

WADALBA WILDLIFE CORRIDOR MANAGEMENT PLAN

SEPTEMBER 2006

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PREFACE

This Management Plan has been completed to provide a range of management strategies in protecting the long term environmental and ecological values of the Wadalba Wildlife Corridor. The Wadalba Wildlife Corridor consists of lands currently zoned and lands to be rezoned 7a Conservation within the Wadalba Urban Release Area according to Wyong Shire Councils Draft Local Environmental Plan.

This Management Plan is a condition of the Department of Environment and Conservations deemed concurrence for the development of lands within the Wadalba Urban Release Area.

This Management Plan is the result of liaison and detailed discussions between the Department of Environment and Conservation, Wyong Shire Council, landowner representatives, *Conacher Travers* and other ecological consultants in arriving at the best outcomes in managing and conserving the environmental and ecological values of the Wadalba Wildlife Corridor.

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The following individuals and organisations were principal contributors to the content, development reviewing production and financing of this Management Plan.

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PART A

INTRODUCTION AND BACKGROUND

A1 INTRODUCTION

The preparation of a Management Plan is required as part of the *Department of Environment and Conservations* (DEC) deemed concurrence with Wyong Shire Council as detailed within correspondence dated 24th December 2004 (Appendix I). As part of the deemed concurrence a Management Plan is required to be prepared for the identified Wadalba Wildlife Corridor to the satisfaction of the Director General of DEC prior to release of construction certificates for any developments within the Wadalba Urban Release Area.

The land subject to the provisions of this Management Plan include those areas within the Wadalba Wildlife Corridor as shown in Figure 1. This area is approximately 46 hectares in size. Those areas planned for addition as later stages of the corridor to the south-east and north-west are not included within the provisions of this Management Plan.

A2 BACKGROUND

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 south-east 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.

A review of the Wadalba Wildlife Corridor by Forest Fauna Surveys (2004) highlighted limitations to the initial design and identified areas proposed for extension to the Wadalba Wildlife Corridor. As a result an amended corridor design was prepared. After consultation between Wyong Shire Council, the Department of Environment and Conservation and the relevant landholders this final design was agreed upon and all areas included within the Draft LEP for rezoning as 7(a) Conservation land.

The Wadalba Wildlife Corridor has been retained to provide movement of fauna through the local area and within a highly disturbed local landscape. The areas of highest habitat value within the Wadalba Urban Release Area have been retained as part of the WWC. The corridor will form a function of a continuous area of habitat from the Tacoma Wetlands to the south-east of the subject site connecting to Porters Creek Wetlands to the north-west of the WWC. Stage 2 of the WWC extends to the south-east corner of the WWC and has been provided to facilitate movement across Johns Road to Tacoma Wetlands to the south-east. At this stage however the Management Plan does not apply to these areas.

The quality of the WWC in providing potential movement between these two vegetation and habitat areas (Porters Creek Wetlands and Tacoma Wetlands) will be largely dependent upon the future rehabilitation of areas currently highly disturbed that represent barriers to movement. This is particularly evident at the crossing of the Pacific Highway in the north-west corner of the WWC where rehabilitation of bushland will be required to maximise the potential for movement. This will also require initiatives to be developed to facilitate safe movement across the Pacific Highway at this point by local fauna.

A3 PROCEDURES FOR THE PREPARATION OF THE MANAGEMENT PLAN

The Management Plan has been prepared with information obtained from the following sources:

- Results from extensive flora and fauna surveys and assessment completed by various ecological consultants within the Wadalba Urban Release Area;
- Review of previous reports and their relevant recommendations;
- Discussions with the landowners, Wyong Shire Council and the DEC;
- Review of correspondence provided to Council by the DEC in relation to deemed concurrence;
- Review of Council Business Paper – Revision to Wildlife Corridor – Wadalba Development Concept Amendments;
- Wyong Council Draft Biodiversity Conservation Strategy

This Management Plan details the strategies and measures to be implemented in protecting the natural values of the Wadalba Wildlife Corridor. In particular the Management Plan provides, at the request of the DEC (detailed within Point 1 of correspondence dated December 2004 – see Appendix I) information on the following:

- Signage
- Weed Control
- Bushfire Management
- Rubbish Dumping
- Prohibited Uses
- Cultural Values
- Community Education

- Stormwater Structure Management
- Stormwater Quality
- Community Vigilance and Reporting
- Habitat Enhancement Initiatives
- Habitat Tree Relocations/Maintenance
- Frog Habitat Features
- Monitoring and Reporting Regime
- Feral Pest Species

Each of the above issues is addressed separately in Part B through the process outlined below:

- i) Identification of objectives to be achieved for each issue
- ii) A statement of the proposed actions to be implemented to address each issue and the objectives provided
- iii) More detailed information on methods, procedures or quantifying information supporting proposed actions is provided in the Appendices of this Management Plan.

A4 AREA TO WHICH THIS MANAGEMENT PLAN APPLIES

This management objectives and actions detailed within this Management Plan are limited to the area bound by the WWC. This area is shown in Figure 1.

Areas proposed for extension to the WWC and known as Stage 2 within the revised Development Control Plan 49 are not applicable to this Management Plan. However this management plan may be amended to include those areas bound by Stage 2.

The measures detailed within this plan are required to be considered by the Roads and Traffic Authority (RTA) in any future upgrade of the Pacific Highway to the north-west of the WWC.

A5 LIFESPAN AND REVIEW OF THE MANAGEMENT PLAN

The Wadalba Wildlife Corridor Management Plan will be implemented over a ten year period following signoff of the plan from the Department of Environment and Conservation and Wyong Shire Council. The specific management actions identified for developers to complete under this plan may require certain actions to be undertaken for no more than two years after the time in which residual corridor areas are transferred into Council ownership. Periodic review of this Management Plan will be the responsibility of Wyong Shire Council.

A6 FORMAT OF THE MANAGEMENT PLAN

The overall Management Plan is provided as a single document separated into several sections as outlined below.

PART A Introduction and Background

Outlines the purpose/objectives and procedures for preparing this Management Plan.

PART B Management Objectives and Proposed Actions

This part identifies the various management objectives and Management Actions to achieve the objectives of the Management Plan.

PART C Implementation of Management Actions

This part details how the Management Plan will be implemented, who is responsible for implementing various actions and provides details on the monitoring and reporting for the life of this management plan.

PART D Figures

PART E References

PART F Appendices

A7 ENVIRONMENTAL MANAGEMENT OBJECTIVES

The environmental management objectives for the areas covered within this Management Plan are:

- i) Protection of the environmental and ecological values of the Wadalba Wildlife Corridor
- ii) Minimisation of the impacts of development within adjacent land upon the Wadalba Wildlife Corridor during construction and occupation of adjoining residential areas.
- iii) Maintenance of biodiversity and protection of native flora and fauna species and their habitats (including threatened species) within the Wadalba Wildlife Corridor
- iv) Increased awareness and promotion of a culture of protection of the Wadalba Wildlife Corridor by the community
- v) Long term monitoring of the Wadalba Wildlife Corridor to determine changes (if any) to flora and fauna, particularly threatened species, and vegetation communities and recommend corrective actions if required.

A8 SITE DESCRIPTION

Landform Features

Topography and slopes

The topography of the WWC consists of flat to undulating land with low rises. The elevation of the subject site ranges from approximately 10m in the lower areas of the north-west portion of the corridor to 80m at the water reservoir in the south-east. The area contains gentle to steep slopes in the south-east.

Drainage

The WWC occurs within the Tuggerah Lakes Catchment. Drainage from the site is by overland flow into unnamed drainage lines that flow north-west into low lying land on the northern side of the Pacific Highway and to the south across Johns Road in the south-east.

Soils

Two soil landscapes occur within the WWC. These are the Wyong and Woodburys Bridge soil landscapes (Murphy 1992). Descriptions of these soil landscapes are provided below.

Woodbury's Bridge Soil Landscape

Landscape - gently undulating rises to rolling low hills on Patonga Claystone. Local relief 40-80m and slope gradients up to 20%. Sandstone capping on crests of steeper hills is common. Predominantly cleared tall open-forest.

Soils - deep (>150cm) Red Podzolic Soils (Dr2.21, Dr3.21), with some Soloths (Dr2.41, Db2.41, Dy2.41) in poorly drained areas on claystone bedrock; shallow to moderately deep (50-150cm) Yellow Podzolic Soils (Dy3.21, Dy5.11) on sandstone bedrock.

Qualities and Limitations - extreme erosion hazard, high foundation hazard, seasonal waterlogging (localised), acid soils of very low fertility, low wet bearing strengths and high erodability.

Wyong Soil Landscape

Landscape - broad poorly drained deltaic floodplains and alluvial flats of Quaternary sediments on the Central Coast Lowlands

Soils - deep (>200cm) Yellow Podzolic Soils, Brown Podzolic Soils, Soloths with some Humus Podzols around lake edges.

Qualities and Limitations - flooding, seasonal waterlogging, foundation hazard, permanent waterlogging (localised) and acid sulphate potential (localised)

Vegetation

The WWC has been mapped by Bell (2003) as containing three (3) broad vegetation communities. These consist of:

- Map Unit 30 – Narrabeen Dooralong Spotted Gum Ironbark Forest
- Map Unit 19b – Alluvial Woollybutt Melaleuca Sedge Forest
- Map Unit 20a – Alluvial Floodplain Shrub Swamp

The locations of these vegetation communities are shown in Figure 3.

The distribution of map units 19b – Alluvial Woollybutt Melaleuca Sedge Forest and Map Unit 20a – Alluvial Floodplain Shrub Swamp Forest is restricted to isolated patches of various sizes within the local area. These units were mapped as occupying a total of 308 and 895 hectares respectively within the Wyong Local Government Area (Bell 2002).

Portions of these two vegetation communities occurring below the 1:100 year flood recurrence level correspond with the endangered ecological communities, Swamp Sclerophyll Forest on Coastal Floodplains and Swamp Oak Floodplain Forests and as such are considered to be of local and regional significance.

Map Unit 30 – Narrabeen Dooralong Spotted Gum Ironbark Forest occurs throughout the local area and was mapped as occupying a total of 2215 hectares within the Wyong Local Government Area (Bell 2002). This community is well represented within the local and regional context and as such is considered to be of limited regional significance.

Fauna

The WWC contains a diverse range of fauna species. Up to 155 native species have been recorded within the Wadalba Urban Release Area during surveys. This number comprises 28 mammal species, 103 bird species, 13 amphibian species and 11 reptile species.

Ten threatened fauna species as listed within the *Threatened Species Conservation Act* (1995) have been recorded within the area during surveys. These are:

- Masked Owl (*Tyto novaehollandiae*)
- Powerful Owl (*Ninox strenua*)
- Squirrel Glider (*Petaurus norfolcensis*)
- Grey-headed Flying-fox (*Pteropus poliocephalus*)
- Eastern Freetail-bat (*Mormopterus norfolkensis*)
- Greater Broad-nosed Bat (*Scoteanax rueppellii*)
- Little Bentwing-bat (*Mormopterus norfolkensis*)
- Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*)
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*)
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)

Habitats

The WWC contains a range of habitats available for use by locally occurring flora and fauna species. These include:

- Flower, nectar and seed producing trees and shrubs;
- Occasional hollow bearing trees;
- Sparse to moderately dense understorey;
- Dense to sparse groundcover;
- Sparse leaf litter layer;
- Fallen timber and hollow logs;
- Cleared areas;
- Aquatic habitat within dams and drainage lines.

The micro and macro habitat types associated with these features provide the foraging, breeding and shelter conditions required for a large number of locally occurring species. Some of the key habitat features present within the WWC include breeding, roost and den tree hollows and winter flowering trees. The diversity of tree species also contributes to the provision of a year round foraging resource.

One of the key habitat features of the WWC, and instrumental in its design, is the potential function it plays in providing opportunity for movement of fauna species through the Wadalba Urban Release Area to bushland areas outside of the WWC area. This corridor is important in providing access through the area to key foraging areas and potentially acting as a dispersal function for species breeding within the corridor lands.

Zoning

The WWC consists of land currently zoned 7(a) Conservation and 2(e) Urban Release Area. The Wyong Shire Council LEP will be amended to have the entire WWC covered by 7(a) Conservation zoning. This includes the two Open Space parks proposed to be located within the WWC.

A9 LEGISLATIVE CONTEXT

This Management Plan has been prepared as a requirement of the DEC's deemed concurrence for separate future subdivision applications within the Wadalba Urban Release Area. This deemed concurrence has been instigated to address subdivision proposals within the area that are deemed to have a significant impact, within the meaning of the *Environmental Planning and Assessment Act* (1979) and *Threatened Species Conservation Act* (1995) upon locally occurring threatened species, endangered populations or endangered ecological communities.

Wyong Shire Council initially requested Species Impact Statements (SIS) to be completed for most residential subdivision development applications within the Wadalba Urban Release Area (Conacher Travers 2002c, 2003, 2004). Following detailed surveys and completion of several of these Species Impact Statements, the need for a more co-ordinated approach to the longterm protection and management of remnant habitat areas development applications was identified by the Department of Environment and Conservation. As a result, discussions between Wyong Shire Council and the DEC determined that subject to conditions, the DEC would grant a deemed concurrence for those development applications that complied with the conditions. The establishment of the Wadalba Wildlife Corridor and the preparation of this Management Plan forms an integral part of these deemed concurrence conditions. Wyong Shire Council can assume DEC's concurrence for ecological impacts associated with vegetation removal providing they occur in accordance with the concurrence terms of the DEC's correspondence dated December 24 2004 (copy included in Appendices).

The Councils assumed concurrence does not negate the relevant provisions of Section 5A of the *Environmental Planning and Assessment Act* (1979). Each Development Application will still require a 7-part test to be prepared and submitted to Council with the Development Application.

A Deed of Agreement exists between Wyong Shire Council and landowners within the Wadalba Urban Release Area. This Deed of Agreement has been prepared to allow for developer contributions to Council to allow Council to purchase parcels of property within the WWC currently under private ownership. After acquisition these lands will be zoned 7(a) Conservation under the Wyong Local Environmental Plan 1991. A copy of the map which forms the basis of the Deed of Agreement is included in Appendix II.

PART B

MANAGEMENT OBJECTIVES AND ACTIONS

The following section provides details on the objectives and actions of each broad management category as suggested by the DEC in their identification of issues to be addressed in gaining a deemed concurrence. The responsibility and timing for each of the management actions is provided within Table 1 of Section C with each management action sub-heading corresponding with a similar action category within Table 1.

B1 BUSHLAND MANAGEMENT AND WEED CONTROL

Weeds represent a potential risk to the ecological and environmental values of the WWC. This is compounded by the additional risk posed by the proximity of residential development and consequent risk of weed invasion from neighbouring properties and other edge effects. The implementation of weed management and removal strategies will minimise the ecological risk posed by weed invasion and aid in the maintenance of the long term environmental and ecological values of the site.

Objectives

- **Identify the extent and types of weeds present within the WWC and target key areas**
- **Implement measures to reduce the extent of weed species within the WWC**
- **Improve the current bushland and biodiversity values of the WWC**
- **Implement measures to control the risk of weeds spreading from residential development**
- **Promote community involvement in the removal of weeds and improvement of bushland values**
- **Replace areas currently dominated by weeds with native species**

Actions

i) Preparation of Vegetation and Bushfire Management Plan

Areas within the site that are highly disturbed are to be targeted for weed removal and rehabilitation with native, provenance specific species. The rehabilitation of these areas will help restore/maintain the connectivity of the wildlife corridor. A specific Vegetation and Bushfire Management Plan will need to be produced for the WWC to concentrate on this and other priority areas. This Vegetation and Bushfire Management Plan will include information on:

- the use of provenance specific species in revegetation works
- lists of provenance specific species to be used for revegetation
- identification of key priority areas for works

- detailed weed removal and vegetation management/protection strategies
- inter-relationship of fuel and vegetation management
- timetable for works and details of Section 94 contribution funding of revegetation works.

Figure 7 shows the locations of areas preliminarily identified for vegetation management activities.

ii) Weed Removal Programs

All weed control and vegetation management works will be co-ordinated as a joint initiative between the Developer and Council who will engage the relevant bush regeneration contractors to complete works as per the Vegetation and Bushfire Management Plan to be produced for the WWC.

While a number of weed species have been identified within the WWC the majority of weeds occur outside and at the edges of the WWC. However there are some disturbed areas within the WWC that do contain high numbers of weeds. The most prevalent of these should be targeted for removal. A number of weed species occurring within the WWC are listed within Wyong Shire Councils DCP 14 (Tree Management) and are to be targeted for removal.

Species targeted for removal will be (as confirmed with Councils Open Space and Recreation Section):

- *Lantana camara* Lantana
- *Chrysanthemoides monilifera subsp. monilifera* Bitou Bush
- *Cinnamomum camphora* Camphor Laurel
- *Erythrina x sykesii* Coral Tree
- *Erythrina crista-galli* Coral Tree
- *Ligustrum lucidum* Broad-leaved Privet
- *Ligustrum sinense* Small-leaved Privet
- *Pinus radiata* Radiata Pine
- *Ageratina adenophora* Crofton Weed
- *Zantedeschia aethiopica* Arum Lilly
- *Paspalum quadrifarium* Tussock Paspalum
- *Watsonia meriana* cvs. Watsonia/Bugle Lilly
- *Bryophyllum delagoense* Mother of Millions
- *Rubus fruticosus* aggregate species Blackberry

Where weeds are identified as occurring appropriate weed control will be undertaken. Weed control can be carried out either through the careful and localised use of chemicals or through physical control methods as outlined below:

- *Physical control methods* involve using physical means such as hand removal and the use of hand tools to remove either specific or broad ranges of weeds. A common physical method for weed removal and subsequent natural revegetation is the Bradley Method. This method involves hand removal and is best for small areas. The use of machinery such as Bobcats, Backhoes, Slashers, etc is not recommended for weed removal due to the potential for large scale disturbance to result.

- *Chemical control methods* involve the use herbicides. These herbicides can be specific to a particular plant or more broad ranging types of chemicals. Problems with the use of herbicides include chemical residues affecting soils, herbicide runoff into waterbodies and the health and safety of the operator involved in the application of the herbicide. Advantages of herbicide use include the low time taken to spray weeds as opposed to physically removing them, especially for large infestations of weeds. Broad area spray application is considered inappropriate for this program. Herbicides will be applied by cut and paint or hand held application methods only. Suitable physical control methods are to be the preferred option.

Weed control in the WWC is to be carried out by professional bush regeneration contractors having TAFE qualifications in bushland regeneration (minimum Certificate 2) and under the supervision of a professional bush regenerator who is a member or is eligible for membership of the Australian Association of Bush Regenerators (AABR). Any individuals or groups undertaking weed removal or bush regeneration activities must currently possess or obtain a licence from the DEC.

iii) Rehabilitation of Disturbed Areas

In conjunction with weed removal programs, and as part of the Vegetation and Bushfire Management Plan, those areas disturbed areas identified within the site will be targeted for rehabilitation. The Vegetation and Bushfire Management Plan will detail strategies for those areas to be rehabilitated including the use of provenance specific species, long term protection of rehabilitation areas and monitoring and maintenance of rehabilitation areas.

Areas of the WWC are currently undergoing bushland regeneration as part of prior Condition of Consent agreements between Council and Westminster Group. The work in these areas will remain the responsibility of the Westminster Group in accordance with current arrangements with Council.

iv) Signage

Signage placed at key access points around the WWC will include information that dumping of lawn and garden clippings is not allowed. This will decrease the chances of exotic lawn and garden variety species establishing within the WWC. The signage will be used in conjunction with an interpretive brochure discouraging residents from dumping garden rubbish and making them aware of the penalties for doing so. This information is detailed within Sections B3 and B7.

v) Fencing

Fencing at the rear boundary of properties and the WWC will aid in acting as a physical barrier to the spread of weeds and decrease edge effects. These areas are potential sites for dumping of garden refuse and should be targeted as part of monitoring programs. Colorbond fencing will be adequate in acting as a suitable barrier between the residential yard/WWC interface.

vi) Monitoring of Weed Removal/Rehabilitation Areas

Full details of monitoring are included in Section B15.

vii) Encouragement of Landcare Community Initiatives

The encouragement and establishment of local community landcare groups will aid in the organisation and carrying out of weed removal programs. This is to be run as a community-council initiative and will encourage partial ownership of the bushland values of the WWC by the community.

viii) Plantings at Road Crossings

Where road crossings of the WWC are planned these areas will be targeted for specific management practices. This will include replanting roadside crossing areas with native species and ongoing monitoring and management of these areas to ensure appropriate vegetation is established and maintained.

B2 BUSHFIRE MANAGEMENT

As a consequence of the proximity of bushland within the WWC to existing and proposed residential development, the WWC poses a potential bushfire risk to that adjacent development. As a result bushfire protection measures, particularly Asset Protection Zones (APZ's) will be required to protect adjacent residential areas from the bushfire risk. All APZ's are to occur within areas adjacent to the WWC in conjunction with the various DA's approved for the adjacent subdivisions. No Asset Protection Zones will occur within the WWC.

The accumulation of fuel over time within the WWC also poses a risk to adjacent residential development. The introduction of suitable bushfire management strategies will ensure the protection of adjacent residents and their properties and minimise the impact upon the environmental and ecological values of the WWC.

Objectives

- **Ensure all bushfire protection measures occur outside the WWC**
- **Ensure bushfire protection measures do not impact upon the ecological values of the WWC**
- **Ensure that bushfire protection measures are implemented to reduce the risk of bushfire from the WWC upon adjacent property**

Actions

i) Preparation of Vegetation and Bushfire Management Plan

A Vegetation and Bushfire Management Plan is to be produced for the WWC outlining strategies to monitor fuel levels, risks and contingency for hazard reduction programs for lands within the WWC. This will include information on the following:

- current fuel loadings
- fire threats
- fire advantages
- sensitive infrastructure

- sensitive habitat, threatened species and vegetation communities
- fuel management strategies in relation to specific fire/fuel management zones within the WWC.

The Vegetation and Bushfire Management Plan will include figures and site plans detailing the fuel management strategies for the site.

ii) Ensure APZ's Established Outside WWC

All bushfire protection measures are to occur outside of the WWC. As a condition of the DEC's deemed concurrence it is stated that "*All necessary fire protection measures (asset protection zones, fuel free and fuel reduced zones) are to be contained within the blue stippled areas.....and are not to impact upon the wildlife corridor area.*" Any clearing for APZ's will occur adjacent to the WWC with the perimeter road system forming a large part of the APZ's adjacent to the WWC.

iii) Monitoring Bushfire Risk within WWC

While all hazard reduction is to occur outside of the WWC the vegetation and accumulation of fuel and consequent bushfire risk over time within the WWC is to be monitored as a long term strategy. Full details of monitoring will be included within the Vegetation and Bushfire Management Plan.

iv) Implementation of Hazard Reduction

This may require future ecological burn strategies to be implemented using a sector/mosaic burn plan based on best knowledge of appropriate regimes for the various vegetation communities present and be mindful of the endangered ecological community (EEC) status of some vegetation community areas. The results of monitoring will be used to plan for any subsequent fuel reduction operations carried out in conjunction with the RFS, Council, DEC and the local Bushfire Safety Committee.

B3 SIGNAGE

The WWC will be contained predominantly adjacent to areas proposed for future residential, development. As a result of expected pressure on the WWC from adjacent residents the need has been identified for adequate signage placed at key points along the WWC boundaries informing local residents and other potential users of the values, characteristics and potential risks to the WWC. Other than playing an informative role the signs placed at the boundary also aid in delineating the boundaries of the WWC.

Objectives

- **Identify the area included within the Wadalba Wildlife Corridor on site**
- **Raise contractor awareness of the presence, values and function of the Wadalba Wildlife Corridor during construction of adjoining development**
- **Raise community awareness of the presence, values and function of the Wadalba Wildlife Corridor during occupation**

- **Provide information on restricted access areas during construction and occupation**

Actions

Signs placed at key access points will alert residents and future visitors as to the importance of the WWC and raise awareness as to the environmental and ecological values of the WWC.

i) “No Go Area” Signage

These signs will be placed at the corridor edge during construction to notifying contractors and others of prohibition of entry in regard to machinery and stockpiling of materials. Temporary signs are to be placed along the edges of the WWC at the residential development interface to alert contractors as to the presence and importance of the WWC, access restrictions and potential problems with the dumping of rubbish associated with construction activities. The placement of signs is to be incorporated as part of contractor inductions. Relevant signs should be placed at any identified restricted access areas, particularly during the construction phase. This placement of temporary signs is to be carried out in conjunction with temporary fencing during construction.

ii) Road Crossing Signage

Warning signs at road crossings identifying potential crossing by wildlife. These should be placed at the road crossing points of the WWC.

iii) Education and Interpretive Signage

These signs should include details on threatened species, threats to the WWC, WIRES/Wildlife Arc/Council Ranger contact details. These signs should include maps, text and photographs and be placed at key locations to the WWC indicating the presence and extent of the WWC. These should be constructed of enclosed weather-proof design and include information on

Permanent advisory signs are to be placed at key access points (walking trail entrances, road crossings, etc) to the WWC. These signs should indicate the presence of the WWC and may also include details on the following:

- Ownership and management of the land
- Bushland values
- Prohibited activities (eg: rubbish dumping, vehicular access, entry of cats, off lead dogs)
- Permitted activities
- Contact/Reporting details
- Penalties for misuse
- Indicative map of WWC

iii) Prohibited Use Signage

Prohibition signing detailing prohibited activities under the Local Government Act 1993. These should be placed at locations abutting the WWC (as shown in Figure 4).

iv) Monitoring

All signs are to be monitored regularly as part of ongoing site monitoring and replaced/repared as required. The full details of site monitoring are included in Section B15.

v) Placement

The placement and design of signage should be carried out in accordance with the brochures/pamphlets to be distributed for local residents. Signs should be placed at key entrance points at places of maximum exposure.

The location most appropriate locations for signs is shown in Figure 4.

B4 RUBBISH DUMPING

The dumping of rubbish within bushland areas decreases the environmental and aesthetic values of that bushland. The risk of pollution and damage through the dumping of rubbish is greater within bushland areas adjacent to residential development and with easy access. The establishment of management practices to minimise the incidence of rubbish dumping will aid in the protection of the environmental and aesthetic values of the WWC.

Objectives

- **Minimise the incidence of rubbish dumping within the WWC**
- **Promote community awareness and vigilance of reporting of rubbish dumping**
- **Establish mechanism for removal of existing and future rubbish short and long term**

Actions

i) Signage

Signs (as detailed within Section B1 and Figure 4) placed at locations along the perimeter of the WWC will notify residents and others of the penalties for dumping of rubbish within the WWC.

ii) Restrict Vehicle Access

The access of vehicles into the WWC will be restricted/prohibited. This will reduce the incidence of dumping of rubbish. This can be achieved by suitably placed bollards, fencing or other restrictive devices at trail entrances and road crossings.

iii) Community Education

Community education will include information on the impact of rubbish dumping in reducing bushland values and promote vigilance in the form of reporting incidences of rubbish dumping. Full details on community education are included within Section B7.

iv) Rubbish Removal

There is currently a relatively low level of incidence of rubbish dumping. This is due mostly to the site being historically difficult to access by motor vehicle. Removal of the rubbish currently within the area should occur by Contractor appointed by the landowner. If this is not carried out then appropriate orders will be issued by Council. Removal of rubbish within areas of the WWC adjacent to construction sites should also occur by the applicant prior to the issue of the construction certificate.

Future rubbish removal should occur as part of local clean-up days (for example Clean-Up Australia Day). Removal of rubbish may occur also as part of local Bushcare Group initiatives in co-ordination with Council.

v) Monitoring of Rubbish Levels

Areas of the WWC that abut residential yards and dwellings should be targeted for monitoring of garden refuse dumping due to ease of resident access to these areas.

B5 PROHIBITED USES

The increase in intensity of use of the WWC expected as a result of the proximity of residential development is likely to have impacts upon the values of the WWC. These uses may have short and long term impacts upon the flora, fauna and erodible soils of the area. As a result those uses likely to have the greatest impacts should be identified at an early stage and recognised as prohibited uses.

Objectives

- **Identify likely uses of the WWC that may have impacts upon ecological and environmental values**
- **Encourage appropriate uses of the WWC by the community**
- **Promote community awareness and vigilance of reporting of prohibited uses**
- **Establish mechanisms for removal of dumped rubbish**

Actions

i) Prohibited Use Signage

Expected uses of the site that should be identified as prohibited uses are:

- Rubbish dumping
- Vehicular (4WD and trail bike) access
- Off-leash dogs
- Flora/fauna harm or removal
- Horse riding
- Bush rock, dead wood removal

ii) Imposition of Penalties/Fines

Penalties, including fines, should be imposed for improper use of the site. Signs indicating prohibited uses and the penalties for these is to be placed at key access points to the WWC. Information on prohibited uses is to be included in the pamphlet to be circulated to residents.

iii) Community Education

The appropriate use of the WWC is to be encouraged by the community. Low impact, passive uses, such as bushwalking, should be encouraged within the area to promote community ownership and the environmental and aesthetic values of the WWC.

The community is to be encouraged to report incidences of prohibited use of the WWC to Council. These details will be included within signage around the WWC and within the pamphlet to be provided to residents at time of sale by the developers and annually by Council.

iv) Restriction of Access

Restricting access to the WWC will control the use of the area by vehicles and horse riders. Details of the restriction of access are included within Section B4.

v) Implementing Appropriate Conditions of Consent

Opportunity exists for Council to establish the WWC as a Wildlife Protection Area to give authority to powers in policing cat ownership issues. Details on restriction as to ownership of cats will be included within the information brochure to be prepared for the WWC for owners/potential owners.

B6 COMMUNITY VIGILANCE AND REPORTING

Due to the close proximity of the WWC to large areas of residential land the community potentially play a vital role in the protection of the WWC from potential damage by improper use or other unforeseen events. The encouragement of ownership of the land and culture of protection by the community of the WWC will aid in protecting the long term conservation values of the WWC.

Objectives

- **Promote ownership and appropriate use of the WWC by the community**
- **Promote community vigilance in reporting prohibited use**
- **Promote community involvement in wildlife observation and reporting of records**
- **Foster formation of a WWC Group to assist with the undertaking of the various management initiatives as well as vigilance and reporting roles**

Actions

i) Contact Information on Pamphlets/Signage

Contact details for reporting of incidences of prohibited use are to be made available to the community. These details should be included in the delivered pamphlet and on signage.

ii) Encouragement of Community Reporting of Incidents

The community should also be encouraged to record and report flora, and particularly fauna details within the WWC. This should include information on unusual or threatened species observed. This information should be included within the pamphlet for residents and include information on the types of information to record and contact details.

Information is to be provided to residents on contact details to report any injured fauna. The numbers of WIRES or Wildlife Arc should be included in pamphlets and on signage.

B7 COMMUNITY EDUCATION

Community education, ownership and involvement in the protection of bushland areas is vital to the long term maintenance and improvement of those bushland values. Informative education programs will provide local residents of the Wadalba Urban Release Area and surrounds with information on the values of the WWC and the importance of protecting the WWC. This will then facilitate ownership and promote a culture of care and control of the WWC by the local community and aid the long term conservation of the WWC.

The community will play an important role in the protection of the values of the WWC. The expected increase in intensity of use as a result of residential development will place pressure on the natural environment of the area. Community education in regard to stressing the importance of the protection of the environmental, natural, cultural, recreational and aesthetic values of the WWC is likely to aid in the long term protection of those values.

Objectives

- **Provide information to the community on the environmental, cultural and recreational values of the WWC**
- **Promote ownership and appropriate use by the community of the WWC**
- **Promote community vigilance in reporting prohibited use**

Actions

i) Provision of Information Pamphlet

Potential residents contracting to purchase a block of land within the Wadalba Urban Release Area, particularly in those lots abutting the WWC, will be provided with a pamphlet containing information on the WWC. This pamphlet will include information on:

- The area covered by the corridor
- History of the area

- Access points and any walking trails
- Reasons for restricted use
- Location of any facilities or important ecological/cultural features
- Accepted passive recreational uses of the area
- Significant flora and fauna (particularly threatened species) and habitats
- Practices to reduce the impacts of adjacent use upon the corridor (eg. Use of locally occurring garden species, limited use of fertilisers, controlling pets, weed management, fauna monitoring, habitat creation)
- Contact details with regard to reporting prohibited use, fauna injuries
- Landcare/Bush regeneration details
- Sources of further information (eg. Wyong Shire Council library/website)
- Identification of those properties with restrictions as to use (eg. Cat ownership)

The pamphlet will initially be provided by developers to residents at the time of sale as part of the contract of sale. The developers will also make a number of pamphlets available to community groups. After this time the pamphlet will be distributed annually by Council as part of rate notices. The pamphlet will also be made available on Council's website.

The final design, distribution and information within the pamphlet will be prepared in consultation with Council.

ii) Encouragement of Community/Resident Ownership and Involvement

The ownership for the land by the community should be encouraged. This could be partly achieved by the involvement of the WWC Group/local landcare groups to organize weed removal and other bush regeneration measures within the corridor. This may be done as part of initiatives with Wyong Councils bush regeneration staff. As part of that ownership the community should be encouraged to report to Council incidences of prohibited use.

Copies of this Management Plan and the information pamphlet will be made available to staff and students of the schools within the Wadalba Urban Release Area. The use of the WWC by the Wadalba Community School should be encouraged as part of the schools environmental and ecological studies curriculum which will aid in the implementation of this plan.

The community education process, particularly encouragement of community involvement, will be instigated by Councils Community and Environmental Education staff. Councils staff will be the instigators of the formation of community actions groups such as the WWC Group in driving landcare and conservation initiatives for the WWC.

B8 ABORIGINAL CULTURAL VALUES

The protection of the WWC will include the protection of any identified culturally significant areas within that bushland. A number of sites of aboriginal cultural significance have been identified within the WWC. The implementation of suitable management strategies will aid in the protection of these sites and maintenance of the cultural and historical values of the WWC.

Objectives

- **Identify and protect the cultural values of the WWC**
- **Provide information to the community on the cultural values of the WWC**

Actions

i) Identification and Protection of Sites

Archaeological assessments completed within the Wadalba Urban Release Area have identified a number of sites of cultural significance (Forest Fauna Surveys 2004). A number of these occur within the WWC. The locations and details of these items will not be included in this management plan due to sensitivity issues. The approximate locations of these sites are included within the Extension of Wildlife Corridor Project Wadalba Corridor Design Issues (Forest Fauna Surveys 2004) and have been provided to Council.

The sites that occur within the WWC should be afforded a higher level of protection. Fencing may be used to protect sensitive sites. Consultations may be undertaken with representatives of the Darkinjung Local Aboriginal Land Council (DLALC) and DEC to determine the most appropriate measures and procedures for the protection and management of identified areas or items of aboriginal cultural value for those sites adjacent to development.

B9 HABITAT ENHANCEMENT MEASURES

The WWC has been identified for retention partly due to the high bushland, biodiversity and habitat values it possesses and the known presence of threatened species and endangered ecological communities. The removal of vegetation and habitat for residential development from areas adjacent to the WWC can be partly ameliorated by the provision of compensatory habitat within the WWC. The WWC possesses key habitat features for locally occurring fauna including nest, den, breeding, roosting and foraging habitat. The protection and enhancement of existing vegetation and habitat within the WWC will aid in the long term conservation of the existing flora and fauna and minimisation of effects of adjacent use.

Objectives

- **Provide compensatory habitat for areas removed by the development**
- **Maximise the habitat value and potential of the WWC through vegetation and habitat management programs and supplement these features with nest boxes and re-erected hollows**
- **Protect key nest, den, foraging and breeding habitat features**
- **Rehabilitate degraded areas of the WWC through vegetation management programs**
- **Provide specific habitat enhancement initiatives for proposed road crossings within the WWC**

Actions

i) Provision of Compensatory Habitat

a. Nest Boxes

The development of the Wadalba Urban Release Area will require the removal of flora and fauna habitats resulting in a net loss of the amount of habitat available for locally occurring species. The habitats of highest quality for these species have been identified and retained within the WWC.

The replacement of nest boxes as breeding and den habitat will partially alleviate the effects of the loss of hollow bearing trees within the area. Flora and Fauna Assessments (*Andrews Neill* 2003; *Conacher Travers* 2001, 2002a, 2002b; *Lesryk Environmental Consultants* 1998a, 1998b, 1998c, 1998d, 1999a, 1999b, 2001a, 2001b) and Species Impact Statements (*Conacher Travers* 2002c, 2003, 2004) completed within the Wadalba Urban Release Area have identified a large number of hollow trees within the area. A number of these have been identified as being used for den, roost or breeding habitat by a number of species including the threatened Squirrel Glider, Masked Owl and Greater Broad-nosed Bat.

It is considered that 5 nest boxes per hectare of current suitable habitat to be cleared should be erected as compensatory habitat within the WWC. This equates to between 100 and 200 replacement nest boxes to be erected within suitable locations of the WWC. The placement of 100-200 nest boxes will also approximately equate to a 1:1 replacement of those hollows to be removed by adjacent development. This should consist of a mix of Squirrel Glider, possum, microchiropteran bat, small and large parrot boxes. Nest boxes have been erected in the WWC in the past however these were of poor quality and many have since failed.

Suitable hollows from trees felled during clearing should be collected and re-erected where practicable or placed on the ground within the WWC.

The following specific management strategies are to be carried out in relation to nest boxes and re-erected hollows.

- I) All replacement nest boxes are to be secured to trees at a minimum height of four metres above ground level facing the east to north east direction. An experienced arborist is required to install the nest boxes. Nest boxes and re-erected limbs are not to be placed near locations where public access is planned along entrance points or tracks. All nest boxes and re-erected limbs will be inspected annually and any damaged, or in danger of falling, are to be repaired or replaced. The locations of each of the erected nest boxes or re-erected hollows will be mapped for later reference.
- II) A fauna ecologist (Project Ecologist) is to co-ordinate the construction and erection of nest boxes and locate appropriate trees and locations for installing the nest boxes. The locations of all nest boxes and re-erected hollows are to be included on plans provided with annual progress reports. Each box is to be identified with a readable, weather resistant number (75mm) in size for identification and recording purposes. The erection of nest boxes will be carried out in consultation with Councils Development Ecologist.

- III) All nest boxes will be inspected regularly for the life of this plan. Any damaged or dangerous boxes should be replaced. Any boxes seen to contain exotic fauna (Indian Mynah, European Bees) will have fauna removed or the nest box replaced.
- IV) The locations of all nest boxes will be fixed by GPS and provided to Council as part of ongoing monitoring strategies.
- V) All nest boxes will be constructed of a durable marine ply material and fixed to trees by qualified climbers using stainless steel bolts. Boxes will be hinged for ease of future monitoring.

Large Forest Owl Nest Boxes

The works will include the erection of five large forest owl nest boxes. The nest boxes will be constructed as per specifications of those boxes used within similar development at Northlakes in Lake Macquarie LGA and observed to be used by the Powerful Owl.

The following specific management strategies are to be carried out in relation to large forest owl nest boxes:

- VI) All large forest owl nest boxes are to be secured to trees at a minimum height of 15 metres above ground level facing the east to north east direction. An experienced, qualified arborist is required to install the nest boxes under supervision of the Project Ecologist. Nest boxes and re-erected limbs are not to be placed near locations where public access is planned along entrance points or tracks. All nest boxes and re-erected limbs will be inspected annually and any damaged, or in danger of falling, are to be repaired or replaced. The locations of each of the large forest owl nest boxes will be mapped for later reference.
- VII) A fauna ecologist (Project Ecologist) is to co-ordinate the construction and erection of the large forest owl nest boxes and locate appropriate trees and locations for installing these. The locations of all nest boxes and re-erected hollows are to be included on plans provided with annual progress reports. Each box is to be identified with a readable, weather resistant number (75mm) in size for identification and recording purposes. The erection of nest boxes will be carried out in consultation with Councils Development Ecologist.
- VIII) All nest boxes will be inspected annually for the life of this plan. Any damaged or dangerous boxes should be replaced. Any boxes seen to contain exotic fauna (Indian Mynah, European Bees) will have fauna removed or the nest box replaced.
- IX) The locations of all nest boxes will be fixed by GPS and provided to Council as part of ongoing monitoring strategies.
- X) All nest boxes will be constructed of a durable marine ply material and fixed to trees by qualified climbers using stainless steel bolts. Boxes will be hinged for ease of future monitoring. Erection will require consultation and sign off from a consultant engineer to ensure safety.

The habitats within the WWC will be enhanced by the implementation of vegetation management strategies. The removal of weeds and rehabilitation of disturbed areas and community involvement has been discussed within Sections B2 and B7.

A number of key habitat features particularly in relation to threatened species have been identified within the WWC. Work by Conacher Travers (2004) located seven Squirrel Glider den sites through a combination of radio tracking, stagwatching and observation of released gliders. The majority of these den sites are in the WWC and thus will be retained. Forest Fauna Surveys (2004) identified potential Masked Owl nest trees and recommended their inclusion, with buffers, within the WWC. These trees have subsequently been included within Open Space parkland within the WWC and will be retained. A roosting Greater Broad-nosed Bat was observed leaving a hollow during stagwatching (Conacher Travers 2003) this tree will also be retained within the WWC. These identified trees should be afforded the maximum level of protection.

ii) Supervision of Clearing Works

Contingency will be made for the safety of any fauna using hollows to be felled during clearing. The following measures will be used as considered appropriate:

- Identification and marking of hollow bearing trees required to be cleared;
- Inspection of tree hollows by spotlight survey and appropriate bat detection methods immediately prior to clearing to determine if hollows are being utilised by tree dwelling fauna, including threatened species;
- Implementation of a trapping program prior to tree clearing to trap any Squirrel Gliders within areas proposed for staged clearing. Any trapped Squirrel Gliders should be released into appropriate areas on dusk;
- Inspection of hollow bearing trees marked for clearing. Trees should be felled in sections of approximately one-metre lengths. Inspections of hollow sections prior to felling should be undertaken to determine if fauna is present within hollows. Fauna occupying hollows should be carefully removed by an experienced and licensed fauna expert and relocated to another tree away from the area of clearing;
- Restriction of clearing hollow bearing trees during the breeding season for microchiropteran bats and Squirrel Glider (September-March);
- Implementation of hollow log salvage and re-erection program in order to retain roosting and nesting opportunities for hollow dependent fauna, including Owls, Squirrel Gliders and threatened bat species;
- Suitably designed and constructed nest boxes erected in suitable trees following the method of attachment described for hollow sections. Nest boxes should be constructed out of seasoned hardwood or weather proof plywood using an accepted design such as those detailed in The Nestbox Book (Gould League, 1997).
- Any clearing should be carried out in accordance with the clearing protocols contained within the Wyong Shire Council Squirrel Glider Conservation Management Plan (Appendix III of this Management Plan).

Two options are available for removing tree hollows or felling hollow bearing trees. These are:

- i) Hollow bearing trees containing fauna, required to be cleared, is to be felled in sections of approximately one metre length with inspections of the hollow sections prior to felling undertaken to determine if fauna is present within the hollow. Fauna occupying hollows should be carefully removed by the Project Ecologist and relocated to adjoining habitat area within the WWC.
- ii) Where machinery is required to fell hollow trees, the blade or bucket of the machinery will be tapped against the base of the tree to disturb any fauna present. The tree will then be felled as gently as possible. All hollow limbs will be inspected after felling for occupation by fauna. Any fauna will be removed and relocated to adjoining bushland.

Any felling of hollow bearing trees will be supervised by a qualified fauna ecologist (Project Ecologist).

All hollow limbs should be removed from those trees felled by a licensed contractor. These hollow limbs will be returned to the Project Ecologist for re-use at a later date.

iii) Road Crossings

The layout for the WWC and adjacent development includes three proposed road crossings of the WWC. The interruption in connectivity posed by the clearing of vegetation for these road crossings and potential barrier to movement needs to be addressed to minimise the impacts upon the flora and fauna of the WWC. The following measures will be implemented as part of these proposed road crossings:

- Warning signs placed at entrance to WWC of each road crossing indicating potential of wildlife crossing
- Speed bumps placed at crossing points to limit vehicle speed and potential for mortality by vehicle strikes
- Retention of trees of suitable height to provide opportunities for Squirrel Glider to glide across the roadway
- Use of low intensity road lighting to reduce impact upon wildlife
- Explore potential for construction of underpasses for terrestrial fauna under road crossings
- Provide details within landscape plans to be produced for each of the crossings Monitor mortality

iv) Minimise Impacts of Access Tracks (Cycleways/Walking Trails)

The formalisation of cycleways and walking trails within the WWC should be limited to informal tracks currently used within the WWC to minimise any additional disturbance.

Where possible, cycleways and walking trails should follow service provision routes to minimise any additional disturbance.

v) Minimise Impacts of Location of Services

The following guidelines should be considered in locating services:

- Locate service routes along existing disturbed areas or trails
- Avoid clearing/felling/damage of any hollow bearing trees
- Avoid any existing drainage channels
- Locate any proposed cycleways/walking trails along service routes or corridor edges to minimise additional impacts

vi) Supplementary Frog Habitat

Full details of provision of additional/compensatory frog habitat are included within section B14- Frog Habitat Features.

vii) Nest Box Monitoring

Full details of monitoring the condition and use of nest boxes is included within Section B15 - Monitoring and Reporting Regime.

B10 HABITAT TREE RETENTION/RELOCATIONS/MAINTENANCE

The WWC contains a large number of trees containing hollows that are available for use as breeding, den or roost sites for a number of locally occurring bird, arboreal mammal and microchiropteran bat species. A large number of hollow-bearing trees will be retained within the WWC. However where hollow trees may be required for removal for the construction of roads, sewer lines or stormwater detention structures scope exists for these trees to have suitable hollows re-erected elsewhere within the WWC.

Objectives

- **Explore options for re-erection of suitable hollows**
- **Maximise potential of re-use of any hollows to be felled within the WWC**

Actions

i) Options for Relocation

Any trees that contain hollows known or likely to be used as den, roost or breeding sites for locally occurring threatened species that are to be removed within the WWC for road or service provision should be identified and options considered for their possible re-erection within the WWC. Suitable hollows may be re-erected within existing trees within the corridor or placed on the ground as potential habitat for terrestrial fauna.

iii) Known Nest Tree Retention

The tree identified in the north-west of the corridor by Council as a Masked Owl nest tree will be retained within the corridor as part of a dual use Public Reserve. It is recommended that suitable bollards are placed around the base of this tree at the fall zone limit to limit potential injury by falling branches.

B11 FERAL PEST EXCLUSION

The presence of feral pests within bushland areas poses a threat to native fauna species through pressures such as predation, competition and displacement. The development of areas adjacent to the WWC increases the risk of feral pest species entering or becoming established within the WWC. Strict management strategies are required to eliminate the possibility of feral pest species occurring within the WWC and thus increase the habitat quality and longevity of wildlife within the WWC.

Objectives:

- **To reduce the risk of predation of native fauna using the WWC by cats, foxes and dogs.**
- **To reduce the risk of grazing of native flora by the European Rabbit (*Oryctolagus cuniculus*) within the WWC.**
- **To reduce the risk of predation of native amphibians by the Plague Minnow (*Gambusia holbrooki*) within the aquatic habitats of the WWC.**
- **To minimise the negative effects of feral avian fauna, in particular the Common Myna (*Acridotheres tristis*) and the Common Starling (*Sturnus vulgaris*), on the avian biodiversity of the WWC.**

ii) Feral Pest Management

Trapping or baiting of foxes should occur within the WWC. Foxes are known to occur within the WWC and have been recorded on a number of occasions during surveys of the Wadalba Urban Release Area. A program using cage traps or baits set by licensed feral pest control contractor should be implemented in accordance with approvals from the Department of Environment and Conservation, Department of Agriculture and Pastures Protection Board to remove foxes from the WWC.

Where monitoring, as detailed in B15 Monitoring and Reporting regime, indicated presence of foxes or other pest species a feral pest exterminator will be engaged to remove these pests from the corridor.

The Indian Myna has been recorded within and adjacent to the WWC and is known to utilise nest boxes and tree hollows opportunistically to breed. Nest boxes should be constructed using anti Myna baffles. These baffles should be placed on nest boxes that are located within 20m of the edge of the WWC or within cleared areas of the WWC. Baffles will not be required for the larger Owl nest boxes.

Inspection of nest boxes by a suitably qualified person particularly during the known breeding season of these avian pest species usually August to March, and the removal of nesting material, eggs and chicks will occur as part of monitoring programs.

The prohibition of the planting of known avian pest preferred roosting trees such as *Phoenix canariensis* (Canary Island Palm) within the public open space areas and road reserves of the adjoining residential subdivisions.

With the reduction of foxes within the WWC as a result of the implementation of this management plan European Rabbit numbers are likely to increase. Close monitoring of European Rabbit numbers and implementation of a reduction program will be required if numbers increase.

Where appropriate a restriction as to user in regards to cat ownership should be enacted for those lots adjoining or in close proximity to the WWC. These lots should be identified at the approvals stage of the various development applications and potential owners made aware of their responsibilities. These areas should also be identified within the pamphlet produced for the WWC.

The Green and Golden Bell Frog Draft Recovery Plan (DEC 2005) list the predation of the Plague Minnow upon threatened and other native amphibians as a Key Threatening Process. Where amphibian populations are under threat from predation by the Plague Minnow, DEC recommends where possible the installation of supplementary breeding habitat may be necessary. This should occur in conjunction with the habitat enhancement design initiatives to be implemented for all proposed sediment detention basins and referred to in Section B14.

ii) Monitoring

Full details of monitoring the occurrence of feral pests within the WWC is included within Section B15 – Monitoring and Reporting Regime.

B12 STORMWATER STRUCTURE MANAGEMENT

The need for the construction of stormwater and sediment control devices as a result of the increased runoff expected from adjacent subdivision facilitates the need for the implementation of strategies to minimise the impacts of the construction of these structures. The impacts of the construction of these devices can be alleviated by design principles that create additional habitat for local flora and fauna, particularly frog species. At present plans are not available detailing the location of these structures however the following actions can be implemented where stormwater management facilities are to be constructed within the WWC.

Objectives

- **Locate and design stormwater structures within the WWC in accordance with the conservation and protection principles of this Management Plan to minimise environmental impacts**
- **Encourage stormwater structure design principles that create additional frog habitat**

Actions

i) Design and Construction Initiatives

Any stormwater structures such as detention basins to be constructed within the WWC are to be designed and constructed sensitively so as to minimise the effects upon the flora, fauna and habitats of the WWC. Alternatives should be explored for locating stormwater structures within disturbed areas and in areas of least impact.

In terms of the location of stormwater detention ponds the following should be considered:

- Stormwater detention ponds should be located offline away from existing drainage channels
- Currently cleared areas should be maximised in locating stormwater detention ponds
- Stormwater detention ponds should be located so as to minimise damage to key habitat areas eg. Undisturbed bushland, hollow bearing trees

Where stormwater control basins are proposed for the WWC these should be designed so as to provide additional frog habitat for locally occurring frog species. Measures should include promotion of growth of native fringing vegetation, monitoring of water quality, weed removal and monitoring for presence of predatory *Gambusia holbrooki*.

ii) Habitat Management Plans for Detention Basins

These measures may be addressed within individual habitat management plans for each proposed basin. The habitat management plans should include features on appropriate design to reduce the risk of infestation and easy eradication of *Gambusia* species and reduce risk of frog chytrid disease as detailed within the DEC's Hygiene Protocol for the Control of Disease in Frogs (NPWS 2001) and Threat Abatement Plan for predation by *Gambusia holbrooki* (NPWS 2003).

iii) Monitoring Water and Habitat Quality

Full details of monitoring the condition of stormwater detention structures is included within Section B15 – Monitoring and Reporting Regime.

B13 STORMWATER QUALITY

The proximity of residential development particularly during construction phases poses some downstream sedimentation and pollution risk to the bushland and aquatic values of the WWC. The WWC contains two small drainage lines that are potentially at risk from upstream flows of polluted water from residential areas. The risk is higher during construction given the destabilisation of the surface soil and increased potential for downstream or downslope sedimentation. The implementation of management strategies to control stormwater quality will provide for the protection of downstream areas within the WWC, particularly aquatic habitat areas.

Objectives

- **Ensure the quality of runoff and protection of downstream aquatic environments**
- **Maintain the current hydrological regime**
- **Monitor the water quality within downstream aquatic environments of the WWC**

Actions

i) Impact Minimisation

Construction within the Wadalba Urban Release Area has the potential to impact upon the aquatic habitats of the WWC and the flora and fauna of those habitats. The current aquatic habitats within the drainage lines of the WWC should be protected from adjacent development. All construction should be carried out in accordance with best practice erosion, sediment and stormwater control techniques.

Where water quality is seen to be degraded within downstream areas of the WWC during and after construction contingency should be made for identification of inadequacies in stormwater structures and immediate repairs undertaken.

During the construction phase crossings of drainage lines may be required. These should be undertaken with minimal impact in accordance with Wyong Shire Councils DCP 67. Any areas drainage lines disturbed or damaged during construction should be rectified or rehabilitated after road installation in line with accepted vegetation and landscape management techniques.

ii) Monitoring

Regular monitoring of aquatic habitats within the WWC should occur and suitable contingency made where impacts from adjacent land are seen to occur. Erosion, sediment and stormwater control devices should be regularly checked and repaired where necessary. Full details of monitoring the condition of aquatic habitats within the WWC is included within Section B15 – Monitoring and Reporting Regime.

B14 FROG HABITAT FEATURES

There are a number of creeklines and dams within the WWC that provide the aquatic habitat conditions required by a number of locally occurring frog species. During surveys fifteen frog species have been recorded within the Wadalba Urban Release Area. The retention and maintenance of these habitats within the WWC and minimisation of downstream effects from adjacent development will ensure the long term persistence of these frog species within the WWC.

Objectives

- **Protect suitable frog habitats within the WWC and maintain current hydrological regimes**
- **Implement appropriate erosion, sediment and stormwater control devices within adjacent areas to minimise the impacts upon downstream aquatic environments**
- **Promote design initiatives to allow for the creation of frog habitat within stormwater and sediment control devices**
- **Seek expert advice in the design and landscaping of detention/sediment control structures**

- **Encourage recolonisation by amphibian species within artificial and natural aquatic areas of the WWC**

Actions

i) Impact Minimisation and Habitat Protection

All clearing and construction works in land adjacent to the WWC must be carried out using appropriate best practice erosion, sediment and stormwater control techniques to protect the aquatic values of creeklines and frog habitat within the corridor. No threatened frog species have been recorded within the WWC however anecdotal information exists of the Green and Golden Bell Frog and Green-thighed Frog within adjacent areas. The implementation of suitable erosion and sediment control techniques, particularly during clearing and construction within the Wadalba Urban Release Area will minimise the potential of sedimentation of water bodies within the WWC and consequent degradation of frog habitats. Engineering works need to be designed so as to cause minimal interruption to the hydrological regime of the WWC and maintain current flows to creeklines within the WWC.

ii) Aquatic Habitat Enhancement Initiatives

Where stormwater control basins are proposed for the WWC these should be designed so as to provide additional frog habitat for locally occurring frog species. Measures should include promotion of growth of native fringing vegetation, monitoring of water quality, weed removal and monitoring for presence of predatory *Gambusia holbrooki*. Design of detention and sedimentation structures will incorporate features to facilitate *Gambusia* eradication where possible. These measures may be addressed within individual habitat management plans for each proposed basin.

The following design features should be considered in the construction of any stormwater detention structures to occur within the WWC:

- Consideration of shallow water verses deep water basins within design criteria
- Maximise diversity and complexity of habitat through planting of range of aquatic and fringing plant species
- Variation in size and type of plants to maximise diversity
- Addition of microhabitat features such as logs with cracks, rock packs
- Use of sand banks
- Inclusion of shallow water areas (<30 cm) near banks
- Contingency for the ability to drain to decrease risk/control *Gambusia* and mosquito larval infestations

These design features should be implemented in conjunction and as part of the Habitat Management Plans discussed in Section B12 – Stormwater Structure Management.

B15 MONITORING AND REPORTING REGIME

The long term environmental and ecological quality of the WWC may be partly dependent upon the implementation of a detailed monitoring and reporting regime. Regular monitoring of environmental and ecological parameters and conditions within the WWC will enable information on the state of the environment within the WWC to be collated and conclusion

drawn as to the success of ongoing management strategies included within this plan. Where monitoring identifies harmful effects or degradation of the current environment within the WWC contingency can be made for reparation or alternate management strategies to be implemented.

The collection of information through monitoring must be presented in a clear, concise and meaningful manner in reports to the relevant statutory authorities, in this case the Department of Environment and Conservation and Wyong Shire Council. This information should also be made available to the community to promote interest and ownership amongst local residents.

Objectives

- **Collect long term information on the environmental and ecological quality of the WWC and impacts of development within the Wadalba Urban Release Area**
- **Collect long term information on impacts of the Wadalba Urban Release Area upon the WWC and make contingency for the implementation of appropriate rehabilitative and compensatory measures**
- **Collect long term information on the success of ameliorative measures introduced as part of this management plan**
- **Collect information on the occurrence of threatened species and health of endangered ecological communities within the WWC**
- **Provide regular meaningful reports to Council and the DEC on the results of monitoring and other ongoing issues and make these available to the public**

Actions

The monitoring program will be designed to collect information over the long term on key environmental and ecological parameters to provide information on the long term environmental health of the corridor. These consist of the following:

- Threatened species
 - Masked Owl
 - Powerful Owl
 - Squirrel Glider
 - Grey-headed Flying-fox
 - Eastern Freetail-bat
 - Greater Broad-nosed Bat
 - Little Bentwing-bat
 - Eastern Bentwing-bat
 - Yellow-bellied Sheath-tail-bat
 - Eastern False Pipistrelle
- Endangered ecological communities
- Frog species
- Weeds
- Rubbish
- Nest boxes, re-erected hollows/trees
- Pest species

i) Monitor Occurrence and Persistence of Threatened Species

Masked Owl and Powerful Owl

The Masked Owl and Powerful Owl have been recorded within the Wadalba Urban Release Area on a number of occasions (*Conacher Travers* 2002b, 2002c, 2003, 2004). Monitoring programs should be designed so as to detect the continued presence of this species within the area. Surveys should be carried out annually during periods of key detection and breeding (Spring Autumn). Surveys should consist of owl call playback and spotlighting. Stagwatch of previously recorded potential den and breeding trees should also occur.

Squirrel Glider

The Squirrel Glider has been recorded throughout the vegetated sections of the Wadalba Urban Release Area. The WWC has been designed to retain maximum habitat values for this species and provide movement through the Wadalba Urban Release Area. Monitoring programs should be designed so as to detect the continued presence of this species within the area. Bi-annual surveys should be carried out to detect the continued presence of this species within the WWC. Surveys should consist of arboreal Elliott trapping, spotlighting and nest box inspection.

Grey-headed Flying-fox

This species has been recorded on a number of occasions foraging on flowering tree species within the Wadalba Urban Release Area. Monitoring programs should be designed so as to detect the continued presence of this species within the area. Surveys for this species should be carried out biannually and consist of spotlighting. This could be run concurrently with surveys for the Squirrel Glider and microchiropteran bat species.

Microchiropteran Bat Species (Eastern Freetail-bat, Greater Broad-nosed Bat, Little Bentwing-bat, Eastern Bentwing-bat, Yellow-bellied Sheath-tail-bat, Eastern False Pipistrelle)

A large number of threatened microchiropteran bat species have been recorded within the Wadalba Urban Release Area during past surveys (*Lesryk* 1998, 1999; *Conacher Travers* 2001, 2002a, 2002b, 2002c, 2003, 2004; *Andrews Neill* 2003). The area contains foraging, roosting and breeding habitat for these species. Monitoring programs should be designed so as to detect the continued presence of this species within the area. Surveys for these species should be carried out biannually and consist of Anabat echolocation recording.

ii) Monitor Frog Species and Numbers

There have been 13 frog species recorded within the Wadalba Urban Release Area since 1998 (*Conacher Travers* 2004). Due to this relatively high species diversity it is important to monitor the frog species diversity within the WWC during construction and after occupation. The monitoring of frog species numbers should occur during suitable seasons. This monitoring will allow for the assessment of potential impacts of the adjacent development and provide indicative information on the health of the WWC in terms of habitat quality.

iii) Monitor Health and status of Endangered Ecological Communities

The WWC contains an area of Swamp Sclerophyll Forest on Coastal Floodplains recently listed as an endangered ecological community within the Threatened Species Conservation Act (1995). This community corresponds with the Sydney Coastal Estuary Swamp Forest (Swamp Forest – *Eucalyptus robusta*/*Eucalyptus longifolia* & *Angophora costata*) community identified by *Conacher Travers* (2004). The condition of this community and the impact of adjacent development should be monitored as part of this management plan. Field information should be collected regularly on the health of the vegetation, species diversity and composition and incursions of weeds.

iv) Monitor Level of Weeds

The WWC, particularly the corridor edges should be monitored regularly for weeds. This should be carried out annually. Where weeds are observed to be increasing removal programs should be carried out. This could be implemented as part of community initiatives as discussed in Sections B2 and B10 above. Any individuals or groups undertaking weed removal or bush regeneration activities must currently possess or obtain a licence from the DEC. Figure 7 shows the locations of areas preliminarily identified for bushland regeneration activities.

v) Monitor Levels of Rubbish

The WWC, particularly the corridor edges should be monitored regularly for incidences of rubbish dumping. This should be carried out regularly. Where build up of rubbish is observed removal programs should be carried out. This could be implemented as part of community initiatives as discussed in Sections B4 and B10 above.

vi) Monitor Use and Condition of Nest Boxes and Re-erected Hollows

Details for the erection of nest boxes and hollows are included within Section B11 above. Nest boxes and re-erected hollows should be monitored regularly for use by locally occurring hollow dependent species. Any incidences of exotic species using hollows should be reported and contingency made for removal. Any damaged nest boxes or re-erected hollows should be removed and replaced.

vii) Monitor Water Quality

Monitoring of the water quality of stormwater detention structures, drainage lines and other aquatic water bodies within the WWC should occur annually. Where water quality is observed to be decreasing in water bodies contingency should be made for identification of the cause and reparation made.

viii) Monitor Pest Species Numbers and Occurrence

Monitoring will include gathering information on the presence of the following pest species:

- Foxes
- Rabbits
- Gambusia
- Indian Myna
- Cats
- Dogs

The collection will allow for the occurrence of pest species to be recorded and provision made for their removal from the WWC.

Any signs of predation by foxes, dogs or cats will also be monitored and reported on.

This management plan may be updated periodically to allow for the implementation of new measures as required and identified by ongoing monitoring.

ix) Produce Regular Meaningful Reports

Reports should be supplied regularly to the DEC and Wyong Shire Council in conjunction with the end of each monitoring period.

At the completion of each monitoring period an assessment report will be completed detailing all methodologies used and results gained during surveys for that monitoring period. The report should include-

- details on survey methods
- results of surveys
- comparison between monitoring/reporting periods
- management issues
- any suggested amendments to management plan
- community initiatives
- prohibited use incidents

PART C

IMPLEMENTATION OF MANAGEMENT ACTIONS

This Management Plan is to be implemented by initiatives developed as an agreement between the developers of land within the Wadalba Urban Release Area and Wyong Shire Council. All management actions will be carried out within that land within the Wadalba Urban Release Area currently zoned and proposed to be rezoned as 7(a) Conservation.

The responsibility for costs of the implementation of the actions contained within this report and included in Table 1 will be shared by the applicant and Wyong Shire Council. Where appropriate some of those actions will be funded through Section 94 contributions.

It is envisaged that the management strategies included within this plan will be enforced as conditions of consent prior to the release of Construction Certificates for the various Development Applications within the Wadalba Urban Release Area. The management actions within this report will allow for approval of Development Applications within the Wadalba Urban Release Area. The provision of Construction Certificates for those approvals are dependent upon the completion of the relevant management strategies within this report imposed as Conditions of Consent on those approvals.

All physical works to be completed within the WWC such as weed removal, bushland rehabilitation, nest box and hollow erection, signage and rubbish removal will be undertaken by suitable experienced personnel as per the terms agreed upon by the developers and Wyong Shire Council and contained within this Management Plan. Ongoing surveys and monitoring reports will be completed by appropriately experienced and qualified consultant ecologists engaged as per the terms agreed upon by the developers and Wyong Shire Council and contained within this management plan.

The actions detailed within this Management Plan will be implemented over a ten year period following signoff of the plan from the Department of Environment and Conservation and Wyong Shire Council. The specific management actions identified for developers to complete under this plan may require certain actions to be undertaken for no more than two years after the time in which residual corridor areas are transferred into Council ownership and thereafter Councils responsibility. Once all corridor land has been transferred to Council ownership, Council will incorporate relevant provisions into a Plan of Management under the *Local Government Act* (1993).

The following table (Table 1) provides details on the implementation of management actions contained within Section B. Each of the actions relates to a zone within the Wadalba Urban Release Area. These areas have been identified to ensure that only those actions relevant to certain areas within the Wadalba Urban Release Area are applied to the relevant area. Zone A covers the land bound by the WWC and generally all management actions are applicable to this zone. Zone B consists of those lots adjacent to the WWC and as such a smaller proportion of management actions are applicable to this zone. Zone C consists of areas outside of the WWC and consequently only a small number of actions are applicable within this zone.

TABLE 1 APPLICATION OF MANAGEMENT PLAN ACTIONS TO VARIOUS SECTIONS WITHIN THE WADALBA URBAN RELEASE AREA						
SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
B1. BUSHLAND MANAGEMENT WEED CONTROL	i) Preparation of Vegetation and Bushfire Management Plan – including identification of key weed control areas	√			WSC: Open Space and Recreation Section. Funding S.94	Upon transfer of corridor areas to Council.
	ii) Weed removal programs	√			WSC – Open Space and Recreation Section. Landowners responsible for any works up until time of handover to Council. This would include land being transferred in a good condition and management plan actions being satisfied. The land is to be inspected by a Council Officer prior to handover to Councils Open Space and Recreation Section and confirmed to be in good condition by Council. Funding Landowners: Developer cost up until time of transfer to WSC. WSC: Open Space and Recreation Section (funded by s.94 initially year 1) then general works program for subsequent years. This would occur after transfer of land to WSC.	Prior to issue of Subdivision Certificate.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
	iii) Rehabilitation of disturbed areas	√			WSC: Open Space and Recreation Section responsible for areas once transfer of ownership has taken place. Developers: Responsible for any restoration works within 20m of corridor edge. Funding <ul style="list-style-type: none"> Corridor perimeter works by developers (no s.94 funds or credits applicable). s.94 for majority of corridor restoration works conducted by WSC. 	Works undertaken by developers are identified prior to issue of Construction Certificate and works must be completed prior to issue of Subdivision Certificate or if required bond is to be taken.
	iv) Signage	√	√		WSC: Open Space and Recreation Section. Funding s.94	See B3 Signage.
	v) Fencing		√		Developers to provide appropriate fencing only for those lots backing onto corridor. Funding Developer cost	Construction - prior to issue of Subdivision Certificate.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
	vi) Monitoring of weed removal/rehabilitation areas	√			WSC - Open Space and Recreation Section to promote restoration work within corridor. Funding Existing works program	Ongoing.
	vii) Encouragement and establishment of Landcare community initiatives	√			WSC - Open Space and Recreation Section Funding Existing works program	Occupation.
	viii) Planting of vegetation at road crossings	√	√		Developers: Mitigation measure relates to development impact. Only for those subdivisions with corridor road crossings. Funding Developers cost.	Detailed design to be provided prior to Construction Certificate. Works to be completed prior to issue of Subdivision Certificate.
B2. BUSHFIRE MANAGEMENT (INCORPORATING ECOLOGICAL BURN STRATEGIES)	i) Preparation of Vegetation and Bushfire Management Plan	√			WSC - Open Space and Recreation Section. Funding S.94	Upon transfer of corridor areas to Council. Open Space and Recreation to prepare as a priority matter.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
	ii) Ensure APZ's established outside WWC		√		WSC – Development Assessment – Staff ensure that this action is achieved at DA Stage and prior to issue of Construction Certificate. Funding None required.	DA Stage.
	iii) Monitor bushfire risk within WWC	√			WSC - Open Space and Recreation Section. Funding Include in existing program.	After transfer of land to Council.
	iv) Carry out hazard reduction in WWC if required	√			Rural Fire Service. Funding Existing program.	Ongoing.
B3. SIGNAGE	i) No go area signage	√	√		Construction contractors. Funding Developers cost.	Erected prior to commencement of works.
	ii) Road crossing signage	√			Road construction contractors to Council specification. Funding Developers cost.	Prior to commencement of works.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
	iii) Educational/Interpretive signage	√			WSC - Open Space and Recreation Section. Funding S.94	Construction.
	iv) Prohibited use signage	√	√		WSC - Open Space and Recreation Section / Customer and Community Services Funding S.94	To be erected immediately upon transfer to Council.
B4. RUBBISH DUMPING	i) Signage	√	√		See B.3 Prohibited Use Signage.	To be erected immediately upon transfer to Council.
	ii) Restrict vehicle access	√	√		Road construction contractors. Funding Developers cost.	Prior to commencement of works.
	iii) Community Education	√	√	√	WSC - Customer & Community Services (Environmental Health & Education Officer) and Development Assessment Unit (Development Ecologist).	Ongoing.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
	iii) Community Education (Cont.)				Developers: Community environmental education pamphlet to be prepared and endorsed by Council prior to issue of construction certificates (as per terms of DEC's deemed concurrence). Funding <ul style="list-style-type: none"> • Include in existing works program for WSC Pamphlet at Developer's expense. 	
	iv) Rubbish removal	√			WSC - Open Space and Recreation Section. Funding Include in existing works program.	Ongoing.
	v) Monitor rubbish levels	√			WSC - Open Space and Recreation Section. Funding Include in existing programs.	Ongoing.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
B5. PROHIBITED USES	i) Placement of prohibitive use signs at key points	√	√		WSC - Open Space and Recreation Section. Funding Include in existing program.	Immediately upon transfer of land to Council.
	ii) Imposition of fines/penalties	√			WSC – Council's Rangers. Funding Existing program.	Ongoing..
	iii) Community Education	√	√	√	WSC - Customer & Community Services (Environmental Health & Education Officer). Funding Include in existing programs.	Ongoing.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
B6. COMMUNITY VIGILANCE AND REPORTING	i) Inclusion of contact information on signage	√	√		WSC - Open Space and Recreation Section. Funding Include in existing program.	To be erected upon transfer of land to Council.
	ii) Encouragement of reporting of incidents	√	√	√	WSC - Council Rangers Funding Include in existing works program	Ongoing.
B7. COMMUNITY EDUCATION	i) Provision of pamphlet endorsed by Wyong Shire Council		√	√	Developer to prepare and checked by Development Assessment Unit, (Council's Development Ecologist). Funding Initial cost of production and supply at point of sale funded by developer. Ongoing annual production and distribution by Council.	Endorsement of pamphlet prior to Management Plan sign off. Distributed at point of sale (Developer)/ Annually (Council).
	ii) Encouragement of community ownership/involvement	√	√	√	WSC - Open Space and Recreation Section Funding Include in existing programmes.	Ongoing.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
B8. ABORIGINAL CULTURAL VALUES	i) Protection of significant sites	√			Developer's liaise with Aboriginal Heritage Consultant and Darkinjung Aboriginal Land Council concerning construction impacts and placement of local parks around known significant Aboriginal sites. Funding Developer's cost	Resolve park design at DA stage.
B9. HABITAT ENHANCEMENT MEASURES	i) Provision of compensatory habitat (nest boxes, relocation of logs and owl trees	√			Developers undertake works. Council's Development Ecologist to be consulted. Funding Funded by developer.	Erected prior to issue of Construction Certificate.
	ii) Supervision of clearing works	√	√	√	Developers undertake works. Development Assessment Unit (Development Ecologist to be consulted) Funding Funded by developer.	Prior to commencement of works and during construction.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
	iii) Road Crossings	√			<p>Developers to provide.</p> <p>Funding</p> <ul style="list-style-type: none"> Cost of works funded by developer. A s.94 credit is available for pavement and road land for crossings. All restoration works and work to facilitate fauna dispersal are to be funded by developers. Development Assessment Unit – (Development Ecologist's) input into designs. 	During construction.
	iv) Provision of Cycleways/Walking Trails (within corridor but not those areas zoned residential)	√			<p>WSC - Open Space and Recreation Section</p> <p>Funding</p> <p>Include in existing program and possibly s.94 if any funds remain.</p>	Upon transfer of land to Council.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
	v) Minimise Impacts of Services	√			Developers undertake works. Development Assessment Unit (Development Ecologist) to be consulted. Funding Funded by developer.	Minimise impacts at DA stage and ensure that civil engineering works have minimal environmental impact.
	vi) Supplementary breeding habitat for amphibian species	√			Works funded by developers. Funding Source Works to be discussed with Development Assessment Unit (Development Ecologist) and works funded by developer.	Works to be completed prior to Subdivision Certificate.
	vii) Nest box monitoring program	√			Works funded by developer. The results of any monitoring programme need to be checked by Council's Development Ecologist Council to integrate monitoring requirements into future POM.	Ongoing.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
	vii) Nest box monitoring program (Cont.)				Funding Initially funded by developers for a period of 2 years from time of transfer of land to Council. Program will be continued by WSC – Natural Resources Section. All locations of nest boxes which have been placed in the corridor are to be provided to WSC.	
B10. HABITAT TREE RE-LOCATION / MAINTENANCE	i) Options for the relocation of hollow trees explored.	√			Works funded by developers. Funding Works to be discussed with Development Assessment Unit (Development Ecologist) Works funded by developer.	Construction.
	ii) Known nest tree retention	√			WSC - Open Space and Recreation Section Funding S.94	Occupation.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
B11. FERAL PEST MANAGEMENT	i) Feral pest trapping/eradication program	√			WSC - Open Space and Recreation Section Funding Include in existing works programs	Ongoing.
	ii) Monitoring	√			As per B.11 i) above	Ongoing.
B12. STORMWATER STRUCTURE MANAGEMENT	i) Design and construction initiatives	√			Responsibility of developers Funding Impacts to be discussed with Development Assessment Unit (Development Ecologist)	Completed as part of design prior to Construction Certificate.
	ii) Habitat management plans or details for stormwater management ponds	√			Responsibility of developers Funding Impacts to be discussed with Development Assessment Unit (Development Ecologist)	Details submitted prior to Construction Certificate being issued.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
	iii) Monitoring quality of habitat within stormwater structures	√	√		<p>Program funded by developer. The results of any monitoring programme need to be checked by Council's Development Ecologist</p> <p>Council to integrate monitoring requirements into future POM.</p> <p>Funding</p> <p>Initially funded by developers for a period of 2 years from time of land transfer. Then actions will be undertaken by WSC – Natural Resources Section</p>	Ongoing.
B13. STORMWATER QUALITY	i) Impact minimisation	√			<p>Responsibility of developers</p> <p>Funding</p> <p>Impacts to be discussed with Development Assessment Unit (Development Ecologist)</p>	During construction.

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
	ii) Monitor downstream water quality within WWC	√			As per B.12 iii)	Monthly during construction and bi-annually for 2 years.
B14. FROG HABITAT FEATURES	i) Impact Minimisation and Habitat Protection	√			<p>Works funded by developer. The results of any monitoring programme need to be checked by Council's Development Ecologist</p> <p>Council to integrate monitoring requirements into future POM.</p> <p>Funding Initially funded by developers for a period of 2 years from time of land transfer. Then actions will be undertaken by WSC – Open Space and Recreation Section and Natural Resources Section</p>	Prior to and during construction.
	ii) Habitat Enhancement	√			As per B.14 i)	Prior to and during construction.
B15. MONITORING AND REPORTING REGIME	i) Monitor occurrence and persistence of threatened species	√			As Per. B.14	Ongoing (see Table 2).

SITE ISSUE	ACTION	SECTION A Areas within Wadalba Wildlife Corridor	SECTION B Future Residential Areas Abutting Wadalba Wildlife Corridor	SECTION C Future Residential Areas within the vicinity of Wadalba Wildlife Corridor	RESPONSIBILITIES	TIMING
		Applicability of Management Action				
	ii) Monitor frog species and numbers	√			As per B.12 iii)	Ongoing (seasonally twice annually for 2 yrs.
	iii) Monitor health and status of endangered ecological community	√			As per B.12 iii)	Ongoing annually.
	iv) Monitor level of weeds	√			As per B.12 iii)	Ongoing annually.
	v) Monitor rubbish levels	√			As per B.12 iii)	Ongoing annually.
	vi) Monitor use of nest boxes/hollows	√			As per B.12 iii)	Ongoing annually.
	vii) Monitor water quality in aquatic areas	√			As per B.12 iii)	Ongoing annually.
	viii) Pest Species	√			As per B.12 iii)	Ongoing annually.
	ix) Produce regular meaningful reports to DEC, Council and the community	√			As per B.12 iii)	Ongoing bi-annually and annually.
Note: Each of the zones referred to (A,B,C) are delineated within Figure 7.						

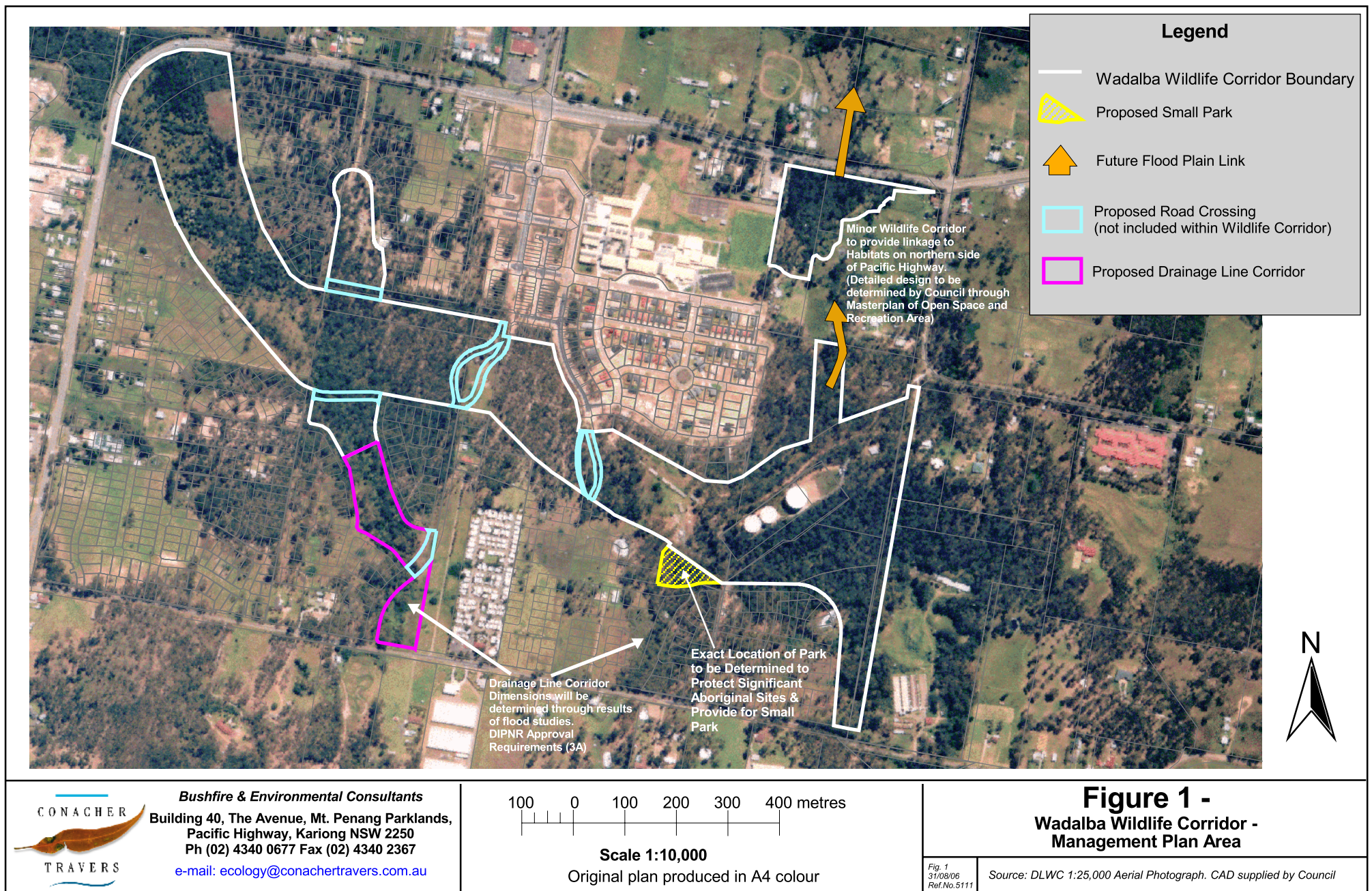
The following table provides specific details on the threatened species monitoring and reporting program to be implemented for the WWC as part of this Management Plan.

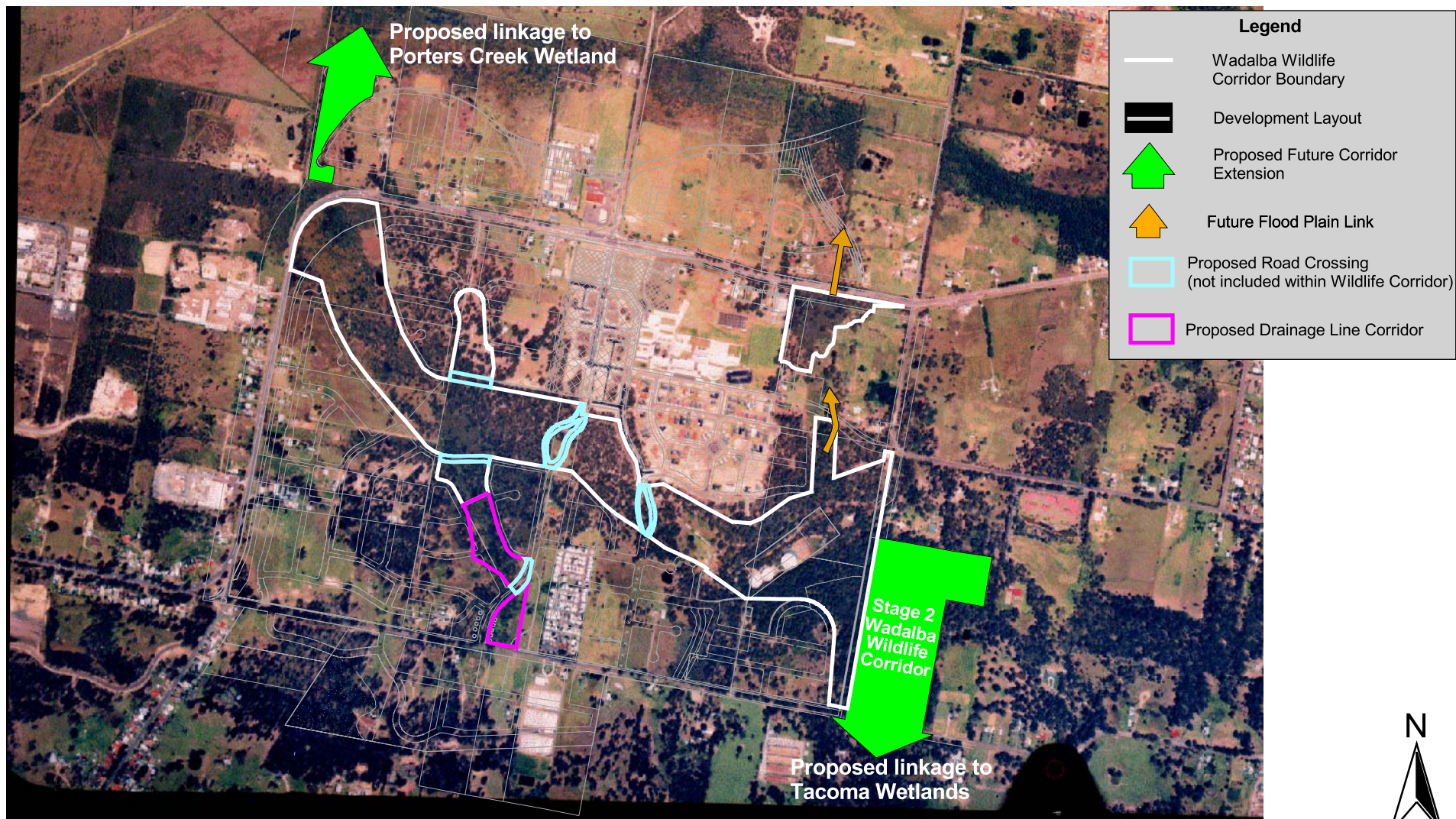
TABLE 2 THREATENED SPECIES SURVEY MONITORING PROGRAM DETAILS			
Threatened Species	Monitoring Period	Survey Details	Reporting Requirement
Powerful Owl/Masked Owl	Twice annually for three years and annually for following seven years	Owl call playback: five sessions per monitoring period	Bi-annual report for first three years /Report annually for following seven years
		Spotlighting: five sessions per monitoring period	
		Stagwatch: Two sessions for each survey period	
Squirrel Glider	Twice annually for three years and annually for following seven years	Elliott Trapping: Five grids of 10 traps per monitoring period	Bi-annual report for first three years /Report annually for following seven years
		Spotlighting: five sessions per monitoring period	
		Nest Box Inspection: Check contents of all nest boxes for gliders	
Grey-headed Flying-fox	Twice annually for three years and annually for following seven years	Spotlighting: five sessions per monitoring period	Bi-annual report for first three years /Report annually for following seven years
Microchiropteran Bats	Twice annually for three years and annually for following seven years	Anabat:: five sessions x 2 Anabats per monitoring period	Bi-annual report for first three years /Report annually for following seven years
Swamp Schlerophyll Forest on Coastal Floodplains	Annually for ten years	Vegetation quadrats and transects	Report annually for ten years

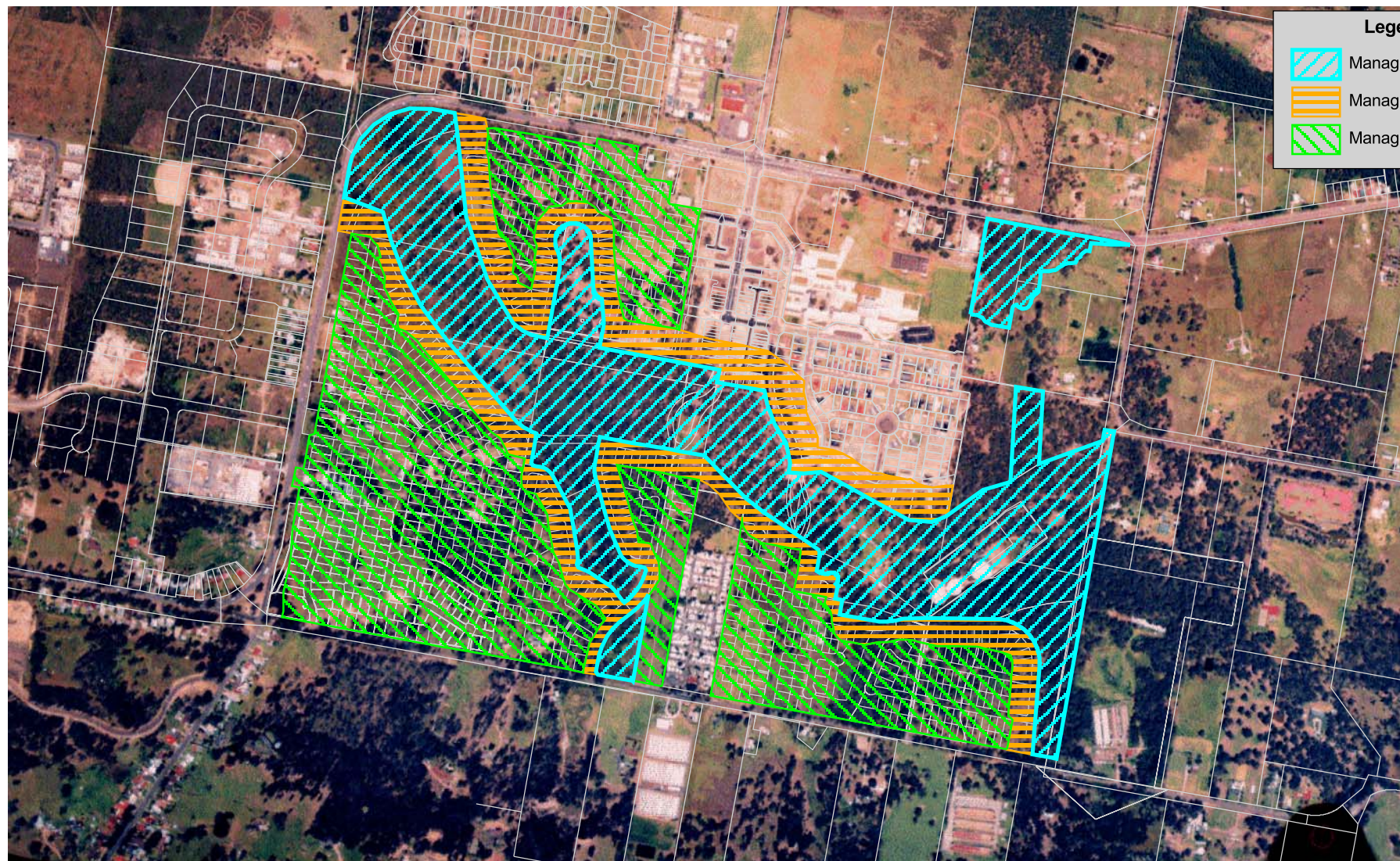
The following table provides specific details on the environmental monitoring and reporting program to be implemented for the WWC as part of this Management Plan.

TABLE 3 ENVIRONMENTAL MONITORING DETAILS			
Criteria	Monitoring Period	Survey Details	Reporting Requirement
Vegetation	Twice annually for three years and annually for following seven years	Monitor vegetation within corridor, particularly rehabilitated/restored areas as per details within Vegetation and Bushfire Management Plan	Bi-annual report for first three years /Report annually for following seven years
Fuel/Bushfire Risk	Annually for ten years	Monitor ground fuel levels and bushfire risk within corridor, particularly rehabilitated/restored areas as per details within Vegetation and Bushfire Management Plan	Report annually for ten years
Water	Twice annually for three years and annually for following seven years	Monitor detention ponds and creeklines within WWC	Bi-annual report for first three years /Report annually for following seven years
Rubbish	Annually for ten years	Monitor entire WWC for occurrence/build up of dumped rubbish	Report annually for ten years
Signage	Annually for ten years	Monitor all erected signs within WWC	Report annually for ten years
Nest boxes	Annually for ten years	Monitor condition of all nest boxes within WWC	Report annually for ten years
Feral Pest Species	Annually for ten years	Monitor occurrence of feral pests within WWC	Report annually for ten years

PART D
FIGURES





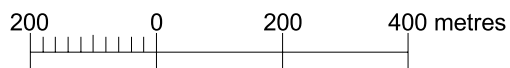


Legend

	Management Zone A
	Management Zone B
	Management Zone C



Bushfire & Environmental Consultants
 Building 40, The Avenue, Mt. Penang Parklands,
 Pacific Highway, Kariong NSW 2250
 Ph (02) 4340 0677 Fax (02) 4340 2367
 e-mail: ecology@conachertravers.com.au

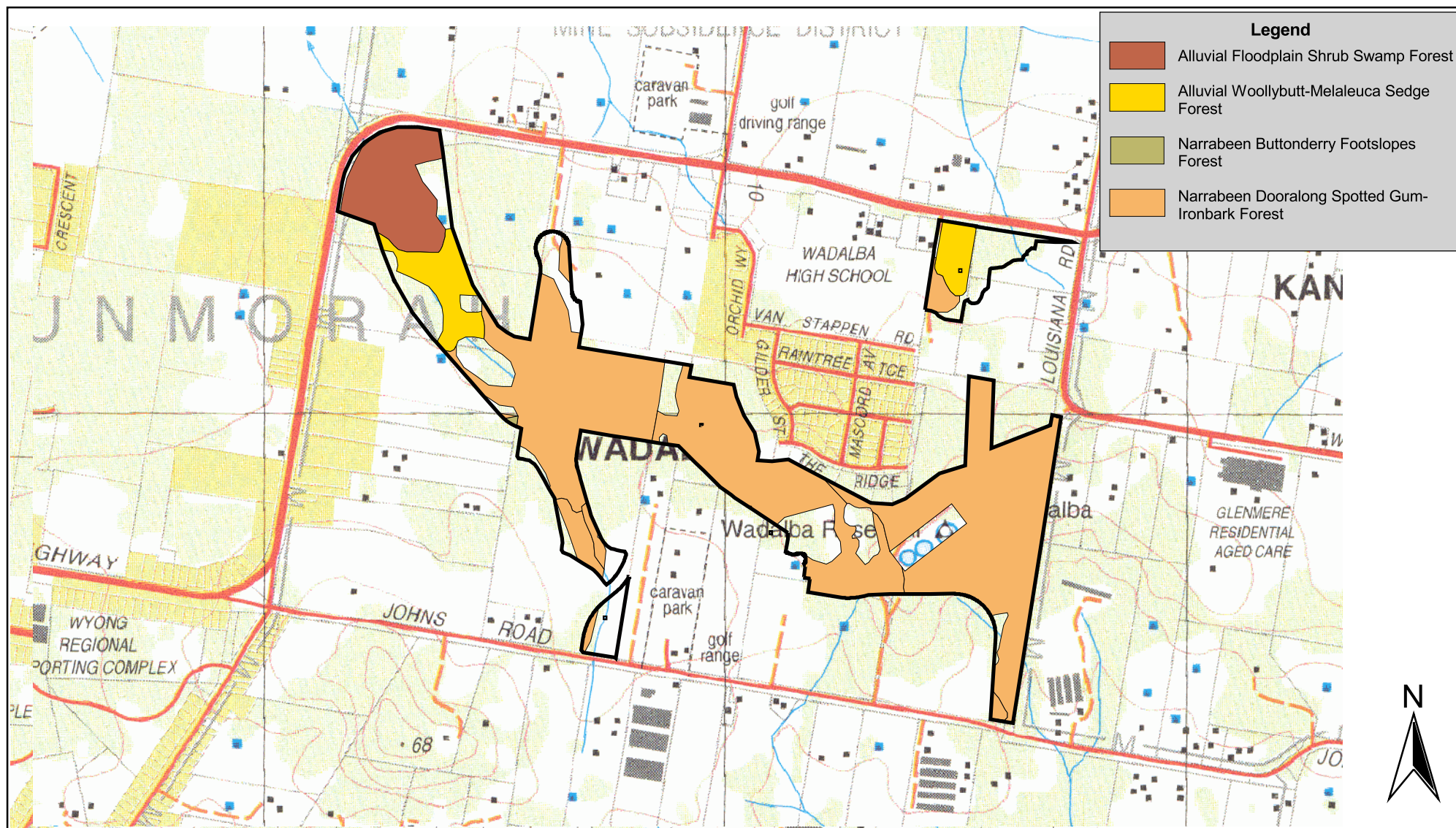


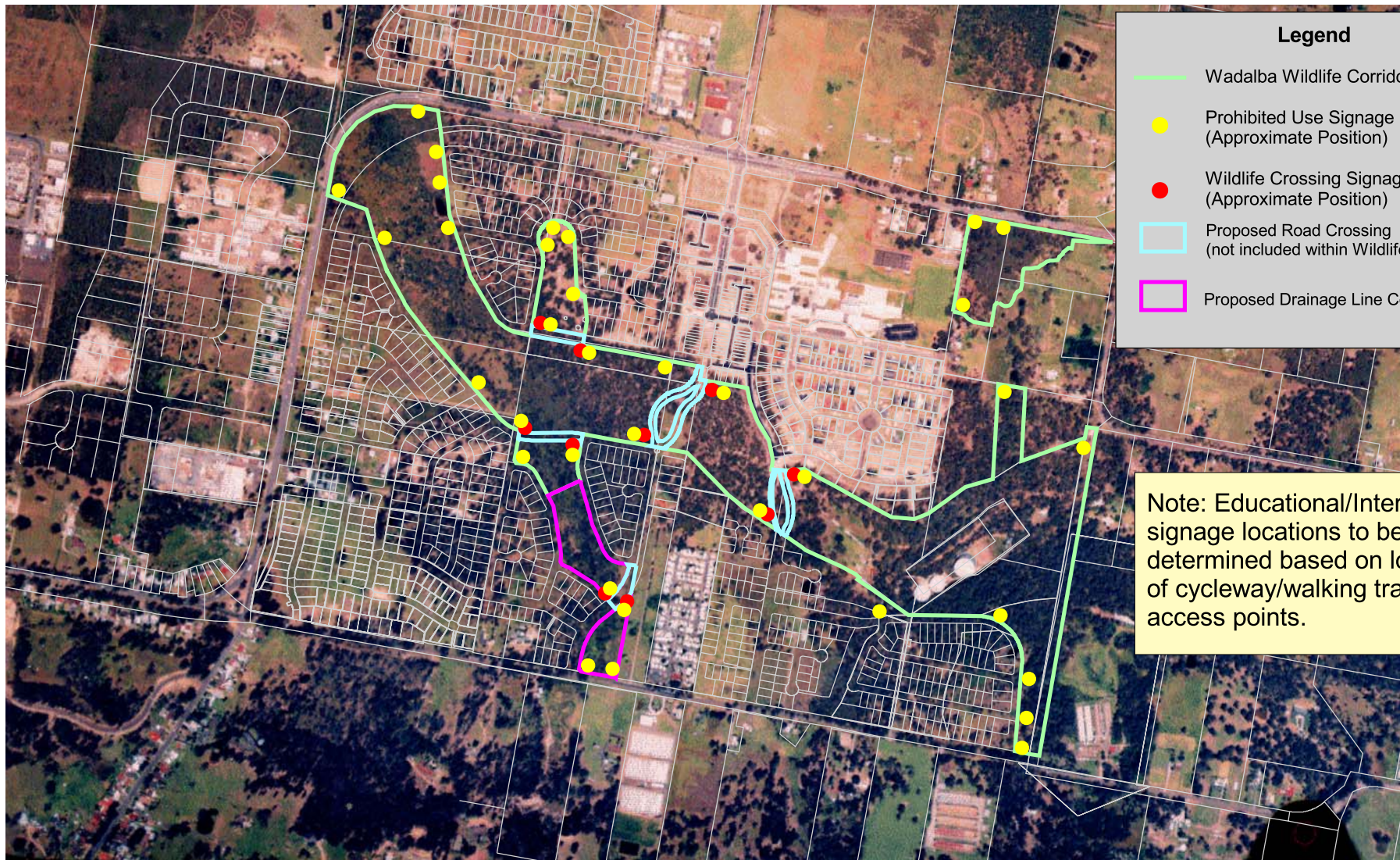
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Figure 3 -
Management Plan Zones for
Application of Actions

Fig. 3
 31/08/06
 Ref.No.5111

Source: DLWC 1:25,000 Aerial Photograph. CAD supplied by Council





Legend

- Wadalba Wildlife Corridor Boundary
- Prohibited Use Signage (Approximate Position)
- Wildlife Crossing Signage (Approximate Position)
- Proposed Road Crossing (not included within Wildlife Corridor)
- Proposed Drainage Line Corridor

Note: Educational/Interpretive signage locations to be determined based on location of cycleway/walking trail access points.



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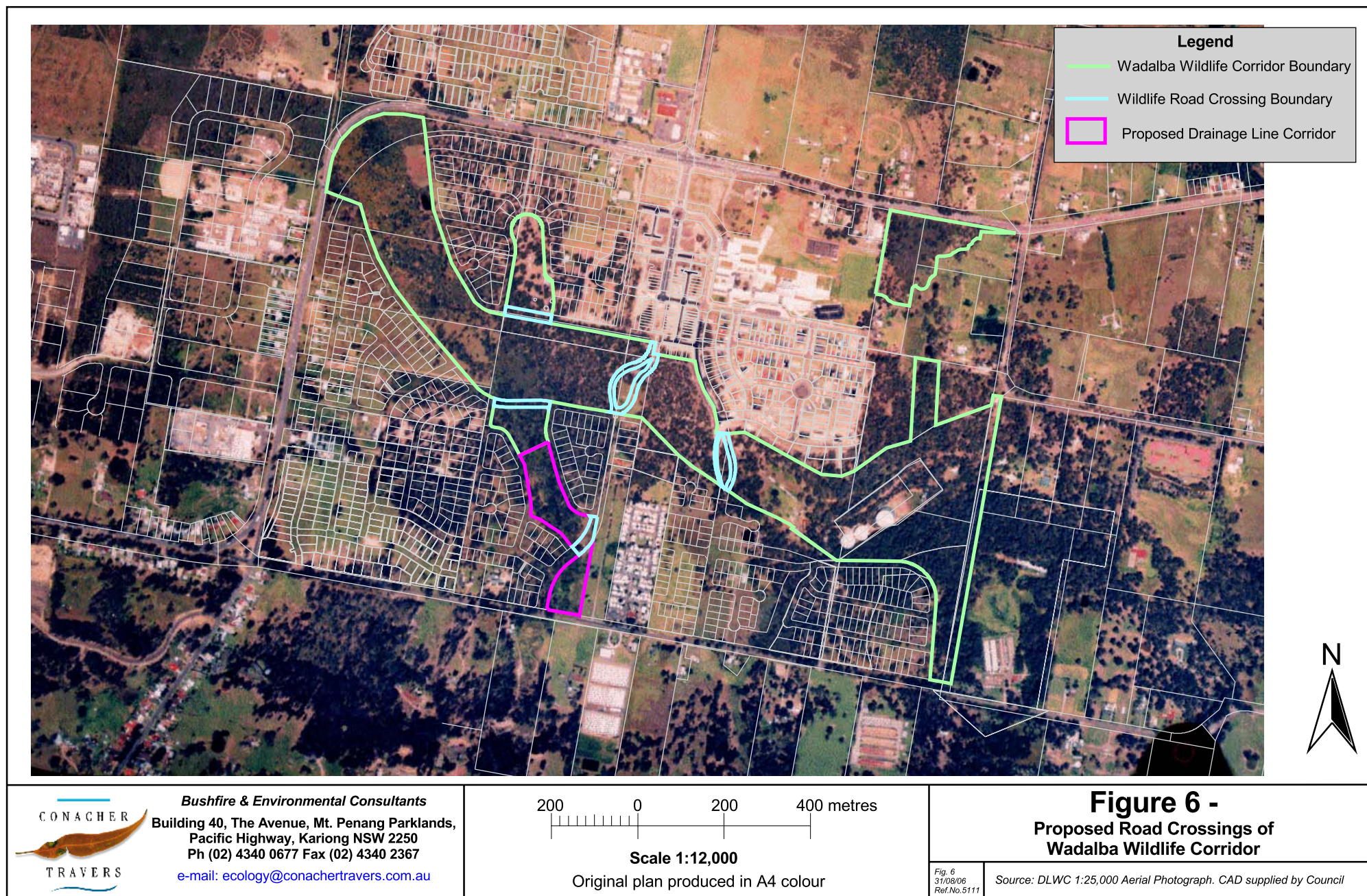
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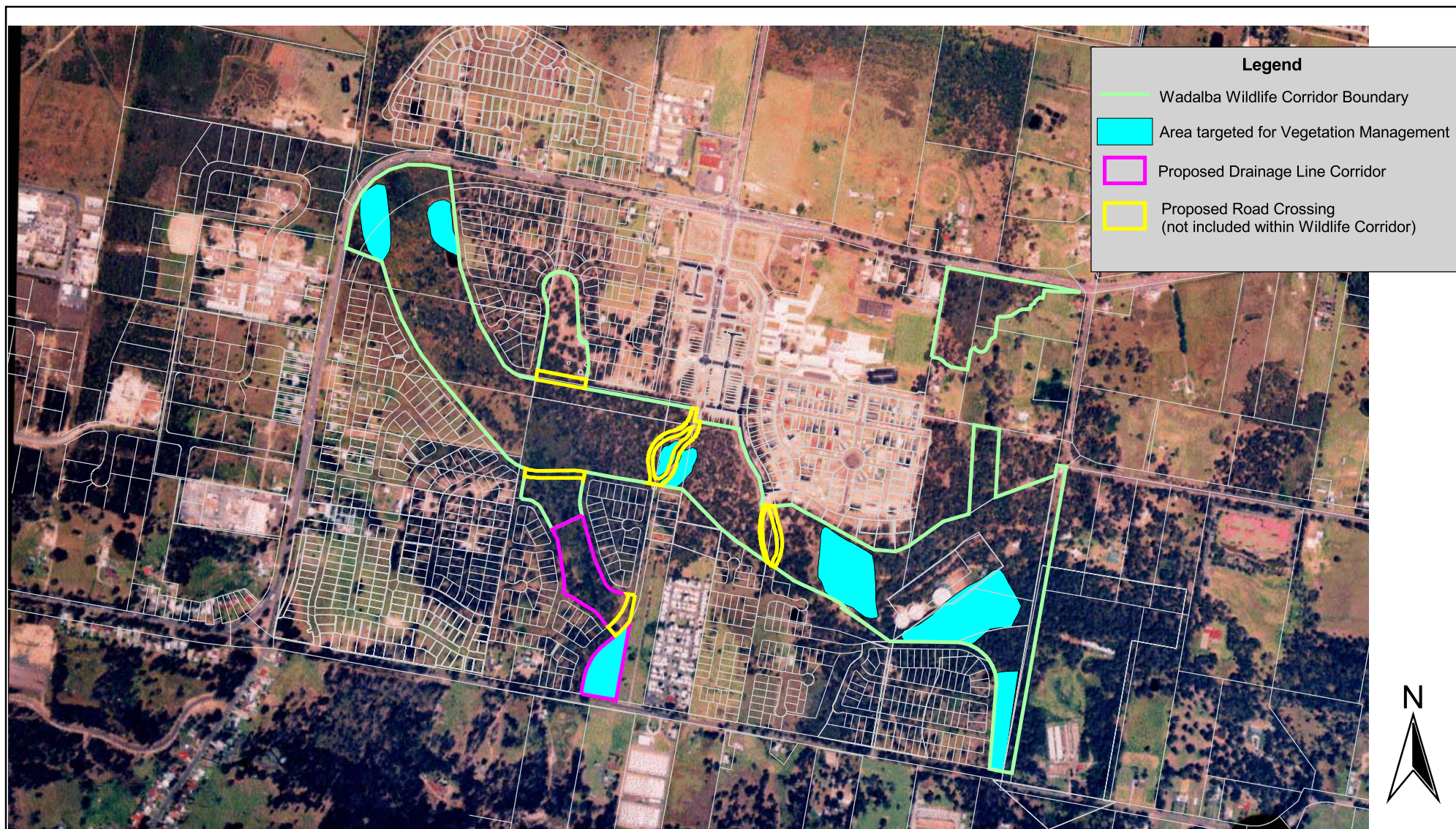
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 Original plan produced in A4 colour

Figure 5 -
Wadalba Wildlife Corridor -
Proposed Locations of Signs

Fig. 5
 31/08/06
 Ref. No. 5111

Source: DLWC 1:25,000 Aerial Photograph. CAD supplied by Council





Legend

- Wadalba Wildlife Corridor Boundary
- Area targeted for Vegetation Management
- Proposed Drainage Line Corridor
- Proposed Road Crossing (not included within Wildlife Corridor)

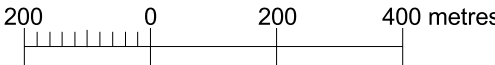


CONACHER TRAVERS

Bushfire & Environmental Consultants

Building 40, The Avenue, Mt. Penang Parklands,
Pacific Highway, Kariang NSW 2250
Ph (02) 4340 0677 Fax (02) 4340 2367
e-mail: ecology@conachertravers.com.au

200 0 200 400 metres



Scale 1:12,000

Original plan produced in A4 colour

Figure 7 -

Wadalba Wildlife Corridor -

Targeted Areas for Vegetation Management

Fig. 7
31/08/06
Ref. No. 5111

Source: DLWC 1:25,000 Aerial Photograph. CAD supplied by Council

PART E

REFERENCES

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- Lesryk Environmental Consultants (January 1999a) Detailed Supplementary Fauna Survey of the Proposed School Site, Wadalba, NSW – giving specific consideration to the presence or absence of threatened possums and bats.
- Lesryk Environmental Consultants (January 1999b) Flora and Fauna Survey of the proposed Minnesota Road, Figtree Boulevard and Pacific Highway Intersection, Wadalba.
- Lesryk Environmental Consultants (April 2001a) Flora and Fauna Survey – Review, Lot 321 DP 719530, Lot 312 DP 808521, Lot 28 DP752455, Lot 2 DP 223730, Lot 4 DP 536569 and Lot 33 DP 809318, Johns Road, Wadalba.
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- Threatened Species Conservation Act (1995) New South Wales Government.

PART F
APPENDICES

APPENDIX I

DEEMED CONCURRENCE CORRESPONDENCE



Department of
Environment and Conservation (NSW)

Our reference : DOC04/16243; 04/01
Contact : Robert Humphries, 9585 6952

Mr Kerry Yates
General Manager
Wyong Shire Council
PO Box 20
WYONG NSW 2259

Attention: Scott Duncan, A/Landuse Planning Manager

Dear Mr Yates

Various proposed residential developments at Wadalba and deemed concurrence of the Department of Environment and Conservation

Council's Landuse Planning Section has been liaising with the Department of Environment and Conservation (DEC) with respect to a number of development applications at Wadalba over the past 12 months. Council determined that five of these proposals were likely to have a significant impact on threatened species and subsequently advised the proponents to prepare separate species impact statements in accordance with Part 5A of the *Environment Planning and Assessment Act*. Council would have been required to request the concurrence of the DEC for each of these developments. However, in order to streamline the process and provide greater certainty for both development and conservation outcomes, the DEC suggested a more strategic approach for the proposed developments in Wadalba.

In February 2004 the DEC indicated that it was prepared to provide a 'deemed' concurrence for all developments in the area, pursuant to Section 64 of the *Environment Planning and Assessment Regulation 2000*, provided that conservation issues were addressed in a strategic manner.

Council subsequently engaged an independent consultant to undertake an assessment of the habitat and corridor values of the naturally vegetated areas of the subject lands. The study identified a footprint of a preferred conservation area (wildlife corridor) whilst the remaining areas were identified as being available for development without impacting on conservation values. The DEC subsequently participated in several meetings between Council and Peter Johnson, of Johnson Partners, representing the various landowner/proponents including AV Jennings, Bellvale Homes, Westminster Homes and a number of individual landowners, to 'fine tune' the footprint and develop some accompanying fundamental conditions with which the Department's concurrence could be assumed.

The DEC understands that Council has now obtained agreement from all of the relevant land holders regarding these conditions and that the area identified in the attached map as wildlife corridor (shown in green crosshatched), is to be transferred to Council ownership, rezoned to an appropriate conservation zoning and managed as community land. Appropriate arrangements must be put in place to ensure that this occurs so that concurrence of the DEC can be assumed.

Accordingly, I advise that Council can assume my concurrence for all developments in the blue stippled areas of the subject land (depicted within the black line of map - F2004/06924 attached) in accordance with Section 64 of the *Environment Planning and Assessment Regulation 2000* subject to the following conditions:-

1. A management plan (MP) is to be prepared and implemented for the identified wildlife corridor (green crosshatched areas on Map F2004/06924) to the satisfaction of the Director General of DEC prior to release of construction certificates for any developments in accordance with this assumed concurrence.
 - The MP will need to address a range of issues including signage; weed control; bushfire management; rubbish dumping; prohibited uses; cultural values; community education; stormwater structure management; storm water quality; community vigilance and reporting; habitat enhancement initiatives including artificial hollows; habitat tree relocations/maintenance; frog habitat features; and a monitoring and reporting regime that requires a biannual report being forwarded to DEC.
2. All necessary fire protection measures (asset protection zones, fuel free and fuel reduced zones) are to be contained within the blue stippled areas as depicted on the attached map and are not to impact on the wildlife corridor area.
3. Placement and construction of any detention/water treatment structures required within the wildlife corridor are located sensitively and designed and landscaped to enhance habitat values for threatened amphibians and mitigate identified Key Threatening Processes (eg. *Gambusia* and frog chytrid).
4. Services such as water, sewer, power and telecommunications that are unavoidably required to be within the wildlife corridor are to be sensitively placed so as to avoid, protect or retain known habitat features (eg hollow bearing trees, dams, drainage lines etc)
5. The four proposed road crossings that traverse the conservation corridor area identified on the attached map are to be designed with features to assist with fauna movement and to reduce mortality. (eg underpasses, landscaping, lighting issues, speed suppression, glide poles – as appropriate).
6. Properties adjoining, abutting or adjacent to the wildlife corridor (including those separated by only a roadway) are to be provided with a restriction as to user covenant with respect to cat ownership; and
7. A community education strategy (as described in the management plan in point 1 above) is to be developed prior to release of construction certificates for any approved developments in the blue stippled areas of the subject land and implemented by the proponents that raises resident/landowner awareness of the purpose of the corridor, its biodiversity/ecological and cultural values, the need for long term management and the desired community role in assisting with meeting these objectives.
 - This will likely take the form of a brochure/pamphlet that identifies key issues of the corridor area. Provides a map depicting the development/subdivision lot layout, the corridor and the corridor/vegetated areas, identifies affectations/restrictions/covenants on lots, sensitive areas within the corridor etc. It should explain the actions residents can take to ensure corridor values are maintained or enhanced. The specific values the corridor habitat area is known to contain and where additional or more detailed information can be obtained (this might be a web link to copies of the various digital reports).

Should you require any additional information regarding the above, please contact Robert Humphries, Manager, Metro Threatened Species Unit on 02 9585 6952 or at robert.humphries@environment.nsw.gov.au.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Tony Fleming', with a long, sweeping horizontal line extending to the right.

TONY FLEMING
Acting Director General

29/12/04

APPENDIX II

DEED OF AGREEMENT SCHEDULES WADALBA URBAN RELEASE AREA

SCHEDULE 1

LIST OF LAND OWNERS PARTICIPATING IN CORRIDOR OFFSET SCHEME

PART 1 – LIST OF LAND OWNERS PARTICIPATING IN CORRIDOR OFFSET SCHEME

Land owners who, subject to Council approval, be carrying out removal of native vegetation and will be required to transfer additions of corridor land to Council.

Parcel Description	Property Address	Area Cleared	Owners Names
Lot 1 DP 376236	531 Pacific Highway WADALBA NSW 2259	0.8ha	CPG Estates Pty Ltd
Pt Lot 1 DP 180012	483 Pacific Highway WADALBA NSW 2259	1.56ha	A V Jennings Ltd
Lot 261 DP 1038214	Johns Road, WADALBA NSW 2259	0.4ha	Westminster Developments Pty Ltd
Lot A DP 386170	469 Pacific Highway WADALBA NSW 2259	0.85ha	Orlit Pty Ltd
Lot B DP 386170	465 Pacific Highway WADALBA NSW 2259	1.07ha	Orlit Pty Ltd
Lot 333 DP 1051976	Clydesdale Street WADALBA NSW 2259	2.06ha	AV Jennings Ltd
Lot 312 DP 808521	155 Johns Road WADALBA NSW 2259	2.93ha	Westminster Developments Pty Ltd
Lot 311 DP 808521	Lot 311 DP 808521 Louisiana Road KANWAL NSW 2259	2.42ha	Threshold Developments Pty Ltd
Pt Lot 28 DP 755245	165-175 Johns Road WADALBA NSW 2259	1.9ha	Westminster Developments Pty Ltd
Lot 102 DP 1019019	501 Pacific Highway WADALBA NSW 2259	5.36ha	Grandeo Pty Ltd
Lot 2602 DP 1043825	Lot 2602 DP 1043825 Van Stappen Road WADALBA NSW 2259	8.77ha	Westminster Developments Pty Ltd and Wadalba Central Developments Pty Ltd
Lot 2 DP 1064784	475-481 Pacific Highway WADALBA NSW 2259	0.18ha	A V Jennings Ltd

PART 2 – LAND OWNERS REQUIRED TO TRANSFER LAND

Areas to be added to wildlife corridor as shown in blue on Map 1.

Parcel Description	Property Address	Area Cleared	Owners Names
Lot 1 DP 376236	531 Pacific Highway WADALBA NSW 2259	1.18ha	CPG Estates Pty Ltd
Lot 2602 DP 1043825	Lot 2602 DP 1043825 Van Stappen Road WADALBA NSW 2259	0.91ha	Westminster Developments Pty Ltd and Wadalba Central Developments Pty Ltd
Lot 102 DP 1019019	501 Pacific Highway WADALBA NSW 2259	0.1ha	Grandeo Pty Ltd

PART 3 – LAND OWNERS WHICH ARE REQUIRED TO TRANSFER ADDITIONAL LAND TO THE CORRIDOR, BUT ARE NOT SUBJECT TO THE DEED AGREEMENT

Areas to be added to wildlife corridor where the land owner is not signatory to Deed at Agreement.

Parcel Description	Property Address	Area Cleared	Owners Names
Lot 1 DP 306056	205 Johns Road WADALBA NSW 2259	0.7ha	S A Haddad

Note: Actual areas of clearing and corridor additions are shown in the map in Schedule 4 for each affected property.

ou 29

SCHEDULE 2

CORRIDOR CONTRIBUTION CALCULATION FOR LAND OWNERS CONDUCTING VEGETATION REMOVAL

1.	Land required to be added to corridor:	2.39 hectares
2.	Total cost of acquiring of land referred to at 1:	\$2,212,013.00
3.	Total vegetation to be cleared:	32.12 hectares
4.	Equivalent contribution per hectare of land to be cleared (2. divided by 3.):	\$68,867.00 per hectare

Notes:

* Amount to be covered by Section 94 Contribution Plan amendment
= 3.82ha x \$68,867.00 = \$263,071.94.

* Amount to be covered by this deed of agreement
= 28.3ha x \$68,867.00 = \$1,948,936.10.

SCHEDULE 3

CORRIDOR CONTRIBUTIONS FOR LANDOWNERS WHO ARE SEEKING TO OFFSET CLEARING COSTS AGAINST CORRIDOR ADDITIONS.

- * Landowners who are transferring land into Council ownership for corridor purposes.

Property	Land valuation rate on basis of function	Area (Ha)	Estimated Value	Proportion
Lot 1 DP 376236	\$1,470,000/ha	1.18	\$1,734,600.00	78%
Lot 2602 DP 1043825	\$297,669/ha	0.91	\$270,878.79	12%
Lot 1 DP306056	\$297,669/ha	0.2	\$59,533.80	3%
Lot 102 DP 1019019	\$1,470,000	0.1	\$147,000	7%
	Total	2.39ha	\$2,212,013.00	100%

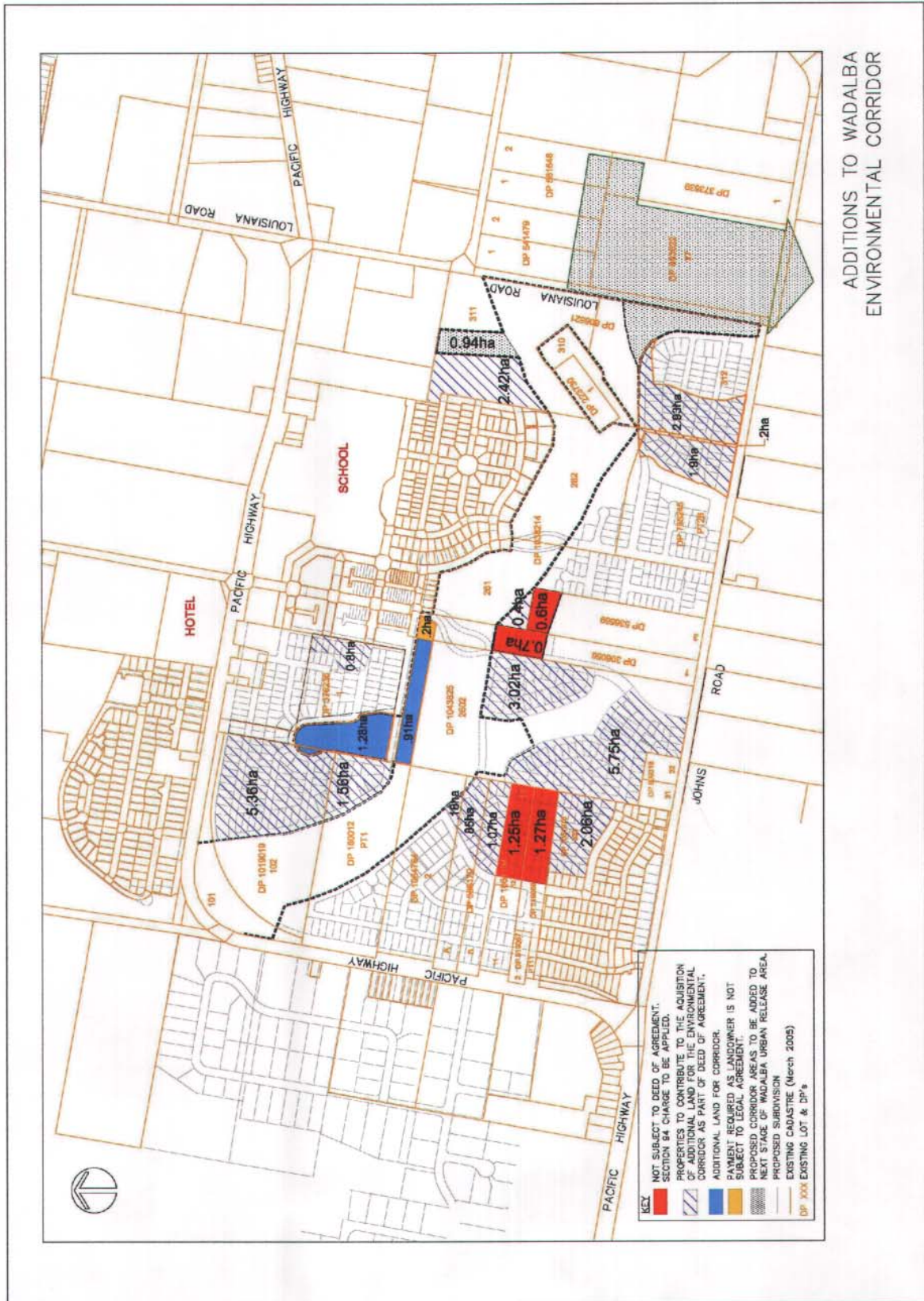
- * Any landowners listed in this Schedule may offset a corridor clearing contribution against any corridor land transfer by using the following formula:

FORMULA

Contribution of \$68,867/ha of vegetation removed LESS

Estimated value of land to be transferred/Ha as outlined in Schedule 3.

SCHEDULE 4



ADDITIONS TO WADALBA
ENVIRONMENTAL CORRIDOR

APPENDIX III

WYONG SHIRE COUNCIL SQUIRREL GLIDER CONSERVATION MANAGEMENT PLAN CLEARING PROTOCOLS

HABITAT CLEARING PROTOCOL

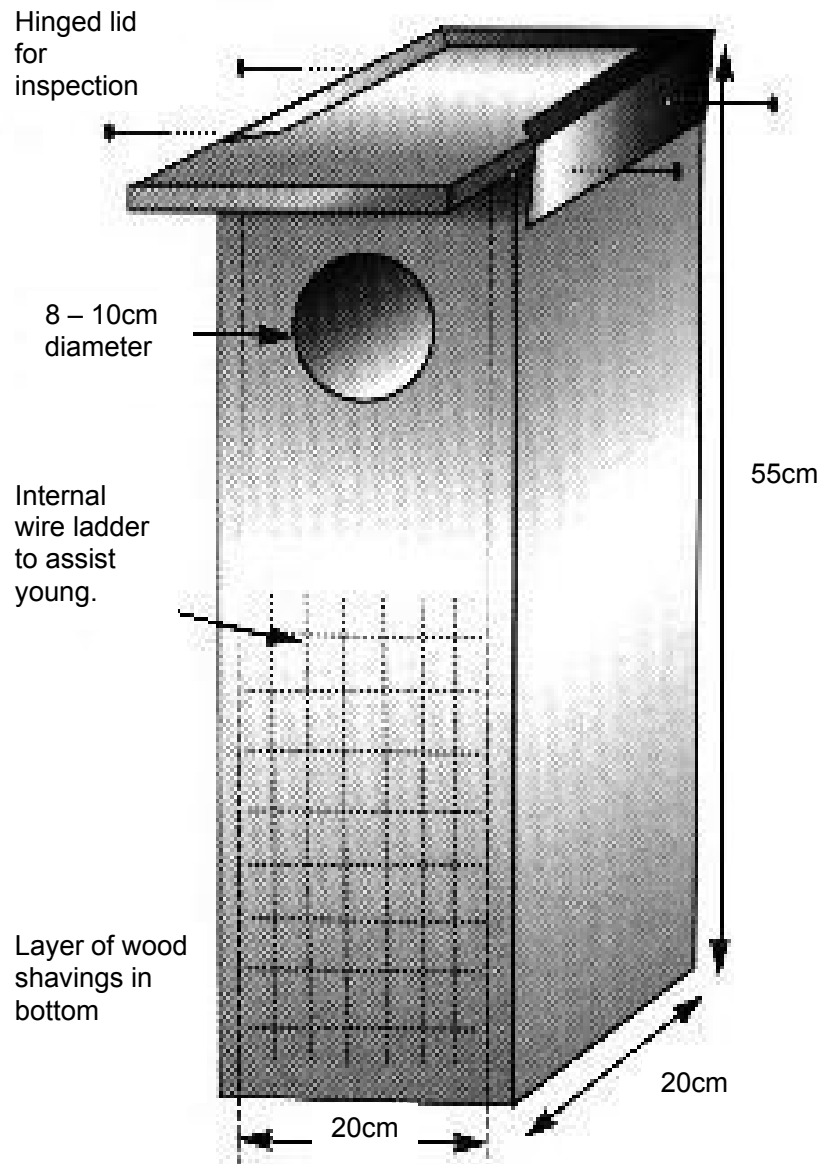
Extraction from – Andrew Smith,
Squirrel Glider Conservation Plan Wyong Shire, November 2002.

Where clearing of habitat with known Squirrel Glider populations occurs the following procedures will be observed.

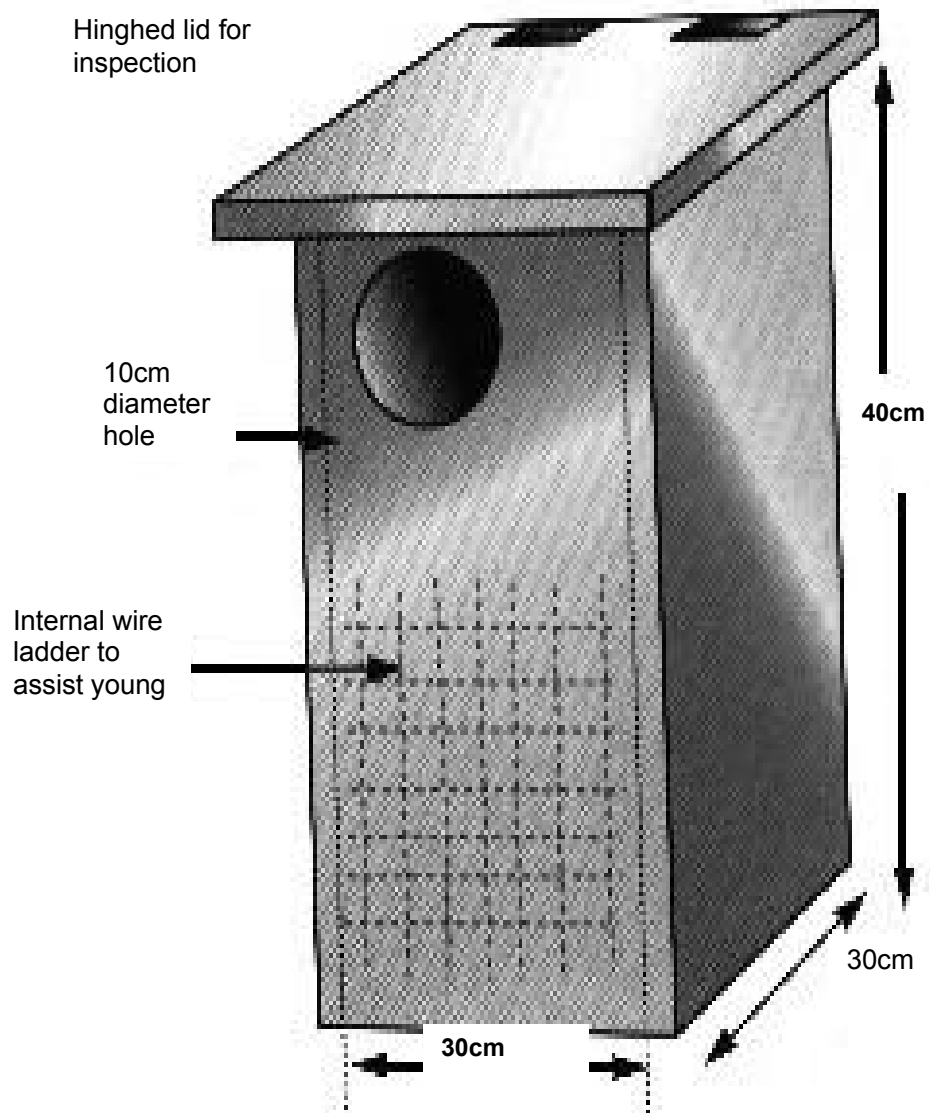
1. All occupied Squirrel Glider habitat trees in the area to be cleared will be identified (by survey) and marked;
2. marked habitat trees and corridors of retained trees linking marked habitat trees with the nearest uncleared (secure) habitat areas will be left standing after initial vegetation clearing for a period of at least 3 weeks (to encourage gliders to disperse into adjacent uncleared habitat);
3. After the three week waiting period standing habitat trees and corridors may be felled commencing with the most distant trees from secure habitat;
4. Clearing should be undertaken in the Spring to Autumn period to facilitate survival of displaced animals;
5. If habitat trees are in short supply (< 4 suitable trees per hectare) artificial nest sites (nest boxes) should be installed in adjacent (secure) habitat before clearing;
6. If no secure habitat exists nearby to areas to be cleared land owners should seek advice from the Department of Environment and Conservation before proceeding with clearing.

APPENDIX IV

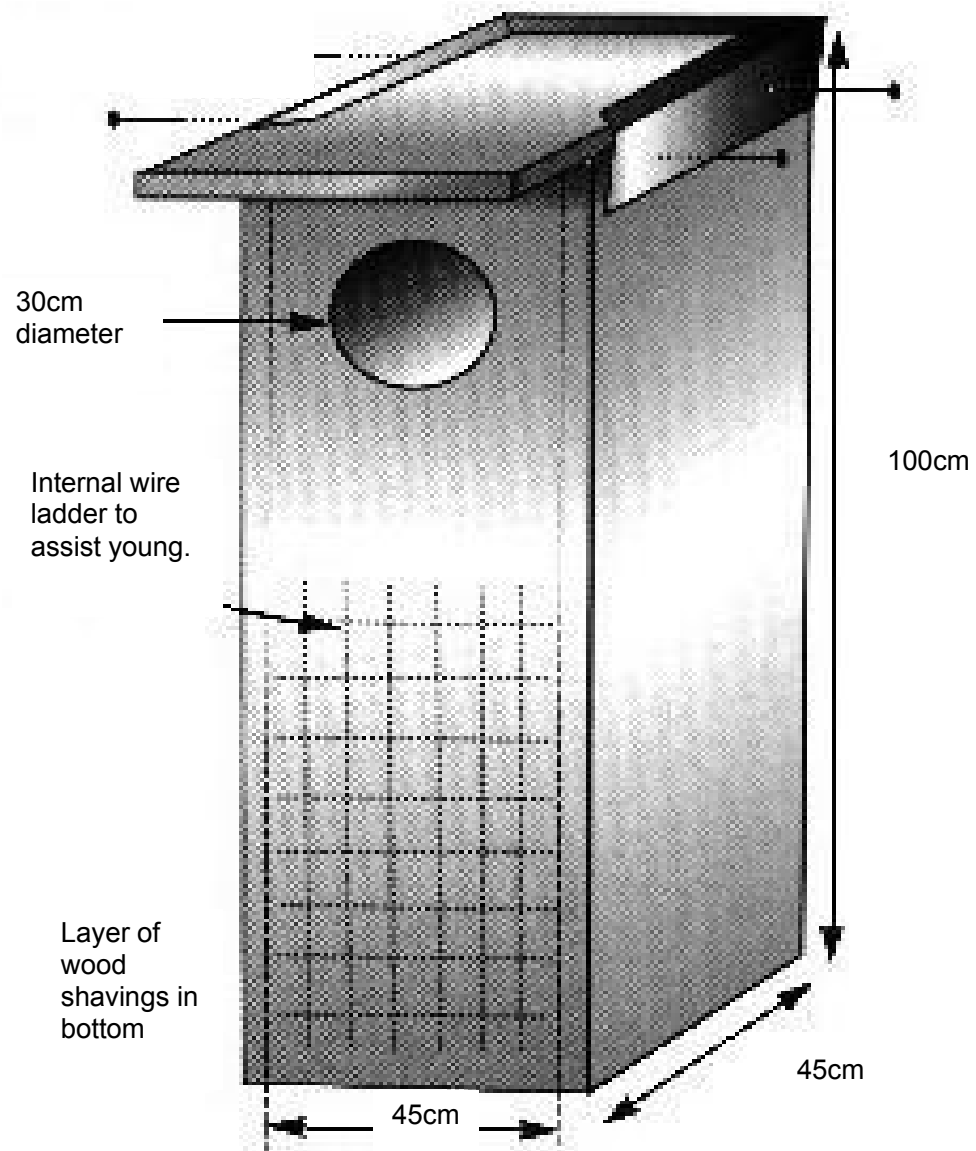
NEST BOX SPECIFICATIONS



PARROT ROOSTING BOX
Install approximately 5m above ground



POSSUM ROOSTING BOX



FOREST OWL ROOSTING / NESTING BOX

Install in large Eucalyptus tree approximately 10m above ground

APPENDIX V

ENDORSEMENT CORRESPONDENCE FROM THE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

61 2 95856442



Department of
Environment and Conservation (NSW)

Your reference :
Our reference : 03/11435
Contact : Robert Humphries 9585 6952

Mr Kerry Yates
General Manager
Wyong Shire Council
PO Box 20
WYONG, NSW 2259

Attention: Scott Duncan

**Re: Department of Environment and Conservation (DEC) endorsement of the
Wadalba Wildlife Corridor Management Plan.**

Dear Mr Yates,

On 24 December 2004, the Department of Conservation and Environment (DEC) issued a deemed concurrence to Wyong Shire Council (WSC) for development in a defined area of Wadalba consistent with a number of conditions.

One of those conditions was the preparation of a Management Plan (MP), to the satisfaction of DEC and WSC that addressed certain conservation issues.

Conacher Travers has provided DEC with a copy of a draft plan dated July 2005. I understand that the draft has been independently reviewed by Ross Wellington, on behalf of Conacher Travers/Johnson Partners and Garon Staines, on behalf of WSC.

I have now reviewed the draft plan and advise Council that DEC is satisfied that the Management Plan addresses this requirements of the deemed concurrence conditions subject to the following minor amendments being incorporated into the plan.

1. That Species Impact Statements and other environmental impact assessment reports prepared for the area prior to the granting of assumed concurrence are cited and included in the references section of the management plan (page 6 and page 15 of draft);
2. That vegetation descriptions on page 4 are updated to be consistent with descriptions of Endangered Ecological Community vegetation descriptions as described by the NSW Scientific Committee (page 23) and are depicted in the map of Figure 2;
3. Areas of the WWC that back onto the rear of properties and therefore are likely high risk weed/garden refuse dumping sites should be identified and targeted for monitoring within the MP;
4. That an ecological/mosaic burn approach to fire management be inserted into the plan and be based on the best information available as to regimes for the vegetation communities present in the WWC (the Bushfire Management section – page 9 and implementation tables sections – page 26 should be modified accordingly);

61 2 95856442

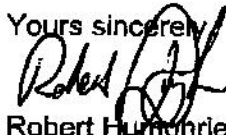
5. On page 11 an additional dot point addressing the establishment of a mechanism for removal of any dumped rubbish that may eventuate;
6. On page 13 dot point - sources of further information should include WSC website;
7. On page 14 mention should be made of the potential for future use of the WWC by the Wadalba Community School for Environmental/Ecological studies and that this is to be encouraged/facilitated where possible;
8. That the figure 5 depicting Aboriginal Cultural features/sites be examined for completeness and if known sites have been omitted that the existing Figure 5 be amended accordingly;
9. On page 19, the DEC Frog Hygiene Protocol and Gambusia Threat Abatement Plan be cited and included in the references section;
10. On page 23 include advice that individuals undertaking bush regeneration activities in the WWC will be required to obtain a licence from the DEC;
11. On page 24 an additional dot point feral cats/dogs be added under pest species;
12. A greater emphasis on the restriction as to user covenants re cat ownership should be made within the MP and the identification of these properties in the community education brochure;
13. On page 27 provision of pamphlet should be amended to read - approved/endorsed by WSC;
14. On page 28 Frog monitoring should have a suitable periodicity included in the implementation tables; and
15. A few other minor grammatical and wording changes brought to the attention of the DEC should also be considered for inclusion.

The DEC's endorsement of the management plan is on the assumption that responsibilities and associated costs for implementation of the management plan have been discussed with Council by the proponent and agreement reached. If this is not the case, Council should seek to resolve responsibilities for the costs to implement the management plan as soon as possible and advise DEC accordingly. Should the contents and actions of the management plan change as a result of these discussions, Council should seek further endorsement of the plan by DEC prior to the release of construction certificates.

Finally, I request that Council bring the requirements of the management plan and conditions of assumed concurrence to the attention of any relevant parts of Council to ensure that any Council activities in the WWC area are consistent with the management plan and conditions of concurrence.

If you have any further queries regarding this matter please contact me on 02 9585 6952.

Yours sincerely

 31/8/05

Robert Humphries

**Manager Biodiversity Conservation Section
Metropolitan Branch
Environmental Protection and Regulation Division**

CC

Johnson Partners

PO Box 2020, GOSFORD, NSW 2250