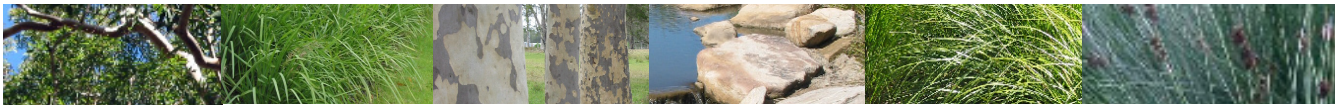
MARMONG STREET RETIREMENT LIVING

EMPOWERED LIVING SUPPORT SERVICES

Category 3 Landscape Documentation

Marmong Street, Marmong Point



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EMPOWERED LIVING SUPPORT SERVICES

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LANDSCAPE MASTERPLAN REPORT

October 2012

Contents

1.0 Introduction

1.1 Background

The primary goal of this report is to communicate the ideas, principles and opportunities incorporated into the Landscape DA Documentation for the Marmong Street Retirement Village situated on Lot 1 DP 377679 and Lot 784 DP 533494 Marmong Street, Marmong Point. The proposal comprises forty-seven village lots with ninety four units and a community centre building containing a pool, gym facilitity and activities area. The site exists within Lake Macquarie's LGA and is currently under two zones, Conservation (Secondary) – Zone 7(1) and Investigation – Zone 10 under the Lake Macquarie City Council Local Environment Plan (LMCC 2004).

Empowered Living Support Services have commissioned Moir Landscape Architecture Pty Ltd to prepare the landscape documentation and report to outline the key landscape design elements and treatments to support the proposal. The landscape DA documentation and report: LP01-LP16 have been prepared to comply with the requirements of Lake Macquarie City Council's DCP1 by accredited Landscape Architecture practice, Moir Landscape Architecture Pty Ltd.

1.2 Site Description

The site is located at Marmong Point, towards the north-western corner of Lake Macquarie and approximately 16 kilometres south-west from Newcastle's CBD. The site is approximately 33ha of which 27ha is dominated by naturally occuring native forest with varied levels of disturbance, several informal walking tracks and unsealed fire trails, 4.4ha of cleared land and a 1.7ha Lake associated with the sites past use as a sewer treatment plant. The site is bounded to the North, East and West by established residential areas and to the North West by Marmong Creek and to the North East by the edge of Lake Macquarie. Access to the site is currently via Marmong Street. An existing sewer pump station remains in the North Western corner of the site.

Vegetation within the site consists predominantly of Coastal Plains Smoothed-barked Apple Woodland (21.8ha) on the higher southern portion. Swamp Sclerophyll Forest and Swamp Oak Floodplain Forest feature on the lower portions of the site to the north on land associated with Marmong Creek and the SEPP 14 Wetlands adjacent to the Lake Macquarie inlet.

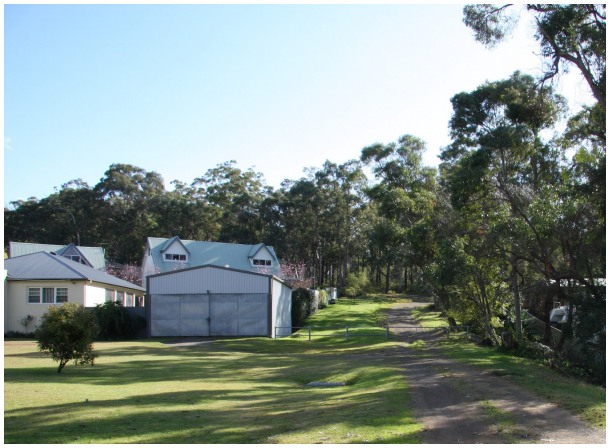
Weed infestation is at approximately 10% in the undisturbed forest areas increasing to a dominance of 90% exotic species in disturbed land associated with the sewer site and on the fringe of established residential areas to the South, East and West.

Topography of the land is gently undulating with two ridgelines running south to west through the

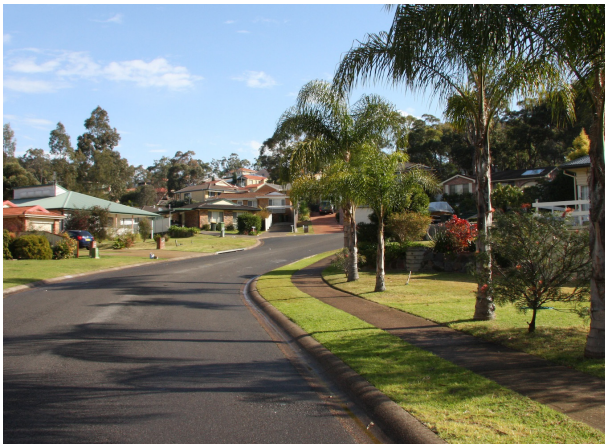
centre of the site. The site falls from a high point of 42 Australian Height Datum (AHD) from the centre of the southern boundary to a low point of 2 AHD at the Northern Boundary adjacent to Marmong Creek. Access through to the site is currently via Marmong Street.

Figure 1 - Site Locality Plan

2.0 Site Photographs

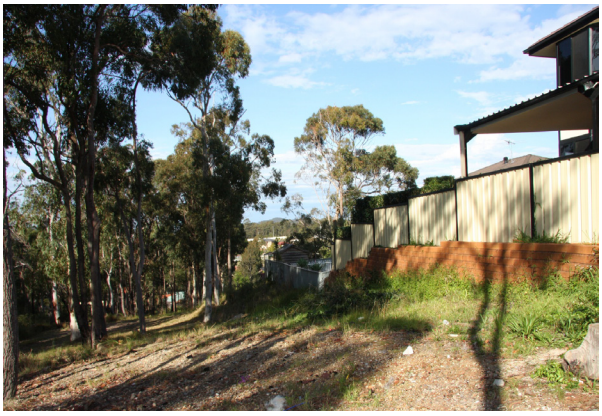


1. Existing site entry off Marmong Street. An unsealed road extends north into the site providing direct access to the old sewer site



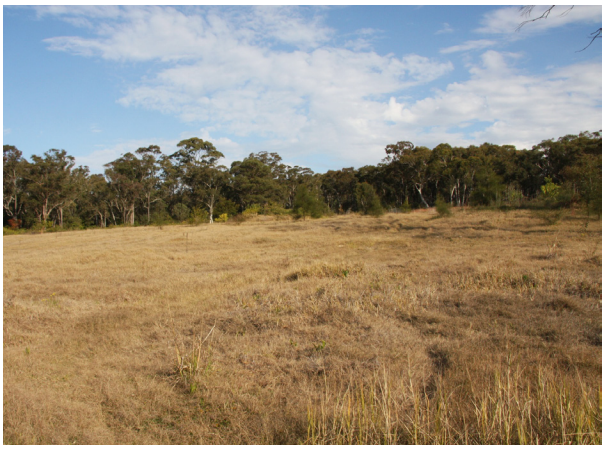
2. View looking south west across Kylie Close. The landscape character of the immediate area is typically suburban dominated by a mix of 1 and 2 storey modern dwellings fringed with natural bushland.

3. Photograph showing the fringe effect of residences backing directly on to the site along the South Eastern boundaries. Trees are retained however exotic species dominate the understorey.

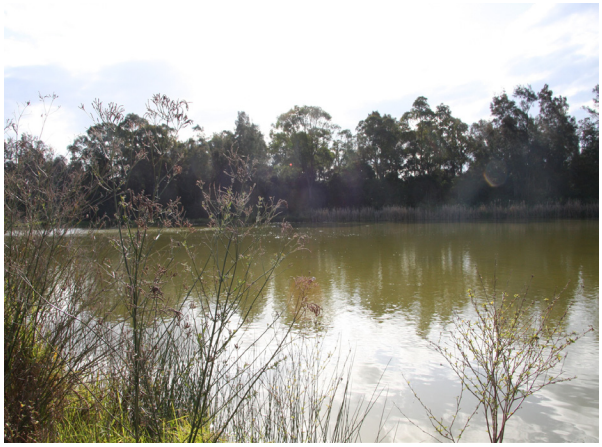


4. View from the site high point towards Tingira Knob (Eleebana) on the eastern side of Lake Macquarie. Existing houses in the foreground from Defender Close.

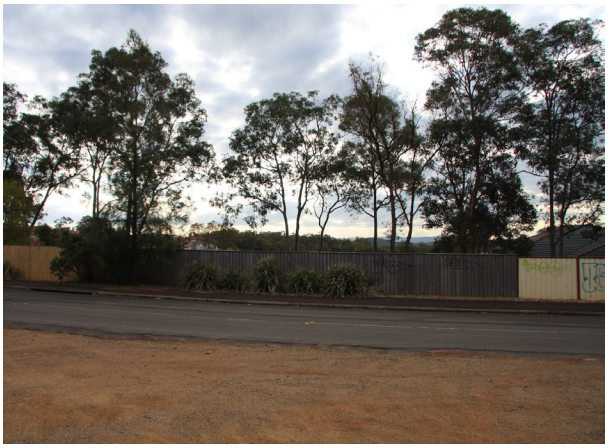
5. Photograph giving a general indication of the existing vegetation located towards the western half of the site.



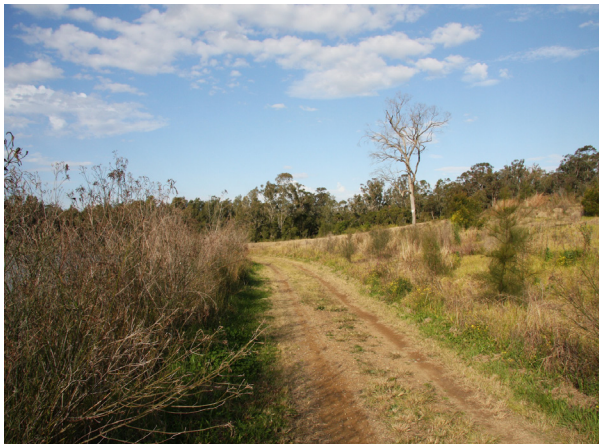
6. The cleared area associated with the former sewage works.



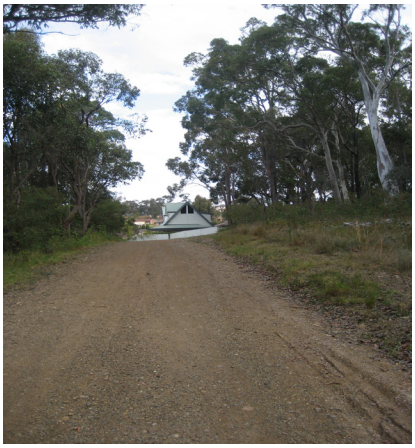
7. View of existing pond surrounded by mature riparian vegetation associated with Marmong Creek to the north-east and north-west.



8. View north west towards the site from 'The Ridgeway'. Views to the site are obscured by existing vegetation, development and topography.



9. View of unsealed road along the southern edge of the existing pond.



10. View south west towards the Marmong Street entry.

3.0 The Proposal

3.1 Proposed Development

The proposed development consists of 94 seniors living dwellings on 47 lots, including 86 three bedroom dwellings with double garages and 8 two bedroom dwellings with single garages. The development also includes a community centre building containing a gym/indoor pool and activities space, competition grade bowling green, hardstand area for maintenance, a playground, a community garden and extensive functional open space areas incorporating seating, shelter and barbecue facilities.

The proposed development area covers approximately 8.5ha including roads and Asset Protection Zones (APZ) and is situated on the site of the former sewer treatment plant minimising the impact on the existing natural vegetation. In total the proposal results in a loss of approximately 3.3ha and the retention of 19.8ha of remnant vegetation.

The 94 dwellings are situated in the centre of the development area and are surrounded by a perimeter road and open parkland which functions as a movement corridor, open space and the APZ. The small lake that remains as a legacy of the previous land use is a key feature of the development with a bowling green and promenade proposed on the lake edge. Four central roadways that provide access to the dwellings, terminate predominantly on open space to the south, wast and community facilities to the north ensuring that a sense of openess is maintained in the residential precinct.

An extensive pedestrian network extends throughout the village connecting residences with community facilities and promoting exercise as the pathways meander through the open space areas. Proposed pathways will also connect to Marmong Street and Woodside shopping precinct.

3.1 Proposed Landscape

The proposed landscape is intended to provide a safe, functional and attractive environment that encourages physical activity and social engagement. The design is driven by key principles specific to seniors living and principles that are specific to the site that respond its unique qualities and environmental attributes

Key Principles:

- An extensive pathway network should provide pedestrian access that is safe, legible and interesting.
- To contrast with the dense nature of the residential precinct recreational areas should feel

spacious, open and inviting.

- Open space areas should be provided that cater for a diverse range of passive and active functions and a range of abilities.
- Recreational facilities should be provided that encourage the families of residents to visit and that can accommodate larger family social gatherings.
- Recreational facilities should accommodate and promote cross generational interaction
- Recreational facilites should be flexible to accommodate large groups or a number of small gatherings.
- Where pedestrian pathways and roadways meet contrasting materials should be incorporated that indicate priority to pedestrians.
- Species selection should seek to supplement the existing site habitat.
- The proposed landscape should facilitate the visual integration of the development into the existing bushland character of the site.
- Residential landscaping should provide privacy and promote passive solar climate control.
- Streetscape treatments should reflect the heirarchy of the internal traffic network to assist in navigation.
- Streetscape treatments should vary in detail to assist in navigation and identificaiton of precincts.
- Nodal feature planting should be utilised to assist in the identification of the function and significance of major access points, rest areas and intersections
- Stormwater management should be integrated with the landscape to improve the viability of plantings, improve water quality and to maintain the existing hydrology of the site.
- The implementation of a sustainable landscape is imperitive to minimise ongoing management costs and demand on resources whilst also ensuring the long term viability of the climatic, aesthetic, ecological and psychological benefits the proposed landscape provides.

3.2 Landscape Theme

The landscape theme of the development seeks to reinforce the natural setting of the development through the use of natural colours, materials and planting that will assist in visually integrating the development with it's surrounds.

In keeping with the Key Principle of providing a sustainable landscape, planting in the residential areas will be a mix of deciduous exotic tree species to assist in passive solar climatic control of the dwellings and the streetscape. Deciduous shade tree planting can have a significant impact on energy consumption by reducing ambient temperatures during summer and increasing them in winter reducing reliance on air conditioning and heating. High canopy trees are desirable as

they maintain physical and visual access, particularly when accompanied by low level shrub and groundcover planting.

Planting on the entry and perimeter roads utilise endemic tree species that are proven in urban environments yet will provide a transition between the residential precincts and the surrounding natural landscape. Planting in the open space areas consists predominantly of endemic tree species to provide habitat and visual integration, exotic tree species are utilised sparingly for nodal identification and in high use areas to encourage year round use. All proposed planting in the perimeter roads and the surrounding open space has to conform with the APZ requirements which includes minimising contiguous canopy which limits the density of the tree plantings.

Material selection and repetition is key in establishing a theme. Timber and steel will be utilised sensitively in site signage and furniture whilst concrete pathways will be treated with shotblast treatments to reduce glare and enhance visual integration. The texture, colour and form of the surrounding natural landscape will inform the design of landscape feature elements.

3.3 Key Features

Entry Road

The proposed entry road extends through retained and enhanced natural bushland. The separation of the development from the established residential area of Marmong Point will provide a sense of exclusivity and retreat enhanced by the tranquility of the bushland setting.

A 1.8m pedestrian pathway extends the length of the entry road, to the acoustic wall where the path becomes 1.5m, providing access to Marmong Street and onwards to the Lake Macquarie foreshore, Marmong Marina and bus stops on George St and The Ridgeway. Appropriate entry signage is proposed at the property boundary and village entry and an orientation bay is proposed prior to the intersection with the internal perimeter road allowing visitors to locate the destinations prior to entering the site, this will assist in reducing internal traffic movement.

Entry Parks & Perimeter Parkland

Landscaped open space at the south eastern end of the residential rows provides a parkland entry for visitors and residents as they arrive at the intersection of the entry road and the perimeter road. This is further reinforced by the parkland edge to the perimeter roads which provide access to the key attractions of the village. Pedestrian pathways meander through the parkland separated from the roadway by planting and bollards.

Perimeter Carparking

46 visitor carparking spaces (including 4 disabled parks adjacent to the community centre) are distributed thoughout the village in the form of intermittent parking bays accessed off the perimeter road. The parking bays are concentrated around key attractions and have been kept to a minimum of 7 contiguous bays to ensure that large expanses of hard surface are avoided. It is proposed that the parking bays will be surfaced with permeable paving to minimise run off and to support the viability of surrounding shade planting.

Picnic Area & Playground

Within the north eastern perimeter parkland a large picnic area and playground is proposed to provide a facility where families of residents could visit for extended periods outside of the confines of the dwellings. The picnic area will consist of large barbecue shelters to cater for a range of events. The concept behind the Picnic Area and Playground is to provide amenity that makes it easier for families to visit relatives and to promote cross generational interaction.

Village Lake

The existing lake at the northen extent of the development area is proposed to be retained as a key feature of the village. The proposed Lake Promenade positioned between the community centre, bowling green and the lake edge provides residents with numerous seating and viewing areas that capitalise on the attraction of water and extensive views across to the natural vegetation associated with Marmong Creek. As the lake is currently stagnant an aeration water feature is proposed within the eastern area of the lake to improve the health of the water body so that it may become viable habitat for fish, amphibians and water fowl. Although the lake is not suitable for swimming it does provide for other recreational activities such as kayaking and model boat racing.

Bowling and Putting Greens

Putting greens and a competition grade bowling green are proposed adjacent to the Community Centre to promote physical activity and as a focus for social interaction. Ample seating, shade tree planting and shade structures are proposed to provide a comfortable environment for participants and spectators. The positioning of these facilities close to the community centre are intended to encourage an active and inclusive culture within the village.

Residential Landscapes

Each dwelling will be provided with a paved courtyard. Garden areas will be planted to enhance the streetscape setting and to differentiate between public and private space. Planting between dwellings will be structured to provide privacy and an attractive outlook for residents. A timber screen between dwellings will provide privacy in courtyard areas while a 1.2 m high black pool fence will allow for visual surveillance to be maintained. Small deciduous trees are proposed for gardens adjoining the north, east, and west facing courtyards where there is adequate planting space. This will allow solar access in winter and shade in summer providing for year round use.

Streetscape & Pathway Planting

The value of street trees in the suburban environment is more than visual. They help control urban run-off, purify the air, shade the streets and play a role in traffic management. They also provide habitat links between wildlife corridors and the surrounding bushland areas. The streetscape assists in establishing unique landscape themes for individual precincts within the development.
The street trees selected are a mixture of Australian natives and exotics. Natives are well suited to the local conditions and will provide good visual integration with surrounding areas of bushland. Street trees create a pleasant link between residential areas, community facilities, and areas of open space. Feature trees are to be planted at intersections and nodal points to highlight these locations.

Advantages of Exotic Species within the village

- Deciduous trees for shade in summer and sunlight in winter.
- Flowering trees for seasonal colour
- Feature trees to highlight entries point, terminate views and contrast against a backdrop of native vegetation
- The use of species which are not classified as environmental weeds and will not pose a risk of invading adjoining bushland areas

Advantages of locally native species include:

- Well suited to the local conditions (soil type, climate etc).
- Blend with adjoining bushland areas and reflect the character of the surrounding area.
- Provide habitat and food for animals and create habitat links and corridors through the site.
- The use of plant material from locally sourced seed assists in maintaining genetic integrity of local plant communities.
- Reduce the visual effects of urban development and retain the landscape character of the area.

- Ease of maintenance following initial planting and watering

Supplementary planting in bushland fringe areas

Supplementary planting of endemic species combined with retention of large areas of bushland will assist in maintaining the ecological integrity of the vegetation communities.

Benefits

Street trees perform numerous functions in the suburban environment. These include the following:

- Humanising the scale of streets and shading streets and footpaths.
- Reducing traffic speeds.
- Passive climate control.
- Framing desirable views and screening undesirable sights.
- Introducing natural sound, scent, and movement into the environment.

Design Principles

- A network of themed streets to strengthen the legibility of the road hierarchy, assist in navigation and create identities for different precincts.
- Trees and vegetation combinations that will be a year round feature.
- Trees which form a clean trunk to maintain vehicular site lines and allow passive surveillance of open space areas.
- Feature trees to mark site entry points, intersections, and other visually prominent areas.
- Trees which are hardy and long lived.
- Tree species selected take into consideration the specific climatic and soil conditions of the site.
- The selected species that are of an appropriate character and are in context with the surrounding landscape.

3.4 Species Selection

Plants selected for use throughout the development combine a mix of exotics and locally native and Australian native species.

Exotic species have been incorporated into the planting scheme for the village to provide greater diversity in colour, texture and form in the built areas

Botanical Name	Common Name	Height (H) x Width (W) at maturity (m)	Pot Size
Araucaria heterophylla	Northfolk Island Pine	25H x 15W	45 Litre
Betula nigra 'Dura Heat'	Tropical Birch	10H x 6W	45 Litre
Brachychiton acerifolius	Illawarra Flame Tree	10-12H x 6-8W	45 Litre
Corymbia maculata	Spotted Gum	18-20H x 12-15W	25 Litre
Cupaniopsis anacardiodes	Tuckeroo	8-10H x 8-10W	25 Litre
Harpullia pendula	Tulipwood	8-12H x 6-8W	45 Litre
Lagerstroemia indica 'Natchez'	Crepe Myrtle Cultivar	16-18H x 5-7W	45 Litre
Lophostemon confertus	Brush Box	12-15H x 10-12W	45 Litre
Platanus acerifolius	Plane Tree	15-20H x 12-16W	100 Litre
Plumeria rubra	Frangipani	5-8H x 5-6W	100 Litre
Pyrus ussuriensis	Manchurian Pear	9-10H x 7-8W	45 Litre
Sapium sebiferum	Chinese Tallow Tree	8-10H x 5-7W	45 Litre
Tristaniopsis laurina 'Luscious'	Water Gum	10-12H x 6-8W	45 Litre

Note: Height and spread at maturity approximate only.

Shrubs, Grasses & Groundcover (Community Facilities + Villas)

Botanical Name	Common Name	
Shrubs		
Acacia fimbriata 'Nana'	Dwarf Fringed Wattle	200mm dia
Acmena 'Allyn Magic'	Dwarf Lilly Pilly Culitvar	150mm dia
Murraya paniculata	Ornage Jessamine	200mm dia
Nandina 'Gulf Stream'	Dwarf Sacred Bamboo	150mm dia
Philotheca myoporoides	Wax Flower cultivars	150mm dia
Raphiolepsis indica Cvs.	Indian Hawthorn cultivars	150mm dia
Syzygium australe Cvs.	Lilly Pilly Cultivars	200mm dia
Syzygium 'Cascade'	Powder Puff Lilly Pilly Cultivar	200mm dia
Syzygium leuhmanii 'Lulu'	Lilly Pilly Cultivar	200mm dia
Westringia fruticosa 'Zena'	Coast Rosemary Cultivar	200mm dia

Ferns

Asplenium australasicum	Birds Nest Fern	200mm dia
Blechnum nudum	Gristle Fern	150mm dia
Cyathea australis	Rough Tree Fern	0.75-1.5m Trunk
Doodia aspera	Rasp Fern	150mm dia

Grasses / Grass-like Plants

Anigozanthus cultivars	Kangaroo Paw Cultivars	150mm dia
Dianella caerulea Cvs.	Flax Lily Cultivars	Tubestock
Liriope Cvs.	Liriope Cultivars	150mm dia
Lomandra confertifolia Cvs.	Fine Leaf Mat Rush Cultivars	Tubestock
Lomandra hystrix	Mat Rush	Tubestock
Lomandra longifolia Cvs.	Mat Rush Cultivars	Tubestock
Hymenocallis littoralis	Spider Lilly	150mm dia
Pennisetum 'Nafray'	Dwarf Fountain Grass	Tubestock

Accent Plants

Alpinia caerulea 'Redback'	Native Ginger	150mm dia
Doryanthes excelsa	Gymea Lily	200mm dia
Xanthorrhoea johnsonii	Grass Tree	25 Litre

Groundcovers / Climbers

Acacia cognata 'Limelight'	Blue Dampiera	150mm dia
Baeckea virgata 'Nana'	Dwarf Baeckea	150mm dia
Gazania hybrida	Gazania	150mm dia
Dampiera stricta	Blue Daampiera	150mm dia
Myoporum parvifolium	Creeping Boobialla	150mm dia
Philodendron 'Xanadu'	Dwarf Philodendron	150mm dia
Trachelospermum jasminoides	Star Jasmine	150mm dia
Viola hederacea	Native Violet	150mm dia

Drainage Swales / Lake Edge Planting

Sedges & Rushes

Carex appressa	Tussock Sedge	Tubestock
Dianella caerulea	Flax Lilly	Tubestock
Eleocharis sphacelata	Tall Spike-Rush	Tubestock
Gahnia clarkei	Saw Sedge	Tubestock
Isolepsis nodosa	Knobby Club Rush	Tubestock
Juncus usitatus	Common Rush	Tubestock
Lepidosperma laterale	Variable Sword Sedge	Tubestock
Lomandra sp.	Mat Rush	Tubestock
Schoenoplectus mucronatus	Star Clubrush	Tubestock

4.0 Management of Existing Vegetation

4.1 Vegetation Management

The proposed treatment for the retained bushland areas identified on the plans will primarily be an exercise in bush regeneration. This section of the Landscape Design Report provides a clear outline for the ongoing retention, protection, rehabilitation and management of existing vegetation to be retained, clearing for proposed development and bushfire protection, and replanting in degraded areas which form part of the broader network of open space.

Currently the majority of vegetation to be retained on site is in good condition. The following methodology applies to those areas:

- Containing weeds / rubbish;
- Cleared of vegetation (upper, middle and lower stratums); and
- That will be modified or cleared for bushfire protection or bulk earthworks associated with the civil works.

Key Objectives:

To maintain a network of natural or semi-natural habitats and to re-establish missing sections of natural habitats.

- Retain and protect existing native vegetation unaffected by proposed development.
- To enable appropriate development where allowed with consent.
- Provide a self-sustaining environment utilising endemic species to build on vegetation communities originally occurring in the local area.
- Establish a monitoring and maintenance program ensuring continued success of the rehabilitation works.

Retention & Protection of Existing Vegetation

All vegetation identified for retention on the plans is to be protected from earthworks and machinery. Retained vegetation is to be protected in accordance with the principles outlined in AS4970-2009 (Protection of Trees on Construction Sites). These areas are valuable sources of seed and require a system of hand weeding to remove exotic species and encourage the regeneration of native plants and seed stocks. Where possible, existing native trees on fringe areas will be retained and incorporated into open space areas. It is desirable that some of the mature native vegetation remain as valuable habitat trees for birds and other native fauna.

The boundaries of the tree protection / exclusion zones should be identified and protective fencing installed prior to any other work on site is undertaken to clearly identify those areas to be protected. All personnel involved in the clearing and construction operations for the site should be inducted on the significance of the conservation areas of the site prior to approval to commence clearing.

General Principles:

- All native trees to be retained are to be flagged and fenced to a suitable distance for protection of the root structure. signage to warn that trees are to be protected
- A suitably qualified person is to check, and sign off, that remnant trees are appropriately marked and fenced.
- The area within the identified SEPP14 Wetland and EEC zones is to be kept free of construction material and debris.
- Prevention of damage to tree bark
- Prevention of compaction to the ground under trees.

4.2 Vegetation Clearing

The limits of clearing including stockpile areas should be designated and clearly marked. Solid barricades or fencing should be erected to ensure protection of retained vegetation. Felled native trees should be chipped and stockpiled to produce mulch for future landscape works.

All vegetation to be cleared will be removed with the lowest possible impact. The trees are to be felled in accordance with the Ecologists recommendations to ensure wherever possible survival and relocation of native fauna.

Prior to any clearing:

- Seed collection on site from native plants should be carried out months prior to clearing, or planting stock should be sourced from nurseries producing stock from locally sourced seed
- Plant propagation for revegetation is to be well underway and ordering of additional species is to be made if not enough local seed is collected.
- Induction for all works staff is to be carried out, covering general environmental awareness procedures, cultural heritage awareness, risks to fauna and flora, fauna rescue protocol, notification of remnant trees for preservation, and erosion and water quality issues.

During clearing:

- Introduced plants cleared from the site must be stored and disposed of appropriately to ensure weeds do not spread.
- Exposed soil is to be immediately covered by erosion control material and or planted and mulched.
- Hollow bearing Trees: All hollow bearing trees proposed for clearing are to be inspected by a qualified ecologist prior to clearing and supervised during felling.

Retaining Green Waste on Site

Once the vegetation is cleared, the green waste is to be mulched on site and stockpiled for use on re-vegetated areas. This mulch is to be well composted prior to reuse on site. Care should be taken to ensure weed seed is not included in the tub grinding process.

4.3 Sediment and Erosion Control

Best practice erosion and sedimentation control measures are to be installed in all appropriate drainage areas where surface runoff is likely to enter vegetation protection zones or rehabilitation areas, in particular the existing onsite pond, SEPP14 Wetland and EEC areas. Control devices should be periodically checked and maintained throughout the duration of the clearing and construction phases, and particularly after each period of substantial rainfall.

Principles include the following:

- Retention of existing vegetation to stabilise and trap sediments;
- Ongoing revegetation of the site including top-soiling and revegetation of batters, embankments and disturbed areas immediately after construction;
- The use of erosion control products such as biodegradable matting to steep sections subject to erosion; and
- Controls during construction including temporary drains, sediment fences and traps and swale drains.

4.4 Soils

Soil Testing

Substrates suitable for landscape works should be identified and tested during site investigations for their suitability to support plant growth. Substrate materials should be stockpiled on site and protected from erosion for later placement to newly formed batters and revegetation areas. Soil will be tested and the nutrient levels and pH adjusted as required. Fertilisers and soil ameliorants

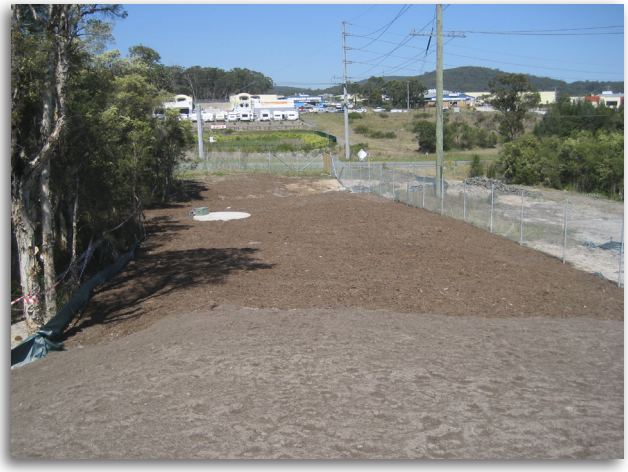
should also be used where soil tests indicate the need. It is proposed the existing site soil be improved by incorporating organic matter and soil conditioner to improve its capacity to store and retain water. Carry out soil tests in accordance with the guidelines recommended in AS4419 – 2003 (Soils for Landscaping).

4.5 Mulch

Mulch specified for external mass planting areas should be a locally sourced, recycled product. Benefits of mulching include:

- Mulch will help prevent the germination of many weed species.
- Mulch helps retain soil moisture, reducing the need for watering.
- Mulching protects the soil from the impact of raindrops.
- Mulch encourages the growth of worms and other beneficial soil organisms which help improve soil structure and the availability of soil nutrients to plants.

Mulch stockpiling.



Top soil and mulch spreading.

4.6 Weed Management

Weed removal in landscaped areas and areas of retained on-site vegetation is to be carried out for the life of the maintenance period. Identified weed species should be removed by hand, taking care not to dislodge seeds, off cut limbs, or leave rootstock in the ground. Weed removal should be timed to minimise weed germination and seed dispersal. Care should be taken to minimise disturbance to existing juvenile natives and any disturbance to the soil.

Acceptable methods may include:

- On larger woody weeds, cutting the trunk and poisoning the remaining stump with concentrated glyphosate herbicide.
- Spraying actively growing leaves with glyphosate herbicide.
- Hand removal of the entire plant taking care not to leave plant material or dislodge seeds.

Displaced weed material is to be disposed of off site where there is no potential of seed dispersal. Where areas of ground are disturbed from the weed removal the soil shall be tamped into place and covered with site leaf litter or site mulch (free from weed seed) to avoid erosion. Follow up weeding is essential to ensure the success of the initial weeding activities and should be carried out at regular intervals throughout the maintenance period. Weed germination may occur in areas to be planted. This can be controlled by light scarification. Herbicide application shall only be used where there is no possibility of damage to native vegetation from overspray or wind drift. Herbicide should be used in accordance with the manufacturers' recommended rates. A follow up treatment, two weeks after the initial spray is required to kill any regrowth of seed. Approved herbicide: Glyphosate.

4.7 Plant Establishment & Maintenance

During plant establishment the landscape works should be checked regularly for plant health and weed invasion. Regular inspections will reduce the potential for minor infestations becoming major problems. Weed control and ongoing plant maintenance will be carried out for a minimum of 12 months. All rubbish related to landscape works shall be removed by the landscape contractor before it is allowed to accumulate.

During the maintenance period the landscape contractor shall undertake the following: Regular watering, weeding, mulching and other activities as required to promote healthy growth. Replace any dead or dying plants within this period. Contingency funds should be made to replant failed areas. The landscape areas should also be monitored to document such things as growth rates, success and failures. Monitoring of the growth, root distribution and transpiration rates of establishing species will help identify species that are successful and suitable for use in future stages or as replacement plantings.

4.8 Asset Protection Zones

An Asset Protection Zone (APZ) is a requirement of the NSW Rural Fire Service and is designed to protect assets (houses, buildings, etc.) from potential bushfire damage. The APZ is measured from the asset to the outer edge of the vegetated buffer.

Signage in open space areas is proposed to demarcate between the APZ's and the rehabilitation areas. This will provide a clear indication of where vegetation is to be managed and what can be retained as naturalistic bushland. Most of the APZ's have been incorporated into residential lots providing residents with the opportunity to manage their own APZ areas or within road reserves.

In accordance with recommendations outlined by Australian Bushfire Protection Planners an 88B Covenant shall be created on the title of the future residential lots burdened by the prescribed APZ so as to ensure the ongoing management of the landscaped gardens / residual vegetation within the development in accordance with the provisions of an Inner Protection Zone.

APZ and cleared understorey.

4.9 Bushfire Hazard Reduction

Proposed landscape treatments in the APZ's conform to the independant Bushfire Hazard Assessment Report (Barry Eadie Consulting Pty) and its recommendations for maintaining a control barrier between bushland and residential areas.

Tree species proposed adjacent to the residential dwellings and community facilities have been selected specifically for the fire retardent nature and ability to catch and control embers. Low level managed turf and native grass plantings around tree plantings ensure ease of management and fuel control. Native gums are located within landscape areas to ensure the character of the area is maintained, while precaution has been taken to ensure canopies do not interlock at a mature age.

The following recommendations included in the report have been adheared to in the landscape masterplan to comply with the proposed APZ and IPA.

- Vegetation is not to touch or overhang dwellings (canopy vegetation must not be within 5 metres of any building / dwelling);
- Vegetation is not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period; and
- Vegetation is located far enough away from dwellings so that it will not ignite the dwelling by direct flame contact or radiant heat emission.