



PLAN OF MANAGEMENT

Natural Areas — Maianbar



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1. INTRODUCTION

1.1. Background

The provisions of the Local Government Amendment (Community Land Management) Act 1998 to Local Government Act, 1993 provided Councils across NSW with the tools and guidelines to move towards positive land management practices with definite objectives.

Council prepares Plans of Management for all community land in its LGA. Plans of Management identify objectives, performance targets, means of achievement and assessment criteria, all of which are accountable to the community. The Plans allow Council to effectively co-ordinate present and future use of public land within its local government area.

A Plan of Management is not the only document that governs the use and management of community land. Under the Act, community land is required to be used and managed in accordance with the following:

- The Plan of Management applying to the land;
- Any law which permits the use of land for a specific purpose, or otherwise regulates the use of the land. (This includes the Environmental Planning and Assessment Act and planning instruments made under the Act. A Plan of Management should not be inconsistent with any environmental planning instrument applying to that land).

A plan of Management should not be inconsistent with any environmental planning instrument applying to that land.

1.2. Land to Which this Plan Applies

Maianbar is located within the Bundeena Catchment. However, as Maianbar is physically isolated from the village of Bundeena it was considered appropriate to treat the Natural Areas of the two villages separately.

Maianbar is a small coastal village on the Port Hacking, located within the Royal National Park on the southern edge of the Sydney Metropolitan Area.

Council land that is classified as “Community” within Maianbar reflects primarily Public Recreation land use, however those parcels with a residential land use have been acquired for the purposes of enhancing public recreation zones.

1.3. Structure of the Plan of Management

Section 2 provides an overview of the legislative requirements for the preparation of a draft plan of management. This includes the relevant provisions of the Act and classification regimes to which the sites will be subject. Section 2 also discusses the community consultation process that has been undertaken to develop the PoM.

Sections 3 4 & 5 provides:

- Description of the condition, features and facilities as at the date of the preparation of this document;
- proposes the categorisation of the natural features of the various sites,

Section 3 addresses foreshore land in Pacific Crescent,

Section 4 covers the reserve at the end of Newcombe Road and

Section 5 covers the land on the top of Kara Karook Street.

Section 6 states the purposes and scale for which the sites are allowed to be used

Section 8 provides the management strategies.

Section 10 provides appendices to the document, including relevant working reports from specialist council staff.

2. LEGISLATIVE REQUIREMENTS

2.1. Legislative Requirements

The minimum requirements for a Plan of Management under the Act are that the plan must:

- categorise the land in accordance with s.36(4) and (5);
- contain objectives for the management of the land;
- contain performance targets
- specify the means of achieving the objectives and performance targets;
- specify how the achievement of the objectives and performance targets is to be assessed (s.36(3));
- describe the condition of the land as at the date of the adoption of the plan of management;
- describe any buildings on the sites as at the date of adoption of the plan of management;
- describe the usage of all land and buildings covered in the plan of management as at the date of adoption;
- state the use for which the land will be allowed to be used, the scale and intensity of that use (s.36(3A)).

Plans of management should not be inconsistent with any environmental planning instrument, applying to the land covered under a Plan of Management.

2.2. Purpose of the Plan

Council land must be used and managed in accordance with a Plan of Management. Until a Plan of Management is adopted by Council the nature and use of the land must not be changed.

A Plan of Management provides a documented tool for the efficient management of community land. It helps to reconcile competing interests, identify priorities for allocation of resources and facilitate public understanding.

Periodic revision of a plan also enables changing social, economic and ecological conditions and new knowledge relevant to land management practices to be taken into account as they arise.

2.3. General Description

The Local Government Act provides that all community land must be categorised as one or more of the following:

- A Natural Area (NA);
- A Sportsground (SG);
- A Park (PK);
- An Area of Cultural Significance (CS): and
- General Community Use (GC).

Land categorised as Natural Area is to be further categorised as one or more of the following:-

- Bushland (BU);
- Wetland (WE);
- Escarpment (ES);
- Watercourse (WA);
- Foreshore (FO); and/or
- a category prescribed by Sections 10 to 19 of the Local Government (General) Regulations, 1999.

Council has prepared generic plans of management for Sportsgrounds, Parks, and General Community Use Areas and is drafting site specific plans of management for Natural Areas, Areas of Cultural Significance and other sites where appropriate.

2.4. Guidelines for Categorisation of Land as a Natural Area

The Local Government (General) Regulations provide that land should be categorised as a natural area, if the land, whether or not in an undisturbed, state, possesses a significant geological feature, geomorphologic feature/s, landform, representative system or other natural feature or attribute that would be sufficient to further categorise the land as bushland, wetland, escarpment, watercourse or foreshore.

2.5. Core Objectives

2.5.1. Natural Areas

The core objectives for management of community land categorised as a natural area are:

- (a) *to conserve biodiversity and maintain ecosystem function in respect of the land, or the feature or habitat in respect of which the land is categorised as a natural area and*
- (b) *to maintain the land, or that feature or habitat, in its natural state or setting, and*
- (c) *to provide for the restoration and regeneration of the land, and*
- (d) *to provide for community use of and access to the land in such a manner as will minimise and mitigate any disturbance caused by human intrusion, and*
- (e) *to assist in and facilitate the implementation of any provisions restricting the use and management of the land that are set out in a recovery plan or threat abatement plan prepared under the Threatened Species Conservation Act 1995 or the Fisheries Management Act 1994.”*

2.5.2. Bushland

The core objectives for management of community land categorised as bushland are:

- (a) *to ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, the flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological values of the land, and*
- (b) *to protect the aesthetic, heritage, recreational, educational and scientific values of the land, and*
- (c) *to promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures directed to minimising or mitigating any disturbance caused by human intrusion, and*
- (d) *to restore degraded bushland, and*
- (e) *to protect existing landforms such as natural drainage lines, watercourses and foreshores, and*
- (f) *to retain bushland in parcels of a size and configuration that will enable the existing plant and animal communities to survive in the long term, and*
- (g) *to protect bushland as a natural stabiliser of the soil surface.”*

2.5.3. Wetland

The core objectives for management of community land categorised as wetland are:

- (a) *to protect the biodiversity and ecological values of wetlands, with particular reference to their hydrological environment (including water quality and water flow), and to the flora, fauna and habitat values of the wetlands, and*
- (b) *to restore and regenerate degraded wetlands, and*
- (c) *to facilitate community education in relation to wetlands, and the community use of wetlands, without compromising the ecological values of wetlands.”*

2.5.4. Escarpment

The core objectives for management of community land categorised as escarpment are:

- (a) *to protect any important geological, geomorphologic or scenic features of the escarpment, and*
- (b) *to facilitate safe community use and enjoyment of the escarpment.”*

2.5.5. Watercourse

The core objectives for management of community land categorised as a watercourse are:

- (a) *to manage watercourses so as to protect the biodiversity and ecological values of the in stream environment, particularly in relation to water quality and water flows, and*
- (b) *to manage watercourses so as to protect the riparian environment, particularly in relation to riparian vegetation and habitats and bank stability, and*
- (c) *to restore degraded watercourses, and*
- (d) *to promote community education, and community access to and use of the watercourse, without compromising the other core objectives of the category.”*

2.5.6. Foreshore

The core objectives for management of community land categorised as foreshore are:

- (a) *to maintain the foreshore as a transition area between the aquatic and the terrestrial environment, and to protect and enhance all functions associated with the foreshore's role as a transition area, and*
- (b) *to facilitate the ecological sustainable use of the foreshore, and to mitigate impact on the foreshore by community use.”*

Council has identified further objectives in the management of natural areas:

- (a) *To conserve biodiversity and maintain ecosystem function in respect of the land, or the features or habitat in respect of which the land is categorised as a natural area;*
- (b) *To maintain the land, or that feature or habitat, in its natural state or setting;*
- (c) *To provide for the restoration and regeneration of the land*

3. 35 Pacific Crescent, Maianbar

3.1. Categorisation of 35 Pacific Crescent

Subsequent to the exhibition of the Issues Paper and public hearing the land at 35 Pacific Crescent is to be categorised Natural Area with the sub-categorisation as follows in table

3.1.1. Table of Categorisation of Land in the Bundeena Reserve-

| Name of Reserve | Legal Description | Categorisation |
|-----------------|-------------------|----------------|
| No name given | Lot 18 DP 12294 | BU, FO and PK |

Categories include:

Bushland: Part of 35 Pacific Cr is covered with remnant bushland comprised of Sydney Sandstone Gully Forest

Foreshore: The northern boundary of the reserve is foreshore frontage with Port Hacking.

Fig 3.1 35 Pacific Crescent provides glimpses of the Port Hacking and informal pedestrian access to the foreshore



3.2. Site Description

The parcel of land known as 35 Pacific Crescent is situated on the protected southern foreshore area of the Port Hacking 3.3 km west of Jibbon Headland within the township of Maianbar. The property is located west of the sand spit on Simpsons Bay fronting onto a section of the estuary that drains from Cabbage Tree Basin.

The reserve is primarily in a natural condition with remnant bushland covering over 90% of the site. The property is approximately 15m wide and 65m long giving it an approximate area of 790m². The surrounding land use is for environmentally sensitive housing and the reserve is basically an undeveloped parcel of land located between two residential developments.

The site is moderately steep with an overall gradient of 27% that creates a north easterly aspect overlooking the Port Hacking. An informal pathway, that has been included in the Bundeena Maianbar Heritage Walk, leads from Pacific Crescent through the reserve to the foreshore.

The reserve has been used to provide drainage from the surrounding residential development with a stormwater drain entering from beneath Pacific Crescent. Stormwater flows through the reserve uncontrolled causing some erosion issues.

3.3. Leases, Licenses and Other Estates

No interests have been registered over this site.

3.4. Condition of Sites

The site represents remnant bushland vegetation, but reflects the disturbance evident in urbanised areas with clearing and modification likely as a result of bushfire hazard reduction works. Other factors affecting the extant vegetation include a moderate level of weed invasion, browsing by feral deer and stormwater impacts

3.5. Community Values

Pacific Crescent Reserve is a small but significant reserve for the local community of Maianbar. The vegetation provides green space and tree canopy between residential development that can be viewed from the waterway as well as surrounding streets and homes that helps create the bushy sense of place and character for this location. Despite only being a small parcel of land the reserve encompasses important recreational, cultural, conservation and heritage values for the community and is used for a variety of purposes providing:

- An informal pedestrian link to the foreshore and waterway for surrounding residents;
- visual access to the Port Hacking;
- a tranquil place to rest, picnic, or fish;
- opportunities to experience the natural environment and study local flora and fauna;
- and generally protect natural heritage values.

3.6. Vegetation

The site is predominantly remnant bushland vegetation that has been disturbed through some clearing and modification likely as a result of bushfire hazard reduction works. A moderate level of dumping of branches and garden waste from neighbouring residents has occurred over a long period of time. Some planting has also occurred using native plants not indigenous to the site including Broad-leaf Paperbark *Melaleuca quinquenervia* and Coastal Tea-Tree *Leptospermum laevigatum*. Other factors affecting the extant vegetation include a moderate level of weed invasion, browsing by feral deer and stormwater impacts.

The vegetation community has been classified as Sydney Sandstone Gully Forest a common community in the Sutherland Shire.

The vegetation has an average canopy height of 20-25m and a projected foliage cover of 30-50%. The dominant canopy tree species include Smooth-barked Apple *Angophora costata*, Bangalay *Eucalyptus botryoides* and Rough-barked Apple *Angophora floribunda*. The mid storey has a moderate diversity of shrubs and climbers including Mock Olive *Notelaea longifolia*, Hairy Clerodendron *Clerodendron tomentosum*, Pearl Vine *Sarcopetalum harveyanum* and Snake Vine *Stephania japonica* var. *discolor*. The lower stratum is characterised by ferns, grasses and herbaceous plants including Bracken *Pteridium esculentum*, Centella *Centella asiatica*, and Blady Grass *Imperata cylindrica*.

Thirty five indigenous plant species have been recorded for the site, though further surveys at different times of year are likely to reveal an even higher diversity. No species present are listed as threatened or endangered on state or federal legislation. Rough-barked Apple *Angophora costata* is considered to be locally significant and the Austral Sarsaparilla Vine *Smilax australis* has a limited distribution in the Sutherland Shire.

35 Pacific Crescent is physically isolated from the surrounding vegetation, a tenuous link still exists through remnant trees in the urban areas around the foreshore to the more extensive vegetation in Royal National Park to the south. The reserve has been classified as support habitat on the Council's Greenweb map that identifies the vegetation corridors within the Shire.

3.7. Weeds

Weeds and introduced plants have a detrimental impact on the natural heritage values of the site. The lower stratum is mostly affected by weed invasion with a variety of species established. The species of weeds present are mostly those that can readily be controlled and managed by bush regeneration techniques and the site has adequate access for removal. Factors influencing the establishment of weeds include previous disturbance, spread of garden plants by birds and neighbourhood dumping and nutrient enriched stormwater. The most dominant weeds are herbaceous species including Veldt Grass *Ehrharta erecta*, Cobblers Pegs *Bidens pilosa*, Fishbone Fern *Nephrolepis cordifolia*, Paspalum *Paspalum dilatatum*, Summer Grass *Digitaria sanguinalis* and Wandering Jew *Tradescantia albiflora*. A small amount of Lantana *Lantana camara* a declared noxious weed for the Sutherland Shire under the Noxious Weed Act 1993 is scattered in the reserve.

Fig.3.2. 35 Pacific Crescent contributes to the intrinsic bushland character of the Port Hacking foreshore 1



3.8. Fauna Habitat

No formal fauna surveys have been undertaken for the reserve though this should be promoted wherever possible. Community members are a valuable source of information and should be encouraged to contribute information on fauna from their experience with the site.

Being close to Royal National Park the reserve is likely to be used by a greater number and variety of fauna species than a similar size reserve in a more isolated urban environment. Fauna that may be disturbed by fires in national nearby may seek refuge in bushland on private property or small reserves. The reserve contains a moderate level of habitat opportunities for local fauna. The vegetation is structurally and floristically diverse with potential for roosting, nesting and foraging in the canopy and understorey for a variety of mammals, birds, reptiles and insects.

There are several large hollows in the mature canopy trees that provide potential habitat for arboreal mammals and parrots. There are roosting and nesting sites and flowering plants that provide nectar, fruits and seeds for a range of common bird species.

No threatened species have been recorded for the site however the Beach Stone Curlew *Esacus neglectus* and the Pied Oyster Catcher *Haematopus longirostris*, both threatened species have been recorded on the sand spit nearby.

Feral Indonesian Rusa Deer *Cervus timoriensis* are a major threat to the ecological values of the reserve. Deer are known to cause damage through grazing, trampling and antler rubbing and have been identified as a Key Threatening Process on the Threatened Species Conservation Act.

3.9. Escarpment and Geological Features

Triassic Hawkesbury Sandstone is the dominant geological stratum of the locality and has influenced the soil, vegetation, fauna and landscape character of the site. Large sandstone boulders are present on the foreshore and are a feature of the reserve. No other outcrop or escarpment is present.

3.10. Foreshore

Pacific Crescent Reserve has approximately 12m of foreshore where the property boundary meets a rocky platform and a small sandy beach. The property boundary extends to Mean High Water Mark which includes a small sandy intertidal zone. The foreshore provides access to the Port Hacking and is a feature from the water. The foreshore is habitat for a variety of intertidal organisms including molluscs, crustaceans and alga.

3.11. Geological features

Triassic Hawkesbury Sandstone is the dominant geological stratum and has influenced the soil, vegetation, fauna and landscape character of the site. The reserve contains some minor exposed rock outcrops in the lower portion of the reserve. However this geological feature is of low significance as it provides limited habitat potential or aesthetic qualities.

The topography of the site varies from steep (approximately 37%) in the south west section of the reserve to a relatively flat area in the middle section and then a gentle slope to the foreshore frontage. The site is bounded by Pacific Crescent to the west, residential properties north and south and the estuarine foreshore to the east.

3.12. European Heritage

No known items of European heritage are listed on the SSLEP 2006 or the State Heritage Register for the site.

3.13. Aboriginal Heritage

The Dharawal Aboriginal people are known to have occupied the area for many thousands of years. No Aboriginal sites have been recorded for the reserve on the Aboriginal Heritage Information System administered by the Department of Environment and Climate Change (DECC). No evidence of midden material or sandstone overhangs or surfaces are present on site though the area is in a high potential zone and any excavation proposed for the reserve would need to consider potential archaeological deposit.

3.14. Non Natural Features

An informal footpath commences on Pacific Crescent and traverses the reserve to the foreshore. The track is part of the Bundeena – Maianbar Heritage Trail developed and mapped by local residents with a small directional information sign located by the roadside. The track provides access to the foreshore and adjoining sand flats at low tide. The upgrade of the steps and track to an acceptable standard is a high priority for the reserve.

No other facilities are provided in the reserve.

4. 19R Newcombe Street, Maianbar

4.1. Categorisation of 19R Newcombe Street Maianbar

Subsequent to the exhibition of the Issues Paper and public hearing the land at 19R Newcombe Street is to be categorised Natural Area with the sub-categorisation as shown in table:

4.1.1. Table of Categorisation of Land at 19R Newcombe St-

| Name of Reserve | Legal Description | Categorisation |
|-----------------|-------------------|----------------|
| No name given | Lot 126 DP14277 | BU, FO, WA |

Categories include:

Bushland: Remnant bushland covers more than 90% of the site

Foreshore: The northern boundary of the reserve is foreshore frontage with Port Hacking.

Watercourse: Several small first order creeks join on site to form a second order creek, debouching into the Hacking River.

4.2. Site Description

Newcombe Street Reserve is situated on the southern shore of the Port Hacking 4km west of Jibbon Headland in the suburb of Maianbar. The 1.17 hectare reserve forms part of a small gully at the head of a shallow small inlet between Yenabilli Point and Constables Point known as Fishermans Bay. The reserve is bound predominantly by residential properties in Newcombe Street, Cullen Lane and Park Street and has a western boundary with the Royal National Park.

Public access is from Newcombe Street, the adjacent narrow Crown land foreshore reserve, and limited access from Cullen Lane.

The reserve is primarily in a natural condition with remnant bushland covering over 90% of the site. Several small creeks drain the surrounding catchment and pass through the reserve before entering Fishermans Bay.

Newcombe Street Reserve is relatively steep with an average gradient of 22°. Several informal tracks traverse the site, created by visitors accessing the reserve.

4.3. Leases, Licenses and Other Estates

No interests have been registered over this site.

4.4. Community Values

The reserve provides an area of public open space bushland that forms a buffer area between the surrounding residential properties and assists to create the natural bushland character of Maianbar. The reserve encompasses important recreational, cultural, conservation and heritage values for the community and is used for a variety of purposes providing:

- An area of natural heritage

- An informal pedestrian link between Newcombe Street and the foreshore of Fishermans Bay
- A setting for informal recreation
- Opportunities to experience the natural environment and study local flora, fauna, landforms and geological features
- Opportunities for community involvement in environmental rehabilitation.



Fig.4.1 19 Newcombe Street Reserve with glimpses of Fishermans Bay. The vegetation is classified as Littoral Rainforest an endangered ecological community.

4.5. Bushcare groups

Local residents have formed the Newcombe Street Reserve Bushcare Group to assist with the management of the reserve. Activities include weed control and planting of indigenous plant species to restore and conserve the site's ecological values.

4.6. Vegetation

The vegetation present in the reserve is the culmination of many factors including the sites' location in a north facing gully protected from strong winds, the watercourse that provides moisture to the surrounding soils and the infrequency of bushfires over a long period of time.

Because of nearby urbanisation the reserve has suffered disturbances such as importation of fill, clearing of vegetation, increased stormwater run off, sedimentation, increased soil nutrients, introduced weeds and feral animals. Consequently human induced changes have occurred to the indigenous vegetation and the fauna it supports.

The extant vegetation community has been classified and mapped as Littoral Rainforest an endangered ecological community protected under provision of the Threatened Species Conservation (TSC) Act 1995. This community occurs in numerous small stands along the NSW coast and is threatened by a range of influences including land clearing for development, damage by vehicles, grazing by introduced herbivores, dumping of garden waste, fragmentation and increased fire frequency. The NSW Scientific Committee is of the opinion that unless the threats are abated Littoral Rainforest will become extinct.

The vegetation in the reserve has an average canopy height of 15-20m and a projected foliage cover of 30-50%. The presence of species with large mesophyll leaves, robust climbers and soft herbaceous groundcovers provide the elements that characterise littoral rainforest vegetation and differentiate it from the surrounding harsh sclerophyll vegetation. The dominant canopy tree species include Smooth-barked Apple *Angophora costata*, Bangalay Eucalyptus *botryoides*, Cabbage Palm *Livistona australis* and Swamp Mahogany *Eucalyptus robusta*. There is evidence that the canopy in some areas has died or been removed in the past. The mid storey is dominated by a thick sub canopy of vines, mostly Water Vine *Cissus hypoglauca*. Other species present in the mid stratum are the locally significant Native Guava *Eupomatia laurina*, Hairy Clerodendron *Clerodendron tomentosum*, Christmas Bush *Ceratopetalum gummiferum*, Mock Olive *Notelaea longifolia* and Lilli Pilli *Acmena smithii*. The lower stratum is characterised by ferns, grasses and herbaceous plants including Sword Grasses, *Gahnia melanocarpa* and *Gahnia sieberiana*, Maidenhair Fern *Adiantum aethiopicum*, Native Violet *Viola hederacea*, Centella *Centella asiatica*, Bracken *Pteridium esculentum* and the locally significant Downy Ground Fern *Hypolepis glandulifera*.

Ninety eight indigenous plant species have been recorded for the site, though further surveys at different times of the year are likely to reveal an even higher diversity. Some species may only be present as seeds in the soil and lay dormant until conditions are favourable for germination. Six species are considered to be locally significant as they only occur at less than ten sites in the Sutherland Shire.

There is a strong connection between the reserve and the Royal National Park with an 85m common boundary. The reserve has been classified as core habitat on the Council's Greenweb map, which identifies the vegetation corridors within the Shire.

4.7. Weeds

Factors influencing the establishment of weeds in the reserve include previous disturbance from urban development, the spread of garden plants by birds and dumping and nutrient enriched stormwater. The most dominant weeds in the reserve are a row of Liquidambar trees planted along side number 21 Newcombe Street and the adjacent grassy pedestrian access way. Other weeds include Lantana *Lantana camara* which has largely been cleared from the reserve and is only present as scattered specimens. Lantana is declared a noxious weed for the Sutherland Shire under the Noxious Weed Act 1993. Crofton Weed *Ageratina adenophora* is associated with the moist conditions along the watercourse but is only present in small amounts.

Council's Parks Operations Unit has managed weeds through the use of herbicides and hand removal techniques. The Newcombe Street Reserve Bushcare Group meets regularly and has also contributed greatly to the management of weeds in the reserve. On going maintenance will be required to keep the level of weeds low.



Fig.4.7. A row of Liquidambar trees and a grassy access way are the main weeds in the reserve.

4.8. Fauna Habitat

No formal fauna surveys have been undertaken for the reserve though this should be promoted wherever possible if resources are available. The accompanying Fauna Observation sheet is only a list of species observed on the day of the biodiversity survey and more extensive diurnal and nocturnal surveys as well as research is needed to understand indigenous fauna and their habitat requirements of the site. Community members are a valuable source of information and should be encouraged to contribute data on fauna from their experience with the locality.

Newcombe Street Reserve contains a high level of habitat opportunities for local fauna. The vegetation is structurally and floristically diverse with potential for roosting, nesting and foraging in the canopy and understorey for a variety of mammals, birds, reptiles and insects. Of interest are the rainforest species such as Port Jackson Fig, Water Vine, Cabbage Palm, Lilli Pilli and Bastard Rosewood that provide specialised fruit for bats and rainforest birds. The Swamp Mahogany is also an important flowering tree for a variety of fauna during winter months when other resources are scarce.

The site being contiguous with the Royal National Park provides opportunity for many species of fauna to extend their range between the two areas. Swamp Wallabies for example are using the reserve but the size of the reserve is not large enough to sustain a population of wallabies by itself.



Fig 4. 8.1. Local native inhabitant

The Department of Environment and Climate Change Wildlife Atlas database was searched for recordings in the reserve. While the data does indicate precisely the location, three threatened species protected under the TSC Act have been recorded in the area. Habitat for all three species exists in the reserve, and even though all species have a large habitat range and that the reserve would only contribute a small proportion of their total habitat, it is imperative that management of the reserve takes into consideration their requirements.

4.8.1. Table. Threatened fauna recorded in the area

| Species | Common name | First recorded | Last recorded | Potential habitat on site |
|------------------------|-------------------------------|----------------|---------------|---------------------------|
| Powerful Owl | <i>Ninox strenua</i> | 1992 | 1992 | Yes |
| Grey-headed Flying Fox | <i>Ptesopus policephalus</i> | 2007 | 2007 | Yes |
| Koala | <i>Phascolarctos cinereus</i> | 1996 | 1996 | Yes |

Exposed sunny patches and areas of sandstone outcrops in the upper areas of the reserve and along the water course provide suitable habitat for reptiles. Red-bellied Black Snake *Pseudechis porphyriacus* and the Water Dragon *Physignathus lesuerii* were observed during the survey. Many other species including the Diamond Python *Morelia spilota*, Eastern Water Skink *Eulamprus quoyii* and Eastern Blue-tongue lizard *Tiliqua scinioides* are likely to be present on the site from time to time.

Feral Indonesian Rusa Deer *Cervus timoriensis* are a serious threat to the ecological values of the Newcombe Street Reserve. Deer are known to cause damage through grazing, trampling and antler rubbing. Deer are listed as a Key Threatening Process on the TSC Act with Littoral Rainforest one of the communities under threat.

It is likely other introduced species including foxes and domestic cats have an impact on the diversity of indigenous fauna.



Fig 4. 8.2. Newcombe St residents

4.9. Watercourse

Several small first order creeks drain the surrounding catchment and join to form a second order creek through the reserve. The stormwater system servicing the roads and residential area within the catchment concentrates water flows and direct them into the reserve. The velocity and volume of water in the creeks after a rainfall event is higher than would have been prior to the development of the surrounding area. Increased erosion, sedimentation and improved conditions for weeds are the results. The watercourses in the reserve provide increased opportunity and habitat resources for fauna. Snags, logs and natural debris in the watercourses add to the complexity of habitat and slow the flow of water reducing erosion. The watercourse habitats are an important feature of the reserve and it is important to maintain their health.

4.10. Escarpment and Geological Features

Triassic Hawkesbury Sandstone is the dominant geological stratum and has influenced the soil, vegetation, fauna and landscape character of the site. While there are some areas of exposed sandstone in the upper areas of the reserve there are no significant escarpments. Bedrock has been exposed by the incision of watercourses creating small waterfall rock features.

4.11. Foreshore

Between Newcombe Street Reserve and the waters of Fishermans Bay is a narrow 40 metre wide Crown Reserve. Even though the subject site does not extend to the high water mark it is still considered to contribute to the foreshore values of the Port Hacking. The reserve is prominent from the water providing scenic quality and a break in the surrounding residential development. From vantage points in the reserve there are glimpses of the waterway framed by native vegetation adding to the site's intrinsic values.

4.12. European Heritage

There are no known heritage items or any historic importance associated with the site.

4.13. Aboriginal Heritage

The Dharawal Aboriginal people are known to have occupied the area for many thousands of years. The Aboriginal Heritage Information System (AHIMS) administered by the National Parks and Wildlife Service has recorded five sites nearby at Yenabilli Point and in the Royal National Park close to the reserve. There is also extensive midden deposit on the foreshore in the adjoining Crown reserve where the creek from the reserve enters the bay. It is not clear if this site has been recorded. The extensive sandflats and estuary environment provided a rich food resource with molluscs including Sydney Cockles, Sydney Rock Oysters and Mud Oysters plentiful.

It is likely Aboriginal people utilised the freshwater when available in the creeks in the reserve and collected known edible fruits such as Lilli Pilli, Native Guava and Dianella. Cabbage Palms in the reserve are another important source of food and fibre and were likely to have been utilised. Management of the site should always consider the potential for Aboriginal artefacts and sites in the reserve.

Table 2. Aboriginal sites recorded nearby

| AHIMS Site # | Site Type | Location |
|---------------------|------------------|----------------------|
| 52-5-0379 | Open camp site | RNP |
| 52-3-0562 | Midden | Yenabilli Point. RNP |
| 52-3-0559 | Midden | Yenabilli Point. RNP |
| 52-3-0561 | Midden | Yenabilli Point. RNP |
| 52-3 060 | Shelter & Midden | Yenabilli Point. RNP |

4.14. Non Natural Features

There has been very little development in the reserve. There are no formed footpaths or access tracks. Access through the reserve is restricted to informal routes that residents have created through use. No other structures or associated infrastructure has been developed in the reserve. Any future development will have to consider the impacts to the site's ecological and heritage values.

5. 22 KARA KAROOK STREET MAIANBAR

5.1. Categorisation of 19R Newcombe Street Maianbar

Subsequent to the exhibition of the Issues Paper and public hearing the land at 19R Newcombe Street is to be categorised Natural Area with the sub-categorisation as shown in table:

5.1.1. Table of Categorisation of Land at 19R Newcombe St-

| Name of Reserve | Legal Description | Categorisation |
|-----------------|-------------------|----------------|
| No name given | Lot 126 DP14277 | BU, FO, WA |

Categories include:

Bushland: Remnant bushland covers more than 90% of the site

Foreshore: The northern boundary of the reserve is foreshore frontage with Port Hacking.

Watercourse: Several small first order creeks join on site to form a second order creek, debouching into the Hacking River.

5.2. Site Description

Kara Karook Street Reserve is situated on the southern shore of the Port Hacking 3.5km west of Jibbon Headland in the suburb of Maianbar. The parcel of land is located on the small headland ridge at an elevation of 42m as you approach Maianbar. It has a road address of 22 Kara Karook Street and is surrounded by environmentally sensitive residential development.

The property is primarily in a natural condition with remnant bushland covering over 80% of the site. Some vegetation has likely to have been cleared or modified over a period of time as a result of the surrounding residential development. There is a cleared pathway that is used by pedestrians to walk between Kara Karook Street and the rear of the properties on Pacific Crescent.

The parcel of land is rectangular in shape approximately 100m long and 15m wide. The total area of land is 1525m². The site is level with an average 5% gradient sloping in a north easterly direction.

5.3. Community Values

The small reserve is primarily a local reserve mostly benefiting the adjoining and nearby residents. It provides open space with trees and vegetation that help to give the suburb its bushland character. Pedestrians use the public land as a link between their homes, neighbours and Kara Karook Street.

The reserve encompasses recreational, conservation and natural heritage values for the community and is used for a variety of purposes providing:

- A pleasant pedestrian links between the residential areas, and other destinations in Maianbar.
- A small area of habitat for native flora and fauna.
- An area of public open space for children to play.

Local residents have formed a Bushcare Group for some of the larger bushland reserves in Maianbar and occasionally work to assist with the management of this parcel of land. Activities include weed control and planting of indigenous plants to restore and conserve the site's ecological values.

5.4. Vegetation

The site shows evidence of past disturbances to vegetation. There is a small cleared area at the road frontage and a cleared pathway along the length of the property where weeds have become established. Some vegetation may have been removed in the past for fire protection to the adjacent properties.

The extant vegetation is representative of the original community with species represented in all strata. Given the species present, the topography and Hawkesbury Sandstone soils the vegetation has been classified as Sydney Sandstone Gully Forest.

The vegetation has an average canopy height of 15-20m and a projected foliage cover of 20-30%. The dominant canopy tree species is Smooth-barked Apple *Angophora costata* and Bangalay *Eucalyptus botryoides*. The mid storey is comprised of a diversity of shrubs and climbers including Tick Bush *Kunzea ambigua*, Ball Honeymyrtle *Melaleuca nodosa*, Water Vine *Cissus hypoglauca*, Mock Olive *Notelaea longifolia*, Black She-oak *Allocasuarina littoralis* and Blueberry Ash *Elaeocarpus reticulatus*. The lower stratum is characterised by ferns, grasses and herbaceous plants including Blady Grass *Imperata cylindrica* var. *major*, Spiny Mat Rush *Lomandra longifolia*, Saw Sedge *Gahnia clarkei*, Centella *Centella asiatica*, Sedge *Cyperus polystachyos* and Kangaroo Grass *Themeda australis*.



Fig.5.3.2. Trees in the reserve provide habitat for a range of arboreal fauna and link to other areas of high conservation value.

Twenty seven indigenous plant species have been recorded for the site, though further surveys and different times of the year are likely to reveal an even higher diversity.

While the parcel of land is small and isolated there is sufficient canopy trees present on the site and in adjacent properties to create a link to the areas of higher conservation value of Royal National Park.

5.5. Weeds

Weeds have become established in the areas of the reserve where there has been disturbance and mowing persists. The majority of the reserve is weed free. Factors influencing the establishment of weeds include the dispersal of garden plants by birds and dumping of garden waste, mowing parts of the property to improve pedestrian access and nutrient enriched stormwater. The most dominant weeds are Common Couch *Digitaria didactyla*, Carpet Grass *Axonopus affinis* and Paspalum *Paspalum dilatatum*. Larger woody weeds have been removed by neighbours and the Bushcare group.



Fig.5.3.1. Kara Karook Street showing the cleared area on the street frontage.

5.6. Fauna Habitat

No formal fauna surveys have been undertaken for the reserve though this should be promoted wherever possible. Community members are a valuable source of information and should be encouraged to contribute information on fauna from their experience with the site.

The Kara Karook Street site contains a moderate level of habitat opportunities for local fauna. The vegetation is structurally and floristically diverse with potential for roosting, nesting and foraging in the canopy and understorey for a variety of mammals, birds, reptiles and insects. The proximity to residential properties restricts the use of the reserve to species that can tolerate noise, light and other impacts associated with residential development. Large Smooth-barked Apple trees bearing hollows are likely to be used by arboreal animals such as Brush-tailed Possums, a variety of parrots and reptiles such as the Diamond Python. Residents have observed the Short-beaked Echidna and scats from Swamp Wallabies were observed during the site survey.

Exposed sunny clearings are likely to be utilised by reptiles including common skinks and Eastern Blue-Tongue Lizard.

No permanent fresh water exists on the site which may limit the potential for some fauna species.

Feral Indonesian Rusa Deer *Cervus timoriensis* are a serious threat to the local ecosystem and are known to use the reserve occasionally to browse. Deer are known to cause damage through grazing, trampling and antler rubbing and are listed as a Key Threatening Process on the Threatened Species Conservation Act 1995.

5.7. Escarpment and Geological Features

Triassic Hawkesbury Sandstone is the dominant geological stratum and has influenced the soil, vegetation, fauna and landscape character of the site. There are no escarpments, areas of exposed sandstone or any other significant geological feature in the reserve.

5.8. Foreshore

The reserve does not form part of a foreshore.

5.9. European Heritage

There are no items of heritage listed on the NSW Heritage Register or the Sutherland Shire Local Environmental Plan 2006.

5.10. Aboriginal Heritage

The Dharawal Aboriginal people are known to have occupied the area for many thousands of years. While no evidence of Aboriginal occupation remains on the Kara Karook Street property, several Aboriginal sites have been recorded on private property and within the national park within a 500m radius. Aboriginal sites are registered on the Aboriginal Heritage Information System administered by the Department of Environment and Climate Change.

5.11. Non-Natural Features

No improvements have been made to the reserve. An informal track has been created for pedestrian use by neighbouring residents. If the track was formalised weeds and introduced turf could be removed and the areas mulch to define the route and reduce maintenance.

6. ACTIVITIES EXPRESSLY AUTHORISED BY THIS PLAN

Subject to compliance with the Local Government Act 1993 and the core objectives for the community land, the following activities are expressly authorised:

- i. Lease, sub-lease, license, or hire the site for any purpose with the consent of Council where community use and access to the site is only to take place in a manner that will minimise and mitigate any disturbance caused by such activity.
- ii. That all necessary fire Control exercises by Council or its agents be authorised, eg, implementation of hazard reduction strategies, construction of fire trails, firebreaks, etc, and the management of fire regimes and fuel.
- iii. Construction and dedication of public roads.
- iv. Construction of buildings and facilities as approved by Council where such buildings or facilities can be shown to assist the core objectives of the management of the site.

7. LEASING LICENSING AND OTHER ESTATES

The Local Government Act provides the following requirements in relation to the granting of leases, licences, and other estates in respect of a natural area:

- 1) A lease, licence or other estate must not be granted, in respect of community land categorised as a natural area:
 - a) to authorise the erection or use of a building or structure that is not a building or structure of a kind prescribed by the regulations, or
 - b) to authorise the erection or use of a building or structure that is not for a purpose prescribed by the regulations.
- 2) A lease, licence or other instrument granting any other estate is void to the extent that its provisions are inconsistent with this section.
- 3) In this section, erection of a building or structure includes rebuilding or replacement of a building or structure.
- 4) The following buildings and structures are prescribed for the purposes of subsection 1)a):
 - a) walkways,
 - b) pathways,
 - c) bridges,
 - d) causeways,
 - e) observation platforms,
 - f) signs.
- 5) The following purposes are prescribed for the purposes of subsection 1)b):
 - a) information kiosks,
 - b) refreshment kiosks (but not restaurants),
 - c) work sheds or storage sheds required in connection with the maintenance of the land,
 - d) toilets or restrooms.

8. NATURAL AREA MANAGEMENT STRATEGIES

A plan of management for community land must identify the following:

- a) the category of the land
- b) the objectives and performance targets of the plan with respect to the land
- c) the means by which the council proposes to achieve the plan's objectives and performance targets
- d) the manner in which the council proposes to assess its performance with respect to the plan's objectives and performance targets, and may require the prior approval of the council to the carrying out of any specified activity on the land

This plan will meet the core objectives through the implementation of management strategies as outlined in the following table 6.1 Management Strategies”.

Each of these issues is accompanied by one or more objective(s) and performance target(s), a means of achieving the objective(s) and a manner in which the objective(s) will be assessed.

The actioning of these site specific objectives will depend on the availability of funds, community involvement and the priority levels given to each site. A Risk Priority Analysis will be carried out by Council which assesses the ecological and cultural significance of each site and the level of risk threatening those values to determine the priority given.

8.1. Land Management Issues

| Management Issues | Objectives & Performance Targets | Means of Achievement | Manner of Assessment |
|-------------------|--|--|---|
| Access: | <p>Provide appropriate pedestrian access.</p> <p>Minimise the creation of excessive tracks that cause erosion and fragmentation of vegetation.</p> <p>Prevent unauthorised access eg. Vehicles/dirt bikes.</p> | <p>Identify authorised track system</p> <p>Maintain existing tracks to a safe standard.</p> <p>Maintain tracks to reduce erosion.</p> <p>Terminate and revegetate inappropriate tracks.</p> <p>Enforcement of regulations.</p> | <p>Mapping of authorised tracks.</p> <p>Response to Customer Requests for track maintenance.</p> <p>Visually assess track condition.</p> <p>Successful revegetation of unauthorised tracks.</p> <p>Monitor Customer Requests for unauthorised access.</p> |
| Activities: | <p>Ensure existing or proposed activities in the reserve do not compromise the site’s ecological and heritage values.</p> <p>Reduce littering</p> <p>Control vandalism and antisocial behaviour.</p> | <p>Assess requests for activities in the reserve for potential impacts.</p> <p>Enforce existing regulations prohibiting littering, vehicle access etc.</p> <p>Activities identified as causing an impact to ecological or heritage values prohibit through regulatory signage.</p> | <p>Monitor ecological and heritage values through regular biodiversity assessment process.</p> <p>Monitor number of complaints regarding inappropriate behaviour or breaches of regulations.</p> |
| Buildings: | <p>Walkways, pathways, bridges, causeways, observation platforms, signs.</p> <p>Information kiosks, refreshment kiosks (but not restaurants), work sheds or storage sheds required in connection with the maintenance of</p> | <p>Appropriate levels of cleaning and maintenance.</p> <p>Regulated hours of use.</p> <p>Application of relevant Council Building Codes, Policies and Regulations and Development Control Policies.</p> | <p>Number of comments in relation to the adequacy of the building for efficient operation, community needs & maintenance.</p> <p>Number of incidents of non-compliance with relevant</p> |

| Management Issues | Objectives & Performance Targets | Means of Achievement | Manner of Assessment |
|--------------------------|--|---|--|
| | the land, toilets or restrooms. | Avoid duplication of facilities in proximity. Application of Council's Heritage LEP. Development Consent where necessary. | Council Building Codes, Policies and Regulations. Number of reported incidents of user conflict/ vandalism. Number of duplicated facilities within the surrounding areas. |
| Drainage: | Protect natural drainage flows through the reserve. Reduce impacts of concentrated stormwater from surrounding catchment. | Do not permit altering of natural hydrology. Discourage new stormwater outlets enter the reserve. Mitigate existing stormwater impacts through the use of gross pollutant traps, artificial wetlands or vegetated swales. | No alteration to existing drainage patterns. No increase in stormwater entering the reserve. Projects undertaken to control existing stormwater impacts. |
| Fauna: | Protect fauna and native animal habitat. Reduce impacts of feral animals. | Create buffer zones around existing habitat through regeneration of exposed areas. Maintain exiting habitat including dead trees, hollow logs and natural litter layer. Develop strategies to control feral animals. | Monitor biodiversity through regular surveys. Increase in area for habitat. No removal of hollow limbs, dead trees. Implementation of trapping or culling of feral animals, including deer. |
| Human Heritage: | Protect Aboriginal sites Protect European sites | Do not allow activities that potentially disturb existing sites. | Monitor sites through visual assessment. |

| Management Issues | Objectives & Performance Targets | Means of Achievement | Manner of Assessment |
|-------------------|--|--|---|
| | | <p>Ensure heritage issues are identified when assessing any proposal for the site.</p> <p>Register any new sites discovered.</p> | |
| Landform: | <p>Conserve geological features</p> <p>Conserve sandstone escarpment.</p> <p>Protect scenic quality of site.</p> | <p>Ensure activities or land use does not adversely impact on geological features, escarpments or scenic quality of the reserve.</p> | <p>Monitor features through visual assessment.</p> |
| Vegetation: | <p>Protect indigenous vegetation</p> <p>Reduce weeds.</p> | <p>Encourage Bushcare and community involvement.</p> <p>Control noxious and environmental weeds.</p> <p>Seek grants for bush regeneration.</p> <p>Maintain diversity of species.</p> <p>Implement appropriate fire regime.</p> | <p>Number of active volunteers in the Bushcare group.</p> <p>Allocation of Council resources for bush regeneration and weed control.</p> <p>Number of successful grants for bush regeneration.</p> <p>Monitor biodiversity through regular surveys.</p> <p>Fire interval is between 8-20 years.</p> |

9. Future Management

This Plan of Management establishes basic management objectives to be used as a guide for the future management, planning and design of sites within the Maianbar village of the Bundeena Catchment Area.

Future management of the sites must balance recognition of the social, natural and cultural heritage of the Shire and be also responsive to changing contemporary needs. Management and planning proposals for the sites must retain sufficient flexibility through plans of management to take advantage of new opportunities as they arise.

This Plan of Management is concerned with the following objectives: -

- a) to conserve biodiversity and maintain ecosystem function in respect of the land, or the feature or habitat in respect of which the land is categorised as a natural area, and
- b) to maintain the land, or that feature or habitat, in its natural state and settings, and
- c) to provide for the restoration and regeneration of the land;
- d) to provide for community use of and access to the land in such a manner as will minimise and mitigate any disturbance caused by human intrusion;
- e) to assist in and facilitate the implementation of any provisions restricting the use and management of the land that are set out in the recovery plan or threat abatement plan prepared under the Threatened Species Conservation Act 1995 or the Fisheries Management Act 1994.

Optimum performance of all management issues in this Plan of Management will depend on the monitoring of the strategies and the versatility of Council's future management practices.

The plan, therefore, provides a framework to develop a balanced response to future pressures. However, as management issues may change over time, Plans of Management should be subject to regular review. This is to ensure its objectives and strategies remain relevant and consistent with community expectations.

10. Appendix A:

Biodiversity Assessment Sheets:

10.1. 35 Pacific Crescent

| Natural Areas Biodiversity Assessment | | | | | |
|--|---------------|------------------|---------------------------------|--------------------------------------|---|
| Bushland Vegetation | | | | | |
| 35 Pacific Crescent Maianbar | | | | | |
| Date 7 /03/2008 | | | | | |
| Plant Community | Status | Structure | Canopy Species (typical) | Mid-stratum species (typical) | Lowest stratum species (typical) |
| Sydney Sandstone Gully Forest | Common | Open Forest | Eucalyptus botryoides | Glochidion ferdinandi | Pteridium esculentum |
| | | | Angophora floribunda | Clerodendron tomentosum | Imperata cylindrica |
| | | | Angophora costata | Allocasuarina littoralis | Glycine clandestinum |
| | | | | | |

| Natural Areas Biodiversity Assessment | | | | |
|--|----------------------|---------------|-----------------------|--------------------------|
| Indigenous Plant Species List | | | | |
| 35 Pacific Crescent Maianbar | | | | |
| Date 27/12/2007 | | | | |
| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
| <i>Acacia longifolia</i> | Sydney Golden Wattle | FABACEAE | Common | Common |
| <i>Allocasuarina littoralis</i> | Black She-oak | CASUARINACEAE | Common | Common |
| <i>Angophora costata</i> | Sydney Red Gum | MYRTACEAE | Common | Common |

Natural Areas Biodiversity Assessment**Indigenous Plant Species List****35 Pacific Crescent Maianbar****Date 27/12/2007**

| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
|--|-----------------------|----------------|-----------------------|--------------------------|
| <i>Angophora floribunda</i> | Rough barked Apple | MYRTACEAE | Locally significant | Uncommon |
| <i>Banksia integrifolia</i> | Coast Banksia | PROTEACEAE | Common | Common |
| <i>Breynia oblongifolia</i> | Breynia | EUPHORBIACEAE | Common | Occasional |
| <i>Casuarina glauca</i> | Swamp She-oak | CASUARINACEAE | Common | Common |
| <i>Cayratia clematidea</i> | Native Grape | VITACEAE | Common | Occasional |
| <i>Centella asiatica</i> | Centella | APIACEAE | Common | Occasional |
| <i>Cissus antarctica</i> | Kangaroo Grape | VITACEAE | Common | Occasional |
| <i>Clematis aristata</i> | Old Man's Beard | RANUNCULACEAE | Common | Occasional |
| <i>Clerodendron tomentosum</i> | Hairy Clerodendron | VERBENACEAE | Common | Occasional |
| <i>Commelina cyanea</i> | Scurvy Weed | COMMELINACEAE | Common | Common |
| <i>Dianella caerulea var. producta</i> | Flax Lily | PHORMIACEAE | Common | Occasional |
| <i>Dichondra repens</i> | Kidney Weed | CONVOLVULACEAE | Common | Occasional |
| <i>Echinopogon ovatus</i> | Forest Hedgehog Grass | POACEAE | Common | Occasional |
| <i>Elaeocarpus reticulatus</i> | Blueberry Ash | ELAEOCARPACEAE | Common | Occasional |
| <i>Entolasia marginata</i> | Panic Grass | POACEAE | Common | Occasional |
| <i>Eucalyptus botryoides</i> | Bangalay | MYRTACEAE | Common | Common |
| <i>Eucalyptus tereticornis</i> | Forest Red Gum | MYRTACEAE | Limited distribution | Occasional |

Natural Areas Biodiversity Assessment**Indigenous Plant Species List****35 Pacific Crescent Maianbar****Date 27/12/2007**

| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
|--|----------------------|----------------|-----------------------|--------------------------|
| <i>Gahnia melanocarpa</i> | Saw Sedge | CYPERACEAE | Common | Occasional |
| <i>Geitonoplesium cymosum</i> | Scrambling Lily | PHILESIACEAE | Common | Occasional |
| <i>Geranium homeanum</i> | Northern Cranebill | GERANIACEAE | Common | Occasional |
| <i>Glochidion ferdinandi</i> | Cheese Tree | EUPHORBIACEAE | Common | Occasional |
| <i>Glycine clandestinum</i> | Lovers Twine | FABACEAE | Common | Occasional |
| <i>Hydrocotyle peduncularis</i> | Pennywort | APIACEAE | Common | Occasional |
| <i>Imperata cylindrica</i> | Blady Grass | POACEAE | Common | V. Common |
| <i>Isolepis nodosus</i> | Knobby Club Rush | CYPERACEAE | Common | Occasional |
| <i>Lomandra longifolia</i> | Spiny Mat-rush | LOMANDRACEAE | Common | V. Common |
| <i>Microlaena stipoides</i> | Weeping Meadow Grass | POACEAE | Common | Occasional |
| <i>Notelaea longifolia</i> | Mock Olive | OLEACEAE | Common | Occasional |
| <i>Rubus parvifolius</i> | Native Raspberry | ROSACEAE | Common | Occasional |
| <i>Sarcopetalum harveyanum</i> | Pearl Vine | MENISPERMACEAE | Common | Occasional |
| <i>Smilax australis</i> | Austral Sarsaparilla | SMILACACEAE | Limited distribution | Uncommon |
| <i>Stephania japonica var discolor</i> | Snake Vine | MENISPERMACEAE | Common | Occasional |
| | | | | |
| | | | | |

Natural Areas Biodiversity Assessment**Environmental and Noxious Weed List****35 Pacific Crescent Maianbar****Date 27/12/2007**

| Botanic Name | Common Name | Family | Species Status | Frequency |
|------------------------------------|----------------------|----------------|-----------------------|------------------|
| <i>Acacia cultriformis</i> | Wattle | FABACEAE | Planted | Uncommon |
| <i>Conyza canadiensis</i> | Fleabane | ASTERACEAE | Environmental weed | Common |
| <i>Digitaria sanguinalis</i> | Summer Grass | POACEAE | Environmental weed | Common |
| <i>Ehrharta erecta</i> | Veldt Grass | POACEAE | Environmental weed | Common |
| <i>Lantana camara</i> | Lantana | VERBENACEAE | Noxious Weed | Uncommon |
| <i>Leptospermum laevigatum</i> | Coastal Tea-Tree | MYRTACEAE | Planted | Uncommon |
| <i>Melaleuca quinquenervia</i> | Broad-leaf Paperbark | MYRTACEAE | Planted | Uncommon |
| <i>Nephrolepis cordifolia</i> | Fishbone Fern | DAVALLIACEAE | Environmental weed | Occasional |
| <i>Paspalum dilatatum</i> | Paspalum | POACEAE | Environmental weed | Occasional |
| <i>Pennisetum clandestinum</i> | Kikuyu Grass | POACEAE | Environmental weed | Common |
| <i>Protasparagus aethiopicus</i> | Asparagus Fern | ASPARAGACEAE | Environmental weed | Occasional |
| <i>Senna pendula var. glabrata</i> | Cassia | CAESALPINACEAE | Environmental weed | Occasional |
| <i>Sida rhombifolia</i> | Paddys Lucerne | MALVACEAE | Environmental weed | Occasional |
| <i>Solanum mauritianum</i> | Wild Tobacco | SOLANACEAE | Environmental weed | Uncommon |
| <i>Stenotaphrum secundatum</i> | Buffalo Grass | POACEAE | Environmental weed | Common |
| <i>Thunbergia alata</i> | Black-eyed Susan | ACANTHACEAE | Environmental weed | Occasional |
| <i>Tradescantia albiflora</i> | Wandering Jew | COMMELINACEAE | Environmental weed | Common |
| | | | | |
| | | | | |

Natural Areas Biodiversity Assessment
Indigenous Plant Species List
35 Pacific Crescent Maianbar
Date 27/12/2007

| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
|----------------|-------------|--------|----------------|-------------------|
|----------------|-------------|--------|----------------|-------------------|

Natural Areas Biodiversity Assessment
Fauna Observations
35 Pacific Crescent Maianbar
Date 27/12/2007

| Type | Common Name | Scientific Name | Observation (call, sighting, scat, track, markings) | Status |
|--------|--------------------------|------------------------------|---|--------|
| Mammal | Rusa Deer | <i>Cervus timoriensis</i> | Scat | Feral |
| | Brush-tailed Possum | <i>Trichosurus vulpecula</i> | Scat | Common |
| Bird | Sulphur-crested Cockatoo | <i>Cacatua galerita</i> | Sighting | Common |
| | Eastern Rosella | <i>Platycerus eximius</i> | Sighting | Common |

Natural Areas Biodiversity Assessment

Reserve Values

35 Pacific Crescent Maianbar

Date 27/12/2007

| Reserve Value | Category 1 | Category 2 | Category 3 | Category 4 | Category 5 | Score |
|--|------------------------|--------------------------------|---------------------------|---------------------------|-------------------------|-----------|
| Plant community | V.common (eg | Common (eg low open forest) | Uncommon (eg woodland) | Restricted (eg heath) | Threatened community | 1 |
| Threatened spp. TSC & ROTAP | 0 | 1 | 2 | 3 | >=4 | 1 |
| Locally significant flora (spp. present) | 0 | 1 | 2 | 3 | >=4 | 2 |
| Canopy condition | Serious dieback | Some dieback | Average | Healthy | Very Healthy | 3 |
| Mid-storey condition | Cleared | Very unhealthy | Average | Healthy | Very healthy | 2 |
| Lower stratum condition | Cleared | Very unhealthy | Average | Healthy | Very healthy | 2 |
| Threatened fauna species or populations | No suitable habitat | Limited suitable habitat | Some potential habitat | High potential habitat | Recorded in reserve | 3 |
| Structural diversity | Very simple | Simple | Average | Complex | Very Complex | 2 |
| Vegetation corridor (connectivity) | Very isolated | Isolated | Fragmented | Extensive | Very extensive | 2 |
| Tree hollows | Absent | Limited | Occasional | Common | Extensive | 3 |
| Litter layer habitat (inc. hollow logs, rock platforms & cover) | Minor | Limited | Average | Extensive | Very extensive | 2 |
| Escarpment/ rock outcrops | Absent | Limited | Occasional | Extensive | Very extensive | 2 |
| Watercourse/ aquatic habitats | Absent | Limited | Occasional | Extensive | Very extensive | 2 |
| Scenic lookout, dyke, rock platform, caves etc. | Absent | Minor | Prominent | Significant | Very significant | 3 |
| Size | <1hectare | 1-3hectares | 3-5hectares | 5-10hectares | <10hectares | 1 |
| Edge: Area | Very high | High | Average | Low | Very Low | 1 |
| Bushcare group/ community support | Very low | Low | Average | High | Very high | 2 |
| Public profile | Very low | Low | Average | High | Very High | 3 |
| European heritage site | No evidence | Site nearby | LEP register | State register | National register | 1 |
| Aboriginal site | No evidence | Low potential | Some potential | Site nearby | Recorded in reserve | 2 |
| Reserve Values Total | | | | | | 40 |

Natural Areas Biodiversity Assessment

Reserve Threats to Biodiversity

35 Pacific Crescent Maianbar

Date 27/12/2007

| Reserve Threats | Category 1 | Category 2 | Category 3 | Category 4 | Category 5 | Score |
|--|--|-------------------|---------------------|---------------------------|-----------------------|--------------|
| Overall impact of weeds in reserve | Minimal | Minor | Moderate | Major | Severe | 3 |
| Accessibility for weed removal | Simple | Some difficulty | Difficult | Complex | Extremely complex | 2 |
| Degree of difficulty for weed control | Readily controlled | Some difficulty | Difficult | Persistent | Very persistent | 1 |
| Soil erosion | Minimal | Minor | Moderate | Major | Severe | 3 |
| Sedimentation | Minimal | Minor | Moderate | Major | Severe | 2 |
| Physical disturbance (eg tracks, bike jumps) | Minimal | Minor | Moderate | Major | Severe | 3 |
| Dumping garden waste | Minimal | Minor | Moderate | Major | Severe | 3 |
| Vegetation removal (eg views, fire protection) | Minimal | Minor | Moderate | Major | Severe | 3 |
| Imported fill | Minimal | Minor | Moderate | Major | Severe | 1 |
| Fire frequency | Appropriate regime | Acceptable regime | Potential impact on | Impacting on biodiversity | Severely impacting on | 3 |
| Stormwater impacts | Minimal | Minor | Moderate | Major | Severe | 4 |
| Sewage system impacts | Minimal | Minor | Moderate | Major | Severe | 1 |
| Feral animals | Minimal | Minor | Moderate | Major | Severe | 4 |
| | Threats to reserve biodiversity | | | | | 33 |

10.2. 19R Newcombe Street

| Natural Areas Biodiversity Assessment | | | | | |
|---------------------------------------|---|---|---|---|---|
| Bushland Vegetation | | | | | |
| 19R Newcombe Street Maianbar | | | | | |
| Date 27/12/2007 | | | | | |
| Plant Community | Status | Structure | Canopy Species (typical) | Mid-stratum species (typical) | Lowest stratum species (typical) |
| Littoral Rainforest | Endangered Ecological Community – TSC Act | 10-20m tall with a projected canopy cover of 20-40% | Eucalyptus botryoides Angophora costata Livistona australis Acmena smithii | Acacia irrorata Synoum glandulosum Cissus hypoglauca Elaeocarpus reticulatus | Gahnia melanocarpa Pteridium esculentum Viola hederacea Hydrocotyle peduncularis |
| | | | | | |
| | | | | | |

| Natural Areas Biodiversity Assessment | | | | |
|---------------------------------------|--------------------|----------|----------------|-------------------|
| Indigenous Plant Species List | | | | |
| 19R Newcombe Street Maianbar | | | | |
| Date 27/12/2007 | | | | |
| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
| <i>Acacia implexa</i> | Hickory | FABACEAE | Limited | Uncommon |
| <i>Acacia irrorata</i> | | FABACEAE | Widespread | Very Common |
| <i>Acacia linifolia</i> | Flax-leafed Wattle | FABACEAE | Widespread | Uncommon |

Natural Areas Biodiversity Assessment**Indigenous Plant Species List****19R Newcombe Street Maianbar****Date 27/12/2007**

| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
|----------------------------------|------------------------|----------------|-----------------------|--------------------------|
| <i>Acacia longifolia</i> | Sydney Golden Wattle | FABACEAE | Widespread | Occasional |
| <i>Acacia myrtifolia</i> | Myrtle Wattle | FABACEAE | Widespread | Occasional |
| <i>Acacia suaveolens</i> | Sweet Scented Wattle | FABACEAE | Widespread | Occasional |
| <i>Acacia terminalis</i> | Sunshine Wattle | FABACEAE | Widespread | Occasional |
| <i>Acacia ulicifolia</i> | Prickly Moses | FABACEAE | Widespread | Occasional |
| <i>Acmena smithii</i> | Lilli Pilli | MYRTACEAE | Widespread | Common |
| <i>Adiantum aethiopicum</i> | Common Maidenhair Fern | ADIANTACEAE | Limited | Occasional |
| <i>Allocasuarina littoralis</i> | Black She-oak | CASUARINACEAE | Limited | Occasional |
| <i>Alternanthera denticulata</i> | Lesser Joyweed | AMARANTHACEAE | Widespread | Common |
| <i>Angophora costata</i> | Sydney Red Gum | MYRTACEAE | Widespread | Common |
| <i>Angophora floribunda</i> | Rough barked Apple | MYRTACEAE | SSC Significant | Occasional |
| <i>Anisopogon avenaceus</i> | Oat Spear Grass | POACEAE | Widespread | Occasional |
| <i>Backhousia myrtifolia</i> | Grey Myrtle | MYRTACEAE | Limited | Occasional |
| <i>Banksia serrata</i> | Old Man Banksia | PROTEACEAE | Widespread | Occasional |
| <i>Banksia spinulosa</i> | Hair-pin Banksia | PROTEACEAE | Widespread | Uncommon |
| <i>Baumea rubiginosa</i> | Soft Twig Rush | CYPERACEAE | Limited | Occasional |
| <i>Billardiera scandens</i> | Apple Berry | PITTOSPORACEAE | Widespread | Occasional |
| <i>Blechnum cartilagineum</i> | Gristle Fern | BLECHNACEAE | Limited | Occasional |

Natural Areas Biodiversity Assessment

Indigenous Plant Species List

19R Newcombe Street Maianbar

Date 27/12/2007

| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
|--|--------------------|----------------|-----------------------|--------------------------|
| <i>Breynia oblongifolia</i> | Breynia | EUPHORBIACEAE | Widespread | Occasional |
| <i>Calystegia marginata</i> | Bindweed | CONVOLVULACEAE | SSC Significant | Uncommon |
| <i>Casuarina glauca</i> | Swamp She-oak | CASUARINACEAE | Widespread | Occasional |
| <i>Cayratia clematidea</i> | Native Grape | VITACEAE | Widespread | Common |
| <i>Centella asiatica</i> | Centella | APIACEAE | Widespread | Very Common |
| <i>Ceratopetalum gummiferum</i> | NSW Christmas Bush | CUNONIACEAE | Widespread | Occasional |
| <i>Cissus antarctica</i> | Kangaroo Grape | VITACEAE | Limited | Occasional |
| <i>Cissus hypoglauca</i> | Water Vine | VITACEAE | Widespread | Very Common |
| <i>Clematis aristata</i> | Old Man's Beard | RANUNCULACEAE | Widespread | Occasional |
| <i>Clematis glycinoides</i> | Old Man's Beard | RANUNCULACEAE | Widespread | Occasional |
| <i>Clerodendron tomentosum</i> | Hairy Clerodendron | VERBENACEAE | Widespread | Occasional |
| <i>Commelina cyanea</i> | Scurvy Weed | COMMELINACEAE | Widespread | Very Common |
| <i>Cyperus sanguinolentus</i> | | CYPERACEAE | Widespread | Occasional |
| <i>Daviesia ulicifolia</i> | | FABACEAE | Limited | Uncommon |
| <i>Desmodium varians</i> | | FABACEAE | Limited | Uncommon |
| <i>Dianella caerulea</i> | Blue Flax Lily | PHORMIACEAE | Widespread | Occasional |
| <i>Dianella caerulea var. producta</i> | Flax Lily | PHORMIACEAE | Widespread | Common |
| <i>Dichondra repens</i> | Kidney Weed | CONVOLVULACEAE | Widespread | Common |

Natural Areas Biodiversity Assessment**Indigenous Plant Species List****19R Newcombe Street Maianbar****Date 27/12/2007**

| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
|--|--------------------|----------------|-----------------------|--------------------------|
| <i>Dillwynia floribunda</i> | Bush Pea | FABACEAE | Widespread | Uncommon |
| <i>Dillwynia retorta</i> ssp. <i>retorta</i> | Bush Pea | FABACEAE | Widespread | Common |
| <i>Doodia aspera</i> | Rasp Fern | BLECHNACEAE | Limited | Common |
| <i>Doryanthes excelsa</i> | Gynea Lily | DORYANTHACEAE | Widespread | Occasional |
| <i>Echinopogon caespitosus</i> | Hedgehog Grass | POACEAE | Widespread | Occasional |
| <i>Elaeocarpus reticulatus</i> | Blueberry Ash | ELAEOCARPACEAE | Widespread | Common |
| <i>Entolasia marginata</i> | | POACEAE | Widespread | Common |
| <i>Entolasia stricta</i> | Wiry Panic Grass | POACEAE | Widespread | Occasional |
| <i>Eucalyptus botryoides</i> | Bangalay | MYRTACEAE | Widespread | Common |
| <i>Eucalyptus piperita</i> | Sydney Peppermint | MYRTACEAE | Widespread | Common |
| <i>Eucalyptus robusta</i> | Swamp Mahogany | MYRTACEAE | Widespread | Occasional |
| <i>Eucalyptus tereticornis</i> | Forest Red Gum | MYRTACEAE | Limited | Occasional |
| <i>Eupomatia laurina</i> | Native Guava | EUPOMATIACEAE | SSC Significant | Occasional |
| <i>Eustrephus latifolius</i> | Wombat Berry | PHILESIACEAE | Widespread | Occasional |
| <i>Ficus rubiginosa</i> | Port Jackson Fig | MORACEAE | Widespread | Occasional |
| <i>Gahnia melanocarpa</i> | Sword Grass | CYPERACEAE | Widespread | Very Common |
| <i>Gahnia sieberiana</i> | Sword Grass | CYPERACEAE | Widespread | Occasional |
| <i>Geitonoplesium cymosum</i> | Scrambling Lily | PHILESIACEAE | Widespread | Common |

Natural Areas Biodiversity Assessment**Indigenous Plant Species List****19R Newcombe Street Maianbar****Date 27/12/2007**

| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
|---------------------------------|----------------------|------------------|-----------------------|--------------------------|
| <i>Geranium homeanum</i> | Northern Cranebill | GERANIACEAE | Widespread | Common |
| <i>Glochidion ferdinandi</i> | Cheese Tree | EUPHORBIACEAE | Widespread | Common |
| <i>Glycine clandestinum</i> | Lovers Twine | FABACEAE | Widespread | Common |
| <i>Hardenbergia violacea</i> | False Sarsaparilla | FABACEAE | Widespread | Occasional |
| <i>Hibbertia dentata</i> | Guinea Flower | DILLENiaceae | Widespread | Occasional |
| <i>Hibbertia scandens</i> | Snake Vine | DILLENiaceae | Widespread | Occasional |
| <i>Hydrocotyle peduncularis</i> | Pennywort | APIACEAE | Widespread | Very Common |
| <i>Hypolepis glandulifera</i> | Downy Ground Fern | DENNSTAEDTIACEAE | SSC Significant | Common |
| <i>Imperata cylindrica</i> | Blady Grass | POACEAE | Widespread | Very Common |
| <i>Isolepis nodosus</i> | Knobby Club Rush | CYPERACEAE | Widespread | Common |
| <i>Kennedia rubicunda</i> | Dusky Coral Pea | FABACEAE | Widespread | Occasional |
| <i>Kunzea ambigua</i> | Tick Bush | MYRTACEAE | Widespread | Occasional |
| <i>Livistona australis</i> | Cabbage Tree Palm | ARECACEAE | Limited | Very Common |
| <i>Lomandra longifolia</i> | Spiny Mat-rush | LOMANDRACEAE | Widespread | Very Common |
| <i>Microlaena stipoides</i> | Weeping Meadow Grass | POACEAE | Widespread | Common |
| <i>Morinda jasminoides</i> | Jasmine Morinda | RUBIACEAE | Widespread | Occasional |
| <i>Notelaea longifolia</i> | Mock Olive | OLEACEAE | Widespread | Common |
| <i>Omalanthus populifolius</i> | Bleeding Heart | EUPHORBIACEAE | Widespread | Occasional |

Natural Areas Biodiversity Assessment**Indigenous Plant Species List****19R Newcombe Street Maianbar****Date 27/12/2007**

| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
|--|---------------------|------------------|-----------------------|--------------------------|
| <i>Oplismenus imbecillus</i> | Basket Grass | POACEAE | Widespread | Common |
| <i>Ozothamnus diosmifolium</i> | Everlasting | ASTERACEAE | Widespread | Uncommon |
| <i>Parsonsia straminea var straminea</i> | Monkey Rope | APOCYNACEAE | Limited | Occasional |
| <i>Passiflora herbertiana</i> | Native Passionfruit | PASSIFLORACEAE | Limited | Uncommon |
| <i>Persoonia linearis</i> | Narrow Leaf Geebung | PROTEACEA | Widespread | Occasional |
| <i>Pittosporum revolutum</i> | Hairy Pittosporum | PITTOSPORACEAE | Widespread | Occasional |
| <i>Plectanthus parviflorus</i> | | LAMIACEAE | Widespread | Occasional |
| <i>Poa affinis</i> | | POACEAE | Widespread | Common |
| <i>Pratia purpurescens</i> | White Root | LOBELIACEAE | Widespread | Occasional |
| <i>Pteridium esculentum</i> | Bracken Fern | DENNSTAEDTIACEAE | Widespread | Very Common |
| <i>Pultenaea daphnoides</i> | Large-leaf Bush Pea | FABACEAE | Widespread | Occasional |
| <i>Rapanea variabilis</i> | Mutton Wood | MYRSINACEAE | Widespread | Occasional |
| <i>Sarcopetalum harveyanum</i> | Pearl Vine | MENISPERMACEAE | Widespread | Common |
| <i>Stephania japonica var. discolour</i> | Snake Vine | MENISPERMACEAE | Widespread | Occasional |
| <i>Senecio hispidulus var. dissectus</i> | Rough Groundsel | ASTERACEAE | Widespread | Occasional |
| <i>Smilax australis</i> | | SMILACACEAE | Limited | Common |
| <i>Smilax glycyphylla</i> | Native Sarsaparilla | SMILACACEAE | Widespread | Occasional |
| <i>Stephania japonica var discolor</i> | Snake Vine | MENISPERMACEAE | Widespread | Occasional |

| Natural Areas Biodiversity Assessment | | | | |
|--|-----------------------|------------------|-----------------------|--------------------------|
| Indigenous Plant Species List | | | | |
| 19R Newcombe Street Maianbar | | | | |
| Date 27/12/2007 | | | | |
| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
| <i>Synoum glandulosum</i> | Bastard Rosewood | MELIACEAE | Widespread | Common |
| <i>Themeda australis</i> | Kangaroo Grass | POACEAE | Widespread | Occasional |
| <i>Viola hederacea</i> | Native Violet | VIOLACEAE | Widespread | Very common |
| <i>Xanthorrhoea arborea</i> | Broad Leaf Grass Tree | XANTHORRHOEACEAE | Widespread | Common |
| <i>Ziera smithii</i> | Sandfly Ziera | RUTACEAE | Widespread | Occasional |

| Natural Areas Biodiversity Assessment | | | | |
|--|--------------------|----------------|-----------------------|------------------|
| Environmental and Noxious Weed List | | | | |
| 19R Newcombe Street Maianbar | | | | |
| Date 27/12/2007 | | | | |
| Botanic Name | Common Name | Family | Species Status | Frequency |
| <i>Stenotaphrum secundatum</i> | Buffalo Grass | POACEAE | Environmental | Common |
| <i>Conyza canadiensis</i> | Canadian Fleebane | ASTERACEAE | Environmental | Occasional |
| <i>Axonopus affinis</i> | Carpet Grass | POACEAE | Environmental | Common |
| <i>Senna pendula var. glabrata</i> | Cassia | CAESALPINACEAE | Environmental | Occasional |
| <i>Erythrina X sykesii</i> | Coral Tree | FABACEAE | Environmental | Occasional |
| <i>Cynodon dactylon</i> | Couch Grass | POACEAE | Environmental | Occasional |
| <i>Ageratin adenophora</i> | Crofton Weed | ASTERACEAE | Environmental | Occasional |

Natural Areas Biodiversity Assessment
Environmental and Noxious Weed List
19R Newcombe Street Maianbar
Date 27/12/2007

| Botanic Name | Common Name | Family | Species Status | Frequency |
|--------------------------------|--------------------|----------------|-----------------------|------------------|
| <i>Lantana camara</i> | Lantana | LAMIACEAE | Noxious | Occasional |
| <i>Ehrharta erecta</i> | Panic Veldtgrass | POACEAE | Environmental | Occasional |
| <i>Liquidambar styraciflua</i> | Sweet Gum | HAMAMELIDACEAE | Environmental | Common |
| <i>Onopordum acanthium</i> | Thistle | ASTERACEAE | Environmental | Occasional |
| <i>Ailanthus altissima</i> | Tree of Heaven | SIMAROUBACEAE | Environmental | Occasional |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Natural Areas Biodiversity Assessment
Fauna Observations
19R Newcombe Street Maianbar
Date 27/12/2007

| Type | Common Name | Scientific Name | Observation (call, sighting, scat, track, markings) | Status |
|-------------|--------------------------|------------------------------|--|---------------|
| Amphibian | Striped Brown Marsh Frog | <i>Limnodynastes peronii</i> | Call | Common |
| | | | | |
| Bird | Eastern Whipbird | <i>Psophodes olivaceus</i> | Call | Common |

| | | | | |
|---------|--------------------------|---------------------------------|-----------------|-------------------|
| | Noisy Miner | <i>Manorina melanocephala</i> | Sighting | Common |
| | Pallid Cuckoo | <i>Cuculus pallidus</i> | Call | Moderately Common |
| | Pied Currawong | <i>Strepera graculina</i> | Sighting | Common |
| | Rainbow Lorikeet | <i>Trichoglossus haematodus</i> | Sighting | Common |
| | Sulphur-crested Cockatoo | <i>Cacatua galerita</i> | Sighting | Common |
| | White-headed Pigeon | <i>Columba leucomela</i> | Sighting | Moderately Common |
| | Wonga Pigeon | <i>Leucosarcia melanoleuca</i> | Sighting | Common |
| | | | | |
| Reptile | Red-bellied Black Snake | <i>Pseudechis porphyriacus</i> | Sighting | Common |
| | Water Dragon | <i>Physignathus lesuerii</i> | Sighting | Common |
| | | | | |
| Mammals | Brush-tailed Possum | <i>Trichosurus vulpecula</i> | Scats, markings | Common |
| | Swamp Wallaby | <i>Wallabia bicolor</i> | Scats tracks | Common |
| | Rusa Deer | <i>Cervus timoriensis</i> | Scats, tracks | Introduced |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Natural Areas Biodiversity Assessment

Reserve Values

19R Newcombe Street Maianbar

Date 27/12/2007

| Reserve Value | Category 1 | Category 2 | Category 3 | Category 4 | Category 5 | Score |
|---|---------------------------|-----------------------------|------------------------|------------------------|----------------------|-------|
| Plant community | V.common (eg open forest) | Common (eg low open forest) | Uncommon (eg woodland) | Restricted (eg heath) | Threatened community | 5 |
| Threatened spp. TSC & ROTAP | 0 | 1 | 2 | 3 | >=4 | 0 |
| Locally significant flora (spp. present) | 0 | 1 | 2 | 3 | >=4 | 4 |
| Canopy condition | Serious dieback | Some dieback | Average | Healthy | Very Healthy | 3 |
| Mid-storey condition | Cleared | Very unhealthy | Average | Healthy | Very healthy | 3 |
| Lower stratum condition | Cleared | Very unhealthy | Average | Healthy | Very healthy | 4 |
| Threatened fauna species or populations | No suitable habitat | Limited suitable habitat | Some potential habitat | High potential habitat | Recorded in reserve | 4 |
| Structural diversity | Very simple | Simple | Average | Complex | Very Complex | 4 |
| Vegetation corridor (connectivity) | Very isolated | Isolated | Fragmented | Extensive | Very extensive | 5 |
| Tree hollows | Absent | Limited | Occasional | Common | Extensive | 4 |
| Litter layer habitat (inc. hollow logs, rock platforms & cover) | Minor | Limited | Average | Extensive | Very extensive | 5 |
| Escarpment/ rock outcrops | Absent | Limited | Occasional | Extensive | Very extensive | 2 |
| Watercourse/ aquatic habitats | Absent | Limited | Occasional | Extensive | Very extensive | 4 |
| Scenic lookout, dyke, rock platform, caves etc. | Absent | Minor | Prominent | Significant | Very significant | 0 |
| Size | <1hectare | 1-3hectares | 3-5hectares | 5-10hectares | <10hectares | 2 |
| Edge: Area | Very high | High | Average | Low | Very Low | 4 |
| Bushcare group/ community support | Very low | Low | Average | High | Very high | 5 |
| Public profile | Very low | Low | Average | High | Very High | 3 |
| European heritage site | No evidence | Site nearby | LEP register | State register | National register | 0 |
| Aboriginal site | No evidence | | | Site nearby | Recorded in reserve | 4 |
| Reserve Values Total | | | | | | 65 |

Natural Areas Biodiversity Assessment

Reserve Threats to Biodiversity

19R Newcombe Street Maianbar

Date 27/12/2007

| Reserve Threats | Category 1 | Category 2 | Category 3 | Category 4 | Category 5 | Score |
|--|---------------------------------|-------------------|---------------------|---------------------------|------------------------------------|--------------|
| Overall impact of weeds in reserve | Minimal | Minor | Moderate | Major | Severe | 2 |
| Accessibility for weed removal | Simple | Some difficulty | Difficult | Complex | Extremely complex | 2 |
| Degree of difficulty for weed control | Readily controlled | Some difficulty | Difficult | Persistent | Very persistent | 1 |
| Soil erosion | Minimal | Minor | Moderate | Major | Severe | 2 |
| Sedimentation | Minimal | Minor | Moderate | Major | Severe | 2 |
| Physical disturbance (eg tracks, bike jumps) | Minimal | Minor | Moderate | Major | Severe | 1 |
| Dumping garden waste | Minimal | Minor | Moderate | Major | Severe | 1 |
| Vegetation removal (eg views, fire protection) | Minimal | Minor | Moderate | Major | Severe | 2 |
| Imported fill | Minimal | Minor | Moderate | Major | Severe | 2 |
| Fire frequency | Appropriate regime | Acceptable regime | Potential impact on | Impacting on biodiversity | Severely impacting on biodiversity | 3 |
| Stormwater impacts | Minimal | Minor | Moderate | Major | Severe | 3 |
| Sewage system impacts | Minimal | Minor | Moderate | Major | Severe | 3 |
| Feral animals | Minimal | Minor | Moderate | Major | Severe | 5 |
| | Threats to reserve biodiversity | | | | | 29 |

10.3. 22 Kara Karook Street

| Natural Areas Biodiversity Assessment | | | | |
|--|----------------------|----------------|----------------|-------------------|
| Indigenous Plant Species List | | | | |
| 22 Kara Karook Street Maianbar | | | | |
| Date 7/03/2008 | | | | |
| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
| <i>Acacia linifolia</i> | Flax-leafed Wattle | FABACEAE | Widespread | Occasional |
| <i>Acacia longifolia</i> | Sydney Golden Wattle | FABACEAE | Widespread | Common |
| <i>Acacia suaveolens</i> | Sweet Scented Wattle | FABACEAE | Widespread | Occasional |
| <i>Allocasuarina littoralis</i> | Black She-oak | CASUARINACEAE | Widespread | Common |
| <i>Angophora costata</i> | Sydney Red Gum | MYRTACEAE | Widespread | Occasional |
| <i>Centella asiatica</i> | Centella | APIACEAE | Widespread | Occasional |
| <i>Cissus hypoglauca</i> | Water Vine | VITACEAE | Limited | Common |
| <i>Commelina cyanea</i> | Scurvy Weed | COMMELINACEAE | Widespread | Common |
| <i>Cyperus polystachyos</i> | Sedge | CYPERACEAE | Widespread | Occasional |
| <i>Dianella caerulea var. producta</i> | Flax Lily | PHORMIACEAE | Widespread | Common |
| <i>Elaeocarpus reticulatus</i> | Blueberry Ash | ELAEOCARPACEAE | Widespread | Occasional |
| <i>Eucalyptus botryoides</i> | Bangalay | MYRTACEAE | Widespread | Occasional |
| <i>Gahnia clarkei</i> | Saw Sedge | CYPERACEAE | Widespread | Common |
| <i>Hibbertia dentata</i> | Guinea Flower | DILLENACEAE | Widespread | Occasional |
| <i>Hibbertia scandens</i> | Snake Vine | DILLENACEAE | Widespread | Occasional |
| <i>Imperata cylindrica</i> | Blady Grass | POACEAE | Widespread | Very Common |
| <i>Isolepis nodosus</i> | Knobby Club Rush | CYPERACEAE | Widespread | Occasional |

Natural Areas Biodiversity Assessment**Indigenous Plant Species List****22 Kara Karook Street Maianbar****Date 7/03/2008**

| Botanical Name | Common Name | Family | Species Status | Reserve Frequency |
|------------------------------|---------------------|---------------|-----------------------|--------------------------|
| <i>Kennedia rubicunda</i> | Dusky Coral Pea | FABACEAE | Widespread | Uncommon |
| <i>Kunzea ambigua</i> | Tick Bush | MYRTACEAE | Widespread | Very Common |
| <i>Lomandra longifolia</i> | Spiny Mat-rush | LOMANDRACEAE | Widespread | Very Common |
| <i>Melaleuca nodosa</i> | Ball Honeymyrtle | MYRTACEAE | Limited | Common |
| <i>Notelaea longifolia</i> | Mock Olive | OLEACEAE | Widespread | Occasional |
| <i>Phyllanthus hirtellus</i> | Thyme Spurge | EUPHORBIACEAE | Widespread | Occasional |
| <i>Pomax umbellata</i> | Pomax | RUBIACEAE | Widespread | Uncommon |
| <i>Smilax glycyphylla</i> | Native Sarsaparilla | SMILACACEAE | Widespread | Common |
| <i>Themeda australis</i> | Kangaroo Grass | POACEAE | Widespread | Occasional |
| | | | | |

Natural Areas Biodiversity Assessment**Environmental and Noxious Weed List****22 Kara Karook Street Maianbar****Date 7/03/2008**

| Botanic Name | Common Name | Family | Species Status | Frequency |
|--------------------------------|--------------------|---------------|-----------------------|------------------|
| <i>Stenotaphrum secundatum</i> | Buffalo Grass | POACEAE | Environmental Weed | Occasional |
| <i>Axonopus affinis</i> | Carpet Grass | POACEAE | Environmental Weed | Common |

Natural Areas Biodiversity Assessment
Environmental and Noxious Weed List
22 Kara Karook Street Maianbar
Date 7/03/2008

| Botanic Name | Common Name | Family | Species Status | Frequency |
|------------------------------------|--------------------|----------------|-----------------------|------------------|
| <i>Cynodon dactylon</i> | Common Couch | POACEAE | Environmental Weed | Common |
| <i>Paspalum dilatatum</i> | Paspalum | POACEAE | Environmental Weed | Common |
| <i>Hydrocotyle bonariensis</i> | Kurnell Curse | APIACEAE | Environmental Weed | Occasional |
| <i>Ageratina adenophora</i> | Crofton Weed | ASTERACEAE | Environmental Weed | Occasional |
| <i>Nephrolepis cordifolia</i> | Fishbone Fern | DAVALLIACEAE | Environmental Weed | Occasional |
| <i>Senna pendula var. glabrata</i> | Cassia | CAESALPINACEAE | Environmental Weed | Uncommon |
| <i>Protasparagus aethiopicus</i> | Asparagus Fern | ASPARAGACEAE | Environmental Weed | Uncommon |
| <i>Cyperus rotundus</i> | Nut Grass | CYPERACEAE | Environmental Weed | Occasional |
| | | | | |

| Natural Areas Biodiversity Assessment | | | | |
|--|--------------------------|-------------------------------------|--|---------------------|
| Fauna Observations | | | | |
| 22 Kara Karook Street Maianbar | | | | |
| Date 7/03/2008 | | | | |
| Type | Common Name | Scientific Name | Observation (call, sighting, scat, track, markings) | Status |
| Mammal | Brush-tailed Possum | <i>Trichosurus vulpecula</i> | Scat | Widespread |
| Mammal | Indonesian Rusa Deer | <i>Cervus timoriensis</i> | Scat | Introduced |
| Mammal | Ring-tailed Possum | <i>Pseudocheirus peregrinus</i> | Reported | Widespread |
| Mammal | Short-beaked Echidna | <i>Tachyglossus aculeatus</i> | Reported | Locally Significant |
| Mammal | Swamp Wallaby | <i>Wallabia bicolor</i> | Scat | Locally Significant |
| Bird | Australian Magpie | <i>Gymnorhina tibicen</i> | Sighting | Widespread |
| Bird | Brown Thornbill | <i>Acanthiza pusilla</i> | Sighting | Widespread |
| Bird | Eastern Spinebill | <i>Acanthorhynchus tenuirostris</i> | Sighting | Widespread |
| Bird | Grey Fantail | <i>Rhipidura fuliginosa</i> | Sighting | Widespread |
| Bird | New Holland Honeyeater | <i>Phylidonyris novaehollandiae</i> | Sighting | Widespread |
| Bird | Pied Butcherbird | <i>Cracticus nigrogularis</i> | Sighting | Widespread |
| Bird | Pied Currawong | <i>Strepera graculina</i> | Sighting | Widespread |
| Bird | Rainbow Lorikeet | <i>Trichoglossus haematodus</i> | Sighting | Widespread |
| Bird | Red Wattlebird | <i>Anthochaera carunculata</i> | Sighting | Widespread |
| Bird | Sulphur-crested Cockatoo | <i>Cacatua galerita</i> | Sighting | Widespread |
| Bird | Superb Fairy-wren | <i>Malurus lamberti</i> | Sighting | Widespread |

Natural Areas Biodiversity Assessment

Reserve Values

22 Kara Karook Street Maianbar

Date 7/03/2008

| Reserve Value | Category 1 | Category 2 | Category 3 | Category 4 | Category 5 | Score |
|---|---------------------------|-----------------------------|------------------------|------------------------|----------------------|-----------|
| Plant community | V.common (eg open forest) | Common (eg low open forest) | Uncommon (eg woodland) | Restricted (eg heath) | Threatened community | 1 |
| Threatened spp. TSC & ROTAP | 0 | 1 | 2 | 3 | >=4 | 1 |
| Locally significant flora (spp. present) | 0 | 1 | 2 | 3 | >=4 | 1 |
| Canopy condition | Serious dieback | Some dieback | Average | Healthy | Very Healthy | 3 |
| Mid-storey condition | Cleared | Very unhealthy | Average | Healthy | Very healthy | 3 |
| Lower stratum condition | Cleared | Very unhealthy | Average | Healthy | Very healthy | 3 |
| Threatened fauna species or populations | No suitable habitat | Limited suitable habitat | Some potential habitat | High potential habitat | Recorded in reserve | 2 |
| Structural diversity | Very simple | Simple | Average | Complex | Very Complex | 2 |
| Vegetation corridor (connectivity) | Very isolated | Isolated | Fragmented | Extensive | Very extensive | 2 |
| Tree hollows | Absent | Limited | Occasional | Common | Extensive | 3 |
| Litter layer habitat (inc. hollow logs, rock platforms & cover) | Minor | Limited | Average | Extensive | Very extensive | 3 |
| Escarpment/ rock outcrops | Absent | Limited | Occasional | Extensive | Very extensive | 1 |
| Watercourse/ aquatic habitats | Absent | Limited | Occasional | Extensive | Very extensive | 1 |
| Scenic lookout, dyke, rock platform, caves etc. | Absent | Minor | Prominent | Significant | Very significant | 1 |
| Size | <1hectare | 1-3hectares | 3-5hectares | 5-10hectares | <10hectares | 1 |
| Edge: Area | Very high | High | Average | Low | Very Low | 1 |
| Bushcare group/ community support | Very low | Low | Average | High | Very high | 1 |
| Public profile | Very low | Low | Average | High | Very High | 3 |
| European heritage site | No evidence | Site nearby | LEP register | State register | National register | 1 |
| Aboriginal site | No evidence | | | Site nearby | Recorded in reserve | 1 |
| Reserve Values Total | | | | | | 35 |

Natural Areas Biodiversity Assessment
Reserve Threats to Biodiversity
22 Kara Karook Street Maianbar
Date 7/03/2008

| Reserve Threats | Category 1 | Category 2 | Category 3 | Category 4 | Category 5 | Score |
|--|---------------------------------|-------------------|----------------------------------|---------------------------|------------------------------------|--------------|
| Overall impact of weeds in reserve | Minimal | Minor | Moderate | Major | Severe | 2 |
| Accessibility for weed removal | Simple | Some difficulty | Difficult | Complex | Extremely complex | 1 |
| Degree of difficulty for weed control | Readily controlled | Some difficulty | Difficult | Persistent | Very persistent | 1 |
| Soil erosion | Minimal | Minor | Moderate | Major | Severe | 1 |
| Sedimentation | Minimal | Minor | Moderate | Major | Severe | 1 |
| Physical disturbance (eg tracks, bike jumps) | Minimal | Minor | Moderate | Major | Severe | 2 |
| Dumping garden waste | Minimal | Minor | Moderate | Major | Severe | 1 |
| Vegetation removal (eg views, fire protection) | Minimal | Minor | Moderate | Major | Severe | 2 |
| Imported fill | Minimal | Minor | Moderate | Major | Severe | 1 |
| Fire frequency | Appropriate regime | Acceptable regime | Potential impact on biodiversity | Impacting on biodiversity | Severely impacting on biodiversity | 3 |
| Stormwater impacts | Minimal | Minor | Moderate | Major | Severe | 1 |
| Sewage system impacts | Minimal | Minor | Moderate | Major | Severe | 1 |
| Feral animals | Minimal | Minor | Moderate | Major | Severe | 4 |
| | Threats to reserve biodiversity | | | | | 21 |