken farm.

A number of dilapidated sheds are also in evidence, in various states of collapse, with lantana almost completely covering them in places. Although the site does contain potential habitat for threatened flora, the extent of weed growth ensures that at present there are very limited opportunities for such species on the subject land.

Moderately suitable habitat (sub-optimal) occurs on the land for native fauna, and a number of threatened species could possibly utilize the site, mainly in the spotted gum-iron bark remnants.

The property could be considered as suitable foraging area for insectivorous bat species, but the simplistic structural diversity of the site could indicate that the presence of threatened bats for instance, may be more a consequence of the complexity of habitats in the nearby Wadalba Wildlife Corridor, which would contain more extensive foraging resources.

Although nectar producing trees do occur on the site, those of the greater significance to nectivorous threatened species, such as the Swift Parrot and Regent Honeyeater, and the Grey-headed Flying Fox are not commonly found on the subject land. The site has *Casuarina* along the drainage lines and this species is one of the food trees for the glossy black cockatoo.

11 Targeted Survey and Assessment Results

Subsequent to the initial site assessment and surveys a targeted survey for two specific threatened species was also undertaken in accordance with appropriate survey and assessment guidelines as indicated below.

11.1 Diurnal Surveys Arboreal Mammals

Surveys of smooth barked Eucalypt species were undertaken, but only two trees with apparent/possible hollows that were considered potentially suitable for Squirrel Gliders were detected. These trees were plotted and identified for later stag watching. Neither of these trees was identified as having possible scratch marks likely formed by arboreal mammals nor any arboreal mammal scats were detected. The only mammals detected incidently during diurnal searches included introduced species; the Black Rat *Rattus rattus*, the Rabbit *Orectolagus cuniculus* and the Red Fox *Vulpes vulpes*. These species were detected either active during searches or indirectly from scats or both.



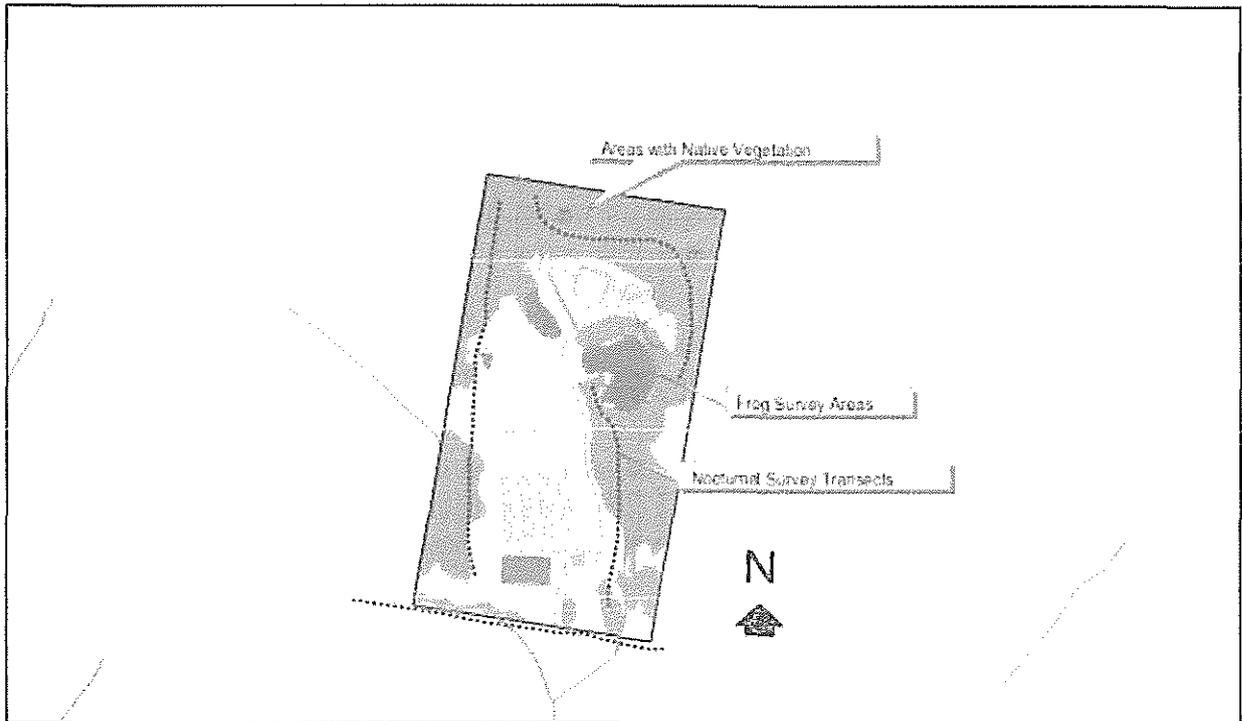


Figure 6 Areas of subject land with some remnant vegetation cover , field survey locations & habitat trees

11.2 Nocturnal Targeted Surveys Arboreal Mammals

Only two arboreal mammals were detected during the three nights of spot light and stag watch survey; the Brush-tailed Possum *Trichosurus vulpecula* and the Ring-tailed Possum *Pseudochirus peregrinus*. No arboreal mammal activity was detected in association with the two presumed hollow bearing trees identified nor among any of the other trees along the northern and western boundaries of the subject land. Both of the species detected were on the eastern side of the property and both were either in association with a built structure or in the vicinity of such a structure, suggesting their utilisation for shelter by both species.

11.3 Diurnal Targeted Frog Survey

Scanning of emergent vegetation and searches of ground cover only detected two common species at the site. The Dwarf Green Tree Frog, *Litoria fallax* and the Common Brown Toadlet, *Crinia signifera*. The former observed sunning on emergent and fringing low aquatic vegetation *Cyperus* and *Typha sp.* and the latter beneath ground debris being used for shelter. Call imitation and vegetation scanning did not reveal any basking GGBF. Dip-netting detected the tadpoles of two additional frog species, the Brown Striped-marsh Frog *Limnodynastes peronii* and Tyler’s Brown Tree Frog *Litoria tyleri*. Tadpoles were identified using Anstis (2002).

11.4 Nocturnal Targeted Frog Survey

Nocturnal frog surveys confirmed the presence of those species detected by diurnal survey methods. Dwarf Green Tree Frogs were detected visually by spot light and from call in high abundance. Brown-striped Marsh Frogs were similarly confirmed by call at several locations though not caught.



Common Brown Toadlets were also common and calling at all water bodies. Only one additional species was added to the detected frog species list following nocturnal survey methods, the Brown Tree Frog *Litoria peronii* which was heard calling off site to the east near a dam on the adjoining property that was not further surveyed.

Call playback, call imitation and auditory survey did not detect the GGBF nor did the dip-net sampling method.

Table 6 Provides a species list of all species detected by all methods during the supplementary targeted survey including incidental bird and other fauna species not targeted by the survey.

Group	Scientific Name	Common Name
Amphibia (Frogs)		
Pelodyadidae (Tree Frogs)	<i>Litoria fallax</i>	Dwarf Green Tree Frog
	<i>Litoria peronii</i>	Brown Tree Frog
	<i>Litoria tyleri</i>	Tyler's Brown Tree Frog
Myobatrachidae (Ground Frogs)		
	<i>Limnodynastes peronii</i>	Brown Striped Marsh Frog
	<i>Crinia signifera</i>	Common Brown Toadlet
Aves (Birds)		
	<i>Acridotheres tristis</i>	Indian Mynah
	<i>Aegintha temporalis</i>	Red-browed Finch
	<i>Cacatua galerita</i>	Sulfur Crested Cockatoo
	<i>Dacelo novaeguineae</i>	Kookaburra
	<i>Grallina cyanoleuca</i>	Magpie Lark
	<i>Gymnorhina tibicen</i>	Magpie
	<i>Leucosarcia melanoleuca</i>	Wonga Pigeon
	<i>Manoria melanophrys</i>	Bell Miner
	<i>Manorina melanocephala</i>	Noisy Miner
	<i>Podargus strigoides</i>	Tawny Frogmouth
	<i>Srepera graculina</i>	Pied Currawong
Mammalia (Mammals)		
	<i>Orectolagus cuniculus</i>	Rabbit
	<i>Pseudochirus vulpecula</i>	Ring-tailed Possum
	<i>Rattus rattus</i>	Black Rat
	<i>Trichosurus vulpecula</i>	Brush-tailed Possum
	<i>Vulpes vulpes</i>	Red Fox

12 Discussion

This survey and assessment report has determined that the proposed rezoning of the existing cleared areas to residential will have a trivial impact on the ecological values of this component of the subject land and a negligible impact on the wider ecology of fauna in the local area, of which the subject land forms a part. A plethora of investigations have been undertaken in the Wyong Shire in support of the now defunct Wyong Conservation Strategy as well as additional studies undertaken in support of the various developments that have occurred to the west, north west and north of the subject land and have been utilised to justify establishment of the Wadalba



Wildlife Corridor at the same time as granting approval for intensive residential subdivision developments and planned infill rezoning developments nearby.

The current proposal is to rezone the existing cleared and disturbed areas to residential uses and the remaining areas with remaining native vegetation (albeit also disturbed) to conservation zoning (as depicted in the map (Figure 4)). The area proposed for residential rezoning is land that has been subject to long term, (many decades) of use as an intensive poultry operation and grazing. Consequently, the majority of the subject land has been cleared and subject to earthworks, establishment of large sheds and other associated ancillary activities including: care taker's dwelling, garages, storage sheds, dam construction, minor creek diversions, road/track construction and the deposition of chicken manure over much of the cleared and levelled areas of the site. Subsequent or simultaneous to these uses has been the use of the large, open and now exotic grass covered areas, as greyhound pens and training yards. Whilst the intensive poultry operation using all the sheds has been wound back over the past seven years to a much smaller non-commercial use of the site for chicken rearing, the sheds or their concrete footings (some have been dismantled), still all remain. Consequently the majority of the site is devoid of any natural soil and any previously existing soil seed bank and native vegetation propagules.

Native vegetation does continue to exist on the sloping/elevated lands on the northern boundary portion of the subject land, along with narrow (1st order), varying width riparian strips of regenerating native woodland along the western and heavily modified eastern drainage lines that form the western and eastern boundaries respectively.

The dominant native vegetation is Spotted Gum Iron Bark Woodland (depicted in LHCCREMS (NPWS, 2000) and Bell (2003) vegetation mapping for the area). Almost all of the native woodland areas on the subject land have an understorey that is a virtual monoculture of Lantana (*Lantana camera*) and which also forms almost impenetrable blocks across much of the otherwise cleared areas of the site that have not been continually managed since cessation of intensive poultry operations. Recent Lantana slashing works by the land owner have only just made accessible parts of the site being considered under this assessment where it had been previously covered by 4m+ high swathes of this exotic vegetation. Lantana is a Class 4 declared noxious weed in Wyong LGA and the plant must not be sold propagated or knowingly distributed however, the removal of declared noxious weeds, within the meaning of the Noxious Weeds Act 1993, doesn't require consent from Council. Furthermore the proponent is in the process of seeking assistance from the Hunter Central Rivers CMA to remove all Lantana from the site, particularly from the areas with remnant native vegetation with the view to rehabilitating these areas. The CMA has informally endorsed such an approach following inspection of the subject land.

12.1 **Wildlife Corridor Values**

The Wadalba Wildlife Corridor has been established as part of an offset to residential subdivision approval by WSC to the west of the subject land. The formal footprint of this corridor ends in the east at the 'paper' boundary of an unformed section of Louisiana Road and to the south east at the Johns Road alignment. This same unformed section of Louisiana Road also forms the western boundary of the subject land. Strategically, this places a considerable and presumed onus on the subject land owner to provide a continuation of the corridor on the subject land if it is to remain functional in the future. This presumption, without discussion or consultation with the current or



previous land owner, is depicted in varying forms/footprints within the Wadalba Wildlife Corridor Management Plan, (Conacher Travers, 2006) and implied in the NWSP (DoPI, 2012a). It is this authors' opinion that current corridor functionality is more likely presently being retained by existing vegetation within the corridor footprint along with other native vegetated land within the proposed and otherwise 'developable' land on the adjoining allotment. It is understood that a DA for residential subdivision on this vegetated 'functional corridor' land is currently before WSC and under consideration for approval as residential housing. This DA is likely (though questionably), being considered under an assumed concurrence granted by DEC (now OEH) to WSC in 2004. The associated conditions of the assumed concurrence granted to WSC included the maintenance of a functional corridor. This corridor was to be subject to a detailed Management Plan being developed and implemented, a s94 contributions plan that provided for rehabilitation and management of the corridor lands and ensured functionality was retained, as well as compensate other land owners (including the subject land owner) who were or would be required to provide disproportionately to the future functionality of the corridor and hence disadvantaged. No such compensation has been provided to the subject land owner, no request for purchase by WSC and little advice on what WSCs preferred option with respect to final outcomes of the Wadalba Wildlife Corridor continuation. Consequently, design of the proposed corridor contributions could not be aligned with any WSC preferred footprint for continuance of what would have to be a largely constructed and/or rehabilitated corridor on the subject land. The currently extant vegetation along the two first order streams are both far too narrow alone to establish or meaningfully contribute to a maintained functional intra-regional wildlife corridor.

In the absence of specific advice, and which may have both assisted and saved the subject land owner from unnecessary costs, we have referred to the literature with respect to corridor ecology and values, and also meant that the previous single dwelling footprint proposal was required to be changed four (4) times before final approval. The currently proposed rezoning to a low density residential zone, for the cleared parts of the subject land, is considered to be ecologically benign, both from a threatened species ecological impact, and broader and more strategic wildlife corridor functionality perspective. The proposed rezoning of the areas retaining native vegetation along the western drainage and the northern elevated component of the subject land to a conservation zone will make a meaningful addition/contribution to corridor connectivity via an increase in width of connectivity and protected in perpetuity as part of a conservation zoning. Further, a proposed revegetation of the Johns Road frontage, as part of the site's ongoing concept plan development, will, in the longer term, add to connectivity and corridor permeability across Johns Road and to the south by increasing wildlife movement options. This will also maximise the potential for connection to the area south of Johns Road that is depicted in the proposed Wyong LEP 2012 as an Environmental Management Zone, and presumably is the proposed/preferred route of future continuation of the corridor to the south, albeit this has never been confirmed by WSC in any of our meetings. Further, the proposed entry and exit to the subject land, under conceptual development, is to be via separate/divided carriageway as employed elsewhere in the Wadalba Wildlife Corridor road crossings.



12.2 *Riparian Habitats*

The existing drainage lines, though categorised as gazetted streams and depicted on the 1: 25 000 topographic map sheet, are modified and, in the case of the eastern drainage line, are not located as depicted in the gazetted stream database.

The western stream is unlikely to be directly impacted, in any way, by the current rezoning proposal but may ultimately require an easement for services to be installed across it. This would be designed with minimal vegetation impact to connect with service reticulation systems on the adjoining property to the west. WSC indicated that it would provide such service diagrams (and other information) to assist with concept planning for the subject land but as yet have not been provided. Sewer and other services could be readily accommodated across the western drainage by sensitive positioning and strict application of NOW controlled activity guidelines. All potential indirect impacts on riparian issues and WM Act considerations would be addressed in other reports and plans and dealt with in accordance with Office of Water controlled activity guidelines as necessary. No further specific discussion of these issues will be made at this time. The eastern drainage, which has been subject to considerable disturbance and upstream diversion works, is proposed to be included in the residential zoning and its treatment would be later subject to detailed site concept planning specifics and landscaping for sensitive incorporation into any future residential subdivision proposal, post rezoning.

12.3 *Watercourse Considerations*

The subject site is partly drained by two non-perennial watercourses, which could be best described as non-perennial drainage-lines. At the time of the initial inspections neither were flowing, being completely dry for their entire lengths within the property. It is possible that many years ago the eastern drainage line may have extended further upslope than at present (and as depicted on the 1: 25K Topographic map), but has since been reduced by track construction (now overgrown by lantana, and so rather difficult to assess) and diverted to the east and to the north of the rear poultry shed. The eastern drainage line also has a small 'headwater' soak present – but this may be the remains of an attempt to dam this part of the stream many years ago, as it appears somewhat artificial in construct. This "soak" may represent a semi-permanent spring, but it was in a drying state when inspected, although it was heavily vegetated with a dense growth of *Typha*. Water quality appeared to be poor due to a dense layer of decaying vegetation and the stagnant state of the soak. The western drainage line was similarly overgrown with lantana, so it was also difficult to assess, although it appeared to have a more significant flow than the eastern drainage line. It was apparent that both watercourses would normally flow to the south following rainfall. However, in 2011 both were in flow following extensive periods of rainfall. The eastern drainage-line had a small soak present with less than thirty centimetres water depth at the time of our inspection on 21 September 2009, but the soak became part of the drainage flow following the high rainfall periods experienced during early 2011 inspections.

Both stream lines were walked for their entire lengths and the banks were inspected to an approximate distance of between 20 and 40 metres on each side, but the density of the Lantana growth made some areas virtually inaccessible.

The riparian vegetation consisted of an assemblage of *Casuarina* and *Melaleuca* along the riparian zone, and further out a dense to open Spotted Gum Woodland remnant with an understorey mainly



comprising lantana, and privet. Native ground cover was sparse to non-existent in both communities.

In-stream ground cover mainly comprised over-grown lantana. No logs, snags, fallen trees or rocks were in evidence along the drainage-lines, which were completely dry along their entire lengths at all times of the earliest visits to the property.

Although the time of our initial inspection coincided with a prolonged period of low rainfall in the area, past land uses may also have contributed to the present dry state of the watercourses as well.

Prior to the original clearing of the site many years ago, these drainage lines would have likely had a more hydrologically complex function than at present. Following periods of rainfall, they would have likely represented small flowing creeks for much of the year, but at the onset of drier periods, they would have reverted to a non-flow condition comprising chains of small semi-permanent pools for much of the time.

The banks of the drainage-lines were minimal and had been subjected to considerable past erosion, bank collapse, slumping, and in-filling/modification.

There were very few habitats along the drainage-lines that had not been seriously degraded by previous use of the property many years ago. The riparian vegetation along both drainage-lines had been severely modified on both sides probably by past grazing and clearing activities related to the sites previous agricultural uses.

The ground and shrub layer species present were virtually all exotics. The conclusion drawn was that the in-stream cover was poor in that little or no cover was present other than over-hanging lantana.

The condition of the banks in relation to erosion and stability was considered to be poor with extensive areas of previous erosion apparent and with little native vegetation cover.

There were no riffles, pools and bends along either watercourse drainage line, both presenting as uniform, with only slight variety of habitat features. It was apparent that during periods of flow the drainage-lines would only have limited periods of (rapid) flow, given the small area of catchment and would rapidly dry to chains of small pools fairly soon after the cessation of rainfall.

The pre-existing natural condition would likely have been streams with such semi-permanent pools present but now that is no longer the case. Following decades of disturbance, and extended periods of no water at all other than perhaps the soak at the headwater of the eastern-most drainage-line, the drainage lines have been hydrologically degraded.

12.4 Artificial Wetland Areas

The artificial wetlands on the subject land consist of two constructed dams developed on the site many decades ago to capture water for the poultry operation and divert runoff away from the poultry facilities. A third minor water body is a drainage depression within an area of exotic grasses (Kikuyu) but which retains water and a covering of duck weed.

These areas have become naturalised to varying extent. One of the dams is heavily shaded and surrounded by Lantana, the other has a significant extent of emergent sedges *Typha*, *Cyperus* and *Eleocharis* surrounding a large area of permanent water. The proximity to Eaton Lands to the west of the Pacific Highway where GGBF have been detected previously (albeit ca 18 years ago and



without re-detection since) as well as east of Pollock Avenue to the south of the subject land warranted an application of GGBF survey guideline techniques and an assessment of the areas with potential as habitat. No GGBF were detected and other frog species found are recorded in the fauna survey results Table 2 above are all common species that readily colonise man-made structures.

These wetland areas would be redesigned or reconstructed and sensitively incorporated into future development footprints or replaced with other similar structures that could be suitably landscaped. Impacts of any future residential subdivision from runoff impacts (sedimentation) or contamination (effluent) will be avoided via appropriate sediment and erosion controls designed to accommodate any future subdivision.

The consequences of this would thus be that any potential habitat for the GGBF would be either retained or replaced with similar habitat components using the best habitat construction advice/guide available. Hence a proposed rezoning and subsequent subdivision would enable the species, if still extant in the locality, to be able to occupy these potential habitat areas were they might periodically migrate through the subject land.

12.5 Vegetation

The subject land is predominantly covered by exotic weeds and grasses that have colonised during and since the sites clearing and use over many decades as a commercial intensive poultry operation.

Remnant and regenerating native vegetation along drainage lines on the eastern and western boundaries is heavily disturbed as is the persisting native vegetation on the sloping/elevated land on the northern boundary. This vegetation is Spotted Gum Iron Bark woodland and is so depicted in LHCCREM (NPWS, 2000) and Bell (2003) vegetation mapping. This vegetation type is recognised as having high to moderately high habitat potential for Squirrel Gliders that warranted survey and inspection. However the quality of this vegetation, on the subject land, is relatively low with very little native understorey species and in most parts almost a monoculture of Lantana. This woodland is also regenerating and with very few tree hollows that could be utilised for denning or shelter by arboreal mammals. The only arboreal mammals that were detected during surveys were common species and were found associated with the built structures on the site.

12.6 Impacts of Existing Proposal

The likely detrimental impacts of the proposal on ecological values of the subject land are trivial and insignificant. Whereas there are likely biodiversity benefits from protecting the retained native vegetation areas within a conservation zoning and applying rehabilitation and bush regeneration techniques to improve its quality.

Ecological impacts from the rezoning itself will be zero and subsequent residential subdivision would be mitigated through various measures controlling sedimentation and effluent effects and any tree losses more than adequately addressed by suitable replanting strategies of appropriate, locally provenance stock in a favourable ratio and placed in more suitable locations along the drainage lines and Johns Road frontage.



12.7 Existing Condition of the Land

Almost the entire site is disturbed with extensive weed infestations across virtually the entire site. Large sheds used for the poultry operation take up a significant portion of the site and various used and disused tracks criss-cross the site. Earth works, drainage diversion channels, dams, storage sheds and care taker residence along with ongoing greyhound holding pens and training areas render much of the site almost useless as natural habitat for wildlife

The owner however, in recognising the potential for rehabilitation of some of the areas still supporting native vegetation, has embarked on a joint effort (when funding is available) with the Hunter Central Rivers Catchment Management Authority (HCRCMA) to control the weed infestation on the site and improve its habitat and connectivity values. This is further undertaken mindful and in recognition of the components of the site with strategic linkage and that may make a worthwhile biodiversity conservation contribution to wider connectivity corridor values and functionality in the locality.

12.8 Conservation and Development Outcomes

The widespread clearing of native vegetation from the Wyong-Wadalba area for agriculture over the last 100 years and in particular for urbanization over the last twenty years or so has resulted in a highly fragmented pattern of remnant vegetation in the whole Wyong LGA.

The general Wyong-Wadalba area is biogeographically significant in that it represents a transition zone between two completely different floras and faunas, a northern group of sub-tropical or warm temperate species and a southern group of cool temperate species.

This central coast North-South climatic overlap zone occurs nowhere else in the Sydney Geological Basin. The area is also significant in that it also coincides with an east west transition zone where a range of species from wetter coastal environments overlap with species from drier inland environments. This part of the Central Coast is well known as a drought refuge for many migratory birds from the inland as well.

Thus, existing pockets of vegetation that would otherwise be of low value for the long term conservation of flora and fauna can now be considered more significant at a regional level. The creation of the Wadalba Wildlife Corridor was an attempt to establish linkages between areas of development and intact bushland in all directions, and likely improves the movement and population viability of the more mobile and adaptable flora and fauna species in the general area.

It could therefore be argued that all remaining stands of native flora in the Wadalba area are highly significant, given the historical losses that have already occurred.

It is herein viewed, that any development outcome for the subject land should also attempt to retain the existing remnant native vegetation beyond the abandoned agricultural parts of the property within a conservation zoning.

The obvious lack of old growth, hollow-bearing trees on the property would mean that there is very limited roosting or nesting opportunities for a number of threatened fauna species. However the land could be considered important foraging habitat for a number of threatened bird and mammal species already known from the general area and which may make periodic visitations or utilize the retained native vegetation as a movement corridor.

While the most important habitat (due to its area and structure) on the subject land is the Spotted Gum/Ironbark Woodland, it should also be appreciated that the cleared areas (although also abundant elsewhere in the locality), could provide at least some foraging habitat for a number of species also.

The surrounding slopes and foothills in the entire Wadalba area are characterized by an extensive series of remnants of eucalypt vegetation (principally Spotted Gum and Ironbark), and this fairly extensive body of vegetation has been largely protected as the Wadalba Wildlife Corridor. The subject property is to the immediate east of the WWC and provides an opportunity to contribute additional areas to it along the western and northern (elevated) boundary areas.

It is here considered that much of the property is suitable for some kind of residential development, and this could likely be achieved without significantly compromising the significant biodiversity values of the site overall. However, it may be necessary to control lantana and privet throughout the proposed corridor components to enhance the long term viability of the native flora and fauna remaining on the site in the areas proposed for rezoning to a conservation zone. Future planning for the property should include provisions for the long term protection and management of the existing native vegetation on the property and with habitat enhancements as outlined. These should form components of future concept planning for the site.

A future development outcome for the property could easily include the retention of most of the existing native vegetation and the enhancement of the riparian areas as well as achieving a residential outcome in the cleared/disturbed areas, within a carefully developed overall concept plan, for the whole land parcel.

13 Conclusions

The targeted survey for two identified subject threatened species did not detect either species or any indication of them. Survey methods and timing of survey effort were adequate to detect both species were they present at the time of survey.

The current proposal is ecologically benign with the proposed residential zone being applied to the most disturbed areas and the retained areas of native vegetation incorporated into a conservation zone and set aside for contribution to the Wadalba Wildlife Corridor.

The corridor contribution from 145 Johns Road via conservation zone rezoning will widen the existing vegetated area given conservation zoning such that it approximates a corridor width concordant with a sub-regional corridor width of 350m recommended by Doerr, *et al.*, (2007).

However, for the overall Wadalba Wildlife Corridor to likely function for Squirrel Gliders, the whole width of the area proposed as a corridor link to the south will need some form of rehabilitation and habitat enhancement. The types of rehabilitation/enhancement required will need to take note of the known habitat requirements outlined in the Squirrel Glider and Corridor discussion (above) and incorporate enhancement measures to address some or many of these requirements. This should be across all lands ultimately contributing to the corridor width at this point and thus comprise: Johnson Lands to the west, the Louisiana Road easement adjacent as well as the component proposed for rezoning to conservation on 145 Johns Road, the subject land. Furthermore, road



frontage transgression to the south may well need to be facilitated (at least in the short term until replantings take effect), by erection of suitable glide poles and any future road widening or works along Johns Road would need to be similarly compensated if tree removal occurs from these activities in that vicinity.

Native vegetation that has been treated as a degraded element of an endangered ecological community but likely actually Spotted Gum Iron Bark Forest (and hence not an EEC) – is specifically located along the drainage lines predominantly in the south eastern and south western boundaries. These areas will not be removed by the proposed rezoning application and future development would be excluded in the western area where it would be added to the Wadalba Wildlife Corridor and under a conservation zoning. In the east, whilst rezoned to residential future concept planning has already identified this component of the site as a likely detention area where trees would be retained in conjunction with detention structure establishment. Such future uses would be subject to further planning and require separate approval.

Three threatened fauna species have been recorded at or adjacent to the site and it is likely that several others may utilize the site as well, from time to time, given their known occurrence in the general vicinity. Their utilization of the site is however primarily, likely restricted to the riparian zones and elevated vegetated area for inclusion in the conservation zoning. None of the threatened species were detected in the areas of the site proposed for residential rezoning and ultimately, subjected to further development on the property.

Recognized habitat for threatened fauna and flora species occurs on the site and on lands adjacent to the site, but none of these areas are to be significantly affected by the proposed rezoning.

The protection of the remnants on the property will allow persistence of most species and ecological communities contained therein and such protection can be easily integrated with the proposed rezoning of the site.

Our investigation of the site also indicated that development of even a large part of the site is not only feasible but it would also provide a viable mechanism for a satisfactory ecological outcome for the broader Wadalba area by inclusion of the areas indicated as a conservation zoning and contributing to corridor functionality. Extensive areas of the property are in a highly degraded state with approximately 60% of the land herein considered suitable for rezoning as residential development owing to its disturbed state. However, even some of these areas with selective retention of areas within a likely required drainage easement could contribute to corridor functionality (stepping stone model) and have some provided habitat values as part of site concept plan formulation.

Should a residential development option be pursued for the subject land, measures can be taken to avoid or minimize ecological impacts.

Where native vegetation may be directly impacted it is recommended that efforts should be undertaken to protect particularly sensitive areas where practical. If this is undertaken, it would be unlikely that any significant impact would result for any threatened entities either on or near the site (see Appendix 1 for 7-Part Tests for the Threatened entities that have been detected on or adjacent to the subject land or assessed on the basis of likelihood).



As a consequence of previous conservation efforts on nearby lands along Johns Road and elsewhere, a substantial area has been dedicated to wildlife conservation (the Wadalba Wildlife Corridor). This area provides protected habitat for a large range of native flora and fauna and the subject land lies to the immediate east of this corridor and has the opportunity of contributing to the continuance and ongoing functionality to this local connectivity conservation measure.

It is here also concluded that future development of the site would not significantly impact upon any threatened or regionally significant flora and fauna or ecological communities.

It is recommended that to ensure the minimization or prevention of any ecological impact of any proposed future development the following should be undertaken:

Depending on the extent of any proposed future development the interface between the development areas and the vegetation to be protected should be managed so that no direct or indirect impacts occur on that part of the property to be conserved. One such conceptual option to this effect would be the use of perimeter road layout designs in any concept plan development for the residential zone areas.

As part of any proposed future residential development of the site, a vegetation management plan should be implemented for the retained vegetated component within a conservation zone or similar requirements to that provided by the Wadalba Wildlife Corridor Management Plan (Conacher, 2004).

Any clearing of remnant native vegetation that becomes required should be kept to an absolute minimum. For example, during the clearing or control of lantana extreme care must be taken to ensure that no mature trees are damaged or understory removed.

All mature and/or hollow bearing trees should be retained. Any pre-clearing activities that may be required should be inspected by ecologists to ensure the protection of potential habitats.

During any construction phase of future development where trees may need to be removed, all work should be supervised by ecologists, following a designed clearing protocol.

The corridor areas of the site should be subjected to additional efforts to control Lanatana as has been in negotiation with the CMA for supplementary funding. Future landscaping of the developable areas should include local provenance seed stock for appropriate species plantings to facilitate the maintenance of genetic integrity and any revegetation works should include where possible the regionally significant species of flora that have been identified in the LGA.

Any proposed development of the site should include or align with an environmental management plan that would include habitat, vegetation and bushfire plans.

Nutrient and sediment control strategies should be put in place particularly in sensitive areas. Revegetation works should be similarly protected and all earthworks, particularly in the vicinity of drainage lines should be considered for sediment control purposes to minimize erosion during inclement weather.

Wherever possible development, other than weed control, should not occur within 10 metres of the drainage lines on either side of the property.

The current rezoning proposal provides WSC, OEH and DoPI with a golden opportunity to secure a connectivity conservation measure at no cost to the community. The proposal establishes and



maintains a continuance in connectivity of the Wadalba Conservation Corridor as an intra-regional corridor to the south and so also secures a critical component of the Wadalba Wildlife Corridor, North Wyong Structure Plan, Central Coast Regional Conservation Strategy (in development) and Wyong Conservation Strategy. Concomitantly, it also contributes to all the state, national and international measures/initiatives (outlined above) that endeavour to ensure connectivity conservation for biodiversity and associated climate change goals and imperatives.

14 Acknowledgements

Thanks are due to Garry Hopkins, DoPI Gosford Office, Algis Sutas, NOW Gosford Office, Karen Thumm and Richard Bath, OEH Newcastle Office and Dan Keating HCR CMA Gosford Office for providing information, agency perspectives and/or inspecting the subject land to assist our formulation of a parsimonious plan for future site utilisation. Garon Staines, former WSC Development Assessment Ecologist, provided additional helpful information in regards to the history of the Wadalba Wildlife Corridor agreement. Current Wyong Shire Council staff are also thanked for their time spent in meeting with us to discuss future site options and preferred options for the site.

15 Authorship

This survey and assessment report has been prepared by Ross Wellington, Principal and Proprietor Australian Environmental Surveys – AES.

Ross is a graduate Zoologist and Ecologist with over thirty years' experience undertaking professional ecological and other environmental investigations and projects.

He is a member of the NSW Declining Frog Working and a former member of the Royal Zoological Society of NSW and the Frog and Tadpole Study Group (FATS). He is a recognised expert practising herpetologist but also with extensive skills in mammalogy, ornithology, ichthyology and invertebrate zoology.

He has owned and operated an Environmental Consulting Company and worked for the NSW Government lead conservation agency providing advice and developing state-wide and national policy, guidelines and management plans relating to wildlife conservation and management. He has been appointed as NSW representative on National conservation working groups and in various work roles has undertaken and reviewed many environmental impact assessments, in scale, ranging from small to major state and nationally significant developments.

15.1 *Other Contributors*

Components of the field work and assessment for this report was undertaken by Richard Wells and Trevor Hawkeswood (Botanical), as well as by Ross Wellington. Richard Wells contributed substantially to the development of this report by way of having prepared *Worldata*, (2011) from which various components of this report have heavily relied. The experience and qualification of the contributing surveyors are as follows:



15.1.1 Richard Wells

Owner of environmental consultancy (Worldata Environmental Information Services - ABN 608 065 653 01) that specialises in fauna and flora surveys, including the preparation of reports for proposed developments.

Auditing of other consultant's reports and data, and provides technical support and information to Local and State Government Officers in regards to development projects as well as various Government policies;

Previous member of Section 165 Review for the Assessment of Licence Applications under the Commonwealth EPBC Act;

Field naturalist with over 40 years experience in observing and documenting Australian fauna. Main research interests focus on the distribution, habitat preferences and taxonomy of reptiles and amphibians;

Has undertaken over 2000 field surveys for vertebrate fauna in NSW, Qld, NT, WA, ACT and Victoria;

Author of hundreds of reports and articles on fauna and flora (including Threatened Species) that have appeared in a variety of publications - including the journals Herpetofauna, the Australian Journal of Herpetology, the Australian Zoologist, the Western Australian Naturalist, the Victorian Naturalist, the Northern Territory Naturalist, the Australian Herpetologist, the Sydney Basin Naturalist, and the Australian Biodiversity Record. A list can be provided if required.

Author of an educational CD ROM "The Extinct, Endangered and Vulnerable Mammals, Birds, Reptiles and Frogs of Australia" which included over 50,000 references on the environmental literature of Australia;

Undertaken numerous private consultancies for property developments in the Sydney Basin Bioregion, Lower North Coast Bioregion and western New South Wales. Projects have included Residential, Industrial, and Infrastructure developments. Numerous National Parks and State Forest lands have been surveyed for State Government agencies;

Previously and Currently Contracted to Survey for fauna (including Threatened Species) by Department of Environment, Conservation and Climate Change (formerly NSW National Parks and Wildlife Service – now OEH);

Contracted by State Forests of NSW for fauna surveys (over 30 State Forests surveyed);

Contracted by the University of New South Wales for research into forest ecology of lower vertebrates on the far south coast of NSW;

Contracted by Western Research Institute (Charles Sturt University) for fauna surveys of various mining operations in New South Wales - including Newcrest Mining's Cadia Valley Operations;

Contracted to survey Reptiles and Amphibians for Connell Wagner (RTA - Pacific Hwy upgrades);

Granted unrestricted licence for studying all species of flora and fauna in NSW (including National Parks) No S10371;

Other:

Previous Employment with NSW NPWS (Scientific Services Unit), NSW Health Commission (in charge of Medical Museum, Institute of Clinical Pathology and Medical Research), Taronga Zoo (Reptile Department), Australian Museum (Herpetology), Northern Territory Museum, Darwin (Department of Natural Sciences) and Australian Customs Service (Customs Officer);

Has delivered numerous public lectures on Australian wildlife - including to various Rotary Clubs, Country Women's Association Meetings, the National Parks Association, Schools, Scout Groups, and various herpetological societies and naturalists' clubs over many years;



Media interviews have included both television and radio - including the Midday Show, Ray Martin Show, 4-Corners (ABC), Bert Newton, Andrew Olle (Radio 2BL), Radio 2Triple J, Radio 2GB (Clive Robinson), Totally Wild, ABC Radio Science Show;

Newspaper articles containing biographical info on activities and projects have also appeared in various Regional, State and National papers - including The Australian, The Age and the Sydney Morning Herald.

The Pilbara Death Adder (*Acanthophis wellsi*) has been named in recognition of services to the study of herpetology in Australia;

Past President of the Australian Herpetological Society;

Editor and Founder of the Australian Journal of Herpetology;

Editor and Founder of the Australian Herpetologist;

Editor and Founder of the Australian Biodiversity Record;

Founding Member of the Australian Herpetologists' League;

Founding Member of the Hawkesbury Herpetological Society;

Founding Member of the Northern Territory Field Naturalists' Club;

Founding member and past Vice President of the Republican Party of Australia;

Professional Referees:

Dr Daniel Lunney - Senior Research Scientist, NSW Department of Environment, Conservation and Climate Change - 02 9585 6444

Professor David Goldney, Charles Sturt University – 02 6331 4807

Professor Noel Tait - Macquarie University - 02 9850 8198

Dr Harry Parnaby - Australian Museum - 0415 912 187

Tanya Leary - Threatened Species Project Officer, DECC (now OEH) Parramatta - 0417 048 422

15.1.2 Trevor J. Hawkeswood

Qualifications

B.Sc. (Hons)(NE), B.App. Sc. (Env. Sc.)(CSturt), PhD (Hon)(CU), FRES

1975 to 1978: University of New England, Armidale. Bachelor of Science (Hons). Successfully passed subjects in Ecology and Entomology as part of the Honours Degree. Completed all of the Botany and most of the Zoology subjects offered by the University.

1991 to 1995: Charles Sturt University, Wagga Wagga. Bachelor of Applied Science (Environmental Science).

Elected Fellow of the Royal Entomological Society of London (FRES)(1990)

Scientific Experience

Undertook research on the subject of plant leaf ultrastructure for his Honours thesis on the survey of leaf anatomy in the Leptospermoideae (Myrtaceae).

Tutored university students in the areas of plant taxonomy, general morphology, ecology and evolution of flowering plants, general zoology and biological experimentation.

Undertaken ecological field work on plants and insects in most States of Australia (especially New South Wales and Queensland) as well as in Papua New Guinea, the Philippines, Thailand, Uzbekistan, Malaysia and the USA.

Contributed numerous papers on Australian and New Guinean biota to refereed journals both here in Australia and overseas.



Author of over 500 scientific papers, books and reports on the flora and fauna of Australia.

Expert Witness NSW Land and Environment Court

Professional Referee

Dr. Ken Page

Head of School of Science and Technology

Charles Sturt University

Locked Bag 588

Wagga Wagga NSW 2678

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Fax: 02 69332737



15.1.3 Ross Wellington

Ross is an ecologist/zoologist with over 30 years experience in wildlife and environmental investigations. Since graduating with a triple major in biological sciences from Macquarie University in 1977 he has worked as a science teacher an environmental educator (NSW DET), ecological/environmental consultant (AES), technical officer within the herpetology and ornithology departments of the Australian Museum and as a senior wildlife conservation and threatened species and wildlife management project officer within the NSW National Parks and Wildlife Service, (now Office of Environment and Heritage and formerly Department of Environment & Climate Change) 1998 – 2005 and most recently as a consultant ecologist with noted environmental consultancy firms - Molino Stewart Pty Ltd 2005 -2008 and Eco Logical Australia Pty Ltd 2008-2012.

Consequently, Ross has an extensive repertoire of skills and experience in undertaking, coordinating or reviewing outcomes of an array of projects that include: wildlife survey, plans of management, taxonomic studies and environmental planning and environmental impact assessment. He is considered a noted authority in the specialist area of herpetology.

Ross has had a wide range of roles and functions throughout his working life and these have variously included being a participant in some of the early ecological investigations into NSW Forestry practices, undertaking fauna surveys as part of the state-wide CRA process, preparing State and National Recovery Plans for high profile endangered species such as the Green and Golden Bell Frog and Broad-headed Snake, a NSW Government representative on national working groups dealing with wildlife diseases and pest species management and contributing to various NSW wildlife conservation and management policy and plan development.

Qualifications

Bachelor of Arts (Biological Sciences), Macquarie University (1974-1977)

Diploma of Education, Macquarie University (1974-1977)

Teaching Certificate, NSW Department of Education and Training

Certificate IV Geographic Information Systems, Newcastle TAFE (2005)

Professional Associations and Memberships

Founding Member NSW Declining Frog Working Group (DFWG) (1999-2012)

Royal Zoological Society of NSW Scientific Member (1991 – 2000)

Australian Herpetological Society (1980 – 1985; 1998 – 2005)

Frog and Tadpole Study Group of NSW (1998 – 2005)

Brisbane Water/Gosford Lagoons Catchment Management Committee Ministerial Appointed Deputy Chairperson (Member 1994-1996; DC 1997-2000)

Tuggerah Lakes Catchment Management Committee Education/Research Task Group/Sub Committee Member (1995-2000)

Association for Environmental Education NSW State Executive (1995-1998)



Background

The wide range of roles and functions Ross has had range over a number of disciplines and include:

- Environmental Impact Assessment
- Natural Resource Management
- Ecological Studies
- Environmental Education and Sustainability Education
- Environmental Training
- Facilitation
- Community Engagement
- GIS

Relevant Project Experience

During a seven year period as a Senior Threatened Species Officer within the Biodiversity Conservation (Threatened Species) Section of the NSW National Parks and Wildlife Service (NPWS) and Department of Environment & Conservation (DEC – DECC – now OEH) Ross either project managed or was required to provide technical expert advice or other input into the statutory roles of the leading NSW state government environment agency and included coordination, assessment and determination of numerous major projects.

A selection of his project experience is provided below.

Government Infrastructure Projects

- Sydney Water Cronulla STP and pipeline up grade
- Sydney Harbour and Foreshore Authority Cooks Cove redevelopment REP
- Sydney Olympic Park Coordinating Authority projects including waste water recycling scheme (WRAMS) predominantly Green and Golden Bell Frog related issues.

Major Industry Projects

- Dendrobium, Mt Owen, Ravensworth, Warkworth and Cumnock coal mine developments and mine expansions
- Port Warratah - Kooragang Island coal loading terminal
- Kurnell Desalination Plant
- Bunnerong to Kurnell – Botant Bay Cable Project

Residential and Commercial Developments

- Hunter Economic Zone (HEZ)
- Wyong Employment Zone (WEZ) at Warnervale
- Somersby Industrial Estate
- Australand's Kurnell Peninsula residential area
- Lensworth's Wallarah Peninsula residential estate
- North Lakes Residential release area
- Johnson Property Group AV Jennings and Westminster Homes Wadalba residential release – assumed concurrence and Wadalba Wildlife Corridor establishment.
- Crighton Properties Gwandalan residential release area
- Minnesota Road residential rezoning and infill development



Threatened Species Recovery Programs

Authored and/or significantly contributed to the coordination, preparation and approval of numerous recovery plans/programs prepared or undertaken to fulfil requirements of the NSW *Threatened Species Conservation Act 1995* and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*.

This included :-

- Green and Golden Bell Frog (2005)
- Broad-headed Snake (2007)
- Blue Mountains Water Skink (2001)
- Gould's Petrel (2000)
- *Grevillea caleyi* (2001)
- Southern Brown Bandicoot (2005)
- Brush-tailed Rock-wallaby (2000)
- Yellow-bellied Glider (2001)
- Giant Burrowing Frog (2007)
- Red-crowned Toadlet
- Plague Minnow *Gambusia* TAP
- European Red Fox TAP
- Frog Chytrid TAP (Cmth)
- Bitou TAP
- Bush Rock TAP

He was also required to regularly provide expert advice on technical matters relating to the conservation of threatened fauna, flora and communities to the NSW Scientific Committee, NSW Environment Minister and Senior Executive of NSW NPWS/DEC. He contributed to policy development and developed guidelines for Policy implementation and was appointed to several National committees/working groups as NSW representative - National Cane Toad Task Force and the Frog Chytrid Working Group.

The NSW NPWS/DECC Frog Hygiene Protocol Policy, that Ross prepared and presented at the 2000 Cairns conference, was acclaimed as a landmark document that put the NSW NPWS ahead of all other states, territories and the Commonwealth in its response to managing *this emerging frog disease* now known to have caused the likely extinction of 9 species of frogs in Australia. This Policy has been viewed as a template for other jurisdictions in Australia and internationally. Ross nominated this now listed Key Threatening Process in NSW.

A more detailed list of project experience carried out whilst employed in the public and private sector is provided below.



Environmental Planning and Policy

- Green and Golden Bell Frog Recovery Plan – NSW DECC
- Broad-headed Snake Recovery Plan – NSW DECC
- Review, significant input or development of draft for: Gould’s Petrel RP, Blue Mountains Water Skink RP, Barred River Frog *Mixophyes ssp* RP, Yellow-bellied Glider RP; Marine Turtle (National) RP; Giant Burrowing Frog RP; Plague Minnow *Gambusia* TAP; Bitou TAP; Fox TAP; Frog Chytrid TAP (National).
- Hygiene Protocol for disease control in amphibians – NSW NPWS/DECC
- Strategic management Plans for Key Populations of the Green and Golden Bell Frog at: Port Kembla, Greenacre, Kurnell, Arncliffe, Georges River, Parramatta River, Kooragang Island and Hexham Swamp, Maitland/Cessnock and Upper Hunter – all prepared on behalf of NSW DECC.
- Prospect Nature Reserve Plan of Management (Sydney Catchment Authority)
- Wyong Employment Zone (WEZ) Warnervale, NSW; Wildlife Conservation Plan of Management, (Wyong Shire Council) – also negotiated the strategic use of the EP&A Act Regulations 2000 to coordinate an assumed concurrence in one of the first instances of this mechanism being utilized to streamline development approvals with mutually beneficial outcomes for proponents and conservation with associated certainty.
- Biobanking Offset Tool Development – (NSW DECC) assisted in development of assessment tool
- Threatened Species Environmental Impact Assessment Guidelines – Green and Golden Bell Frog, Red-crowned Toadlet, Giant Burrowing Frog (NSW NPWS)
- Threatened Species Recovery Planning prioritization tool development – a decision support tool justify the sequence of Recovery Plan preparation.
- Priorities Action Statement development for all herpetofauna and other selected species listed under NSW TSC Act 1995 (NSW DECC)
- Property Vegetation Plan – PVP assessment tool assisted in its development (NSW DECC and CMAs)
- Threatened Species Calculator Tool for Biobanking Calculations
- Threatened Species Translocation Policy (NPWS)
- Exotic Reptile Seizure Policy (Draft - NSW DECC)
- Marine Turtle Nest disturbance Policy (Draft – NSW DECC)
- Grey-headed Flying Fox camp disturbance policy (Draft – NSW DECC)
- Best Practice Habitat Guide for the Green and Golden Bell Frog

Ecology

- On-site environmental management plan for the Red-crowned Toadlet, Giant Burrowing Frog and *Darwinia glaucophila* Lot 4 Piles Road, Somersby.
- Herpetofauna Survey of the Ravensworth State Forest Area for the proposed extension of the Mount Owen Coal Project, Hebdon, NSW. (Resource Planning Pty Ltd)
- Reptile and Amphibian Surveys of the Narooma Forestry District – Wandella – Dampier State Forests. (NSW. NSW State Forests)
- Morisset Forestry District Environmental Impact Statement. Supporting Document No. 7; Fauna Survey of the Morisset Forestry District Central Coast NSW - Reptiles and Amphibians, State Forests (NSW. NSW State Forests)
- Fauna surveys and habitat assessment surveys within Tania Park and Wellings reserves Manly, LGA. (Manly Council)
- Five Forests surveys and ecological investigations of wildlife on the south coast of NSW – investigations into impacts of logging and fire on forest fauna. (NSW NPWS)



- Fire Management and Ecological assessment of the Red-crowned Toadlet in Wellings Reserve and Tania Park at Balgowlah Heights, NSW. (Manly Council)
- Aquatic and Terrestrial Ecological Assessment of proposed Bellfield College Site, Rossmore NSW. (Bellfield Group)
- 'Planting the Seed' vegetation mapping and weed management along the Cooks River (Marrickville Council).
- Stormwater management and drain maintenance assessment of Davistown, NSW in relation to Green and Golden Bell Frog habitat and integration with species Plan of Management.

Environmental Impact Assessment

- Environmental Impact Assessment Lot 4 Piles Road, Somersby NSW.
- Environmental Impact Assessment Lot 2 Piles Road, Somersby
- Pre-harvest Threatened Species habitat assessment in Doyles River SF, Enfield SF, Bulga SF, Dingo Tops SF and Mt Boss SF
- Threatened Species habitat assessment in relation to proposed road realignment and drainage works in Bulga State Forest.
- Environmental Impact Assessment and 8 Part-test Headlands development proposal Hawkeshead Drive, Killcare NSW
- Flora and Fauna Assessment and 8 Part-test for proposed dam removal and residential subdivision Greens Parade, Kellyville NSW
- Environmental Impact Assessment and 8 Part-test for subdivision proposal the Round Drive, Avoca, NSW
- Environmental Impact Assessment and 8 Part-test for a proposed crematorium at Failford Road, Failford, NSW
- Environmental Impact Assessment and 8 Part-test for proposed cinema extension at Westfield, Tuggerah, NSW
- Environmental Impact Assessment and 8 Part-test for subdivision proposal Tramway Road, North Avoca, NSW
- Flora, fauna and archaeological investigations in relation to proposed Telstra communications towers in Dharug, Yengo and Popran NPs and Mangrove Mountain area, NSW
- Environmental impact assessment and survey for the Broad-headed Snake in relation to proposed optic fibre installation between St Helens Park and Wedderburn, NSW.
- Prepared Director General Requirements for Species Impact Statements in relation to: 150 Lot subdivision Precinct 1 Northlakes, Estelville; 280 Lot subdivision Precinct 2 & 3 Northlakes, Estelville; 86 Lot subdivision Precinct 4 Northlakes, Estelville; Dendrobium Coal Mine Proposal, Appin; SEPP 5 aged development at Normanhurst, among others
- Vegetation and threatened flora species mapping for proposed sand-mining development at Somersby Fields (Vulcan Materials)
- Threatened Flora and Fauna assessment and 8 part-test for proposed dwelling construction at Bar Point, Hawkesbury River
- Terrestrial ecological assessment of the 132kV Botany Bay power cable installation proposal by Energy Australia from Bunnerong STS to Kurnell STS. (Energy Australia)
- Review of Environmental Factors for the Blowering Dam upgrade (State Water)
- Review of Environmental Factors for vegetation maintenance clearing along the 132kV powerline corridor at Kemps Creek between Elizabeth Dve and Gurners Rd Cecil Park, NSW (Integral Energy)
- Fishway Construction Ecological Assessment – (Rockdale and Canterbury City Councils)
- Woy Woy Waste Depot expansion proposal – (Gosford City Council)



- Environmental Impact Assessment Lot 18 Balkala Rd Bayview Hts - (Walker & Walker)
- Botany Bay Cable Project (Part 3A) Referral – (Energy Australia) to Commonwealth Department of Environment and Water Resources (DEWHA)
- Statement of Environmental Effects Proposed expansion to Barker College, Hornsby
- Review of Environmental Factors proposed weir removal and rehabilitation, Gulph Creek, Nerrigundah, NSW (State Water)
- Woy Woy Waste Depot expansion and recycling plant proposal – (URS & Gosford City Council)

Environmental Law

- Expert witness Sutherland Shire Council and Department of Planning Vs Rocla Pty Ltd Sand Mining proposal impacts on the Green and Golden Bell Frog and RAMSAR wetland at Kurnell, NSW, Land Environment Court (NSWLEC 55 2007)
- Expert Witness Hawkesbury City Council Vs Allison Hadfield. Proposed water extraction facility at Tootie Creek near Bilpin NSW. Impacts on ground water aquifer in vicinity of World Heritage and Wilderness areas of Blue Mts NP and impacts on threatened frogs and fish in the aquifer discharge and base flow maintenance of Tootie Creek.
- Expert Witness Wollongong City Council Vs PGH Pty Ltd Impacts of proposed residential development at Maddens Plains impacts on threatened frogs, reptiles, birds, mammals and an endangered ecological community (Upland Peat Swamps on Sandstone EEC)
- Expert Witness Beacon Hill Retirement Vs Warringah Council Seniors Living Development at Beacon Hill and impacts on Threatened Frogs, Reptiles and Mammals
- Expert Witness Warrigal Care Pty Ltd Vs Wollongong City Council retirement village development impacts on Green and Golden Bell Frog and Coastal Swamp Forest EEC.
- Wadalba strategic wildlife conservation corridor Management Plan review, endorsement and assumed concurrence by the NSW DECC (Johnson Partners & AV Jennings)
- Assessment of s91 Licences – (DECC) Undertook independent assessment of section 91 licences for various applicants to the NSW DECC including proposals that potentially impacted on various Endangered Ecological Communities (EECs) including Blue Gum High Forest and Blue Mountains Hanging Swamp, threatened species including: Blue Mountains Water Skink, Squirrel Glider, Green and Golden Bell Frog, *Tetratheca juncea*, Grey-headed Flying Fox, Broad-headed Snake
- Review of licensing arrangements for vegetation management along easements running through Scheyville, Cattai, Marramarra, Popran and Brisbane Water National Parks along the Alinta/Agility and Caltex pipelines from Sydney to Kooragang Island
- Breach investigations of: NSW NPWS/DEC v Forests NSW IFOA licence conditions; endangered ecological communities and threatened species habitat clearing at Redhead, NSW; NSW DEC/NPWS and Lake Macquarie City Council V Hue Gordon and PGP Properties
- Developed a case for compensation and resolution of licensing jurisdiction issues for commercial fishers in the Queensland east coast fishing zone in response to changes to commercial fishing areas brought about by zone adjustments to the Great Barrier Reef Marine Park and establishment of the Torres Strait Protected Zone. Liaised and negotiated across the complex jurisdictional and management responsibilities of the Protected Zone Joint Authority (PZJA), Great Barrier Reef Marine Park Authority (GBRMPA), Queensland Fisheries Management Authority (QFMA) and the Australian Fisheries Management Authority (AFMA) in relation to eligibility for compensation.



Training/Teaching, Stakeholder and Community Consultation and Liaison

- ARTC Environmental Code Training – (Australian Track and Rail Corporation - ARTC) Environmental impact Assessment Code training for SEPP - (ARTC Rail Infrastructure) 2004
- Geographic Information Systems (GIS) training (NSW DET). Developed and delivered a two day course in the use of ESRI ArcView GIS for Geography and Science teachers.
- Lower North Coast NRM Education Strategy and Implementation Plan (Hunter-Central Rivers Catchment Management Authority). Facilitated meetings with a reference committee consisting of representatives from local councils, government agencies, environmental groups and rural landholders to develop education strategies and implementation plan linked to the CMA's Catchment Action Plan
- DPI School Education Plan (NSW Department of Primary Industries). Facilitated workshop with DPI staff to develop scope for preparation of a school education plan for NSW DPI
- Teacher Training and Development Courses (NSW DET). Planned and implemented numerous training and development courses for teachers particularly in Environmental Education, Science and Geography field work activities and techniques
- University student training (University of Newcastle). Trained several groups of university students in water quality monitoring and other environmental monitoring techniques
- Tutor in the distance education program (Charles Sturt University) – Bachelor Environmental Science (Management) Degree Course
- Guest Lecturer in the Environmental Science and Management Degree Course University of Newcastle – Ourimbah Campus
- Co-Supervisor Honours Degree project Ecology of the Green and Golden Bell Frog. University of Wollongong
- Co-supervisor PhD Degree project Disturbance ecology of the Red-crowned Toadlet and Giant Burrowing Frog. University of Technology Sydney (UTS)
- Co-supervisor PhD Degree project Genetic differentiation of the Green and Golden Bell Frog and its application to conservation management. University of NSW
- Co-supervisor Teacher Education Graduate EE project. University of Western Sydney
- Teacher and Acting Teacher in Charge Rumbalara Environmental Education Centre – DET Developed teaching resources and developed and delivered environmental education programs to over 100,000 school students and teachers over a seven year period including a year and a half as manager of the centre (1991-1998)

Selected Publications

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- Helping Frogs Survive Poster (2002) (co-produced with Ron Haering and Judy Denby). NSW Department of Environment and Conservation
- Payne, R., Wellington, R. and Somerville, M. (2010) Coastal Sandplain Vegetation at Brisbane Water and Broken Bay reconstructing the past to plan for the future. *Cunninghamia* 11(3): 295–317
- Inventory of NSW Environmental Studies Sites (NSW Environmental Trusts) (1997). Surveyed and compiled a detailed inventory of environmental studies sites throughout NSW that could be accessed by school excursions (co-produced with A and N Dufty). Rumbalara Environmental Education Centre and the NSW Environmental Trust
- Schools Water Testing Kit (1996) (co-produced with Neil Dufty) Rumbalara Environmental Education Centre
- Teachers Guide to Local History Studies (1997) Rumbalara Environmental Education Centre
- Biodiversity Kit for Schools (1998) (co-produced with Mark Attwooll) now Principal Rumbalara Environmental Education Centre

Professional Referees

Robert Humphries – former Manager Central Directorate Threatened Species Unit, NSW NPWS (DEC, DECC, DECCW) now OEH; Presently Manager Biobanking, Offsets and Training Manager Eco Logical Australia, 0417 258 264

Neil Dufty – former Principal Rumbalara Environmental Education Centre, Central Coast Catchments Manager and currently Principal Molino Stewart Environmental Consultants 0427 130 283

Associate Professor Noel Tait formerly Senior Lecturer Macquarie University School of Biological Sciences, 9427 6747



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- Bell, S.A.J. (2004) The vegetation of Werakata National Park, Hunter Valley New South Wales. *Cunninghamia*, 8: 331-347
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Appendix A – s5A (7 Part Test) Assessment of Significance

The Section 5A EPA Act (1979) 7-Part Test of Significance for Regional Threatened Flora and Fauna

Under Section 5A of the Environmental Planning and Assessment Act of 1979 (as amended by the Threatened Species Conservation Act, 1995), a 7-Part Test of Significance may be applied to determine whether a proposed development will have a significant impact on threatened species, populations or ecological communities, or their habitats.

The Threatened Species Conservation Act came into force on 1 January 1996 and its objectives are to conserve threatened species, populations and ecological communities of native fauna and flora. This Act amends the National Parks and Wildlife Act of 1974 and the Environmental Planning and Assessment Act of 1979 and repeals the Endangered Fauna (Interim Protection) Act of 1991.

Specifically, the objectives of the TSC Act are to:

- (a) Conserve biological diversity and to promote ecologically sustainable development;
- (b) Prevent the extinction and to promote the recovery of threatened species, populations and ecological communities that are endangered;
- (c) Protect critical habitat of those threatened species, populations and ecological communities;
- (d) Eliminate or manage certain processes that threaten the survival or evolutionary development of those threatened species, populations and ecological communities;
- (e) Ensure that the impact of threatening actions are properly assessed; and,
- (f) Encourage the conservation of threatened species, populations and ecological communities by the adoption of measures involving cooperative management.

Under Section 5A of the Environmental Planning and Assessment Act of 1979 (as amended by the Threatened Species Conservation Act, 1995), a 7-Part Test of Significance may be applied to determine whether a development will have a significant impact on threatened species, populations or ecological communities, or their habitats.



A-1 Seven-part Test Assessment for *Litoria aurea* under Section 5A of the Environmental Planning and Assessment Act 1979

Litoria aurea (Green and Golden Bell Frog or GGBF) is listed in Schedule 1 of the TSC Act (1995) as Endangered and also under the EPBC Act (1999) as Endangered. It was not detected on the site despite undertaking three replicated survey efforts using prescribed methodology, however potential habitat for this species was detected on the site around and in two dams and a small water-filled depression on the subject land. Fringing emergent vegetation surrounding one of the dams rendered it suitable for foraging, basking and breeding. The second dam was heavily shaded and with little if any free water and no fringing vegetation rendering it less suitable. A small water filled depression with a covering of duck weed was considered as providing potentially suitable ephemeral breeding habitat that is a habitat type known to be used from time to time by the species. Whilst the potential habitat present is unremarkable, and of a type and quality known to occur regularly across many other rural residential properties in the vicinity, the proximity of the subject land to known records of the species (albeit somewhat dated) justified the level of survey effort undertaken. Overall the subject land is considered to be unlikely supporting the species however were the species to periodically migrate to or from the site to utilise these potential habitat values any local or regional population would not be reliant on it. In any case these potential habitat values for this species will not be directly or indirectly impacted by the current proposal but future proposals and concept plan development will require to give consideration to provision or rehabilitation of this habitat component.

Biological Background:

This species once existed quite commonly on the Central Coast but it unexpectedly and suddenly declined through unproven causes around 30 years ago, although frog chytrid is presumed to be a major contributing factor among other threats; its habitat was later destroyed during land-clearing operations for urbanization. It is still considered as a species to occur in the Wyong LGA – where considerable areas of suitable habitat still occur, but recent lack of records suggest it is sparse if still extant. The best remaining area for this species in the LGA occurs to the east of the Central Coast/Pacific Highway near Wyong and flood plain areas of the main stream systems entering Tuggerah Lakes. However regionally no populations are considered adequately protected in any National Park.

Vegetation units identified on the central coast for this species are Alluvial Tall Moist Forest, Hunter Lowlands Redgum Forest, Coastal Narrabeen Moist Forest, Coastal Foothills Spotted Gum-Ironbark Forest, Swamp Mahogany-Paperbark Forest, Phragmites Rushland, Wyong Paperbark Swamp Forest, Freshwater Wetland Complex, Sandstone Hanging Swamps, Mangrove-Estuarine Complex.

Its overall current distribution pattern indicates that it is now largely confined to lowland coastal wetlands, with emergent sedges and *Typha sp.*

According to all reports this species occurs naturally only in south-eastern Australia. It ranges from the far north-eastern coast of New South Wales south to the north-eastern corner of coastal Victoria and occurs slightly inland to include small parts of the Australian Capital Territory and into parts of the eastern Riverina district. It has also been introduced into New Zealand as well as New Caledonia.



The distribution pattern of *Litoria aurea* indicates that its primary habitat is now largely confined to the coastal marshlands of most of eastern New South Wales and the adjacent parts of Victoria. The coastal population was probably more or less continuous along mid to north-eastern New South Wales at European settlement, but elsewhere the species' distribution was fragmented into many smaller isolates. The northern and southern populations appear to have been naturally isolated prior to the species recent precipitous decline, and indeed may have demonstrated some genetic variation. The northern population was considered to warrant recognition at the subspecific level by Arthur Loveridge in 1950 (*Litoria aurea ulongae*) but this was never confirmed nor widely adopted – and the species had been barely studied morphologically prior to its relatively recent decline. Since settlement, the formerly continuous coastal distribution has become highly fragmented.

Green and Golden Bell Frogs can attain a maximum size of around 80-90mm in length, but are surprisingly light for such a large frog. The hind limbs are large and powerful, with the hind feet fully webbed, and the body somewhat streamlined in appearance. As a consequence, GGBF are capable of quite large leaps to avoid predators and once in the water, they are fast swimmers and readily dive to considerable depth if required.

Although GGBF are quite large, they readily adopt a reduced surface exposure posture during low moisture conditions, by orienting themselves away from the direct sun and remaining motionless tightly pressed against protective vegetation with their limbs tucked-in close to their body. When in such a posture they appear much smaller than they really are, and this no doubt reduces the area of body surface exposure to desiccating conditions. They of course can and do at other times align themselves to maximise surface area exposure to sunlight presumably to assist with digestion and thermoregulatory functions and are also capable and do practise active avoidance of potential predators by shifting their pose away from an observer.

Behaviourally, this species can be active both during the day (when it may bask in the sun for prolonged periods or feed), and night (when they mate and feed). When foraging, this species can adopt a sit-and-wait strategy by seizing any suitable prey that may wander past, or an active hunting strategy, where they apparently seek out other calling frogs and eat them.

However, GGBF do not confine their diet to other frogs as is popularly believed. They are voracious predators and may consume a wide variety of invertebrates and small vertebrates, taking small frogs, lizards, beetles, moths, dragonflies, spiders, and many other suitably sized animals and including tadpoles. A closely related species, *Litoria raniformis* has even been recorded feeding on a juvenile Copperhead (*Austrelaps ramsayi*).

Reproductively, GGBF can be highly fecund, and under natural conditions some adult populations have been estimated in the hundreds of thousands per site. They are summer breeders, with most reproductive activity being triggered by summer thunderstorm conditions. Although breeding has been recorded from August through to February in response to rain events. The eggs are capable of surviving in water exposed to quite a range of temperatures and float as a sticky mass around emergent vegetation; the larvae are fast swimming, fast growing and hardy.



In captivity some adults have lived over 5 years, and it is possible that a life span of between 10 to 20 years may be attained (at least in captivity).

Its main natural predators are numerous types of waterbirds which prey on both the larvae and the adults, but they are also eaten by Red-bellied Black Snakes (*Pseudechis porphyriacus*), Tiger Snakes (*Notechis scutatus*), Marsh Snakes (*Hemiaspis signata*) (larvae and metamorphlings), Green Tree Snakes (*Dendrelaphis punctulatus*), Plague Minnow or Mosquito Fish (*Gambusia holbrooki*) (feeds on larvae), and Water Rats (*Hydromys chrysogaster*). Specimens are occasionally found with various parasitic infestations and fungal infections as well. Interestingly, this species can emit a peculiar odour when handled, and it is possible that this may indicate that the species could possess a toxic skin secretion as a defence mechanism against predators.

This species is able to utilize a variety of wetland conditions, both natural and disturbed, and wherever it is found it is usually common and easy to locate. Under natural conditions this species prefers swamps, marshes, low river flats, creek backwaters and billabongs, hence its original common name of 'Swamp Frog'. Most sites are below 100 metres in elevation, although prior to their decline the species had been recorded from areas considerably higher than this (around 700-800 metres). The highest altitude extant population currently known is at Bungendore, NSW at 690m elevation.

Swamp Frogs may be found in association with a variety of vegetation, both native and exotic, and usually prefers reeds for basking, and mainly occur in areas with ephemeral ponds. Such ponds are usually typified as being in moderately to highly disturbed sites such as farmland, but with good water quality, good growths of emergent vegetation such as *Typha* sp. *Eleocharis* sp. and *Juncus* sp. and an abundance of shelter sites around their verges. Those containing predatory exotic fishes (*Gambusia holbrooki*) generally are less suitable for GGBF. Substrate in occupied ponds varies from sand, clay to rock. Water flow is either still or gently flowing. Most suitable ponds are in unshaded positions, although dense emergent water plants do provide a density of cover which provides some protection from excessive heat. Ponds are usually shallow, but often have a deep area of still water present as well.

As mentioned above, GGBF are both diurnal and nocturnal in activity pattern, although they are mainly diurnal in nature, basking either on emergent vegetation within the pond, or on the ground around the shoreline. Usually they climb only about a metre up vegetation that protrudes from the water, but they are capable climbers and on occasions they can also be found up to three or four metres high in the dense foliage of trees growing along the water's edge. More often though, they may be observed sitting partly submerged in the water amongst dense grasses and other plants like *Phragmites* or *Typha*, or basking on the damp ground beside water, or on objects like logs and reeds that protrude from the water. They overwinter beneath large mats of vegetation that have accumulated on the bottom of dry ponds, or beneath logs and rocks around the pond edges. Large overland movements also occur during thunderstorms of summer, and this may be during the day or night.

The principal vegetation community occupied by this species nowadays is usually wetland within open grassland, such as provided by farmland and other agriculturally altered landscapes. No core or primary wetland breeding habitat for this species occurs on the subject site however a farm dam that has become somewhat naturalised does provide some potential habitat for the species.



There are now numerous references on this species, following frantic research into all aspects of its biology once it was realized that the species had become endangered. Information on the biology of *Litoria aurea* may be found by consulting the GGBF Recovery Plan and several review articles cited therein.

<http://www.environment.nsw.gov.au/resources/nature/tsprofileGreenGoldenBellFrog.pdf>

<http://www.environment.nsw.gov.au/resources/nature/recoverypplanGreenGoldBellFrogDraft.pdf>

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,

This species has not been detected on the site of the proposed development and the potential habitat on the site is unremarkable. The potential impact from a proposed rezoning is zero however subsequent subdivision would likely result in the removal and/or modification of the created potential breeding habitat and ephemeral soak area that could also be periodically utilised were the species to still persist in the area. Such possible modifications would be addressed during concept plan development for the subject land and would likely also require construction of alternative dams and detention structures. These would, provided they were adequately landscaped, provide replacement or offset habitat for this species. Other similar potential breeding areas occur on most rural properties in the area and no loss of food or foraging habitat will occur in the region either. It is therefore considered unlikely that any population of *Litoria aurea* that may utilize aspects of the subject land as part of their local distribution would be likely to become extinct as a result of any disturbance resulting from proposed future development arising from a rezoning of parts of the subject land.

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;

Litoria aurea has not been listed in the TSC Act as an endangered population. As an endangered species, it is ineligible for listing as an endangered population.

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

(ii) Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction;

Not applicable as this entity is a Threatened Species.

d) In relation to the habitat of a threatened species, population or ecological community:

(i) The extent to which habitat is likely to be removed or modified as a result of the action proposed;



This species was not detected anywhere on the subject land including those areas identified as potential habitat nor following replicated survey efforts and using prescribed methods. In any case the rezoning proposal will not remove or modify any potential habitat for this species but may have future implications with respect to Residential sub-division, if approved. The future possible removal or modification of existing dam structures will not remove a substantial or vital habitat component for the species, were the GGBF to continue to persist in the locality or periodically utilise on-site habitat components during migratory movements, ample other similar habitat still remains in the nearby area. Similarly any future concept plan for the site after rezoning would include detention and drainage features that could be enhanced and landscaped as GGBF habitat using the Best Practice Habitat Guide for the species. Potential foraging habitat extends over much of the disturbed grassy areas of the site but this is not believed to be a vital habitat component on the subject land and large expanses of other grassy areas persist in the locality.

(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;

The current proposal will not fragment or isolate an area of habitat for this species and in fact by way of endeavouring to rezone connective areas of the site to a conservation zone the proposal will improve this area (connectivity conservation) of conservation biology for the species.

(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 potential foraging habitat to be affected by the proposal can be considered as not important to the long-term survival of the species in the locality. In any case no area of habitat for *Litoria aurea* is to be modified or removed by the proposed development. The extent of known or potential habitat of *Litoria aurea* in the locality covers only a small part of what is available elsewhere within the Wyong LGA and within the Porters Creek and Tacoma wetlands and other wetland areas to the west on Eaton Land where the species was previously detected some 18 years ago. Very little of this area is protected in any of the regional National Parks and Reserves. However, in any case it is concluded that no significant area of known habitat is to be modified or removed by the proposed development and any impact at all would be trivial.

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

No 'critical habitat' for this species has been declared under Part 3 of the *TSC Act* as such measures were considered unlikely to increase protection for the species or provide a conservation benefit, particularly given the species propensity for often occupying disturbed and degraded sites.

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

The proposed development is consistent with the current recovery plan for this threatened species and the various survey and assessment guidelines developed arising out of the RP. No Key Population Management Plan has been developed for the Wyong GGBF population owing to the difficulty of locating any extent population elements for some considerable time.

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.

The proposed rezoning of the subject site is not in itself of a class of development or activity that is recognised as a Key Threatening Process but may pre-empt future development proposal impacts from sub-division.

Key Threatening Processes (KTPs) are regarded as a threatening process which (a) adversely affects 2 or more threatened species, populations or ecological communities, and (b) could cause species, populations or ecological communities that are not threatened to become threatened.

The KTP's listed in Schedule 3 of the *TSC Act* are provided in the table below. Those that appear most applicable to this species (both directly and indirectly) are indicated with an *.



Key Threatening Process - KTP	Likely Implication
Alteration of habitat following subsidence due to longwall mining	
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	*
Anthropogenic climate change	
Bushrock removal	
Clearing of native vegetation	*
Competition and grazing by the feral European rabbit (<i>Oryctolagus cuniculus</i>)	
Competition and habitat degradation by feral goats (<i>Capra hircus</i>)	
Competition from feral honey bees (<i>Apis mellifera</i>)	
Death or injury to marine species following capture in shark control programs on ocean beaches	
Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments	
Forest Eucalypt dieback associated with over-abundant psyllids and bell miners	
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	*
Herbivory and environmental degradation caused by feral deer	
Importation of red imported fire ants (<i>Solenopsis invicta</i>)	
Infection by psittacine circoviral (beak and feather) disease affecting endangered psittacine species and populations	
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	*
Infection of native plants by <i>Phytophthora cinnamomi</i>	
Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae	
Introduction of the large earth bumblebee (<i>Bombus terrestris</i>)	
Invasion and establishment of exotic vines and scramblers	
invasion and establishment of Scotch broom (<i>Cytisus scoparius</i>)	
Invasion and establishment of the cane toad (<i>Bufo marinus</i>)	*
Invasion of native plant communities by African Olive <i>Olea europaea</i> L. subsp. <i>cuspidata</i>	
Invasion, establishment and spread of <i>Lantana camara</i>	*
Invasion of native plant communities by <i>Chrysanthemoides monilifera</i> (bitou bush and boneseed)	
Invasion of native plant communities by exotic perennial grasses	
Invasion of the yellow crazy ant (<i>Anoplolepis gracilipes</i> (Fr. Smith)) into NSW	
Loss of hollow-bearing trees	
Loss or degradation (or both) of sites used for hill-topping by butterflies	



Predation and hybridisation of feral dogs (<i>Canis lupus familiaris</i>)	
Predation by the European red fox (<i>Vulpes vulpes</i>)	*
Predation by the feral cat (<i>Felis catus</i>)	
Predation by <i>Gambusia holbrooki</i> Girard, 1859 (plague minnow or mosquito fish)	*
Predation by the ship rat (<i>Rattus rattus</i>) on Lord Howe Island	
Predation, habitat degradation, competition and disease transmission by feral pigs (<i>Sus scrofa</i>)	*
Removal of dead wood and dead trees	*

This proposal is for a rezoning of the subject land – part Residential and part Conservation Zones. Consequently the rezoning process itself will have no implications for increasing KTP operation on the subject land.

Subsequent development of a residential component of the site might result in some of the following but are unlikely to impact on the subject threatened species were such future developments approved with appropriate conditions. Those KTPs implicated by future subdivision (subject to rezoning approval) are:

- * Alteration to flow regimes of rivers and streams – this may occur subject to appropriate future concept design
- * Clearing of a small component of Native Vegetation will occur but is unlikely of significance to this species.
- * Increase in fire frequency or alteration of existing regimes – this is a potential outcome subject to appropriate application in the future of Planning for Bushfire Guidelines into site concept planning.
- * There will be no increase in the operation of effects of frog chytrid disease
- * There will be no increase in the likelihood of colonisation and establishment of Cane Toads
- * No likely increase in fox predation
- * No *Gambusia* are currently known from the dams on the property and won't be introduced
- * No feral pigs are known from the site and will not be introduced
- * No Removal of dead wood and dead trees will occur as part of this proposal and maybe an inclusion in future water features as part of site concept planning.

Other Considerations:

The area of high quality habitat to be affected by future proposed subdivision (subject to rezoning approval) is trivial and will not result in the fragmentation or loss of preferred habitat of this species in the locality. The species' preferred habitat is already totally fragmented throughout the region, but that which does occur on the subject land of the proposal will remain and remain connected to other such areas in the locality. The specific site area to be affected by the proposed rezoning is primarily foraging habitat provided by the degraded former poultry farming area. This weedy open area is not remarkable and extensive areas of such habitat occur across much of the locality.



Will any critical habitat be affected by the proposal?

Presently, no areas of designated critical habitat for this species have been identified under the provisions of the Threatened Species Conservation Act of 1995. Under this Act, critical habitat means the whole or any part or parts of an area or areas of land comprising the habitat of an endangered species, population or ecological community that is critical to the survival of the species, population or ecological community. Critical habitat is to be identified by the Director-General of the National Parks and Wildlife Service (OEH) and declared by the Minister for the Environment. None has been identified or declared for this species and is unlikely to be declared as the species is already listed as endangered and no additional conservation benefit is likely to result from such a declaration.

Is this species adequately represented in conservation reserves (or other similarly protected areas) in the regional environment of the species?

No populations of this species are currently known to be reserved in any National Park, or reserve on the Central Coast. A small area of wetland at Tuggerah is former habitat for this species but no records have been detected in the area for some 18 years. The area of habitat reserved for this species even at the regional level is also insignificant.

Is this species in the region at or near the limit of its overall geographical distribution?

The records of *Litorio aurea* from the region are not at the limit of the species' distribution. The species is widely known from north eastern New South Wales and Victoria.

A-2 Seven-part Test Assessment for *Petaurus norfolcensis* under Section 5A of the Environmental Planning and Assessment Act 1979

Petaurus norfolcensis (Squirrel Glider) is listed in Schedule 2 of the TSC Act (1995) as VULNERABLE. It was not detected on the site for the proposed development, and has not previously been recorded from the subject land. Scratch mark evidence detected on a few smooth barked Spotted Gums is inconclusive and may well have been caused by one of the common possum species detected on-site or even by a small Lace Monitor *Varanus varius*. Nevertheless, potential habitat for this species occurs in the areas of Spotted Gum Iron Bark Woodland on the elevated slopes at the rear of the subject land and along the drainage lines on the eastern and western boundaries of the subject land, as well as to the west and east on adjoining properties and elsewhere in the general area. The species has been recorded further to the west in a larger vegetation patch now incorporated into the Wadalba Wildlife Corridor. This corridor was established as a component of the development approval process for the AV Jennings and Westminster Homes residential developments that were approved immediately adjacent to it, (see Payne, 2002; Smith, 2002; Conacher Travers, 2006) for locational and viability likelihood information. The species usually prefers open woodland and dry sclerophyll forest habitats, and in some situations may even be found in fairly disturbed environments. Occasional records of this species inhabiting regenerating stands of moist hardwood forest, Swamp Mahogany, and eucalypt plantations have been reported. Its persistence in disturbed environments is probably more a consequence of the persistence of hollow-bearing trees than any inherent adaptability on the part of the Squirrel Glider. While this is not really a rare species overall, it is patchy in its distribution and, in the long term, appears to be not particularly adaptable to most human-induced changes to its habitat and may be particularly susceptible to feral and roaming, domesticated predators. In the region of the proposal, habitat for this species is widely protected in the region's major reserves such as Brisbane Water National Park, Wattagan National Park, Wyrabalong National Park, Wallarah National Park, Munmorah SRA and Dharug National Park. It also occurs widely across private lands, State Forests (Ourimbah, Olney, Wyong, McPherson and Heaton), and Mangrove Dam Water Catchment lands on the central coast and within Wyong and Lake Macquarie LGAs in particular. Wyong Shires now defunct Wyong Conservation Strategy was largely designed around conserving contiguous areas of Squirrel Glider habitat with viable patch size for long term security (Smith, 2002).

Information on the biology of *Petaurus norfolcensis* may be found by consulting the following selected references: Bennett and van der Ree, 2001; 2003, Brunner and Coman, 1974, Conacher Travers, 2006, Cronin, and Westmacott, 1991, Davey, 1989, Holland, Bennett, and van der Ree, 2007, Murray, 1996, NSW Scientific Committee, 2008, Quin, 1993; 1995, National Parks and Wildlife Service NSW, 1999, Smith, 2002a, Smith, Lindenmayer, Begg, MacFarlane, Seebeck, and Suckling, 1989, Sharpe and Goldingay 1998, Smith and Murray, 2003, Strahan, 2000, Trail, 1995, Trail and Lill, 1997, van der Ree, 2000, 2002, van der Ree and Bennett, 2001, 2003, van der Ree, Bennett and Gilmore, 2003. However, an abbreviated review of essential habitat requirements and the key references that have revealed these undertsandings is reviewed elsewhere herein (above).



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,

This species has not been detected on the subject land nor within the restricted development (rezoning application) area of same and although marginally suitable habitat occurs along the northern, western and eastern boundaries of the site none of this potential habitat will be impacted by the proposed rezoning. The scarcity of suitable tree hollows and the almost total lack of suitable understorey foraging species eg Banksias makes its presence less likely as well. The presumed utilisation of the subject land as connectivity habitat is also probably more wishful thinking than reality as much better connectivity habitat from the Wadalba Wildlife Corridor lands to the west of the subject land and across Johns Road to the south are also located more westerly along Johns Road. In any case, the potential connectivity habitat on the subject land, if used by the species, will not be impacted by the proposal. The level of disturbance of native vegetation that may be caused by future proposed residential development is small. No loss of reproductive/shelter/refuge/denning or foraging habitat will occur as a result of this proposed development. No potential denning trees are to be cleared as none were detected on the subject land and the two trees with hollows will be within a future conservation zone. Therefore it is here considered that any population of *Petaurus norfolcensis* that may utilize the locality would not become extinct as a result of potential disturbances from some future proposal residential development. Payne (1998), in assessing the values and connectivity aspects of WCS corridors, considered corridor WSC20, which ultimately (in-part) became the Wadalba Wildlife Corridor, (Conacher Travers 2006), concluded that the corridor was too narrow, had tenuous connectivity to the west across Eaton Lands and, though this species was detected within the area, considered it likely non-viable long term, using the Smith (2002) modelled habitat and population viability criteria.

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;

Petaurus norfolcensis has not been listed under the TSC Act as an endangered population in the Wyong LGA. Nevertheless, it is considered here that the viability of any population of *Petaurus norfolcensis* in the locality would not be further compromised by the proposed development, and hence place a local population at risk of becoming so listed in the future. In fact this proposal for rezoning (part conservation) will strengthen connectivity potential via protection and future enhancement of possible connectivity vegetation across Johns Road. Such a zoning for the vegetated parts of the site will provide security for an additional component that adds to the critical mass of habitat available for the species. The area proposed for the residential zone change and hence future residential development is the cleared and disturbed component with the available habitat and potential habitat areas of the site to remain. Of course, this will be to some extent be subject to any approval of further vegetation clearing and development approval overall on the adjoining property to the west, currently under consideration by WSC. This is,



however, notwithstanding this authors belief that SGs will survive long term in vegetation patch sizes much smaller than the Smith (2002) modelled optimum and has been shown to do so in small linear roadside remnants in Victoria (van der Ree, 2000; 2002; Bennett and van der Ree, 2001; 2003; van der Ree and Bennett 2001; 2003; van der Ree and Loyn, 2002; van der Ree, Bennett and Gilmore, 2003; Holland, Bennett and van der Ree 2007).

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

(ii) Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction;

Not applicable as this entity is a Threatened Species.

d) In relation to the habitat of a threatened species, population or ecological community:

(i) The extent to which habitat is likely to be removed or modified as a result of the action proposed;

This species was not detected on the subject land during targeted surveys for the species. Previous assessment undertaken that noted possible scratch marks (Worldata, 2011) may well have been created by possums or even a small Lace Monitor *Varanus varius*. In any case even if the species were to utilise components of the woodland areas of the site from time to time in its foraging movements, these areas will not be impacted by the proposal. No area of potential habitat for *Petaurus norfolcensis* is to be modified or removed by the proposed development. The extent of known habitat of *Petaurus norfolcensis* in the locality and region, although fragmented, potentially covers thousands of hectares. Some of this known habitat area is already protected in several major National Parks and other Reserves. Similarly the Wyong Conservation Strategy, now abandoned, would have also assured long term viability and conservation security for the species in an area recognised as a stronghold for the species in Wyong and Lake Macquarie LGAs (Smith, 2002; NSW Scientific Committee, 2008). Therefore, it is concluded that no significant area of habitat is to be modified or removed by the proposed development.

(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;

The area of habitat to be affected by the proposed development will not result in the fragmentation of any local area of potential habitat for this species. Whilst the Wadalba Wildlife Corridor was originally established with the primary purpose of maintaining or establishing connectivity between fragmented vegetation patches in the Wadalba area this premise was based on WSC retaining connective functionality. Whilst the Wadalba Wildlife Corridor Management Plan depicts components of the subject land as possibly contributing to this connectivity to the south, it was always viewed as a tenuous connection at best. Proposed developments to the west likely threaten any continued functional connectivity of the Wadalba Wildlife Corridor to the south and the tiny narrow ribbons of native vegetation persisting on the subject land are unlikely to contribute in any meaningful way on their own. Any belief that functional connectivity is currently



sustained by the linkages provided by the subject land are wishful thinking at best. In any case, the current proposed residential rezoning is located outside these tenuous connective linkages to the south and will not interfere or impact on them. In fact the proponent is independently endeavouring to enhance and rehabilitate these areas of native vegetation on the subject land via Lantana removal strategies and in collaboration with the Hunter Central Rivers CMA. Similarly, concept planning (under development for the site but subject to rezoning approval), proposes revegetation of the Johns Road frontage along with other enhancement measures will maximise permeability to the south and better align with proposed zone changes under the Wyong LEP 2012. The area to be affected by the proposed rezoning for residential development is considered unsuitable as habitat for the species being cleared and disturbed grassed and weed infested areas, and no clearing of significant tree cover will occur as a result of future development in these areas.

(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;

No area of habitat for *Petaurus norfolcensis* is to be modified or removed by the proposal for rezoning to residential uses and future development proposals of that type would be subject to concept planning and separate approval. The extent of known habitat of *Petaurus norfolcensis* in the locality is not precisely known, but as a condition of the assumed concurrence associated with the establishment of the Wadalba Wildlife Corridor, monitoring of the corridor area for arboreal mammals was supposed to have been occurring since 2006. Information from such studies, that were to be coordinated by WSC and provided to the community via Councils' website, are not currently available and may not have even occurred? Such information would have been beneficial for this applicant given the assumed strategic importance of native vegetation remnants on the subject land. Nevertheless, given that no significant area of native vegetation is to be affected by the proposal to rezone the site part residential and part conservation in accordance with that configuration it can be safely concluded that subsequent residential development will not contribute to any further fragmentation of the local areas native vegetation. No significant clearing of native trees will occur as a result of the development.

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

None of the site has been designated 'critical habitat' under Part 3 of the *TSC Act*.

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

No recovery plan or threat abatement plan has been prepared that has implications for this species.

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.

The proposed development, (particularly given its proposed configuration and the extent of native vegetation with potential to be later required for removal under separate application), for the subject site is not likely of a scale where it would be classed as a development or activity type that is recognised as a Key Threatening Process.



Key Threatening Processes (KTPs) are regarded as a threatening process which (a) adversely affects 2 or more threatened species, populations or ecological communities, and (b) could cause species, populations or ecological communities that are not threatened to become threatened.

The KTP's listed in Schedule 3 of the *TSC Act* that appear most applicable to this species (both directly and indirectly) would appear to be:

Key Threatening Process - KTP	Likely Implication
Alteration of habitat following subsidence due to longwall mining	
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	
Anthropogenic climate change	
Bushrock removal	
Clearing of native vegetation	*
Competition and grazing by the feral European rabbit (<i>Oryctolagus cuniculus</i>)	
Competition and habitat degradation by feral goats (<i>Capra hircus</i>)	
Competition from feral honey bees (<i>Apis mellifera</i>)	*
Death or injury to marine species following capture in shark control programs on ocean beaches	
Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments	
Forest Eucalypt dieback associated with over-abundant psyllids and bell miners	*
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	*
Herbivory and environmental degradation caused by feral deer	
Importation of red imported fire ants (<i>Solenopsis invicta</i>)	
Infection by psittacine circoviral (beak and feather) disease affecting endangered psittacine species and populations	
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	
Infection of native plants by <i>Phytophthora cinnamomi</i>	*
Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae	
Introduction of the large earth bumblebee (<i>Bombus terrestris</i>)	
Invasion and establishment of exotic vines and scramblers	*
Invasion and establishment of Scotch broom (<i>Cytisus scoparius</i>)	
Invasion and establishment of the cane toad (<i>Bufo marinus</i>)	
Invasion of native plant communities by African Olive <i>Olea europaea</i> L. subsp. <i>cupidata</i>	
Invasion, establishment and spread of <i>Lantana camara</i>	*
Invasion of native plant communities by <i>Chrysanthemoides monilifera</i> (bitou bush and boneseed)	*
<i>Invasion of native plant communities by exotic perennial grasses</i>	
Invasion of the yellow crazy ant (<i>Anoplolepis gracilipes</i> (Fr. Smith)) into NSW	
Loss of hollow-bearing trees	*
Loss or degradation (or both) of sites used for hill-topping by butterflies	
Predation and hybridisation of feral dogs (<i>Canis lupus familiaris</i>)	
Predation by the European red fox (<i>Vulpes vulpes</i>)	*



Predation by the feral cat (<i>Felis catus</i>)	
Predation by <i>Gambusia holbrooki</i> Girard, 1859 (plague minnow or mosquito fish)	
Predation by the ship rat (<i>Rattus rattus</i>) on Lord Howe Island	
Predation, habitat degradation, competition and disease transmission by feral pigs (<i>Sus scrofa</i>)	
Removal of dead wood and dead trees	*

- No Clearing of Native Vegetation will occur that is of significance to this species.
- There will be no increase in fire frequency or alteration of existing regimes
- There will be no increase in the extent of European Bees *Apis mellifera* as a result of the proposal and in fact the current Bee Farming occurring on the site will likely be phased out over time following an approval for the proposal.
- There will be no increase in the extent of Lantana, Bitou Bush or introduced species of Vines and Scramblers. In fact, the proposal will lead to a reduction in these exotic plant threats on the subject land and along with the other current initiatives to remove these threats, will ultimately improve the habitat quality of the native vegetation that will be retained on the subject land now and in the future within a conservation zone.
- Forest Eucalypt die-back currently occurring on the site will not be exacerbated by the proposal and current initiatives to remove understorey Lantana will likely assist with improving the situation via improving native understorey complexity through promotion of its regeneration.
- There will be no loss of trees bearing hollows or spouts
- No likely increase in fox predation
- No Removal of dead wood and dead trees will occur as part of this proposal

Other Considerations:

Will any critical habitat be affected by the proposal?

Presently, no areas of designated critical habitat for this species have been identified or declared under the provisions of the Threatened Species Conservation Act of 1995 by the Minister for the Environment. Under this Act, critical habitat means the whole or any part or parts of an area or areas of land comprising the habitat of an endangered species, population or ecological community that is critical to the survival of the species, population or ecological community. Critical habitat is to be identified by the Director-General of the National Parks and Wildlife Service and declared by the Minister for the Environment.

Is this species adequately represented in conservation reserves (or other similarly protected areas) in the regional environment of the species?

The species is adequately conserved in many national parks, and in several other reserves within its east coastal range. Within the Sydney Basin bioregion potential habitat is also extensively reserved in Royal National Park, Heathcote National Park, Morton National Park, Garigal National Park, Ku-ring-Gai Chase National Park, Muogamarra Nature Reserve, Nattai NR, Brisbane Water National Park, Popran National Park, Wattagan National Park, Marramarra National Park, Wollemi National Park, Bargo SRA, Parr SRA, Munmorah SRA, Wallarah National Park, Wyrabalong National Park, Dharawal SRA, Blue Mountains National Park, Dharug National Park, and Yengo National Park. Additionally the species' habitat and other known occurrences are from nearby State Forests (McPherson, Ourimbah, Wyong, Olney) and Mangrove Dam Water Catchment areas in the region.

These areas are afforded substantial protection and/or strict management regimes that protect essential habitat components for the species.

Is this species in the region at or near the limit of its overall geographical distribution?

The records of *Petaurus narfolcensis* from the region are not at the limit of the species' distribution. The species is widely known from most of south eastern Queensland, a large part of eastern and southern central New South Wales and into central Victoria. Wyong and Lake Macquarie LGAs are considered the stronghold of the species distribution in eastern NSW (Smith 2002; NSW Scientific Committee, 2006).



A-3 Section 5A Assessment for the Remnant of “Swamp Oak Floodplain Forest of the NSW North Coast; Sydney Basin and South East Corner bioregions” at 145 Johns Road Wadalba, NSW

Biological and ecological data on this EEC considered for this assessment may be found at:

<http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10945>

The vegetation along the drainage of the subject land has elements of this EEC in so far as Swamp Oak *Casuarina glauca*, two species of Paperbark *Melaleuca styphelioides* and *Melaleuca linariifolia* are present along with some scattered Cheese Trees *Glacchidion ferdinandi*. While these floristic elements are present, the predominant canopy tree species found in association on the lower drainage lines of the subject land, are Spotted Gum *Corymbia maculata* and Iron Bark *Eucalyptus siderophloia*, *E. fibrosa*. Furthermore, vegetation mapping for the area (LHCCREMs 2000; Bell, 2007) depict the area as Spotted Gum Iron Bark Forest (MU X and Y respectively). Consequently it is the opinion here that the vegetation is Spotted Gum Iron Bark Community and that the atypical presence of these other Swamp Oak Forest elements is likely an artefact of almost total clearing of the site in historic times, followed by disturbed regeneration since. Nevertheless an assessment of the vegetation present as being of this EEC is provided.

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;

Not applicable to Endangered Ecological Communities. However, all of the plant and animal species detected within the remnant on the site are common and widespread taxa. None of the native species of flora and fauna remaining on the subject site are likely to be disrupted such that any viable local populations of the species would 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;

Not applicable to Endangered Ecological Communities.

c) In the case of a critically endangered or EEC, 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,

(ii) Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction;

The EEC on the property is not currently listed as ‘Critically Endangered’, so this is not applicable. However, the current proposed rezoning will not involve the removal or damage to any of this EEC. This vegetation community occurs within that part of the property intended to be retained for conservation purposes. Therefore it can be stated that the proposal will not have an adverse effect on the extent of the EEC such that the local occurrence is likely to be placed at risk of extinction.

d) In relation to the habitat of a threatened species, population or ecological community:

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



No habitat containing this EEC will be removed or modified by this proposed development. However, the area of the subject property that contains this community is totally insignificant when compared to the known distributional area of the Swamp Oak Floodplain Forest EEC within its overall distribution. The remnant of this ecological community on the subject land is essentially confined to an isolated stand of vegetation collectively less than one hectare in area. It is intended that this remnant will be conserved on the subject property, and indeed, may be expected to expand along the drainage lines following the removal of lantana infestation that the EEC has long been subjected to.

(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 proposed rezoning will not itself involve the removal of any of this EEC and subsequent residential developments in the areas proposed for a residential zone will not include these areas. However, the proposed conservation zones within the site as well as the existing conservation areas already set aside as the Wadalba Wildlife Corridor, have produced an adequate local conservation outcome for this community. As such, it can be stated that areas of known and proximate habitat for the community will be maintained within the area and not isolated by the current proposal. However, the remnant portion of Swamp Oak Floodplain Forest on the site has already been effectively isolated by past agricultural activities. Hence at present, it does not in itself form any significant corridor linkage for wildlife over the majority of the property. As the remnant is for the most part isolated and seriously degraded by weed growth, its viability through connectance with other similar habitat has likely been seriously compromised many decades ago.

(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;

No habitat containing this EEC will be removed or modified by this proposal. However, the presence of this EEC on the subject land is relatively tiny, likely incomplete biotically due to past agricultural disturbance, and now heavily overgrown with exotic weeds such as Lantana and Privet.

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

Presently, no areas of designated critical habitat for this ecological community have been identified under the provisions of the Threatened Species Conservation Act of 1995. Under this Act, critical habitat means the whole or any part or parts of an area or areas of land comprising the habitat of an endangered species, population or ecological community that is critical to the survival of the species, population or ecological community. Critical habitat is to be identified by the Director-General of the National Parks and Wildlife Service and declared by the Minister for the Environment.

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

No recovery plan or threat abatement plan is associated with this EEC.

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.



The proposed rezoning of the subject land (part residential and part conservation) is not in itself of a class of development or activity that is recognised as a Key Threatening Process. Subsequent applications would be subject to concept planning and a separate approval process.

Key Threatening Processes (KTPs) are regarded as a threatening process which (a) adversely affects 2 or more threatened species, populations or ecological communities, and (b) could cause species, populations or ecological communities that are not threatened to become threatened. A number of final determinations for key threatening processes that could affect the ecological community of Swamp Oak Floodplain Forest have been identified in the provisions of the Threatened Species Conservation Act of 1995.

The KTP's listed in Schedule 3 of the TSC Act that appear most applicable to this EEC (both directly and indirectly) would appear to be:

- *Clearing of Native Vegetation;*
- *Removal of dead wood and dead trees;*
- *Removal of hollow-bearing trees;*
- *Invasion of native plant communities by exotic perennial grasses;*
- *Alteration to the Natural Flow Regimes of Rivers, Streams, Floodplains & Wetlands;*
- *Infection of Native Plants by Phytophthora cinnamomi.*
- No '*Clearing of Native Vegetation*' will occur that will affect this EEC. The relatively minor removal of vegetation for bushfire hazard reduction around the proposed dwelling will not be of this EEC, and mainly comprise Lantana removal.
- No '*Removal of dead wood and dead trees*' will occur that will affect this EEC;
- The proposed development will not result in the *Removal of hollow-bearing trees;*
- The proposed development will not result in the '*Invasion of (this EEC) by exotic perennial grasses*', as that has already occurred many years ago.
- The proposed development will not result in the '*Alteration to the Natural Flow Regimes of Rivers, Streams, Floodplains & Wetlands*'.
- The proposed development will not result in the '*Infection of Native Plants by Phytophthora cinnamomi*'.

**A-4 Section 5A Assessment for *Stagonopleura guttata* (Diamond Firetail) at 145 Johns Road
Wadalba, NSW**

Biological and ecological data on this species considered for this assessment may be found at:

<http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10768a>) ***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;***

The proposal for rezoning will not remove any areas of available habitat for this species. Subsequent developments in a residential zone (once approved) may remove potential grassy foraging habitat (on this site largely introduced grass species) and the large extent of similar woodland/dry sclerophyll forest habitats within relatively close proximity, it is considered that the proposal is unlikely to disrupt the life cycle of any local population of the Diamond Firetail such that a local extinction would occur.

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 populations of this species have been identified as Endangered Populations under Part 2 of Schedule 1 of the *TSC Act*.

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

(ii) Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction;

Not applicable as this entity is a Threatened Species.

d) In relation to the habitat of a threatened species, population or ecological community:

(i) The extent to which habitat is likely to be removed or modified as a result of the action proposed;

Although this species was detected within the proposed footprint for rezoning as residential, it is likely that it could occur over the majority of the property from time to time. The only specimen observed was in an open area near the existing house at the front of the property and the species is well known to frequent or visit rural properties. Although the rezoning proposal itself will not remove or modify any potential natural habitat for this species, it is also known to utilize fairly disturbed areas (gardens) around houses in agriculturally disturbed landscapes. The removal of lantana and other non-threatened vegetation as part of site rehabilitation may modify potential foraging habitat, it is not believed to pose a significant threat to this species' available habitat in the locality. Similar areas are and will be protected in the conservation zone and adjoining Wadalba Wildlife Corridor.

(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;



The current proposal will not fragment or isolate an area of habitat for this species and future conservation zone areas will enhance corridor/connectivity opportunities

(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 potential foraging habitat values of the disturbed areas of the site are widespread and abundant on all adjoining rural properties in the locality. Whilst subsequent development in the areas proposed for residential development will remove some grassy areas (on this site largely exotic pasture grasses and weeds) it is considered here as not being important to the long-term survival of the species in the locality.

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

None of the site has been designated 'critical habitat' under Part 3 of the *TSC Act*.

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

No recovery plan or threat abatement plan is associated with this threatened species.

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.

The proposed rezoning of the subject site (part conservation and part residential) is not in itself of a class of development or activity that is recognised as a Key Threatening Process. Future residential applications may remove some potential disturbed foraging habitat but would be subject to concept planning and separate approval process.

Key Threatening Processes (KTPs) are regarded as a threatening process which (a) adversely affects 2 or more threatened species, populations or ecological communities, and (b) could cause species, populations or ecological communities that are not threatened to become threatened. A number of final determinations for key threatening processes that could affect the ecological community of Swamp Oak Floodplain Forest have been identified in the provisions of the Threatened Species Conservation Act of 1995.

The KTP's listed in Schedule 3 of the *TSC Act* that appear most applicable to this EEC (both directly and indirectly) would appear to be:

- *Clearing of Native Vegetation;*
- *Removal of dead wood and dead trees;*
- *Invasion of native plant communities by exotic perennial grasses;*
- No 'Clearing of Native Vegetation' will occur that will affect this species. The relatively minor removal of vegetation for bushfire hazard reduction around the proposed dwelling is considered to be of no significance for this species and mainly comprises the removal of Lantana and privet.
- No 'Removal of dead wood and dead trees' will occur that will affect this EEC;



- The proposed development will not result in the 'Invasion by exotic perennial grasses', as is has already occurred many years ago.



A-5 Section 5A Assessment for *Climacteris picumnus victoriae* (Brown Treecreeper) at 145 Johns Road Wadalba, NSW

Biological and ecological data on this species considered for this assessment may be found at:

<http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10171a>) *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;*

The current proposal will not remove or modify any areas of known and potential habitat for this species. Brown Treecreepers are widespread in occurrence within the Wyong LGA and are known to be susceptible to habitat fragmentation and disturbance. However, the existing Wadalba Wildlife Corridor provides a significant area of known habitat of this species and additional habitat areas exist throughout the Wadalba area where it is a relatively locally common species. When these factors are taken into consideration, it is considered that the proposal is unlikely to place the local population(s) of this species at further risk of extinction and will likely be strengthened within the areas proposed for conservation zoning.

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 populations of this species have been identified as Endangered Populations under Part 2 of Schedule 1 of the *TSC Act*.

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

(ii) Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction;

Not applicable as this entity is a Threatened Species (actually a subspecies).

d) In relation to the habitat of a threatened species, population or ecological community:

(i) The extent to which habitat is likely to be removed or modified as a result of the action proposed;

Although this species was not detected within the area of the site likely to be subject to residential development, it is likely that it could occur over the majority of the property. The only specimen observed was in a disturbed area of vegetation at the front of the property. The proposal itself will not remove or modify any significant area of potential natural habitat for this species. The removal of lantana and other non-threatened vegetation in the vicinity may modify a relatively small area of potential foraging habitat, however this is not believed to pose a significant threat to this species' overall available habitat on the property. Corridor areas are to be contributed within a conservation zone and concept plans for the site (under development) propose maintenance and enhancement of a vegetation element across the Johns Road frontage.

(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;

The current proposal will not fragment or isolate an area of habitat for this species and will add to connectivity habitat.

(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 proposed rezoning of the subject land will not affect habitat for this species. The area of habitat within areas proposed for rezoning as residential is minor and areas that are far more likely to be functional habitat for the species are to be conserved within areas zoned conservation. These would be added to the existing Wadalba Wildlife Corridor that adjoins the subject land. Consequently it can be considered that any habitat losses are not important to the long-term survival of the species in the locality and would be subject to concept plan development and separate approval.

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

None of the site has been designated 'critical habitat' under Part 3 of the TSC Act.

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

No recovery plan or threat abatement plan is associated with this threatened species.

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.

The proposed rezoning of the subject site (part residential and part conservation) is not in itself of a class of development or activity that is recognised as a Key Threatening Process. Subsequent clearing of the disturbed areas of the site for residential development would be subject to a separate planning and approval process, but nevertheless given the setting aside of areas into a conservation zone (the better potential habitat areas for this species) would mean that the clearing that does occur would be minor in its impact.

Key Threatening Processes (KTPs) are regarded as a threatening process which (a) adversely affects 2 or more threatened species, populations or ecological communities, and (b) could cause species, populations or ecological communities that are not threatened to become threatened. A number of final determinations for key threatening processes that could affect the Brown Tree Creeper have been identified in the provisions of the Threatened Species Conservation Act of 1995.

The KTP's listed in Schedule 3 of the TSC Act that appear most applicable to this EEC (both directly and indirectly) would appear to be:

- *Clearing of Native Vegetation;*
- *Removal of dead wood and dead trees;*
- *Invasion of native plant communities by exotic perennial grasses;*
- No 'Clearing of Native Vegetation' will occur that will affect this species. The relatively minor removal of vegetation for bushfire hazard reduction around the proposed dwelling is considered to be of no significance for this species and mainly comprises the removal of Lantana and privet.
- No 'Removal of dead wood and dead trees' will occur that will affect this EEC;



- The proposed development will not result in the '*Invasion by exotic perennial grasses*', as is has already occurred many years ago.

Appendix B

B- 1 Squirrel Glider Habitat Assessment

HABITAT INFORMATION TO ASSIST ASSESSMENT OF SIGNIFICANCE OF DEVELOPMENT IMPACTS ON SQUIRREL GLIDER HABITAT

(adapted from Smith, 2002)

Until such time that sufficient conservation measures have been introduced to improve the conservation security of Squirrel Gliders it will be necessary to consult with Council about the type of clearing impacts which will occur within potential Squirrel Glider habitat. A ranking system has been developed to assist with the determination of impact "significance" on local populations of Squirrel Gliders within the meaning of the Threatened Species Conservation Act, 1995.

In order to provide a local context for making decisions on the relative impacts of various clearing proposals, a series of impact classes ranging from 1 to 4 have been developed. You will need to contact Council's Development Ecologist to find out which impact class your clearing proposal falls into. The ranking procedure for dealing with clearing impacts within Squirrel Glider habitat is outlined as follows:

1.0 Habitat Information Required to Assist in Making Any Merit Based Assessment

If the following information has not already been collected as part of the environmental process, the following information will need to be available to permit a merits based assessment to occur for clearing proposals within potential Squirrel Glider habitat. The following survey based information should be made available to Council:

- ◇ Detailed plan of remnant patch showing locations of adjacent patches and main vegetation assemblages.
- ◇ Microhabitat features of each vegetation assemblage should be described such as dominant species, mature trees, percentage cover of different plant species, presence of introduced species.
- ◇ Map locations of habitat trees (trees with visible hollows > 5cm diameter).
- ◇ Show area to be disturbed by development proposal and outline any mitigation measures (eg. clearing, under-scrubbing, boring, grazing).
- ◇ Show level of disturbance and discuss disturbance history.
- ◇ Provide distance measurements to adjoining areas of remnant vegetation and size (area) of adjoining patches.



1.1 Habitat Suitability

a Habitat Quality

Assess relative predominance of optimum Squirrel Glider microhabitat types according to vegetation assemblage type:

	Habitat Area	% Habitat Type Within Patch	
1 Stringybark/Gum with Acacia/Melaleuca/Grass understorey			Less optimum  More optimum
2 Spotted Gum/Ironbark/Gum		X	
3 Stringybark with Banksia/Allocasuarina/Melaleuca understorey			
4 Sydney Red Gum/Scribbly Gum with Allocasuarina/Melaleuca understorey			
5 Sydney Red Gum/Scribbly Gum with Banksia understorey			
6 If plant assemblage type does not fit well with the above describe below:			
.....			
.....			

b Remnant Patch Size

Assess patch size on site according to the scale outlined below:

Patch < 5 hectares in size

Patch > 5 hectares but less than 10 hectares in size

Patch > 10 hectares but less than 30 hectares in size

Patch > 30 hectares but less than 90 hectares in size

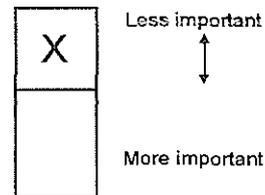
X	Less optimum  More optimum



c Density Habitat Trees

Average number of trees with hollows per hectare < 2 habitat trees / hectare

Average number of trees with hollows per hectare > 2 habitat trees / hectare



d Abundance of Food Plants of Squirrel Glider

Quantitatively assess using plot based data, the proportion of Squirrel Glider food plants which occur on the site and show plot locations on map. Field survey effort for measuring food plant abundance should be applied as per Council's Flora and Fauna Guidelines for Development (see section on survey effort for vegetation plots). A summary of locally occurring food resources for Squirrel Gliders is provided below:

Local Food Plants in Study Area		Food Item	Average No of Plants/ Hectare	% of Vegetation Assemblage
<i>Angophora</i>	<i>costata</i>	sap, nectar & pollen		
<i>Eucalyptus</i>	<i>haemastoma</i>	sap, nectar & pollen		
	<i>racemosa</i>	sap, nectar & pollen		
	<i>robusta</i>	sap, nectar & pollen		
	<i>siderophloia</i>	sap, nectar & pollen	5	
	<i>paniculata</i>	sap, nectar & pollen		
	<i>fibrosa</i>	sap, nectar & pollen	1	
	<i>gummifera</i>	sap, nectar & pollen		
	<i>maculata</i>	nectar & pollen	10	
	<i>Melaleuca</i>	<i>linariifolia</i>	nectar & insect bark food	3
<i>nodosa</i>		nectar & insect bark food	2	
<i>quinquenervia</i>		nectar & insect bark food		
<i>sieberi</i>		nectar & insect bark food		
<i>Acacia</i>	<i>spp.</i>	seeds & gum		
<i>Banksia</i>	<i>spinosa</i>	nectar & pollen		
	<i>serrata</i>	nectar & pollen		



	<i>integrifolia</i>	nectar & pollen	<input type="checkbox"/>	<input type="checkbox"/>
	<i>oblongifolia</i>	nectar & pollen	<input type="checkbox"/>	<input type="checkbox"/>
<i>Xanthorrhoea</i>	<i>spp.</i>	nectar & potential gum	<input type="checkbox"/>	<input type="checkbox"/>

* Council staff will have regard to the availability of food resources and continuity of flowering times of different plant species in making any assessment.

1.2 Habitat Vulnerability

Factors to be assessed include area, edge/area ratio of the habitat, presence of disturbed or weed invaded vegetation within remnant patch, presence of threatening processes and impact of surrounding land use proposals. Assessment criteria are outlined below.

a Edge to Width Ratio

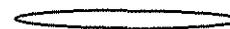
Which shape is the patch size most similar to?



Round



Oval Shaped



Narrow Linear Fragment

b Habitat Disturbance

What % of the patch area has experienced disturbance by weed invasion, underscrubbing, fire or other understorey disturbance?

The native vegetation on the subject land is virtually 100% disturbed by weed invasion - Lantana.

c Proximity to Existing or Future Residential Development

Is the fragment within 200 metres of an existing or future residential development?

<input checked="" type="checkbox"/>	<input type="checkbox"/>
Yes	No

2.3 Resident Breeding Squirrel Gliders

Presence / absence of resident breeding Squirrel Gliders in patch?

<input type="checkbox"/>	<input checked="" type="checkbox"/>
Yes	No

Applicants must supply details from trapping programme.

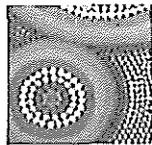
No trapping was undertaken because potential habitat tree analysis, significant spot light survey effort did not reveal any indications of the species, it was therefore determined that trapping was considered unwarranted and would be subject to the detection of the species using other survey methods viz. stag watching, habitat tree assessment, spot-lighting. As no indications for suitability or presence were detected by these methods, trapping did not proceed.



Attachment 5c

Aboriginal Cultural Heritage Assessment

Aboriginal Cultural Heritage Assessment Report



Local Aboriginal Land Council
DARKINJUNG

145 Johns Road Wadalba

**Report to
Aconsult
Development & Environmental Planning
Consultants**

November 2012

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Aboriginal Cultural Assessment Heritage Report

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Aboriginal Cultural Heritage Site Assessment Report

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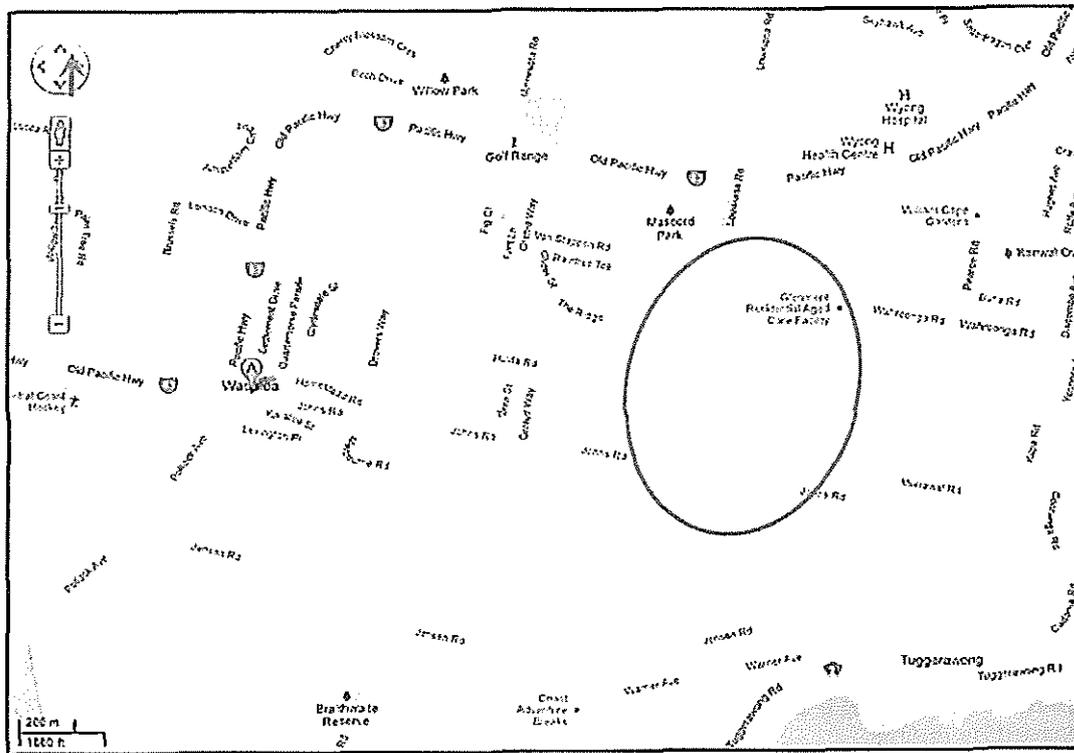


Figure 2: Map shows the approximate location of the assessment site within which is indicated by the red circle.

Source: Google Maps.

1. Introduction.

This report has been prepared as part of an Aboriginal Cultural Heritage Assessment for Darkinjung Local Aboriginal Land Council (DLALC) and on behalf the Aconsult Development & Environmental Planning Consultants.

The assessment was undertaken over one day on 27th November 2012.

The aim of the Aboriginal Heritage Assessment was to inspect the site located at 145 Johns Road Wadalba where the property owner proposes to lodge a Rezoning Application with Wyong Shire Council over a major portion of the site to allow for a residential development. The property is currently zoned 10a Investigation Precinct Zone.

The inspection was to identify any Aboriginal Cultural Heritage, places, or objects, of significance to the Aboriginal community, and for the site's developer to meet the statutory obligations and requirements under the National Parks and Wildlife Act (1974) and the Environmental Protection Act (1979).

In November 2011 DLALC visited the property and conducted an Aboriginal Heritage Assessment for a Development Application (DA) to construct a single 509 square metre dwelling house situated to the far north-west corner of the property and upgrade of an access track to the proposed dwelling. The DA has since been approved by council.

2. Description of the Assessment Area and Development Proposal.

The assessment area is situated within the boundaries of the Darkinjung Local Aboriginal Land Council. Darkinjung LALC is located on the Central Coast of New South Wales, its boundaries stretch from Catherine Hill Bay to the Watagan Mountains to the North, Hawkesbury River to the South, Pacific Ocean to the east while the western boundary stretching along Judge Dowling Range from Bucketty to Spencer (Darkinjung Local Aboriginal Land Council).

The assessment site is located at 145 Johns Road Wadalba. The assessment site can be accessed from Johns Road via the Old Pacific Highway Wadalba and is located approximately 6 kilometres north-east of Wyong NSW.

Wadalba lies within a semi-rural area; over the past few years the area has undergone increased residential growth through the development of a number of housing estates. The proposed development site lies within this semi-rural area. A large majority of site has been cleared of most of the native vegetation for past agricultural practices. Thick native bushland lies within the boundary and surrounding the property to the east, north and west. The main types of vegetation include native and weed species of trees and shrubs.

The landscape and vegetation in the area of the assessment site is largely influence by terrestrial and aquatic environments and scatted bushland and urban development.

The type of development proposed would be depended on the approval of the proposed rezoning of the property. Therefore the assessment of the site has been

undertaken assessing the impacts of a proposed residential development including house, streets and associated infrastructure.

3. Description of Impact.

The impact to the assessment site as a result of the proposed development would have a major impact to the site including vegetation clearing and soil excavation.

These impacts may expose soil and expose or destroy any potential Aboriginal Cultural Heritage sites. Potential erosion may also expose Aboriginal Cultural Heritage sites and or material. Other negative impacts to consider include, labour accessing the site, treadage, transporting materials, construction tools and damage from machinery which also have the potential to expose and/or destroy artefacts on top of, or below the soil surface.

Impacts can also include the destruction of vegetation and the surrounding landscape which can contain Aboriginal Cultural Heritage, material remains or cultural places.

The Aboriginal Cultural Heritage most at risk from this type of works are, Aboriginal shell middens, rock engravings and axe grinding grooves, scar trees, open sites and isolated artefacts. Other forms of Aboriginal sites at risk include cultural and spiritual places. Adverse impact could include exposure of artefacts and other Aboriginal archaeology and destruction of Aboriginal places, through water runoff and soil erosion, impact from machinery or tools and treadage associated with the works. These impacts could occur during the various phases of the project, while after completion impacts can be a result of altered runoff and natural water movement which are also a threat. The greatest impact on Aboriginal heritage places in NSW occurs in the form of soil erosion (Byrne 1997:1). Runoff and erosion can potentially cause siltation and/or exposure and destruction of Aboriginal cultural heritage sites. Indirect impacts may occur in the form of alterations to drainage and erosion patterns (Byrne 1997:2).

Trampling and treadage has had a significant impact on Aboriginal sites in NSW. The impact of treadage on open sites can result in displacement and damage to individual artefacts. Treadage can also initiate soil erosion (Byrne 1997:3) including for example by people damaging the vegetation and exposing the soil surface, workers unknowingly walking over sites, or being in the vicinity of sites that may be sensitive, sacred or mythical.

Tools and treadage associated with the project during and post works phases have the potential to destroy or adversely alter sites if the area is not adequately protected.

There has been some previous disturbance within the assessment site. Past agricultural practices on the property have resulted in a major section of the site being cleared of original vegetation and possibly some of the original soil surface.

4. Qualifications, Relevant Experience and Community Endorsement

I have completed Certificate III Horticulture, Parks and Garden through the TAFE Open Training and Education Network (OTEN), Certificate III Conservation and Land Management, Specialising in Indigenous Land Management through the Ryde College of TAFE Ryde and have completed the Diploma in Indigenous Archaeology at the University of New England, Armidale NSW. Currently I am studying Certificate IV In Frontline Management also through the TAFE Open Training and Education Network (OTEN).

I have gained experience through liaison and collaborating with both Aboriginal and non-Aboriginal representative from such organisation as, State Forest NSW, NSW National Parks and Wildlife Service, NSW Office of Environment and Heritage, Central Coast Hunter Range Regional Aboriginal Co-management Committee, Greater Blue Mountains World Heritage Area Aboriginal Reference Group, Tuggerah Lakes Estuary Coastal and Floodplain Management Committee, Gosford City and Wyong Shire Councils and professionals such as Archaeologist, Anthropologist, Biologist and Environmentalist. I have worked under the guidance and management of Darkinjung Local Aboriginal Land Council and have the endorsement of the council and the local Aboriginal community.

5. Statutory Requirements and Legislation.

Aboriginal heritage and places are protected by law under Legislation. Two basic pieces of legislation concerned with Aboriginal Heritage Management are the National Parks and Wildlife Act 1974 (NPW Act) and The Environmental Planning and Assessment Act 1979 (EP&A Act).

Section 84 of the National Parks and Wildlife Act (1974) provides protection for 'Aboriginal Places'. The act defines Aboriginal places as 'areas of cultural significance to the Aboriginal Community'. Section 90 of this Act gives protection for all 'Aboriginal Relics'. The act defines Aboriginal relics as 'any material evidence of the Aboriginal occupation of New South Wales'. The Minister will gazette areas as Aboriginal places if satisfied that adequate evidence exist to show that the area was or is of special importance to the Aboriginal community.

The National Parks and Wildlife Act 1974 (NPW Act) Legislation does not structure any formal mechanisms to make sure that areas with potential to contain Aboriginal sites or places of special significance are evaluated before impact on those areas. It is the Environmental Planning and Assessment Act (EP&A Act) which carries out this function.

The Environmental Planning and Assessment Acts principal function is to consider 'environmental impacts' in land use and decision making. Environmental impacts include impacts on Aboriginal Heritage. There are three main sections in the EP&A Act which are applicable to Aboriginal Heritage. Part III, administrate the preparation of planning instruments; Part IV relates to development evaluation process for local government (consent) authorities; and Part V which communicate to activity approvals by Government (determining) authorities.

Part III of the Act governs the preparation of the following three planning instruments: 1. State Environmental Planning Policies (SEPPs); 2. Regional Environmental Plans (REPs); 3. Local Environmental Plans (LEPs). These planning instruments dictate allowable uses and potential constraints on land use. When preparing planning instruments the Department of Urban Affairs and Planning have guidelines which should be followed. These guidelines list Aboriginal sites and places of significant to the Aboriginal community as values which should be assessed.

Part IV of the legislation governs the decision making process by local government authorities during a development application. Section 90 of the Act lists impacts which must be considered before development approval is granted. Under section 90 (1) 9b consideration must be given for 'the impact of that development on the environment (whether or not the subject of an environmental impact statement)'. Section 90 (1) 9b includes Aboriginal sites and heritage.

Part V of the legislation governs the decision making process by State Government authorities for activities conducted by that agency or under authority from the agency are controlled by Part V of the EP&A Act. It is mandatory for these agencies to consider environmental impacts of proposed activities then, determine whether the level of impact is adequate to necessitate the planning of an Environmental Impact Statement (EIS). Environmental impacts include Aboriginal sites and places. The Department of Planning New South Wales has created a set of guidelines for explaining Section 112 which requires that Aboriginal Heritage is assessed as part of the process (Byrne 1997: 2-3).

There are number of amendments to the NPW Act 1974. The amendments include a number of guidelines. These guidelines can be viewed on the NSW Office of Environment and Heritage (OEH) website.

The process of due diligence under the OEH guidelines require that a proponent of a development assess impacts of the proposed activity.

Below is a brief explanation of the process from the OEH web site,

The purpose of due diligence is to identify whether Aboriginal objects are present in an area, and to determine whether a proposed activity will have impacts on Aboriginal objects. Therefore it is essential to identify and understand all the expected impacts of the proposed activity.

There are two categories of activity used for assessing impacts:

- (1) Activities involving no additional surface disturbance.
- (2) Activities causing additional surface disturbance.

For activities causing additional surface disturbance, it is necessary to determine whether an activity is proposed for:

- a) a developed area or a previously disturbed area, or
- b) an undisturbed area.

For activities in previously developed or disturbed areas, it is then necessary to determine whether the new activity will create significant additional surface disturbance. If it will, then the process for undisturbed areas will apply'.

Due diligence involves taking reasonable and practicable measures to determine whether your actions will harm an Aboriginal object and if so avoiding that harm (Office of Environment and Heritage formally NSW Department of Conservation Climate Change and Water).

Note: Any works that may disturb, damage, or destroy Aboriginal cultural heritage requires an Aboriginal Heritage Impact Permit (AHIP) from OEH, this includes impacts to both registered and unknown Aboriginal sites that may require excavation or disturbance to the soil of any kind. Prosecution may result if works are carried without a relevant permit.

6. Aboriginal Cultural Heritage, Values and Significance.

Aboriginal people have inhabited Australia between 50,000 and 60,000 years, evidence for this can be found from material dated from Malakunanja and Nauwalabila rock shelter in the Northern Territory (Mulvaney & Kamminga 1999:141).

Further evidence for human occupation is displayed through the skeletal remains of Mungo 3 discovered at Lake Mungo New South Wales. These remains have been dated to be between 28 000 and 32 000 years old (Morwood 2002:12). In the Sydney region some early occupation dates come from a rock shelter near the Nepean River of around 14,000 years BP (Attenbrow 2002: 153). Aboriginal people's occupation of the Central Coast shown through archaeology, Aboriginal cultural heritage, material and spiritual places provides the local Aboriginal community with a sense of connection to the land, the people and culture. These materials and places present tangible evidence of the past and should be conserved.

The first inhabitants of the Central Coast region were members of the Darkinjung (Darginung, Darginyung), language group. Several researches and publications show tribal or language group boundaries within similar areas, but exact boundaries are unlikely. Boundaries are a European concept and there was likely a zone between language groups which was shared and utilised by neighbouring groups.

Stone artefacts in the Upper Mangrove Creek area of the Central Coast have been dated between 10,000 to 12,000 years old (Attenbrow 2002: 153). These provide some reliable evidence of Aboriginal people's occupation of the region. Upper Mangrove Creek is situated approximately 34 km to the north-west of Wadalba as the crow flies.

European exploration of the Central Coast area began soon after the arrival of the First Fleet in 1788. Settlement of the Hawkesbury River began about 1794 and in 1820 the area between the Hawkesbury and the Hunter Rivers become available for settlement (Brisbane Water National Park Plan of Management 1992:19).

Evidence for Aboriginal habitation, includes middens, which consist of shell, bone, charcoal, tools and sometimes burials. A midden is likely to contain only a selection of shell fish species available in the local environment. It may contain a high proportion of individuals of an edible size, stone artefact, charcoal from camp fires, pumice, coral, faunal bone and human burials (Byrne 1997:5). Shell middens are also important scientifically they can be dated, they provide precious information about Aboriginal use of the environment and changes in behaviour over time. Other evidence includes, fish traps and stone arrangements, deposits in sandstone shelters, including artefact, charcoal, shell and bone remains, rock engravings and pigment art. Additional forms of Aboriginal cultural evidence can consist of abraded channels, grooves and grinding stones, axe grinding grooves, scarred and carved trees, water holes, quarry sites, open sites or camp sites, stone artefact scatters, graves, earth mound, walking trails along trading routes, mythological and ceremonial sites. In some cases landscape modification can provide evidence of Aboriginal people's occupation.

The landscape surrounding an Aboriginal place or site can be seen in a spiritual sense and is very important to Aboriginal people. The landscape can be an extension of a site, or the landforms and features within the landscape can be the site. Aboriginal sites can also be connected through sight lines to other sites or places of significance. These features are all part of the cultural landscape.

Some sites are associated with sight lines and tracks, their purpose and associated stories connect these sites with other sites across Darkinjung country and should not be viewed in isolation of each other. Considering this, changing the context of an Aboriginal site by landscape degradation compromises the spiritual and cultural connection that Aboriginal people have to the land and or the site. In many cases landscape destruction can be considered, destruction of an Aboriginal site and the Darkinjung cultural landscape.

Recent research of certain areas of the Central Coast has revealed an intricate network of Aboriginal cultural heritage sites, connected by Aboriginal walking trails and routes which have been utilised over hundreds and in some cases thousands of years. These tracks were utilised to access seasonal resources, carry out trade, teaching and ceremonies. These sites are connected and form part of a complex Aboriginal cultural landscape. The significance of many of these sites and the significance of the connection they have to each other and the landscape has been highlighted as very important for Aboriginal people both culturally and spiritually.

The Darkinjung people were fishers, hunters and gatherer of plants and animals of the land, rivers, estuaries and sea. These places including the hills, valleys, creeks, wetlands, lakes and coastline provided food, medicines, and raw material for tools, weapons, shelter and decoration. These environments and landforms also provided the basis for spiritual and cultural life and are of value and significance to the local Aboriginal community. Certain environments can be considered to have a higher Aboriginal cultural heritage potential because of their ecology and landform and the associated flora, fauna and other resources needed for everyday life. The proposed development site lies in an area with a high Aboriginal Cultural Heritage value. This is because of the surrounding, mountains, lakes, creeks, coastline and associated woodland and wetland habitats. These environments and ecological zones provided the local Aboriginal population with many food and other natural resources.

Therefore considering the long Aboriginal occupation of Australia and the Central Coast it could be predicted that most areas, particularly those with minimal disturbance have the potential to produced Aboriginal Cultural Heritage material or places.

Aboriginal sites are connected to each other within the landscape, a number of places and sites hold spiritual and cultural importance to the local Aboriginal community through their physical link to ancestors and the past. This connection attaches the community to land, traditions and strengthens bonds within the Aboriginal community. Safe guards need to be put in place to protect the spiritual and environmental integrity of a site and the cultural landscape. These Aboriginal materials, places and landscapes have value and significance to the local Aboriginal community and need to be protected.

7. The Site

The assessment site is situated within the suburb of Wadalba on the NSW Central Coast.

The assessment site can be accessed from 145 Johns Road and is located approximately at GPS reading 0357758 6317333. The site covers an area of approximately 200 by 400 metres. The assessment site includes a small cottage and various agricultural sheds and animal enclosures. These are mainly situated to the southern section of the assessment site.

The site is surrounded by various hills, ranges, valleys, creeks, wetlands, beaches and coast line, as shown previously these types of environments and the resources they provided to local Aboriginal people, was very important and as a result a large number of Aboriginal sites are recorded within the region surrounding the assessment area. Three registered Aboriginal sites are recorded within one (1) km radius from the proposed development site. These are shown in Table 1 on page 17.

The topography of the assessment site is relatively flat to gently sloping from the north towards the south and there are two drainage lines situated roughly to the west and the other to the east within the property, both flow approximately in a north-south direction.

Vegetation on the assessment site consists mainly of native species of trees and shrubs near the boundaries, while other areas are thickly vegetated with long grass such a Kikuyu (*Pennisetum clandestinum*) and weed. The main plant species observed on the site include Eucalyptus species and various other native shrubs and introduced weed species such as Lantana (*Lantana camara*).



Figure 4. Map shows site location and boundary of 145 Johns Road Wadalba shown within the red line.

Source: SIX Lite Viewer Land and Property.

The Darkinjung LALC assets management system incorporating the Office of Environment and Heritage (OEH) Aboriginal Heritage Management Systems (AHIMS) Register has identified a number of registered Aboriginal sites within the Wadalba area.

A number of locations within the assessment site are considered to have the potential for Aboriginal sites or artefacts which may be concealed by thick vegetation or be covered by leaf litter, sand and silt. The areas of the assessment site with a higher potential for Aboriginal Cultural Heritage include places where there has been minimal disturbance or areas with intact soil and vegetation and possibly the drainage lines.

Area of the assessment site with a lower potential for Aboriginal Cultural Heritage sites includes disturbed areas such as where there has been previous vegetation clearing, construction of tracks, farm sheds and the house. In the past these activities within the assessment site could have negatively impacted on, or destroyed a number of Aboriginal Cultural Heritage sites.

No	AHIMS Site No	Site Name
1	45-3-3371	Wadalba Hill Scar 1
2	45-3-3370	Wadalba Hill Grooves 2
3	45-3-3369	Wadalba Hill Grooves 1

Table1. Shows Registered Aboriginal sites located within 1km of the proposed development site.

Source: DLALC Assets Governor incorporating AHIMS.

Further details of recorded Aboriginal sites in the area can be found on the NSW Office of Environment and Heritage (OEH) Aboriginal Heritage Information Management System (AHIMS).

7.1 Site Topography and Vegetation

The landscape and original vegetation in the area within Wadalba and the assessment sites is largely influenced by terrestrial and aquatic environments and associated ecosystems, which include sections of bushland, including the Wadalba Wildlife Corridor, Tuggerah Lake, wetlands and creeks although most of the area surrounding assessment site is now dominated by small rural properties and urban development.

Vegetation in the site consists mainly of native species of trees and shrubs. The main plant species observed on the site include *Eucalyptus* species and various other native shrubs and introduced weed species.

Many of the native plant, faunal and aquatic species found within the area are considered a valuable food and material resource for the local Aboriginal inhabitants.

Examples of those resource plants found in the area consist of; Cabbage Tree Palm (*Livistona australis*), the growing tip was eaten either uncooked or roasted, Mat Rush (*Lomandra longifolia*) which can be used as string or for food (Stewart & Percival 1997:33-35). Bracken (*Pteridium esculentum*), the rhizomes are used for food, but are toxic if not treated by roasting or baking. The young fronds are also roasted and eaten, while the sap of the crushed leaf is used to relieve ant or nettle stings (Stewart & Percival 1997:44). Many of the Paper barks (*Melaleuca* spp), Tea-trees (*Leptospermum* spp), Bottlebrush (*Callistemon* spp) and Wattle (*Acacia* spp) provide food, medicinal and other resources through the nectar from flowers, leaves and bark (Robinson 1991:55). Lilypilly (*Acmena* and *Syzygium* spp) provided eatable fruit (Robinson 1991:369-371) while the bark of Geebung's (*Persoonia* species) has medicinal qualities and the fruit can be eaten. The plant can be used for sore eyes and to strengthen fishing lines (Stewart & Percival 1997:42). Native Rock Lily (*Dendrobium speciosum*) has starchy stems that are roasted before eating. The stems could also be chewed and applied to injuries such as burns or wounds (Stewart & Percival 1997:16). The roots of Native Yams (*Dioscorea transversa*) can be eaten raw (Stewart & Percival 1997:19). The Saw-sedge (*Gahnia aspera*) has seeds that are ground to make flour (Stewart & Percival 1997:33). The Cabbage Tree Palm (*Livistona australis*) has growing tips that are edible raw or roasted. The leaves are also used as thatch for shelters and weaving baskets, while the bark fibres are used for making fishing lines (Stewart & Percival 1997:34).

Flowering plants also provide Aboriginal people with seasonal indicators, when to move to a new area to obtain a particular food source or when certain marine or faunal species may be available, for example when Sydney Golden Wattle (*Acacia longifolia*) comes into flower it indicates to fish for Mullet (Stewart & Percival 1997:8).

Many of the Gum Trees (*Eucalyptus*, *Angophora*, *Corymbia* spp) provide resources from various parts of the plant. These include string, tools, weapons, shelter, canoes, food, medicinal and spiritual uses.

The lake lies within close proximity to the assessment site (1.7km) and is abundant in various marine and estuary resources including fish, shell fish, marine birds and animals. Middens provide evidence of these resources utilised by Aboriginal people. Middens were once abundant along the NSW coastline, but since colonization many have been destroyed by erosion, urban development and utilised as a resource earlier this century, for such things as lime burning or for building mortar.

Middens contain the remains of meals consumed by Aboriginal people, their tools and also burials. Some of the marine species consumed on the Central Coast include, Turban shell (*Turbo torquata* and *Turbo undulata*), Sydney Rock Oysters (*Saccostrea glomerata*, formerly known as *Saccostrea commercialis*), Sydney Cockle (*Anadara trapezia*), Pipi (*Plebiodonax d' toides*), Sydney Whelk (*Pyrazus ebeninus*), *Nerita* sp and Limets (*Cellana* sp).

The examples above shows that Wadalba including the surrounding area has the potential to provide Aboriginal people with abundant, reliable food and material resources that are within close proximity. Therefore the assessment site is considered to have potential for Aboriginal cultural heritage sites or artefacts which may be concealed by deposits of soil, vegetation and leaf litter.

8. Assessment Methodology.

Prior to any Aboriginal site survey, assessment or monitoring carried out in the field, a desk top analysis of the area is carried out. This involves consulting the relevant topographical, council and survey maps, and the DLALC Asset Governor incorporating, OEH Aboriginal Heritage Information Management System (AHIMS) Data.

It should be noted in regards to the AHIMS database that many Aboriginal sites listed on the data base often are not situated within the location as shown on maps referring to the AHIMS information. Therefore it can be difficult to relocate the precise position of many registered Aboriginal sites due to some of the following reasons:

- Registered sites were recorded before the introduction of GPS units.
- In the past many registered Aboriginal sites were recorded on a topographical map with a scale of 1:25000. The co-ordinates were acquired by cross references to easting and northing figures located along the side of the map. The site was then mark as a point on the map and as a result of this, the co-ordinates could be up to 1 millimetre off, on the map, which then results in the sites location recorded as an error of up to 250 metres on the ground.
- Sites were frequently recorded in different datum for example: Some site where recorded in AGD which has now change to GDA 94 therefore the site could be out by as much as 200 metres on the ground.
- Human error, locations of Aboriginal sites may have been incorrectly recorded.
- Inability to visually relocated sites due to thick bush, vegetation, leaf litter, silt and other debris, and hazardous or inaccessible topography.

Having considered the above points, it should also be noted that sites recorded more recently are often situated in the correct location given.

The main strategy used to assess the area was to first consult the relevant maps and DLALC Asset Governor incorporating AHIMS database and information as shown above, then secondly to visually inspect the area and soil surface.

9. Assessment Fieldwork.

The assessment and inspection of the proposed development site for Aboriginal Cultural Heritage sites and places within 145 Johns Road Wadalba was conducted on the 27th November 2012. Involved in the assessment of the site was Sharon Hodgetts representing Darkinjung Local Aboriginal Land Council. Also in attendance was Barry Hunt Registered Surveyor from Barry Hunt Associates Pty Ltd.

The aim was to physically walk over the assessment sites in areas of accessibility and exposed soil surfaces, to inspect the site and locate any potential or existing Aboriginal cultural heritage sites or material.

The inspection of the proposed development site was required so that any Aboriginal cultural heritage material or sites located within the area could be assessed, protected and properly managed and to assess the site for any potential sites or material to be located beneath the soil surface.

Day One.

Weather conditions: Fine

Transect 1.

The transect starts from the southern entrance to the property and proceeds in a northerly direction following a track which passes sheds and thick vegetation. Much of the site near farm sheds was inaccessible due the thick weed bushes such as lantana. The mid-section of assessment site and the area to the north- eastern boundary were inspected. The mid-section of the assessment site was the major area of proposed impact. The north-eastern boundary had been inspected on a previous site visits.

The soil surface visibility within the midsection of the assessment site was very poor due to very thick long grass. This was predominately within the areas of the site which had been cleared and utilised for previous agricultural purposes. The area adjacent to the west and northern site boundaries also has poor soil visibility due to thick native vegetated.

The area surrounding the cottage located in the south of the assessment site, near the entrance had better soil surface visibility along the vehicle tracks.

No visible Aboriginal cultural heritage sites or material were located within the assessment site.

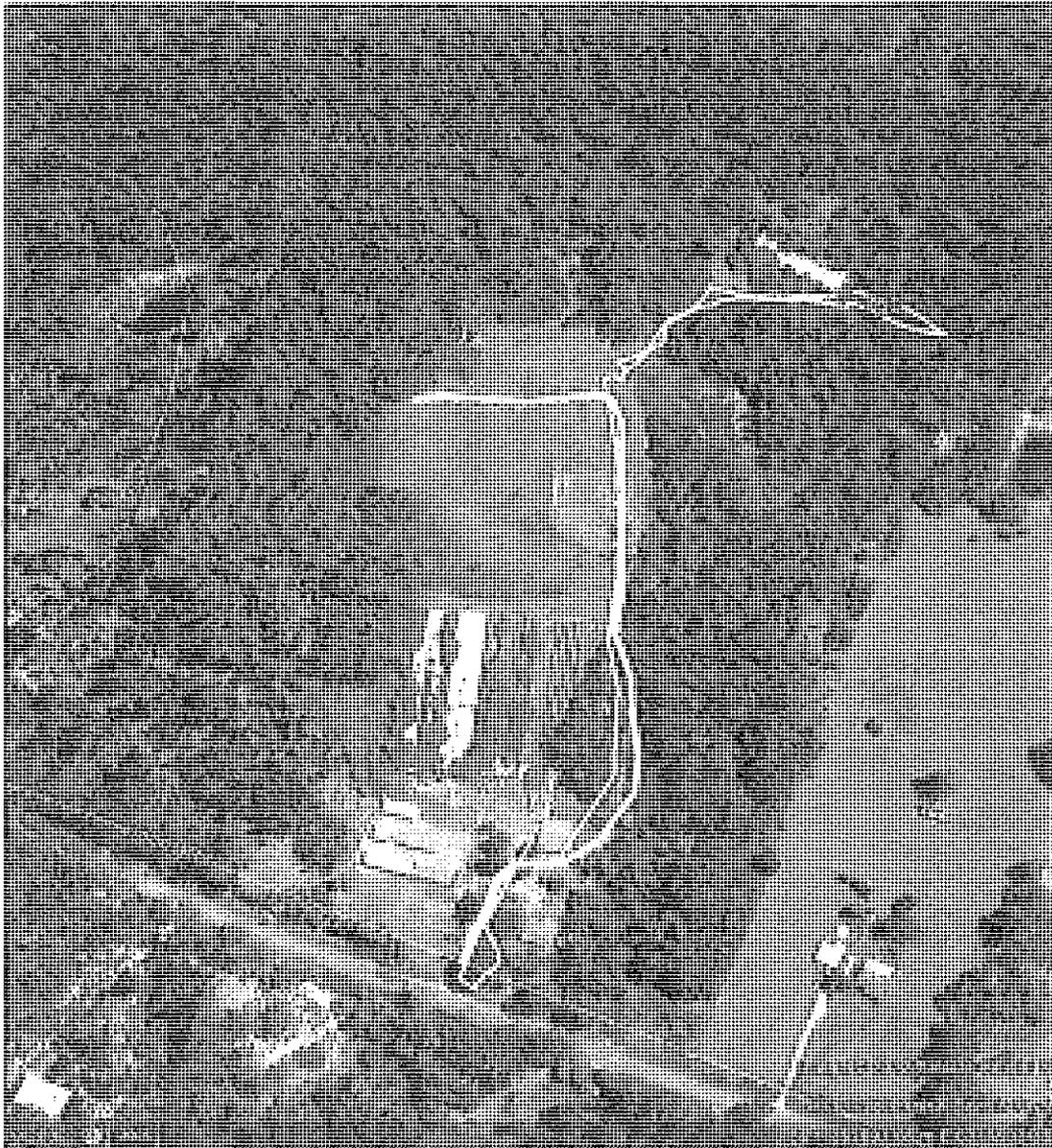


Figure 5: Map shows the approximate location of Transect 1 shown as the yellow line situated within the assessment area. The white line is from a previous site visits.

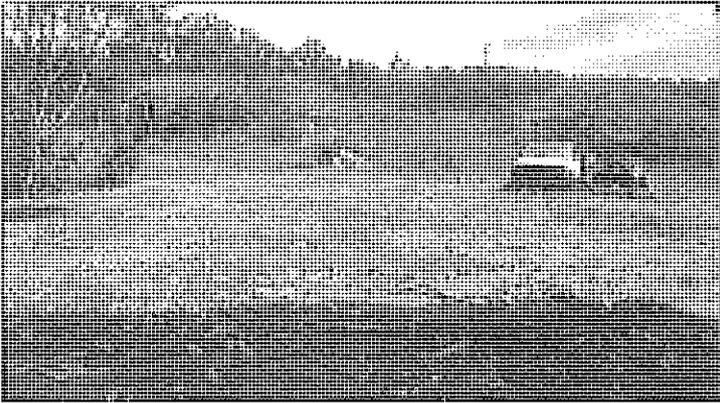
Source: Google earth.

10. Photographs.



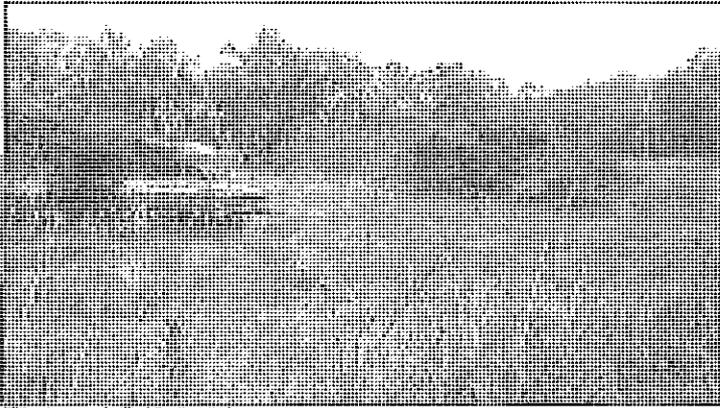
[Photograph ©. Hodgson]

Figure 6: The photograph shows part of the assessment site and part of Transect 1 behind the cottage in the south of the assessment site facing south.



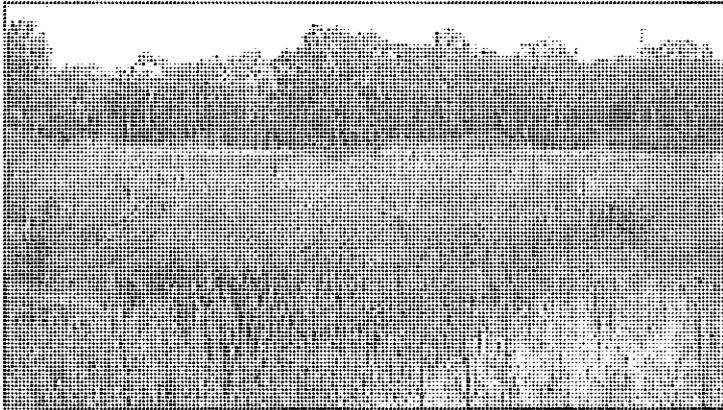
[Photograph ©. Hodgson]

Figure 7: The photograph shows part of the southern section of the assessment site near the cottage facing north.



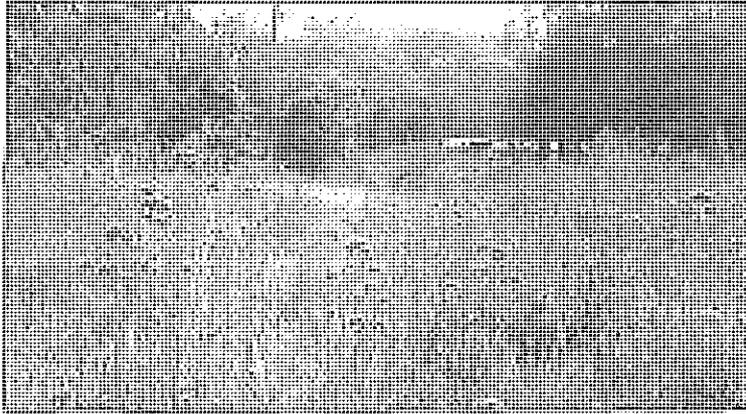
Photograph 8. (Halftone)

Figure 8: The photograph shows a part of the southern section of the assessment site facing north-west.



Photograph 9. (Halftone)

Figure 9: The photograph shows part of the eastern section of the assessment site facing west.



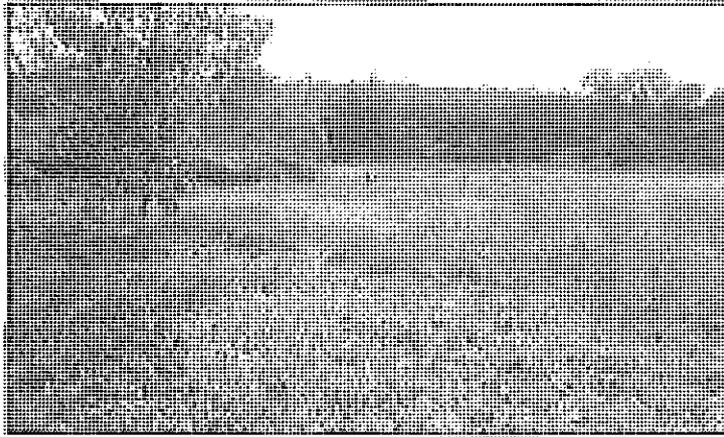
[Photograph 8, Wadalba]

Figure 10: The photograph shows part of the north-eastern side of the assessment site facing east.



[Photograph 9, Wadalba]

Figure 11: The photograph shows part of the assessment site from the north facing south.



(Photograph S. Hodgetts)

Figure 12: The photograph shows part of the north-western side of the assessment site facing east.



(Photograph S. Hodgetts)

Figure 13: The photograph shows part of the north-western section of the assessment site facing west.

11. Fieldwork Results.

No Aboriginal Cultural Heritage sites or places were found on the assessment site.

12. Discussion and Recommendations.

DLALC's position on a rezoning application of the property located at 145 Johns Road Wadalba is an impartial one and the potential for Aboriginal Cultural Heritage sites and materials to be present on the assessment site and the potential impacts from development on those Aboriginal sites is the only consideration. .

The accessible sections of the site were assessed and has been establish that the soil surface visibility within the assessment site was very poor due to very thin long grass within the previously disturbed areas of the assessment site and thick vegetation adjacent the property boundaries. The disturbed areas of the assessment sites have a low possibility to contain objects or sites of Aboriginal Cultural Heritage, while areas of higher Aboriginal Cultural Heritage potential are those areas with minimal disturbance such as areas of bushland and drainage lines.

Considering the number of registered Aboriginal sites surrounding the area there is a high possibility for undiscovered objects or sites of Aboriginal Cultural Heritage to be located within undisturbed sections of the assessment areas, concealed by vegetation or beneath the top soil surface. All have Aboriginal Cultural Heritage value.

Therefore Darkinjung LALC recommends for the assessment site is as follows:

Any large scale development will require the engagement of a qualified archaeologist.

Certain areas of the assessment site may require subsoil testing to investigate the potential for Aboriginal Cultural Heritage material particularly near the drainage lines.

Darkinjung LALC Standard Recommendations:

The sites developers and employees or contractor must give notice to Darkinjung LALC 30 days prior to any commencement of construction work and to engage a Darkinjung LALC Sites Officer to monitor any earthworks or excavations until such time as is satisfied that there is very little or no possibility of Aboriginal Cultural Heritage. This is due to the possibility of uncovering Aboriginal objects/items of significance whilst excavation takes place.

The sites developers, employee's, contractors and personnel should receive basic training in the recognition of Aboriginal Cultural Heritage sites and material and have an awareness of the important of such material and places to both the Aboriginal and non-indigenous community.

When any soil, leaf litter or vegetation clearing activities are carried out workers associated with the project should be observant and keep a look out for surface shell, bone, rocks or any other Aboriginal Cultural Heritage material.

If any Aboriginal Cultural Heritage sites or material is found, work should cease immediately in that area and the Office of Environment and Heritage (OEH) and Darkinjung LALC be immediately notified. Work should only recommence when an appropriate and approved management strategy has been agreed to by OEH and Darkinjung LALC.

Any negative impacts including excavations to an area containing an Aboriginal Cultural Heritage site will require the application of an Aboriginal Heritage Impact Permit (AHIP) from Office of Environment and Heritage (OEH) prior to any soil disturbance taking place.

Finally the Registered Aboriginal Site information contained in this report is considered confidential and should be deleted from this report if it is to enter the public domain.

Overview of recommendation

1. Any large scale development will require the engagement of a qualified archaeologist.
2. Certain areas of the assessment site may require subsoil testing to investigate the potential for Aboriginal Cultural Heritage material.
3. The sites developers, employees or contractor must give notice to Darkinjung LALC 30 days prior to any commencement of construction work and to engage a Darkinjung LALC Sites Officer to monitor any excavations where recommended.
4. The sites developers, employees, contractors and personnel of the developers should receive basic training in the recognition of Aboriginal Cultural Heritage material and sites.
5. When any soil excavation, earth works, vegetation clearing and leaf litter removal activities are conducted workers should be observant and keep a look out for, surface shell, bone, rocks or any other Aboriginal Cultural Heritage material.
6. If Aboriginal Cultural Heritage sites or material is discovered, work should cease, the area should then be avoided and the Office of Environment and Heritage (OEH) and Darkinjung LALC be immediately notified.
7. Any impacts including excavations to an area containing an Aboriginal Cultural Heritage site will require the application of an Aboriginal Heritage Impact Permit (AHIP) from the Office of Environment and Heritage (OEH) prior to any soil disturbance taking place. This should be seriously considered within the areas along Woy-Woy Creek.
8. Registered Aboriginal Site information in this report is confidential and not for public interest.

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