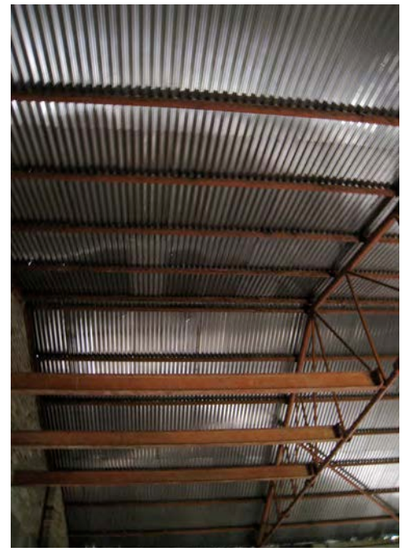
Wianamatta Regional Park

Volume 3: Park Masterplan







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List of Abbreviations

ADI	Australian Defence Industries
BCC	Blacktown City Council
CMP	Conservation Management Plan
PoM	Wianamatta Regional Park Plan of Management
DLL	Delfin Lend Lease
DECCW	Department of Environment, Climate Change and Water
NPWS	National Parks and Wildlife Service
PCC	Penrith City Council
WRP	Wianamatta Regional Park
WWII	World War Two

Glossary of terms

Adaptive re-use - Modification of a building or its existing curtilage to suit an existing or proposed use. Can only occur if the modification is undertake in a sustainable manner; the modification and use are not inconsistent with the conservation of the natural and cultural values of the land; and the modification is compatible with the retention of the cultural significance of the building or structure.

Amenity Block - A public building that is usually constructed in a visitor area for toilet facilities, showers and maybe laundry facilities.

Appropriate recreation - Recreation that is in accordance with the essential nature and spirit of the management principles of the relevant park, does not substantially interfere with implementation of management objectives, is culturally appropriate and does not have an unacceptable degree of environmental or social/cultural impact.

Appropriate uses - Those activities that are consistent with legislation and DECC policies.

Approval - Includes a consent, licence, permission or some form of authorization.

BBQ shelter - a structure that provides shade and shelter over a BBQ for park visitors for cooking and preparation of food. Normally a roof supported by posts but may have one or more walls for additional protection.

Cafe - A building or part of a building with indoor and/or outdoor seating used for the sale of light meals and refreshments. May be dine in but may also provide a take-away service.

Car park - An area set aside for the safe parking of cars, may have a sealed or unsealed surface, may have formed parking bays or not (usually for more than one or two vehicles). Does not include road pull-off areas.

Conference/Education Centre/Field Studies Centre - a centre that provides training, conference, education or meeting facilities. Would typically include a large room with seating capacity of 20 people or more. May also include catering and dining facilities and in some instances, accommodation may be attached. May be used for staff, holiday or other accommodation.

Bush regeneration - The practice of restoring bushland by focusing on reinstating and reinforcing the system's ongoing natural regeneration processes (Australian Association of Bush Regenerators). Bush regeneration work aims to rehabilitate the bush from a weed infested or otherwise degraded plant community to a healthy community composed of locally occurring native plants.

Critical habitat - Habitat declared under Part 3 of TSC act that is critical to the survival of species or populations listed under the TSC Act 1995.

Critically endangered ecological community - An ecological community listed under Part 2 of Schedule 1a of the TSC Act 1995, that is at extremely high risk of extinction in NSW in the near future.

Critically endangered species - A species listed under Part 1 of Schedule 1a of the TSC Act 1995, that is at an extremely high risk of extinction in NSW in the near future.

Day use area - An outdoor space used by visitors providing for day use, as distinct to overnight use. The most common activity in day use areas is picnicking although some day use areas provide for other visitor uses.

Desired outcomes - Goal statements or measurable objectives which are documented in a Plan of Management implementation table

Disabled Access - Access constructed in accordance with AS1428 "Design for Access and Mobility" for use by people with restricted mobility.

Ecologically sustainable development (ESD) - ESD require the effective integration of economic and environmental considerations in decision making processes can be achieved through implementing the following principles: Precautionary principle; Inter generational equity; Conservation of biological diversity and ecological integrity; and, Environmental factors should be included in the valuation of assets and services (*Protection of the Environment Administration Act 1991 s.6(2)*).

Ecotourism - Nature-based tourism that involves education and interpretation of the natural environment and is managed to have minimal environmental impact on the sites visited. The definition recognises that the natural environment includes cultural components and that there should be an appropriate return to the local community and the long-term conservation of the resource (*Commonwealth Department of Tourism 1994*).

Endangered ecological community - An ecological community listed under Part 3 of Schedule 1 of the TSC Act 1995, that is facing a very high risk of extinction in NSW in the near future.

Endangered population - A population listed under Part 2 of Schedule 1 of the TSC Act 1995, that is facing a very high risk of extinction in NSW in the near future.

Endangered species - A species listed under Part 1 of Schedule 1 of the TSC Act 1995 that is facing a very high risk of extinction in NSW in the near future.

Fence (Boundary) - A fence that is situated on the boundary of the park where it adjoins a neighbour. (AMS)

Fence (Internal) - A fence that is situated within a park or reserve and is not a boundary fence. Solely owned and maintained by NPWS. (AMS)

Historic Building - A building that has heritage value and may be either over 25 years old, or listed on the relevant council list (local significance), state heritage register (state significance) Cth EPBC Act 1999 (national significance) or international (world heritage property). May have currently or previously had a range of uses (see homestead, hut, cabin, cottage/house)

Historical/Cultural garden or plantings - Any plantings, either native or introduced that have been historically planted at that location. This definition does not include plants which have spread significantly beyond the original plantings or seedlings of original plants, but may include replacement plantings. Examples of historical planting include (but is not limited to), stands of trees and flowers planted along roads or access routes, ornamental gardens and plants at historic sites, cultural plantings at cemeteries, orchards and hedges. May have heritage significance, but may also be a potential weed source.

Homestead - Typically the primary dwelling in a pastoral situation that provides accommodation, generally for one family. The Homestead can include external buildings such as kitchens, meat house, servants quarters, workers living quarters, bathhouse, laundry, offices, stores buildings, livestock housing, gardens, orchards and sheds etc.

Interpretation - Programs, activities and facilities aimed at giving visitors greater awareness, understanding and appreciation of the features and significance of the park.

Lookout - A high place or structure used for observation for viewing scenic values or for fire detection.

Management response - Are the actions or strategies which are documented in a Plan of Management implementation table.

Management principles - A set of principles set out in the NPWS Act 1974 for each category of land reserved under the NPWS Act 1974.

Management trail - A vehicle trail that is maintained to facilitate management activities and is not available for general public vehicular use, except for licensed access to inholdings, apiary sites or similar.

Modified natural area - An area of land where the native vegetation cover has been substantially modified or removed by human activity (other than activity relating to bush fire management or wild fire) and that is identified in a plan of management as not being appropriate for or capable of restoration.

Nature-based recreation - A recreational activity in which the experience of the natural environment forms a major motivation.

Park - All "protected area" tenures managed by the NPWS.

Picnic Area - A maintained visitor area set aside for outdoor food preparation, consumption and general recreation for groups and individuals. Tables, shelters, barbeques and toilet facilities may be provided. No camping allowed.

Picnic Shelter - A structure that provides shade and shelter for park visitors for seating and food consumption. Normally a roof supported by posts but may have one or more walls for additional protection. May or may not have picnic tables, barbeques and/or other facilities.

Prohibited - An activity can not be undertaken under legislation and/or PoMs.

Public Access road - An access road opened for vehicle use by the general public. May also be available for walking, cycling etc.

Regenerate - A process where ecological communities that have been subject to some form of disturbance such as clearing, logging or weed invasion are restored to a good condition or natural state. This process can occur through naturally processes or management intervention.

Rehabilitate - To restore an ecological community to a good condition or former state using management intervention.

Revegetation - Produce a new growth of vegetation on (disturbed or barren ground)

Restoration - Returning the existing fabric of an historic place to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material (Burra Charter) (Use rehabilitation when referring to restoration of natural areas).

Restricted Public Access road - An access road generally closed to use by the public, however access via locked gates may be permitted by permit.

Threatened species, population and ecological community - Species, populations and ecological communities listed under Schedules 1 or 2 of the TSC act.

Vehicle - (a) a boat or other object that, while floating on water or submerged, whether wholly or partly, under water, is wholly or partly used for the conveyance of persons or things,

(b) an apparatus that, while propelled, or directed or controlled, in the air by human or mechanical power or by the wind, is wholly or partly used for the conveyance of persons or things,

(c) a motor vehicle,

(d) an apparatus propelled, or directed or controlled, upon land, snow or ice by human or animal power or by the wind, and

(e) a trailer or caravan, whether or not it is in the course of being towed. (NPWS Act)

Viewing platform - A structure for viewing scenic values of an area while maintaining a high level of visitor safety.

Visitor Centre - A place that provides information on the area's attractions and is often a retail outlet for maps, brochures, souvenirs and items relevant to the local area. Provides displays that interpret the natural and cultural features of the local environment.

Vulnerable ecological community - An ecological community listed under Part 2 of Schedule 2 of the TSC act, that is facing a high risk of extinction in NSW in the medium term.

Vulnerable Species - A species listed under part 1 of schedule 2 of the TSC act, that is facing a high risk of extinction in NSW in the medium term.

Walking Track Classes - An accessibility and difficulty grading as defined by AS2156 Walking Tracks.

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Masterplanning Mapping Legends

A compilation of mapping legends used throughout this report have been consolidated onto this page as follows as a quick reference.

Note: All development areas included on plans are subject to change and represent indicative design for roads/ open space etc at the time of the Landscape Masterplan report being written. This will be subject to ongoing design development.

Regional Park Masterplan (section 5.0)

- Boundary recreation zone 3
- Zone1 : Habitat Focus - restricted access
- Zone 2 : Secondary Habitat Focus - controlled access
- Adjoining Development Ropes Crossing
- Open Space in Ropes Crossing Development
- Existing Vegetation Habitat
- Newly Regenerated Areas
- Newly Revegetated Areas
- Recreation : Interpretation Experience
- Recreation : Kick about Open Space
- Recreation : Picnic Areas
- Nursery
- Visitor Centre and Event Hall
- National Park Work Shop
- Multifunction Heritage Space
- Pedestrian / Cycle Entry Access
- Vehicular Entry Access
- Parking - Event Carpark
- Parking - To building
- Parking - Daily
- Vehicular Access
- Existing Tracks Proposed as Interpretation Walks
- Interpretation Walks Access Proposed
- Shared Sealed Access
- Shared Unsealed Access
- Adjoining Access Routes

Key Factors Map (Fig 3.1.1)

- Dam / Other Water body
- Alluvial Woodland
- Development Open Space
- Regional Open Space
- Regional Park
- Existing ADI Building
- South Creek
- Ropes Creek
- Existing Secondary Creek
- Existing Sealed Road
- Existing Gravel Road
- Existing Cleared (Grassed) Road / Track
- Existing Sealed Path
- Existing Track
- Existing Former Track Overgrown

Action Plan (Fig 7.0)

- Stage 1 Works Main Visitor Precinct
- Stage 2 Works Western Visitor Precinct
- Stage 3 Works Central Visitor Precinct
- Future Stage Works - Recreational Precincts
- Regional Park - Ongoing Works

Services and Infrastructure (Fig 2.6.1)

- Bund earthforms
- Existing ADI Buildings
- Dams
- Past Rail Line
- Drainage channels
- High voltage transmission line
- Wianamatta Creek
- Possible power, water, sewer, connections to mains.

Access and Relationship to adjoining Communities (Fig 2.5.9)

- Existing Sealed Road
- Existing Gravel Road
- Existing Cleared (Grassed) Road / Track
- Existing Track
- Existing Former Track Overgrown
- Regional Park Boundary
- Regional Park
- Open Space in Development area

1.0 INTRODUCTION

1 INTRODUCTION

1.1 Background

The Wianamatta Regional Park (WRP) covers approximately 900 hectares of the former Australian Defence Industries (ADI) site at St Marys in Western Sydney. The site sits approximately 45 kilometres (kms) west of the Sydney CBD and is located 5 Kms north-east of Penrith and 12 kms west of Blacktown (refer Figure 1.1).

The overall ADI site has an area of 1545ha, and stretches roughly 7 kms east to west and 2 kms north to south. The residential suburbs of Willmot, Shalvey, Lethbridge Park, St Marys, Werrington County, Werrington Downs, Cambridge Gardens and Cranebrook bound the site to the south, west and east while the areas of Llandilo and Shanes Park lie to the north of the site and are rural in nature (refer Figure 1.2). The site sits within two local government areas, the eastern portion is within Blacktown City Council area while the west is governed by Penrith City Council. The Park is also within the traditional Darug Aboriginal country and the Deerubbin Local Aboriginal Land Council area.

The land developer (Delfin Lend Lease) portion of the site is expressed as five development precincts, Eastern (Ropes Crossing), Ropes Creek, Dunheved, Central and Western (refer figure 1.0). The Dunheved Precinct supports employment development only, while the Central precinct will support both employment and residential land uses. All other precincts have a residential focus.

A human-made dam located in the south-west corner of the site, commonly known as the “Secret Garden”, has also been zoned as Regional Park. This area has a number of unresolved management issues, including the safety of the dam structure, stormwater management, and the boundary interface with development areas. It is not part of the current Development Agreement which transfers the Park to DECCW and it is therefore not specifically included in this plan. Other lands may also be considered for addition to the Regional Park in the future. (dPoM p2)

Other surrounding land uses include the St Marys Sewerage Treatment Plant and Dunheved Golf Course to the south, while market gardens and transmission station (Shanes Park Air Services site) sit to the north and north-east. The WRP lies within the Sydney Basin Bioregion along with the Castlereagh, Windsor Downs and Agnes Banks Nature Reserve managed by NSW National Parks and Wildlife Services. The former Australian Defence Industries (ADI) site at St Marys was endorsed by the NSW Government for inclusion in the Urban Development Program (UDP) in 1993. The site was seen to present an opportunity to provide housing for Sydney’s growing population within an environmentally sustainable framework.

The WRP site contains several (pre ADI) heritage sites, bushland vegetation and numerous remnants of the sites use for munitions manufacturing for the ADI These remnants include access infrastructure - roads and tracks, building foot prints and topographical berms/ mounds. The site has played an important part in the local history of Western Sydney including early associated development and the ADI ammunitions site. A condition of the acquisition of the site was that high value areas were retained to be developed as a Regional Park.

The masterplanning process for the Wianamatta Regional Park has considered sustainability as an over-arching principle and focus for the site’s future use and development. This has taken into account that all facets of the site and their inter-relationships need to be examined with a long term view to a sustainable future. This includes heritage components, built elements and their adaptive re-use, facilities and infrastructure or services. Beyond this physical fabric, sustainability also relates to the education of parkland users, the way in which the site is accessed and the promotion of both a local and global community through management and use of the Park.

The masterplan provides the long term directions for the site’s development while also considering that a staged approach and action plan will be necessary to meet NPWS’s budget constraints.

The key objectives of management for the Park as defined in the Wianamatta Regional Park Plan of Management are:

1. Protection and enhancement of the natural heritage of the Park, particularly the endangered ecological communities and the threatened flora and fauna species through the management of fire, disturbed areas, drainage, introduced species, access and visitor use.
2. Recognition and protection of traditional and contemporary Aboriginal cultural heritage, landscape and spiritual values through providing opportunities for the involvement of the traditional owners and the local Aboriginal community in the protection, interpretation and management of their heritage and values.
3. Protection of historic heritage through identifying, recording, conserving and interpreting historic items and places.
4. Protection of the catchment values of South and Ropes Creeks through managing any disturbances, particularly those associated with fire, access and drainage.
5. Provision of recreational facilities that are appropriate in a regional context and are designed, located and managed to protect the natural and cultural heritage and visual values of the Park.
6. Provision of interpretive and educational opportunities through signage, park brochures and activities to assist visitor understanding and enjoyment of the Park.
7. Improving knowledge of natural and cultural heritage, corresponding threats and the evaluation of management programs through research and monitoring. Working with local government, other agencies and authorities, the community and commercial interests to maximise community interest and involvement in the conservation of the Park, and the implementation of sympathetic conservation measures in the neighbouring environment.

1 INTRODUCTION

1.2 Site configuration

The Regional Park incorporates the major areas of vegetation habitat and conservation importance across the St Marys site as defined in the St Marys SREP 2001. As a consequence the park is divided by urban development precincts and existing road corridors. Whilst this does exacerbate the park's edge to area ratio (there is 37km of edge to adjoining lands / land managers) and potential for related management issues, it also creates opportunities for a high level of accessibility to adjoining residential areas.

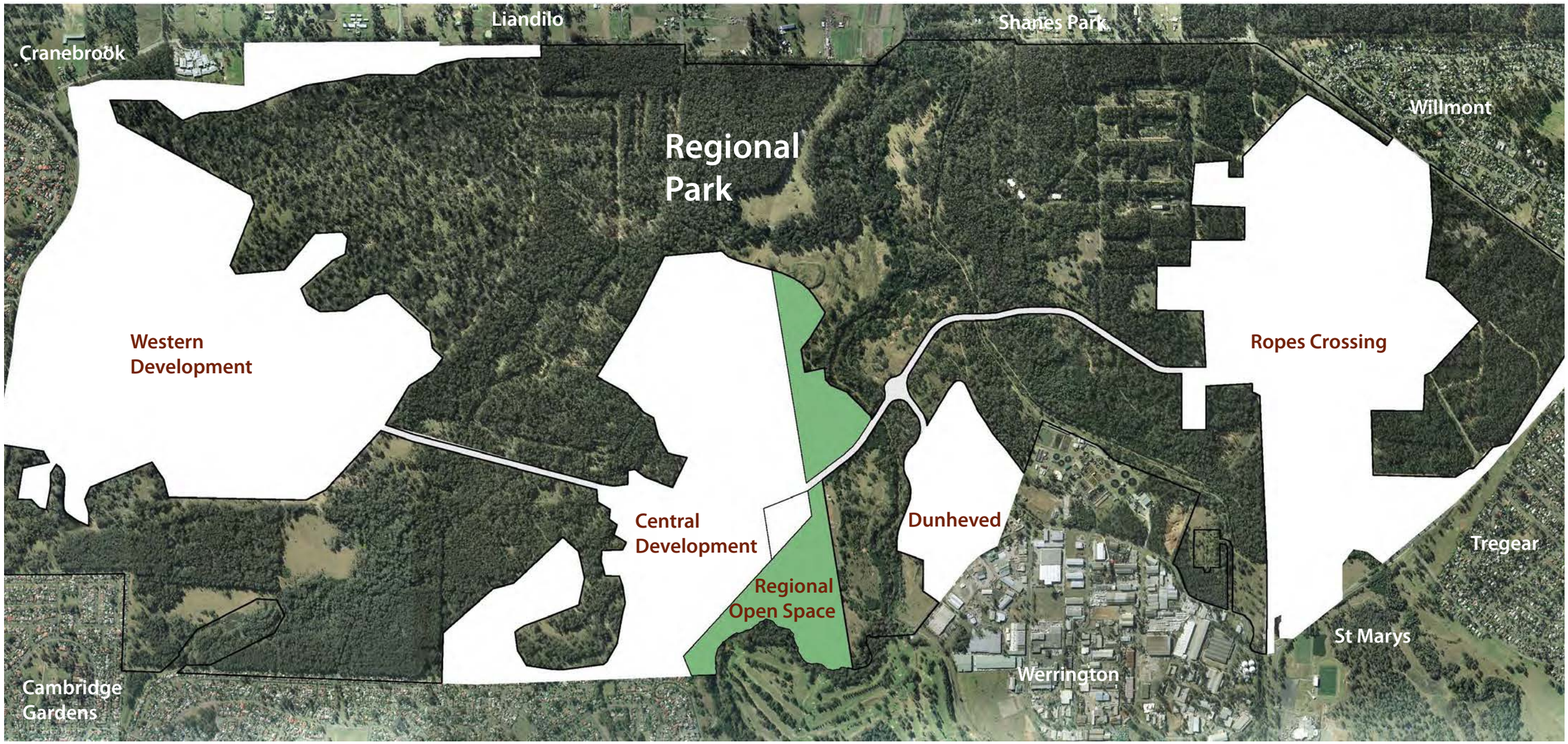


Figure 1.1 ADI Site Map: includes; Wianamatta Regional Park, Delfin Lend Lease Development Precincts & neighbouring suburbs

1 INTRODUCTION

1.3 Project vision

Aims and Objectives

The NSW National Parks and Wildlife Service of the Department of Environment Climate Change and Water (DECCW) commissioned Environmental Partnership (Landscape Architects) in June 2009 to prepare a masterplan for the Wianamatta Regional Park located on the former ADI site at St Marys. The project team incorporated a number of specialist inputs:

Godden Mackay Logan	*Heritage Planning, Aboriginal Community Liaison & Interpretation*
Carolyn Stone	*Consultation Planning and Facilitation*

Core aims for development of the masterplan as identified in NPWS brief included:

- Identification and protection of significant heritage items
- Development of visitor facilities
- Provision of traffic circulation
- Provision of access routes into and within the park linking to regional connections
- Car parking and management of different landscape areas and boundary interfaces

Key project objectives are:

- To provide strategic direction based on the plan of management for future management of the park including long term conservation and landscape management outcomes;
- To identify broad scale conservation, use, linkages, services, infrastructure and access zones across the park;
- To identify key access points, connections and circulation routes; and
- To identify appropriate levels of access and visitor facilities across the park.

In order to meet these objectives the precinct plans have taken into account the following:

1. The requirements of the Wianamatta Regional Park Plan of Management;
2. The findings of the Conservation Management Plan;
3. Considers the natural and cultural values of the places as well as community aspirations and needs; and
4. Takes a long term view to developing visitor improvements in the park.

Vision

The full realisation of a Regional Park and related uses and management of the scale of Wianamatta Regional Park will be a long term undertaking. Required actions must be prioritised to enable available resources to be best focussed on those actions that will enable recreational use to be commenced by the public, and important conservation and habitat management actions to be initiated.

As such it is necessary to think of implementation of the park in both the short term and long term. Visions to reach each of these phases of park implementation are outlined following:

Short term vision

Provide for initiation of high priority management regimes for habitat and cultural heritage conservation, and actions for commencement of public use, enjoyment and appreciation of the park.

Long term vision

Consolidate habitat and cultural heritage conservation to complement recreational use and education, and involve the broad range of stakeholders in its planning and management.

Build upon core recreation opportunities of walking, cycling, and picnicking in a bushland setting. Provide dynamic interpretation of conservation values, special events areas and programmed education.

2.0 REVIEW

2 REVIEW

2.1 Natural Systems

Flora

The Park protects a number of Endangered Ecological Communities including Shale Plains Woodland, Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Alluvial Woodland. Along with several wetland communities and Castlereagh Scribbly Gum Forest which are poorly represented in western Sydney. Generally the vegetation communities found across the site (refer figure 2.1.1) have been highly impacted over many years from significant disturbance. As a result weed infestation has affected major areas across the park. The PoM identifies that fire is potentially an important factor in reestablishing vegetation communities such as the Cumberland Plain Woodland, as well as providing an effective weed management tool. The integration of such management strategies with recreational goals for the park is a significant challenge to be addressed.

dPoM Desired Outcomes

- The full range of native plant and animal species and their habitats found in the park is conserved.
- A diversity of vegetation structures and other habitat values are conserved, and restored where they have been subject to past disturbance.
- The endangered ecological communities and populations within the Park are protected.
- Rare, threatened & regionally significant native species and their habitats within the Park are protected.
- Park neighbours support conservation of remaining areas of privately owned native vegetation near the Park.
- Habitat linkages for biodiversity movement within a regional context are established and maintained.

Fauna

Careful management of macrofauna to sustainable levels will enable more holistic habitat values and capacity to be pursued which reflect the sites natural values and caters for a broad range of potential fauna species on the site. Management of uses should ensure that highest quality of potential habitat areas have a conservation focus.

PoM Desired Outcomes

- A sustainable population of macrofauna will be retained in the Park.
- Any decision on long-term fencing for the management of macrofauna, once they have reached a sustainable population size, will seek the best possible environmental result.
- Protection of habitat of native species will include actions to minimise illegal activities.
- Threatening processes from surrounding urban areas are minimised.

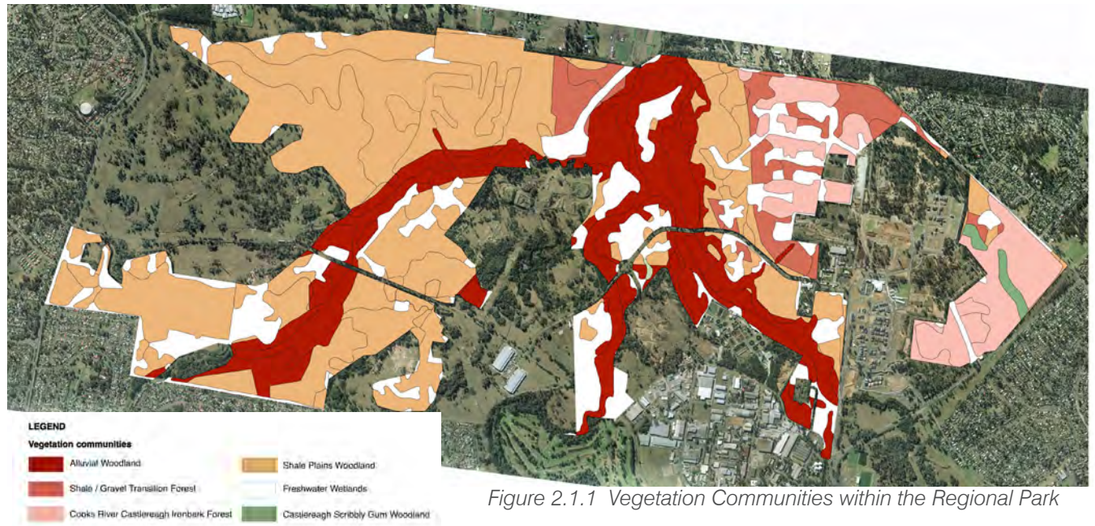
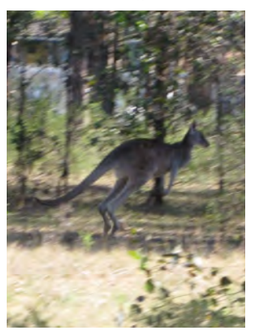


Figure 2.1.1 Vegetation Communities within the Regional Park

Figure 2.1.2 Fauna habitat within the Regional Park



Site Images: Existing flora and fauna found in the Regional Park Fauna habitat within the Regional Park (Source: EP NSW)

2 REVIEW

2.2 Soils, topography and drainage

The landform of the Regional Park comprises several main units:

1. The central floodplain around the Ropes and South / Wianamatta Creek systems
2. The undulating plains adjoining
3. Higher steeper pockets in the east adjoining Forrester Road and northwest and southwest

These units shape much of the physical character of the site and as a result have influenced past land use and ongoing opportunities and pressures for the Regional Park.

Extensive excavation undertaken during past land uses have resulted in much of the Regional Park being affected by poor drainage and soil erosion.

The Department of Infrastructure, Planning and Natural Resources (2002) modelling of the salinity potential for Western Sydney indicated that the area covered by the St Marys property has a moderate salinity potential especially along the creek lines (dPoM page 39). Residual contamination risks within Site 6, Site 23 (see Fig 2.2.3) and areas under existing infrastructure may require further investigation, remediation and validation during any construction process.

The four soil landscape groups identified in the Regional Park provide an important educational and research resource.

A total water management system has been designed by Delfin Lend Lease based on the St Marys REP to effectively manage the water quality entering and leaving the Regional Park and surrounding development precincts. This will include one to two additional basins adjacent the Regional Park adjacent the Western and Central Precincts and potential long term management of he remnant dam south of the Western Precinct.

dPoM Desired Outcomes

- Human induced soil erosion in the Regional Park is minimised.
- Soil Management practises within the Regional Park do not have any negative impacts on neighbouring landholders.
- Areas affected by soil erosion, salinity and contamination in the Regional Park are identified and remediated.
- Use of water sensitive strategies in the design of recreational and interpretative facilities.

Site Images: A variety of topographical conditions (Source: EP NSW)

Figure 2.2.1 Site topography

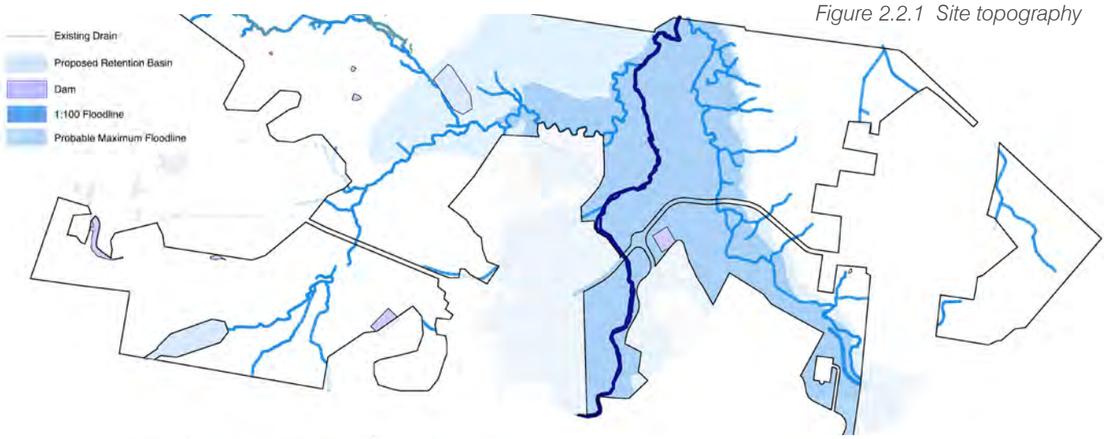


Figure 2.2.2 Creeks local catchment areas and water basins

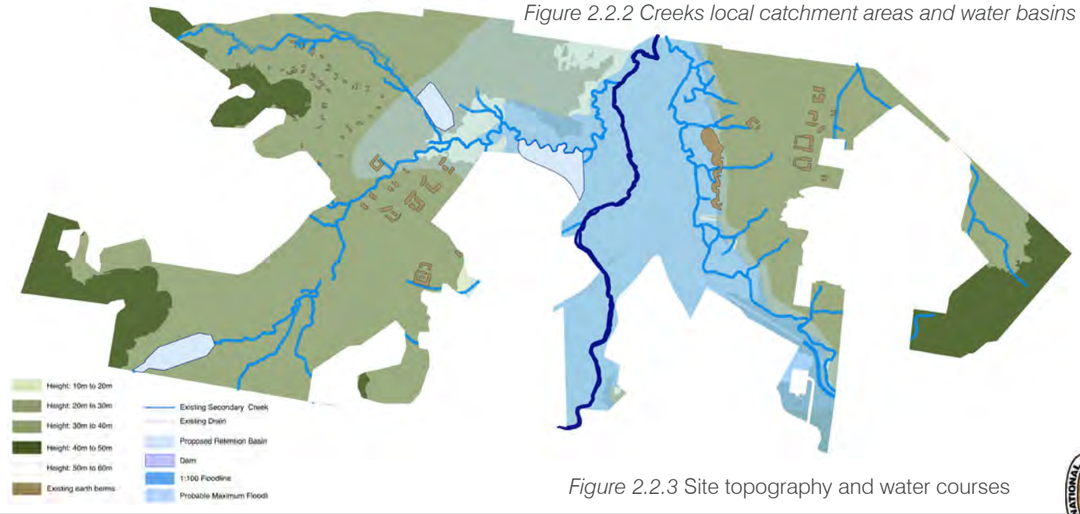


Figure 2.2.3 Site topography and water courses

2 REVIEW

2.3 Environmental management & parkland sustainability

Fire Management

Although fire is a potentially important process in the Australian landscape, inappropriate fire regimes may have an impact on the biodiversity of the Regional Park. Fire could also damage the cultural heritage of the Regional Park and built and natural Regional Park assets.

The fire history of the St Marys property has been recorded since 2000. Most of the unplanned fires were suspected arson attacks originating along roads and tracks. Prior to this, some areas of the site were managed with planned fire events almost yearly to prevent any threat to stored munitions from wildfire (ERM 2002). By contrast the majority of the site has not been burnt.

Asset Protection Zone

A buffer zone, known as the Asset Protection Zone (APZ) exists along all borders of the Regional Park located within adjoining residential development land. This buffer has the purpose of minimising bushfire fuels (eg vegetation) between the Regional Park and homes. The buffer zone in some areas may include part of the residential and commercial development lots bordering the Regional Park.

Sustainability

The planning and implementation of the Regional Park must fundamentally embody a sustainable approach. This will involve a whole of project / whole of life integrated approach across all facets. This includes:

- Optimising capture and re-use of rainwater / stormwater
- Optimising powering of facilities from power generated on site or redirected to grid
- Minimising energy use in park facilities and management
- Optimising opportunities for access by non motorised transport and public transport
- Maximising sustainability of design and construction
  - Materials
  - Fabrication
  - Construction
  - Maintenance
  - Disposal at end-of-life

dPoM Desired Outcomes

- Reserve fire management planning for the Regional Park must ensure the protection of life and property on or adjacent to the Park.
- Fire regimes are appropriate for long-term maintenance of the Regional Park's plant and animal communities.
- The occurrence of unplanned bushfires and the spread of bushfires on, from, or into the Regional Park are minimised.
- Aboriginal sites, historic places and culturally significant features are protected from damage by bushfires.
- Fire is managed to enhance spatial variability and to ensure species always have habitat available within the Regional Park.
- Fire is managed to maintain a range of structural types within the vegetation (eg some high *Bursaria spinosa* density/cover patches, some low *Bursaria spinosa* cover/density)
- Fire management is used to decrease, rather than increase the occurrence of introduced plant species in the Regional Park

Site Images: Typical "full strata" Cumberland Plain vegetation (Source: EP NSW)

2 REVIEW

2.4 Heritage management & interpretation

Values

The CMP prepared concurrently with this document identifies heritage values of the site - a summary of which follows:

Natural

- The Regional Park protects a number of Endangered Ecological Communities and poorly represented communities
- The Regional Park protects several threatened plant species and an endangered population of the species Marsdenia viridiflora subsp. viridiflora.
- The Regional Park protects at least six threatened animal species and is a significant link for plant and animal movements along both South and Ropes Creek corridors and to and from other regional areas.
- The Regional Park protects an area where four soil landscape groups can be seen in close proximity and where an east-west gradation in soil and geology occurs demonstrating the close relationships between soils and vegetation that have evolved over millions of years in the Cumberland Plain

Cultural

- The floodplain of the 2 major creeks in the Regional Park (Ropes and South / Wianamatta Creek) would have been an important meeting place and source of food for Aboriginal communities.
- The Regional Park protects spiritual values attributed to the heritage of the Park by the Aboriginal community and evidence of Aboriginal occupation and use across the site in the form of stone artefacts and open artefact scatters.
- The Regional Park contains a large area of western Sydney landscape which has been relatively undisturbed, thereby providing a significant opportunity for future research into Aboriginal site distribution and land-use.
- Parts of the Park have a history of stock grazing and timber clearing from 1803 to the 1940s and beyond. These areas provide examples of the impacts of these historic practices on the landscape and the processes of ecological recovery.
- Landscape features such as old fence lines and tracks indicate original grazing property boundaries, and more recently grass species research for grazing of sheep by CSIRO.
- There are a number of historical remains that demonstrate munitions production and storage in the Regional Park.
- Within the ADI site boundary is a number of locally significant heritage sites including: ‘Dunheved Homestead Site’ (potentially state significant), ‘tree plantings near the homestead’, ‘Elizabeth farm site’, ‘Luxford’s House’, ‘Ropes Creek Bridge’, ‘South / Wianamatta Creek Bridge’, ‘the road between the two bridges’, Jackson’s Dairy’, ‘House Site’ and ‘House site-chimney’.

Significance

The CMP identifies the cultural heritage significance of the site under 8 key phases. The masterplan strategies provide guidance to interpretation of each phase through development and management of the Regional Park

1. Natural landscape
2. Aboriginal lands - Darug Country
3. Colonial landscape (1800 - 1860)
4. Growth and development (1860s to 1940s)
5. Munitions - explosives and filling (1941 - 1946)
   Munitions - munitions and storage - project 590 (1950s to 1990s)
6. Revitalisation and conservation - post industrial (1993-2001)
   Revitalisation and conservation - Regional Park (2001 onwards)

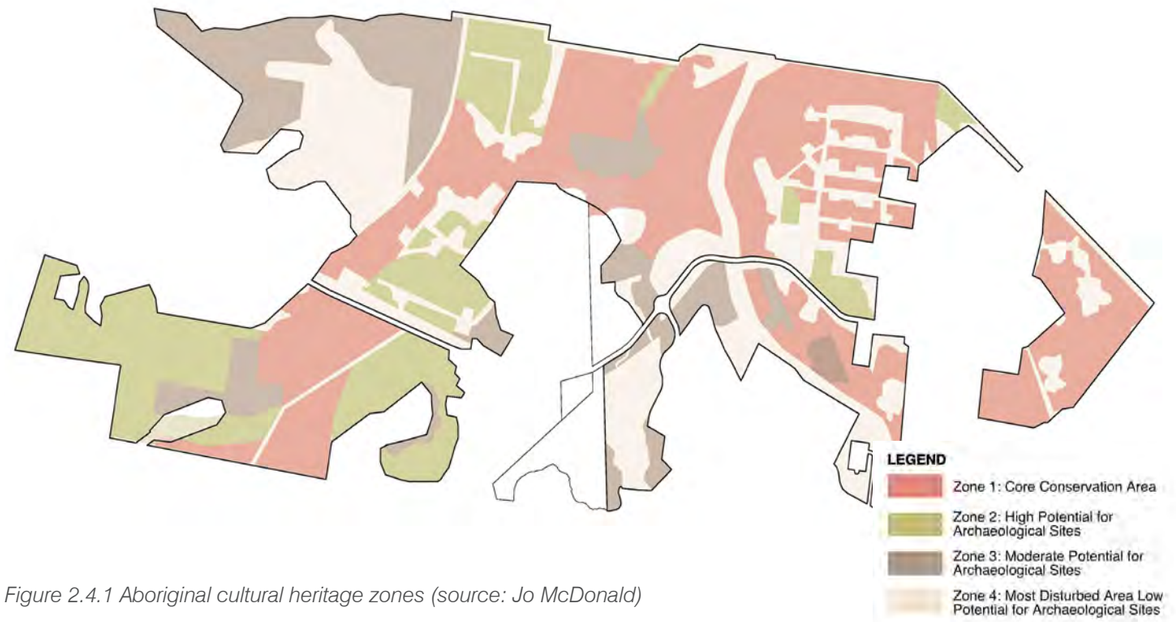


Figure 2.4.1 Aboriginal cultural heritage zones (source: Jo McDonald)

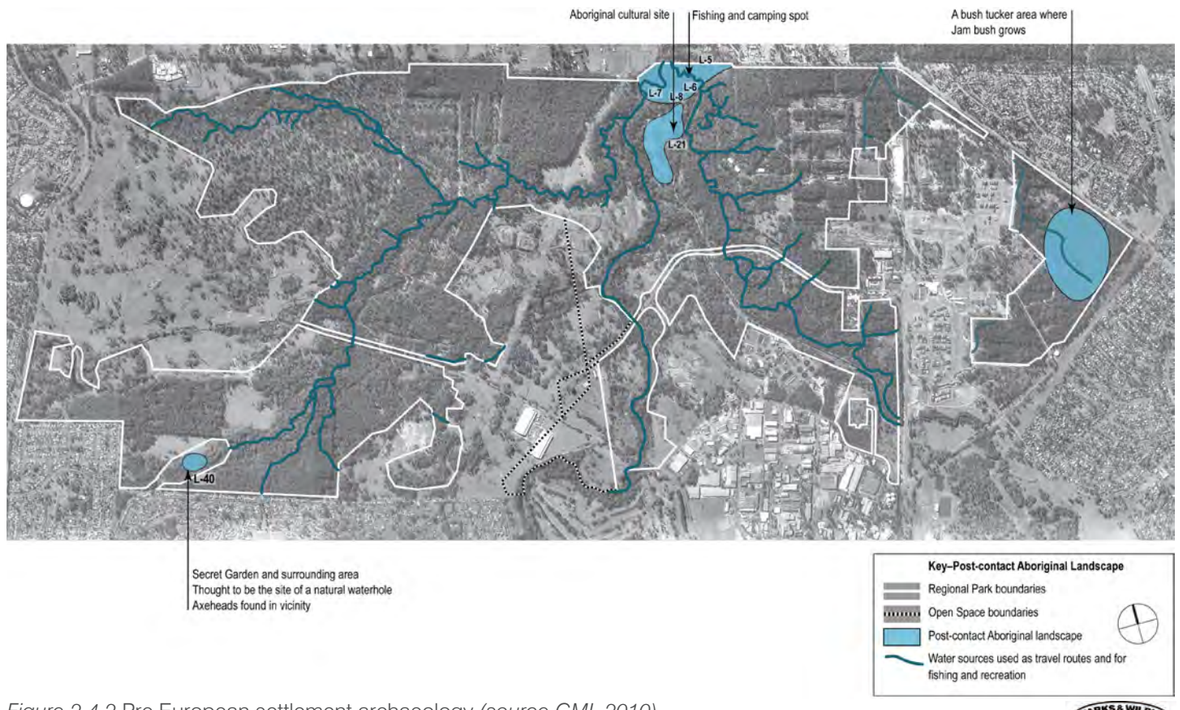


Figure 2.4.2 Pre European settlement archaeology *(source GML 2010)*

2 REVIEW

2.4 Heritage management & interpretation

Photo looking across Dunheved showing the house and its associated buildings (Source: Mitchell Library, State Library of NSW)

Conrad Martins's painting of Dunheved 1837, showing the house to the right and its associated buildings to the left (Source: Mitchell Library, State Library of NSW)

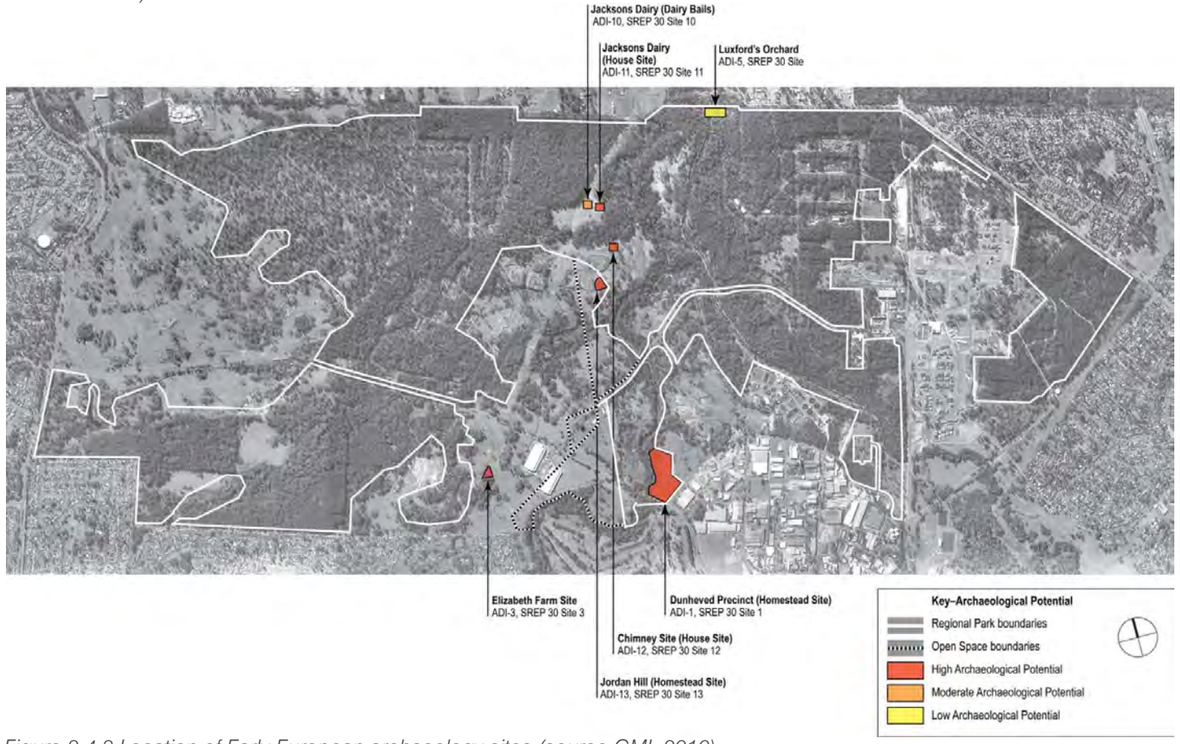


Figure 2.4.3 Location of Early European archaeology sites (source GML 2010)

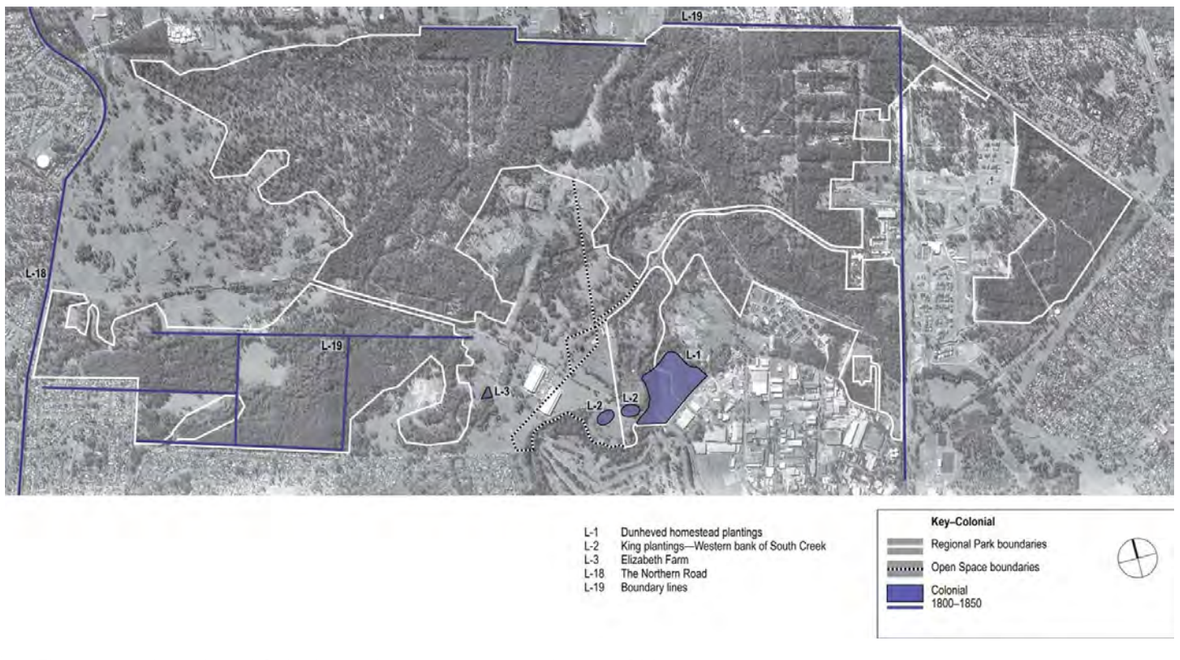


Figure 2.4.4 Location of Colonial landscape 1800-1860 (source GML 2010)

2 REVIEW

2.4 Heritage management & interpretation

Significance of individual elements

Significance of existing elements of the landscape was identified in the CMP and must be considered in the masterplan.

Existing Site Boundary

- Some portions of the present site boundary reflect historical patterns of subdivision, mainly from Colonial Phase 3 and Growth and Development Phase 4. They are a direct reflection of field boundaries which date from land grants and rural holdings. Some of these are also reinforced by differences in natural and managed landscape.

Other Boundaries within the Regional Park

- Other delineations in the landscape also reflect historical patterns of subdivision and land management. They remain in evidence through road and fence alignments and differences in the natural and managed landscape including age, density and type of vegetation and, in some cases, cleared areas.

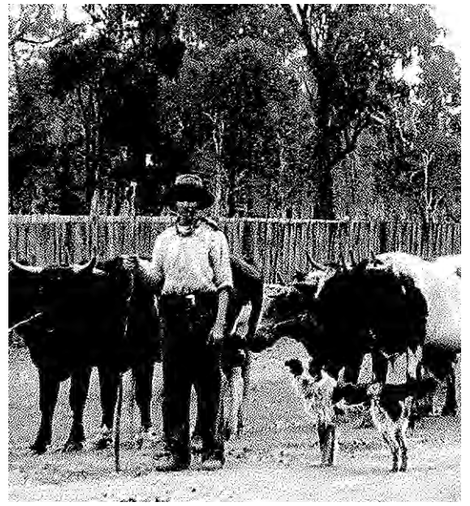
General Topography and Landforms, Including Remnant Vegetation

- The present topography and landforms comprise an important cultural landscape that has been modified over 200 years. It recalls both the specific setting of the original colonial land grants (such as Dunheved, and also some of the former rural character of the wider setting, since lost through incremental development of the wider district.
- Dunheved is a significant remnant of a colonial farm landscape, reflecting the nineteenth century rural aesthetic with potential to shed light on early settlement patterns and early methods of agriculture.
- The existing vegetation within the park is almost exclusively re-growth, mostly dating to post-1943. The trees recall the pre-European vegetation cover but their significance as a cultural heritage feature (as opposed to a natural heritage feature) is limited (some isolated pre 1940's stands remain).
- Some aspects of the vegetation on site have been actively managed since and possibly prior to the mid-nineteenth century. These include a number cleared areas which remain clear of regrowth and a number of stands of mature eucalypts including those associated with creeklines and fencelines.

Dunheved Homestead

- The archaeological remains of Dunheved Homestead Site constitutes an in-situ record of an early colonial estate with close associations with Governor King and his family, and important evidence of the westward expansion of the colony in the early years of settlement and of early attempts at agriculture in previously unsettled areas.
- The remains of the homestead makes a highly significant contribution to the remnant cultural landscape, contributing to the legibility of the original and early settlement landscape and being an uncommon and representative example of a farm from the early colonial period.
- The homestead location and remnant cultural landscape (trees, remnant hedge and garden plantings and cleared areas) contribute to our understanding of the colonial rural aesthetic. The archaeological relics associated with the homestead have the potential to contribute significantly to our understanding of the conditions and lifestyle of colonial society.
- The visual connection with cultural plantings to the west of Dunheved (outside the Regional Park but within an area allocated as open space) is also important.
- Whilst the Elizabeth Farm site is not located within the boundary of Wianamatta Regional Park, it has been assessed as being an ancillary site supporting a major colonial estate and as such, should be considered as part of the suite of 'King Family' sites (Dunheved landscape).

James and Charlotte Luxford - they ran a dairy farm (Source: Mitchell Library, State Library of NSW)



Fred Luxford with Bullock dray (Source: Mitchell Library, State Library of NSW)

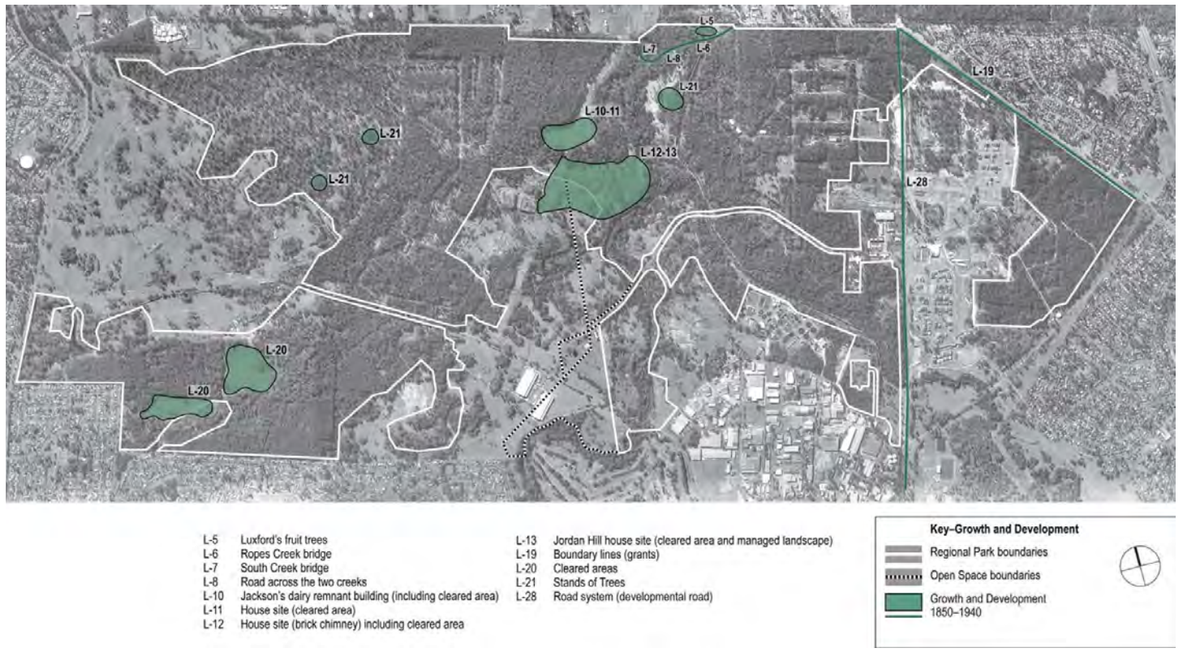


Figure 2.4.5 Location of Growth and Development Phase (1851 to 1941) heritage (source GML 2010)

2.4 Heritage management & interpretation

Thelma May Casey packing ammunition at St Marys filling factory in 1943 (source Australian War memorial)

Women workers made up 42% of munitions workers between 1942-1945 (source Australian War memorial)

Workers filling shells at St Marys filling factory in 1962 (source Australian War memorial)

Explosion of a truck carrying materials in 1962 (source Australian War memorial)

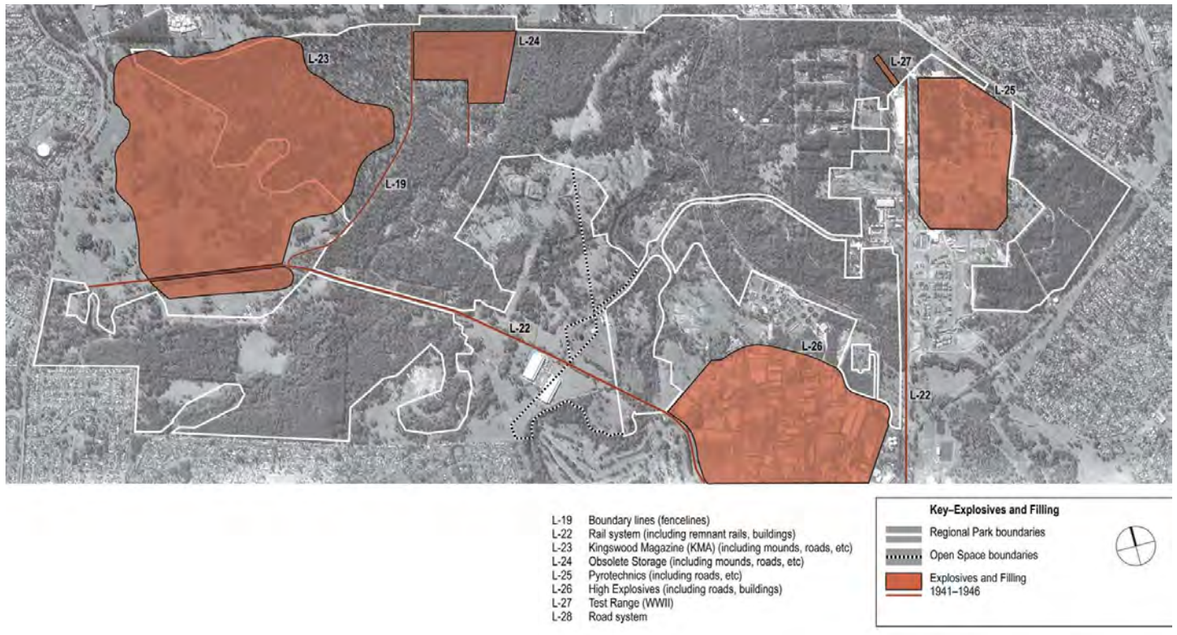


Figure 2.4.6 Location of Explosives & Filling Phase (1914 to 1946) heritage (source GML 2010)

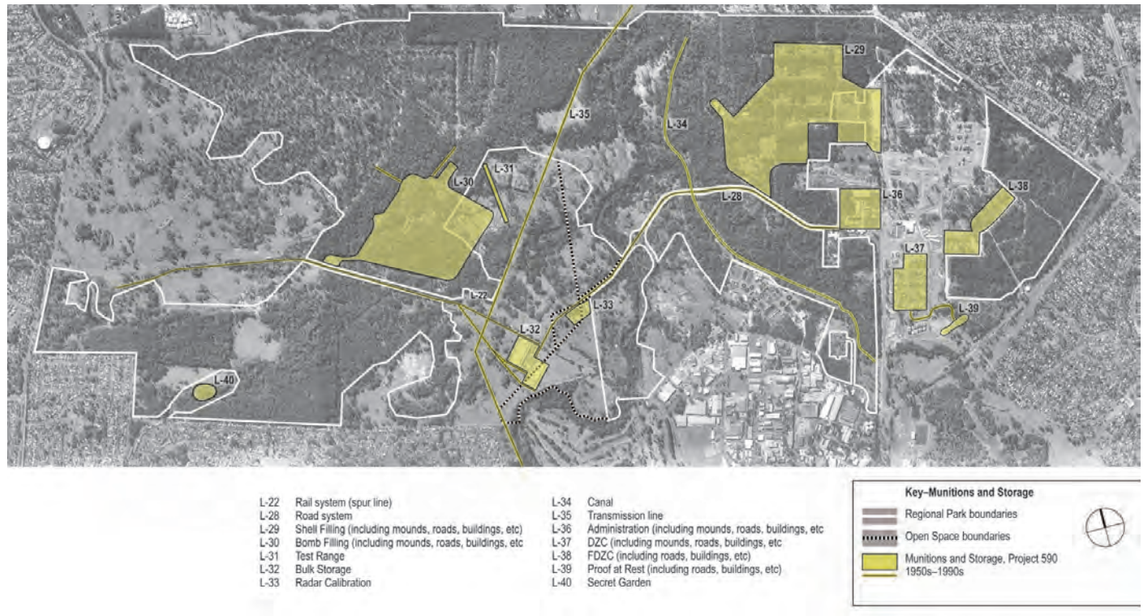


Figure 2.4.7 Location of Munitions & Storage Phase (1950 to 1990s) heritage (source GML 2010)

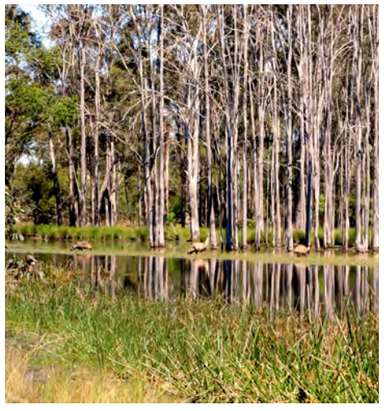
2 REVIEW

2.4 Heritage management & interpretation

Site Image: Exceptional significance area (Source: EP NSW)

Site Image: High significance area (Source: EP NSW)

Site Image: Moderate significance area (Source: EP NSW)



Site Image: Some significance area (Source: EP NSW)

Community action was part of conservation history and should be interpreted (Source: www.adisite.org)

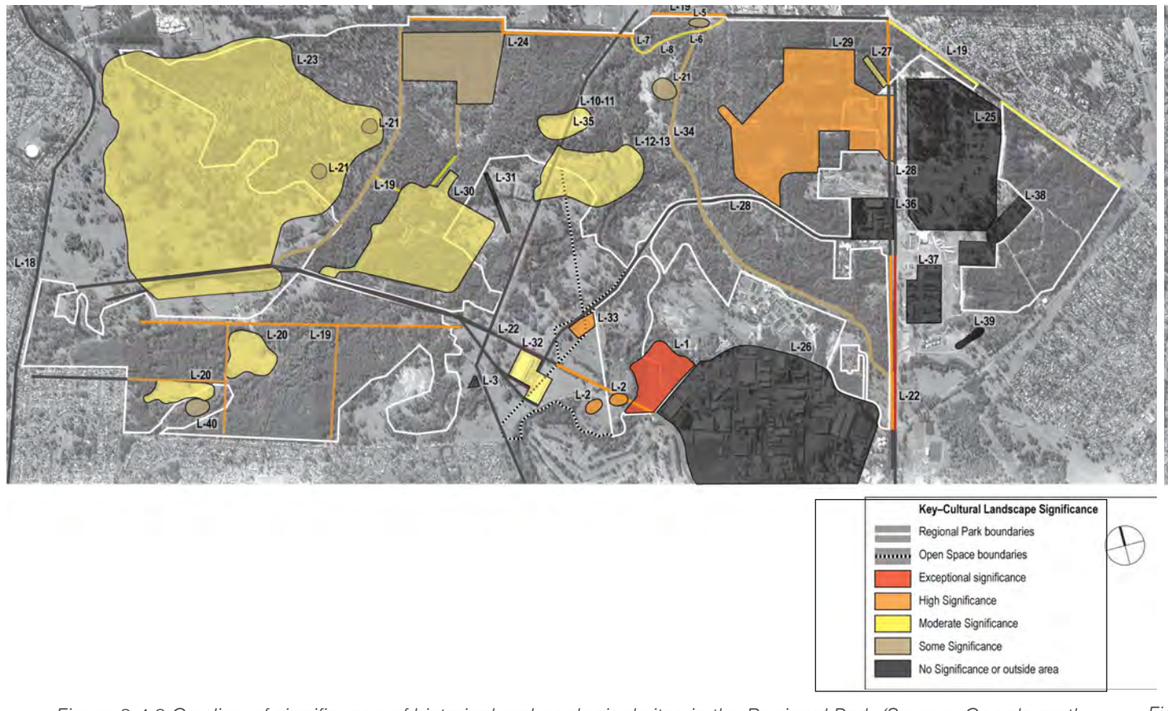


Figure 2.4.8 Grading of significance of historical archaeological sites in the Regional Park (Source: Google earth 2009 with GML overlay 2010)

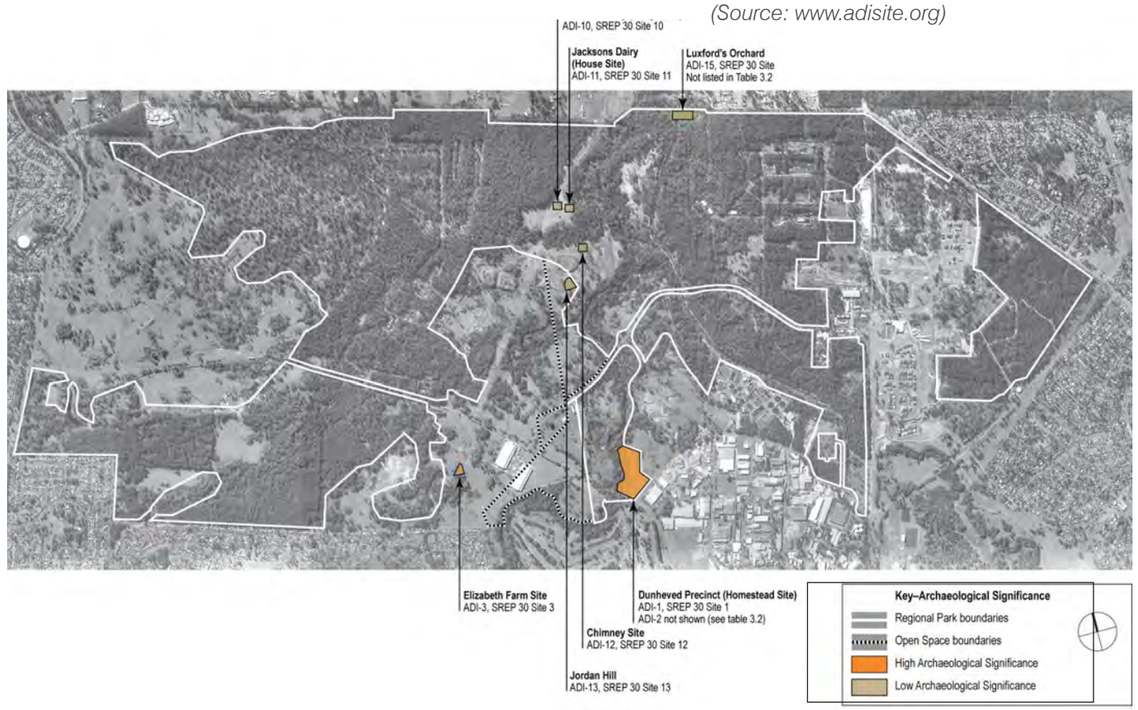


Figure 2.4.9 Grading of significance of the cultural landscape elements within and partially within the Regional Park (Source: Google earth 2009 with GML overlay 2010)

Significance of individual elements

Jackson's Dairy

- Jackson's Dairy site comprises both the above-ground ruin of the dairy bails and the sub-surface structural remains, as well as the adjacent archaeological house site.
- Archaeological relics deriving from the site may shed light on certain elements of the local area's history small-scale farming initiatives.
- The archaeological site is also within a cleared area which provides a setting evocative of the farming use of the site. These sites also represent an important (Growth and Development) phase in the history of the local area.

Luxford's Orchard (Remnant)

- Evidence of orchards and possible outbuildings associated with Luxford's farm represent continued local agricultural development from the late nineteenth to early twentieth century.

Road and Bridges from Growth and Development Phase

- The late nineteenth century road linking Llandilo to the Northern Road and the two associated bridges crossing Ropes and South / Wianamatta Creeks provides evidence of the infrastructure associated with farming during Growth and Development Phase 4 and is evocative of this period.

Chimney Site

- The chimney ruin and sub-surface structural features form the remains of a 20th century house. This house site is representative of rural regional development.
- This site is within a larger cleared landscape edged to the east by an arc of retained, mature eucalypts. This shared cleared area links it visually to Jordan Hill (see below).
- The western edge of the cleared area includes a track which also linked these properties with the outside world and also served Jackson's dairy. The group of sites in this central precinct of the Wianamatta Regional Park is evocative of the interdependence of rural holdings in the area in Phase 4.

Jordan Hill Site (NOT within Regional Park Boundary)

- Jordan Hill homestead was one of the better-known nineteenth century dwellings (the Growth and Development phase), which was demolished sometime after 1940. Archaeological features, deposits and relics may have potential to make a contribution to an understanding of the evolution and activities of an early rural homestead complex within a local rural tenancy context.
- A number of groves of deciduous trees are escapee remnants of the homestead. A number of mature eucalypts indicate managed plantings within the cleared farm setting (see Chimney Site, above). The site is listed on the Register of the National Estate.

Rail and Road Networks from Munitions Phase

- Rail and road networks provide the clearest physical indication of the disbursement of the ADI St Marys factory operations across the site and the scale of these operations.
- These transport systems include major road and rail corridors, tight networks of roads within functional areas and feeder roads between functional areas and transport corridors. Along with the remaining buildings and earthworks associated with demolished buildings, these networks provide a basis for an understanding of the processes and scale involved in munitions manufacture.

Views and Vistas

- Views and vistas are limited due to the natural topography of the site and due to the regrowth of vegetation. A number of significant historical views exist at the site (refer Figure 2.4.8 for locations):

- View from and to Dunheved house site (L-1) and the King plantings (L-2);
- Views between Jordan Hill (L-13) and House Site (L-12);
- View from Jordan Hill (L-13) and House Site (L-12) to the access track to the west;

Heritage Themes

The CMP identifies a series of potential interpretation themes (storey lines) to guide the masterplan process and be integrated into ongoing design and management of improvements to the park.

A Resilient Landscape Restores

- The topography and natural vegetation of this site is the result of dramatic transformation through natural processes and human occupation and modification.
- The Cumberland Plain is the Sydney Basin's most significant geological feature and this park typifies its gentle undulating character.
- The Park represents three main geological formations, four soil types which support though modified, remnants of four Cumberland Plain ecological communities.

Wianamatta - our Mother Country

- Wianamatta Regional Park is the traditional country of the Darug. Their country was their life force, sustaining them physically and spiritually. It was carefully managed according to a complex system of beliefs and cultural protocols. Ceremonial sites, hunting grounds, wood, water, stone and native foods that were harvested and hunted within the park.
- Wianamatta Regional Park includes extensive archaeological evidence of Aboriginal occupation which is of significance to the local Aboriginal community. The site represents a tangible link to the past and evidence of the occupation of the land by Indigenous people prior to settlement by Europeans.
- The site is associated with the exploitation and use of water, food, stone and timber resources. British settlement dramatically altered the traditions and customs of the Aboriginal group that occupied this land over thousands of years. Their traditional country was also irrecoverably altered.

Living and Working this Land

- The landscape has been used to support human occupation for thousands of years. Aboriginal people exploited the natural environment and developed economies sharing and exchanging natural resources according to well established protocols.
- Several places in this park reflect different periods of this area's development. This park includes evidence of some of the earliest land grants in the colony in the form of property boundaries, fencelines, archaeological evidence and cultural plantings. Dunheved Farm is a rare and significant heritage site associated with Governor King and his family.
- The Park includes places that are associated with subsequent growth and development of the area. This includes a number of smaller cleared areas, remnant orchard plantings and house sites.
- Past land owners and their employees worked this land. Timber was cut, farms, dairies and orchards were established and often worked by several generations of the same family. The King Family farmed here over a period spanning 140 years.

Making Munitions

- The site has been associated with Australian defence from 1941 to the 1990s.
- People have worked at this site since 1940 in defence of our nation. During its peak between 1941 and 1946the St Mary's Munitions Filling Factory employed 3,600 men in construction. In 1943 the factory employed 2175 workers, a significant proportion of whom were women.
- The changes that have occurred over time by Defence on site are reflected in the small number of remnant built and cultural landscape environment as well as memories and social attachments.

Revitalisation and Conservation

- Following the closure of the site, a grassroots campaign to conserve it began. The Kangaroos and emus that had been introduced to the site thrived here following the decommissioning of the ADI factory and were much loved by locals. The Regional Park is managed and conserved by the DECCW NPWS on behalf of the people of NSW.

2.4 Heritage management & interpretation

2 REVIEW

Adaptive re-use

There are 4 remnant buildings on site from the Munitions Phase and an extensive network of remnant roads. The road and access network generally provides a significant opportunity for use in the regional park both for recreational and management access.

The Former Mine Filling building S29 (The Hulk) is centrally located in the park and offers potential to house major facilities to serve park users. Previous concept design has indicated the opportunity to create new structures within the shell of this building as a potential means of creating habitable space.

The transit stores (3 buildings) are conserved within a setting of intact roads and mounding and with buildings in generally fair condition. These offer potential for re-use to service recreational or management activities with some potential for adaptation. Retention of setting is desirable.

Summary heritage opportunities

1. Aboriginal

- Involve stakeholders in ongoing planning and management of park
- Involve stakeholders in development of interpretation
- Select sites maybe interpreted through public artworks designed by local Aboriginal people
- Key sites for the promotion and interpretation of Aboriginal cultural heritage include:
  - The 'secret garden', located in the south west of the site;
  - Bush tucker sites
  - Creek lines
  - Post-contact campsite and fishing spot; and
  - Area of Silcrete cobbles
- Use of Aboriginal names of precincts and tracks

2. Historic

Dunheved

- Interpretation of archaeological resource and cultural landscape features
- Interpretation through design and management of the landscape
- Railway corridor link potential

Jordan Hill

- Views to remnant fabric ('chimney site')
- Retention of cleared area and continued management of native tree stands located within WRP

Jackson's Dairy

- Extant Dairy bails – interpretation and signage opportunity around Growth and Development phase
- Retention of cleared area to support interpretation of agricultural use
- Retention of rural tracks

Western Regional Park Area

- Retain elements of rural landscape around hilltops to conserve views
- Retain some cleared areas to interpret grazing use of the land
- Retain significant fence and boundary lines to interpret early land grants

Central Regional Park Area

- Relationship of Dunheved to Elizabeth farm site—linkage and interpretation
- Reuse of roads and bridges

3 Munitiions

Western Regional Park Area

- Interpret elements of Kingswood Magazine Area (KMA) including link to rail/road corridor
- Possible use of area as picnic facility

Transit Stores S42, S43 and S44

- One of only two locations in the park where landform, road and buildings remain
- Interpret the operations of the ADI site in general
- Retain and reuse for park-related purpose
- Public access to at least one store with an appropriate use

The Hulk and adjacent smaller building

- One of only two locations in the park where landform, road and buildings remain
- Gateway to park and associated uses
- Venue for introduction, interpretation, meetings, welcome to country

Road/rail network

- Reuse of road network (eg in Shell Filling area) to interpret site layout and operation
- Reuse of rail lines
- Connections with ADI uses outside park could be made through interpretive material

4. Recent Habitat Conservation by Community (ADI Resident Action Group)

- Integration into visitor centre
- Integration into interpretive panels
- "Time lapse" interpretation - before and after images

dPoM Desired Outcomes

- Aboriginal sites and places are protected from damage by human activities.
- Aboriginal people are involved in management of Aboriginal cultural and natural values in the park.
- Historic features are appropriately documented, conserved, managed and interpreted.
- Community and NPWS knowledge and understanding of Aboriginal and historic values within the Park is increased.
- Intact landscape units are preserved as a means of protecting Aboriginal heritage.

2 REVIEW

2.5 Access and relationship to adjoining communities

Generally the Regional Park has good potential for connections to the south through the South and Ropes Creek corridors linking through to the Western Sydney Parklands. These links have been defined in previous strategies as outlined in Figures 2.5.1 and 2.5.2 on this page. At this time links to the north are less well defined and as such future connections should be considered in ongoing management and liaison with Councils. This includes those to existing open space/ bushland areas such as Castelreagh Nature Reserve and possible NPWS managed lands in Shane's Park and Cranebrook. Other key opportunities to the north are along South / Wianamatta Creek and road corridors (Second Ave / Northern Road). Vehicular entry to the urban development will ultimately provide signaled intersections to Northern Road which will enhance commuter and recreational cycle links to the west.

Cycle and pedestrian links to existing and future cycleway and open space networks in adjoining developments and suburbs should be utilised to maximise community accessibility and use of the Regional Park.

dPoM Desired Outcomes

- There is community recognition of the park in the provision of recreational opportunities within the context of regional and local space
- There is community recognition of support for sympathetic conservation management on lands surrounding the Regional Park
- Visitors are can easily find their way to park facilities and recreational trails

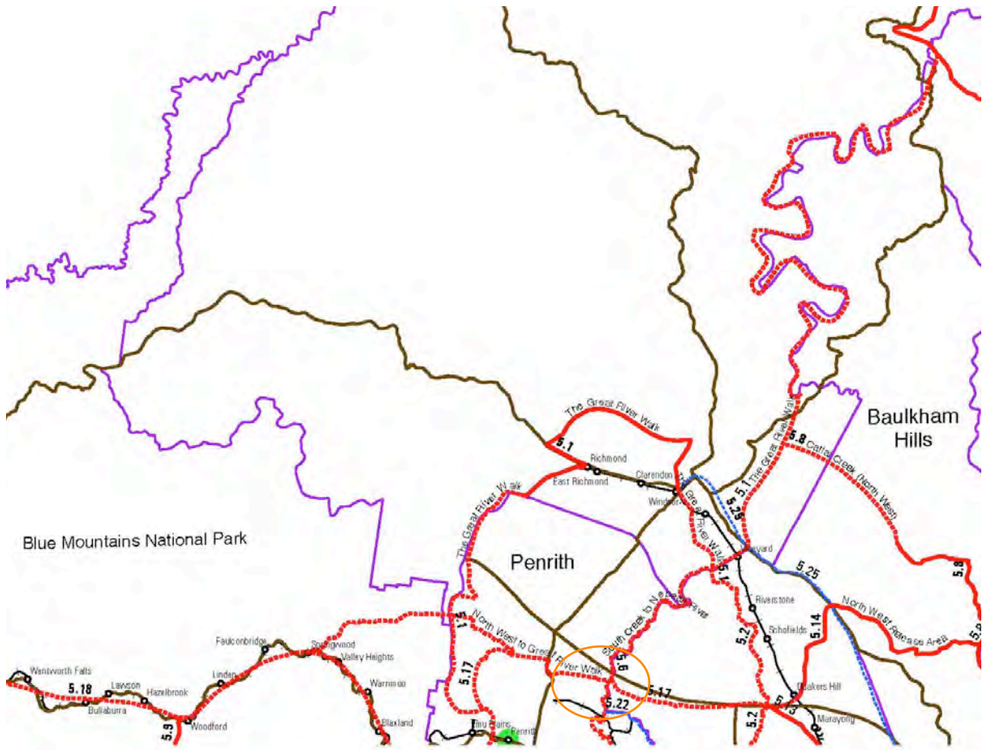


Figure 2.5.1 Sydney Metropolitan Regional Trails Network (Source DoP)

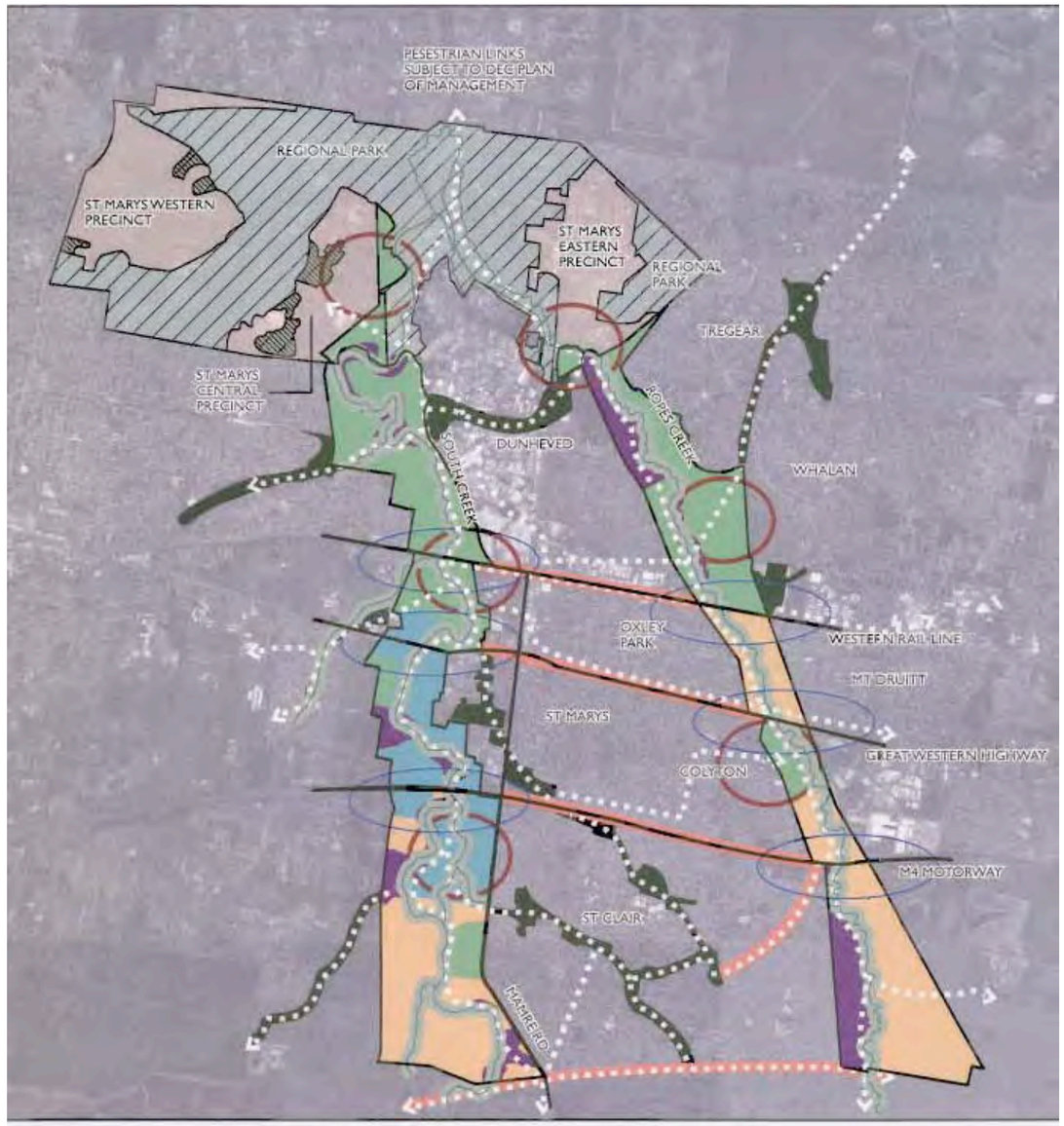


Figure 2.5.2 Ropes and South / Wianamatta Creeks Masterplan (Source DoP)

2 REVIEW

2.5 Access and relationship to adjoining communities

Existing access hierarchy

The plans this page indicate the extent of existing access on the site. The large plan on the opposite page indicates all existing access including former tracks which are now generally overgrown but have potential for use.

The existing access system has potential to largely cater for access needs for the Regional Park. Generally this access follows direct functional routes between areas of past use and takes into account constraints of drainage and topography and / or have modified those to suit.

The existing access is predominantly a legacy of the Munitions Phase of the site's use although tracks along the northern boundary and in the south west section of the site (see Figure 2.4.4) have some reference to boundaries of land grants from the Colonial Phase of site use.

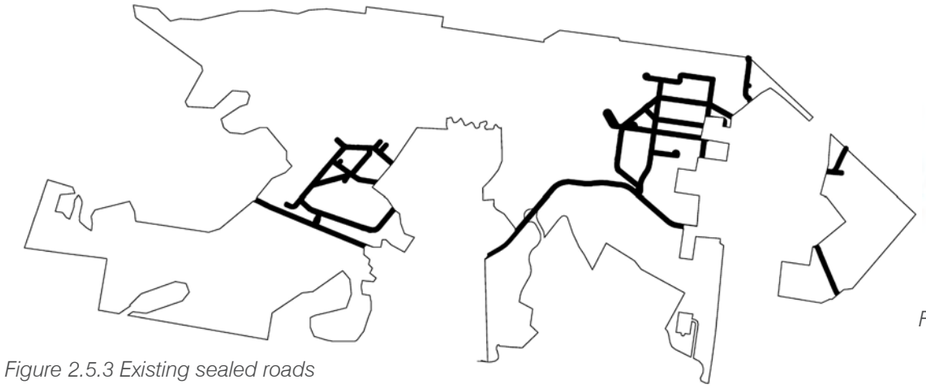


Figure 2.5.3 Existing sealed roads

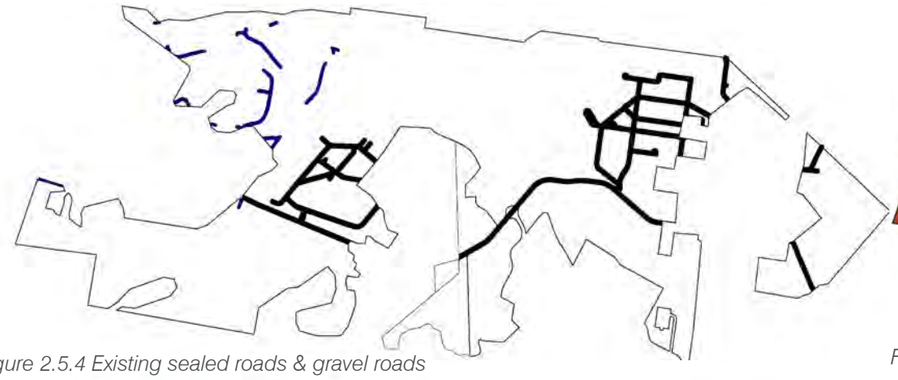


Figure 2.5.4 Existing sealed roads & gravel roads

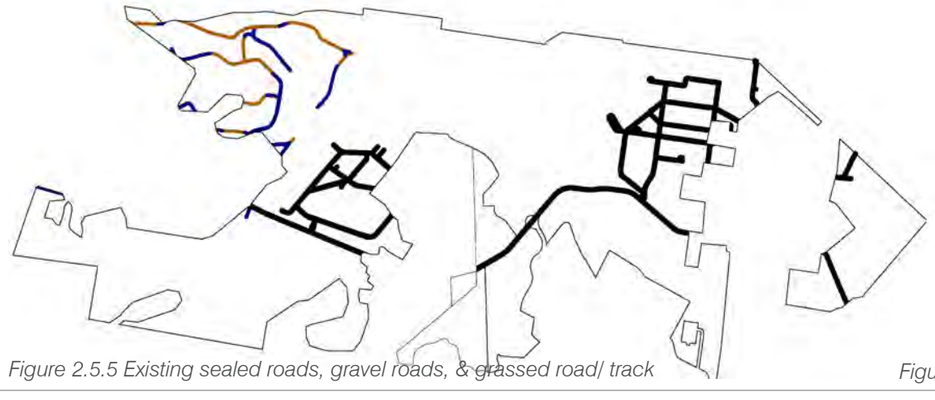


Figure 2.5.5 Existing sealed roads, gravel roads, & grassed road/ track

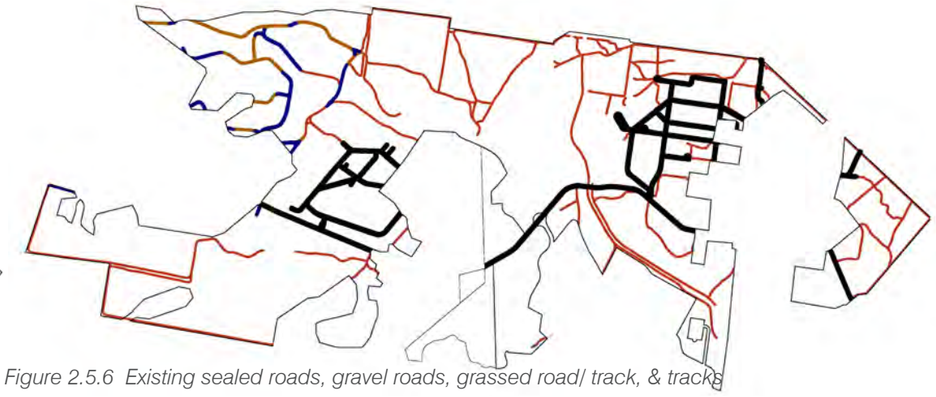


Figure 2.5.6 Existing sealed roads, gravel roads, grassed road/ track, & tracks

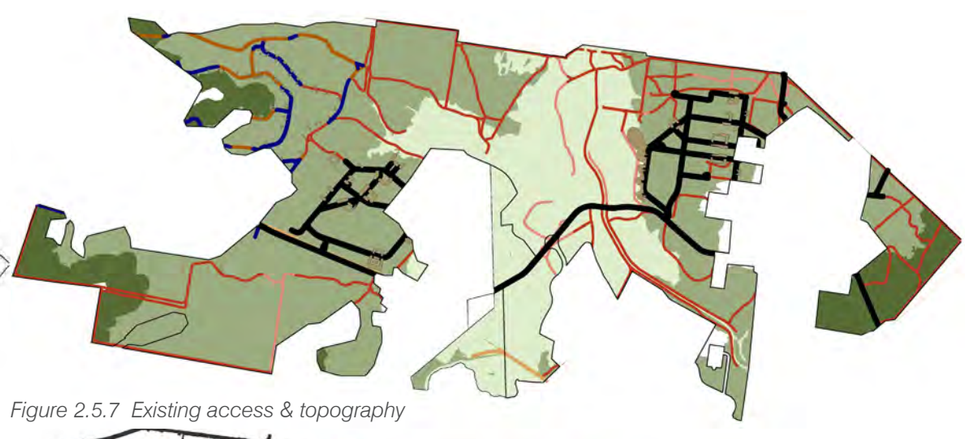


Figure 2.5.7 Existing access & topography

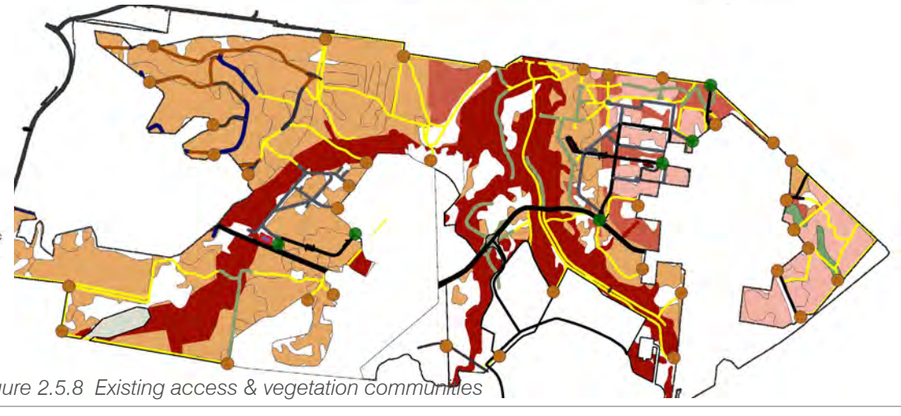
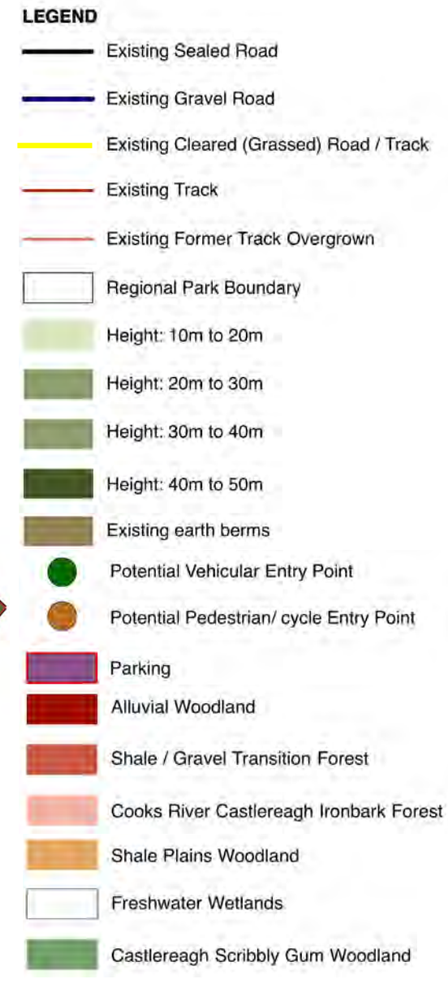


Figure 2.5.8 Existing access & vegetation communities



2.5 Access and relationship to adjoining communities

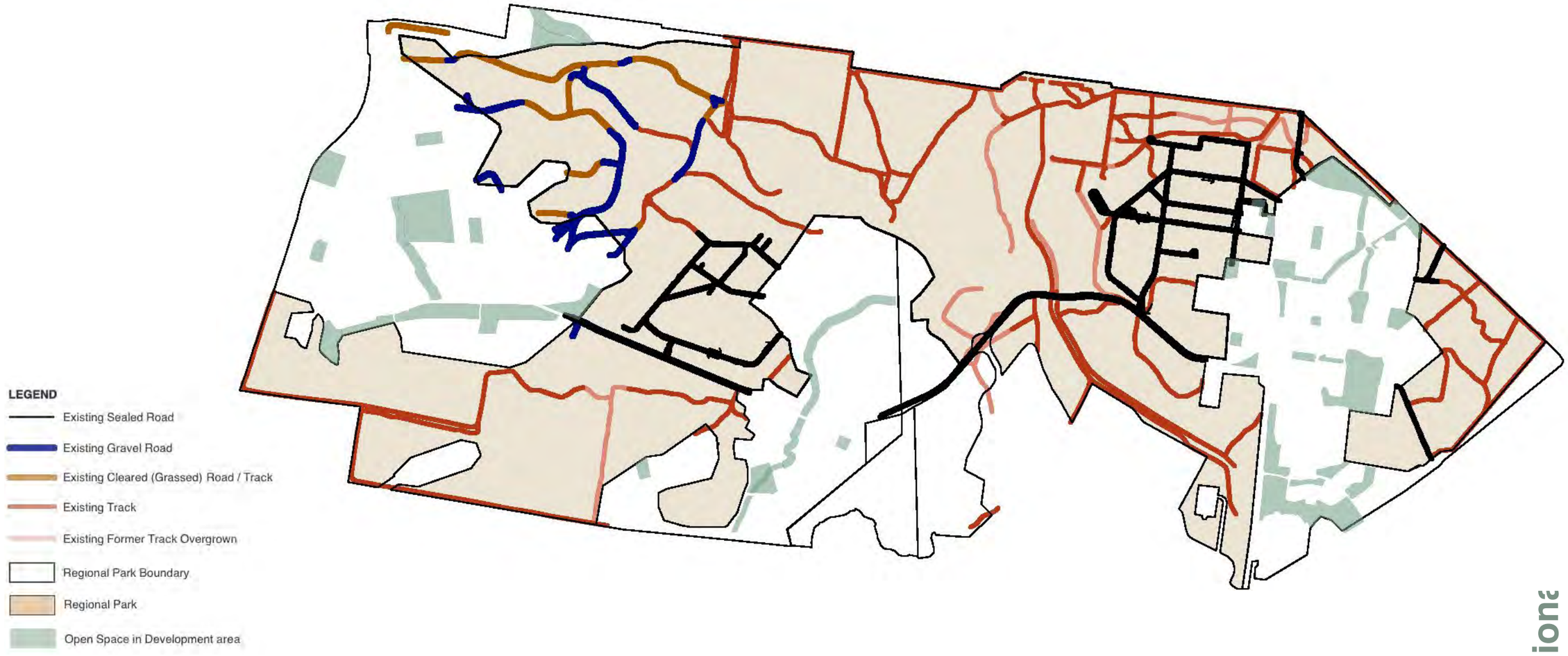


Figure 2 5.9 Compilation of existing roads and tracks on the site

Site Image: Existing sealed road (Source: EP NSW)

Site Image: Existing gravel road (Source: EP

Site Image: Existing cleared grassed road / track (Source: EP NSW)

Site Image: Existing track (Source: EP

Site Image: Existing track overgrown (Source: EP NSW)

2 REVIEW

2.6 Services and infrastructure

The site has a legacy of many layers of services and infrastructure that have evolved through different uses. The Munitions phases from 1940 till 1993 account for the majority of these.

The diagram this page illustrates the main elements identifiable on the site, and make comment as to whether these have some use / value to Regional Park development and management.

High Voltage Transmission Line

- Will remain in place in the long term
- May be relocated in alignment through the adjoining development (Central Precinct) but this will not affect alignment through park

General Power reticulation

- Combination of overhead power and some underground links through Munitions project 590 area (eg Transit Stores and Bomb Filling buildings)
- Limited potential for re-use due to age and damage during demolition
- Potential to link to new mains through adjoining development as indicated

Telecommunications

- Limited existing cabling - no potential for re-use due to age, damage during demolition, and lack of compatibility with current systems
- Potential to link to new mains through adjoining development as indicated

Water supply

- Minimal remnant reticulation - no potential for re-use due to age, damage during demolition
- Potential for roofwater harvesting to be fitted to existing buildings to be adapted / new buildings
- Potential to link to new mains through adjoining development as indicated

Sewer

- Minimal remnant reticulation - no potential for re-use due to age, damage during demolition, and lack of compatibility with current systems
- Potential to link to new mains through adjoining development as indicated

Stormwater

- Network of open channels linked by piped connections and pits in some locations
- Building demolition has created larger areas without effective drainage - existing swale function has also been impacted by demolition and remedial works
- Generally will need to allow for new drainage system focussed on surface drainage to creek systems with appropriate water quality and volume management to developed user precincts.

Earthforms

- The modification of landform to provide earth enclosures to operational and storage areas of the ADI Munitions works is a key piece of remaining infrastructure that provides links to this past use. Mounds were created through a combination of excavation to set working platforms into the ground and use of fill material to create mounded earthforms
- These earthforms are an important element for interpretation of Munitions uses and offer potential for visual and spatial definition to usage precincts of the Regional Park

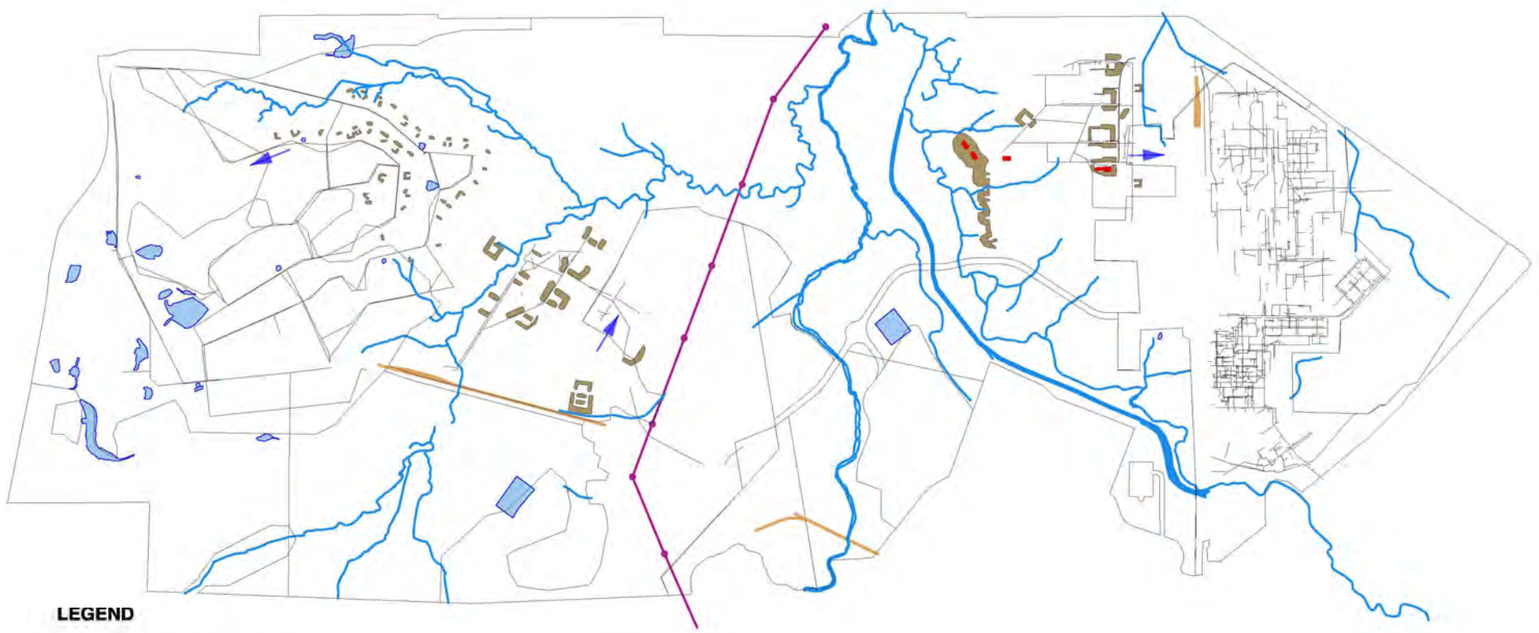


Figure 2.6.1 Existing Infrastructure

Site Image: Transmission lines (Source: EP NSW)

Site Image: Existing channel (Source: EP NSW)

Site Image: Earthforms (Source: EP NSW)

2 REVIEW

2.7 Sustainable Tourism and Recreation

The PoM provides a reasonably prescriptive position in terms of recreational uses in the Regional Park. The plan notes that:

"recreation opportunities ..... will be concentrated at the passive end of the spectrum which will include picnicking, bushwalking, running and cycling. This is appropriate in the regional context, because of the demonstrated demand for passive recreation, and the relatively limited opportunities for such recreation in a bushland setting in the local and regional environment. In addition the current and proposed enhancements of active recreational facilities in regional and local open space will ensure that more active recreational pursuits are adequately catered for elsewhere in the area" (dPoM NPWS 2007).

The limitation of recreational scope is primarily based on the reality that of the 900ha of Regional Park approximately 828ha is listed on the Register of the National Estate for the presence of rare and regionally significant plant and animal species, the presence of significant remnants of native vegetation of the Cumberland Plain, and significant examples of Aboriginal and European heritage. This includes archaeological sites associated with the King family (including Dunheved Homestead site, Elizabeth Farm site, and the Pines planted on the western site of South / Wianamatta Creek.

In this context the plan identifies that:

"the park provides an excellent opportunity for the community to experience and learn about the Australian bush, and the Cumberland Plain and its endangered biodiversity in particular".

The PoM in section 6.2 provides a broad zonation of potential usage of the park in relation to the significance of habitat and the related carrying capacity of the land. Also the plan specifically identifies the following uses as suitable for the park:

- Bushwalking
- Picnicking
- Cycling
- Commercial Tourism
- Education - including controlled overnight stays
- Fitness and health
- Research and Monitoring

Further to this core listing the masterplanning process has through further appraisal of the site and various consultative forums identified that ongoing management of the park should enable opportunities for engagement with partners including the private sector and the community to provide new visitor experiences. Such experiences should be environmentally, socially, culturally, and economically sustainable and might include:

- Events- such as concerts festivals, adventure challenges, eco-events
- Partnerships to achieve conservation objectives, enhance visitor experiences, and increase understanding of Regional Parks values - for example, Aboriginal people, other land managers, tourism industry, research institutions, and the private and not for profit sectors
- Private fitness training- use by personal trainers for fitness activities including health, yoga, meditation etc.

Further the PoM identifies the following uses as deemed to be inappropriate within Wiannamatta Regional Park:

- Camping
- Dog walking
- Horse riding
- Skateboarding, rollerblading, and similar facilities

Figure 2.7.1 this page provides an appraisal of potential locations of uses as identified in the PoM based on the parameters identified in Figure 2.7.2 on the following page. Figure 2.7.2 provides an evaluation of the suitable uses/ activities as identified in the PoM against several key criteria aimed at evaluating the range of facilities that will be needed, the interrelationship of uses, capacity to stage implementation etc. The criteria include:

1. Identification of the facilities, and infrastructure required
2. Identification of the preferred landscape and visual setting / characteristics
3. Relationships with other uses and other park elements
4. Provision of use in the local area - potential user catchment
5. Potential negative/positive impacts on the site and the local area.
6. Potential for staging of implementation
7. Management support required

1. Main Visitor Precinct
- *Visitor Centre*
- *Cafe / Kiosk*
- *Parking*
- *One way vehicular access road*
- *Picnicking*
- *Class One (accessible) track and boardwalk loops / vantage points*

Possible
- *Short criterion course (special events)*

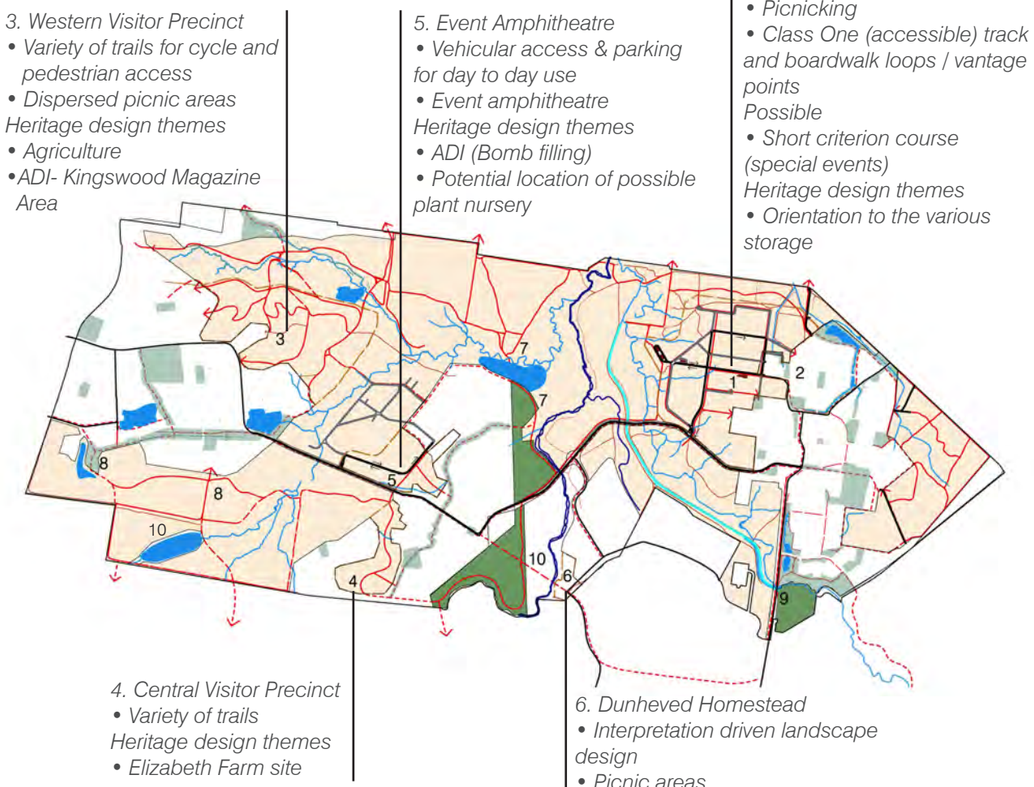
Heritage design themes
- *Orientation to the various storage*

3. Western Visitor Precinct
- *Variety of trails for cycle and pedestrian access*
- *Dispersed picnic areas*

Heritage design themes
- *Agriculture*
- *ADI- Kingswood Magazine Area*

5. Event Amphitheatre
- *Vehicular access & parking for day to day use*
- *Event amphitheatre*

Heritage design themes
- *ADI (Bomb filling)*
- *Potential location of possible plant nursery*



4. Central Visitor Precinct
- *Variety of trails*

Heritage design themes
- *Elizabeth Farm site*

6. Dunheved Homestead
- *Interpretation driven landscape design*
- *Picnic areas*
- *Access link on heritage railway line*

Heritage design themes
- *Gov King homestead*
- *Contemporary interpretation of Colonial rural aesthetic*

Key

1. Main Visitor Precinct
2. Main entry zone
3. Western Visitor Precinct
4. Central Visitor Precinct
5. Potential Events Amphitheatre
6. Dunheved Homestead
7 Jordans Hill - Jackson's Dairy/ Chimney site
8. Native Grass research
9. Beecroft Butchery
10. Cycle path to heritage rail line

Figure 2 7.1 Appraisal of potential locations of uses based on PoM scope of uses

2 REVIEW

2.7 Sustainable Tourism and Recreation

Evaluation of Recreational and Community Uses

Facilities, and infrastructure	Preferred landscape and visual setting	Relationships with other uses and park elements	Provision of use in the local area - potential user catchment	Potential negative/positive impacts	Potential for staging	Management support required
BUSHWALKING						
Network of trails that may provide: - point to point access within or across park - connections to nodes or other points of interest -recreational loops of varied length and difficulty Variety of surfaces reflecting AS2156 Walking Tracks hierarchy: Class 1 All Access Track Class 2 Graded Track Class 3 Walking Track Class 4 Hiking Track Class 5 Marked Route Class 6 Unmarked Route (Note: lack of gradient to site will limit provision of full range - mainly Class 1-3)	Variety of settings that represent the landscape types on site and provide visual interest for users	Provides access to the various user precincts within the park Extends user access from parking facilities Potential to link the various local communities both existing and future	Some existing provision - Whalan / Tregear Reserves Potential for both local and regional use to extent of potential trails and expansive bushland context	Rubbish dropping Erosion on heavily used tracks Management of drainage Potential for trail bike access at park boundaries Potential for conflicts on shared tracks Can add to local access network to provide holistic / coordinated resource	Good potential for staging - target effective loops taking advantage of established amenity in shorter term	Boundary / trail bike access (Councils / Police / Community) Planning and implementation of access beyond Regional Park As above Possible involvement of organised user groups
MOUNTAIN BIKING						
Network of trails that may provide: - recreational / cycling loops of varied length and difficulty - connections to nodes or other points of interest	Variety of settings that represent the landscape types on site and provide visual and topographical (grade) interest for users	As above	Limited off road cycling opportunities on large scale in district	As above	As above	As above Possible involvement of organised user groups
ROAD BIKING						
Criterium Tracks can range from 2-5km on asphalt road surface. Using existing roads within the main ADI zone adjoining the Ropes Crossing community a track of around 2km could be configured	Settings can vary from urban to natural - however a bushland setting with ADI infrastructure remnant character would be a very individual experience eg. the zone containing remnant ADI roads adjacent Ropes Crossing	Would require temporary closure of access roads - preferable to do in non peak use	Existing formal courses at Bankstown and Sutherland	Would require temporary closure of access roads - impact on general recreational use Would compliment off road cycle use of site Potential for informal use of roads integrated with adjoining urban development roads for road cycling with lesser impact	Could be imple-mented with minimal infrastructure	Necessary involvement of organised user groups
PICNICKING						
Provision of facilities at a number of levels from high (BBQ shelters and picnic shelters) to low (simple table / bench)	Provision of picnic facilities in a variety of settings that are of good amenity and assist users in understanding site Major facilities could be located at several locations which are separately accessible and provide different experiences eg. the zone containing remnant ADI buildings adjacent Ropes Crossing and western area accessed from the western urban development precinct	Should relate to combination of vehicular and pedestrian access catering for varied types of users from elderly and families to those happy to ride / walk to a destination	Limited local opportunities for picnicking in expansive bush setting with added character of cultural heritage Nurrangingy at Blacktown provides comparable gathering opportunities	Rubbish movement Desire for close vehicular access parking	Good potential for staging / phased implementation as user demand grows	General maintenance by NPWS

2.7 Sustainable Tourism and Recreation

Evaluation of Recreational and Community Uses

Facilities, and infrastructure	Preferred landscape and visual setting	Relationships with other uses and park elements	Provision of use in the local area - potential user catchment	Potential negative/positive impacts	Potential for staging	Management support required
EDUCATION						
Outdoor gathering spaces in proximity to sheltered / indoor spaces that can provide for outdoor teaching Internal displays / visitor centre covering the range of site interpretational themes External interpretive points identifying specific point / factors of interest that are part of a broader educational / experiential walk	Primary facilities in Visitor Centre for Regional Park Shelter / protection from summer sun to external education spaces Location specific interpretation to be located to optimise understanding	Educational interpretation integrates with loop track systems with potential for progressive experiences Some outdoor learning spaces should relate to main internal displays / visitor centre	Can provide facility of individual identity and value related to combination of natural and cultural values that are able to be expressed	Fixed elements can become static in their benefit and interest once viewed - challenge for research and design Fixed educational interpretation for organised groups (schools etc) is equally effective for casual park users	High potential for staged implementation of interpretation Ideal to have a degree of interps in place for initial park opening	Involve Aboriginal groups in their interpretive processes and ongoing educational activities on site
TOURISM						
Interpretive / educational experiences as for education Potential for overnight stays (eg camping within existing sheds or externally) for organised groups Enable opportunities for engagement with partners including the private sector and the community to provide new visitor experiences Identify opportunities for visitor experiences that are environmental, social, culturally and economically sustainable and that demonstrate leadership in environmental sustainability	Experience of a “different” landscape and character - through bushland setting and remnant industrial infrastructure Transit stores(S42, S43 & S44) and mine filling building (S29) Earth mounds in shell filling area	Educational interpretation integrates with loop track systems with potential for progressive experiences	Limited opportunities of similar character in district	Tourism / commercial activities should not overwhelm or compromise general public use	Good potential for staged implementation and use of temporary facilities in short term	Potential licenses to external operators Potential to involve Aboriginal groups
NATIVE PLANT NURSERY						
Internal work sheds and operational areas External spaces for preparation , propagation and holding	Must have reasonable solar access Possible location adjoining Central urban development precinct which will have an employment landuse focus - possible complimentary Regional Park (NPWS) private sector partnership	Could compliment visitor centre / cafe Could compliment external commercial nursery	Greening Australia run nursery currently at Nurrangingy (with licence by Blacktown Council)	Access for larger vehicles and related habitat and recreational impacts needs to be considered Can play role in park implementation Will draw visitors in additional to adding to experience of general visitation	Good potential for staged implementation and use of temporary facilities in short term	Potential license to external operator

2 REVIEW

2.7 Sustainable Tourism and Recreation

Evaluation of Recreational and Community Uses

Facilities, and infrastructure	Preferred landscape and visual setting	Relationships with other uses and park elements	Provision of use in the local area - potential user catchment	Potential negative/positive impacts	Potential for staging	Management support required
EVENTS						
Large open outdoor gathering spaces in proximity to toilets and vehicular access / parking for larger crowd events – such as concerts, festivals, adventure challenges, eco-events	Open grassed areas secluded from development sitting within bushland for larger gatherings Variety of different sized spaces and settings for smaller events	Avoid major impact on day to day use Major (eg annual) events - some impact acceptable	Limited availability of other large spaces in bushland setting (eg Nurrangingy - Blacktown)	Noise - proximity to residences and other park uses / impact on fauna need to be considered Rubbish / cleanup Degradation of grassed/ other surfaces	High potential for staging and for temporary facilities setup (eg stages, toilets) - provide event power	Support for event management will be required - events likely to be run by organised groups to provide required coordination / management
FITNESS TRAINING						
Fitness training – opportunity to explore the potential for personal trainers to provide fitness activities – including health – yoga, meditation etc	Smaller sized grass clearings Trail network Grassed areas with shade	Morning and evening peaks of use	Use of Council parks in urban areas is common	Overuse of areas - degradation of surfaces Noise	High potential	Must be managed by operators
PARTNERSHIPS						
Partnerships for eg. – Aboriginal people, other land managers, the tourism industry, research institutions, the private and non-profit sectors to achieve conservation objectives, enhance visitor experiences and increase understanding of the regional parks values.	Bushland settings Regenerating bushland Heritage precincts	Maintain flexibility to not unduly impact / restrict general public use	Local Govt increasingly pursuing partnerships	Perceived loss of public ownership / access to park areas (monopolisation of space by partners)	High potential	May be jointly undertaken or with major role by partnership party

dPoM Desired Outcomes

- A variety of informal visitor opportunities are available that encourage appreciation of the natural and cultural environment and enjoyment of the park.
- Facilities are designed and managed to provide a satisfying and informative visitor experience and minimise impacts.
- Visitor use is compatible with the management direction of the Park and is ecologically, economically and socially sustainable.
- Appropriate recreation and visitor opportunities are provided within the Park, that take into account the proximity and nature of regional and local open space.
- Future planning of recreation activities takes the regional context into account.
- A sustainable macrofauna population is retained in the Park and linked to visitor experience.
- Where appropriate, the impact of the macrofauna fencing on visitor experience is minimised.
- Opportunities exist for sustainable and appropriate commercial recreation activities.
- Construction of new facilities complies with the conditions of any relevant Site Audit Statements and the Contamination Management Plan.

Other desired outcomes identified;

- Enable opportunities for engagement with partners including the private sector and the community to provide new visitor experiences
- Identify opportunities for visitor experiences that are environmental, socially, culturally and economically sustainable and that demonstrate leadership in environmental sustainability.

2 REVIEW

2.8 Visitor facilities and site management

Facilities

The recreational use of the Regional Park and ongoing NPWS management of the park require that certain facilities be provided. These facilities should enhance the recreational experience of the park while observing the full range of principles developed in the PoM related to conservation and sustainability.

Based on the PoM range of acceptable uses to be pursued in the park the following facilities can be expected to be appropriate to consider:

Buildings / structures

1. Central (and focal) visitors centre located near the entry (or main entry) to the park
2. NPWS office (potentially located adjoining or as part of visitors centre)
3. Focal interpretive display (ideally in the visitors centre)
4. Cafe / kiosk and toilet facilities serving main visitor area
5. Picnic and BBQ shelters located adjoining main usage areas at a range of locations
6. Internal event space for site based or community events
7. Meeting rooms for stakeholder and NPWS use
8. Smaller scale toilet facilities serving dispersed recreation areas
9. NPWS maintenance depot
10. Native plant nursery

Parking

11. Main parking area serving central facilities
12. Dispersed parking facilities to user precincts accessible by vehicle

Spaces

13. Open grassed external event spaces of a range of sizes / scales

Signage

14. Main entry signage
15. Precinct identification signage
16. Vehicular wayfinding signage
17. Pedestrian / cycle wayfinding signage through site
18. Interpretive signage through site

Paths / Tracks

19. Shared pedestrian cycle track
20. Pedestrian walking tracks of varied levels (that is width and surface)
21. Cycle tracks of varied levels (that is width and surface)
22. Maintenance access tracks (supplementary to dual use of other access tracks

Site Management

The nature of the Regional Park site including its dispersed expansive area and segmentation provides a number of challenges for management. Key issues to be addressed in development of masterplan include:

1. Edge condition and management

- The park has approximately 37km of boundary to adjoining uses and land managers.
- Planning and management could aim to control the amount of boundary that has to be intensively managed (eg high security fencelines) and associated capital and maintenance costs
- Planning and management could aim to provide where possible a buffer between highest priority habitat areas and adjoining land managers

2. Public access management

- Although the park is dispersed in nature and is likely to have several separate usage precincts - planning should minimise number of vehicular entries to keep ongoing management / control of entries (eg potential gate closure) to a sustainable level
- Controlled vehicular access enables managed (eg paid) events to be catered for
- Pedestrian and cycle access could potentially be provided from a number of locations given the extensive park boundary - this needs to be reconciled against management of trail bike access

3. Maintenance access

- The extensive network of existing access will be used for public, maintenance access and fire management
- Certain recreational links (2.5m width and over) offer potential to be used for maintenance access by light NPWS vehicles. Dedicated maintenance routes should supplement public access routes in particular in those areas were public access is to be limited

dPoM Desired Outcomes

- Commercial and other non-park uses have minimal environmental impact and contribute to the aims of Park management.
- Commercial and other non-park uses contribute to understanding and enjoyment of the values of the Park
- Commercial and other non-park uses are potentially revenue-generating opportunities and provide opportunities for employment and training, where appropriate.
- Management facilities adequately serve the needs of NPWS objectives, strategies and operations and have minimal environmental impact.
- New management facilities will consider and apply the principles of ecological, economic and social sustainability.
- The conditions of relevant Site Audit Statements and the Contamination Management Plan are complied with prior to the construction of any facilities and/or infrastructure in contaminated areas of the Park.

2 REVIEW

2.9 Planning framework

Regional Parks requirements

The PoM identifies that Regional Parks are reserved under the NPWS Act to protect and conserve areas in a natural or modified landscape that are suitable for public recreation and enjoyment. Under the Act, Regional Parks are managed to:

i. Provide opportunities, in an outdoor setting, for recreation and enjoyment in natural or modified landscapes;

ii. Identify, interpret, manage and conserve the Park so as to maintain and enhance significant landscape values;

iii. Conserve natural and cultural values;

iv. Promote public appreciation and understanding of the Park's natural and cultural values;

v. Provide for sustainable visitor use and enjoyment that is compatible with the conservation of the Regional Park's natural and cultural values; and

vi. Provide for the sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to conservation of the Regional Park's natural and cultural values.

The management of Wianamatta Regional Park will be in accord with the National Parks and Wildlife Act 1974. Consistent with this, management of the Park under the POM will also comply with:

1. Sydney Regional Environmental Plan 30 – St Marys;
2. St Marys Environmental Planning Strategy 2000;
3. Clause 11 of the St Marys Development Agreement (2002); and
4. The Macrofauna Management Plan (2004) for the St Marys Property.

St Marys Development Agreement

It is an obligation of the St Marys Development Agreement that the Plan of Management give due consideration to the inclusion of the following principles:

1. The principle of environmental sustainability, which will involve:
- the preservation, protection and rehabilitation of remnant bushland;
- the preservation, protection and improvement (where practicable) of the biodiversity values of the Regional Park, recognising the importance of the Regional Park to the local area, including the Land; and
- the retention of fauna and flora, recognising that sections of the Regional Park may be used for macrofauna conservation in accordance with a macrofauna management plan to be prepared and implemented by the Developer.

2. The principle of economic sustainability, which will involve:
- the development of the Regional Park to minimise capital and maintenance costs;
- the making of capital improvements to maximise employment and training opportunities;
- maximising the opportunities to access external funding and grants for the Regional Park; and
- the identification of appropriate revenue generating opportunities relating to the Regional Park and the use of that revenue to offset the capital and maintenance costs of the Regional Park.

3. The principle of social/community sustainability, which will involve:
- maximising educational opportunities for school and community groups;
- highlighting aboriginal heritage at appropriate locations within the Regional Park;
- involving community groups in the rehabilitation and maintenance of the Regional Park; and
- maximising the opportunities for community interaction and passive recreation within the Regional Park.

The St Marys Development Agreement also requires that the Plan of Management will:

1. Identify a set of clear management objectives which reflect the principles of plans of management in accordance with the National Park and Wildlife Act 1974, and the social and economic context of the Regional Park;
2. Identify a set of clear management objectives in relation to the Regional Park reflected from the principles and obligation of the St Marys Development Agreement, SREP 30 and EPS 2000;
3. Identify a set of priority works which are essential to the achievement of the objectives of the Plan of Management
4. Assesses the relative priority of identified works in relation to short- and long-term objectives of the Plan of Management, and
5. Is accompanied by a realistic and pragmatic budget and time frames to undertake those works.

Wianamatta Regional Park Plan of Management

The PoM identifies the following key actions in section 6.0 Visitor Opportunities and Education. These include or will be informed by this Masterplan and supporting CMP.

6.2.1 Prepare a Master Plan for Park facilities and infrastructure with a focus on recreation opportunities in natural settings, ensuring that this Plan is consistent with the Conservation Management Plan, the Visitation Strategy, the Fire Management Strategy, the Bush Regeneration Plan and the listed values on any RNE listed land, and is environmentally, economically and socially sustainable;

6.2.2 Prepare a Visitation Strategy that is consistent with the Conservation Management Plan, the Fire Management Strategy, the Bush Regeneration Plan and the listed values on any RNE listed land, and is environmentally, economically and socially sustainable;

6.2.3 Prepare an Access Plan that considers priority access areas, minimisation of visitor impacts on the Park environment, NPWS management facilities and operations as well as threats to visitor's safety from macrofauna, management of possible residual contamination and development of adjoining residential areas;

6.2.4 Plan visitor access within the constraints of environmental sustainability, public safety and macrofauna management;

6.2.5 Provide controlled visitor access to the eastern sector of the Park to minimise the impacts on threatened plant species;

3.0 SYNTHESIS AND EVALUATION

3 SYNTHESIS AND EVALUATION

3.1 Consultation

Consultation with a number of stakeholder groups has been undertaken during the development of the masterplan. This has informed confirmation of constraints and opportunities to be addressed in addition to enabling forums for discussion and refinement of masterplanning strategies. Key points from consultations are outlined following:

Community

Community flyer / questionnaires and a series of workshops and consultation provided the focus of liaison with the community during the masterplan process. These aimed to promote community understanding and appreciation of park values and management strategies, allow community input to the process, and promote the role of sympathetic conservation in surrounding areas (in ensuring the Park's long term sustainability).

1. Community flyer

A questionnaire was distributed to local residents and posted on the Ropes crossing web site. Key responses by the general community included;

1. Natural values highest priority - conservation of endangered communities
2. Minimal infrastructure in order to maintain "Naturalness" is desirable
3. Some limited Vehicular access and parking is needed
4. Education and research to protect endangered communities
5. Key active recreational usages - bush walking and cycling
6. Picnic tables and toilets to be provided
7. Weekends between 9-3pm expected high usage

2. Community Workshops

Two evening community workshops were held including;

1. 16th September 2009
The Study team introduced project, then outlined initial mapping of existing site and preliminary principles derived from this exercise. Followed by a general discussion of preliminary principles ;

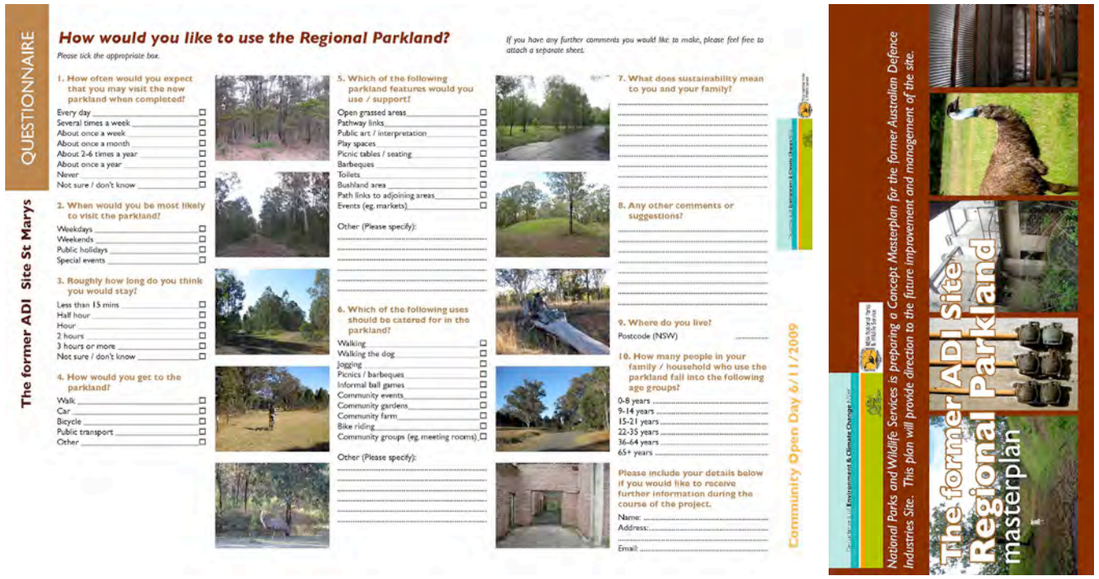
Key Items raised were:

- Concern for ongoing protection of endangered habitat and flora and fauna communities
- Key locations of bio-diversity to be "no go" zones or have limited access only
- Connectivity between the precincts should allow for regeneration areas – preserved areas to be maintained. ie closed off and then restricted to access
- Entry points to core recreational corridors are important
- Access for maintenance / fire access to be considered
- Active recreation to focus on pedestrian / cycle use
- Potential ranking for access – 1. Restricted/ 2. Pedestrian Cycle/ 3. Cars/ Vehicular
- Confirmation of selected Cumberland Plain vegetation boundaries
  - ground proofing critical boundaries to sub communities on site in areas to be affected by recreational use

2. 9th December 2009
The Study team provided a brief outline of the preliminary Conservation Management Plan and Preliminary Masterplan. A discussion of stakeholder comments followed:

Key Items raised:

- It was noted that South Creek had been officially changed in name to South / Wianamatta Creek
- Effective adaptive re-use of remaining buildings is important
- Impact of visitor vehicular access to the park on local residential streets to be considered
- Draft plan identifies several potential zones of management from conservation focus to recreation focus - varied levels of boundary control to each zone need to be carefully resolved
- How to manage trail bikes (motorised) to edges of recreational areas that may not have full fencing needs to be carefully resolved
- Recreational focus area - to also incorporate important habitat goals in terms of tree retention, revegetation etc
- Central point near site entry (eg Visitor Centre) that provides site orientation and access to heritage stories is important
- Explore potential to encourage Councils and RTA to further develop "off site" links that complement Regional Park in improving local access and recreation opportunities (eg. from Shanes Park to St Marys)



Community flyer / questionnaire (Source EP NSW)

3 SYNTHESIS AND EVALUATION

3.1 Consultation

Aboriginal Stakeholders

Invitations were issued to all potential stakeholders applicable to NPWS policy and relevant legislation by Godden Mackay Logan and NPWS. A number of Darug Community Group representatives attended both consultations. Deerubbin Local Aboriginal Land Council representatives were unable to attend these forums. NPWS has issued further invitations and will pursue further liaison as the programme allows.

3. Aboriginal Group Workshop 10th September 2009

A workshop session explored what the site means to the Aboriginal Community (in this case - the Darug representatives)

Wianamatta Cultural Landscape: Meanings and Associations

- Tangible Evidence – footprints on landscape
- Creek lines
- Direct Continued Connection: "In the Blood"
- Meeting/Consolidation point – Pre & Post Contact – Core Area – Rich Resource Area
- Lived—Continuity—Survival in Changing Landscape
- Trade Routes
  - Clear passage
  - Ceremonies
  - Interaction with other groups
  - Intermarriage
- Displacement and Exclusion (Blacktown)
- Severing Connections- Survival and Resistance
- Living in Harmony with Environment/Nature
- Pristine Areas – Conservation by Default
- Country "It is Mother"- Like a church – sacred
- Reading the Landscape
  - Living in it
  - Responding
  - Feeling it "Born with it"
  - Understanding land form
  - Seasonality
- A Journey – Living Culture
- Dynamism
- Finding a Feed
- Fishing Spots and Catching Rabbits

Potential Key Themes for Aboriginal Interpretation:

- Respect, Recognition and Acknowledgement of Darug Country

  "Old Peoples Country"
- Strategies
  - Education of the Broader Community
  - Tourism [Co-management of initiatives]
  - Employment and training opportunities

Potential Design and Management Strategies for Aboriginal Interpretation:

- Ancestral-Family–Genealogy -"Known" and Continued Connection–Importance of local Darug history
- Interpretation
- Welcome to Darug Country Entry and Exit signage
- Darug community/cultural centre
  - Education
  - Arts and Crafts
- Use of Darug language and names
  - Naming precincts and places
- Use of Darug artists
- Silcrete cobbles as public art feature – also education
- Explore siting/location of feature (s)
  - Tool manufacturing, quarry site
  - Walking trails
  - Darug culture theme
  - Mini song lines
  - Contemporary values
  - Explore location of interpretation points
- Darug people are the rightful interpreters of their heritage
- Relative Quality of Landscape
- Ecology = fauna and ecological health & cultural meanings
- Native/local flora, re vegetation, rehabilitation
- Water course rehabilitation
- Traditional Lands co-management
- Inclusive process - Care and Control permit – Darug participation
- Surveying is a priority

3 SYNTHESIS AND EVALUATION

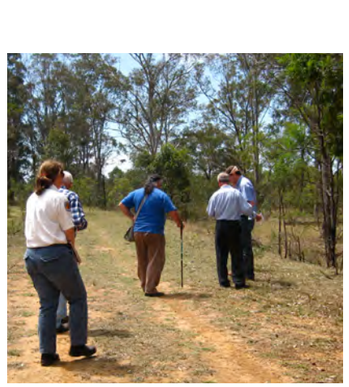
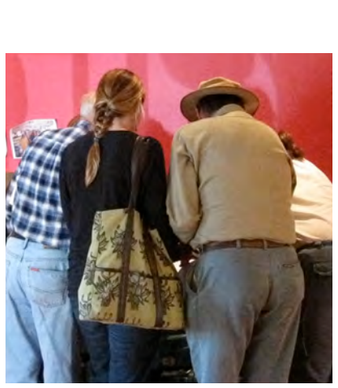
3.1 Consultation

4. Aboriginal Group Workshop and Site Walk 28th October 2009

In follow up to the workshop forum a second meeting was held with Darug Community representatives that involved a site to several key locations in the Regional Park. The aim was to further verify the values and potential for interpretation of these locations as part of masterplan development.

The sites visited were

- Farm dam (also known as Secret Garden) in the south west of site. This is a human made dam but lies in an area of low elevation of poor drainage which is likely to have been an ephemeral swamp before creation of the dam. This location is likely to have been a place of gathering and of harvesting of creek fauna when water flowed during the pre European era
- Confluence of Ropes and Wianamatta (South) Creeks in central north of site:
  - high potential for higher ground to have been past permanent campsite / gathering place
  - extensive remains of tool chippings found on site and along high voltage power easement
  - during ADI era Darug representative accessed creekline near this area for play / foraging
- Silcrete quarry area, near Interim community centre of Forrester Road
  - know to be location of Silcrete "River" and past quarry site for toolmaking
  - extensive remains of tool chippings found on site

Aboriginal stakeholder sessions (Source : EP NSW)


Authority stakeholder sessions (Source : EP NSW)

Authorities Stakeholders

5. Authority Workshop 1st October 2009

The Study team introduced the project and then outlined initial mapping of existing site and preliminary principles derived from this exercise. A discussion of preliminary principles followed and a number of issues were raised.

Key Items raised:

- Ensure connectivity to regional access routes/ conservation - also to potential sites including Shanes' Park and Cranebrook corridors/ open space
- Consideration to other Regional recreation ie. dog walking / sporting/ recreation nodes
- Ensure heritage overlays/ interpretation and consider past use / activities beyond remnant archaeology sites
- Entry points to core recreational corridors are important
- Access for maintenance / fire access vital especially boundary condition and fencing issues
- Hierarchy of fencing strategies and ongoing maintenance
- Consider recreational opportunities to water bodies
- Consider visual connectivity of road links beyond boundary
- Natural conservation should not always take precedence over heritage conservation

6. Authority Workshop 25th November 2009

The Study team provided a brief outline of the preliminary Conservation Management Plan and Preliminary Masterplan.

Outcomes of discussions included:

- Consider potential for vehicular access to main visitor precinct off east west access road rather than through Ropes Crossing *(note subject to discussions with DLL - possible for access through Ropes Crossing to avoid impact on Local Roads)*
- Parking to recreational areas in Regional Park should be provided within the park - ideally not within Asset Protection zones adjoining
- Drainage basins lying at boundary of Regional Park and adjoining development as defined in REP for St Marys site require a range of issues to be addressed - potential conflicts between hydraulic, heritage conservation, recreational access and maintenance access to be addressed.

Supplementary Consultation

The Study team also undertook further consultation on site with the authors of Heritage Assessments on the Dunheved European Cultural heritage site to confirm potential for design interpretation along with specialist NPWS staff to review habitat linkage opportunities.



Supplementary consultation with specialist experts (Source : EP NSW)

3 SYNTHESIS AND EVALUATION

3.2 Opportunities and constraints

The effective balance of a sustainable level of usage with the natural and cultural values of the park is the fundamental challenge of the Masterplan. As has been outlined in the preceding review, the creek system and related floodplain support the most significant habitat on the site. Working from the premise that these areas have a higher conservation value and significance, these should form the core of conservation management in the Regional Park.

Key Factors Map

The Key Factors Map (Figure 3.1.1) indicates compilation of key influences on masterplanning decision making:

- Alluvial Woodland as most significant (endangered) vegetation and in the worst condition being located along creek corridors and within floodplain
- Creeks and water courses – high fauna habitat value
- Existing roads and tracks – fundamentally re-use existing infrastructure for access needs
- Adjoining open space to development and Regional Open Space – extended access network including potential for connections through Asset Protection Zones to development

Site images: Alluvial Woodland (Source : EP NSW)

Site images: Creeks & watercourses (Source : EP NSW)

Site images: Existing roads and tracks (Source : EP NSW)

Site images: Open space to adjoining development (Source : EP NSW)

3 SYNTHESIS AND EVALUATION

3.2 Opportunities and constraints

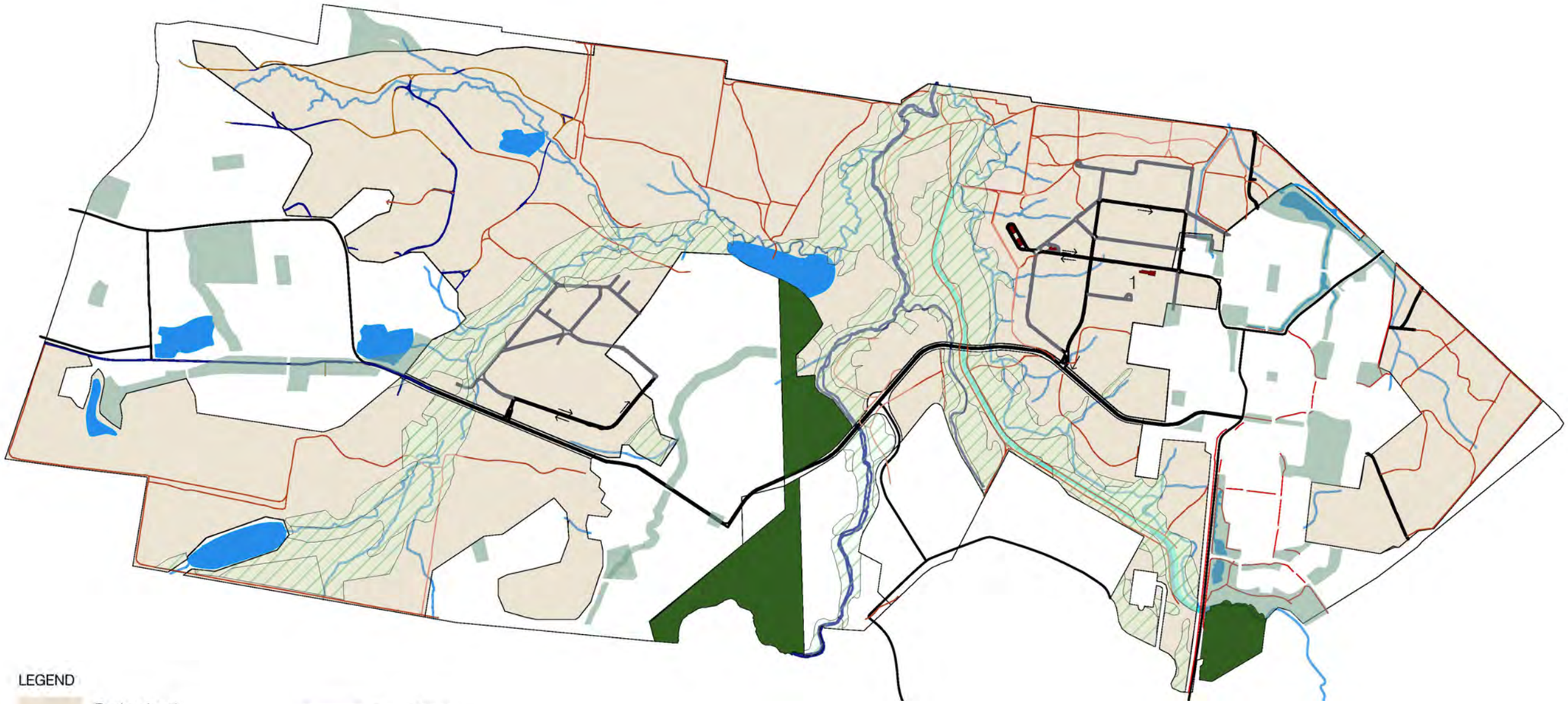


Figure 3.1.1 Key Factors Map: Alluvial Woodland, creeks and water courses, existing roads and tracks and adjoining open space

3 SYNTHESIS AND EVALUATION

3.3 Park Vision

Aims and Objectives

The NSW National Parks and Wildlife Service of the Department of Environment, Climate Change and Water (DECCW) commissioned Environmental Partnership (Landscape Architects) in June 2009 to prepare a masterplan for the Wianamatta Regional Park located on the former ADI site at St Marys. The project team incorporated a number of specialist inputs:

Godden Mackay Logan	*Heritage Planning, Aboriginal Community Liaison & Interpretation*
Carolyn Stone	*Consultation Planning and Facilitation*

Core aims for development of the masterplan as identified in NPWS brief included:

- Identification and protection of significant heritage items
- Development of visitor facilities
- Provision of traffic circulation
- Provision of access routes into and within the park linking to regional wide connections
- Car parking and management of different landscape areas and boundary interfaces

Key project objectives are:

- To provide strategic direction based on the plan of management for future management of the park including long term conservation and landscape management outcomes;
- To identify broad scale conservation, use, linkages, services, infrastructure and access zones across the park;
- To identify key access points, connections and circulation routes; and
- To identify appropriate levels of access and visitor facilities across the park.

In order to meet these objectives the precinct plans have taken into account the following:

1. The requirements of the Wianamatta Regional Park Plan of Management;
2. The findings of the Conservation Management Plan;
3. Considers the natural and cultural values of the places as well as community aspirations and needs; and
4. Takes a long term view to developing visitor improvements in the park.

Site image: Hierarchy of potential access (Source: EP NSW)

Vision

The full realisation of a Regional Park and related uses and management of the scale of Wianamatta Regional Park will be a long term undertaking. Required actions must be prioritised to enable available resources to be best focussed on those actions that will enable recreational use to be commenced by the public, and important conservation and habitat management actions to be initiated.

As such it is necessary to think of implementation of the park in both the short term and long term. Visions to reach each of these phases of park implementation are outlined following:

Short term vision

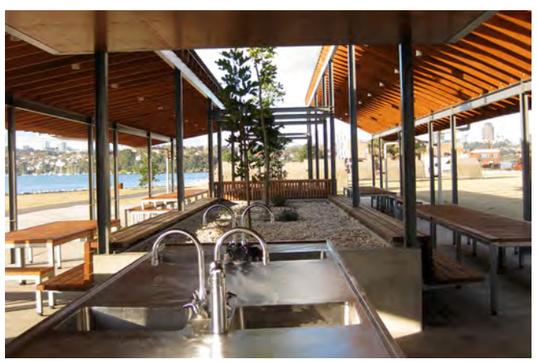
Provide for initiation of high priority management regimes for habitat and cultural heritage conservation, and actions for commencement of public use, enjoyment and appreciation of the park.

Long term vision

Consolidate habitat and cultural heritage conservation to complement recreational use and education, and involve the broad range of stakeholders in its planning and management.

Build upon core recreation opportunities of walking, cycling, and picnicking in a bushland setting. Provide dynamic interpretation of conservation values, special events areas and programmed education.

Example of Interpretation totem - multi themed (source Victoria Parks)



Example of Visitors Centre - site responsive facilities (Source: EP NSW)

4.0 MASTERPLANNING PRINCIPLES

4 MASTERPLANNING PRINCIPLES

4.1 Key masterplanning objectives and principles

The chart following identifies the guiding principles established for the masterplan in response to the PoM desired outcomes (and corollary planning objectives identified during the study).

Desired outcomes (from PoM)	Masterplan Objectives	Masterplanning Principles
Topography and drainage		
• Features, sites and processes of geological, natural geomorphological and/or pedological significance will be protected. • Research is conducted to confirm the location of the different geology and soil associations across the Park. • Significant landscape features of the Park including the two creeks, and associated floodplains and undulating landscape will be protected. • Exposed geologic cross-sections, where safe, may remain accessible to the public and maintained in their natural state for education purposes. • Reduce, wherever possible, or at least do not increase, the risks imposed by contamination from previous owners • Human induced soil erosion in the Park is minimised. • Soil Management practises within the Park does not have any negative impacts on neighbouring landholders. • Areas affected by soil erosion, salinity and contamination in the Park are identified and remediated. • The Park's catchment values and the water quality and health of streams and waterbodies within the Park are maintained; • The management of the Park does not cause any degradation of the downstream catchment; • Potential catchment management impacts caused by upstream activities are minimised; • Park facilities and infrastructure will utilise environmentally sustainable development principles and practices where possible.	• Assist park users to interpret the character of the park • Improve water quality • Minimise soil erosion • Mitigate soil salinity	• Ensure access system provides experience of all landscape types • Provide vantage / viewing / orientation points over generally flat landscape where possible / of benefit • Use of existing tracks/ roads to minimise additional earthworks to Regional Park • Coordinated design (including habitat, heritage, and relationship to recreational access of water quality control ponds by developer at edge of Regional Park • Provide on line water quality control within natural creeks where possible
Flora		
• The full range of native plant and animal species and their habitats found in the park is conserved. • A diversity of vegetation structures and other habitat values are conserved, and restored where they have been subject to past disturbance. • The endangered ecological communities and populations within the Park are protected. • Rare, threatened & regionally significant native species and their habitats within the Park are protected. • Park neighbours support conservation of remaining areas of privately owned native vegetation near the Park. • Protection of habitat of native species will include actions to minimise illegal activities. • Threatening processes from surrounding urban areas are minimised. • The impact of introduced species on native plants and animals is minimised. • Monitoring of new introduced species in the Park results in eradication before they establish. • Increasing neighbour and community awareness about the impacts of introduced animals and plants on the Park's natural values, and about the desirability of sympathetic management in areas adjoining the Park. • Introduced species of cultural significance are managed to have no impact on environmental values of Park. • There is no establishment of Phytophthora cinnamoni within the Regional Park.	• Conserve full range of flora habitats in parkland • Enhance / maintain vegetation connectivity within parkland	• Protect areas with threatened and highly significant native species / sub communities • Focus park activities in existing disturbed and cleared areas • Focus park activities within areas containing most resilient vegetation communities • In areas where recreation is to be promoted, ensure conservation objectives are also pursued in relation to existing vegetation and habitat opportunities

4 MASTERPLANNING PRINCIPLES

4.1 Key masterplanning objectives and principles

Desired outcomes (from PoM)	Masterplan Objectives	Masterplanning Principles
Fauna		
• Habitat linkages for biodiversity movement within a regional context are established and maintained. • A sustainable population of macrofauna will be retained in the Park. • Any decision on long-term fencing for the management of macrofauna, once they have reached a sustainable population size, will seek the best possible environmental result.	• Maintain and enhance flora habitat values	• Focus park activities in existing disturbed and cleared areas • In areas where recreation is to be promoted, ensure conservation objectives are also pursued in relation to existing vegetation and habitat opportunities • Recognise fauna movement through park (creek & vegetation corridors) • Provide buffer zones to adjoining uses and activities within the park • Retain habitat tree trunks and protect plant species which provide food and shelter • Reestablish vegetation to highly disturbed zones that impact on fauna movement and habitat
Aboriginal Cultural heritage		
• Aboriginal sites and places are protected from damage by human activities. • Aboriginal people are involved in management of Aboriginal cultural and natural values in the park. • Community and NPWS knowledge and understanding of Aboriginal history and heritage within the Park is increased. • Intact landscape units are preserved as a means of protecting Aboriginal heritage.		• Aboriginal people to participate in further investigation of significance zones 1 to 3 as mapped in PoM where these areas are proposed for park development works • Reflect key themes for Aboriginal cultural heritage in park interpretation and visitor experience; - productive place - living place - meeting place - survival and continuity • Involve Aboriginal communities in the planning, management and conservation of Aboriginal heritage and any associated interpretative elements • Seek local stories about the history and meaning of the site and incorporate in appropriately located interpretation • Aboriginal people are the interpreters of their cultural heritage
Colonial settlement and Cultural heritage		
• Historic features are appropriately documented, conserved, managed and interpreted.	• Provide for recreational activities compatible with the cultural significance of heritage place • Interpret the park's significant cultural heritage and provide opportunities for public enjoyment and education • Plan uses and activities that do not impact on the cultural significance of the park • Integrate local stories about the history and meaning of the site	• Tell the stories of the site's agricultural development and use • Seek local stories about the history and meaning of the site and incorporate in appropriately located interpretation • Identify important areas such as Dunheved to retain cultural landscape character as part of conservation and understanding of history

4 MASTERPLANNING PRINCIPLES

4.1 Key masterplanning objectives and principles

Desired outcomes (from PoM)	Masterplan Objectives	Masterplanning Principles
Growth and Development Cultural heritage		
• Historic features are appropriately documented, conserved, managed and interpreted.	Provide for recreational activities compatible with the cultural significance of heritage place • Interpret the park's significant cultural heritage and provide opportunities for public enjoyment and education • Plan uses and activities that do not impact on the cultural significance of the park • Integrate local stories about the history and meaning of the site	• Use heritage roadways, tracks, and other infrastructure to provide recreational locations / services where possible - to reduce additional disturbance and aid interpretation / understanding • Provide interpretation and destination points to berm landforms • Provide clear identification / treatment of any new access routes • Adaptive re use of existing buildings • Seek local stories about the history and meaning of the site • Tell the story of the ADI site across the landscape using a range of interpretative initiatives
Munition Cultural heritage		
• Historic features are appropriately documented, conserved, managed and interpreted.		• Seek local stories about the community involvement in establishment of the Regional Park • Tell the story of the communities involvement in the conservation of endangered habitat and communities across the landscape using a range of interpretative initiatives and within adaptive reuse of existing buildings
Recreation Generally		
• There is widespread community understanding and appreciation of the Park's natural and cultural values. • Visitors are aware of the Park's recreational opportunities and can easily find their way to park facilities. • The Park is a useful educational resource for local schools and community organisations. • There is community understanding and acceptance of park management practices. • There is community recognition of the role of the Park in the provision of recreational opportunities within the context of regional and local open space. • There is community recognition and support for sympathetic conservation management on lands surrounding the Regional Park. • A variety of informal visitor opportunities are available that encourage appreciation of the natural and cultural environment and enjoyment of the park. • Facilities are designed and managed to provide a satisfying and informative visitor experience and minimise impacts. • Visitor use is compatible with the management direction of the Park and is ecologically, economically and socially sustainable. • Appropriate recreation and visitor opportunities are provided within the Park, that take into account the proximity and nature of regional and local open space. • Future planning of recreation activities takes the regional context into account. • A sustainable macrofauna population is retained in the Park and linked to visitor experience. • Where appropriate, the impact of the macrofauna fencing on visitor experience is minimised. • Opportunities exist for sustainable and appropriate commercial recreation activities. • Construction of new facilities complies with the conditions of any relevant Site Audit Statements and the Contamination Management Plan.		• Use existing disturbed areas / developed areas for recreational uses where possible (passive recreation, picnicking, gatherings) • Provide a range of access to recreational uses - some areas to be accessible by vehicle whilst some by cycle or walking • Re-use 'Hulk" remnants as location of main Visitor Centre and arrival / orientation point

4 MASTERPLANNING PRINCIPLES

4.1 Key masterplanning objectives and principles

Desired outcomes (from PoM)	Masterplan Objectives	Masterplanning Principles
Vehicular Access and entry		
	• Provide a functional, effective, and memorable arrival experience • Limit the extent of vehicular access to minimise impacts on habitat values and recreational use	• Reuse of existing infrastructure - sealed roads/ entry points • Provide entry points which effectively connect to district linkages • Stop unauthorised vehicular access within the park - no cars/ motor bikes or trail bikes on unsealed roads and tracks • Limit on site parking to key entry points/ recreational nodes/ educational & facilities buildings locations • Consider one way circulation through site as a way of mitigating potential traffic congestion/ cycle pedestrian conflicts
Pedestrian and Cycle Entry		
	• Maximise accessibility of recreational areas to pedestrian and cycle access from adjoining communities	• Establish hierarchy of access control based on natural and heritage conservation - Guided or controlled public access only to highest priority conservation areas - High level of access / entry to highest priority recreational areas • Reuse of existing track network and connections at boundaries where possible • Provide entry points which connect to local areas • Provide entry points which connect to district linkages • Prioritise placement of track and entries to outside flora, fauna, and heritage conservation areas where ever possible • Link and supporting signage to regional trail networks
Pedestrian and Cycle (shared) Access		
	• Provide an appropriate balance of shared (cycle and walking) and specific use access (cycle only, bushwalking only)	• Reuse of existing infrastructure - roads/ tracks/ entry points • Supplement where required to: - complete functional loops - create a variety of spatial and environmental experiences • Provide point to point and loop circulation through site with varied hierarchy of: - walk/ cycling difficulty, - experiences, - points of interest & vegetation/ flora habitat • Provide opportunities for pedestrian only and cycle only access experiences • Provide sustainable facilities, picnicking areas and resting points to within existing cleared/ disturbed areas and at points of interest • Provide destination for rest / facilities to complement broader district cycle networks (i.e. Ropes creek/ South / Wianamatta Creek corridors) • Interpretative treatments to recognise track usage: pedestrian, cycle, shared
Bushwalking		
	• Promote a variety of experiences through park topography, vegetation and heritage • Provide dedicated bushwalking paths in some locations	• Existing roads tracks to be used are generally past vehicular access and will cater for shared use • Recognise opportunities for bushwalking only tracks to western zone of park where topography is more varied and older tracks are more heavily overgrown • Integrate track access with picnic facilities for shared use of facilities (toilets / picnics) • Provide directional signage • Integrate interpretation into track facilities and signage

4 MASTERPLANNING PRINCIPLES

4.1 Key masterplanning objectives and principles

Desired outcomes (from PoM)	Masterplan Objectives	Masterplanning Principles
Cycling		
	• Provide an appropriate balance of shared (cycle and walking) and specific use access (cycle only, bushwalking only) • Promote cycling as key park activity - track system - possible bike hire	• Use existing roads and tracks • Promote a variety of experiences through park topography, vegetation and heritage • Integrate track access with picnic facilities for shared use of facilities (toilets / picnics) • Associated Car Parking • Cafe / Kiosk and facilities • Integrate interpretation into track facilities and signage • Provide destination for rest / facilities to complement broader district cycle networks (i.e. Ropes creek/ South / Wianamatta Creek corridors)
Picnicking		
	• Picnicking in a variety of locations and settings with varied levels of accessibility from vehicular to cycle / walking only	• Provide to existing cleared areas • Relate to areas / elements that have heritage "story" and build upon for design themes • Consider most applicable approach: - centralised "high volume" facilities to control and focus impacts - more dispersed areas affording lower volume of use but potentially wider spread impacts (albeit less intense) • Educate park users in sustainable practises through design of park facilities
Tourism		
• Commercial and other non-park uses have minimal environmental impact and contribute to the aims of Park management. • Commercial and other non-park uses contribute to understanding and enjoyment of the values of the Park • Commercial and other non-park uses are potentially revenue-generating opportunities and provide opportunities for employment and training, where appropriate.	• Self guided educational walks • Guided Cycling/ Bush walking activities • Educational Tours / stays • Sustainability research and development • Visitor facility - event spaces/ cafes/ restaurants	• Track system to provide opportunities for self guided access through recreational areas of park • Potential for adaptive re-use of Transit Stores for overnight stays • Maintain existing track access through habitat conservation areas (that is limited general public access) for guided access events and access for management and research • Re-use 'Hulk" Bomb Filling building remnants as location of main Visitor Centre and arrival orientation point
Education and Research		
• Research is undertaken that enhances the information base and assists conservation and management of the Park, and of the Cumberland Plain. • Research causes minimal environmental damage. • Monitoring programs are in place to detect any changes in the status of Park resources and values. • Monitoring programs designed to assist in the management of the Park comply with the principles of environmental, economical and social sustainability. • Research and monitoring programs and activities comply with relevant legislation. • Research participation and co-operation is achieved with tertiary institutions and other major interested organisations.	• Sustainability research and development • Plant propagation • Plan research • Ongoing heritage research / investigations	• Control of general public access to highest priority conservation areas • Maintain existing track access through habitat conservation areas (that is limited general public access) for access for management and research • Potential for native plant propagation in a Regional Park area adjoining the "Central Precinct of the urban development - for potential integration with a commercial nursery facility in the Employment Lands • Potential for native grass research in cleared areas of historic significance (Growth and development phase) • Heritage research / investigation
Heritage research / investigation		
• Management facilities adequately serve the needs of NPWS objectives, strategies and operations and have minimal environmental impact. • New management facilities will consider and apply the principles of ecological, economic and social sustainability. • The conditions of relevant Site Audit Statements and the Contamination Management Plan are complied with prior to the construction of any facilities and/or infrastructure in contaminated areas of the Park.		• Re-use 'Hulk" Bomb Filling building remnants as location of main Visitor Centre and arrival orientation point • Re-use single Transit Store building as location of NPWS depot and maintenance activities.

4 MASTERPLANNING PRINCIPLES

4.2 Masterplanning strategies

Natural Systems

The fundamental strategy embodied in the masterplan is the expression of the Regional Park in three management zones that will have varied balance of conservation, access and recreation emphasis:

- Zone 1 - Primary Habitat Focus
- Zone 2 - Secondary Habitat Focus
- Zone 3 - Recreation Focus

These will be linked by a system of access that focuses upon reuse of existing roads and track infrastructure. A description of the zones follows;

Zone 1 - Primary Habitat focus:

- Encapsulates the Alluvial Woodland area and all creek corridors
- Incorporates the Aboriginal cultural heritage zone at the confluence of South and Ropes Creeks and the majority of the High Significance areas as determined in previous assessments (refer PoM).
- Would generally be fenced to boundaries – 75% being a boundary to adjoining development / 25% to other RP zones
- Public access to be limited to guided access for special events and one fenced east west corridor (which generally replicates an existing corridor) through the central area of Zone 1

Zone 2 - Secondary Habitat Focus:

- Areas that have potential to be pursued in the future for either Habitat (Zone 1) or Recreation (Zone 3) focus
- Areas that provide for access links but with limited recreation use
- May be fenced to boundaries – subject to relationship to adjoining areas (eg Zone 1) which may be fenced already at their boundary
- Public access will vary – but generally will be open to day to day pedestrian and cycle access but no public vehicular access
- Where no fencing provided – vehicular access management required to boundaries

Zone 3 - Recreation Focus:

- Areas to be pursued for a Recreation Focus – potential for a specific use and interpretational theme to each recreation zone
- Key location of access track system
- Location of recreational facilities
- Public access will generally be open at boundary for to day to day pedestrian and cycle access with public vehicular access to designated access roads to key recreation precincts (ie not necessarily to all recreation precincts)
- Where no fencing provided – vehicular access management required
- Will fundamentally integrate habitat enhancement and conservation with recreational activities and maintain habitat and conservation qualities of area
- Includes key historic heritage precincts

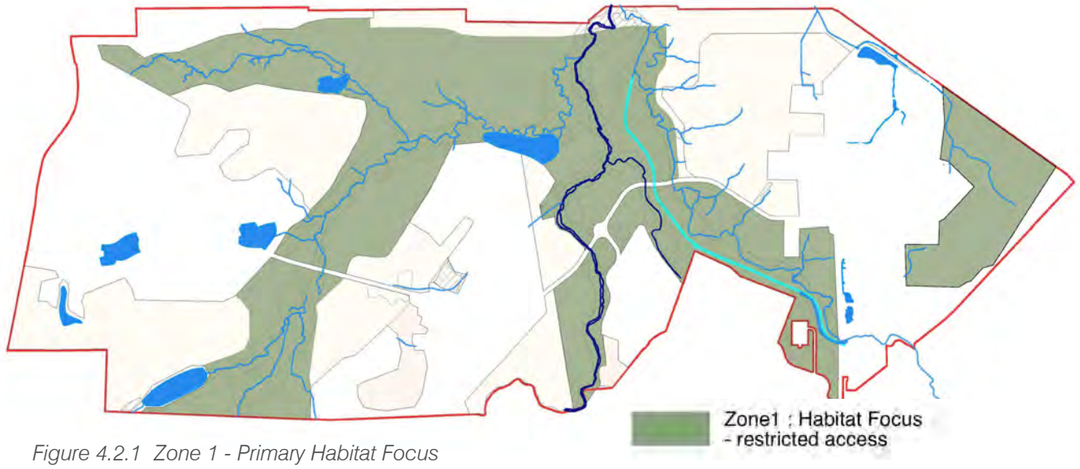


Figure 4.2.1 Zone 1 - Primary Habitat Focus

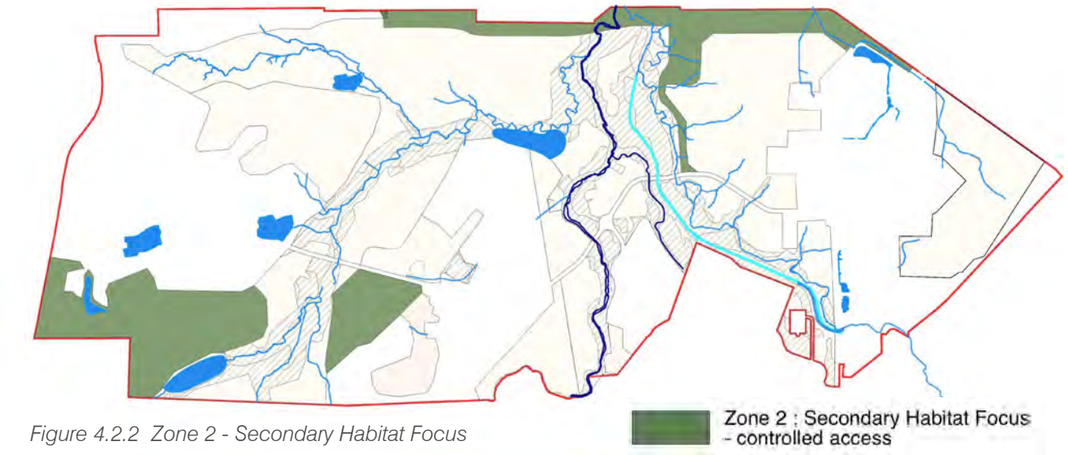


Figure 4.2.2 Zone 2 - Secondary Habitat Focus

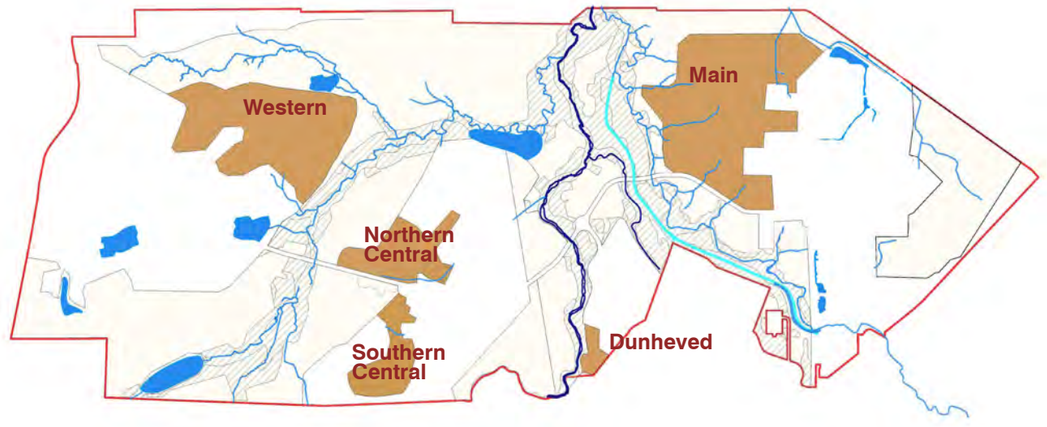


Figure 4.2.3 Zone 3 - Recreation Focus

4 MASTERPLANNING PRINCIPLES

4.2 Masterplanning strategies
Cultural heritage

Heritage themes and their relationship to site

Interpretation of historic themes and heritage will contribute to the understanding and appreciation of the park through initiatives that stimulate and engage visitors. Benefits of heritage interpretation will be :

- Increased appreciation of heritage values
- Community cohesion
- Creating and making a sense of place

The CMP identifies the cultural heritage significance of the site under 6 key phases. The masterplan should guide development and management of the park so as to facilitate the understanding by park users of these key phases. A particular feature of the Regional Park is that physically these phases overlay and interpretation must consider the optimum locations and means to assist understanding. The proposed strategies for interpretation of the key phases are listed broadly following:

1. Natural landscape

- Integrated display at Visitor Centre
- Included in regular “totems” on paths network explaining local factors and changes in natural conditions (from other parts of site) in context of other themes
- Focussed interpretation signage and “time lapse” photographs at key locations to interpret progressive upgrading of natural values
- Guided and self guided walks

2. Aboriginal lands - Darug Country

- Integrated display at Visitor Centre
- Included in regular “totems” on path network explaining local factors in context of other themes
- Focussed interpretation signage at key locations to interpret camp site, Silcrete quarry, and significance of creeks / wetlands
- Darug naming of spaces, paths etc.
- Guided walks
- Darug involvement in education and guided tours etc
- Programme of public art that commemorates and celebrates the sites history and heritage

3. Colonial landscape (1800 - 1860)

- Integrated display at Visitor Centre
- Included in regular “totems” on paths network explaining local factors in context of other themes
- Maintain and provide interpretive signage to key clearings such as in Jordan Hill area, Dunheved, and to western recreational precinct - where not in conflict with CMP provide recreational uses to clearings
- Focussed interpretation signage at key locations to interpret
- Interpretation plantings and features at Dunheved

4. Growth and development (1860s to 1940s)

- Integrated display at Visitor Centre
- Maintain historic cleared areas in zone 1 & 2, seeking compatible use (eg native grass research)
- Maintain tracks for reuse in zones 1 & 2
- Included in regular “totems” on paths network explaining local factors in context of other themes
- Conservation and use of tracks along past land grant boundaries
- Focussed interpretation signage at key locations to interpret Luxford dairy, South / Wianamatta Creek Bridge (restricted and controlled access with in zones 1 & 2)

5.1 Munitions - explosives and filling (1941 - 1946) and munitions and storage - project 590 (1950s to 1990s)

- Integrated display at Visitor Centre
- Included in regular “totems” on paths network explaining local factors in context of other themes
- Focussed interpretation signage at key locations to explain location of Munitions uses
- Thematic focus on munitions history in main visitor precinct being site of major site works
- Use of Munitions names and numbering / codes to spaces and facilities in Main Visitor Precinct
- As above
- Conservation and use of road and rack networks (main visitor and western visitor precincts)

6.1 Revitalisation and conservation - post industrial (1993-2001) and Regional Park (2001 onwards)

- Integrated display at Visitor Centre
- Included in regular “totems” on paths network explaining local factors in context of other themes
- Focussed interpretation signage at key locations to explain conservation campaign
- Integrated display at Visitor Centre
- Included in regular “totems” on paths network explaining local factors in context of other themes
- Focussed interpretation signage and “time lapse” photographs at key locations to interpret progressive upgrading of natural values

4 MASTERPLANNING PRINCIPLES

4.2 Masterplanning strategies

Responses to specific heritage elements

The CMP identifies the cultural heritage significance of a range of key cultural landscape elements on the site (refer table 5.2 in CMP). Key attributes are identified which should be conserved and interpreted in masterplanning and ongoing design development in the park. Masterplanning strategies to achieve this are outlined following. The Masterplan strategies should be read in conjunction with the CMP policies.

Zone 1: King plantings - western side of South / Wianamatta Creek

Key Attributes	Masterplanning Strategies
• Remnant cultural plantings with landmark qualities visible from east side of creek • Form of the trees (Norfolk Island Pines) Also • Lie in area of past rail link to western section of ADI	• Located in adjoining Regional Open Space • Conserve and manage remnant trees and view lines • Pursue recreational access link along alignment of past rail line and in vicinity of trees across creek and through Regional Open Space to Central Precinct of urban development • Provide interpretive signage on access route and within Dunheved area (looking west to trees)

Zone 1: Jackson's dairy remnant building (including cleared area)

Key Attributes	Masterplanning Strategies
• Evidence includes ruin of dairy bails and archaeological remains • Location adjacent to house site • Cleared, grassland setting • Related to small scale farming in the area	• Located in proposed Zone 1 conservation focus • Conserve cleared area • Provide interpretive signage adjacent track access for guided groups

Zone 1: House site / cleared area of Jackson's dairy

Key Attributes	Masterplanning Strategies
• Location adjacent to dairy site • Cleared, grassland setting • Remnant garden plantings	• Located in proposed zone 1 conservation focus • Conserve cleared area and remnant plantings • Provide interpretive signage adjacent track in adjoining Regional Open Space • Coordinate detention basin design to consider heritage factors

Zone 1: House site / brick chimney)

Key Attributes	Masterplanning Strategies
• Evokes interdependence of small scale farm holdings • Wide, cleared setting • Fruit tree scatter • Visual link to Jordan Hill • Relationship to access track	• Located just outside Regional Park in Regional Open Space • Liaise for conservation and protection • Provide interpretive signage adjacent track in adjoining Regional Open Space

Zone 1: Jordan Hill house site (cleared area and managed landscape) (not in Regional Park)

Key Attributes	Masterplanning Strategies
• Early rural homestead complex • Wide, cleared setting • Deciduous tree scatter • Visual link to house site with chimney • Relationship to access track	• Located across proposed Zone 1 conservation focus and adjoining Regional Open Space • Provide interpretive signage adjacent track in adjoining Regional Open Space

Zones 1-2: Canal

Key Attributes	Masterplanning Strategies
• Fauna attractant • Amenity value	• Located predominantly in proposed Zone 1 area conservation focus

Zone 2: Luxfords fruit trees

Key Attributes	Masterplanning Strategies
• Evidence of local orcharding fruit trees close to the confluence of the two creeks approximates the location of Luxford orchard	• Located in proposed zone 1 conservation focus • Conserve and manage remnant plants where compatible with conservation of natural values • Provide interpretive signage on access route - potentially related to bridge crossing

Zone 2: Ropes Creek Bridge

Key Attributes	Masterplanning Strategies
• Evidence of infrastructure associated with farming • Rustic character • Make-do nature of repairs • Association with past road in this area	• Located in proposed Zone 2 secondary conservation focus • Provide pedestrian cycle crossing • Provide interpretive signage

Zone 2: South/ Wianamatta Creek Bridge

Key Attributes	Masterplanning Strategies
• Evidence of infrastructure associated with farming • Rustic character • Association with past road in this area	• Located in proposed Zone 1 & 2 secondary conservation focus • Provide pedestrian /cycle crossing • Provide interpretive signage

Zone 2: Road across the two creeks

Key Attributes	Masterplanning Strategies
• Unpaved character • Natural gravel surface • Evocative of growth and developing of area for farming	• Located in proposed Zone 2 secondary conservation focus • Retain natural / gravel surface • Conserved as shared access trail - provide interpretive signage • Retain use of road

4.2 Masterplanning strategies

Zone 3: Dunheved Homestead

Key Physical Attributes	Masterplanning Strategies
• Rows of trees, garden and • Hedge plantings; • Cleared, grassland setting • Remnant terracing; • Views to Kings Plantings - wester side of creek Also • Archaeological evidence of colonial homestead and outbuildings with related uses offering potential for interpretation	• Located in a proposed recreational focus Zone 3 • Conserve and manage remnant trees, garden and hedge plantings • Conserve and manage cleared / pastoral setting adjoining riparian corridor • Interpret terracing in future design for use of area - providing access near creek - possible new cultural plantings • Interpret footprints of past buildings and their uses in landscape design

Zone 3: Rail system (including remnant rails, buildings, spur line)

Key Attributes	Masterplanning Strategies
• Alignment • Fabric • Relationship with roads and functional areas (main Precinct and Central Park Precinct)	• Located across various zones and outside Regional Park • Pursue recreational access link along alignment of past rail line and through Regional Open Space to Central Precinct of urban development • Remnant rails in Links Ave interpreted as entry element to Dunheved • Provide interpretive signage on access route

Zone 3: Kingswood Magazine (KMA including mounds, roads, etc)

Key Attributes	Masterplanning Strategies
• Network of roads of a variety of materials, sinuous alignments along contours • Hardstand areas • Earthworks and building footprints	• Located partly in proposed zone 3 (western precinct) recreational focus • Track system conserved as recreational access • Hardstand areas retained with in pavement marker / identifier • Markers to identify bunker names / numbers • Interpretative signage to explain munitions history and industrial processes

Zone 3: Shell Filling (including mounds, roads, buildings, etc)

Key Attributes	Masterplanning Strategies
• Road pattern and connection to road system • Buildings and their relationship with other components • Earthworks and building footprints	• Located in proposed Zone 3 (main visitor precinct) • Shell filling pads retained for picnic / gathering uses • Names of spaces to relate to past use / identifying numbers / names • Provide interpretive signage to explain past use and process • Provide access up onto berms to enable viewing over

Zone 3:Bomb Filling (including mounds, roads, buildings, etc

Key Attributes	Masterplanning Strategies
• Road pattern and connection to L-28 • Earthworks and building footprints	• Located in proposed zone 3 (Central Visitor Precinct) • Main area retained for picnic / gathering uses and additional event space (eg community markets • Provide interpretative signage to explain past use and process

All Zones: Boundaries

Key Attributes	Masterplanning Strategies
• Tracks • Cleared lines amongst trees • Delineation through differences in vegetation types, etc	• Tracks conserved as part of park access system either as day to recreational tracks or access tracks in controlled access areas • Name track loops in Zones 1 and 2 (that is zones of general public access) interpreting land grants / ownership

All Zones: Cleared areas

Key Physical Attributes	Masterplanning Strategies
• cleared, grassland setting • Some edges coinciding with fence or boundary lines	• Located in proposed Zone 2 secondary conservation focus • Clearing to be maintained - potential for native grass research to continue research role of this area • Provide interpretive signage adjacent track

All Zones: Stands of trees

Key Attributes	Masterplanning Strategies
• mature original trees in a group • Associated understorey	• Located in proposed Zone 1 and zone 3 (western precinct) recreational focus - adjacent track access • Conserve stand of trees - identify as possibly remaining from pre development era in interpretive signage

All Zones: Obsolete Storage (including mounds, roads, etc)

Key Attributes	Masterplanning Strategies
• Remnant infrastructure	• Located in proposed Zone 1 area conservation focus • Allow to revegetate - provide interpretive signage to explain munitions history and industrial process to adjoining paths / tracks

All Zones: Road system

Key Attributes	Masterplanning Strategies
• Alignment • Fabric of bridges • Relationship with functional areas and rail	• Located in all areas • Roads retained - several to be used as public vehicular access to main visitor precinct and central visitor precinct

4 MASTERPLANNING PRINCIPLES

4.2 Masterplanning strategies

Access & Circulation

Potential Vehicular Entry / Circulation

Vehicular entry is proposed to be provided on existing sealed road surfaces to two of the proposed recreational precincts. Whilst a preferred circulation direction is nominated below - this is flexible to future adaptation if required.

Main visitor precinct

- Entry is proposed from the Ropes Crossing urban development flowing past the proposed visitor centre
- Exit is proposed out onto the main east west link road

As arriving traffic will be dispersed across a greater time frame and exiting traffic potentially focussed on afternoon the highest impact traffic will be to the east west link road.

Bringing traffic adjoining the Ropes Crossing Town Centre was seen by Delfin lend Lease a positive, and DLL advise that there is potential for this access to continue the Ropes Crossing Boulevard axis and link to the existing roadway into the Regional Park by roadways that limit impact on residential streets. Traffic would potentially also flow past the proposed cultural park at the past ADI rail station.

It is proposed that a one way access loop through the main recreational area would be provided with a two way connection to the west to the Transit Stores to house varied recreational and management activities.

It is proposed that gates to entry and exit would be locked at park closing. If events were to be held in the Visitor Centre at night gates would be kept open.

Central visitor precinct

- Entry / exit is proposed from the main east west link road
- A secondary access is proposed to the north to the central precinct of the urban development

Generally traffic would flow on a two way system.

Potential Vehicular Parking

Parking is provided within the main and central precincts and at the edges of the Western and Dunheved precincts as outlined:

Main Visitor Precinct

- Several permanent parking areas serve the visitors centre
- Parking in ninety degree or parallel arrangement adjoining roads will serve the picnic / gathering areas to ADI operational pads
- An event parking area is available in the grass clearing in the south west

Western Visitor Precinct

- Parking in ninety degree or parallel arrangement within Regional Park lands but adjoining roads flanking the park boundary at the main hilltop clearing

Northern Central Visitor precinct

- Parking in ninety degree or parallel arrangement adjoining internal road
- Parking in ninety degree or parallel arrangement at entry from east west link road

Southern Central Visitor precinct

- No parking is envisaged within the Regional Park area - not seen as a regional destination area - and limited facilities are provided
- Parking would occur to adjoining streets if required

Dunheved Visitor precinct

- Parking Bays within site adjoiing Links Rd, having regard to views corridors to site from roadway.

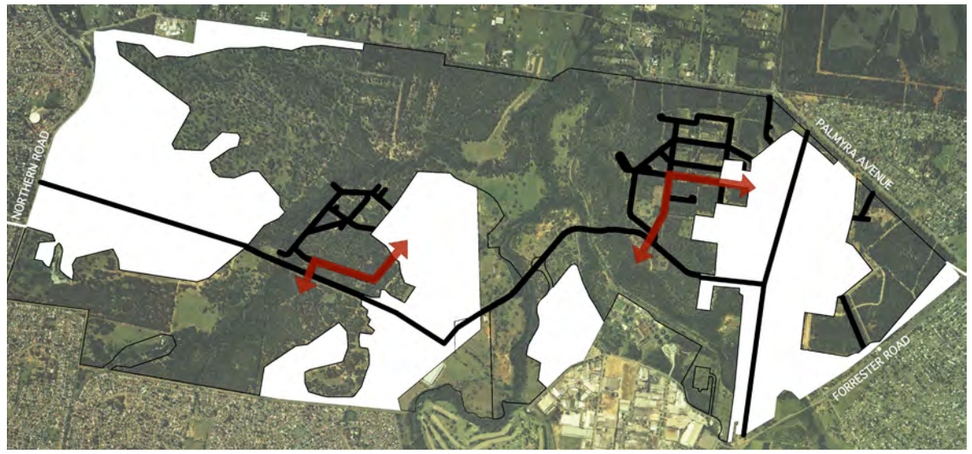


Figure 4.2.4 Potential vehicular entry / exit

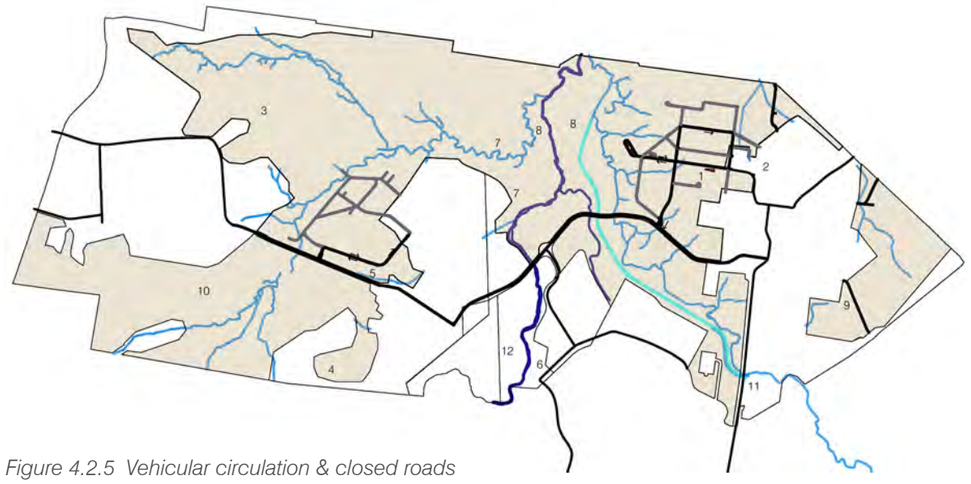


Figure 4.2.5 Vehicular circulation & closed roads

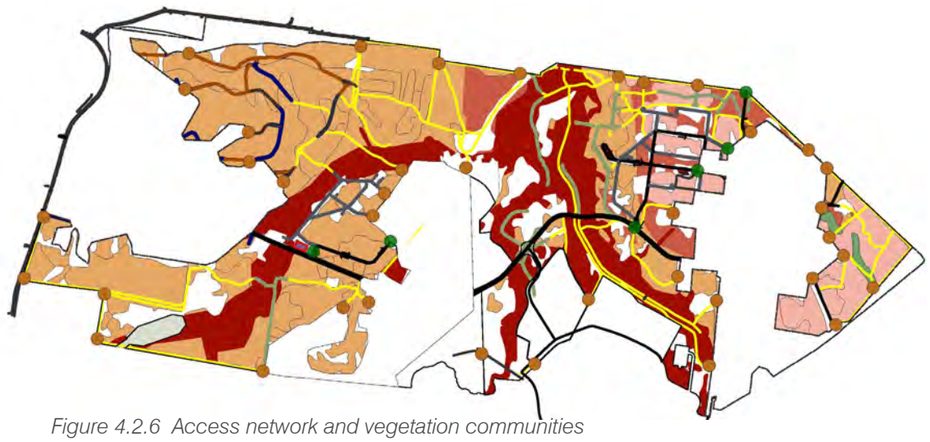
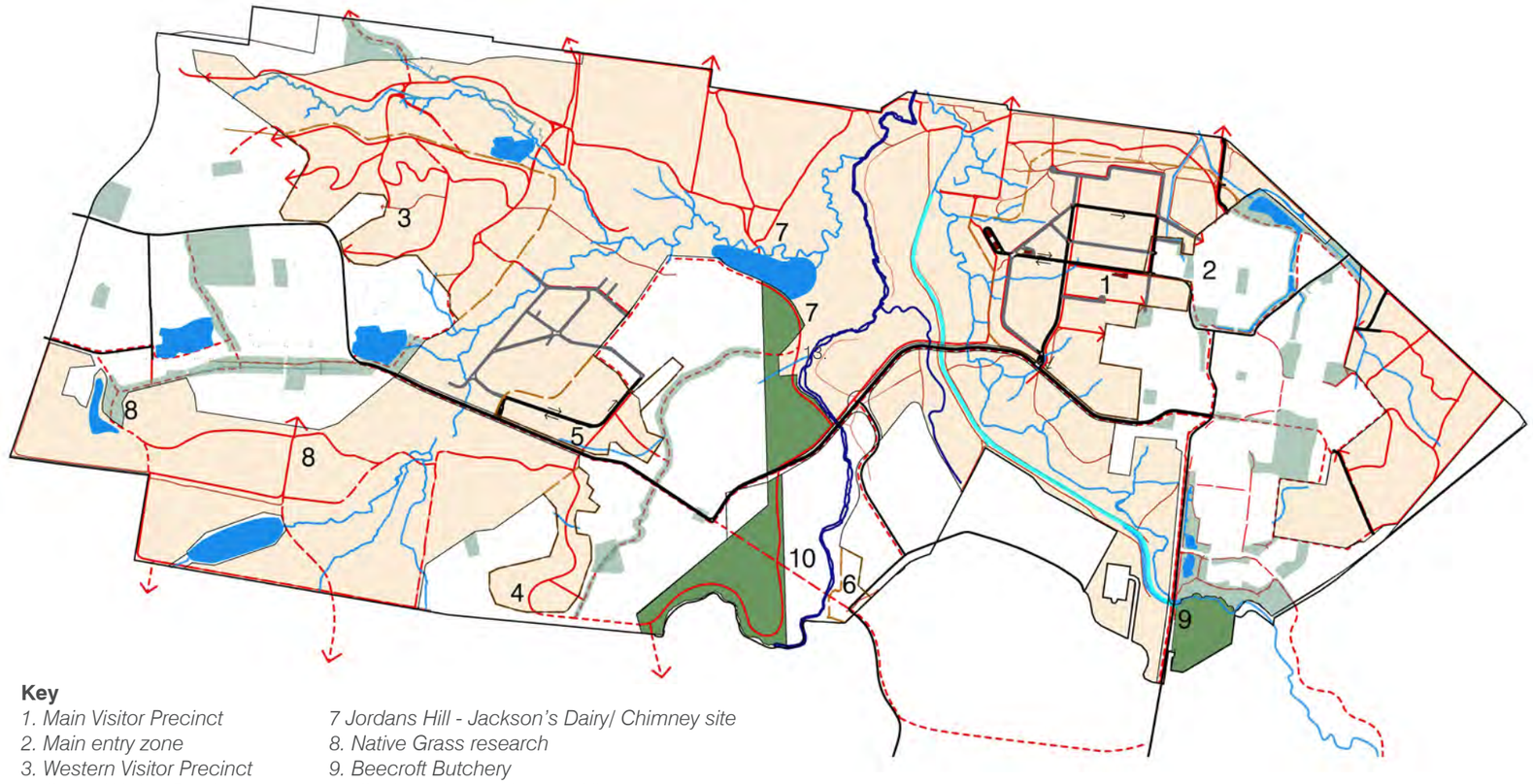


Figure 4.2.6 Access network and vegetation communities

Site Images: Existing road and track infrastructure will provide the majority of access to the Regional Park (Source : EP NSW)



Key

1. Main Visitor Precinct
2. Main entry zone
3. Western Visitor Precinct
4. Central Visitor Precinct
5. Potential Events Amphitheatre
6. Dunheved Homestead
7 Jordans Hill - Jackson's Dairy/ Chimney site
8. Native Grass research
9. Beecroft Butchery
10. Cycle path to heritage rail line

LEGEND

- Regional park
- Dam / Other Water body
- Development Open Space
- Regional Open Space
- Existing ADI Building for adaptive reuse
- Proposed Pedestrian / Cycle Access within adjoining developments and open space
- Proposed Pedestrian / Cycle Access within Regional Parklands
- Proposed Pedestrian / Cycle linkage through Habitat Zone or Regional Open Space
- Proposed Pedestrian / Cycle Access Entry and Connections
- South Creek
- Ropes Creek
- Existing Secondary Creek
- Existing Sealed Road (main)
- Existing Sealed Road (secondary)
- Existing Gravel Road

Figure 4.2.7 Access network and recreational precincts / points of interest

4 MASTERPLANNING PRINCIPLES

4.2 Masterplanning strategies

Recreation and Facilities

Recreational uses

The following uses are addressed in the recreation and use strategy outlined on figure 4.2.8.

- Bushwalking
- Picnicking
- Cycling
- Commercial Tourism
- Education
- Research and Monitoring

Further the plan identifies the following uses as deemed to be inappropriate within Wiannamatta Regional Park:

- Camping
- Dog walking
- Horse riding
- Skateboarding, rollerblading, and similar facilities

Buildings / structures

1. Central (and focal) visitors centre located near the entry (or main entry) to the park
2. NPWS office (potentially located adjoining or as part of visitors centre)
3. Focal Interpretive display (ideally in the visitors centre)
4. Cafe / kiosk and toilet facilities serving main visitor area
5. Picnic and BBQ shelters located adjoining main usage areas at a range of locations
6. Internal event space for site based or community events
7. Meeting rooms for stakeholder and NPWS use
8. Smaller scale toilet facilities serving dispersed recreation areas
9. NPWS maintenance depot
10. Native plant nursery

Parking

11. Main parking area serving central facilities
12. Dispersed parking facilities to user precincts accessible by vehicle

Spaces

13. Open grassed external event spaces of a range of sizes / scales

Signage

14. Main entry signage
15. Precinct identification signage
16. Vehicular wayfinding signage
17. Pedestrian / cycle wayfinding signage through site
18. Interpretive signage through site

Paths / Tracks

19. Shared pedestrian cycle track
20. Pedestrian walking tracks of varied levels (that is width and surface)
21. Cycle tracks of varied levels (that is width and surface)
22. Maintenance access tracks (supplementary to dual use of other access tracks

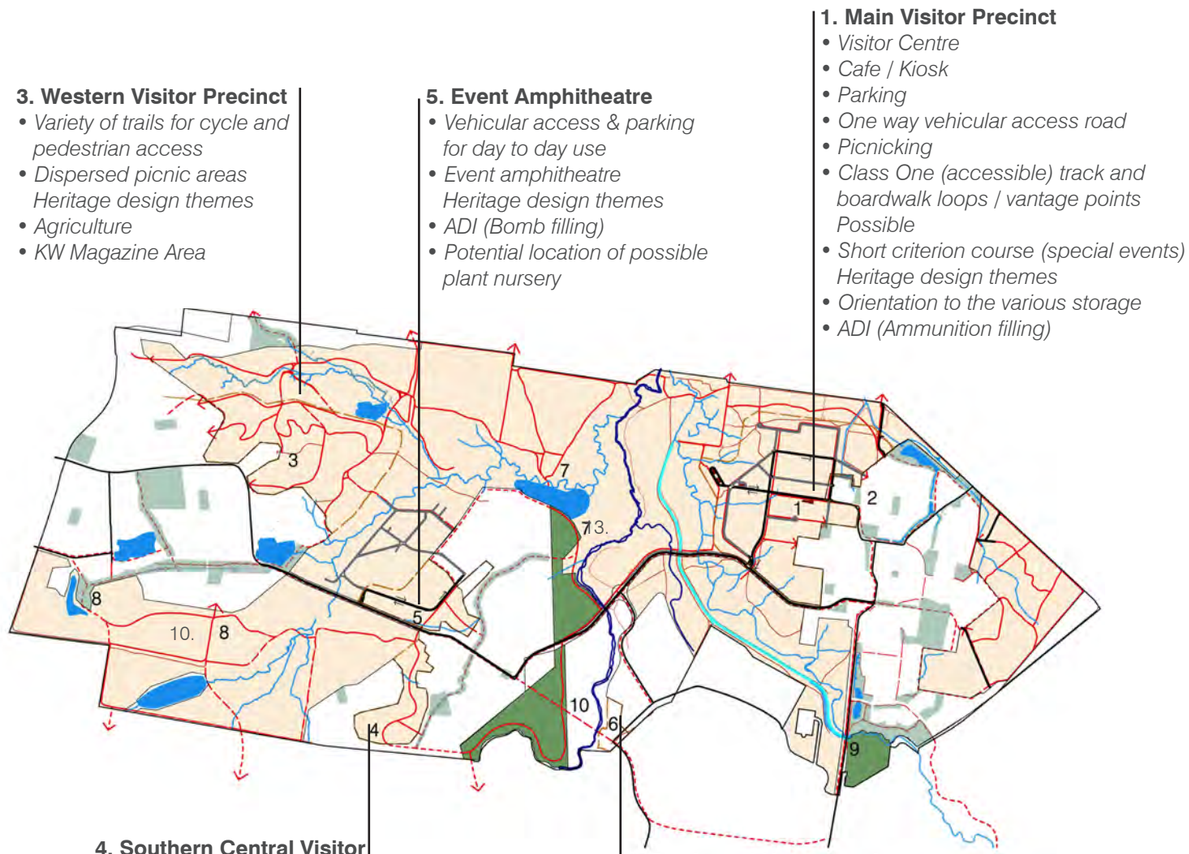


Figure 4.2.8 Recreation and Use Strategy Plan

5.0 REGIONAL PARK MASTERPLAN

5 REGIONAL PARK MASTERPLAN

5.1 Masterplan

As outlined in the masterplan strategies, a core habitat conservation goal has been the formative influence in the masterplanning process. This process reflects the following:

- The refinement of highest priority areas for pursuit of habitat and Aboriginal heritage conservation goals
- Recreational precincts located in areas with less significant existing and potential habitat value - these areas also reflect areas having a major role in ADI development history
- Recreational precincts located to integrate with adjoining urban development communities and related open space systems and access connections
- Phasing of park implementation and co - use allows for coordination of infrastructure and facilities provision (e.g. Adjoining services such as toilets can be located in development open space),
- Positive management and maintenance situation for Regional Park

Regional Park Zones 1 and 2

Required works to realise the proposed masterplan uses and management within the Regional Park will vary within each zone. Zone 1 Primary Habitat Focus and Zone 2 - Secondary Habitat Focus are typified by a generic range of works which will be required across the zones as noted below. Specific strategies for each are identified on the descriptions for Zone 1 and 2 on the following pages.

Zone 1 - Primary Habitat Focus (561ha 62% of RP area 2900 lin/m of boundary):

Ongoing general maintenance of these areas by NPWS will continue such as upgrading to existing fencing and fire trail / maintenance tracks. As well as ongoing macrofauna and vegetation management.

Zone 2 - Secondary Habitat Focus (163ha 18% of RP area 18400 lin/m of boundary):

Future staged works will undertake construction of new trail connections including;

- recreation and maintenance tracks,
- long term fauna connections
- shareway access entries,
- interpretative signage/ art and
- boundary fence removal and relocation adjoining selective development interface

Section 5.2 Precinct plans, describes the detailed proposals for each of the proposed recreational precincts.

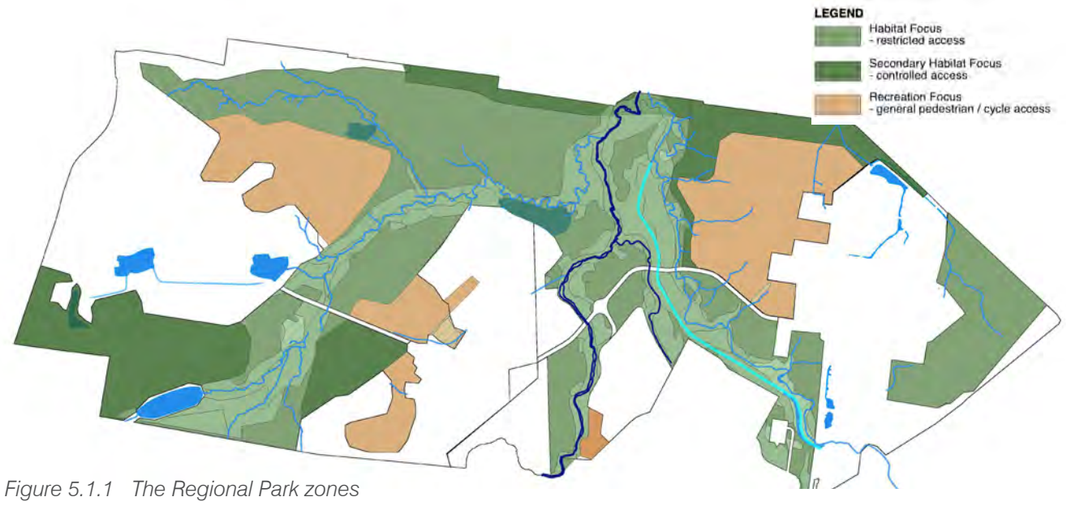


Figure 5.1.1 The Regional Park zones

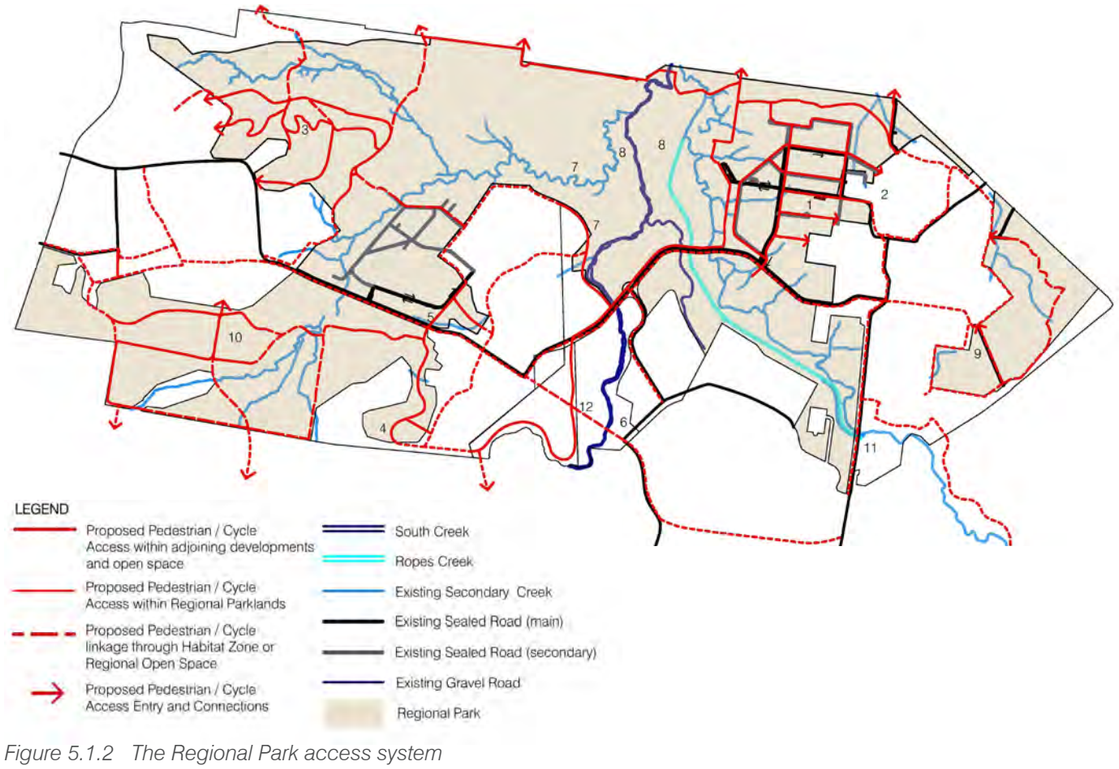


Figure 5.1.2 The Regional Park access system

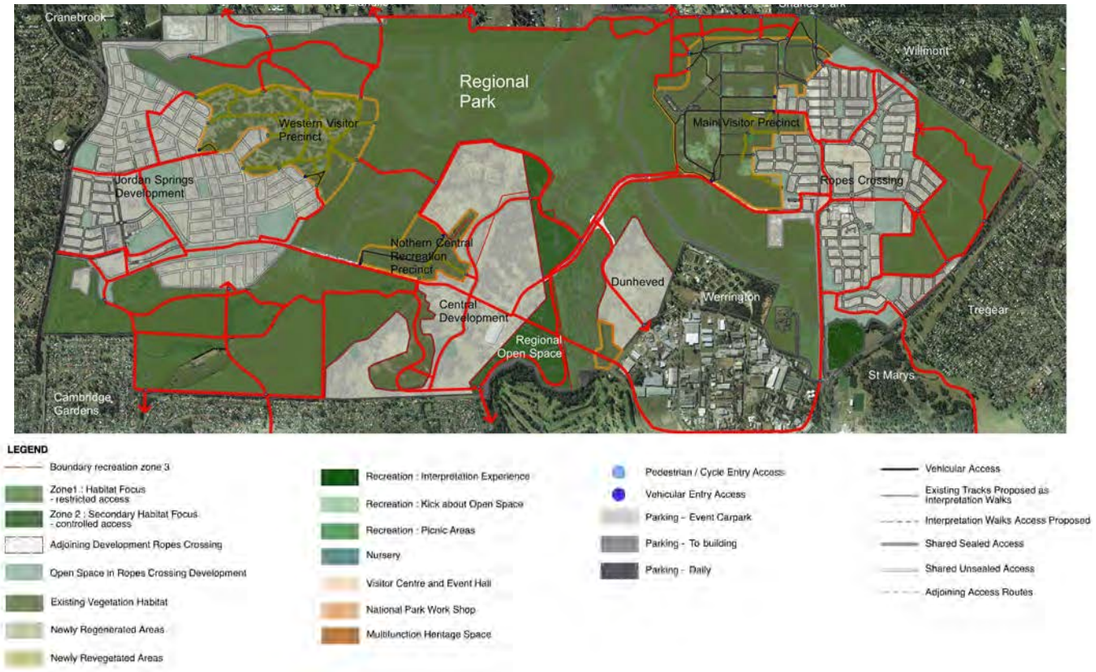


Figure 5.1.3 The Regional Park Masterplan

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans
Park Zone 1 - Primarv Habitat Focus (163ha 18% of RP area 18400 lin/m of boundary)

LEGEND

- Boundary recreation zone 3
- Zone1 : Habitat Focus - restricted access
- Zone 2 : Secondary Habitat Focus - controlled access
- Adjoining Development Ropes Crossing
- Open Space in Ropes Crossing Development
- Existing Vegetation Habitat
- Newly Regenerated Areas
- Newly Revegetated Areas
- Fence : 2.1m Fauna Proof
- Fence : Post and Cable
- Fence : 1.5m Height
- Vehicular Access
- Existing Tracks Proposed as Interpretation Walks
- Interpretation Walks Access Proposed
- Shared Sealed Access
- Shared Unsealed Access
- Adjoining Access Routes
- Recreation : Interpretation Experience
- Recreation : Kick about Open Space
- Recreation : Picnic Areas
- Nursery
- Visitor Centre and Event Hall
- National Park Work Shop
- Multifunction Heritage Space
- Pedestrian / Cycle Entry Access
- Vehicular Entry Access
- Parking - Event Carpark
- Parking - To building
- Parking - Daily

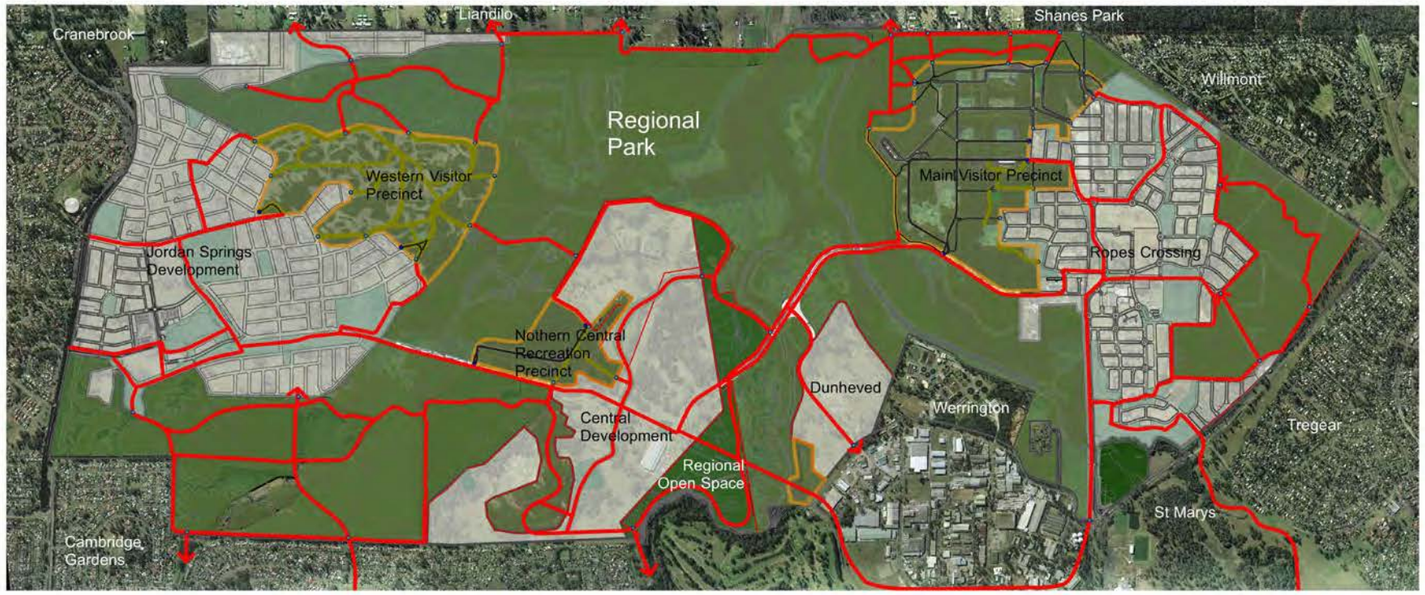


Figure 5.2.1 The Regional Park Masterplan

1. *Obsolete Storage Area - provide interpretation on track access*
2. *Jackson's Dairy remnant building, house site and cleared area*
3. *Jordan Hill house site and cleared area*
4. *Access for guided walks in zone 1 from Main Visitors Precinct*
5. *Opportunity to interpret Silcrete Quarry on adjoining Asset Protection Zone (APZ) pathway/ maintenance and guided access entry*
6. *Coordinate construction / protection of remnant Chimney in Regional Park Site*
7. *East West public shared access link corridor with security fence set back from path edge (visual buffer)*

LEGEND

- Zone 1 : Habitat Focus - restricted access
- Water bodies
- Alluvial Woodland
- Security Gate / Management access related to existing track access
- Proposed Pedestrian / Cycle Access within adjoining developments and open space
- Proposed Pedestrian / Cycle Access within Regional Parklands
- Proposed Pedestrian / Cycle linkage through Habitat Zone or Regional Open Space
- Proposed Pedestrian / Cycle Access Entry and Connections

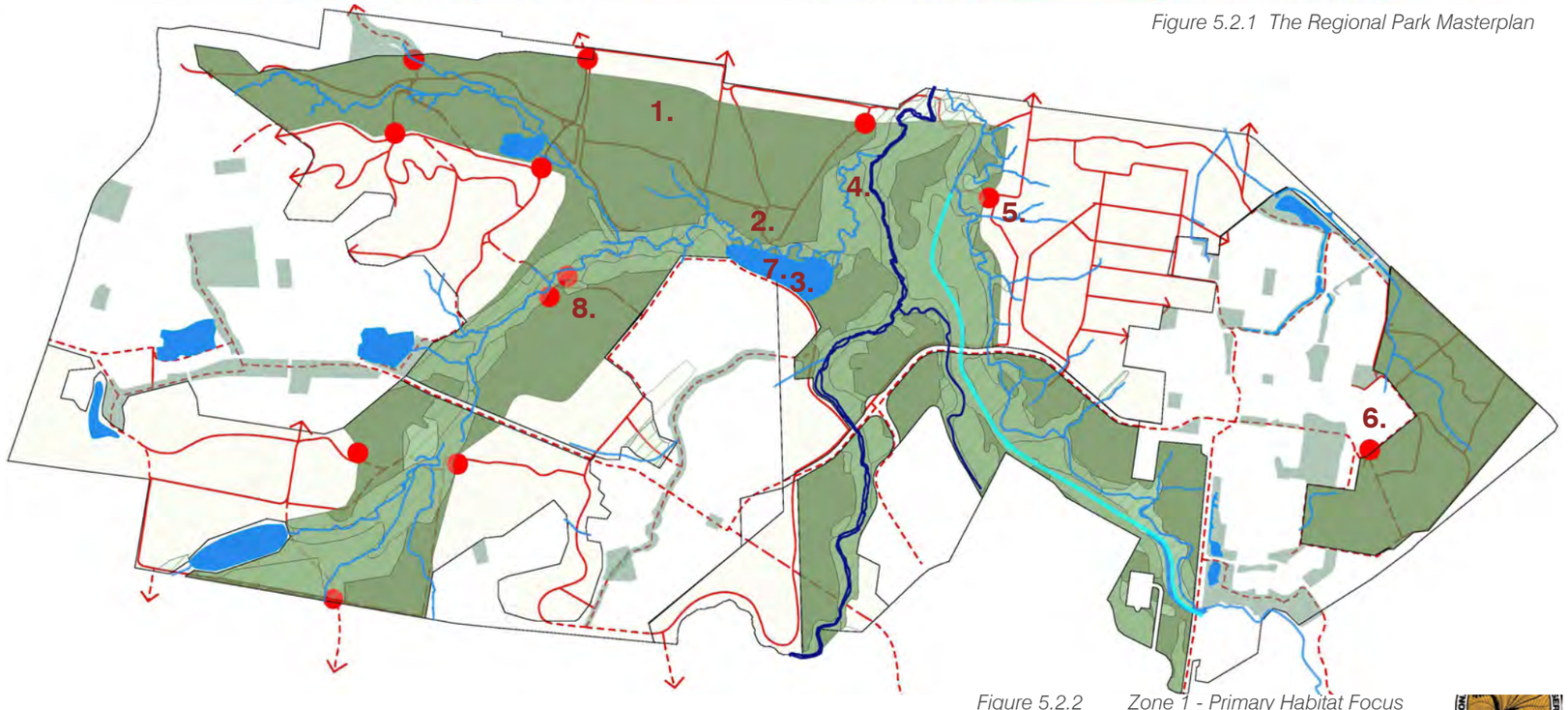


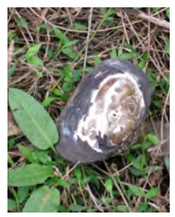
Figure 5.2.2 Zone 1 - Primary Habitat Focus

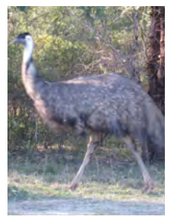
5.2 Precinct Plans

Flora & Fauna Management

- Weed management and regeneration of Alluvial Woodland riparian corridors
- Weed management and regeneration of other Cumberland Plains sub communities
- Long term macrofauna community resides within Zone 1 of the Regional Park
- Selected management of existing cleared areas to support heritage significant house sites
- Selected management of existing exotic plantings to support heritage significant house sites
- Areas adjoining boundary fencelines to adjoining development are to be planted at denser spacings to ensure maximum visual buffer
- Fauna links via underpasses between sections of Zone 1

Site Image : Fauna connections (Source : EP NSW)





Site Image : Habitat focus (Source : EP NSW)

Heritage / Interpretation

- Explore virtual visits through online interpretation resources
- Track system will function for maintenance and research functions in addition to providing for signage for guided tours through Zone 1
- Interpretation should address the layered values of natural and cultural heritage
- Potential “time capsule” interpretation of natural environment management through use of “then and now” views of bushland
- Interpretation / place marker signage at locations of cultural heritage significance:
  - Jacksons dairy and related clearings / plantings
  - Jordan Hill home site
  - obsolete ADI storage area (possible markers)
- Aboriginal naming of areas of Zone 1 as determined by Aboriginal stakeholders
- Aboriginal naming of track links through all park areas
- Develop public artwork programmes to interpret the history and heritage of the site
- Specific historic phases eg munitions may be interpreted

Illustrative view of trackside interpretation (Source : EP NSW)

(Image Source : GM...

(Source : EP NSW)

Conservation and interpretation of cultural landscape features

Access, Circulation and Carparking

- Secured boundary with 2.1m high black macrofauna proof chain wire fencing to contain macrofauna but maintain movement of smaller fauna via canopy etc.
- General retention of existing track system to provide for maintenance access and research functions throughZone 1
- Retention of key east west public shared access link through Zone 1 between central precinct of urban development and western regional park recreational precinct - provision of security fencing set back from track edge with visual buffer
- Maintain existing bridge crossing to creek line of east west link track
- Monitoring of track surfacing - progressively upgrade crushed rock surface and cross track drainage to highest use / most needing links
- Potential for loop track access as aboriginal “song line” with supporting interpretive signage and markers
- Track system to provide for guided tours through Zone 1
  - run as themed events eg:
  - environment and habitat
  - aboriginal heritage

Site Image : Secure boundary (Source : EP NSW)

Recreation, Visitor Facilities & Services Infrastructure

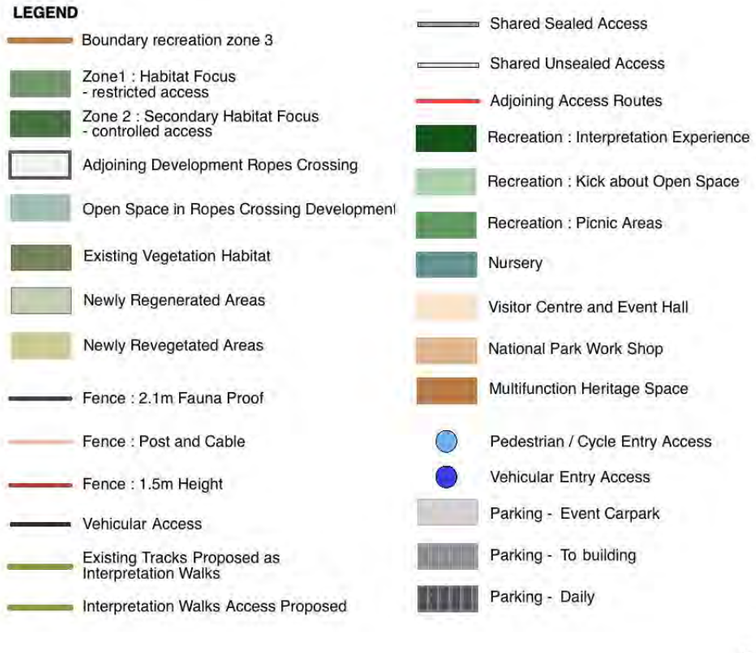
- Secured boundary to full perimeter of zone 1
- Security gates at designated access points on existing track network to provide for management and guided group access
- Interpretation / place marker signage at locations of cultural heritage significance as per heritage / interpretation
- Selected placement of sitting rocks at gathering / interpretive points along song line walk and other interpretive walks

Site Image : Guided tours (Source : EP NSW)

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans

Park Zone 2 - Secondary Habitat Focus (163ha 18% of RP area 18400 lin/m of boundary):



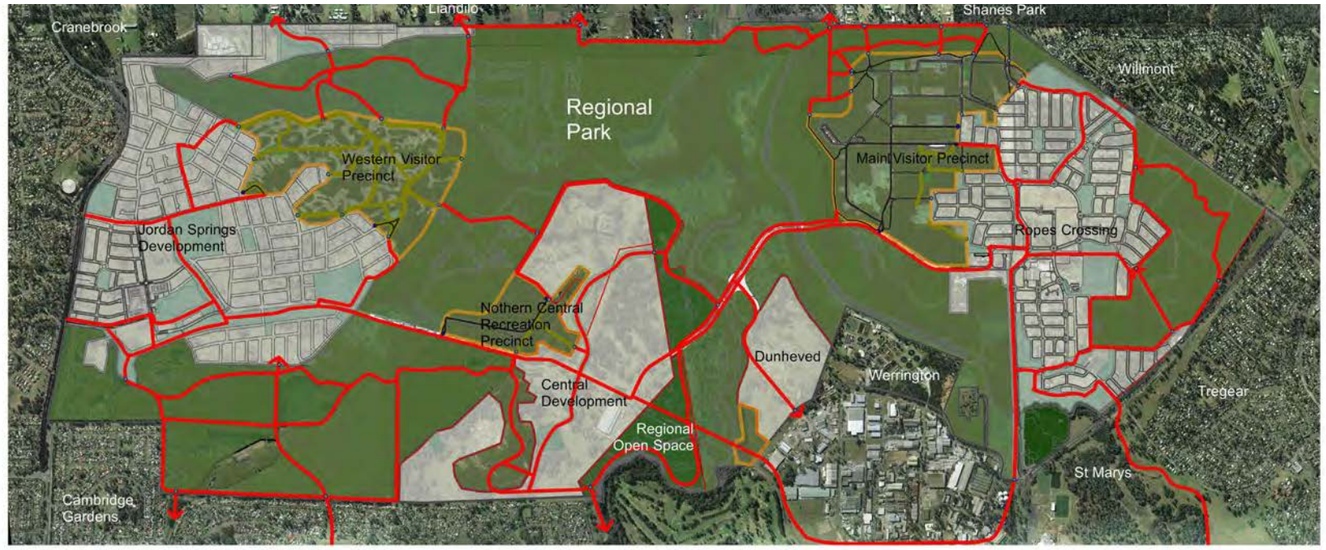
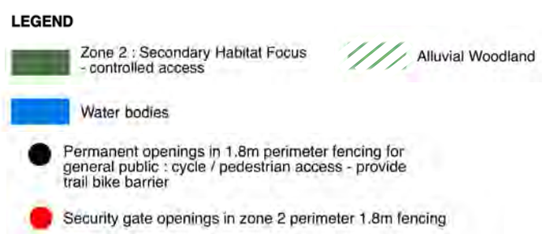


Figure 5.2.3 The Regional Park Masterplan

Key

1. *Grass clearings - potential native grass research - interpretative signage for past CSIRO use*
2. *South Creek Bridge (repair / refit deck upgrade for pedestrian / cycle areas & provide signage map)*
3. *Ropes Creek Bridge (repair and adapt upgrade for pedestrian / cycle areas & provide signage map)*
4. *Road alignment - conserved as shared access trail - provide interpretative signage*
5. *Luxford orchard site - interpret with historic photos*
6. *Past property boundaries reflected by existing track alignment*



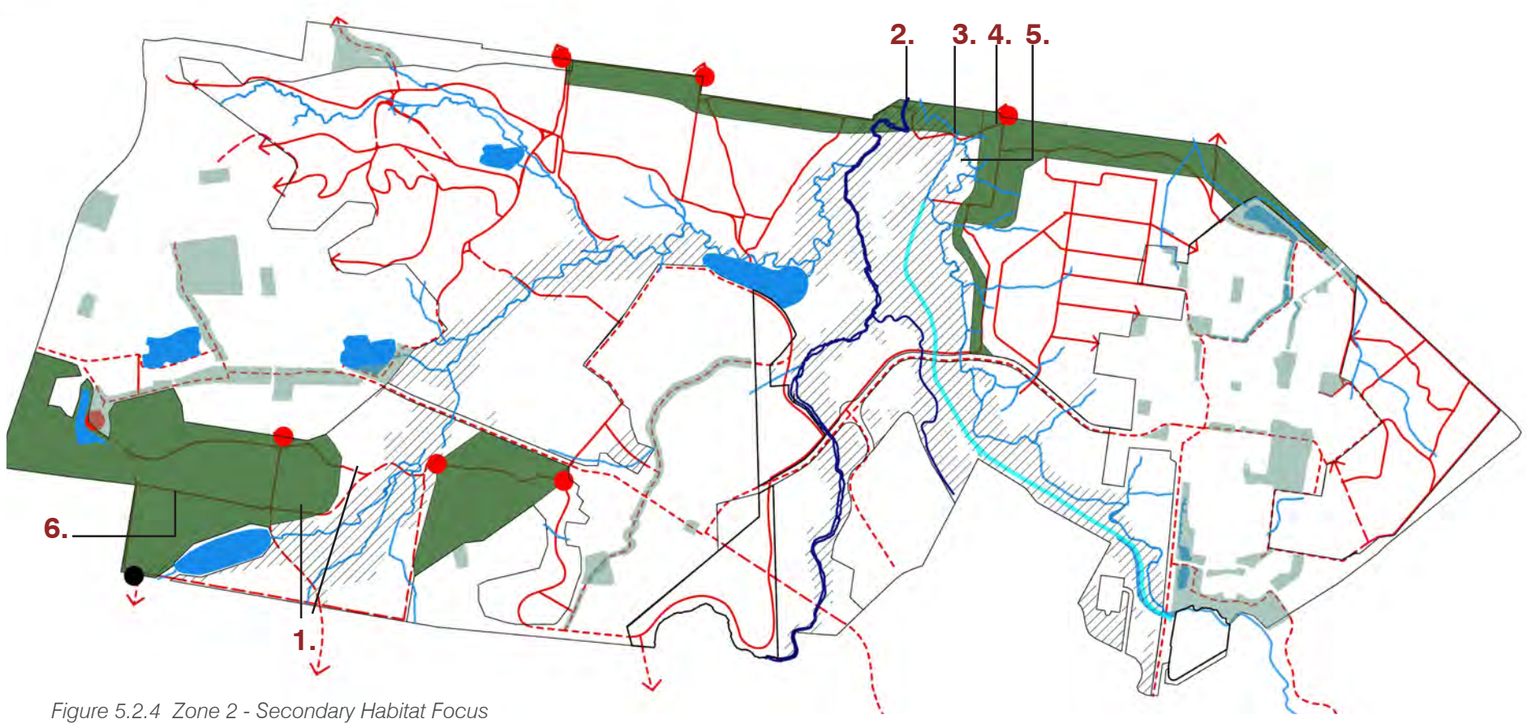


Figure 5.2.4 Zone 2 - Secondary Habitat Focus

5.2 Precinct Plans

Flora & Fauna Management

- Long term weed management and regeneration of Cumberland Plains sub communities
- Revegetation to provide visual buffer along boundary and to adjoining development
- Long term macrofauna community to be removed from zone 2 to ensure safety for important public access routes through the zone
- Selected management of existing cleared areas to support heritage significance of past CSIRO research area and allow for future native grass research in Regional Park

Heritage / Interpretation

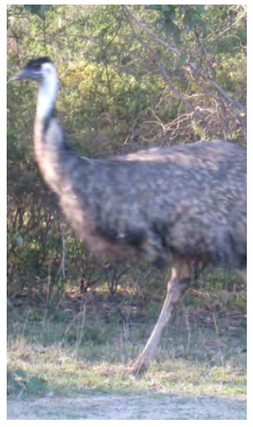
- Track system will function for recreational access and connections between recreational precincts
- Interpretation related to track access should address the multiple values of natural and cultural heritage values
- Potential “time capsule” interpretation of natural environment management through use of “then and now” views of bushland
- Conserve and manage remnant orchard plantings to Luxford Orchard site
- Interpretation / place marker signage at locations of cultural heritage significance:
  - Luxford Orchard
  - Ropes Creek bridge
  - Wianamatta (South) Creek Bridge
  - Past road alignment east west along north of site
  - CSIRO research clearing
- Aboriginal naming of track links through all park areas
- Public artwork

Access, Circulation and Carparking

- Zone 2 facilitates access between recreational precincts
- General retention of existing track system to provide recreational and linking access
- Secured boundary along boundaries to adjoining landholders (1.8m high security fence)
- Secured boundary to selected locations for short term / medium term security of macrofauna management
- Vehicular/ trail bike control to any unfenced boundaries
- Permanent openings at adjoining roads and open space links for pedestrian / cycle access with trail bike barrier systems
- Monitoring of track surfacing - progressively upgrade crushed rock surface and cross track drainage to highest use / most needing links
- Entry orientation signage at public access points
- Upgrade bridge crossing at Ropes Creek for maintenance, cycle / pedestrian access having regard for heritage fabric
- Upgrade bridge crossing at Wianamatta (South) Creek for maintenance, cycle / pedestrian access - Upgrade for limited width to allow retention of relic fabric of structure for remainder subject to structural advise

Recreation, Visitor Facilities & Services Infrastructure

- Interpretation / place marker signage at locations of cultural heritage significance as per heritage / interpretation
- Selected placement of sitting rocks at gathering / interpretive points along song line walk and other interpretive walks



Site Image : Long term macrofauna removal for safety of public access (Source: EP NSW)

Upgrade bridge link across South Creek maintaining section of bridge as relic fabric (Source: EP NSW)

Illustration - upgrade bridge link across Ropes Creek having regard for heritage fabric (Source: EP NSW)

Site Image : Maintenance access (Source: EP NSW)

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans

Further detailed proposals have been developed for the recreational precincts comprising Zone 3 of the masterplan. This includes:

1. The Main Visitor Precinct — West of Ropes Crossing Development
2. The Western Visitor Precinct — East of Western Development Precinct
3. Northern Central Visitor Precinct — East of Central Development Precinct

It is anticipated that these precincts will be undertaken as highest priority implementation works to facilitate opening of the park to recreational use.

Within the other recreational precincts of Zone 3, planning, design and implementation will be undertaken over a programme to be determined:

4. Southern Central precinct — West of North Central Development Precinct
5. Dunheved heritage precinct — East of Regional Open Space

These last two precincts will be influenced by timing of urban development to adjoining precincts (that is Central Development Precinct) and the Regional Open Space, along with outcomes of further heritage investigations to the Dunheved heritage recreational precinct, whilst having regard for the programming of adjoining development.

Landscape Precinct Plans Objectives and Outcomes

Key precinct objectives are listed below:

- To provide detailed advice on the development and management of these landscape zones;
- To provide strong rationale for the design principles and design elements proposed for the zones;
- To provide detailed illustrative plans, sections and perspectives of key landscape areas and elements to clearly illustrate the design intention of the developed zones; and
- To provide innovative and environmentally sustainable design solutions to all aspects of parklands design including solutions to car parking, road works and infrastructure that incorporate 'landscape' or 'soft' civil engineering principles.

To meet these objectives the precinct plans have:

- Taken into account the findings of the Wianamatta Regional Park Plan of Management and Conservation Management Plan;
- Considered the natural and cultural values of the places as well as community aspirations and needs;
- Considered the recreational needs of future park visitors; and
- Been prepared with a long term view to developing visitor improvements in the park.

Staged Works programme

It is envisaged that within Zones 1 and 2 fencing management, high priority weed management, and management of track access will be commenced early in the programme and be ongoing whilst recreational precincts are being upgraded. .Section 5.1 outlined works to be undertaken within zones 1 and 2 in further detail.

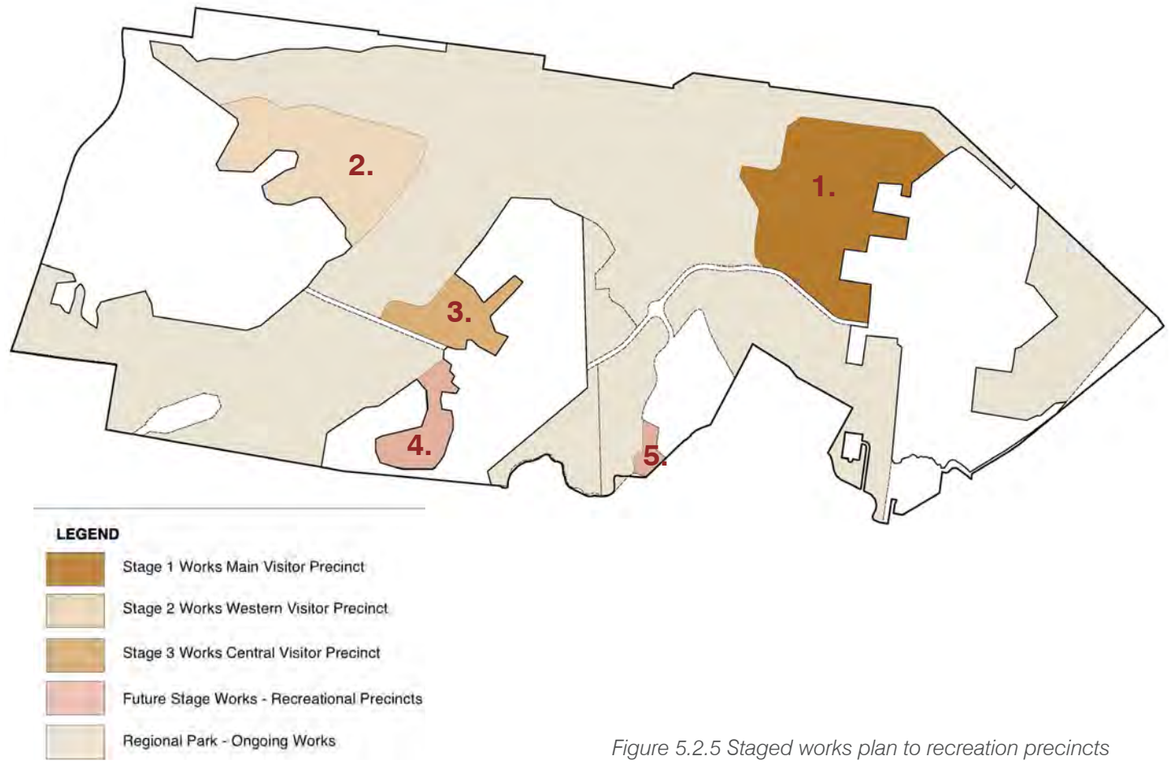


Figure 5.2.5 Staged works plan to recreation precincts

Implementation within the recreational precincts (zone 3) as listed above is anticipated to roll out to coincide with adjoining development staging to enable coordination of construction access, servicing etc:

Stage 1 - Main Visitor Precinct

Stage 2 - Western Visitor Precinct

Stage 3 - Northern Central Recreation Precinct

Future Works - Southern Central Recreation Precinct and Dunheved Heritage Precinct

Co-ordination of Precinct Plans undertaken to date
Co-ordination meetings and review of the landscape design plans prepared by Delfin Lend Lease consortium were critical in the preparation and understanding of the opportunities for the Masterplan for Wianamatta Regional Park. This coordination allowed for sensible outcomes to access into the Regional Park via the development areas managed by Delfin Lend Lease.

Further Co-ordination of Development Precinct Plans
NPWS will undertake co-ordination meetings and liaise with the landscape consultants from Delfin Lend Lease to ensure a coordinated landscape planning approach of the Regional Park and the key Precinct Plans and a seamless relationship between the two projects. Facilitation of a holistic design process incorporating heritage and habitat issues to elements such as the water quality control ponds lying at the boundary of the Regional Park will be critical.

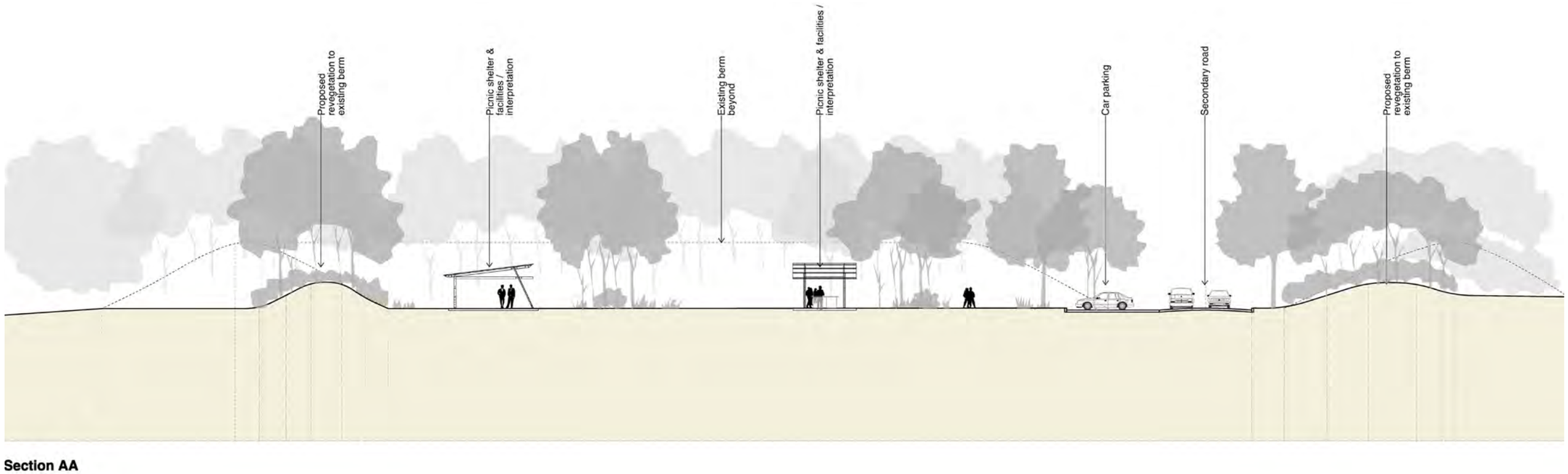
5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans
Park Zone 3 - Recreation Focus: Stage One Works Main Visitor Precinct

A detailed precinct plan hss been prepared for the Main Visitor Precinct in the east of the park. It is anticipated that this precinct will be undertaken as priority stage works.

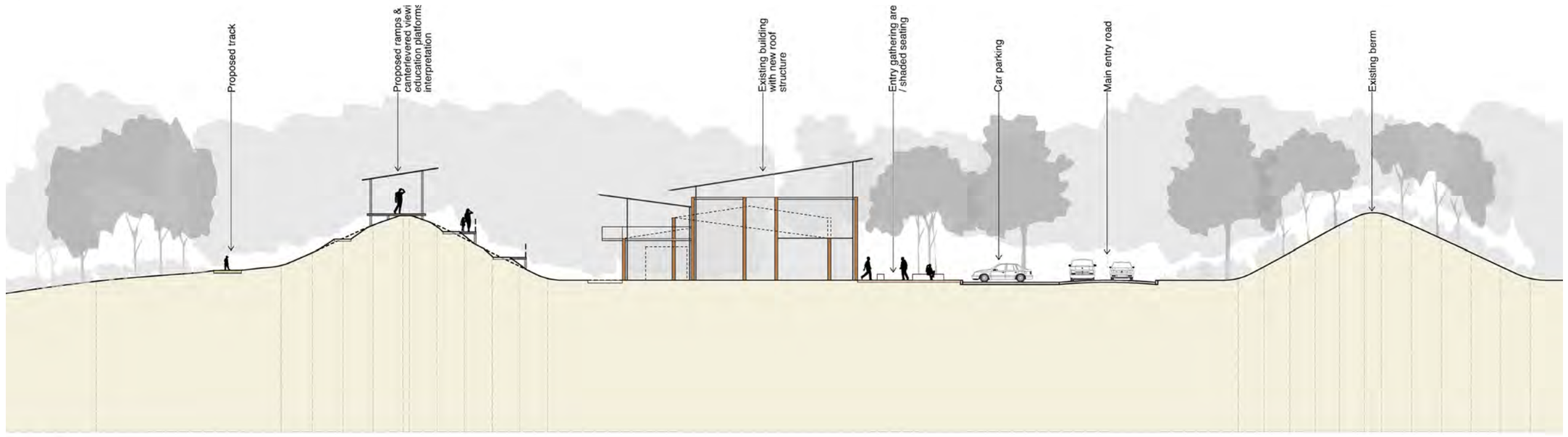
Figure 5.2.6 Main Visitor Recreation Precinct Masterplan

5.2 Precinct Plans - Main Visitor Precinct



Section AA
scale 1:300 @ A3

Figure 5.2.7 Main Visitor Recreation Precincts Section AA (Source: EP NSW)



Section AA
scale 1:300 @ A3

Figure 5.2.8 Main Visitor Recreation Precincts Section BB (Source: EP NSW)

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Main Visitor Precinct
Traffic Circulation and Car parking, Connectivity & Linkages

Brief

In developing design solutions for access within the sub-precinct the landscape plans must:

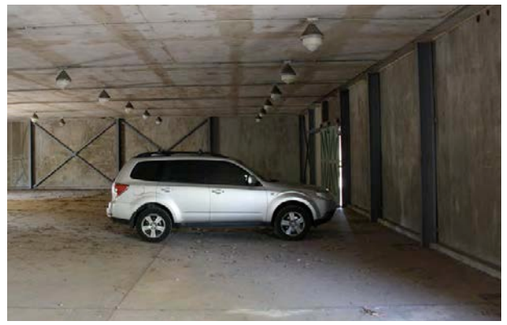
- Provide design solutions for the road network within the individual sub-precincts.
- Consider the existing path and road network;
- Consider wider regional park connections as documented in the "Ropes + South Creek Management Plan" prepared by the Department of Planning in 2005, refer Appendix 9; and
- Take into account the findings of the CMP and Overview Master Plan when determining connections between sub-precincts.

Design Concept

- Two key vehicular entry points are proposed, one from the Ropes Crossing Development to the east linking to an internal one way sealed road system and a second exit (or possible entry / exit) on the East -West Road located to the south of the Precinct.
- A number of pedestrian/ cycle entries will be provided along the precinct boundaries to the adjoining development. As this precinct will contain facilities such as the main visitor centre that are prone to vandalism the precinct is proposed to be secured in the evenings, and as such these will be lockable gateways. Refer to 4.2 Masterplanning Strategies - Access & Circulation for broader access network.

  To several locations sections of parkland will be permanently publicly accessible through openings in a post and cable barrier that prevents vehicular access (refer section 6.3 fencing and barriers)
- Several key pedestrian / cycle (and Maintenance) entry / links will also be provided through the Regional Park to the Central Visitor Precinct, and to Shanes Park (to the north) and northern regional links.

  A series of existing ADI tracks have been retained to provide the basis for walk /cycle track networks within the precinct.
- The existing sealed roadway network will provide for internal vehicular circulation to proposed picnic and gathering uses in cleared areas. This roadway (potentially including road not generally open to public) could also be used for special events such as criterium cycling or the start of fun runs. Major upgrading of sealed roads is not required. The retention of character width alignment is desirable.
- The remainder of the existing sealed road will provide for cycle / walking access to the balance of the recreational precinct. Major upgrading of roadways is not required. It is desirable to retain the character of the munitions phase fabric.
- Day use parking will be limited to park edges and designated road side spaces along the one way system, one small car parking area adjacent the Main Visitor Centre (Mine Filing building - S29).
- Bus and event parking will include two unsealed areas, one at the secondary eastern entry and one centrally located.
- Consideration should be given to reuse of existing transit store buildings to the west for temporary undercover parking.



Site image: Temporary parking within existing transit stores (Source: EP NSW)

Site image: The main park entry will occur via Ropes Crossing Boulevard through Ropes Crossing including the public cycleway from the Forrester's Road roundabout (Source: EP NSW)

Figure 5.2.9 Traffic Circulation & Parking Precinct Plan

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Main Visitor Precinct
Vegetation management

Brief

In developing design solutions for vegetation and planting within the sub-precinct the landscape plans must:

- Provide a description and plan showing the current vegetation types and locations in the two sub-precincts;
- Identify areas that require additional planting;
- Determine the most appropriate plant species and provide key planting recommendations and plant lists in table form for both sub-precincts, and
- Outline the key management regime for vegetation management within the sub-precincts.

Design Concept

- Regeneration and selective Revegetation of Alluvial Woodland, Shale - Gravel Transition Forest, Cooks River Castlereagh Ironbark Forest and Shale Plains Woodland species to occur throughout this precinct.
- Revegetation planting areas located adjacent entries and visitor facilities are to be planted at denser spacings to ensure maximum visual impact
- Use planting to emphasise land forms to assist interpretation of the munitions phase
- Possible interpretation of the WWII test range through maintenance of cleared corridor (refer Figure 5.2.17)

Figure 5.2.10 Proposed Regeneration and Revegetation Areas

Site image: existing low lying areas to precinct (Source: EP NSW)

Site image: existing cleared areas to be retained as open space recreation gathering (Source: EP NSW)

Montage: frontage areas to buildings requiring further planting (Source: EP NSW)

5.2 Precinct Plans - Main Visitor Precinct

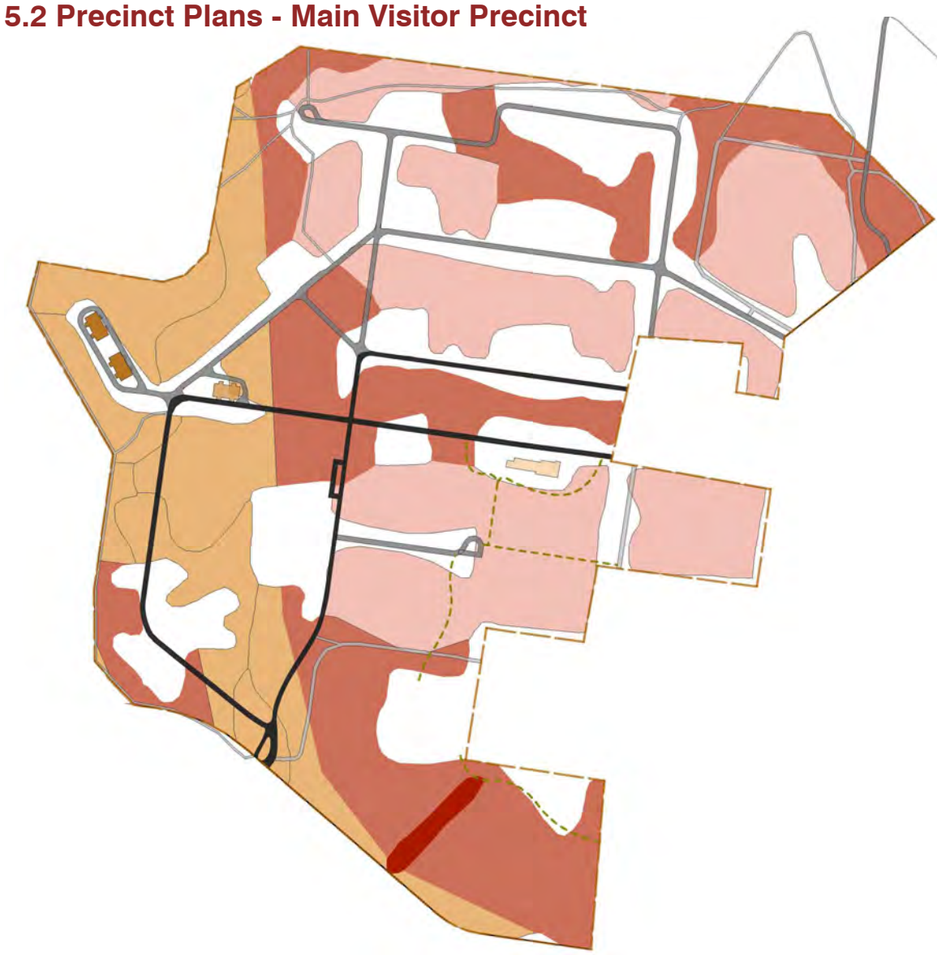


Figure 5.2.11 Existing Vegetation Communities Precinct Plan

Landscape Function	Botanic Name	Common Name	Height	AW	SGTF	CRCIF	SPW	FW	CSGW
Tree	Eucalyptus tereticornis	Forest Red Gum		X	X		X		
	Allocasuarina littoralis	Black She-Oak							X
	Eucalyptus baueriana	Blue Box		X					
	Eucalyptus crebra	Narrow-leaved Ironbark					X		
	Eucalyptus fibrosa	Broad-leaved Red Ironbark			X	X	X		
	Eucalyptus moluccana	Grey Box			X		X		
	E. parramattensis subsp. parramattensis	Parramatta Red Gum							X
	Eucalyptus sclerophylla	Scribbly Gum							X
	Bursaria spinosa	Blackthorn					X		
	Casuarina glauca	Swamp She-Oak		X					
	Dillwynia tenuifolia		0.4m - 1m				X		
	Melaleuca decora	White Feather Honeymyrtle				X			
	Melaleuca linearifolia	Snow-In-Summer		X				X	
	Melaleuca nodosa	Ball Honeymyrtle				X			X
	Melaleuca decora),	White Feather Honeymyrtle							X
	Angophora bakeri	Narrow-leaved Apple							X
	Angophora subvelutina	Broad-leaved Apple		X					
	Angophora floribunda	Rough-barked Apple		X					
	Typha orientalis	Broad-leaved Cumbungi						X	
Shrub	Dillwynia tenuifolia		0.4m - 1m	X	X	X			
	Pultenaea parviflora		to 1m	X	X	X	X		
	Micromyrtus minutiflora		2m	X	X	X	X		
	Persoonia nutans		2.5m	X	X	X	X		
	Grevillea juniperina subsp. juniperina		0.5-1.5 m	X	X	X	X		
Grasses/Groundcovers	Centella asiatica	Gotu Kola						X	
	Juncus usitatus	Common Rush						X	
	Persicaria decipiens	Slender Knotweed						X	
	Cynodon dactylon	Couch Grass						X	

Proposed Revegetation Species List (refer Appendices for full list)

Alluvial Woodland (Source: EP NSW)

Shale - Gravel Transition Forest (Source: EP NSW)

Cooks River Castlereagh Ironbark Forest (Source: EP NSW)

Shale Plains Woodland (Source: EP NSW)

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Main Visitor Precinct
Interpretation

Brief

Interpretation will be a key tool for visitors in providing park information and directions as well as information about the natural and cultural values of the place. Develop interpretation that enables visitors to understand the shell filling production process. Establish this precinct as the major arrival / visitor orientation point for the park.

The precinct plans:

- Identify locational opportunities for the provision of interpretive facilities as self guided walks, signage and brochures, as well as more contemporary materials such as downloadable from the web;
- Examine the need and desirability of establishing an interpretive/visitor information and/or education/research facility within one of the zones; and
- Present an interpretive strategy that develops key themes and sub themes for the zones and identifies key interpretive methods, sites and implementation recommendations.

Design Concept

Most of the Main Visitor Precinct was used as the Shell Filling Area (L-29) during the ADI's sites Munitions and Storage Project 590 phase which occurred on site between the1950s and the 1990s. Four buildings were retained as they did not require remediation during site demolition/ remediation and were retained for their heritage values. As summarised below;

Figure / map reference	*Heritage reference (CMP)*	*Heritage: Munitions & Storage 1950-1990s*	*Proposed NPWS reuse and building interpretation*	*Additional Interpretation opportunities (Refer CMP) to within buildings*
●	*S29*	*The Mine Filling Building (never commissioned)*	*NPWS Main Visitor Information Centre -Conservation in practice, building cut aways, cross sections, paint scrapes, & remnant layering (CMP)*	*- Permanent on site exhibition - Public events - Archaeology and objects - Possible display of "Brass Strip" ADI artefacts if available*
●	*S42*	*Transit Stores (used to store finished products prior to transport)*	*NPWS workshop maintenance depot*	*- Interpretative signage*
●	*S43 & S44*		*multi- function heritage space potential usage including; Shaded Parking, School camping/education & Bike storage/ rentals*	*- Communication media - Interpretative signage - Public Events*

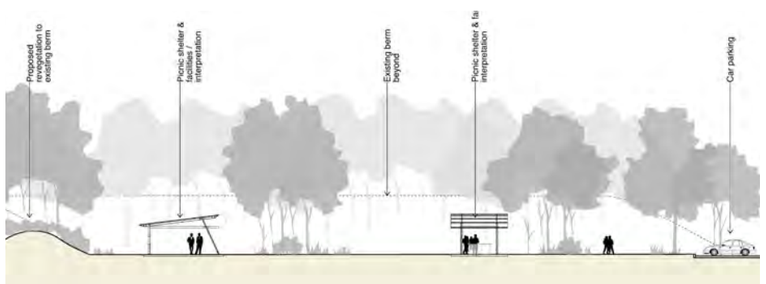


Figure 5.2.12 Cross section - showing detail of possible adaptive refurbishment of Mine Filling building

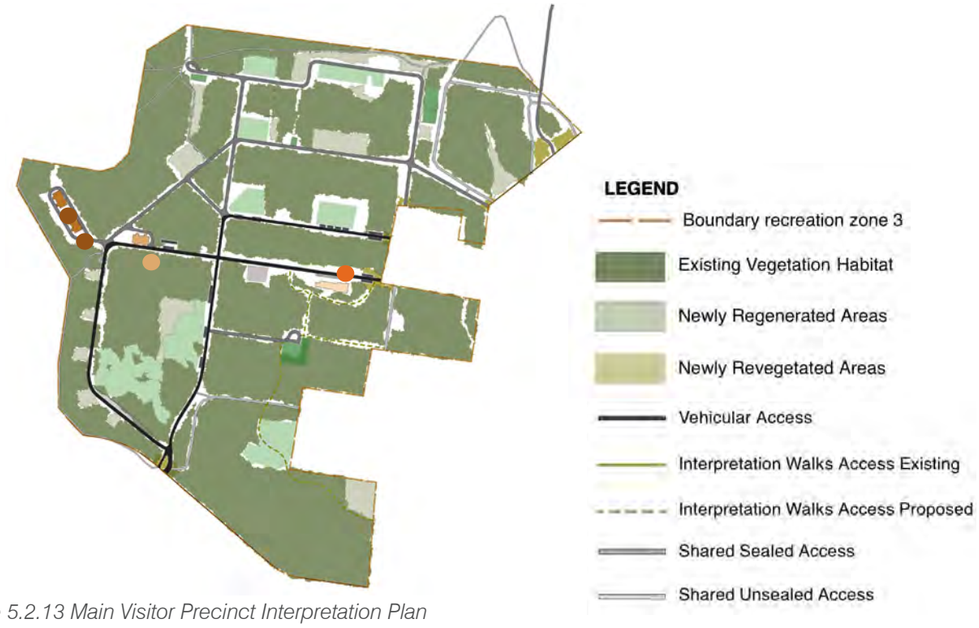


Figure 5.2.13 Main Visitor Precinct Interpretation Plan

● *Figure 5.2.14 - S29 -The Mine Filling Building (Source: EP NSW)*

● *Figure 5.2.15- S43 & S44 -Transit Stores (Source: EP NSW)*

● *Figure5.2.16 - S42 Transit Store -Proposed NPWS workshop maintenance depot (Source: EP NSW)*

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Main Visitor Precinct

It is proposed that the cleared spaces in which the demolished ADI shell filling complex stood can be interpreted through:

1. Developing a self guided walk that follows the shell filling production process
2. Naming of spaces after their past munitions function including building code where applicable
3. Retention and adaptive reuse of hardstand areas
4. Ground marking through concrete and steel markers of past building footprint
5. Multi theme interpretational totems (see below●)

The plan below identifies the function of the buildings through the Shell Filling area.

1. Breaking Down Building
2. Rocket Assembly Building
3. Cartridge Assembly Buildings (2)
4. Meissner Shell Filling and Finishes Building
5. Test Range (WWII)
6. Medium Calibre Shell Filling Building
7. Heavy Calibre Shell Filling Building
8. Mine Filling and Finishing Buildings
9. Workshops and Stores

Figure 5.2.17 ADI Functional Areas - for potential interpretive naming of spaces

Figure 5.2.18 Montage depicting potential boardwalk access along top of berms adjoining Transit Stores in west of precinct (Source: EP NSW)

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Main Visitor Precinct

Recreation and Use

Brief

The landscape plans must include:

- Information on the appropriate level of recreational access and use;
- Identification of the types of activities that may be appropriate to the sub-precinct; and
- Detailed design of the path, track and cycle networks within individual sub-precincts.

Design Concept

Visitor facilities locations are to include picnic benches/ tables and shelter. Vsitor facilities can incorporate interpretation as outlined in the Materials and Finishes section. These are to be spaced throughout the precinct to allow for differing habitat experiences within the precinct found along pedestrian and cycle track routes.

A self guided interpretative walking track route is to circulate through the precinct which includes a sequence of historic and habitat experiences. A portion of this walk adjacent the Main Vsitor Precinct is to incorporate all abilities decked access to ADI berms located around Munitions filling and remnant bushland habitat experience.

Smaller cleared maintained grasslands area are to be maintained for day to day gathering - these are to incorporate picnic facilities and some specific interpretation art works and signage. Additional tree planting for shade should be incorporated into design development.

A large cleared grasslands event area is to be maintained as a significant gathering open space for markets / outdoor cinema etc which includes overflow carparking area.

Figure 5.2.19 Recreation locations within Main Visitor Precinct Plan

Figure 5.2.20 Montage of Day to Day Recreation within Main Visitor Precinct - picnic use of cleared areas to past shell filling buildings (Source: EP NSW)

Figure 5.2.21 Montage of Event Recreation within Main Visitor Precinct Plan (Source: EP NSW)

5.2 Precinct Plans - Main Visitor Precinct
Visitor Facilities

Brief

The landscape plans must include:

- Details of the visitor facilities required for each sub-precinct, as per the Park Facilities Manual;
- Appropriate adaptive reuse of existing buildings for visitor facilities where appropriate; and
- Location of toilets, picnic areas, information points and food or other outlets.

Design Concept

- NPWS information points are to be located at key entries to the precinct as both a way finding tool and educational tool to promote understanding of habitat and heritage within the Wianamatta Regional Park area and specifically to the Main Visitor Precinct.
- A second series of information points are to be located throughout the precinct as both a way finding tool and interpretative walk through interactive story telling and web links which outline habitat values and heritage of the Wianamatta Regional Park area and specifically to the Main Visitor Precinct.
- 3 Toilet facilities are to be located were possible within the remnant building footprints. Disabled toilets should be incorporated into these locations.

  Public toilets to more isolated areas within open spaces are to be considered as part of the overall open space network located within the adjacent Ropes Crossing precinct outside the Regional Park boundary.

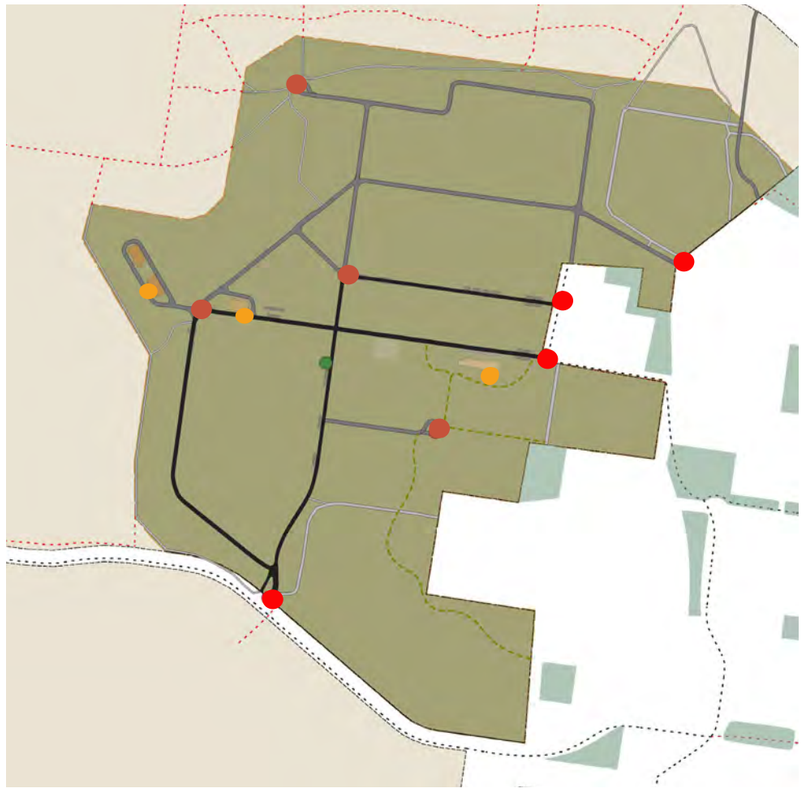


Figure 5.2.22 Visitor facility locations to Main Visitor Precinct Plan

Figure 5.2.23 Montage depicting typical Interpretative viewing point to top of berm near Visitors Centre (Source: EP NSW)

Figure 5.2.24 Montage depicting typical toilet block provided between Transit Stores in west of precinct (Source: EP NSW)

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Main Visitor Precinct
Services / infrastructure planning

Brief

A separate project mapping of existing services is to be conducted by DECCW. At this time this information is not available. Notwithstanding it's evident that there will in reality be limited potential for re-use of sewer, water, and power infrastructure due to age, compliance, and damage during demolition

Design Concept

Built Elements

- The existing path and road network to within the precinct is to form the basis of the vehicular/ pedestrian and cycle routes.
- Additional track and roads should be kept to a minimum and function only as linking existing routes.
- Remnant kerbs, gutters and drains scattered through out the precinct should be assessed for functionality and liability and retained if possible.
- Existing fences and gates are to be used along the precinct boundary to Regional Park zones where possible. All new fencing and gates are to be in line with the NPWS facilities manuals. Long term removal of boundary fences to open space areas adjoining the Ropes Crossing development should be considered.

Drainage

- Build up soil levels for proposed maintained grass areas and to key access paths to define overland flow routes.
- Provide overland flow escape routes for stormwater drainage - where levels preclude excavate to provide small wetland zones to hold and promote infiltration of drainage.
- Assess drainage adjacent to buildings and adapt if necessary to provide clear overland flow escape path building from level areas.

Services

- Water, sewer and power services from ADI phase are aged and in poor condition where present.
- It is proposed that new services connections are provided. These will be most practically provided along the proposed entry road from the Ropes Crossing urban development. This will provide the most direct route enabling reticulation to the proposed Visitors Centre and other buildings to be adaptively reused.
- Development is currently progressing in the adjoining area making connections feasible in the short term.
- Levels for sewer connection will need to be reviewed in detail from buildings and proposed toilet locations.

Site image: Existing Roads to Main Visitor Precinct (Source: EP NSW)

Site image: Fencing/ Gates to Main Visitor Precinct (Source: EP NSW)

Site image: Existing drains to Main Visitor Precinct (Source: EP NSW)

Site image: Kerb and gutters to Main Visitor Precinct (Source: EP NSW)

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Western Visitor Precinct

Park Zone 3 - Recreation Focus: Stage Two Works Western Visitor Precinct

A detailed precinct plan has been prepared for stage two works located to the west of the park. It is anticipated that this precinct will be undertaken as the second stage of priority works, which will be programmed for construction following development and population numbers increase in the surrounding new suburbs.

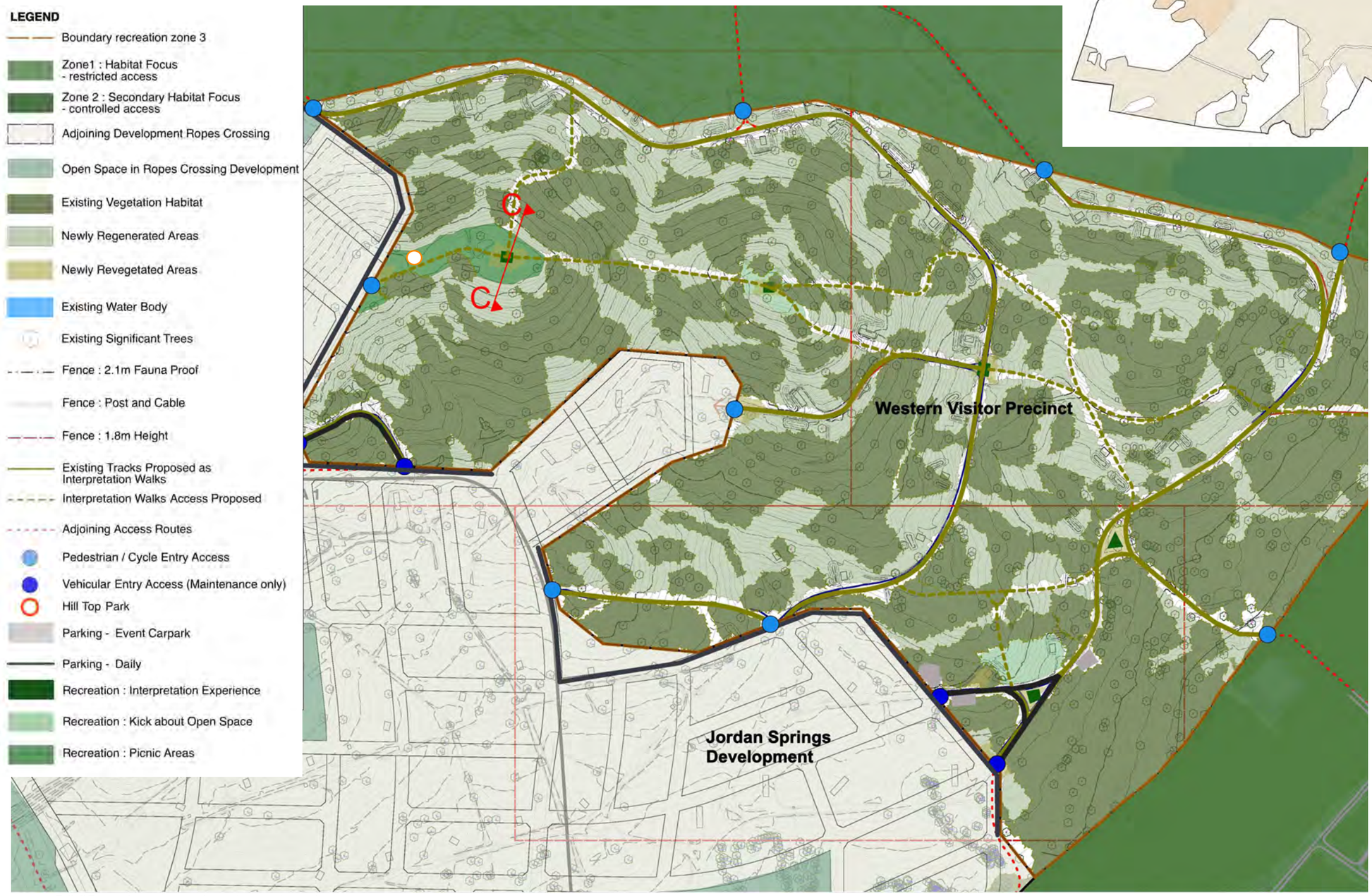


Figure 5.2.25 Western Recreation Precinct Masterplan

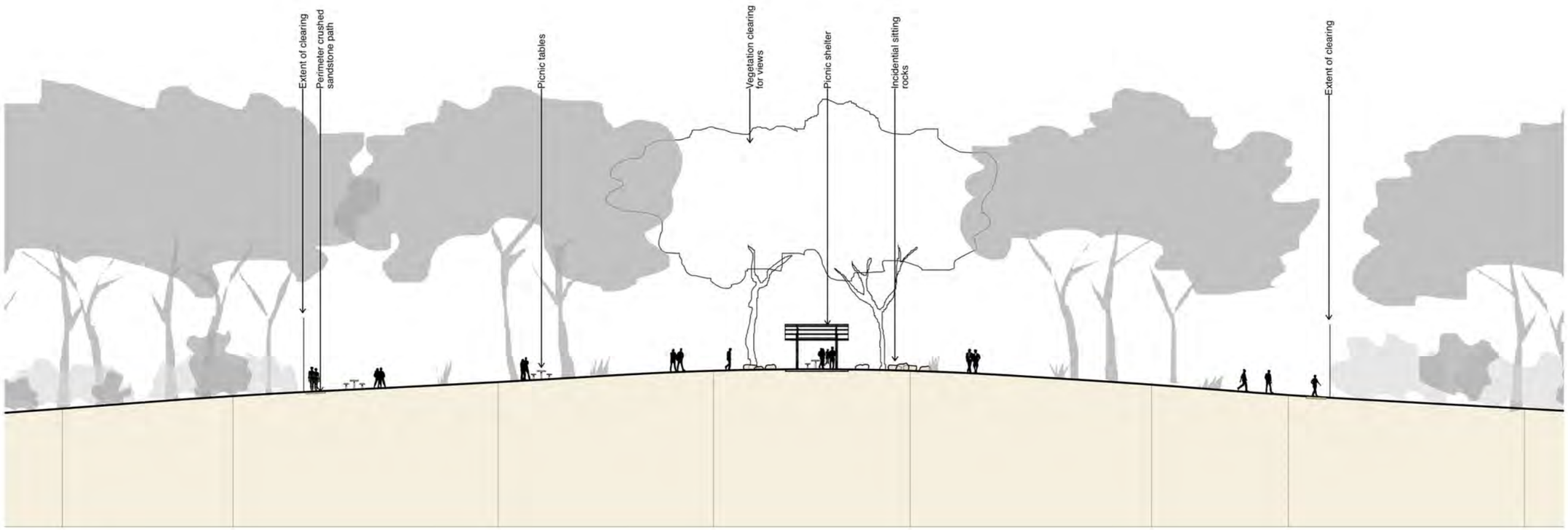


Figure 5.2.26 Western Recreation Precincts Section CC (Source: EP NSW)

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Western Visitor Precinct
Traffic Circulation and Car parking, Connectivity & Linkages

Brief

In developing design solutions within the Regional Park the detailed landscape plans must:

- The consultant will be required to provide design solutions for the road network within the individual sub-precincts.
- Consider the existing path and road network;
- Consider wider regional park connections as documented in the "Ropes + South Creek Management Plan" prepared by the Department of Planning in 2005, refer Appendix 9; and
- Take into account the findings of the CMP and Overview Master Plan when determining connections between sub-precincts.

Design Concept

- Two vehicular entry points are proposed along the western boundary adjoining the proposed residential development area. These are proposed only as vehicular turning, arrival and event parking access points to mitigate potential traffic congestion to residential neighbourhoods. No permanent vehicular access is proposed through the precinct.
- A number of secondary level pedestrian/ cycle entries will be provided along the precinct boundaries to the adjoining development to the south and west. Adjoining the urban development where roads front the recreational precinct it is proposed that a post and cable vehicle barrier is provide but where residences adjoin a 1.8m high security fence is provided (refer 6.3 Fences and Barriers)
- Several key pedestrian / cycle (and Maintenance) entry / links will also be provided through the Regional Park to Habitat Zones 1 & 2 to the east and north (linking through to the northern regional links) and access to Cranebrook (proposed NPWS managed site).

  A series of existing tracks have been retained and form the walk /cycle track networks around the precinct. These consist of a mixture of surfaces including concrete, asphalt loose gravel, dirt and grassed. Connections to the Main Visitor Precinct are provided from the north east of the precinct

  Site Parking will be limited to park edges as no day to day vehicular access will be provided within this precinct.
- Bus parking will be limited to the one way vehicular entry point to the west
- Event parking is provided adjacent the main vehicular entry points in the south, some long term additional parking may be considered necessary to the main hill top park (◯ Hill top park).
- Visitor parking is to be provided as ninety degree or parallel parking within the Regional Park property but adjoining the roadway corridor anticipated to flank this section of the park

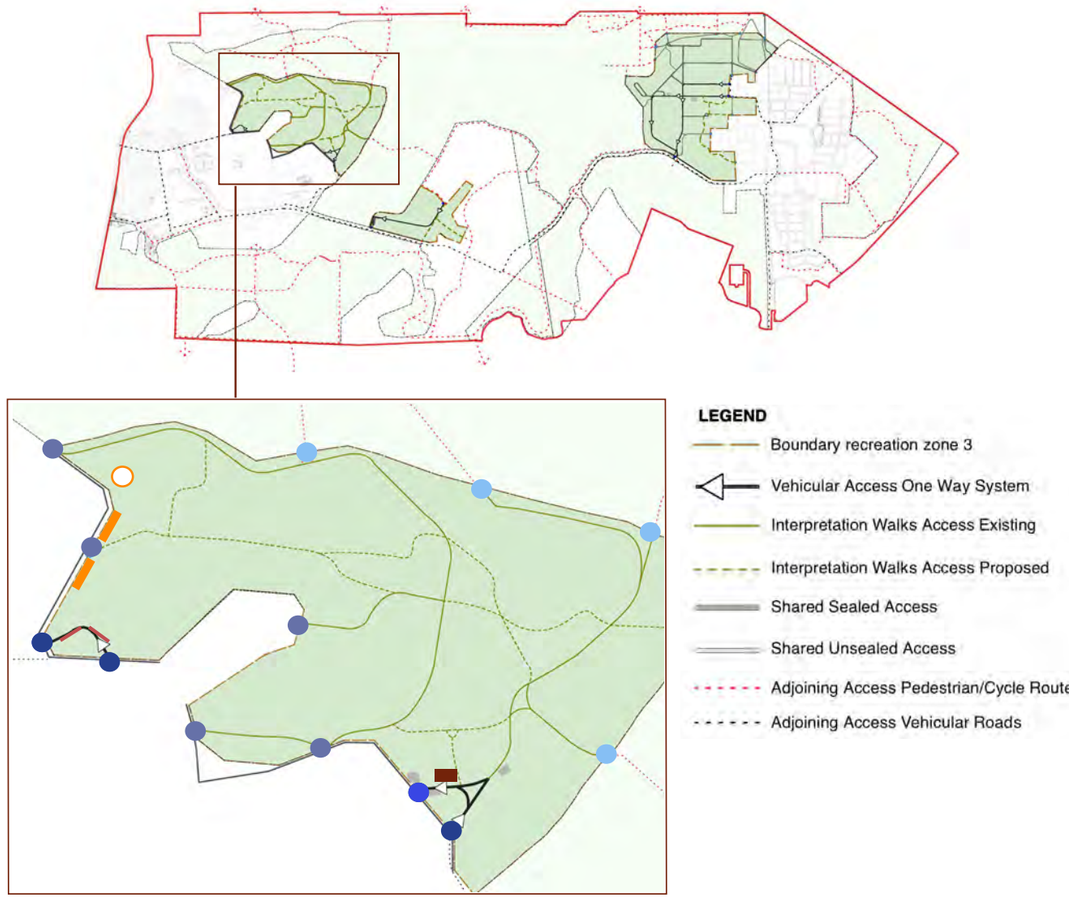


Figure 5.2.27 Traffic Circulation & Parking Precinct Plan

Site image: North western entry adjoining Western Precinct development (source EP NSW)

Site image: Typical grassed track within precinct (source EP NSW)

Site image: Typical gravel track within precinct (source EP NSW)

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Western Visitor Precinct

Vegetation Management

NPWS Brief

In developing design solutions for vegetation and planting within the sub-precinct the landscape plans must:

- Provide a description and plan showing the current vegetation types and locations in the two sub-precincts;
- Identify areas that require additional planting;
- Revegetation plant species list and provide key planting recommendations and plant lists in table form for both sub-precincts, and
- Outline the key management regime for vegetation management within the sub-precincts.

Design Concept

- Regeneration and revegetation of Shale Plains Woodland species which predominately occur throughout this precinct. Some small areas to the south east include Alluvial Woodland species.
- Areas located adjacent entries and Visitor facilities are to be planted at denser spacings to ensure maximum visual impact
- Soils, topography and drainage are to be considered surrounding proposed visitor picnic and toilet facilities
- Weed management in accordance with NPWS practises

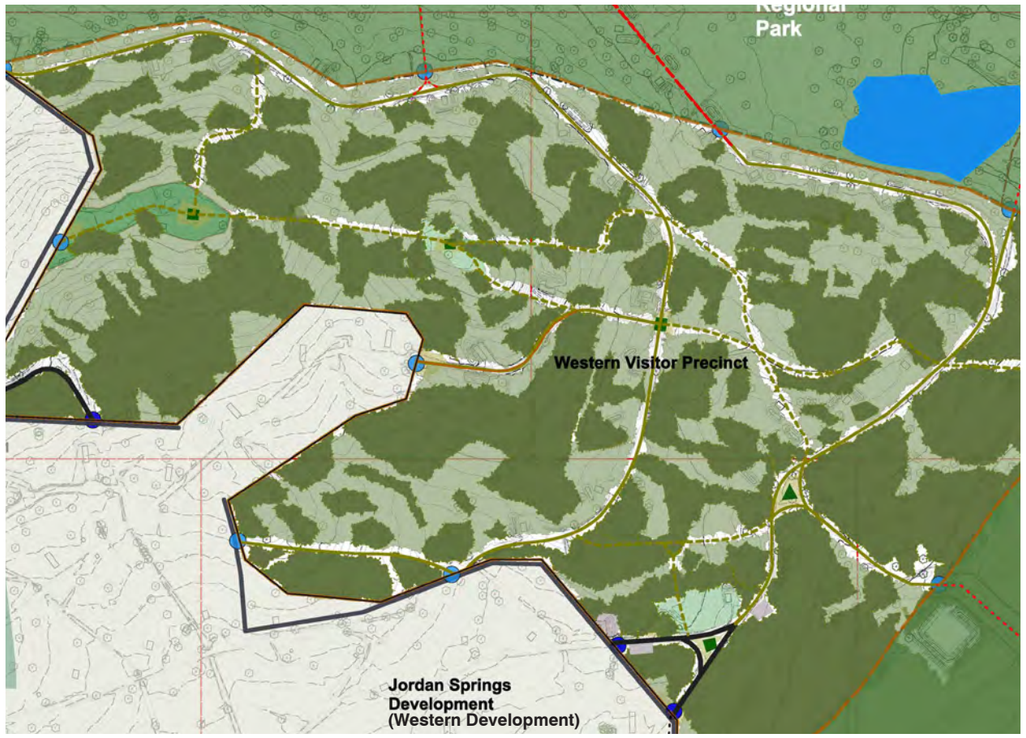
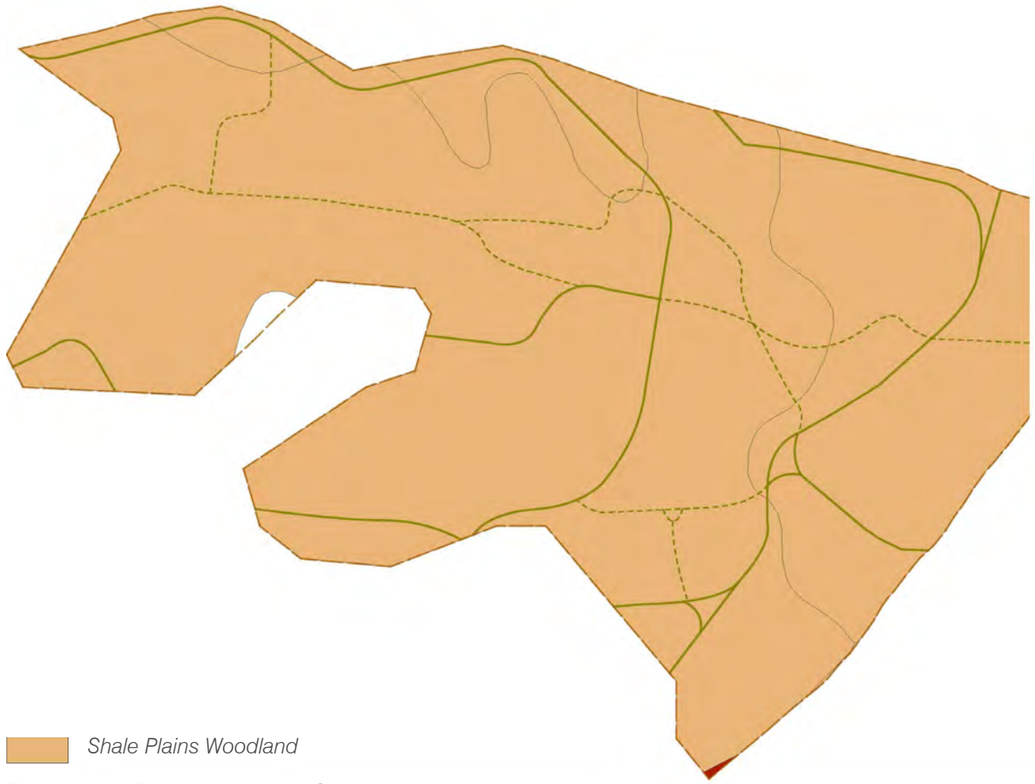


Figure 5.2.28 Proposed Regeneration and Revegetation Areas

Site Image: Vegetation Regeneration areas (source EP NSW)

Site image: existing cleared areas to be retained as open space recreation gathering (Source: EP NSW)

5.2 Precinct Plans - Western Visitor Precinct



Shale Plains Woodland

Figure 5.2.29 Existing Vegetation Communities

Site image: typical vegetation community found in the Western Precinct (source EP NSW)

Landscape Function	Botanic Name	Common Name	Height	AW	SGTF	CRCIF	SPW	FW	CSGW
Tree	Eucalyptus tereticornis	Forest Red Gum		X	X		X		
	Allocasuarina littoralis	Black She-Oak							X
	Eucalyptus baueriana	Blue Box		X					
	Eucalyptus crebra	Narrow-leaved Ironbark					X		
	Eucalyptus fibrosa	Broad-leaved Red Ironbark			X	X	X		
	Eucalyptus moluccana	Grey Box			X		X		
	E. parramattensis subsp. parramattensis	Parramatta Red Gum							X
	Eucalyptus sclerophylla	Scribbly Gum							X
	Bursaria spinosa	Blackthorn					X		
	Casuarina glauca	Swamp She-Oak		X					
	Dillwynia tenuifolia		0.4m - 1m				X		
	Melaleuca decora	White Feather Honeymyrtle				X			
	Melaleuca lineariifolia	Snow-In-Summer		X				X	
	Melaleuca nodosa	Ball Honeymyrtle				X			X
	Melaleuca decora),	White Feather Honeymyrtle							X
	Angophora bakeri	Narrow-leaved Apple							X
	Angophora subvelutina	Broad-leaved Apple		X					
	Angophora floribunda	Rough-barked Apple		X					
	Typha orientalis	Broad-leaved Cumbungi						X	
Shrub	Dillwynia tenuifolia		0.4m - 1m	X	X	X			
	Pultenaea parviflora		to 1m	X	X	X	X		
	Micromyrtus minutiflora		2m	X	X	X	X		
	Persoonia nutans		2.5m	X	X	X	X		
	Grevillea juniperina subsp. juniperina		0.5-1.5 m	X	X	X	X		
Grasses/Groundcovers	Centella asiatica	Gotu Kola						X	
	Juncus usitatus	Common Rush						X	
	Persicaria decipiens	Slender Knotweed						X	
	Cynodon dactylon	Couch Grass						X	

Proposed Revegetation Species List table (refer Appendices for full list)

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Western Visitor Precinct

Interpretation

Brief

Interpretation will be a key tool for visitors in providing park information and directions as well as information about the natural and cultural values of the place.

The precinct plans:

- Identify locational opportunities for the provision of interpretive facilities such as signage and brochures as well as more contemporary materials such as downloadable material from the web;
- Examine the need and desirability of establishing an interpretive/visitor information and/or education/research facility within one of the zones; and
- Develop an interpretive strategy that focuses on the following themes key themes and sub themes for the zones and identifies key interpretive methods, sites and implementation recommendations;
  - Native Landscapes,
  - Colonial lands
  - growth development
  - Munitions especially KMA remnant storage area

Design Concept

The main remnant physical fabric to this precinct includes the ADI track network used between 1941 and the 1990's, cleared (pastoral) grasslands and views to adjoining ridge lines and the Blue Mountains.

The area comprises part of the Kingswood Magazine phase of ADI. Remnant hardstand areas are to be retained with in pavement marker / identifier of past uses and adaptively re-used where possible for park facilities.

Markers to identify bunker names / numbers should be used to the small bunkers lining the track network. These bunkers are generally overgrown. A representative sample of the best preserved bunker sites should be kept cleared. These could function as small picnic areas.

Interpretative design locations for precinct heritage items are to be in line with past uses identified in the Conservation Management Plan (CMP) including;

- Colonial Growth and development of the area during Colonial times (1860-1940s). Including Land subdivision, Village settlement, expansion of industry through selective breeding/ viticulture/ tobacco/ cotton, hemp and indigo, as well as timber cutting, tanneries, sawmills, brick making and wheelwrights as initiated by Governor King
- A portion of this precinct falls into what was known as the "Castlereagh Common" (CMP 2010 page 14), an area of land granted by Governor King in 1810 for use by the public for grazing and timber gathering purposes during colonial times. Interpretation through art works, interactive web information and signage should be incorporated into cleared areas located in the hill top park to reflect this past use of the Regional Park site.
- Hilltop views of between ridge tops and cleared grasslands provides interpretation opportunities for past colonial landscapes for pastoral heritage of the precinct including historic themes of convicts, pastoralism, Land tenure, land subdivision and transport routes.
- Remnant storage areas related to Kingswood Magazine Area. A small sample (maybe 3-5) of the best preserved bunker sites kept clear for small picnic areas.
- Remnant stand of pre 1940s trees to be retained and incorporated into open space design.

Figure 5.2.30 Proposed revegetation and regeneration areas

Site image: Views to development hill top park from Regional Park to be retained along interface of development - open spaces are to interpret rural pastoral heritage of the site (Source: EP NSW)

Site image: Reuse of existing ADI tracks and road layout for recreational paths - interpretational signage / artworks to provide further interpretation (Source: EP NSW)

5.2 Precinct Plans - Western Visitor Precinct

Recreation and Use

Brief

The landscape plans must include:

- Information on the appropriate level of recreational access and use;
- Identification of the types of activities that may be appropriate to the sub-precinct; and
- Detailed design of the path, track and cycle networks within individual sub-precincts.

Design Concept

A series of remnant ADI track networks of mostly loose gravel surface and varying topography are the basis for exploration / circulation around the precinct. As vehicular traffic will be kept to minimal locations and event only access times, the precinct provides good opportunity for daily pedestrian/ cycle circulation and family picnic areas.

Visitor facilities as located are to include picnic benches/ tables and shelters as outlined in the Materials and Finishes section. These are to be spaced throughout the precinct to allow for differing experiences within the precinct along pedestrian and cycle track routes.

A self guided interpretative walking track route is to circulate through the precinct which includes a sequence of historic pastoral and topographical experiences.

Smaller cleared maintained grasslands areas are to be maintained for day to day gathering - these are to incorporate picnic facilities and some specific interpretation art works and signage. Additional tree planting for shade should be incorporated into design development for amenity.

A large cleared grasslands gathering / event area located in the south west of the site is to be maintained as a large open space for large gatherings / community events. Vehicular entry and circulation with overflow carparking area for events is located adjacent.

A second open space located along the ridge top and fronting onto residential streets has been selected as the main recreational open space park area for family picnicking. Visitor facilities and parking will be included into this area. Interpretive art, signage and cultural plantings will contribute to the understanding of colonial heritage of the precinct.

Figure 5.2.31 Recreation locations within Main Visitor Precinct Plan

Site image: southern open space events area (Source: EP NSW)

Site image: existing track network within precinct (Source: EP NSW)

Site image: existing open grassed areas to precinct

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Western Visitor Precinct

Visitor Facilities

Brief

The landscape plans must include:

- Details of the visitor facilities required for each sub-precinct, as per the Park Facilities Manual;
- Appropriate adaptive reuse of existing buildings for visitor facilities where appropriate; and
- Location of toilets, picnic areas, information points and food or other outlets.

Design Concept

- NPWS information points are to be located at key entries to the precinct as both a way finding tool and educational tool to protect habitat and heritage within the Wianamatta Regional Park area and specifically to the Western Visitor Precinct.
- A second series of information points are to be located throughout the precinct as both a way finding tool and interpretative walk through interactive story telling and web links which outline habitat values and heritage of the Wianamatta Regional Park area and specifically the Western Visitor Precinct.
- One Toilet facility is to be located to the hill top open space area close to parking.

  Public toilets to more isolated areas within open spaces are to be considered as part of the overall open space network located within the adjacent the Ropes Crossing precinct outside the Regional Park boundary.

Figure 5.2.33 Visitor facility locations to Western Visitor Precinct Plan

Figure 5.2.32 Montage depicting typical informal seating in hilltop parkland (Source: EP NSW)

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Western Visitor Precinct
Services / infrastructure planning

Brief

A separate project mapping existing services is to be conducted by DECCW. At this time this information is not available. Notwithstanding its is evident that there will in reality be limited potential for re-use of sewer, water, and power infrastructure due to age, compliance, and damage during demolition

Design Concept

Built Elements

- The existing track to within the precinct is to form the basis of the vehicular/ pedestrian and cycle routes.
- Additional track and roads should be kept to a minimum and function only as linking existing routes.
- Remnant kerbs, gutters and drains are limited but should be assessed for functionality and liability and retained if possible as ADI heritage fabric.
- Existing fences and gates are to used along the precinct boundary to Regional Park zones where possible. All new fencing and gates are to be in line with the NPWS facilities manuals. Long term removal of boundary fences to open space areas adjoining the Western Precinct urban development should be considered.

Drainage

- The steeper grades through this precinct will ensure overland flow away from hilltop recreation areas if effective - new drainage infrastructure is to be minimised to track drainage crossings to prevent erosion.
- Provide overland flow escape routes for stormwater drainage - where levels preclude excavate to provide small wetland zones to hold and promote infiltration of drainage.

Services

- Water, sewer and power services from ADI phase are aged and in poor condition where present.
- It is proposed that new services connections are provided but can be limited due to the minimal facilities development in this precinct.
- A sewer and water connection and power for lighting should be provided from the urban development adjoining the hilltop open space
- A sewer and water connection and power for lighting should be provided from the urban development adjoining the southern clearing and proposed event space. Sewer should allow for provision of temporary toilets
- Development has not yet commenced in the western precinct area and such provision of these services may be a long term proposition.
- Levels for sewer connection will need to be reviewed in detail from buildings and proposed toilet locations.

Site image: Existing Roads to Western Visitor Precinct (Source: EP NSW)

Site image: Fencing/ Gates to Western Visitor Precinct (Source: EP NSW)

Site image: Existing drains to Western Visitor Precinct (Source: EP NSW)

Site image: Creek adjacent to Western Visitor Precinct (Source: EP NSW)

5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans

Future Works Precincts - Northern Central Visitor Precinct:

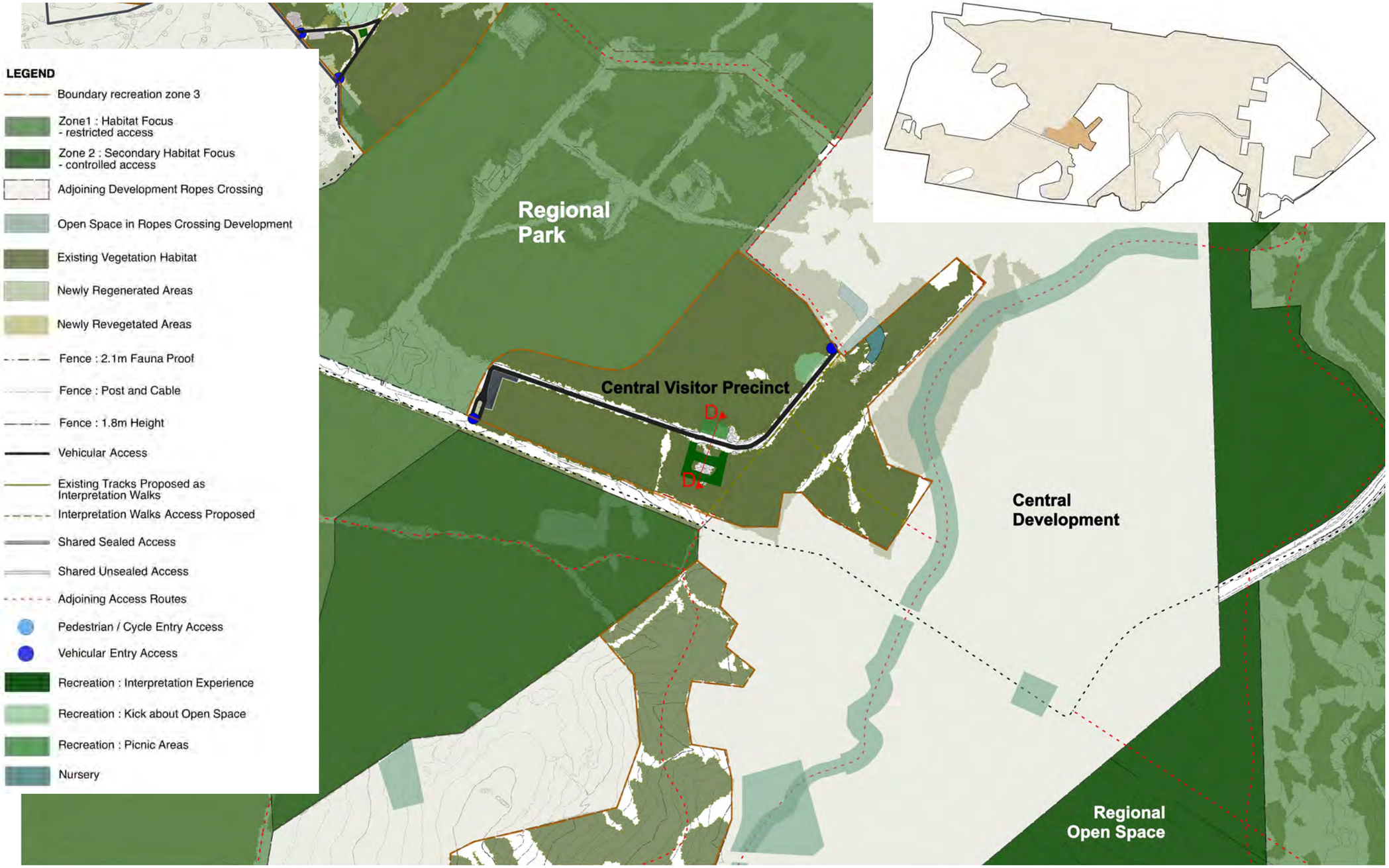


Figure 5.2.34 Central Recreation Precinct Masterplan

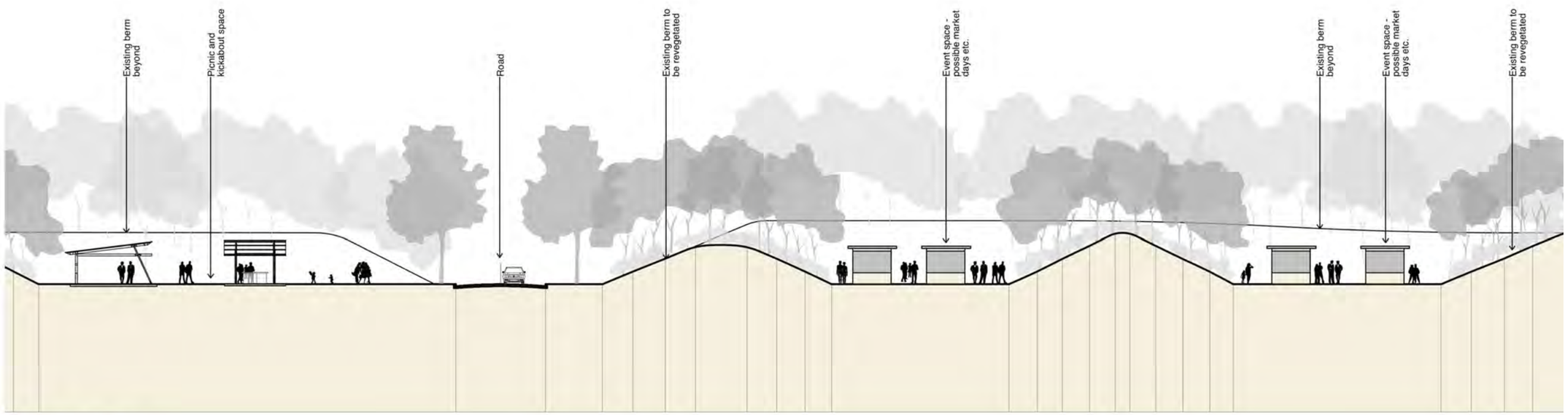


Figure 5.2.35 Central Recreation Precinct Section DD

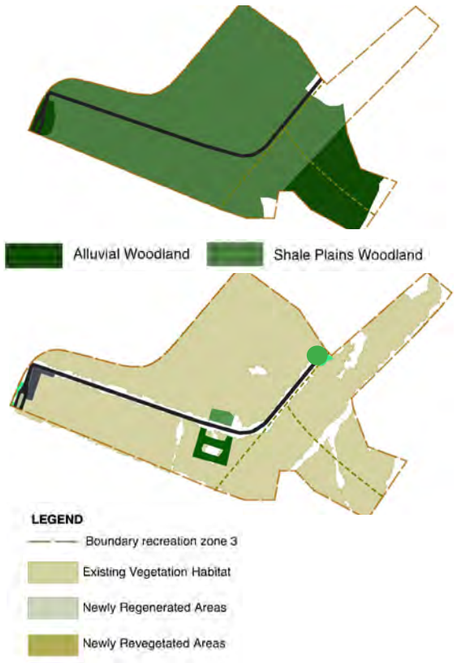
5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans- Northern Central Visitor Precinct

Flora & Fauna Management

Regeneration and Revegetation of Alluvial Woodland and Shale Plains Woodland species to occur throughout the precinct.

- A native nursery to be located adjoining development lands along the north eastern precinct boundary to be considered during precinct design development.

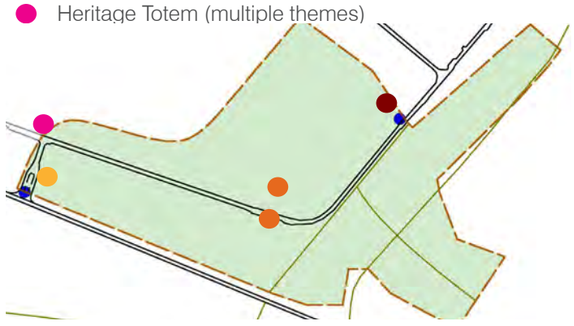


Heritage / Interpretation

The main remnant physical fabric to this precinct is the ADI road / track network used between 1950s and earth mounding associated with the Bomb Filling function of the ADI. These elements form the basis for exploration / circulation around the precinct and recreational use The interpretative design for precinct is to be in line with recommendations outlined in the CMP including;

- ADI munitions and storage phase including remnant ADI circulation networks & remnant earth mounds in the Bomb Filing areas
- Provide markers and space naming to reflect past ADI functional naming as per diagram on opposite page
- Remnant ADI 'clean areas' located at the precinct entry

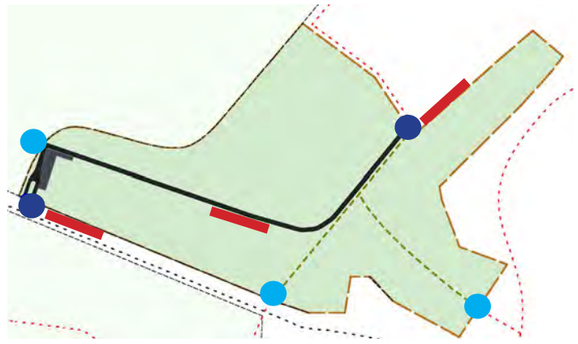
  Rare and endangered species/ vegetation communities including, Alluvial Woodland & Shale Plains Woodland interpretation to be considered as part of nursery located to northern eastern precinct boundary.
- Heritage Totem (multiple themes)



Access, Circulation and Carparking

A series of existing tracks some of which post date ADI have been retained to provide the basis for walk /cycle track networks.

- Two key entry points one from the Central Development Precinct and another to the East-West Link Road "book mark" the sealed roadway spine which runs centrally through the Precinct.
- A series of secondary lower level entries will be provided along the precinct boundaries to the adjoining development for general pedestrian/ cycle track entry. The regional park's western precinct will be access directly via a fenced access track which will run east west through zone 1 and 2 of the Regional Park.
- Parking will be limited to a central area and at park edges within this precinct.



Recreation, Visitor Facilities & Services Infrastructure

- Visitor facilities nodes as located are to include picnic benches/ tables and shelters as outlined in the Materials and Finishes section.
- Public toilets to be considered as part of the nursery located to the adjacent the Central Development Precinct entry gate outside the Regional Park boundary.
- Cleared grasslands event area is to be maintained as a large gathering open space for markets / outdoor cinema etc.

  Interpretive walk / bike riding

Site image: Vegetation communities

Site image: low lying areas (EP NSW)

Site image: ADI munitions and storage berms *(EP NSW)*

Site image: Existing track and road network *(EP NSW)*

Site image: Precinct events areas *(EP NSW)*

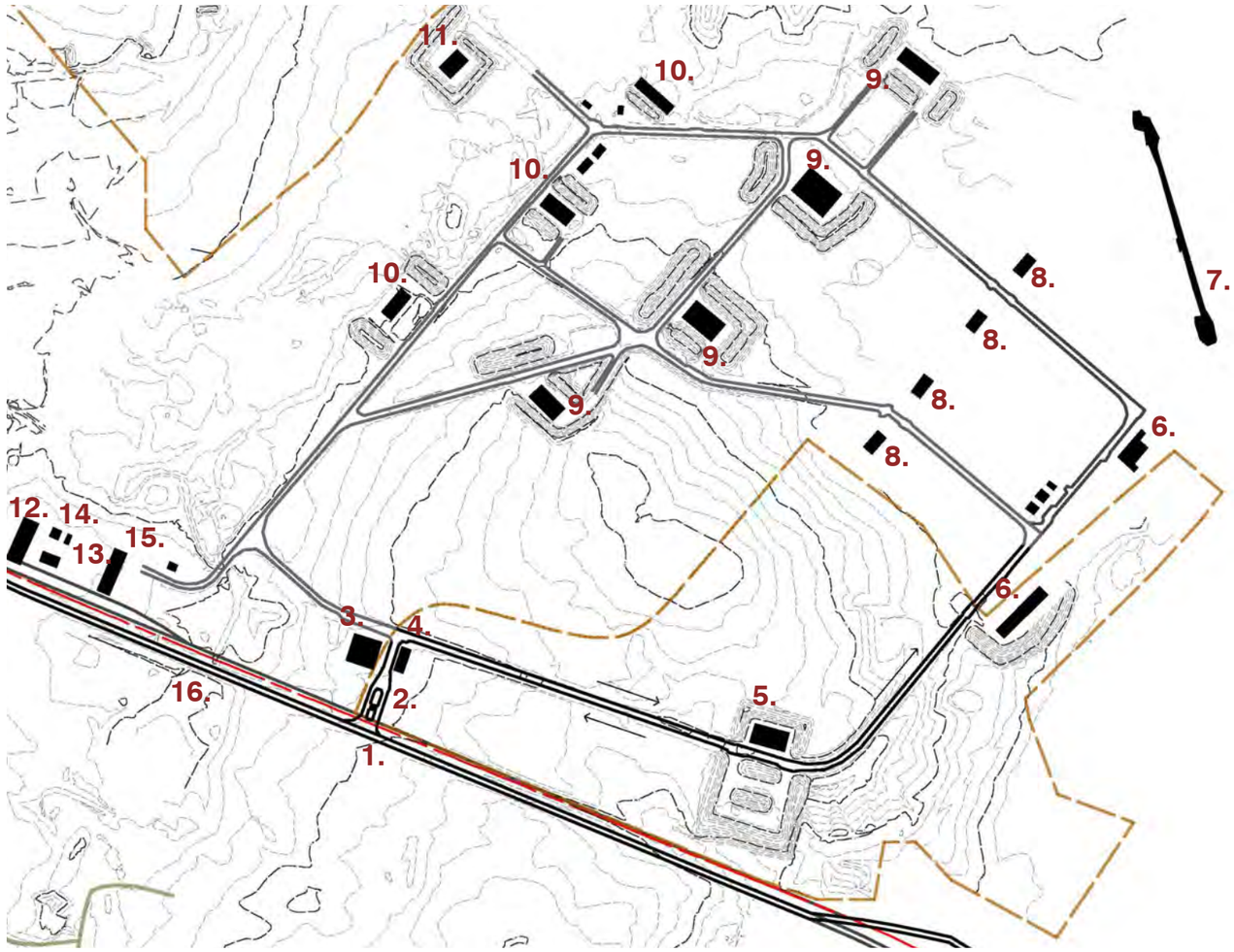
5 REGIONAL PARK MASTERPLAN

5.2 Precinct Plans - Northern Central Visitor Precinct

Within the Northern Central Visitor Precinct it is proposed that the cleared spaces in which the demolished ADI Bomb Filling complex stood can be interpreted through:

1. Naming of spaces after their past munitions function including building code where applicable
2. Retention and adaptive reuse of hardstand areas
2. Ground marking through concrete and steel markers of past building footprint
3. Develop a self guided walk that enables visitors to understand bomb filling process by following the production route through the landscape.

The plan below identifies the function of the buildings through the Bomb Filling area including the area lying within the Regional Park. It is noted that the Bomb Filling complex covered a much greater area extending to the north during the ADI phase of the sites use.



1. Entry
2. Guard House
3. Change Rooms
4. Dinning Hall Servery
5. Bomb Transit Building
6. Finishing and Exploding
7. Test Range
8. Bomb Storage used for cooling filled bombs
9. Bomb filling
10. Biscuit Casting and Finishing Building
11. Explosives Unpacking
12. Non - explosive Store
13. Metallic Powder Store
14. Boiler House
15. Bomb Preparation
16. Bulk Explosives from Kingswood Magazine Area

Figure 5.2.36 ADI Functional Areas - for potential interpretive naming of spaces

5.2 Precinct Plans

Future Works Precincts - Southern Central Visitor Precinct:

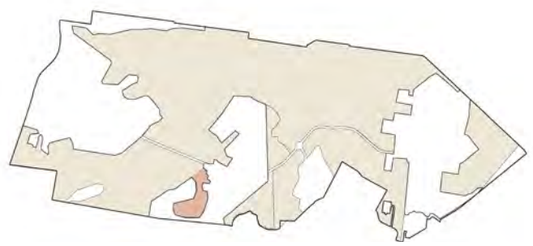


Figure 5.2.37 Park Zone 3 - Southern Central Visitor Precinct

Flora & Fauna Management

Regeneration of Shale Plains Woodland species which predominately occur throughout this precinct.

Some historic plantings maybe used to interpret colonial heritage of the precinct and adjoiing Elizabeth King farmlands to the east.

Maintain grassland character through management of understorey - as part of cultural heritage reference to Elizabeth King farm holdings to facilitate recreational use.

Heritage / Interpretation

The design for heritage is to be designed in line with recommendations outlined in the Conservation Management Plan (CMP) including;

- The Colonial Landscape 1800-1850, interpret connections to the Elizabeth King farmlands. Visual link to King family heritage stands of tree plantings
- Brick making - relics and footprint
- Interpretative play
- Cultural plantings eg non fruiting heirloom varieties

Access, Circulation and Carparking

Walk /cycle track recreational networks are to be based on existing roads and tracks where possible.

Several secondary level entries will be provided along the precinct boundaries to the adjoining development for pedestrian/ cycle entry into the precinct

Several key entry / links are to be provided through the precinct to the Northern Central Visitor Precinct, and northern regional links.

No public vehicle access will be provided into this precinct.

Parking will be limited to park edges as no day to day vehicular access will be provided within this precinct.

Recreation, Visitor Facilities & Services Infrastructure

Recreational development is proposed to be low key for predominately local residential use and access stopover / rest

Visitor facilities are to include picnic benches/ tables and shelters as outlined in the Materials and Finishes section.

Public toilets are not proposed in this precinct.

Cleared grasslands through the precinct are to be maintained as informal gathering open spaces for family gathering and picnics.

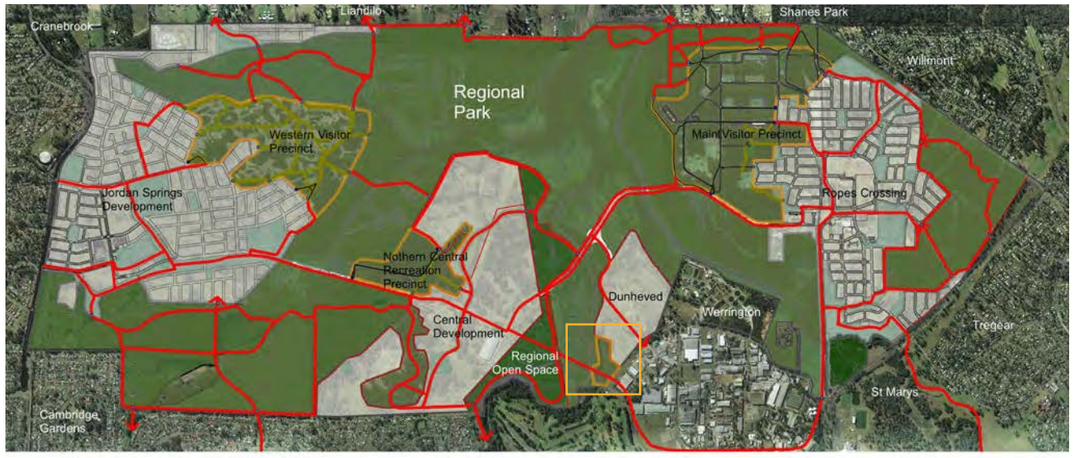
Post and cable barrier with openings for cycle / pedestrian access proposed adjoining urban development of Central Precinct

Site image: Vegetation communities (Source: EP NSW)

Site image: grasslands and understorey (Source: EP NSW)

5.2 Precinct Plans

Future Works Precincts - Dunheved Precinct:



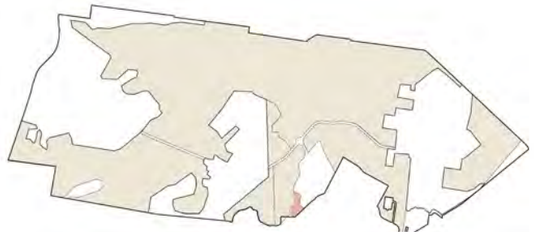


Figure 5.2.38 Park Zone 3 - Dunheved Precinct

Flora & Fauna Management

Alluvial Woodland weed management and regeneration to riparian corridor

Retain cleared character of floodplain zone of site, predominantly cleared with scattered native trees and significant native plantings

Possible additional plantings to reflect past cultural avenues to access roads etc

Some historic orchard/ vegetable species maybe used to interpret colonial heritage of the precinct.

Heritage / Interpretation

The design for heritage is to be developed in line with recommendations outlined in the Conservation Management Plan (CMP) including;

- The Colonial Landscape 1800-1850, interpret Crops, kitchen gardens and fruit trees found on the King family homesteads.
- Possible markers to past building footprints / roadways
- Visual link to Elizabeth farm heritage stands of tree plantings
- Western Arm of the ADI Rail route from explosives and filling 1941- 1946
- Interpret / use remnant rail tracks to Links Road in entry statement to precinct.

Access, Circulation and Carparking

Further investigation of past planning / layout of homestead can inform layout of new recreational cycle and pedestrian access, with additional access as necessary

Main pedestrian / cycle entry at corner on Links Road near rail crossing - can act as key entry to Regional Park and Regional Open Space

A key link is to be provided to the west through the Regional Open Space to the Central Development Precinct and beyond to the Central Visitor Precinct. This will require an access bridge in the area of the past rail bridges and earlier farm bridges.

In addition a recreational loop through interpretative locations (possible boardwalk) is recommended.

Parking will be provided as formalised bays within site adjoining Links Road.

No day to day vehicular access beyond this parking.

Recreation, Visitor Facilities & Services Infrastructure

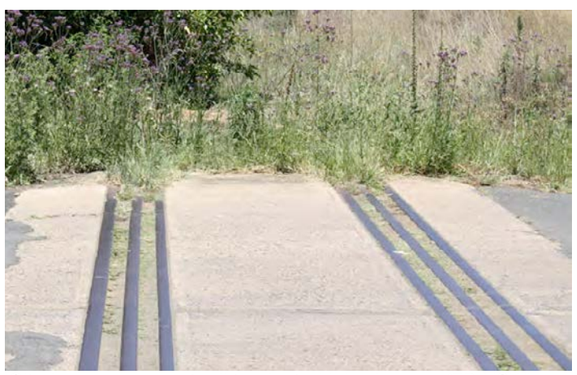
Visitor facilities as located are to include picnic benches/ tables and shelters as outlined in the Materials and Finishes section.

Public toilets to be considered as part of the entry located to the adjacent to the corner of Links Road.

Cleared grasslands areas over much of the precinct are to be maintained as informal gathering open spaces for family gathering and picnics.

Historic guided tours as well as signage/ interactive web self guided tours to Governor King Homestead site.

Site image: grasslands and understorey (EP NSW)



Site image: remnant rail tracks to Links Avenue (EP NSW)

Site image: cultural plantings (EP NSW)

Site image: cleared grasslands (EP NSW)

6.0 MATERIALS AND FINISHES

6 MATERIALS & FINISHES

6.1 Generally

Generally materials and finishes should reflect the principles of the NSW NPWS Parks Facilities Manual in which simple robust material fit for purpose provide the key fabric of the parklands. The strong cultural heritage references of the site also suggest that concrete and steel in existing infrastructure are important connections to this industrial past.

This section identifies some key principles for the main materials components required for park design and implementation

A total life-cycle approach should be considered in the design, construction, maintenance and end-of-life disposal of all parkland improvements. Key issues related to materials and finishes (and their sustainability) as identified in the Parks Facilities Manual are outlined following:

Materials

- Re-use demolition component materials or recycled content materials that meet engineering specifications
- Source materials locally to reduce transport impacts and support the local community
- Use materials adequate for a job and not of an excessive standard (eg. don't use stainless steel when galvanised will do)
- Use materials that have a lower environmental footprint

Fabrication

- Use prefabricated structures or fabricate components off-site where possible
- Build bulk quantities of structures / components if practical
- Use techniques that maximise recovery at end of life (eg. screwing or bolting not nailing)

Construction

- Keep construction sites as small as possible and manage these carefully
- Use environmentally friendly construction techniques
- Minimise material and vehicle movements on and off the site

Maintenance

- Maintain maintenance schedules to maximise life span
- Fix things as soon as a problem is identified
- Use long life and low-toxicity materials where possible
- Repair vandalism and graffiti immediately

Disposal at end-of-life

- Maximise the quantity of materials recovered at end of life with landfill as last option
- Re-use and recycle components and materials where possible

Materials and finishes

Design and materials principles are provided for the following

1. Roads Tracks and Paths
2. Fencing and barriers
3. Planting
4. Facilities
5. Signage
6. Public Art

6 MATERIALS & FINISHES

6.2 Roads, Tracks and Paths

The table below identifies the key functional and design parameters for implementation of general access improvements

User	Activity / description	Trail	Topography	Length	Fitness	Experience	Compatibility	Conflicts
VEHICLES	**Car** Typical street vehicle	5.5m wide sealed road for two way. 3m wide for 1 way. Requires parking at destination	Maximum gradient to be confirmed	N/A	N/A	N/A	Coach and maintenance vehicle. Could be compatible with Road Cyclists if vehicle speed is controlled	Generally conflicting with most cycling and walking users
	Coach Typical 14.5m bus	6.5m wide sealed road for two way. 3.5m wide for 1 way. Required parking at destination. Large turning circle required.	As above	N/A	N/A	N/A	Car and maintenance vehicle.	Generally conflicting with most cycling and walking users
	Maintenance vehicle Ute or light truck	2.5m wide road. Could be sealed or unsealed.	As above	N/A	N/A	N/A	Car and coach on sealed roads. Mountain bike on unsealed maintenance trails	
	Fire Fighting	2.5m wide road. Could be sealed or unsealed.	As above	N/A	N/A	N/A	Mountain bike	
WALKERs	**Disabled access** An opportunity for visitors with limited mobility to experience the landscape and access essential services	1.5m min with and paved eg. AS2156 Class 1	Flat	1-2km	Low - medium	Low	Compatible with general walkers and possibly recreational cyclists. May be compatible with maintenance vehicle access.	
	Walkers For fitness and to experience the site from a high quality track surface	1.2m min width and paved eg. AS2156 Class 122	Flat - undulating	1-5km	Low - medium	Low	Recreational cyclists. Maintenance vehicles.	
	Bush walkers For fitness and to experience the site from a more natural perspective on a more rugged trail	0.5m min width and not paved eg. AS2156 Class 3-5	Ranging from flat to steep and everything in between	3-20km	Medium - high	Medium	May be compatible with cross country mountain bikers, cross country runners and horses	
RUNNERs	**Joggers**	1.2m min width paved surface eg. AS2156 Class 1-3	Preferably flat to undulating	2-15km	Medium - high	Medium	Most sealed track users	
	Cross country runners	4-5m wide mown track Specialised area already provided in precinct 7.	Flat - undulating	5-15km	Medium - high	Medium	Equestrian	
FAMILY / CASUAL CYCLISTs	**Recreational road bikes** $500-$1500 Bikes with skinny tires made for use on sealed tracks	Sealed track with relatively smooth surface Eg. Shared path 2.5m	Ranging from flat to undulating. Preferably avoid steep slopes.	5-30 km depending on individual fitness	Varies and influences length of ride / topography that can be accessed	Low - high	May be compatible with vehicle access if speed of vehicle is limited. Compatible with walkers on a shared trail.	
	Recreational mountain bike / hybrid $500-1000 Bikes with medium - fat tyres. May have front suspension	Sealed / road base tracks. Generally not suitable for extensive 'off road' use Eg. Shared path 2.5m	Ranging from flat to undulating. Preferably avoid steep slopes	5-30 km depending on individual fitness	Varies and influences length of ride / topography that can be accessed	Low - high	May be compatible with vehicle access if speed of vehicle is limited. Compatible with walkers on a shared trail.	
	Children's bikes $200-500 Smaller bicycles without gears	Short circuit with hard pavement within view of adults	Flat	100-250m	Generally not able to ride for long distances	Low	Non powered scooters	Most other users
MOUNTAIN BIKERS	**Cross country / trail** $1000+ Fat tyres, good front suspension (some with rear suspension)	Trail conditions vary relative to difficulty rating. Natural / road base surface ranging from 'single track' 15-200cm width to 'fire trail' 2.5m in width.	Varies from flat (less than 5% / 1:20) to steep (20% / 1:5 or more) relative to level of difficulty	6-100km depending on level of difficulty	Low - High depending on level of difficulty	Low - High Technical obstacle hardness is relative to trail level of difficulty	Fire trail may be compatible with 4x4 maintenance vehicle access.	Trails potentially ridden in one way direction if a popular loop to reduce conflicts and issues with sight distance
	Down hill $3000+ Very fat tyres, and specialised suspension	Down hill specific tracks with very difficult obstacles. Vehicle access to top of hill required.	Sloping - steep terrain with ride starting from top of a hill	3-5km	Medium - High	Medium - High		
	BMX / 4X $500+ BMX - tough bicycles with small wheels designed for stunts $3000+ 4X - similar to down hill mountain bikes	Undulating small circuit with jumps. Similar to 4x track at Sydney Olympic Park	Track usually constructed on reasonable flat site	0.5-1km	Medium - High	Medium - High		
ROAD CYCLISTS	**Road / racers** $2000+ Light weight bike with very skinny tires.	Smooth surface suitable for high speed Eg. road / highway	No sudden changes of direction or gradient	50-200km	Medium - High	Medium-High	Cars	Most other cycle / walking types due to speed
	Bridle trails	2.5m wide unsealed track. Potential to expand nodal role to larger areas along corridor	Flat - undulating	3-20km	Medium – high	Medium - high	May be compatible with cross country mountain bikers and bush walkers	

6 MATERIALS & FINISHES

6.2 Roads, Tracks and Paths

Pedestrian and cycle access

The Wianamatta Park Masterplan describes a network of pedestrian access that links usage nodes and precincts, provides loop recreational trails and provides interconnections between adjoining communities where sustainable with natural values.

A path hierarchy should be implemented to reflect elements appropriate to site conditions and recreational opportunities as derived from AS 2156 Walking Tracks, and adapted in the NSW NPSW Parks Facilities Manual 2008. As described in the table below:

The following performance criteria apply to path design and implementation as derived from the NSW NPSW Parks Facilities Manual:

Description of track	*Class 1* *'All Access Track'*	*Class 2* *'Graded Track'*	*Class 3* *'Walking Track'*	*Class 4* *'Hiking Track'*	*Class 5* *'Marked Route'*	*Class 6* *'Unmarked Route'*
						
Surface	Hard surface suitable for wheelchair access eg. concrete, asphalt, paver, elevated boardwalks	Generally a hard surface dependent on level of usage eg. concrete, asphalt, bitumen, pavers, elevated boardwalks	Generally a modified surface eg. bitumen, stone, gravel, mulch, board and chain, boardwalks	Distinct surface often without major modification eg. gravel, mulch, natural surface	Limited modification to natural surface and track alignment may be indistinct in places	No modification of the natural environment eg. wilderness areas
Width	Constant 1500mm min.	Constant 1200mm min.	Variable 1200mm preferred	Variable 600mm max	N/A	N/A
Path gradient / access requirements	Compliant with AS1428 Design for Access and Mobility (refer general requirements page)	1:10 max gradient Minimal steps	No steeper than 1:10 preferred but may exceed this gradient for short lengths dependent on soil stability Steps may be common	Limited by environ-mental and maintenance considera-tions	May include steep sections of unmodified surfaces	Likely to include steep sections of unmodified surfaces
Example	Discovery track located adjoining visitor centre	Very high-use tracks located adjoining park focal points eg. visitor centre, lookouts	High-use tracks in high visitation areas	Medium-use tracks in high visitation areas, high-use tracks in low visitation areas	Low-use routes	Occasional-use routes

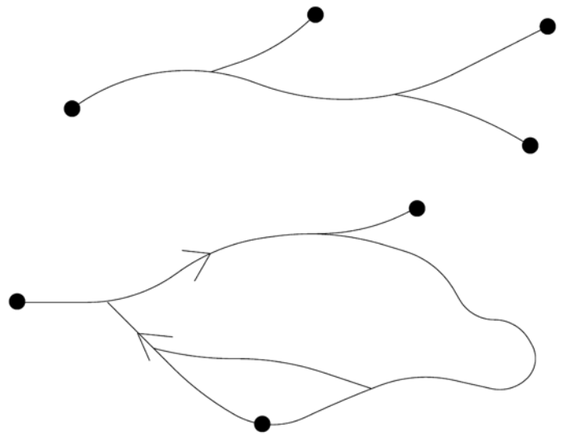
Figure 6.2.1 Walking track guidelines (NPWS Facilities Manual 2007l)

6 MATERIALS & FINISHES

6.2 Roads, Tracks and Paths

Pedestrian and cycle access - Track Form

Track form should be considered in implementation and opening of track access. Functional connections and loops adjoining points of entry to the park should be a focus



Track form
Departure and destination points will define each end of the track.

Linear form can be used for both long-distance routes and for short links between related facilities such as parking and destination areas. Added spurs provide access to features off the main route.

Single loop is preferable to give diversity where a return through different terrain to the starting point is possible. There is also less wear on the track surface.

Connected loop increases choice of distance travelled and features encountered.

The tracks should permit large-scale vistas (A) so that walkers can orient themselves and understand the geological processes that shaped the landscape. Closer views (B) will enable focus upon details of natural interest.

Figure 6.2.2 Walking track guidelines (NPWS Facilities Manual 2007)

Materials and Finishes

Design principles:

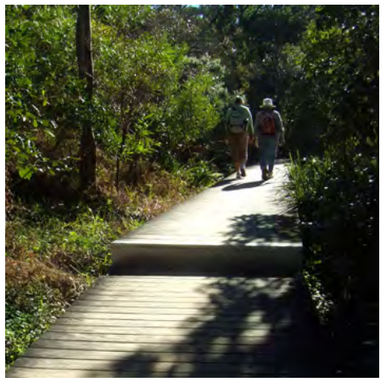
- Provide a unified palette of materials to each access type across the site
- Retain existing track and path alignments reflecting past site use

Materials principles:

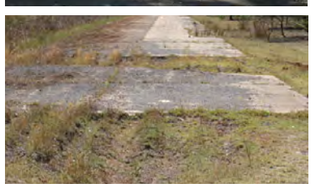
Roads
- Limit extent of asphalt surfacing to existing sealed roads
- If upgrading asphalt surface use a course grade of aggregate to integrate with existing aged material
- If upgrading concrete road - infill with asphalt

Tracks
- Review existing stabilised tracks to determine material used in base course. Unless strong theme present employ crushed sandstone material as track base as it provides a good surface for cycle or pedestrian use

Boardwalks
- Generally employ steel frame or recycled plastic bearers
- Plantation hardwood or recycled plastic boardwalk



Boardwalk (EP NSW)



Site image: existing asphalt road *(Source: EP NSW)*

Site image: existing track *(Source: EP NSW)*

Site image: Existing concrete roadway (Source: EP NSW)

Typical asphalt path (class 1 access) (Source: EP NSW)

Typical Gravel pathway (Source: EP NSW)

Typical path to adjoining dev't (Source: EP NSW)

6 MATERIALS & FINISHES

6.3 Fencing and Barriers

Fence types

Three key fence types are proposed for use by the masterplan

1. 2.1m high fauna proof fence to general perimeter for Zone 1 areas to provide secure boundary and to prevent macrofauna movement
2. 1.8m high security fence to boundaries of Zone 2 which require security or to zone 3 boundaries adjoining residential allotments
3. 0.8m high post and cable barrier to edges of Zone 3 areas which adjoin public roadways

Gate / entry types

Gate types / openings are required in each of the fence types

1. 2.1m high fauna proof fence
   to have security gates to allow for maintenance vehicle access
2. 1.8m high security fence
   where entries are provided to public streets or adjoining open space - provide permanently open access for cycles and pedestrians with trail bike barrier
3. 0.8m high post and cable barrier
   where entries are provided to public streets or adjoining open space - provide permanently open access for cycles and pedestrians with trail bike barrier

Materials and Finishes

Design principles:

- Provide a unified palette of fence treatments to each fence type across the site
- Provide safe and secure barriers to vehicle access

Materials principles:

- Fence types 1-3 to be in accordance with NSW NPWS Parks Facilities Manual
- Fencing and barriers to be durable and of high quality materials
- Fencing and barriers to respond to heritage and rural character of the site - to curtilage of Dunheved and house sites in zone 1 consider post and rail rural fence

2.1m fence to zone 1 (Source: EP NSW)

1.8m security fence (Source: EP NSW)

Feature gates (Source: EP NSW)

Trail bike barriers (Source: EP NSW)

Post and cable barrier (Source: EP NSW)

Rural fence (Source: EP NSW)

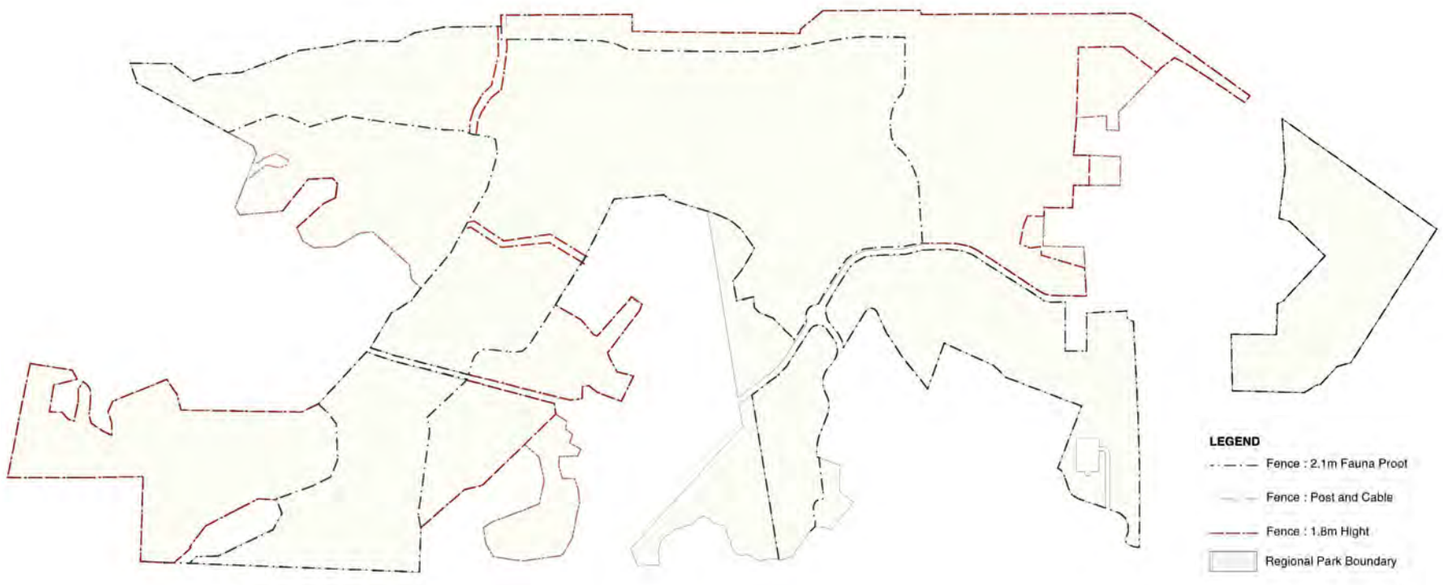


Figure 6.3.1 Proposed location of fencing / barrier types

6 MATERIALS & FINISHES

6.4 Planting

Design principles:

- Retain existing tree canopy
- Limit mid-storey planting to enable views across the site
- Conserve existing cleared / grassland areas
- Raise levels through additional soil to selected grassed gathering spaces for drainage and to provide maintainable surface

Materials principles:

- Species to reflect existing planting on site
- Use of species of the Cumberland Plain Woodland community
- Propagate plants from site seed stock through establishment of on site nursery

Landscape Function	Botanic Name	Common Name	Height	AW	SGTF	CRCIF	SPW	FW	CSGW
Tree	Eucalyptus tereticornis	Forest Red Gum		X	X		X		
	Allocasuarina littoralis	Black She-Oak							X
	Eucalyptus baueriana	Blue Box		X					
	Eucalyptus crebra	Narrow-leaved Ironbark					X		
	Eucalyptus fibrosa	Broad-leaved Red Ironbark			X	X	X		
	Eucalyptus moluccana	Grey Box			X		X		
	E. parramattensis subsp. parramattensis	Parramatta Red Gum							X
	Eucalyptus sclerophylla	Scribbly Gum							X
	Bursaria spinosa	Blackthorn					X		
	Casuarina glauca	Swamp She-Oak		X					
	Dillwynia tenuifolia		0.4m - 1m				X		
	Melaleuca decora	White Feather Honeymyrtle				X			
	Melaleuca linearifolia	Snow-In-Summer		X				X	
	Melaleuca nodosa	Ball Honeymyrtle				X			X
	Melaleuca decora),	White Feather Honeymyrtle							X
	Angophora bakeri	Narrow-leaved Apple							X
	Angophora subvelutina	Broad-leaved Apple		X					
	Angophora floribunda	Rough-barked Apple		X					
	Typha orientalis	Broad-leaved Cumbungi						X	
Shrub	Dillwynia tenuifolia		0.4m - 1m	X	X	X			
	Pultenaea parviflora		to 1m	X	X	X	X		
	Micromyrtus minutiflora		2m	X	X	X	X		
	Persoonia nutans		2.5m	X	X	X	X		
	Grevillea juniperina subsp. juniperina		0.5-1.5 m	X	X	X	X		
Grasses/Groundcovers	Centella asiatica	Gotu Kola						X	
	Juncus usitatus	Common Rush						X	
	Persicaria decipiens	Slender Knotweed						X	
	Cynodon dactylon	Couch Grass						X	

Proposed Revegetation Species List (refer appendices for full list)

Site Image: No mow / regeneration zones (Source: EP NSW)

Site Image: Existing buffer planting (Source: EP NSW)

Site Image: Existing tree canopy (Source: EP NSW)

6 MATERIALS & FINISHES

6.5 Furniture

Materials and Finishes

Design principles:

Park bench

- Provide to Zone 3 recreational precincts within cleared areas supporting picnic and gathering use
- Provide to Zone 3 recreational precincts adjoining major path links and outside major building facilities
- Locate with back to planted zones

Bench

- As for above but with flexibility to have oriented two ways

Picnic table

- Provide to Zone 3 recreational precincts within cleared areas supporting picnic and gathering use

Table seats

- Provide to Zone 3 recreational precincts within cleared areas supporting picnic and gathering use to provide for flexible range of use and less formal / structured character

Informal rock seating

- Provide to Zone 3 recreational precincts within cleared areas supporting picnic and gathering use to provide for flexible range of use and less formal / structured character
- Provide to Zone 1 and 2 areas adjoining interpretive signage / points of interest to cater for rest stopover

Precast concrete bollards

- Limit extent to main visitor precinct adjoining Visitor Centre

Cycle racks

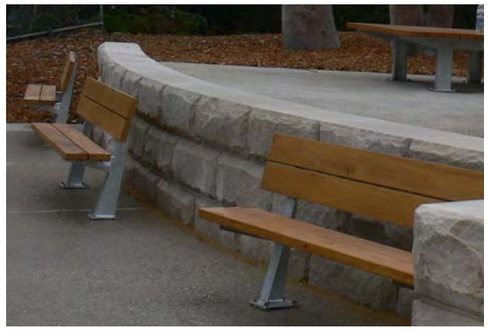
- Provide at Visitor Centre
- Provide at Transit Stores - multi function buildings
- Provide at larger gathering / picnic spaces

Bins

- Provide at larger gathering / picnic spaces to main visitor precinct, western visitor precinct, central visitor precinct, and Dunheved visitor precinct

Materials principles:

- Furniture to be in accordance with NSW NPWS Parks Facilities Manual



Site Image: NPWS Park bench (Source: EP NSW)

Site Image: NPWS bench (Source: EP NSW)

Site Image: NPWS Picnic table / seats (Source: EP NSW)

Site Image: Table / seats (Source: EP NSW)

Site Image: Informal rock seating (Source: EP NSW)

Site Image: Precast concrete bollards / seats (Source: EP NSW)

Site Image: Bicycle racks (Source: EP NSW)

Site Image: Bins (Source: EP NSW)

6 MATERIALS & FINISHES

6.6 Facilities

Materials and Finishes

Design principles:

Generally facilities should follow the principles and standards outlined in the NSW NPWS Parks Facilities Manual. The opportunity exists for some specific / non standard facilities and these should develop a site specific design response but have regard for materials and related principles outlined in manual.

Visitors Centre

- Adaptive re-use of Mine Filling store - site specific design retaining shell of existing structure and infilling with new fabric

Picnic shelters

- Parks Facilities Manual gable or skillion shelters

Toilets

- Parks Facilities Manual gable or skillion toilets as quad or double

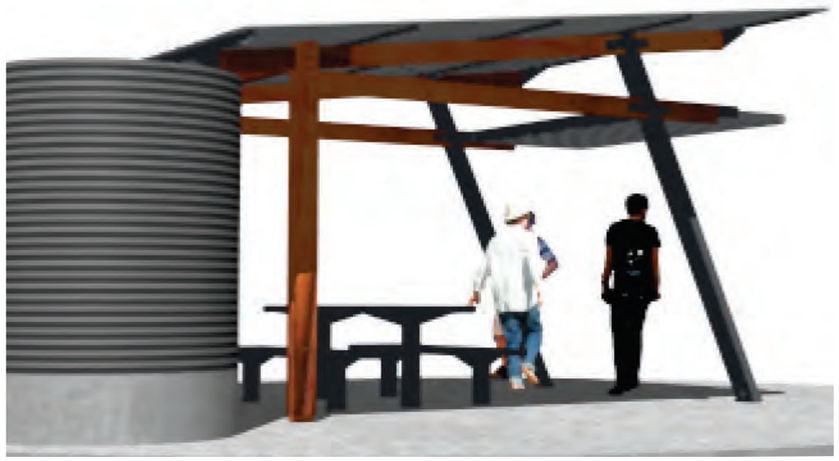
Materials principles:

- Generally apply steel as predominant facade material with timber accent in accordance with NSW NPWS Parks Facilities Manual

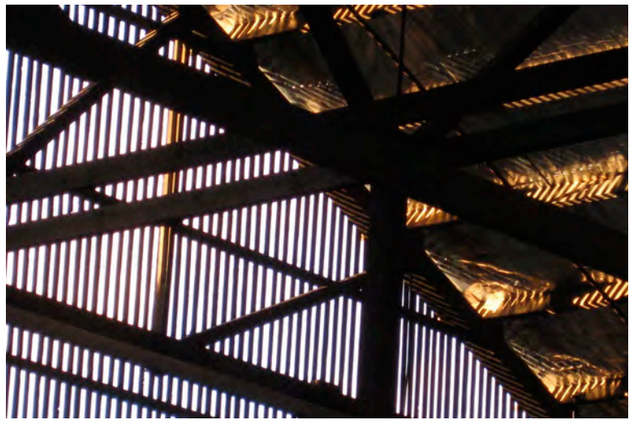
Single Toilet (Source: NPWS Manual 2007)

Gable Picnic Shelters (Source: NPWS Manual 2007)

Quad Toilets (Source: NPWS Manual 2007)



Skillion Picnic Shelters (Source: NPWS Manual 2007)



Visitors Centre - site specific design precedents (Source: EP NSW)

6 MATERIALS & FINISHES

6.7 Signage

Materials and Finishes

Design principles:

As part of initial design development for the first stages of implementation in the park it is desirable that a Signage Plan be prepared that further details the hierarchy of signage, develops a design and graphic approach, and researches raw material for interpretive signage. This exercise must have regard for existing NPWS signage strategies as applicable.

Interpretive development will draw upon the recommendations of the CMP for Wianamatta Regional Park

Some basic principles for key signage elements are listed

Place markers / signage

- Provide to identify recreational places and other places of significance
- Locate at major approaches to spaces as markers
- Integrate interpretive information where possible

Vehicular wayfinding

- Located prior to and at key traffic decision points.
- Ideally should reflect a general NPWS character but retain a component of site specific reference - it is noted that use of Aboriginal and ADI related terminology / names will be a key aspect of this goal

Pedestrian cycle wayfinding

- Located at track heads and at track decision points
- Smaller scale than vehicular signage

Ground level markers

- Provide to reflect past building footprints and potentially building names / functions

Interpretive totem

- To be provided along the major track access routes as part of an integrated sequence of educational and informative signage
- Ideally will provide a layered approach whereby each totem addresses a brief component of the key topics and their individual themes. Key topics include natural heritage, aboriginal occupation, early colonial history, growth and development, ADI phases, and community action

Interpretive panels

- To be provided to illustrate and inform key locations on site and may address a single or multiple topics

Materials principles:

- Materials should reflect the post industrial character of the site and employ concrete, stone, and weathering steel as core elements.

Example of Interpretation panels

Example of Interpretation totem - multi themed (source Victoria Parks)

Example of Place markers / signage

vehicle wayfinding

Pedestrian / cycle wayfinding

Ground level markers

6 MATERIALS & FINISHES

6.8 Public Art

Key principles:

An element that is potentially closely related to signage and interpretation is public art in the Regional Park. It is desirable that art play a role in the functional and aesthetic design development of park improvements.

As for signage an integrated strategy developed at the outset of implementation is the most effective way of facilitating this.

A series of themes building on the CMP outcomes can be effectively linked to information objectives and integrated into the fundamental spatial and elemental design of spaces so that art is not limited to installed objects.

Design principles:

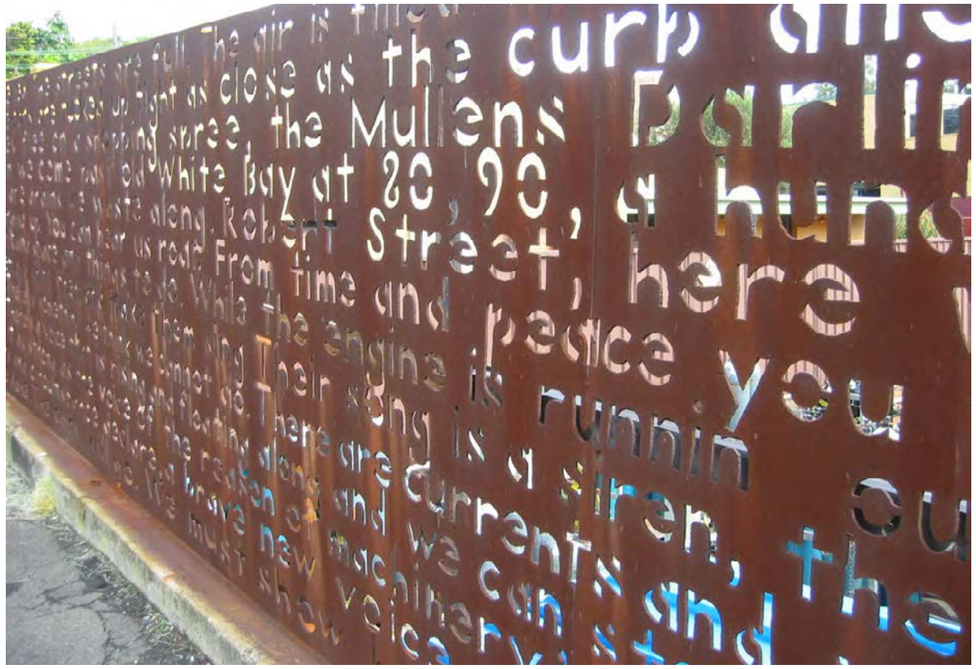
- Incorporate public art to reinforce site character and identity
- Provide artworks as integrated components of landscape improvements

Materials principles:

- Art components to be of durable materials, resistant to potential vandalism
- Reuse where possible with found materials from site - reflecting the sites past use (refer ssection 6.9)

Example of Artwork installations

Example of Fusion between art and signage



Example of Artwork integrated to entry fence element

6 MATERIALS & FINISHES

6.9 Found Materials

Materials and Finishes

Design principles:

The development of building, road, hardstand, and services infrastructure through the ADI complex's history was extensive. The majority of these structures were dismantled as part of the decommissioning of the site, with construction materials including brick masonry, concrete, pipes, telegraph poles etc stockpiled on the site (currently within the Urban Development Central precinct).

A review of these stockpile holding areas identified a wide diversity of elements across the eras of the sites use. A number of footings for poles etc appear to be very early based on the composition and types of aggregate materials.

Materials are generally broken from the demolition process, with concrete often having twisted plumes of reinforcement steel attached along with remnants of operational paint markings etc. Overall the effect of these found materials is highly evocative of the working industrial nature of the ADI landuse past, and its haphazard demolished character reflective of its post industrial present. It is considered that adaptive re-use of these materials affords a significant design opportunity that has both interpretive and sustainability potential to add further dimensions to the Regional Parks ongoing implementation.

It is proposed that these found materials can play a significant role in the landscape enhancement of the recreational precincts through the Regional Park along with effective and sustainable treatment of infrastructure such as drainage and roads / tracks.

The images this page indicate some examples of existing found material ith potential for re-use - some possibilities are listed below the images.

It is noted that contamination potential would need to be assessed prior to re-use of any found materials.


Masonry rubble

- crush for use as aggregate to new concrete finishes and as road base/ track material


Pipes

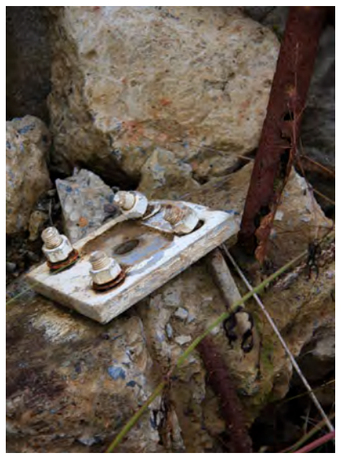
- reuse as elements (eg pillars, face sections etc) within new walls
- reuse as seats / markers
- reuse within structure or within play landscapes to create viewing points / tunnels etc


Larger concrete sections, footings etc

- reuse as elements (eg pillars, face sections etc) within new walls
- reuse as seats / markers


Power poles and power fixtures

- evocative potential as element in public artworks / landscape designs interpreting site use and history
- reuse as seats / markers



Concrete and reinforcement / steel fixtures

- evocative potential as element in public artworks / landscape designs interpreting site use and history



Concrete rubble

- crush for use as aggregate to new concrete finishes and as road base/ track material
- crush for use in filling of gabion baskets for wall construction and mattresses for stabilisation / erosion control



Light fittings

- potential for selected re-use for lighting near visitors centre

7.0 ACTION PLAN

7 ACTION PLAN

This masterplan report describes the full range of proposed strategies proposed for long term development and management of the Wianamatta Regional Park. In implementing these strategies, a range of actions encompassing a broad range of activities from investigation to construction works will be required.

This section identifies those actions and identifies a potential prioritisation of these based on a set of criteria specific to Wianamatta Regional Park, and is set out as follows:

1. Identification of the suggested criteria for prioritisation of actions and related rationale
2. Application of the criteria to a possible staging approach providing a listing of actions required for masterplan implementation including outline implementation costs
3. Full listing of initial implementation costs by the zones identified in the masterplan

7.1 Criteria for establishing priorities

As identified earlier in this report, the full realisation of a Regional Park and related uses and management of the scale of Wianamatta Regional Park will be a long term undertaking. Required actions must be prioritised to enable available resources to be best focussed on those actions that will enable recreational use to be commenced by the public and important conservation and habitat management actions to be initiated.

As such it is necessary to think of implementation of the park in both the short term and long term. The masterplan has identified visions to reach each of these phases of park implementation, along with having regard for the specific objectives that were developed in the Wianamatta Regional Park Plan of Management (prepared by NPWS) guided the masterplan process. As such criteria for priority decision making should have regard for the short and long term visions along with addressing each of the objectives

Short term vision

Provide for initiation of high priority management regimes for habitat and cultural heritage conservation, and actions for commencement of public use, enjoyment and appreciation of the park.

Long term vision

Consolidate habitat and cultural heritage conservation to complement recreational use and education, and involve the broad range of stakeholders in its planning and management.

Build upon core recreation opportunities of walking, cycling, and picnicking in a bushland setting. Provide dynamic interpretation of conservation values, special events areas and programmed education.

Prioritisation Criteria

dPoM Management Objective	No	Criteria for prioritisation
Protection and enhancement of the natural heritage of the Park, particularly the endangered ecological communities and the threatened flora and fauna species through the management of fire, disturbed areas, drainage, introduced species, access and visitor use.	1.1	Implementation of required actions for stabilisation (ie prevention of further degradation) of sensitive or threatened environmental systems in the park
	1.2	Support implementation of recreational activities with require environmental protection measures as it proceeds
Recognition and protection of traditional and contemporary Aboriginal cultural heritage, landscape and spiritual values through providing opportunities for the involvement of the traditional owners and the local Aboriginal community in the protection, interpretation and management of their heritage and values	2.1	Implementation of required actions for protection / management of locations of Aboriginal cultural heritage significance
	2.2	Facilitation of structure that will promote and manage involvement of traditional owners in ongoing planning and design along with operation and management of the park
Protection of historic heritage through identifying, recording, conserving and interpreting historic items and places	3.1	Implementation of required actions for protection / management of locations of historic heritage significance
Protection of the catchment values of South and Ropes Creeks through managing any disturbances, particularly those associated with fire, access and drainage		Refer 1.1
Provision of recreational facilities that are appropriate in a regional context and are designed, located and managed to protect the natural and cultural heritage and visual values of the Park	4.1	Implementation of initial recreational facilities in locations with good accessibility to adjoining communities to : - establish awareness and profile of park - assist with management of security
	4.2	Implementation of recreational facilities as a holistic functional precinct to: - provide maximum impact in initial stages of community use - assist in simplification of management and maintenance in initial stages of community use
	4.4	Relate development of recreational precincts to the programme for implementation of adjoining urban development to: - take advantage of access and infrastructure availability - optimise security (avoid isolated recreational precincts in short term)
	4.5	Supplement functional precinct with path network beyond to support and enhance recreational experience
Provision of interpretive and educational opportunities through signage, park brochures and activities to assist visitor understanding and enjoyment of the Park.	5.1	Coordinated approach required to guide implementation of signage
	5.2	Implement to support functional precincts and to path network beyond
Improving knowledge of natural / cultural heritage, related threats and evaluation of management programs through research and monitoring. Working with other agencies and authorities, the community and commercial interests to maximise community interest and involvement in the conservation of the Park, and the implementation of sympathetic conservation measures in the neighbouring environment.	6.1	Refer 5.1 and 5.2 Management of the park to develop and pursue partnerships in research, and provision and management of facilities

The criteria for prioritisation generate several common principles:

- Ensure that any required protection and management works to habitat and environmental systems that are threatened are undertaken as high priority
- Focus first priority recreational works on establishment of a holistic functional recreational precinct with good accessibility to adjoining community (urban development)

7 ACTION PLAN

7.2 Works action plan

The Works Action Plan table following identifies the range of actions encompassing a broad range of activities from investigation to construction works required to implement the masterplan proposals.
The Works Action Plans are in the form of a schedule that:

- Lists works in suggested priority order based on the criteria for prioritisation;
- Describes the broad actions required including pre-construction elements for capital works items;
- Describes the nature of actions required (capital works, policy review, management, liaison action);
- Notes any specific comments relating to the implementation of that item.

Ultimately actual staging of implementation will be influenced by a range of factors including availability of funding and its (potential) relationship to specific recreational uses, environmental or conservation activities along with other factors. As such this process will need to be flexible and opportunistic, always having regard for the criteria noted in 7.1 but recognising that flexibility to maximise implementation opportunities is essential.

The staging described by the Action Plan is illustrated in Figure 7.1 Staging Plan to opposite page. Refer to key plan page 104 for location of sub zones upon which costing is based.

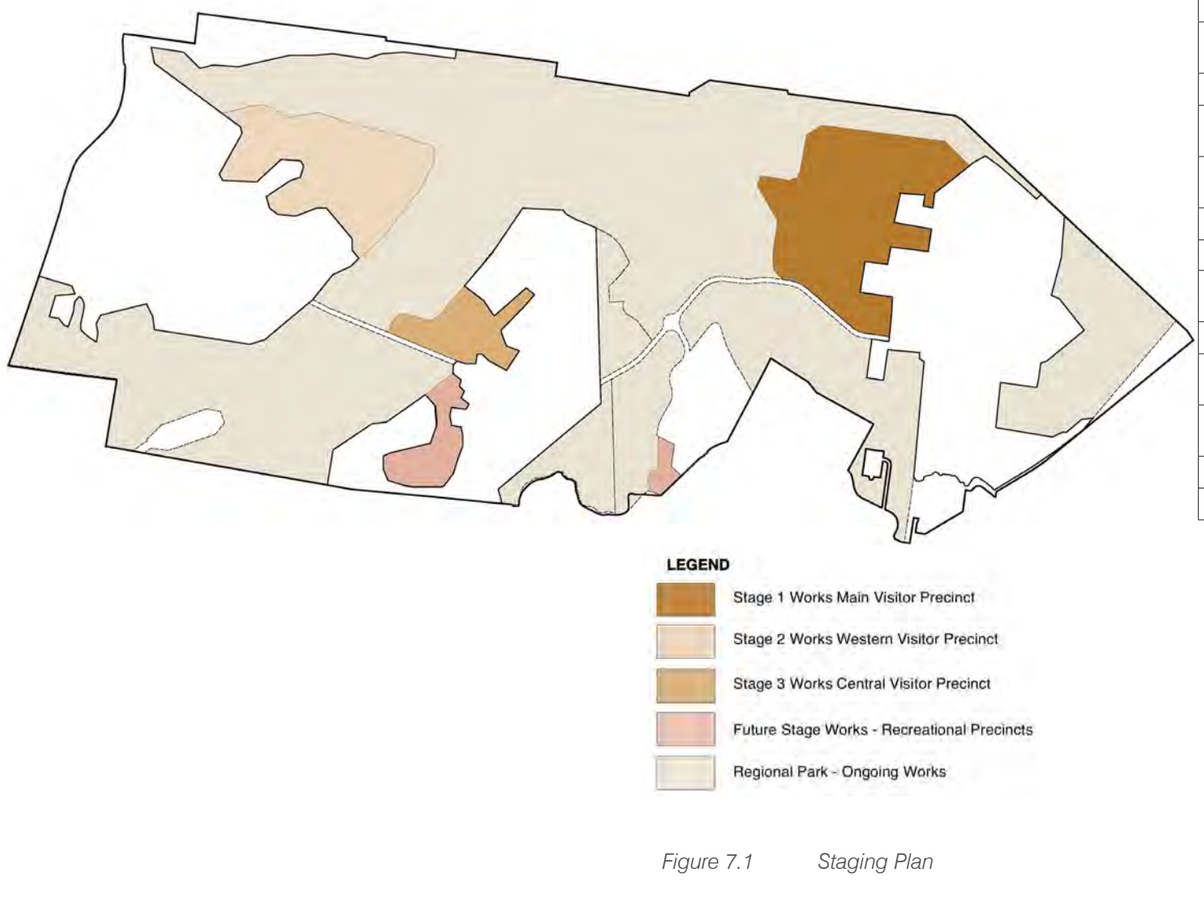


Figure 7.1 Staging Plan

No	Action	Indicative costing ('000)	Points for consideration
1.0	**STAGE ONE - MAIN VISITOR PRECINCT AND ZONE ONE / TWO PRIORITY WORKS**		
1.1	**Pre Construction -general & precinct based**		
1.1.1	Heritage investigation - property boundaries	$18k	• Specific significance and sequence of boundary lines and owners and relationship to road system • Interpretation potential
1.1.2	Integrated Interpretation and Wayfinding Strategy	$45k $15k	• Develop coordinated approach to interpretation and wayfinding as framework from implementation including text and imagery, elements and detailing
1.1.3	Fencing Audit - zone 1B and 3A - main Visitor Precinct	$22k	• Review all fence lines and identify actions for retention / replacement ($61.5k across all zones)
1.1.4	Design & documentation - Zones 1/2	$161k	• 33% of total allowance for Zones 1/2
1.1.5	Design & documentation - Zone 3 - Main Visitor Precinct	$297k	• 70% of total allowance for Zone 3 including adaptive re-use
1.2	**Zone 1 / 2 - Environmental Management Works**		
1.2.1	Weed management to creeklines - ongoing	$138k	• One third budget for weed management through zones 1-2
1.3	**Zone 1 / 2 - Heritage Management Works**		
1.3.1	Protection and interpretation of remnant chimney in zone 1B	$75k	• Required works and interpretation for guided walks or from adjoining areas
1.3.2	Protection of burial / potential arch'l sites	$10k	• Required works and interpretation for guided walks or from adjoining areas
1.4	**Zone 1 / 2 - Recreational & Infrastructure Works**		
1.4.1	Partial fencing to zone 1	$500k	• 10% of overall fencing (to 10% total of $4,559k for 1/2)
1.4.2	Guided walk establishment / setup including signage in Zone 1	$100k	• Formalisation of approach / management and supporting signage and controls (fencing)
1.5	**Main Visitor Precinct Infrastructure, Heritage, Environment & Recreational & Works**		
1.5.1	Infrastructure and Recreation works excluding building adaptive re-use to zone 3A	$2544.6k	• Formalisation of approach / management and supporting signage and controls (fencing)
1.5.2	Infrastructure and Recreation works - Building adaptive re-use - phase one	$1,996k	• Adaptive re-use works - 50% completed
	Sub Total - Stage One	**$5,921.6k**	
	Total - Stage One works incl Misc / Accel'n	**$6,430.5k**	

7 ACTION PLAN

No	Action	Indicative costing ('000)	Points for consideration
2.0	**STAGE TWO - WESTERN VISITOR PRECINCT AND ZONE ONE / TWO PRIORITY WORKS**		
2.1	**Pre Construction**		
2.1.1	Heritage investigation / survey - Zone 1 B Aboriginal Cultural Heritage (eg Burial site)	$50k	
2.1.2	Heritage investigation - agricultural and ADI landuse	$15k	• Specific significance and sequence of boundary lines and owners and relationship to road system • Interpretation potential
2.1.3	Heritage investigation - creek bridge crossings and past road in north	$20k	
2.1.4	Heritage investigation - Luxford Dairy	$13k	
2.1.5	Heritage investigation - Arch Design and materials options / interpretation - adaptive re-use	$25k	
2.1.6	Fencing Audit - balance of areas	$39.5k	• Review all fence lines and identify actions for retention / replacement
2.1.7	Design & documentation - Zones 1/2	$161k	• 33% of total allowance for Zones 1/2
2.1.8	Design & documentation - Zone 3A - Main Visitor Precinct - building adaptive re-use remaining works from 1.1.4	$128k	
2.1.9	Design & documentation - Zone 3B - Western Visitor Precinct	$105k	
2.2	**Zone 1 / 2 - Environmental Management Works**		
2.2.1	Weed management to zones 1 / 2	$205.5k	• Balance of budget for weed management through zones 1-2
2.3	**Zone 1 / 2 - Heritage Management Works**		
2.3.1	Protection and interpretation of Jacksons Dairy clearing	$30k	• Required works and interpretation for guided walks or from adjoining areas
2.3.2	Protection and interpretation of Jordans Hill house site and cleared area	$100k	• Required works and interpretation for guided walks or from adjoining areas
2.4.5	General interpretation works through zone 1 and 2	$176k	
2.4	**Zone 1 / 2 - Recreational & Infrastructure Works**		
2.4.1	Services & roadworks to zone 1/2 (excl fencing)	$85k	• 50% of Services & roadworks to zone 1/2 (to 50%)
2.4.2	Partial fencing to zone 1/2	$1,500k	• 33% of overall fencing (to 43% total of $4,559k for 1/2)
2.4.3	Pedestrian / cycle link between zones 3A and 3B through zone 1B	$100k	• Formalisation of track link and supporting signage and controls (fencing)
2.4.4	Pedestrian / cycle access works through zone 1 and 2	$819k	• 50% of general access works to zone 1 and 2
2.4.5	Interpretation works through zone 1 and 2	$3k	• Partial completion
2.5	**Main Visitor Precinct Recreational & Infrastructure Works**		
2.5.1	Infrastructure and Recreation works Zone 3A - Building adaptive re-use - phase two	$1,996k	• Adaptive re-use works - 100% completed
2.6	**Western Visitor Precinct Infrastructure, Heritage, Environment & Recreational & Works**		
2.6.1	Infrastructure and Recreation works to zone 3B	$1,616.8k	
	Sub Total - Stage Two	**$7,183.8k**	
	Total - Stage Two works incl cont / Accel'n	**$7,794.5k**	

No	Action	Indicative costing ('000)	Points for consideration
3.0	**STAGE THREE - CENTRAL VISITOR PRECINCT AND ZONE ONE / TWO PRIORITY WORKS**		
3.1	**Pre Construction**		
3.1.1	Heritage investigation - CSIRO research	$15k	
3.1.2	Heritage investigation - Elizabeth King Farmlands	$15k	
3.1.3	Heritage investigation - ADI Bomb Filling	$15k	
3.1.4	Heritage investigation - Dunheved	$40k	
3.1.5	Design & documentation - Zones 1/2	$161k	• 33% of total allowance for Zones 1/2
3.1.6	Design & documentation - Zone 3C - Central Visitor Precinct	$79k	
3.2	**Zone 1 / 2 - Environmental Management Works**		
	No capital works		
3.3	**Zone 1 / 2 - Heritage Management Works**		
3.3.1	Protection and interpretation of Obsolete Storage Area	$20k	• Required works and interpretation for guided walks or from adjoining areas
3.3.2	Protection and interpretation of creek road bridges and past road	$50k	• Required works and interpretation to supplement bridge and track upgrade works
3.3.3	Protection and interpretation of CSIRO research area	$25k	• Required works and interpretation to supplement bridge and track upgrade works
3.3.4	Protection and interpretation of King Farmlands	$15k	• To address adjoining site
3.4	**Zone 1 / 2 - Recreational & Infrastructure Works**		
4.4.1	Services & roadworks to zone 1/2 (excl fencing)	$85k	• 50% of Services & roadworks to zone 1/2 (to 100%)
4.4.2	Partial fencing to zone 1/2	$1,279.5k	• 28% overall fencing (to 71% total of $4,559k for 1/2)
4.4.3	Pedestrian access works through zone 1 and 2	$819k	• 50% of general access works to zone 1 / 2 (to 100%)
3.5	**Central Visitor Precinct Infrastructure, Heritage, Environment & Recreational & Works**		
3.5.1	Infrastructure and Recreation works to zone 3C	$1,210.7k	
	Sub Total - Stage Three	**$3,829.2k**	
	Total - Stage Three works incl cont / Accel'n	**$4,151.5k**	
4.0	**ONGOING WORKS - ZONES 1 / 2 & SECONDARY VISITOR PRECINCTS**		
4.1	**Pre Construction**		
4.1.1	Heritage investigation / survey - Zone 1 B Aboriginal Cultural Heritage (eg Silcrete Quarry)	$25k	
4.1.2	Design & documentation - Zone 3D - South Central Visitor Precinct	$34k	
4.1.3	Design & documentation - Zone 3E - Dunheved Visitor Precinct	$75k	
4.2	**Zone 1 / 2 - Heritage Management Works**		
4.2.1	Protection and interpretation of Silcrete Quarry Area	$20k	• Required works and interpretation for guided walks or from adjoining areas
4.3	**Zone 1 / 2 - Recreational & Infrastructure Works**		
4.3.1	Partial fencing to zone 1/2	$1,279.5k	• 28% overall fencing (to 100% total of $4,559k for 1/2)
4.4	**South Central precinct Infrastructure, Heritage, Environment & Recreational & Works**		
4.4.1	Infrastructure and Recreation works to zone 3D	$1,083.3k	
4.5	**Dunheved precinct Infrastructure, Heritage, Environment & Recreational & Works**		
4.5.1	Infrastructure and Recreation works to zone 3E	$523.7k	
	Sub Total - Ongoing works	**$3,040.5k**	
	Total - Ongoing works incl cont / Accel'n	**$3,294.9k**	

7 ACTION PLAN

7.3 Masterplan Costings

The tables following identify initial costings for masterplan implementation. General preliminaries and pre construction items are identified followed by costings within the proposed sub zones as identified on the diagram below.

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
1.0	**Preliminaries & General Pre Construction items**				
1.1	Masterplan Consultancy		item		$200,000.00
1.2	Heritage Investigation – property boundaries		item		$18,000.00
1.3	Integrated Interpretation Strategy		item		$45,000.00
1.4	Integrated Signage Design		item		$15,000.00
	Sub total (note: excluded from Zone 1 total)				**$278,000.00**

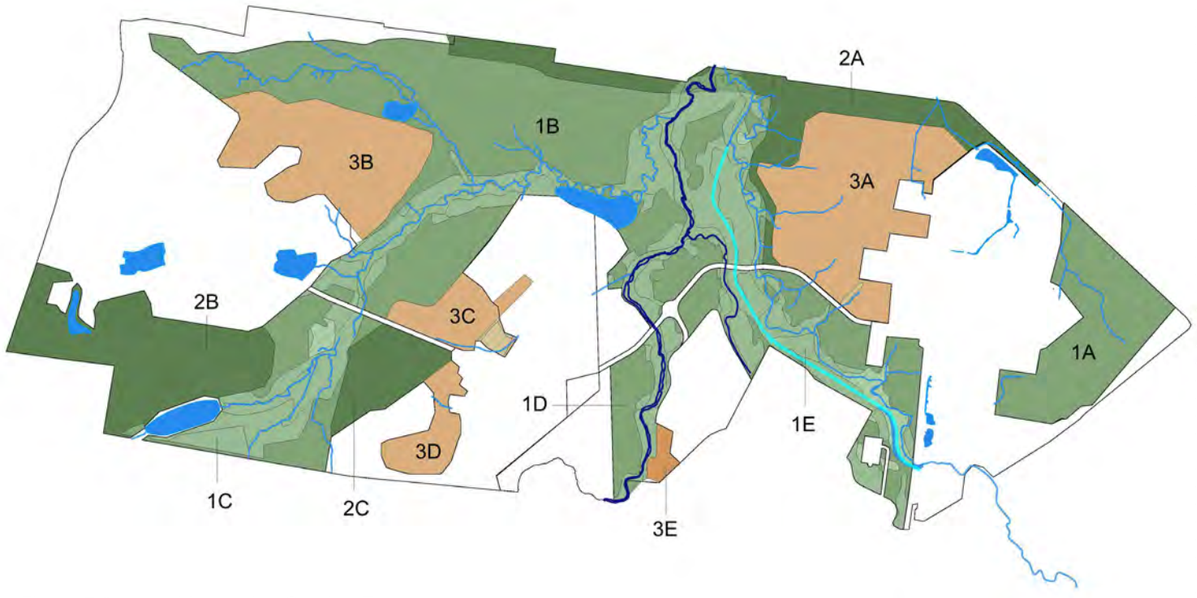


Figure 7.2 Masterplan Costing Zones

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
2.0	**Zone 1: Habitat Focus**				
2.1	**Zone 1A**				
2.1.0	**Pre construction tasks**				
2.1.0.1	Fencing audit – status and recommendations		item		$6,000.00
2.1.0.2	Aboriginal cultural heritage survey of key sites – silcrete quarry site etc		item		$25,000.00
2.1.0.3	Design documentation (6.5% of capital cost)		item		$47,339.24
2.1.0.4	Acceleration (2.5 % total allowance – ongoing implementation)		item		$18,207.40
	Sub total				**$96,546.64**
2.1.1	**Services & infrastructure, fencing & barriers**				
2.1.1.1	Fauna proof security fence 2.1m	4,162	lin/m	$140.00	$582,680.00
2.1.1.2	General Security fence 1.8m		lin/m	$90.00	
	Sub total				**$582,680.00**
2.1.2	**Traffic circulation & parking**				
2.1.2.1	Gravel road resheeting (partial allowance say 10%)	854	m2	$45.00	$38,448.00
2.1.2.2	Upgrade general road drainage (crossovers / swales etc) – allowance for all roads	2,136	lin/m	$20.00	$42,720.00
2.1.2.3	Vehicular entry security gate	1	no	$2,500.00	$2,500.00
	Sub total				**$83,668.00**
3.1.3	**Track and path access**				
3.1.3.1	Crushed sandstone resurfacing / refurbishment (1.2m)	170	m2	$15.00	$2,556.00
3.1.3.2	New crushed sandstone path surfacing 1.2m)	652	m2	$45.00	$29,322.00
3.1.3.3	Upgrade general path drainage (crossovers etc) – allowance for all tracks	690	lin/m	$3.00	$2,070.00
3.1.3.4	Steel and timber bridge link (2.5m wide)		lin/m		
3.1.3.5	Steel and timber boardwalk (1.5m wide)		lin/m		
3.1.3.6	Steel and timber lookout (nom 16m2)		no	$25,000.00	
	Sub total				**$33,948.00**
3.1.4	**Vegetation Management**				
3.1.4.3	Selective weed management through general conservation areas	50,000	m2	$0.10	$5,000.00
3.1.4.2	Weed management through regeneration areas		m2		
3.1.4.3	Revegetation areas		m2		
3.1.4.4	Native grassing		m2		
3.1.4.5	Pasture Grassing		m2		
	Sub total				**$5,000.00**
3.1.5	**Conservation management, Interpretation & Signage**				
3.1.5.1	Major Interpretive totems	1	no	$3,000.00	$3,000.00
3.1.5.2	Secondary Interpretive markers		no		
3.1.5.3	Skillion signage shelter		no		
3.1.5.4	Pedestrian wayfinding signage		no		
3.1.5.5	Place marker signage		no		
3.1.5.6	Conservation / protection works and interpretation to Silcrete Quarry area		item		$20,000.00
	Sub total				**$23,000.00**
3.1.6	**Facilities**				
3.1.6.1	Park seat		no		
3.1.6.2	Table seat		no		
	Sub total				**$0.00**
	Total Zone 1A works				**$728,296.00**
	Total Zone 1A including pre construction works				**$824,842.64**

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ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
2.2	**Zone 1B**				
2.2.0	**Pre construction tasks**				
2.2.0.1	Fencing audit – status and recommendations		item		$18,000.00
2.2.0.2	Design documentation (6.5% of capital cost)		item		$179,594.38
2.1.0.3	Aboriginal cultural heritage survey of key sites – burial site etc		item		$50,000.00
2.1.0.4	Design input / coordination with Water Quallity pond design by developer		item		$5,000.00
2.2.0.5	Acceleration (2.5 % total allowance – ongoing implementation)		no	allowace	$69,074.76
	Sub total				**$321,669.14**
2.2.1	**Services & infrastructure, fencing & barriers**				
2.2.1.1	Fauna proof security fence 2.1m	12,411	lin/m	$140.00	$1,737,540.00
2.2.1.2	General Security fence 1.8m	2,396	lin/m	$90.00	$215,640.00
	Sub total				**$1,953,180.00**
2.2.2	**Traffic circulation & parking**				
2.2.2.1	Gravel road resheeting (partial allowance say 10%)	781	m2	$45.00	$35,154.00
2.2.2.2	Upgrade general road drainage (crossovers / swales etc) – allowance for all roads	1,953	lin/m	$20.00	$39,060.00
2.2.2.3	Vehicular entry security gate	8	no	$750.00	$6,000.00
	Sub total				**$80,214.00**
2.2.3	**Track and path access**				
2.2.3.1	Crushed sandstone resurfacing / refurbishment (1.2m)	11,242	m2	$15.00	$168,624.00
2.2.3.2	New crushed sandstone path surfacing 1.2m)		lin/m	$35.00	$0.00
2.2.3.3	Upgrade general path drainage (crossovers etc) – allowance for all tracks	9,368	lin/m	$3.00	$28,104.00
2.2.3.4	Steel and timber bridge link (2.5m wide)		lin/m		
2.2.3.5	Steel and timber boardwalk (1.5m wide)		lin/m		
2.2.3.6	Steel and timber lookout (nom 16m2)		no	$25,000.00	
2.2.3.7	Additional tasks / works incl signage – setup of east west link through Zone 1B		Item		$100,000.00
	Sub total				**$296,728.00**
2.2.4	**Vegetation Management**				
2.2.4.3	Selective weed management through general conservation areas	912,684	m2	$0.10	$91,268.40
2.2.4.2	Weed management through regeneration areas		m2		
2.2.4.3	Revegetation areas		m2		
2.2.4.4	Native grassing		m2		
2.2.4.5	Pasture Grassing		m2		
	Sub total				**$91,268.40**
2.2.5	**Conservation management, Interpretation & Signage**				
2.2.5.1	Major Interpretive totems	1	no	$3,000.00	$3,000.00
2.2.5.2	Secondary Interpretive markers		no		
2.2.5.3	Skillion signage shelter		no		
2.2.5.4	Pedestrian wayfinding signage	12	no	$300.00	$3,600.00
2.2.5.5	Protective measures to burial site		item		$10,000.00
2.2.5.6	General supplementary interps for guided walks & walk setup		item		$100,000.00
2.2.5.7	Place marker signage		no	incl in 2.2.5.6	
2.2.5.8	Conservation / protection and interpretation of remnant chimney		item		$75,000.00
2.2.5.9	Conservation / protection and interpretation of Jacksons dairy clearing		item		$30,000.00
2.2.5.10	Conservation / protection and interpretation of Jordans Hill remnant house & clearing		item		$100,000.00
2.2.5.11	Conservation / protection and interpretation of obsolete storage area		item		$20,000.00
	Sub total				**$341,600.00**
2.2.6	**Facilities**				
2.2.6.1	Park seat		no		
2.2.6.2	Table seat		no		
	Sub total				**$0.00**
	Total Zone 1B works				**$2,762,990.40**
	Total Zone 1B including pre construction works				**$3,084,659.54**

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
2.3	**Zone 1C**				
2.3.0	**Pre construction tasks**				
2.3.0.1	Fencing audit – status and recommendations		item		$6,000.00
2.3.0.2	Design input / coordination with Water Qaliity pond design by developer		item		$5,000.00
2.3.0.3	Design documentation (6.5% of capital cost)		item		$55,204.86
2.3.0.4	Acceleration (2.5 % total allowance – ongoing implementation)		item		$18,207.40
	Sub total				**$84,412.26**
2.3.1	**Services & infrastructure, fencing & barriers**				
2.3.1.1	Fauna proof security fence 2.1m	4,628	lin/m	$140.00	$647,920.00
2.3.1.2	General Security fence 1.8m		lin/m	$90.00	
	Sub total				**$647,920.00**
2.3.2	**Traffic circulation & parking**				
2.3.2.1	Gravel road resheeting (partial allowance say 10%)	33	m2	$45.00	$1,476.00
2.3.2.2	Upgrade general road drainage (crossovers / swales etc) – allowance for all roads	82	lin/m	$20.00	$1,640.00
2.3.2.3	Vehicular entry security gate	3	no	$750.00	$2,250.00
	Sub total				**$5,366.00**
2.3.3	**Track and path access**				
2.3.3.1	Crushed sandstone resurfacing / refurbt (1.2m)	1,676	m2	$15.00	$25,146.00
2.3.3.2	New crushed sandstone path surfacing 1.2m)	2,315	m2	$45.00	$104,166.00
2.3.3.3	Upgrade general path drainage (crossovers etc) – allowance for all tracks		lin/m	$3.00	
2.3.3.4	Steel and timber bridge link (2.5m wide)		lin/m		
2.3.3.5	Steel and timber boardwalk (1.5m wide)		lin/m		
2.3.3.6	Steel and timber lookout (nom 16m2)		no	$25,000.00	
	Sub total				**$129,312.00**
2.3.4	**Vegetation Management**				
2.3.4.3	Selective weed management through general conservation areas	637,075	m2	$0.10	$63,707.50
2.3.4.2	Weed management through regeneration areas		m2		
2.3.4.3	Revegetation areas		m2		
2.3.4.4	Native grassing		m2		
2.3.4.5	Pasture Grassing		m2		
	Sub total				**$63,707.50**
2.3.5	**Conservation management, Interpretation & Signage**				
2.3.5.1	Major Interpretive totems	1	no	$3,000.00	$3,000.00
2.3.5.2	Secondary Interpretive markers		no		
2.3.5.3	Skillion signage shelter		no		
2.3.5.4	Pedestrian wayfinding signage		no	$300.00	
2.3.5.5	Place marker signage		no		
	Sub total				**$3,000.00**
2.3.6	**Facilities**				
3.1.6.1	Park seat		no		
3.1.6.2	Table seat		no		
	Sub total				**$0.00**
	Total Zone 1C works				**$849,305.50**
	Total Zone 1C including pre construction works				**$933,717.76**

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7.3 Masterplan Costings

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
2.4	**Zone 1D**				
2.4.0	**Pre construction tasks**				
2.4.0.1	Fencing audit – status and recommendations		item		$6,000.00
2.4.0.2	Design documentation (6.5% of capital cost)		item		$27,333.84
2.4.0.4	Acceleration (2.5 % total allowance – ongoing implementation)		item		$10,513.02
	Sub total				**$43,846.85**
2.4.3	**Services & infrastructure, fencing & barriers**				
2.1.1.1	Fauna proof security fence 2.1m	2,681	lin/m	$140.00	$375,340.00
2.1.1.2	General Security fence 1.8m		lin/m	$90.00	
	Sub total				**$375,340.00**
2.4.2	**Traffic circulation & parking**				
2.4.2.1	Gravel road resheeting (partial allowance say 10%)			$15.00	
2.4.2.2	Upgrade general road drainage (crossovers / swales etc) – allowance for all roads		lin/m	$5.00	
2.4.2.3	Vehicular entry security gate			$750.00	
	Sub total				**$0.00**
2.4.3	**Track and path access**				
2.4.3.1	Crushed sandstone resurfacing / refurbishment (1.2m)		lin/m	$15.00	
2.4.3.2	New crushed sandstone path surfacing 1.2m)	312	m2	$45.00	$14,040.00
2.4.3.3	Upgrade general path drainage (crossovers etc) – allowance for all tracks		lin/m	$3.00	
2.4.3.4	Steel and timber bridge link (2.5m wide)		lin/m		
2.4.3.5	Steel and timber boardwalk (1.5m wide)		lin/m		
2.4.3.6	Steel and timber lookout (nom 16m2)		no	$25,000.00	
	Sub total				**$14,040.00**
2.4.4	**Vegetation Management**				
2.4.4.3	Selective weed management through general conservation areas	281,406	m2	$0.10	$28,140.60
2.4.4.2	Weed management through regeneration areas		m2		
2.4.4.3	Revegetation areas		m2		
2.4.4.4	Native grassing		m2		
2.4.4.5	Pasture Grassing		m2		
	Sub total				**$28,140.60**
2.4.5	**Conservation management, Interpretation & Signage**				
2.4.5.1	Major Interpretive totems	1	no	$3,000.00	$3,000.00
2.4.5.2	Secondary Interpretive markers		no		
2.4.5.3	Skillion signage shelter		no		
2.4.5.4	Pedestrian wayfinding signage		no		
2.4.5.5	Place marker signage		no		
	Sub total				**$3,000.00**
2.4.6	**Facilities**				
2.4.6.1	Park seat		no		
2.4.6.2	Table seat		no		
	Sub total				**$0.00**
	Total Zone 1D works				**$420,520.60**
	Total Zone 1D including pre construction works				**$464,367.45**

3.0 Zone 2: Secondary Habitat Focus

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
3.1	**Zone 2A**				
3.1.0	**Pre construction tasks**				
3.1.0.1	Fencing audit – status and recommendations		item		$4,000.00
3.1.0.2	Detailed heritage review – creek bridge crossings and past road		item		$20,000.00
3.1.0.3	Detailed heritage review – Luxford Dairy		item		$13,000.00
3.1.0.4	Design documentation (6.5% of capital cost)		item		$85,637.71
3.1.0.5	Acceleration (2.5 % total allowance – ongoing implementation)		item		$32,937.58
	Sub total				**$155,575.30**
3.1.1	**Services & infrastructure, fencing & barriers**				
3.1.1.1	Stormwater – Open Swales		lin/m		
3.1.1.2	Stormwater – Piped connections		lin/m		
3.1.1.3	Stormwater -headwall / outfall		no		
3.1.1.4	Fauna proof security fence 2.1m		lin/m		
3.1.1.5	General Security fence 1.8m	4,622	lin/m	$90.00	$415,980.00
3.1.1.6	Vehicular entry security gate	3		$750.00	$2,250.00
3.1.1.7	Post & cable vehicular barrier to park perimeter		lin/m		
3.1.1.8	Square bollard to park perimeter		no		
	Sub total				**$418,230.00**
3.1.2	**Traffic circulation & parking**				
3.1.2.1	Post & cable vehicular barrier to road / carpark edge		lin/m		
3.1.2.2	Square bollard to park perimeter to road / carpark edge		lin/m		
	Sub total				**$0.00**
3.1.3	**Track and path access**				
3.1.3.1	Crushed sandstone resurfacing / refurbishment (2.5m)	17,950	m2	$15.00	$269,250.00
3.1.3.2	Crushed sandstone resurfacing / refurbishment (1.2m)		lin/m		$0.00
3.1.3.3	New crushed sandstone path surfacing (2.5m)	1,690	m2	$45.00	$76,050.00
3.1.3.4	New crushed sandstone path surfacing 1.2m)		lin/m		
3.1.3.5	Upgrade general path drainage (crossovers etc) – allowance for all tracks		no		
3.1.3.6	Steel and timber bridge link (2.5m wide)	80	lin/m	$5,000.00	$400,000.00
3.1.3.7	Steel and timber boardwalk (1.5m wide)		lin/m		
3.1.3.8	Steel and timber lookout (nom 16m2)		no	$25,000.00	
3.1.3.9	Entry stockades (trail bike proof) at path heads	3	no	$2,000.00	$6,000.00
	Sub total				**$751,300.00**
3.1.4	**Vegetation Management**				
3.1.4.3	Selective weed management through general conservation areas	821,733	m2	$0.10	$82,173.30
3.1.4.2	Weed management through regeneration areas		m2		
3.1.4.3	Revegetation areas		m2		
3.1.4.4	Native grassing		m2		
	Sub total				**$82,173.30**
3.1.5	**Conservation management, Interpretation & Signage**				
3.1.5.1	Major Interpretive totems	2	no	$3,500.00	$7,000.00
3.1.5.2	Secondary Interpretive markers	4	no	$1,200.00	$4,800.00
3.1.5.3	Skillion signage shelter		no		
3.1.5.4	Pedestrian wayfinding signage	8	no	$500.00	$4,000.00
3.1.5.5	Place marker signage		no		
3.1.5.6	Conservation / protection and interpretation of past road		item		$20,000.00
3.1.5.7	Conservation / protection and interpretation of bridges (see also 3.1.3.6)		item		$30,000.00
	Sub total				**$65,800.00**
3.1.6	**Facilities**				
3.1.6.1	Park seat		no		
	Sub total				**$0.00**
	Total Zone 2A works				**$1,317,503.30**
	Total Zone 2A including pre construction works				**$1,473,078.60**

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ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
3.2	**Zone 2B**				
3.2.0	**Pre construction tasks**				
3.2.0.1	Fencing audit – status and recommendations		item		$5,500.00
3.2.0.2	Detailed heritage review – CSIRO research		item		$15,000.00
3.2.0.3	Design documentation (6.5% of capital cost)		item		$66,902.31
3.1.0.4	Acceleration (2.5 % total allowance – ongoing implementation)		item		$50,625.82
	Sub total				**$138,028.12**
3.2.1	**Services & infrastructure, fencing & barriers**				
3.2.1.1	Stormwater – Open Swales		lin/m		
3.2.1.2	Stormwater – Piped connections		lin/m		
3.2.1.3	Stormwater -headwall / outfall		no		
3.2.1.4	Fauna proof security fence 2.1m		lin/m		
3.2.1.5	General Security fence 1.8m	5,006	lin/m	$90.00	$450,540.00
3.2.1.6	Vehicular entry security gate	3		$2,500.00	$7,500.00
3.2.1.7	Post & cable vehicular barrier to park perimeter		lin/m		
3.2.1.8	Square bollard to park perimeter		no		
	Sub total				**$458,040.00**
3.2.2	**Traffic circulation & parking**				
3.2.2.1	Post & cable vehicular barrier to road / carpark edge		lin/m		
3.2.2.2	Square bollard to park perimeter to road / carpark edge		lin/m		
	Sub total				**$0.00**
3.2.3	**Track and path access**				
3.2.3.1	Crushed sandstone resurfacing / refurbishment (2.5m)	9,423	m2	$15.00	$141,337.50
3.2.3.2	Crushed sandstone resurfacing / refurbishment (1.2m)		lin/m		$0.00
3.2.3.3	New crushed sandstone path surfacing (2.5m)	4,053	m2	$45.00	$182,362.50
3.2.3.4	New crushed sandstone path surfacing 1.2m)		lin/m		
3.2.3.5	Upgrade general path drainage (crossovers etc) – allowance for all tracks		no		
3.2.3.6	Steel and timber bridge link (2.5m wide)	80	lin/m	$2,000.00	$160,000.00
3.2.3.7	Steel and timber boardwalk (1.5m wide)		lin/m		
3.2.3.8	Steel and timber lookout (nom 16m2)		no	$25,000.00	
3.2.3.9	Entry stockades (trail bike proof) at path heads	2	no	$2,000.00	$4,000.00
	Sub total				**$487,700.00**
3.2.4	**Vegetation Management**				
3.2.4.3	Selective weed management through general conservation areas	500,263	m2	$0.10	$50,026.30
3.2.4.2	Weed management through regeneration areas		m2		
3.2.4.3	Revegetation areas		m2		
3.2.4.4	Native grassing		m2		
	Sub total				**$50,026.30**
3.2.5	**Conservation management, Interpretation & Signage**				
3.2.5.1	Major Interpretive totems		no		
3.2.5.2	Secondary Interpretive markers	4	no	$1,500.00	$6,000.00
3.2.5.3	Skillion signage shelter		no		
3.2.5.4	Pedestrian wayfinding signage	5	no	$500.00	$2,500.00
3.2.5.5	Place marker signage		no		
3.2.5.6	Conservation / protection and interpretation of CSIRO Research area		item		$25,000.00
	Sub total				**$33,500.00**
3.2.6	**Facilities**				
3.2.6.1	Park seat		no		
	Sub total				**$0.00**
	Total Zone 2B works				**$1,029,266.30**
	Total Zone 2B including pre construction works				**$1,167,294.42**

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
3.3	**Zone 2C**				
3.3.0	**Pre construction tasks**				
3.3.0.1	Fencing audit - status and recommendations		item		$3,000.00
3.3.0.2	Detailed heritage review - Elizabeth King farmlands		item		$15,000.00
3.3.0.3	Design documentation (6.5% of capital cost)		item		$12,944.94
3.3.0.4	Acceleration (2.5 % total allowance - ongoing implementation)		item		$4,978.82
	Sub total				**$35,923.76**
3.3.1	**Services & infrastructure, fencing & barriers**				
3.3.1.1	Stormwater - Open Swales		lin/m		
3.3.1.2	Stormwater - Piped connections		lin/m		
3.3.1.3	Stormwater -headwall / outfall		no		
3.3.1.4	Fauna proof security fence 2.1m		lin/m		
3.3.1.5	General Security fence 1.8m	1,390	lin/m	$90.00	$125,100.00
3.3.1.6	Vehicular entry security gate	2		$750.00	$1,500.00
3.3.1.7	Post & cable vehicular barrier to park perimeter		lin/m		
3.3.1.8	Square bollard to park perimeter		no		
	Sub total				**$126,600.00**
3.3.2	**Traffic circulation & parking**				
3.3.2.1	Post & cable vehicular barrier to road / carpark edge		lin/m		
3.3.2.2	Square bollard to park perimeter to road / carpark edge		lin/m		
	Sub total				**$0.00**
3.3.3	**Track and path access**				
3.3.3.1	Crushed sandstone resurfacing / refurbishment (2.5m)	1,640	m2	$15.00	$24,600.00
3.3.3.2	Crushed sandstone resurfacing / refurbishment (1.2m)		lin/m		$0.00
3.3.3.3	New crushed sandstone path surfacing (2.5m)		lin/m	$35.00	$0.00
3.3.3.4	New crushed sandstone path surfacing 1.2m)		lin/m		
3.3.3.5	Upgrade general path drainage (crossovers etc) - allowance for all tracks		no		
3.3.3.6	Steel and timber bridge link (2.5m wide)		lin/m	$1,100.00	$0.00
3.3.3.7	Steel and timber boardwalk (1.5m wide)		lin/m		
3.3.3.8	Steel and timber lookout (nom 16m2)		no	$25,000.00	
3.3.3.9	Entry stockades (trail bike proof) at path heads		no	$2,000.00	$0.00
	Sub total				**$24,600.00**
3.3.4	**Vegetation Management**				
3.3.4.3	Selective weed management through general conservation areas	232,529	m2	$0.10	$23,252.90
3.3.4.2	Weed management through regeneration areas		m2		
3.3.4.3	Revegetation areas		m2		
3.3.4.4	Native grassing		m2		
	Sub total				**$23,252.90**
3.3.5	**Conservation management, Interpretation & Signage**				
3.3.5.1	Major Interpretive totems	1	no	$4,000.00	$4,000.00
3.3.5.2	Secondary Interpretive markers	1	no	$1,200.00	$1,200.00
3.3.5.3	Skillion signage shelter		no		$0.00
3.3.5.4	Pedestrian wayfinding signage	5	no	$500.00	$2,500.00
3.3.5.5	Place marker signage	1	no	$2,000.00	$2,000.00
3.3.5.6	Conservation interpretation of King Farmlands adjoining		item		$15,000.00
	Sub total				**$24,700.00**
3.3.6	**Facilities**				
3.3.6.1	Park seat		no		
	Sub total				**$0.00**
	Total Zone 2C works				**$199,152.90**
	Total Zone 2C including pre construction works				**$235,076.66**
	TOTAL ZONE 2				**$2,875,449.68**

7 ACTION PLAN

7.3 Masterplan Costings

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
4.1	**Zone 3A**				
4.1.0	**Pre construction tasks**				
4.1.0.1	Fencing audit – status and recommendations		item		$4,000.00
4.1.0.2	Detailed heritage review – buildings for adaptive re-use		item		$25,000.00
4.1.0.3	Design documentation (6.5% of capital cost)		item		$424,844.99
4.1.0.4	Acceleration (2.5 % total allowance – ongoing implementation)		item		$163,401.92
	Sub total				**$617,246.90**
4.1.1	**Services & infrastructure, fencing & barriers**				
4.1.1.1	Power connection / control		item		$50,000.00
4.1.1.2	Power reticulation	1,500	lin/m	$75.00	$112,500.00
4.1.1.3	Sewer connection		item		$30,000.00
4.1.1.4	Sewer reticulation	855	lin/m	$120.00	$102,600.00
4.1.1.5	Stormwater – Open Swales	1,500	lin/m	$10.00	$15,000.00
4.1.1.6	Stormwater – Piped connections	200	lin/m	$85.00	$17,000.00
4.1.1.7	Stormwater -headwall / outfall	2	no	$1,500.00	$3,000.00
4.1.1.8	Telecommunications connection		item		
4.1.1.9	Telecommunications cabling	855	lin/m	$100.00	$85,500.00
4.1.1.10	Fauna proof security fence 2.1m		lin/m	$140.00	$0.00
4.1.1.11	General Security fence 1.8m	3,190	lin/m	$90.00	$287,100.00
4.1.1.12	Post & cable vehicular barrier to park perimeter	1,588	lin/m	$100.00	$158,800.00
4.1.1.13	Square bollard to park perimeter		no	$60.00	$0.00
4.1.1.14	Pedestrian security gate	3	no	$750.00	$2,250.00
	Sub total				**$863,750.00**
4.1.2	**Traffic circulation & parking**				
4.1.2.1	Asphalt road resheeting (partial allowance say 10%)	2,000	lin/m	$25.00	$50,000.00
4.1.2.2	Gravel road resheeting (partial allowance say 10%)	1,500	lin/m	$15.00	$22,500.00
4.1.2.3	Upgrade general road drainage (crossovers / swales etc) – allowance for all roads	4,000	lin/m	$50.00	$200,000.00
4.1.2.4	Vehicular entry security gate		no	$750.00	
4.1.2.5	Carpark two coat seal		m2	$75.00	
4.1.2.6	Carpark crushed sandstone surface	1,800	m2	$40.00	$72,000.00
4.1.2.7	Wheelstop to parking space (recycled plastic or concrete)	80	no	$20.00	$1,600.00
4.1.2.8	Post & cable vehicular barrier to road / carpark edge	1,000	lin/m	$100.00	$100,000.00
4.1.2.9	Square bollard to park perimeter to road / carpark edge	200	lin/m	$60.00	$12,000.00
4.1.2.10	Feature entry gate	2	lin/m	$5,000.00	$10,000.00
	Sub total				**$468,100.00**
4.1.3	**Track and path access**				
4.1.3.1	Crushed sandstone resurfacing / refurbishment (2.5m)	7,605	m2	$15.00	$114,075.00
4.1.3.2	Crushed sandstone resurfacing / refurbishment (1.2m)		lin/m		
4.1.3.3	New crushed sandstone path surfacing (2.5m)	5,330	m2	$45.00	$239,850.00
4.1.3.4	New crushed sandstone path surfacing 1.2m)		lin/m		
4.1.3.5	Upgrade general path drainage (crossovers etc) – allowance for all tracks	5,100	lin/m	$6.00	$30,600.00
4.1.3.6	Steel and timber bridge link (2.5m wide)		lin/m		
4.1.3.7	Steel and timber boardwalk (1.5m wide)	116	lin/m	$1,100.00	$127,600.00
4.1.3.8	Steel and timber lookout (nom 16m2)	1	no	$25,000.00	$25,000.00
4.1.3.9	Enrty stockades (trail bike proof) at path heads	5	no	$2,000.00	$10,000.00
	Sub total				**$547,125.00**
4.1.4	**Vegetation Management**				
4.1.4.3	Selective weed management through general conservation areas	636,585	m2	$0.10	$63,658.50
4.1.4.2	Weed management through regeneration areas	43,341	m2	$0.20	$8,668.20
4.1.4.3	Revegetation areas	6,487	m2	$25.00	$162,175.00
4.1.4.4	Native grassing (15% of cleared areas 54107m2)	8,100	m2	$12.00	$97,200.00
4.1.4.5	Pasture Grassing (10% of cleared areas 54107m2)	5,400	m2	$3.00	$16,200.00
4.1.4.6	Spot tree planting (15% of cleared areas 54107m2)	100	no	$12.00	$1,200.00
4.1.4.7	Recreational grassed areas (10% of cleared areas 54107m2)	5,400	m2	$13.00	$70,200.00
	Sub total				**$419,301.70**
4.1.5	**Conservation management, Interpretation & Signage**				
4.1.5.1	Major Interpretive totems	2	no	$4,000.00	$8,000.00
4.1.5.2	Secondary Interpretive markers	8	no	$1,000.00	$8,000.00
4.1.5.3	Skillion signage shelter		no		$0.00
4.1.5.4	Vehicular wayfinding signage	8	no	$300.00	$2,400.00
4.1.5.5	Pedestrian wayfinding signage		no	$500.00	$0.00
4.1.5.6	Place marker signage	4	no	$750.00	$3,000.00
4.1.5.7	Conservation and interpretation of ADI Armaments Filling		item		$225,000.00
	Sub total				**$246,400.00**
4.1.6	**Facilities**				
4.1.6.1	Park single shelters with picnic table	14	no	$11,000.00	$154,000.00
4.1.6.2	Park single shelters with BBQ	8	no	$12,000.00	$96,000.00
4.1.6.3	Park double shelters with picnic tables	3	no	$20,000.00	$60,000.00
4.1.6.4	Park double shelters with BBQ	1	no	$22,000.00	$22,000.00
4.1.6.5	Skillion quad toilet block		no	$30,000.00	$0.00
4.1.6.6	Picnic table	8	no	$1,500.00	$12,000.00
4.1.6.7	Park seat	16	no	$1,000.00	$16,000.00
4.1.6.8	Table seat	8	no	$800.00	$6,400.00
4.1.6.9	Visitors Centre refurbishment Hulk (2 storey) 676m2 Western building 606m2	1	item	$3,000,000.00	$3,000,000.00
4.1.6.10	Transit Store (x2) refurbishment for adaptive re-use Each building ....m2 x 2 = ...m2	1	item	$500,000.00	$500,000.00
4.1.6.11	Transit Store refurbishment for NPWS depot m2	1	item	$125,000.00	$125,000.00
	Sub total				**$3,991,400.00**
	Total Zone 3A				**$6,536,076.70**
	Total Zone 3A including pre construction works				**$7,153,323.60**

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
4.2	**Zone 3B**				
4.2.0	**Pre construction tasks**				
4.2.0.1	Fencing audit – status and recommendations		item		$4,000.00
4.2.0.2	Detailed heritage review – Agricultural and ADI Landuse		item		$15,000.00
4.2.0.3	Design documentation (6.5% of capital cost)		item		$105,094.89
4.2.0.4	Acceleration (5 % total allowance – ongoing implementation)		item		$80,842.23
	Sub total				**$204,937.12**
4.2.1	**Services & infrastructure, fencing & barriers**				
4.2.1.1	Power connection / control		item		$20,000.00
4.2.1.2	Power reticulation		lin/m	$75.00	
4.2.1.3	Sewer connection and reticulation		item		
4.2.1.4	Sewer reticulation (for recycled toilets)	376	lin/m	$120.00	$45,120.00
4.2.1.5	Stormwater – Open Swales	650	lin/m	$40.00	$26,000.00
4.2.1.6	Stormwater – Piped connections		lin/m	$85.00	$0.00
4.2.1.7	Stormwater -headwall / outfall	2	no	$3,000.00	$6,000.00
4.2.1.8	Telecommunications connection		item		
4.2.1.9	Telecommunications cabling		lin/m	$100.00	
4.2.1.10	Fauna proof security fence 2.1m		lin/m	$140.00	$0.00
4.2.1.11	General Security fence 1.8m	676	lin/m	$90.00	$60,840.00
4.2.1.12	Post & cable vehicular barrier to park perimeter	1,921	lin/m	$100.00	$192,100.00
4.2.1.13	Square bollard to park perimeter		no	$60.00	$0.00
4.2.1.14	Pedestrian security gate		no	$500.00	$0.00
	Sub total				**$350,060.00**
4.2.2	**Traffic circulation & parking**				
4.2.2.1	Asphalt road resheeting (partial allowance say 10%)	500	lin/m	$25.00	$12,500.00
4.2.2.2	Gravel road resheeting (partial allowance say 10%)	701	m2	$45.00	$31,545.00
4.2.2.3	Upgrade general road drainage (crossovers / swales etc) – allowance for all roads	1,000	lin/m	$50.00	$50,000.00
4.2.2.4	Vehicular entry security gate	2	no	$750.00	$1,500.00
4.2.2.5	Carpark two coat seal	500	m2	$75.00	$37,500.00
4.2.2.6	Carpark crushed sandstone surface	1,800	m2	$40.00	$72,000.00
4.2.2.7	Wheelstop to parking space (recycled plastic or concrete)	80	no	$20.00	$1,600.00
4.2.2.8	Post & cable vehicular barrier to road / carpark edge	750	lin/m	$100.00	$75,000.00
4.2.2.9	Square bollard to park perimeter to road / carpark edge	100	lin/m	$60.00	$6,000.00
4.2.2.10	Feature entry gate	2	lin/m	$5,000.00	$10,000.00
	Sub total				**$297,645.00**
4.2.3	**Track and path access**				
4.2.3.1	Crushed sandstone resurfacing / refurbishment (2.5m)	5,748	m2	$15.00	$86,212.50
4.2.3.2	Crushed sandstone resurfacing / refurbishment (1.2m)		lin/m		
4.2.3.3	New crushed sandstone path surfacing (2.5m)	6,030	m2	$45.00	$271,350.00
4.2.3.4	New crushed sandstone path surfacing 1.2m)		lin/m		
4.2.3.5	Upgrade general path drainage (crossovers etc) – allowance for all tracks	4,600	lin/m	$6.00	$27,600.00
4.2.3.6	Steel and timber bridge link (2.5m wide)		lin/m		
4.2.3.7	Steel and timber boardwalk (1.5m wide)		lin/m	$1,100.00	$0.00
4.2.3.8	Steel and timber lookout (nom 16m2)		no	$25,000.00	$0.00
4.2.3.9	Enrty stockades (trail bike proof) at path heads	5	no	$2,000.00	$10,000.00
	Sub total				**$395,162.50**
4.2.4	**Vegetation Management**				
4.2.4.3	Selective weed management through general conservation areas	375,220	m2	$0.10	$37,522.00
4.2.4.2	Weed management through regeneration areas		m2	$0.20	$0.00
4.2.4.3	Revegetation areas	6,099	m2	$25.00	$152,475.00
4.2.4.4	Native grassing (15% of cleared areas 13877m2)	2,000	m2	$12.00	$24,000.00
4.2.4.5	Pasture Grassing (10% of cleared areas 13877m2)	1,380	m2	$3.00	$4,140.00
4.2.4.6	Spot tree planting (15% of cleared areas 13877m2)	2,000	no	$12.00	$24,000.00
4.2.4.7	Recreational grassed areas (10% of cleared areas 54107m2)	1,380	m2	$13.00	$17,940.00
	Sub total				**$260,077.00**
4.2.5	**Conservation management, Interpretation & Signage**				
4.2.5.1	Major Interpretive totems	2	no	$4,000.00	$8,000.00
4.2.5.2	Secondary Interpretive markers	6	no	$1,000.00	$6,000.00
4.2.5.3	Skillion signage shelter		no		$0.00
4.2.5.4	Vehicular wayfinding signage	4	no	$300.00	$1,200.00
4.2.5.5	Pedestrian wayfinding signage	12	no	$500.00	$6,000.00
4.2.5.6	Place marker signage	2	no	$750.00	$1,500.00
4.2.5.7	Conservation and interpretation of ADI and Agricultural history		item		$130,000.00
	Sub total				**$152,700.00**
4.2.6	**Facilities**				
4.2.6.1	Park single shelters with picnic table	4	no	$11,000.00	$44,000.00
4.2.6.2	Park single shelters with BBQ	1	no	$12,000.00	$12,000.00
4.2.6.3	Park double shelters with picnic tables	2	no	$20,000.00	$40,000.00
4.2.6.4	Park double shelters with BBQ	1	no	$22,000.00	$22,000.00
4.2.6.5	Skillion quad toilet block	1	no	$30,000.00	$30,000.00
4.2.6.6	Picnic table	4	no	$1,500.00	$6,000.00
4.2.6.7	Park seat	4	no	$1,000.00	$4,000.00
4.2.6.8	Table seat	4	no	$800.00	$3,200.00
	Sub total				**$161,200.00**
	Total Zone 3B				**$1,616,844.50**
	Total Zone 3B including pre construction works				**$1,821,781.62**

7 ACTION PLAN

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
4.3	**Zone 3C**				
4.3.0	**Pre construction tasks**				
4.3.0.1	Fencing audit – status and recommendations		item		$2,000.00
4.3.0.2	Detailed heritage review – ADI Bomb Filling		item		$15,000.00
4.3.0.3	Design documentation (6.5% of capital cost)		item		$78,696.28
4.3.0.4	Acceleration (7.5 % total allowance – ongoing implementation)		item		$90,803.40
	Sub total				**$186,499.68**
4.3.1	**Services & infrastructure, fencing & barriers**				
4.3.1.1	Power connection / control		item		
4.3.1.2	Power reticulation		lin/m	$75.00	
4.3.1.3	Sewer connection and reticulation		item		
4.3.1.4	Sewer reticulation (for recycled toilets)	376	lin/m	$120.00	$45,120.00
4.3.1.5	Stormwater – Open Swales	650	lin/m	$40.00	$26,000.00
4.3.1.6	Stormwater – Piped connections		lin/m	$85.00	
4.3.1.7	Stormwater -headwall / outfall	2	no	$3,000.00	$6,000.00
4.3.1.8	Telecommunications connection		item		
4.3.1.9	Telecommunications cabling		lin/m	$100.00	
4.3.1.10	Fauna proof security fence 2.1m		lin/m	$140.00	$0.00
4.3.1.11	General Security fence 1.8m	2,062	lin/m	$90.00	$185,580.00
4.3.1.12	Post & cable vehicular barrier to park perimeter		lin/m	$100.00	$0.00
4.3.1.13	Square bollard to park perimeter		no	$60.00	$0.00
4.3.1.14	Pedestrian security gate	2	no	$500.00	$1,000.00
	Sub total				**$263,700.00**
4.3.2	**Traffic circulation & parking**				
4.3.2.1	Asphalt road resheeting (partial allowance say 10%)	324	m2	$45.00	$14,562.00
4.3.2.2	Gravel road resheeting (partial allowance say 10%)	200	lin/m	$50.00	$10,000.00
4.3.2.3	Upgrade general road drainage (crossovers / swales etc) – allowance for all roads	500	no	$50.00	$25,000.00
4.3.2.4	Vehicular entry security gate	3	m2	$750.00	$2,250.00
4.3.2.5	Carpark two coat seal	0	m2	$40.00	$0.00
4.3.2.6	Carpark crushed sandstone surface	900	no	$20.00	$18,000.00
4.3.2.7	Wheelstop to parking space (recycled plastic or concrete)	40	no	$20.00	$800.00
4.3.2.8	Post & cable vehicular barrier to road / carpark edge	100	lin/m	$100.00	$10,000.00
4.3.2.9	Square bollard to park perimeter to road / carpark edge	100	lin/m	$60.00	$6,000.00
4.3.2.10	Feature entry gate	1	no	$5,000.00	$5,000.00
	Sub total				**$91,612.00**
4.3.3	**Track and path access**				
4.3.3.1	Crushed sandstone resurfacing / refurbishment (2.5m)	440	m2	$15.00	$6,600.00
4.3.3.2	Crushed sandstone resurfacing / refurbishment (1.2m)		lin/m		
4.3.3.3	New crushed sandstone path surfacing (2.5m)	1,598	m2	$45.00	$71,887.50
4.3.3.4	New crushed sandstone path surfacing 1.2m)		lin/m		
4.3.3.5	Upgrade general path drainage (crossovers etc) – allowance for all tracks	800	lin/m	$6.00	$4,800.00
4.3.3.6	Steel and timber bridge link (2.5m wide)		lin/m		
4.3.3.7	Steel and timber boardwalk (1.5m wide)	100	lin/m	$1,750.00	$175,000.00
4.3.3.8	Steel and timber lookout (nom 16m2)	1	no	$25,000.00	$25,000.00
4.3.3.9	Enrty stockades (trail bike proof) at path heads	2	no	$2,000.00	$4,000.00
	Sub total				**$287,287.50**
4.3.4	**Vegetation Management**				
4.3.4.3	Selective weed management through general conservation areas	190,045	m2	$0.10	$19,004.50
4.3.4.2	Weed management through regeneration areas		m2	$0.20	$0.00
4.3.4.3	Revegetation areas	548	m2	$25.00	$13,700.00
4.3.4.4	Native grassing (15% of cleared areas 4180m2)	630	m2	$12.00	$7,560.00
4.3.4.5	Pasture Grassing (10% of cleared areas 4180m2)	418	m2	$3.00	$1,254.00
4.3.4.6	Spot tree planting (15% of cleared areas 4180m2)	630	no	$12.00	$7,560.00
4.3.4.7	Recreational grassed areas (10% of cleared areas 4180m2)	418	m2	$13.00	$5,434.00
	Sub total				**$54,512.50**
4.3.5	**Conservation management, Interpretation & Signage**				
4.3.5.1	Major Interpretive totems	1	no	$4,000.00	$4,000.00
4.3.5.2	Secondary Interpretive markers	4	no	$1,000.00	$4,000.00
4.3.5.3	Skillion signage shelter	1	no	$8,000.00	$8,000.00
4.3.5.4	Vehicular wayfinding signage	3	no	$300.00	$900.00
4.3.5.5	Pedestrian wayfinding signage	4	no	$500.00	$2,000.00
4.3.5.6	Place marker signage	2	no	$750.00	$1,500.00
4.2.5.7	Conservation and interpretation of ADI history		item		$90,000.00
	Sub total				**$110,400.00**
4.3.6	**Facilities**				
4.3.6.1	Park single shelters with picnic table		no	$11,000.00	$0.00
4.3.6.2	Park single shelters with BBQ		no	$12,000.00	$0.00
4.3.6.3	Park double shelters with picnic tables		no	$20,000.00	$0.00
4.3.6.4	Park double shelters with BBQ		no	$22,000.00	$0.00
4.3.6.5	Skillion quad toilet block		no	$30,000.00	$0.00
4.3.6.6	Picnic table		no	$1,500.00	$0.00
4.3.6.7	Park seat		no	$1,000.00	$0.00
4.3.6.8	Table seat	4	no	$800.00	$3,200.00
4.3.6.9	Nursery establishment	1	item	$400,000.00	$400,000.00
	Sub total				**$403,200.00**
	Total Zone 3C				**$1,210,712.00**
	Total Zone 3C including pre construction works				**$1,397,211.68**

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
4.4	**Zone 3D**				
4.4.0	**Pre construction tasks**				
4.4.0.1	Fencing audit – status and recommendations		item		$2,000.00
4.4.0.2	Detailed heritage review – Elizabeth King Farmlands		item		$15,000.00
4.4.0.3	Design documentation (6.5% of capital cost)		item		$34,040.21
4.4.0.4	Acceleration (10 % total allowance – ongoing implementation)		item		$52,369.56
	Sub total				**$103,409.77**
4.4.1	**Services & infrastructure, fencing & barriers**				
4.4.1.1	Power connection / control		item		
4.4.1.2	Power reticulation		lin/m	$75.00	
4.4.1.3	Sewer connection and reticulation		item		
4.4.1.4	Sewer reticulation (for recycled toilets)		lin/m	$120.00	
4.4.1.5	Stormwater – Open Swales	300	lin/m	$40.00	$12,000.00
4.4.1.6	Stormwater – Piped connections		lin/m	$85.00	
4.4.1.7	Stormwater -headwall / outfall		no	$1,500.00	
4.4.1.8	Telecommunications connection		item		
4.4.1.9	Telecommunications cabling		lin/m	$100.00	
4.4.1.10	Fauna proof security fence 2.1m		lin/m	$140.00	$0.00
4.4.1.11	General Security fence 1.8m		lin/m	$90.00	$0.00
4.4.1.12	Post & cable vehicular barrier to park perimeter	2,084	lin/m	$100.00	$208,400.00
4.4.1.13	Square bollard to park perimeter		no	$60.00	$0.00
4.4.1.14	Pedestrian security gate	2	no	$750.00	$1,500.00
	Sub total				**$221,900.00**
4.4.2	**Traffic circulation & parking**				
4.4.2.1	Asphalt road resheeting (partial allowance say 10%)		lin/m	$25.00	$0.00
4.4.2.2	Gravel road resheeting (partial allowance say 10%)	13	m2	$45.00	$576.00
4.4.2.3	Upgrade general road drainage (crossovers / swales etc) – allowance for all roads		lin/m		
4.4.2.4	Vehicular entry security gate	1	no	$2,000.00	$2,000.00
4.4.2.5	Carpark two coat seal		m2	$75.00	
4.4.2.6	Carpark crushed sandstone surface		m2	$40.00	
4.4.2.7	Wheelstop to parking space (recycled plastic or concrete)		no	$20.00	
4.4.2.8	Post & cable vehicular barrier to road / carpark edge		lin/m	$100.00	
4.4.2.9	Square bollard to park perimeter to road / carpark edge		lin/m	$60.00	
4.4.2.10	Feature entry gate	2	lin/m	$5,000.00	$10,000.00
	Sub total				**$12,576.00**
4.4.3	**Track and path access**				
4.4.3.1	Crushed sandstone resurfacing / refurbishment (2.5m)	810	m2	$15.00	$12,150.00
4.4.3.2	Crushed sandstone resurfacing / refurbishment (1.2m)		lin/m		
4.4.3.3	New crushed sandstone path surfacing (2.5m)	2,200	m2	$45.00	$99,000.00
4.4.3.4	New crushed sandstone path surfacing 1.2m)		lin/m		
4.4.3.5	Upgrade general path drainage (crossovers etc) – allowance for all tracks	1,100	lin/m	$20.00	$22,000.00
4.4.3.6	Steel and timber bridge link (2.5m wide)		lin/m		
4.4.3.7	Steel and timber boardwalk (1.5m wide)		lin/m	$1,100.00	$0.00
4.4.3.8	Steel and timber lookout (nom 16m2)		no	$25,000.00	$0.00
4.4.3.9	Enrty stockades (trail bike proof) at path heads	3	no	$2,000.00	$6,000.00
	Sub total				**$139,150.00**
4.4.4	**Vegetation Management**				
4.4.4.3	Selective weed management through general conservation areas	135,296	m2	$0.10	$13,529.60
4.4.4.2	Weed management through regeneration areas		m2	$0.20	$0.00
4.4.4.3	Revegetation areas	548	m2	$25.00	$13,700.00
4.4.4.4	Native grassing (15% of cleared areas 83500m2)	1,245	m2	$12.00	$14,940.00
4.4.4.5	Pasture Grassing (10% of cleared areas 83500m2)	8,300	m2	$3.00	$24,900.00
4.4.4.6	Spot tree planting (15% of cleared areas 83500m2)	630	no	$12.00	$7,560.00
4.4.4.7	Recreational grassed areas (10% of cleared areas 83500m2)	830	m2	$13.00	$10,790.00
	Sub total				**$85,419.60**
4.4.5	**Conservation management, Interpretation & Signage**				
4.4.5.1	Major Interpretive totems	1	no	$4,000.00	$4,000.00
4.4.5.2	Secondary Interpretive markers	2	no	$1,000.00	$2,000.00
4.4.5.3	Skillion signage shelter		no		$0.00
4.4.5.4	Vehicular wayfinding signage		no	$300.00	$0.00
4.4.5.5	Pedestrian wayfinding signage	3	no	$500.00	$1,500.00
4.4.5.6	Place marker signage	1	no	$750.00	$750.00
4.4.5.7	Conservation and interpretation of Elizabeth King farmlands		item		$20,000.00
	Sub total				**$28,250.00**
4.4.6	**Facilities**				
4.4.6.1	Park single shelters with picnic table	2	no	$11,000.00	$22,000.00
4.4.6.2	Park single shelters with BBQ	1	no	$12,000.00	$12,000.00
4.4.6.3	Park double shelters with picnic tables		no	$20,000.00	$0.00
4.4.6.4	Park double shelters with BBQ		no	$22,000.00	$0.00
4.4.6.5	Skillion quad toilet block		no	$30,000.00	$0.00
4.4.6.6	Picnic table		no	$1,500.00	$0.00
4.4.6.7	Park seat		no	$1,000.00	$0.00
4.4.6.8	Table seat	3	no	$800.00	$2,400.00
	Sub total				**$36,400.00**
	Total Zone 3D				**$523,695.60**
	Total Zone 3D including pre construction works				**$627,105.37**

7 ACTION PLAN

7.3 Masterplan Costings

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
4.5	**Zone 3E**				
4.5.0	**Pre construction tasks**				
4.5.0.1	Fencing audit – status and recommendations		item		$1,000.00
4.5.0.2	Detailed heritage review – Dunheved		item		$40,000.00
4.5.0.3	Design documentation (6.5% of capital cost)		item		$70,415.54
4.5.0.4	Acceleration (12.5 % total allowance – ongoing implementation)		item		$135,414.50
	Sub total				**$246,830.04**
4.5.1	**Services & infrastructure, fencing & barriers**				
4.5.1.1	Power connection / control		item		$20,000.00
4.5.1.2	Power reticulation	100	lin/m	$75.00	$7,500.00
4.5.1.3	Sewer connection and reticulation		item		
4.5.1.4	Sewer reticulation	20	lin/m	$120.00	$2,400.00
4.5.1.5	Stormwater – Open Swales	300	lin/m	$40.00	$12,000.00
4.5.1.6	Stormwater – Piped connections		lin/m	$85.00	
4.5.1.7	Stormwater -headwall / outfall	2	no	$1,500.00	$3,000.00
4.5.1.8	Telecommunications connection		item		
4.5.1.9	Telecommunications cabling		lin/m	$100.00	
4.5.1.10	Fauna proof security fence 2.1m		lin/m	$140.00	$0.00
4.5.1.11	General Security fence 1.8m		lin/m	$90.00	$0.00
4.5.1.12	Post & cable vehicular barrier to park perimeter	2,084	lin/m	$100.00	$208,400.00
4.5.1.13	Square bollard to park perimeter		no	$60.00	$0.00
4.5.1.14	Pedestrian security gate	2	no	$750.00	$1,500.00
	Sub total				**$254,800.00**
4.5.2	**Traffic circulation & parking**				
4.5.2.1	Asphalt road resheeting (partial allowance say 10%)		lin/m	$25.00	$0.00
4.5.2.2	Gravel road resheeting (partial allowance say 10%)	13	m2	$45.00	$576.00
4.5.2.3	Upgrade general road drainage (crossovers / swales etc) – allowance for all roads		lin/m		
4.5.2.4	Vehicular entry security gate	1	no	$2,000.00	$2,000.00
4.5.2.5	Carpark asphalt seal	195	m2	$50.00	$9,750.00
4.5.2.6	Carpark crushed sandstone surface		m2	$40.00	
4.5.2.7	Wheelstop to parking space (recycled plastic or concrete)	12	no	$450.00	$5,400.00
4.5.2.8	Post & cable vehicular barrier to road / carpark edge	120	lin/m	$100.00	$12,000.00
4.5.2.9	Square bollard to park perimeter to road / carpark edge	50	lin/m	$60.00	$3,000.00
4.5.2.10	Feature entry gate	1	lin/m	$5,000.00	$5,000.00
	Sub total				**$37,726.00**
4.5.3	**Track and path access**				
4.5.3.1	Crushed sandstone resurfacing / refurbishment (2.5m)	810	m2	$15.00	$12,150.00
4.5.3.2	Crushed sandstone resurfacing / refurbishment (1.2m)		lin/m		
4.5.3.3	New crushed sandstone path surfacing (2.5m)	2,200	m2	$45.00	$99,000.00
4.5.3.4	New crushed sandstone path surfacing 1.2m)		lin/m		
4.5.3.5	Upgrade general path drainage (crossovers etc) – allowance for all tracks	1,100	lin/m	$20.00	$22,000.00
4.5.3.6	Steel and timber bridge link (2.5m wide)	120	lin/m	$2,000.00	$240,000.00
4.5.3.7	Steel and timber boardwalk (1.5m wide)	50	lin/m	$1,750.00	$87,500.00
4.5.3.8	Steel and timber lookout (nom 16m2)		no	$25,000.00	$0.00
4.5.3.9	Enrty stockades (trail bike proof) at path heads	3	no	$2,000.00	$6,000.00
	Sub total				**$466,650.00**
4.5.4	**Vegetation Management**				
4.5.4.3	Selective weed management through general conservation areas (Riparian Zone)	20,000	m2	$0.50	$10,000.00
4.5.4.2	Weed management through regeneration areas		m2	$0.20	$0.00
4.5.4.3	Revegetation areas	548	m2	$25.00	$13,700.00
4.5.4.4	Native grassing (15% of cleared areas 83500m2)	1,245	m2	$12.00	$14,940.00
4.5.4.5	Pasture Grassing (10% of cleared areas 83500m2)	8,300	m2	$3.00	$24,900.00
4.5.4.6	Spot tree planting (15% of cleared areas 83500m2)	630	no	$12.00	$7,560.00
4.5.4.7	Recreational grassed areas (10% of cleared areas 83500m2)	830	m2	$13.00	$10,790.00
	Sub total				**$81,890.00**
4.5.5	**Conservation management, Interpretation & Signage**				
4.5.5.1	Major Interpretive totems	1	no	$4,000.00	$4,000.00
4.5.5.2	Secondary Interpretive markers	4	no	$1,000.00	$4,000.00
4.5.5.3	Skillion signage shelter	1	no	$11,000.00	$11,000.00
4.5.5.4	Vehicular wayfinding signage	1	no	$300.00	$300.00
4.5.5.5	Pedestrian wayfinding signage	4	no	$500.00	$2,000.00
4.5.5.6	Place marker signage	1	no	$750.00	$750.00
4.5.5.7	Conservation and interpretation of Elizabeth King farmlands		item		$150,000.00
	Sub total				**$172,050.00**
4.5.6	**Facilities**				
4.5.6.1	Park single shelters with picnic table	2	no	$11,000.00	$22,000.00
4.5.6.2	Park single shelters with BBQ	1	no	$12,000.00	$12,000.00
4.5.6.3	Park double shelters with picnic tables		no	$20,000.00	$0.00
4.5.6.4	Park double shelters with BBQ		no	$22,000.00	$0.00
4.5.6.5	Skillion quad toilet block	1	no	$30,000.00	$30,000.00
4.5.6.6	Picnic table	2	no	$1,500.00	$3,000.00
4.5.6.7	Park seat		no	$1,000.00	$0.00
4.5.6.8	Table seat	4	no	$800.00	$3,200.00
4.5.6.9	**Sub total**				**$70,200.00**
	Total Zone 3E				**$1,083,316.00**
	Total Zone 3E including pre construction works				**$1,330,146.04**

ITEM	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL
	TOTAL Preliminaries & General Pre Construction items				**$278,000.00**
	TOTAL ZONE 1				**$6,406,455.14**
	TOTAL ZONE 2				**$2,875,449.68**
	TOTAL ZONE 3				**$12,329,568.31**
	OVERALL TOTAL ZONE 1,2,3				**$21,889,473.13**

8.0 BIBLIOGRAPHY

8 BIBLIOGRAPHY

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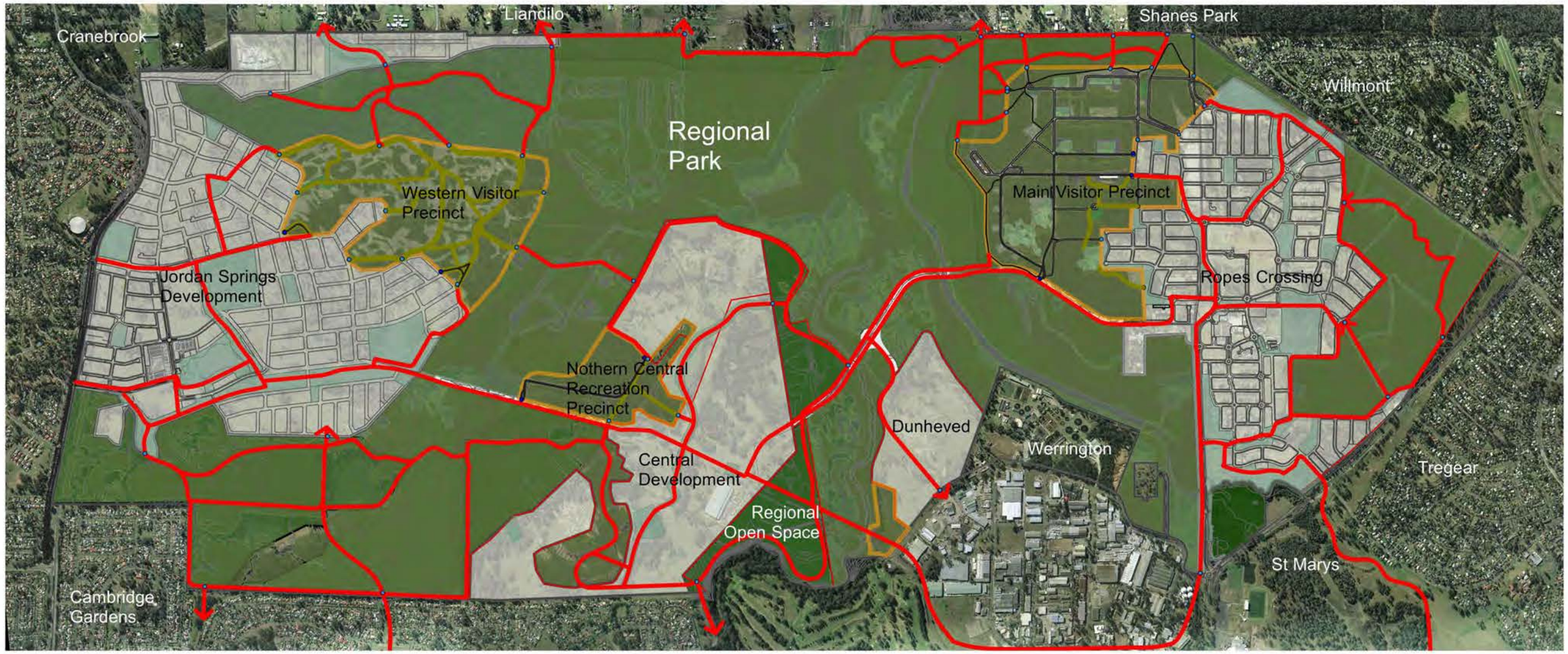

LEGEND

- Boundary recreation zone 3
- Zone1 : Habitat Focus - restricted access
- Zone 2 : Secondary Habitat Focus - controlled access
- Adjoining Development
- Open Space in Development
- Regional Open Space
- Existing Vegetation Habitat
- Proposed Regeneration Areas
- Existing Fence
- Short Term Fence
- Long Term Fence
- Vehicular Access
- Interpretation Walks Access Existing
- Interpretation Walks Access Proposed
- Shared Sealed Access
- Shared Unsealed Access
- Adjoining Access Routes
- Recreation Interpretation Experience
- Recreation Kick about Open Space
- Recreation Picnic Aeras
- Nursery
- Visitor Centre and Event Hall
- National Park Work Shop
- Multifunction Heritage Space
- Pedestrian / Cycle Entry Access
- Vehicular Entry Access
- Parking - Event Carpark
- Parking - To Building
- Parking - Daily

Note: All development areas are subject to change and represent indicative design for roads/ open space etc at the time of the Landscape Masterplan report being written.

9 APPENDICES

APPENDIX 2. PLANT SPECIES LIST FOR REVEGETATION

Shale Gravel Transition Forest

Tree stratum

Acacia parramattensis
Eucalyptus fibrosa
Eucalyptus moluccana
Eucalyptus tereticornis
Melaleuca decora

Shrub stratum

Acacia falcata
Bursaria spinosa
Daviesia ulicifolia
Dillwynia sieberi
Lissanthe strigosa
Pultenaea villosa

Ground stratum

Agrostis avenacea var. avenacea
Aristida vagans
Austrodanthonia tenuior
Brunoniella australis
Calotis cuneifolia
Cheilanthes sieberi subsp. sieberi
Chorizema parviflorum
Desmodium varians
Dianella longifolia
Dianella revoluta var. revoluta
Dichelachne micrantha
Dichondra repens
Echinopogon caespitosus var. caespitosus
Echinopogon ovatus
Entolasia stricta
Euchiton sphaericus
Fimbristylis dichotoma
Goodenia hederacea subsp. hederacea
Hydrocotyle peduncularis

Ground stratum cont

Hypericum gramineum
Lagenifera stipitata
Laxmannia gracilis
Lepidosperma laterale
Lomandra filiformis subsp. filiformis
Lomandra multiflora subsp. multiflora
Microlaena stipoides var. stipoides
Opercularia diphylla
Oxalis perennans
Panicum simile
Paspalidium distans
Pomax umbellata
Poranthera microphylla
Pratia purpurascens
Themeda australis
Thysanotus tuberosus subsp. tuberosus
Tricoryne elatior
Vernonia cinerea var. cinerea
Wahlenbergia gracilis

Climbers

Glycine clandestina
Hardenbergia violacea
Polymeria calycina

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APPENDIX 2. PLANT SPECIES LIST FOR REVEGETATION

Cooks River / Castlereagh Ironbark Forest

Tree stratum

Eucalyptus fibrosa
Eucalyptus longifolia
Melaleuca decora

Shrub stratum

Acacia elongata
Acacia falcata
Acacia pubescens
Bursaria spinosa
Daviesia ulicifolia
Dillwynia tenuifolia
Dodonaea falcata
Lissanthe strigosa
Melaleuca nodosa
Olearia microphylla
Ozothamnus diosmifolius
Pultenaea parviflora

Ground stratum

Aristida vagans
Austrodanthonia tenuior
Calotis cuneifolia
Cheilanthes sieberi subsp. sieberi
Dianella revoluta var. revoluta
Dichelachne micrantha
Entolasia stricta
Eragrostis brownii
Goodenia hederacea subsp. hederacea
Lagenifera stipitata
Laxmannia gracilis
Lepidosperma laterale
Lomandra multiflora subsp. multiflora

Ground stratum cont

Microlaena stipoides var. stipoides
Opercularia diphylla
Panicum simile
Paspalidium distans
Pomax umbellata
Pratia purpurascens
Themeda australis
Thysanotus tuberosus subsp. tuberosus
Vernonia cinerea var. cinerea

Climbers

Cassytha glabella f. glabella
Glycine clandestina

9 APPENDICES

APPENDIX 2. PLANT SPECIES LIST FOR REVEGETATION

Castlereagh Scribbly Gum Woodland

Tree stratum

Angophora bakeri
Eucalyptus parramattensis subsp. parramattensis
Eucalyptus sclerophylla
Melaleuca decora

Shrub stratum

Acacia brownii
Acacia elongata
Banksia oblongifolia
Banksia spinulosa var. spinulosa
Bossiaea rhombifolia subsp. rhombifolia
Callistemon pinifolius
Cryptandra amara var. amara
Daviesia squarrosa
Daviesia ulicifolia
Dillwynia tenuifolia
Gompholobium pinnatum
Grevillea mucronulata
Hakea dactyloides
Hakea sericea
Isopogon anemonifolius
Leptospermum polygalifolium subsp. polygalifolium
Leptospermum trinervium
Lissanthe strigosa
Melaleuca erubescens
Melaleuca nodosa
Melaleuca thymifolia
Micromyrtus ciliata
Micromyrtus minutiflora
Persoonia nutans
Pimelea linifolia subsp. linifolia
Pultenaea elliptica

Ground stratum

Aristida ramosa
Aristida vagans
Aristida warburgii
Boronia polygalifolia
Burchardia umbellata
Cheilanthes sieberi subsp. sieberi
Cyathochaeta diandra
Dampiera stricta
Dianella revoluta var. revoluta
Entolasia stricta
Eragrostis brownii
Gonocarpus tetragynus
Goodenia bellidifolia subsp. bellidifolia
Goodenia paniculata
Haemodorum planifolium
Hypericum gramineum
Laxmannia gracilis
Lepyrodia scariosa
Lomandra glauca
Lomandra multiflora subsp. multiflora
Microlaena stipoides var. stipoides
Mitrasacme polymorpha
Opercularia diphylla
Panicum effusum
Panicum simile
Patersonia sericea
Platysace ericoides
Pomax umbellata
Ptilothrix deusta
Stylidium graminifolium
Themeda australis
Thysanotus tuberosus subsp. tuberosus
Xanthorrhoea minor subsp. minor

Climbers

Cassytha glabella f. glabella

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APPENDIX 2. PLANT SPECIES LIST FOR REVEGETATION

Alluvial Woodland

Tree stratum

Acacia parramattensis
Angophora floribunda
Casuarina glauca
Eucalyptus amplifolia
Eucalyptus tereticornis

Shrub stratum

Acacia floribunda
Bursaria spinosa
Phyllanthus similis
Sigesbeckia orientalis subsp. orientalis

Ground stratum

Adiantum aethiopicum
Agrostis avenacea var. avenacea
Brunoniella australis
Centella asiatica
Cheilanthes sieberi subsp. sieberi
Commelina cyanea
Desmodium varians
Dichondra repens
Echinopogon ovatus
Einadia hastata
Entolasia marginata
Galium propinquum
Juncus usitatus
Lomandra longifolia
Microlaena stipoides var. stipoides
Oplismenus aemulus
Oxalis perennans
Plectranthus parviflorus

Ground stratum cont

Poranthera microphylla
Pratia purpurascens
Solanum prinophyllum
Wahlenbergia gracilis

Climbers

Clematis glycinoides var. glycinoides
Geitonoplesium cymosum
Glycine clandestina
Glycine tabacina
Polymeria calycina
Rubus parvifolius

9 APPENDICES

APPENDIX 2. PLANT SPECIES LIST FOR REVEGETATION

Shale Plains Woodland

Tree stratum

Eucalyptus crebra
Eucalyptus eugenioides
Eucalyptus moluccana
Eucalyptus tereticornis
Exocarpos cupressiformis

Shrub stratum

Bossiaea prostrata
Bursaria spinosa
Daviesia ulicifolia
Dillwynia sieberi
Dodonaea viscosa subsp. cuneata
Indigofera australis
Phyllanthus virgatus
Pultenaea microphylla

Ground stratum

Agrostis avenacea var. avenacea
Ajuga australis
Aristida ramosa
Aristida vagans
Arthropodium milleflorum
Arthropodium minus
Asperula conferta
Austrodanthonia racemosa var. racemosa
Austrodanthonia tenuior
Bothriochloa decipiens
Bothriochloa macra
Brunoniella australis
Centaurium spicatum
Centella asiatica
Cheilanthes sieberi subsp. sieberi
Chloris ventricosa
Chorizema parviflorum

Ground stratum cont

Chrysocephalum apiculatum
Commelina cyanea
Cymbonotus lawsonianus
Cymbopogon refractus
Daucus glochidiatus
Desmodium varians
Dianella longifolia
Dichelachne micrantha
Dichelachne parva
Dichondra repens
Dichopogon fimbriatus
Dichopogon strictus
Digitaria diffusa
Echinopogon caespitosus var. caespitosus
Einadia hastata
Eragrostis leptostachya
Eremophila debilis
Eriochloa pseudoacrotricha
Euchiton sphaericus
Fimbristylis dichotoma
Glossogyne tannensis
Goodenia hederacea subsp. hederacea
Hypericum gramineum
Hypoxis hygrometrica
Hypoxis pratensis var. pratensis
Juncus usitatus
Lomandra filiformis subsp. filiformis
Lomandra multiflora subsp. multiflora
Mentha diemenica
Microlaena stipoides var. stipoides
Opercularia diphylla
Oxalis perennans
Panicum effusum
Paspalidium distans
Plantago debilis

Ground stratum cont

Plantago gaudichaudii
Pratia purpurascens
Sporobolus creber
Sporobolus elongatus
Stackhousia viminea
Themeda australis
Tricoryne elatior
Vernonia cinerea var. cinerea
Veronica plebeia
Wahlenbergia gracilis
Wurmbea dioica subsp. dioica
Zornia dyctiocarpa var. dyctiocarpa

Climbers

Glycine clandestina
Glycine microphylla
Glycine tabacina

9 APPENDICES

APPENDIX 2. PLANT SPECIES LIST FOR REVEGETATION

Freshwater Wetlands

Tree stratum

Casuarina glauca

Melaleuca linariifolia

Melaleuca styphelioides

Ground stratum

Eleocharis sphacelata

Juncus usitatus

Ludwigia peploides subsp. montevidensis

Hardenbergia violacea

Persicaria spp

Philydrum lanuginosum

Triglochin procera