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Ecology Report
RSL Anzac Village – Proposed Redevelopment Master Plan Stage 1



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Ecological Report for MasterPlan Stage 1

TSA Management, L16 207 Kent Street,
Sydney NSW 2000
On behalf of R.S.L LifeCare Ltd

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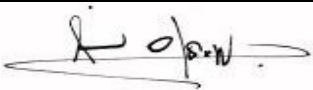
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Statement of Authorship

This Ecology Report RSL Anzac Village – Proposed Redevelopment Master Plan Stage 1 were undertaken by contract by Dragonfly Environmental for TSA Management Pty Ltd. The principle author of the report is André Olson whose qualifications are BSc. majoring in Aquatic Ecology and Botany. André has over 8 years experience in the field and is familiar with the study area. Other researchers involved were Mia Dalby-Ball whose qualifications are BSc. (Hons I).

Information presented in this report is based on an objective study undertaken in response to the brief provided by the client. Any opinions expressed in this report are the professional, objective opinions of the authors and are not specifically intended to advocate any pre-determined position.

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1 EXECUTIVE SUMMARY

Dragonfly Environmental © has prepared this report for Andrew Thompson, TSA Management Pty Ltd, Level 16, 207 Kent Street, Sydney NSW, 2000, on behalf of RSL Life Care Limited (applicant).

The ecological assessment was done for the land within and adjoining the proposed redevelopment sites at Anzac Village, Narrabeen.

The environment is highly modified due to existing development comprise of buildings and roads. Significant canopy trees are growing in the proposed development area however the understorey and mid storey is principally planted natives of low diversity and exotics.

The sites is within and adjoining areas of high environmental significance containing known threatened species including Powerful Owl and Osprey.

Endangered Ecological Communities and high priority habitats include: Swamp Mahogany Forest; Bangalay Forest; Palm Woodland; Angophora Woodland occur in bushland surrounding the site. Remnant canopy trees occur within the proposed development site. Principal species are Scribbly Gum and Bloodwood.

Threatened plants also occur within 1 km. A species recorded close by is *Pimelea curviflora* var. *curviflora* none occur within the area of the proposed redevelopment. See TSA Ecological Monitoring Report (Dragonfly Environmental 2009) for updated status on this plant population.

Proposed redevelopment would result in the loss of trees. The most up to date arborist report (UTM Australia Pty Ltd, November 09) should be consulted for the precise number of trees recommended for removal and the corresponding size, health and location. The trees are in various stages of maturity and health. At the time of this Ecology Report the Arborist Report had recommendations for removal of native trees due to disease – particularly Scribbly Gums, plus tree removals where the proposed development footprint and/or construction zone occurs. Seed collection and tree replating is recommended in this Ecology Report.

A small tree hollows was found during the site inspections. Hollows are likely to occur in other trees. Conditions of removal – should it be granted – are as recommended in this report to minimise the inadvertent damage or death to hollow using species and to provide alternative places for such fauna in the event of loss of habitat.

Bushfire mitigation (creation and maintenance of Asset Protection Zones) does not require the significant removal of native flora from bushland areas. The most intensive disturbance consists of the recommendation to remove environmental weeds in the gully area, for details see (Bushfire Protection Assessment Proposed Redevelopment RSL Anzac Village, Narrabeen, ECOLOGICAL, November 2009). In addition to this there is a requirement to thin some of the shrub vegetation in small garden beds.

In conclusion for the proposed Stage 1 Masterplan, there would be a loss of canopy trees. The understorey is currently poor and dominated by turf and exotics. The canopy tree loss is to be mitigated in the longer term but replanting and by the installation of nest boxes. Proposed tree removals are not likely to impact on Threatened Species. The questions of the 7 part test have been considered for threatened species in the wider area and there are no environmental impacts associated with Master Plan Stage 1 that trigger the need to undertake a 7 Part test.

2 INTRODUCTION

Purpose of this Report

This Report provides an assessment of Environmental impacts of the proposed redevelopment, Master Plan Stage 1, at the RSL Anzac Village, Narrabeen (Figure 1).

This report is to accompany the Development Assessment that is to be submitted to Warringah Council.

Property

Name: RSL Life Care

Postal address: C/- TSA Management, L16 207 Kent Street, Sydney NSW 2000

Street or property Name: Veterans Parade

Suburb, town or locality: Narrabeen Postcode: 2101

Local Government Area: Warringah Council

Type of development: Redevelopment of existing structures

Location and Description of Proposed Development

The RSL ANZAC Village (the 'Village') is located on the southern side of Narrabeen Lakes, west of Veterans Parade and north of Lantana Avenue (Figures 1 and 2). The site overlooks bushland along the foreshore of the lake.

Buildings

The proposed development consists of the redevelopment of four existing areas to improve services to residents, cater for market demand and achieve the long term objectives of the Village. These four areas are:

- Village Centre (east and west): new village centre building over existing bowling green and includes residential apartments;
- Old Darby and Joan: replacement of 25 one-bedroom homes with 64 x 2/3 bedroom contemporary homes;
- New Darby and Joan: replacement of 30 one-bedroom homes with 62 new dwellings consisting of 38 x 2/3 bedroom contemporary homes plus two apartment buildings comprising 24 x 2/3 bedroom homes; and
- Potts Point Child Care Centre: to cater for 40 children.

Access

Proposed public road access for the Village includes Veterans Parade and Lantana Avenue by which there are currently four access points, with an additional access point proposed along Lantana Avenue to service Old Darby & Joan.

The access roads within the Village will be improved by providing additional roads through the New and Old Darby & Joan development areas and new links to the other parts of the Village including road widening in places (such as along James Wheeler Street in Old Darby & Joan) and additional parking bays. The new access roads to be provided for the New and Old Darby & Joan development areas are to comply with the requirements for Fire Fighting Vehicles.

Background

Reports have been compiled for this proposed re-development. All have been read and relevant documents were used as background to this report. In particular the Bushfire and Arborist Reports along with the survey drawings were used to determine impacts direct and indirect.

Supporting Reports

- Design and planning documents including detailed surveys provided by Young & Metcalf Architects.
- Bushfire Report By EcoLogical Australia (2009)
- Geotechnical Report by Jeffrey & Katauskas Consulting Geotechnical and Environmental engineers (2009)
- Arborist Report by UTM(2009)

In addition there has been extensive reports on the ecology of the wider area (background to the Dardanelles Development) is described in the Bushland Works Manual, including a list of relevant ecological management reports that were used to create the Bushland Management Plan for the site (GIS Environmental Consulting).

Other Relevant Reports

- Ecology Reports by GIS Consulting written for the adjoining Dardanelles development
- Monitoring Reports Dardanelles Dragonfly Environment (2009)
- NPWS Atlas Data base
- Warringah Council website and Plans of Management for near by Reserves.
- Narrabeen Lagoon Fauna Surveys – Warringah Council 2008/09

3 METHODS

3.1 Environmental Impact

The site was assessed in September 2009 and November 2009. The authors of the Report are familiar with the site and surrounding bushland including frequently sited listed fauna including Powerful Owl and Osprey.

Earlier studies have done comprehensive flora and fauna assessments of surrounding bushland (GIS Environmental). These were used as background information, as were records from NPWS Atlas Data base.

All areas of proposed redevelopment were assessed. A general assessment was done of the surrounding areas including the bushland area to the north and west.

Due the developed nature of the site and the limited habitat in the proposed redevelopment area the field work focused on location tracks, scats, hollows and other traces of fauna and fauna habitat – in particular tree hollows generally and in particular in trees that were listed, in the preliminary Arborist report, to be removed. Surveys did not include trapping, hair tubes or harp trap (bats).

4 RESULTS

4.1 Flora

Native plants growing on site are principally canopy species. Two species are most common the Scribbly Gum (*Eucalyptus haemastoma*) and Blood wood (*Corymbia gummifera*). Diversity is high with seven native species – excluding Banksia (listed below). All of which are described in the Arborist Report (Urban Tree management 2009) and shown on the survey drawings.

Remnant canopy species:

- | | |
|--------------------------------|--------------------------------|
| • <i>Eucalyptus botryoides</i> | Bangalay |
| • <i>Corymbia gummifera</i> | Red Bloodwood |
| • <i>Eucalyptus umbra</i> | Broad-leaved White Mahogany |
| • <i>Angophora costata</i> | Smooth-barked Apple |
| • <i>Eucalyptus haemastoma</i> | Scribbly Gum |
| • <i>Eucalyptus nicholii</i> | Narrow-leaved Black Peppermint |
| • <i>Eucalyptus microcorys</i> | Tallowwood |

The arborist report makes recommendations for some native trees to be retained. The Arborist Report and associated Survey drawings show trees are marked for retention and those for removal. The Arborist report lists the trees, gives, species, landscape quality and health and cross references with the survey plan.

The report also concludes that many Scribbly Gums (*Eucalyptus haemastoma*) are infected by a fungal canker that can weaken and kills this species.

Inspections as part of this ecology report observed trees noted for retention and those for removal. Trees noted for removal were examined (from the ground) with extra effort to determine location of key habitat features – hollows etc. The Bloodwoods were examined also for Glider chew marks – no chew marks were located on trees in the proposed development area. Sugar Gliders are within 2 km in Garigal National Park. Habitat on the site is marginal quality for arboreal mammals with many canopy breaks, virtually no mid-storey and little understorey.

Canopy species on the ridge are representative of vegetation communities not well represented such as Angophora Woodland.

Where trees are approved for removal seed should be collected at time of felling. Seed to be provided to local nurseries and Warringah Council for growing up. Canopy trees from the above species are to be planted on the site to ensure long-term canopy retention. This can be done while meeting bush fire requirements of APZs – see recommended conditions at the end of this report.

At least 100 canopy tree seedlings are required to be planted, in the total development area, to ensure approximately 40 trees become mature specimens. This number can be accommodated in the area while achieving canopy separation and distance from buildings as recommended in the Bushfire Management Plan.



Canopy trees provide key habitat by way of hollows – the recommendation section has conditions relating to tree hollows.

Other plant species on site are a mix of exotics, not recorded, and common natives. Principal native species are *Lomandra longifolia* and *Dianella caerulea*.

Threatened or Rare Species / Communities

No threatened or ROTAP native plants were observed in the proposed development site.

Endangered Ecological Communities and high priority habitats occurring within 1km of the proposed redevelopment (and down slope of) include: Swamp Mahogany Forest; Bangalay Forest; Palm Woodland and Angophora Woodland.

Threatened plants also occur within 1 km. A species recorded close by is *Pimelea curviflora* var. *curviflora* none occur within the area of the proposed redevelopment. See TSA Ecological Monitoring Report (Dragonfly Environmental 2009) for updated status on this plant population.

Fauna

While in the surrounding bushland fauna is diverse and includes threatened species - habitat on the site is fragmented and low quality. Mature trees provide hollows and bandicoots are expected to forage on open lawn area and go back to bushland areas for shelter in the day. Birds observed were the common species including:

Noisy Minor
Kookaburra
Lorikeet
Magpie
White Cockatoo

Arboreal Mammals could use the trees and hollows provided. They are not optimal though due to the disconnected canopy. Birds are more likely to use these hollows in particular White Cockatoos.

Threatened and Regionally Significant Fauna

On the way to a Site visit an Osprey was seen flying over Jamieson Park and the Lagoon and four Black Swans were seen on the Lagoon.

Threatened and Regionally Significant Fauna live in surrounding bushland. Habitat within the proposed development area is not suitable for these species nor is key habitat. The proposed development will have adequate safeguards to not impact on the surrounding bushland now or indirectly in the future.

The major threat to wildlife, from the proposed redevelopment, is inappropriate management of Companion Animals. Conditions can be applied to minimise impacts from Dog and Cats. This is discussed in the recommendations section.

Bushfire

Results of the Bushfire Assessment can be found in EcoLogical Report (2009).

In summary Bushfire mitigation (creation and maintenance of APZs)

“Vegetation removal works required to achieve an APZ are listed in Table 1 of the Report by Ecological 2009. Generally APZ work is limited to the improvement of the APZ to the west of the proposed New Darby & Joan within the pocket of landscaping bounded by a concrete footpath at the bend of Endeavour Drive”.

This pocket of bushland is situated within the existing 60 m APZ to the west of proposed New Darby & Joan and although it will be some 30 m from the development, it acts as a fuel source within the APZ and requires fuel reduction in the way of understorey removal. The pocket of bushland should be modified to achieve the general APZ fuel management specifications below”.

Generally speaking, the APZs within the Village should be maintained as follows:

“a) No tree or tree canopy is to occur within 2 m of a building;

b) The presence of a few shrubs or trees in the APZ is acceptable provided that they are well spread out and do not form a continuous canopy and are located far enough away from the development so that they will not ignite the building by direct flame contact or radiant heat emission;

c) Any landscaping or plantings should preferably be local endemic mesic species or other low flammability species;

d) A minimal ground fuel is to be maintained to include less than 4 tonnes per hectare of fine fuel (fine fuel means ANY dead or living vegetation of <6 mm in diameter e.g. twigs less than a pencil in thickness (4 t/ha is equivalent to a 1 cm thick layer of leaf litter)”.

Source: Bushfire Protection Assessment Proposed Redevelopment RSL Anzac Village, Narrabeen, ECOLOGICAL, (November 2009).

There is no significant impact on the environment as a result of creation and maintenance of APZs.

Key points from Ecological Report are repeated here:

“Although some management within the Council reserve to the north of the proposed Village Centre occurs, this cannot be relied upon for the proposal, and therefore an APZ cannot be extended in this direction. Improvements to the APZ to the west of the proposed New Darby & Joan are achievable, and

this is to consist of the removal of the understorey of the pocket of landscaping at the bend in Endeavour Drive, and weed control and removal for at least an additional 10 m to the west of the footpath. This will increase the APZ from approximately 60 m to 70 m.

North of Village Centre (east)

The managed grounds and Colooli Road provide an existing separation (APZ) from the bushland to the north of at least 30 m. There is an additional 10 to 20 m of land within the adjoining Council reserve that provides further bushfire protection for the development and existing village, however as this is within Council reserve it cannot be relied upon for the development.

West of Village Centre (west)

The managed grounds of the Village provide an existing APZ of 60 m, which is measured to the western edge of the footpath along the top of the gully. Beyond the footpath are landscaping, weeds and generally the bushland within the gully.

New Darby & Joan

The managed grounds of the Village provide an existing APZ ranging between 58 and 62 m, which is measured to the western edge of the footpath along the top of the gully. Beyond the footpath are landscaping, weeds and bushland within the gully.

Old Darby & Joan

The managed grounds of the Village provide an existing APZ of at least 170 m. There are no bushfire protection requirements for development greater than 100 m from bushland.

Potts Point Child Care Centre

The managed grounds of the Village provide an existing APZ of at least 140 m. There are no bushfire protection requirements for development greater than 100 m from bushland".

Source: Bushfire Protection Assessment Proposed Redevelopment RSL Anzac Village, Narrabeen, ECOLOGICAL, (November 2009).

Water Quality

Sediment and erosion controls on the proposed development are required to be well managed so there is no soil entering Narrabeen Lagoon from RSL Creek. Stormwater runoff from all developed areas to be contained for nutrient and silt removal prior to entering surrounding waterways.

It is noted that the geotechnical report summarises that no dewatering of the site is required.

Weed propagules in storm water act as a major contributor to bushland weeds. The source weed seeds and weed propagules should be removed from the site – particular environmental weeds. Instigate weed eradication and weed control maintenance regime. Assist residents in getting non-invasive exotics and utilising native endemic stock.

Fencing and Signage

Fencing and signage is required to retain desirable canopy trees. Signage and exclusion fencing is to be as per final recommendations, to come, from Arborist report.

5 Plates



Plate 1: Example of canopy trees with understorey of Lomandra and exotic species.



Plate 2: Example of canopy trees with understorey of Lomandra and exotic species.

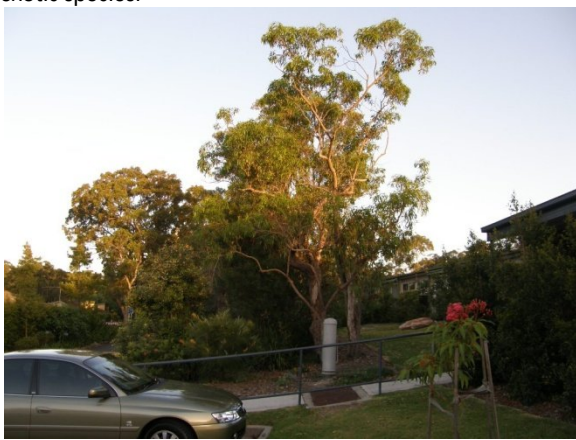


Plate 3: Example of canopy trees with understorey of exotic species.



Plate 4: Example of canopy trees with understorey of exotic species.



Plate 5: Example of canopy trees with no mid or understorey



Plate 6: Example of canopy trees with understorey of *Lomandra longifolia*, *Dianella caerulea* and exotic species.

6 Conclusions and Recommendations

Vegetation Communities

Aim is for the conservation of high priority habitats and communities include: Swamp Mahogany Forest; Bangalay Forest; Palm Woodland; and Angophora Woodland.

This will occur as there is no significant bushland clearing required for APZ and only remnant canopy trees of Angophora Woodland occurs in the proposed redevelopment area.

Sustaining Native Plant Diversity

Native Plant diversity is to be retained by including endemic plant species in final landscape design, for communal areas. There is to no plantings of environmental weeds and exotic species (all must be non-invasive) are to be contained within building enclaves .

Public Access to Bushland

Support only appropriate access – that is keep public access to approved trails.

Domestic and feral animals

For the protection of native animals Companion Animals, where permitted, must be indoors or on a leash at all times. Domestic animals should not permitted in the bushland reserve.

Tree Hollows

Aim is to retain old hollow bearing trees and stags. Removal of hollows is a Key threatened process listed on the Threatened Species Conservation Act. While habitat in the proposed development site is not optimum rare and/or Threatened Species that use hollows could occur in the area including micro bats.



Outside of the approved development zone, and requirements of the APZ, maintain mature hollow bearing trees including stags that may be utilised as roosting and nesting habitat by bird and arboreal mammal species (including bats).

Hollows are likely to occur in the older trees – though none were seen from the ground observation.

Nest boxes specifically designed for locally native arboreal mammals and native birds have been recommended to assist in there being no net loss of hollows fro the site.

If mature trees, that are likely to have hollow, are approved for removal they must be inspected for fauna, at least by the tree lopper, prior to felling.

A wildlife carer is to be present for all tree removals. Cut pieces with hollows are not to be chipped prior to being inspected by the wildlife carer. Hollows suitable for relocation on the site or in the reserve are to be kept - not chipped. Relocation of hollows can be done by those contracted to remove trees as part of their contract. Placement of hollows in Council Reserve will need Council approval prior to this occurring. Wood with hollows not replaced on site should be offered to WIRES or Sydney native Wildlife Rescue Service or Warringah or Pittwater Councils for fauna habitat.

Sustaining Tree Canopy on the Site

Canopy Trees planted as replacement trees and to provide saplings to replace the current canopy are to be sourced from local seed within 5 Km of the site adhering to the Flora Bank Guidelines. Where local native trees are approved for removal seed is to be collected at time of felling.

Seed to be provided to local nurseries and/or Warringah Council for propagation.

At least 100 canopy tree seedlings are required to be planted, in the total development area, to ensure approximately 40 trees become mature specimens. This number can be accommodated in the area while achieving canopy separation and distance from buildings as recommended in the Bushfire Management Plan.

Trees planted to be from the following species and including at least 5 different species.

- *Eucalyptus botryoides* Bangalay
- *Corymbia gummiifera* Red Bloodwood
- *Eucalyptus umbra* Broad-leaved White Mahogany
- *Angophora costata* Smooth-barked Apple
- *Eucalyptus haemastoma* Scribbly Gum
- *Eucalyptus nicholii* Narrow-leaved Black Peppermint
- *Eucalyptus microcorys* Tallowwood

6 QUALIFICATIONS ECOLOGISTS

Tabulated below are details regarding Dragonfly Environmental's qualifications and experience of the Ecologist involved in the field survey and report writing.

Employee & Position	Qualifications	Experience
Mia Dalby-Ball Ecologist	• B. Sc. Ecology (Hons) • Senior Report Writer Dragonfly Environmental • Manager Natural Resources Unit, Pittwater Council • Member of ECA NSW.	Mia has expertise and experience in environmental management of terrestrial and aquatic ecosystems. Mia is skilled in experimental design and analysis; research; wetland design and management; teaching (Sydney University and TAFE), environmental legal work, negotiating and strategic planning regarding environmental outcomes. Mia has contributed to many community and professional workshops on environmental issues. Mia has excellent public relations skills and is experienced in liaison with and between groups including community members, councils, government agencies—such as DECCW and organisations such as Sydney Coastal Councils group, and other community and government groups. Mia has up to date knowledge of environmental policies and guidelines and frequently provides input to such works. Mia is a key speaker at Environmental Conferences..
André Olson, Director / Ecologist	• B. Sc. (Aquatic Science) Majoring in Aquatic Biology & Aquatic Botany. • Conservation and Land Management – Natural Area Restoration (Bush Regeneration II equivalent) • Arboriculture Cert I Ryde TAFE • Practising Member of ECA NSW.	Andre is the Director of DFE Pty Ltd and has specialised in Environmental Consultancy for over ten years. He has experience with preparing high-quality environmental reports. He has excellent knowledge on current state and local authority regulations, standards and practices that apply and the reporting requirements to satisfy the various approval processes. Andre's valuable local ecology knowledge is gained from working and living on the Northern Beaches for 7+.



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