

Grey Box Reserve

Plan of Management

Delfin Lend Lease

October 2006

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Approved by:	<u>Peter Monsted</u>
Position:	Project Manager
Signed:	
Date:	19, October 2006
Approved by:	<u>Jacqui Coughlan</u>
Position:	Project Director
Signed:	
Date:	19, October 2006

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Delfin Lend Lease

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**Environmental Resources Management
Australia**

Building C, 33 Saunders Street

Pymont, NSW 2009

Telephone +61 2 8584 8888

Facsimile +61 2 8584 8800

www.erm.com

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1.1 BACKGROUND OF PROJECT

In February 1999, the NSW State Government gazetted the *State Environmental Planning Policy No. 59 – Central Western Sydney Economic and Employment Area* (SEPP 59) which applied to six landholdings (known as precincts) in the Holroyd and Blacktown Local Government Areas (LGAs).

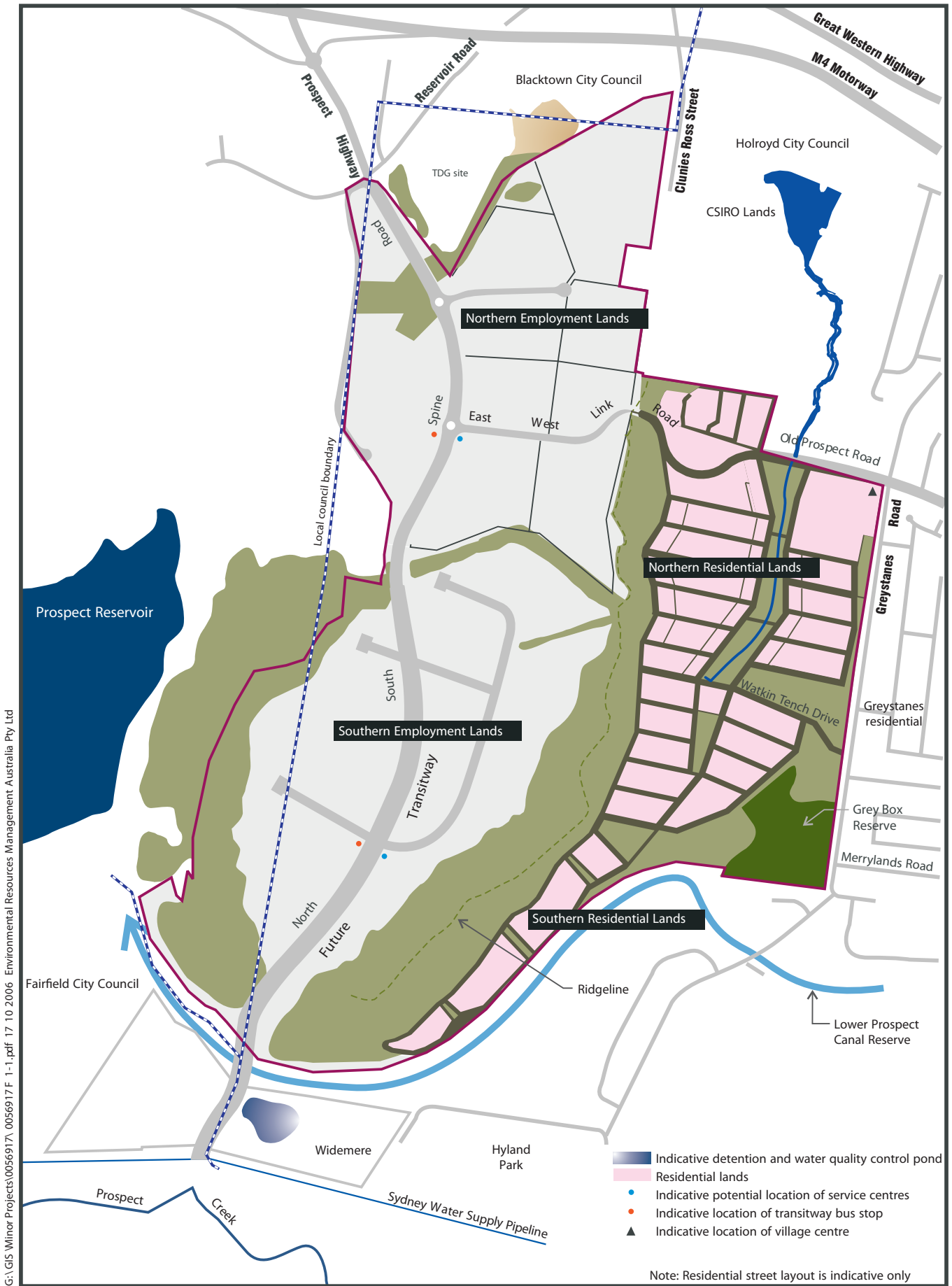
SEPP 59 identified and rezoned land for urban development to provide suitable employment generation and residential land uses. In addition, SEPP 59 established a planning framework for the development of the land that superseded numerous other existing Environmental Planning Instruments (EPIs).

One of the six precincts identified was the Greystanes Estate (the Greystanes Precinct). The 330 hectare site, formerly known as Prospect Quarry, was used for quarrying to produce aggregate used in construction materials (and other secondary activities) for the last 100 years.

In October 2002, the *Greystanes Estate – Residential Lands Precinct Plan* (ERM 2002) was prepared for Holroyd City Council (HCC) to address the planning objectives of SEPP 59 for the Greystanes Precinct. The plan identified Grey Box Reserve (refer *Figure 1.1*) as the area of highest conservation value within the estate due to the presence of the threatened Cumberland Plain Woodland ecological community and *Pimelea spicata*, a threatened plant. The precinct plan proposed that the dedication of Grey Box Reserve (hereafter referred to as the 'Reserve') to HCC would constitute a suitable component of a S94 Contribution¹, and allow for the protection of the precinct's area of highest conservation value.

The dedication of land was imposed under Holroyd SEPP59 Residential Lands Contribution Plan 2003. HCC have specified that a draft Plan of Management (POM) was to be prepared by Delfin Lend Lease for HCC.

¹ Under Section 94 (S94) of the *Environmental Planning and Assessment Act 1979* (EP&A Act), a consent authority (in this case HCC), may grant consent to an application subject to the dedication of land free of cost. The S94 Contribution is to provide compensation for the likely increase in demand for public amenities and public services resulting from the application.



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Figure 1.1 Greystanes Estate Concept Plan



0 250m
Approximate only

1.2

RELATIONSHIP TO EXISTING MANAGEMENT PLANS

To date, numerous management plans have been prepared for the Greystanes Estate Residential Lands. The objectives, findings and recommendations of these management plans will be incorporated into this POM where suitable. These management plans include:

- *Bushland Management Plan Southern Residential Lands – Greystanes Estate Draft Report (BMP) (Perkins 2004).*
- *Greystanes Estate Residential Lands Bushfire Management Plan (ERM 2003);*
- *Greystanes Estate Residential Lands Precinct Plan (ERM 2002);*
- *Greystanes Estate Southern Residential Lands EMP (ERM 2004); and*
- *Nelson’s Ridge Southern Residential Lands Flora and Fauna Assessment (Cumberland Ecology 2004).*

1.3

REPORT STRUCTURE

This report is structured as follows:

- Chapter 2 summarises the legislative objectives relating to the management of the Reserve and the preparation of this POM;
- Chapter 3 provides a description of the Reserve; and
- Chapter 4 presents the detailed recommendations and estimated costs for future management of the Reserve.

2.1 STATUTORY INSTRUMENTS RELEVANT TO THE DEDICATION OF GREY BOX RESERVE

Table 2.1 summarises the key sections of state legislation and policies relating to the dedication of the Reserve, and therefore the requirements for the content of this POM. Annex A provides a more detailed compliance table for the specific items of these statutory instruments.

Table 2.1 Summary of key sections of statutory instruments relating to the dedication of Grey Box Reserve, and the content of this POM

Source / Section	Detail
SEPP 59 23 Residential Land Objective 1 (g)	Rezones Greystanes Estate for residential development. Provides planning to provide elements of the natural environment through re-zoning
EP&A Act Division 6 Conditions requiring contributions towards public amenities and services (Section 94)	Allows a consent authority (in this case HCC) to grant consent to a development application subject to the dedication of land <u>free of cost</u> .
TSC Act Part 2 Listing of threatened species, populations and ecological communities and key threatening processes	Part 2 of the TSC Act provides for the listing of threatened species, populations and ecological communities and key threatening processes. Results in the preparation of the <i>Pimelea spicata</i> draft Recovery Plan that applies to the Reserve.
LG Act Part 2, Division 2 Use and management of community land	Specifies the minimum requirements for the preparation of a POM for community land, and the objectives for management of natural land and bushland. In addition, that community land all or part of which is directly affected by a recovery plan or threat abatement plan under the TSC Act (or the FM Act) <u>must be categorised as a natural area</u> .
LG General Regulation Part 3, Division 1 Guidelines for the categorisation of community land	Provides guidelines for categorisation of land as a natural area.
SEPP 19 Section 8, Plans of Management	Specifies that Council may cause for a POM to be prepared for bushland zoned, or reserved for public open space purposes. Also provides specific conditions for a POM for an area of bushland.

2.2

STATUTORY INSTRUMENTS RELEVANT TO THE MANAGEMENT OF GREY BOX RESERVE

The requirements for the Draft POM are specified in the conditions of the HCC development application determination. The zoning and attributes of the site also require the incorporation of other commonwealth and state (NSW) statutory instruments including:

- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- NSW *Local Government Act 1993* (LG Act) and *Local Government (General) Regulation 1999* (LG General Regulation);
- NSW *Threatened Species Conservation Act 1995* (TSC Act);
- NSW *Noxious Weeds Act 1999* (NW Act);
- NSW *National Parks and Wildlife Act 1974* (NP&W Act);
- NSW *Rural Fires Act 1997* (RF Act) and *Rural Fires Regulation 1997* (RF Regulation) ;
- NSW *Protection of Environmental Operations Act 2000* (POEO Act) and *Protection of Environmental Operations (Control of Burning) Regulation 2000* (POEO Control of Burning Regulation);
- *State Environmental Planning Policy 19 – Bushland in Urban Areas* (SEPP 19); and
- *State Environmental Planning Policy No. 59 – Central Western Sydney Economic and Employment Area* (SEPP 59).

SEPP 59 superseded the *Holroyd Local Environment Plan 1991* (Holroyd LEP) and the *State Environmental Planning Policy No. 4 – Development Without Consent* (SEPP 4). Therefore, these EPIs no longer apply to the Reserve.

2.3

OBJECTIVES OF RELEVANT STATUTORY INSTRUMENTS

The core objective of this POM is the management of Grey Box Reserve to maintain the ongoing ecological viability of the land through the identification and incorporation of the relevant statutory instruments. This will be achieved through the following general objectives:

- the protection of species, populations and ecological communities occurring within the Reserve listed under the TSC Act or the EPBC Act;
- the suppression and control of noxious weeds as listed by the NW Act, Weeds of National Significance (WONS) listed by the Department of the Environment and Heritage (DEH), and other environmental weeds that threaten ecological processes in the Reserve;
- a prescription of management strategies to mitigate impacts on remnant bushland and fauna habitats from proposed residential development; and
- a prescription of vegetation and fauna habitat management strategies that provide for long-term viability and enhancement of the Grey Box Reserve.

Table 2.2 Objectives of Relevant Statutory Instruments

<i>Statutory Instrument</i>	<i>Relevant Objective</i>	<i>Section of POM in which objective is addressed</i>
SEPP 59	to prohibit development that is of an environmentally inappropriate nature.	Entire POM
SEPP 19	To protect and preserve bushland in urban areas	Section 1.1
	To protect remnant plant communities that were once characteristic of the land.	Section 1.1
	To protect rare and endangered flora and flora species.	Section 4.3.11
	To protect habitats for native flora and fauna.	Section 3.6.3
	To protect wildlife corridors.	Section 3.6.4
	To protect the recreational potential of bushland.	Section 4.3.6
	To protect educational value of bushland.	Entire POM
LG Act (36E)	To conserve biodiversity and maintain ecosystem function.	Entire POM
	To maintain the land and habitat in its natural state and setting.	Entire POM
	To provide for the restoration and regeneration of the land.	Sections 4.3.9 and 4.3.10
	To provide for community use of and access to the land in such a manner as will minimise and mitigate any disturbance caused by human intrusion.	Section 4.3.6
	To assist in and facilitate the implementation of any provisions restricting the use and management of the land that are set out in a recovery plan [the <i>Pimelea spicata Recovery Plan</i> (DEC 2004)].	Section 4.3.11
LG Act(36J)	To ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, the flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological values of the land.	Entire POM
	To protect the aesthetic, heritage, recreational, educational and scientific values of the land.	Entire POM
	To promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures directed to minimising or mitigating any disturbance caused by human intrusion.	Sections 4.3.4, 4.3.5 and 4.3.6
	To restore degraded bushland.	Sections 4.3.9 and 4.3.10
	To protect existing landforms such as natural drainage lines, watercourses and foreshores.	Sections 4.3.1 and 4.3.3
	To retain bushland in parcels of a size and configuration that will enable the existing plant and animal communities to survive in the long term.	Section 3.6.2
	To protect bushland as a natural stabiliser of the soil surface.	Entire POM

DESCRIPTION OF GREY BOX RESERVE

This chapter presents a description of Grey Box Reserve based on a desktop study and field assessment of the Grey Box Reserve. This description relates to the following attributes:

- land to which the POM applies;
- categorisation of the land;
- condition of the land;
- relevant characteristics of the area, catchment and region;
- current use of the land; and
- the natural environment.

3.1

LAND TO WHICH THIS POM APPLIES

This POM applies to a 6.5 ha parcel of land referred to in the precinct plan (ERM 2002) as the 'Grey Box Reserve' and illustrated in *Figure 1.1*.

This POM does not apply to any other areas of open space in the Greystanes Estate, including the naturally regenerating woodland area directly to the north of the Reserve, or the highly disturbed woodland area to the west of the Reserve. However, these areas of open space are referred to within this POM in regard to habitat corridors and addressing conflicting objectives of conservation and recreation derived from the various legislative instruments that apply to the Reserve.

3.2

CATEGORISATION OF THE LAND

In accordance with the LG Act and LG General Regulation, community land that is directly affected by a recovery plan for a threatened species must be categorised as a *natural area*. *Pimelea spicata* is listed as endangered under the TSC Act, and listed as endangered under the EPBC Act, and occurs within the Reserve. The Reserve is therefore directly affected by the *Draft NSW and National Recovery Plan - Pimelea spicata R. Br* (DEC 2004).

Land within the *natural area* categorisation must be further categorised, and the most appropriate sub-category is *bushland*.

The guidelines for the categorisation of the land in accordance with the LG Act and LG General Regulation are provided in *Annex A*.

The Reserve contains primarily native vegetation. In accordance with the description of bushland in LG Act 36 (3(a.)), the condition of the land is *moderately disturbed bushland* with areas of low, moderate and high resilience², and areas of moderate to high weed infestations.

Perkins (2004) sub-divided the Conservation Zone into management zones based on the anticipated resilience or recovery potential. Within the Conservation Zone, six zones were identified (Zones 14, 15, 16, 17, 18 and 20). Table 3.1 details the recovery potential of these zones, and Figure 3.1 maps the extent of each zone.

Table 3.1 *Recovery Potential of Management Zones within the Grey Box Reserve*

Zone	Recovery Potential
Zone 14	high
Zone 15	high
Zone 16	low
Zone 17	very low
Zone 18	moderate
Zone 20	very low

1. Categories of recovery potential:

High: sufficient plant biota remaining *in situ* to enable good recovery to pre-disturbance state without planting or introduction of plant propagules

Moderate: *In situ* biota likely to be somewhat depleted. Recovery of community probably to a degraded state (relative to pre-disturbance). Some use of planting or introduction of locally indigenous plant propagules may be justified, but only if deemed necessary after monitoring several years of natural regeneration.

Low: *In situ* biota likely to be significantly depleted. Use of supplementary planting or introduction of locally indigenous plant propagules may be justified at an early stage of recovery.

Very low: *In situ* biota replaced by exotics. Complete reinstatement (reconstruction) of native plant community (through planting or introduction of locally indigenous propagules) will be required.

2. Source: Perkins (2004)

² Resilience is a qualitative assessment of the bushlands ability to naturally regenerate following disturbance, and is an indication of the diversity and abundance of the native seed stored in soil.

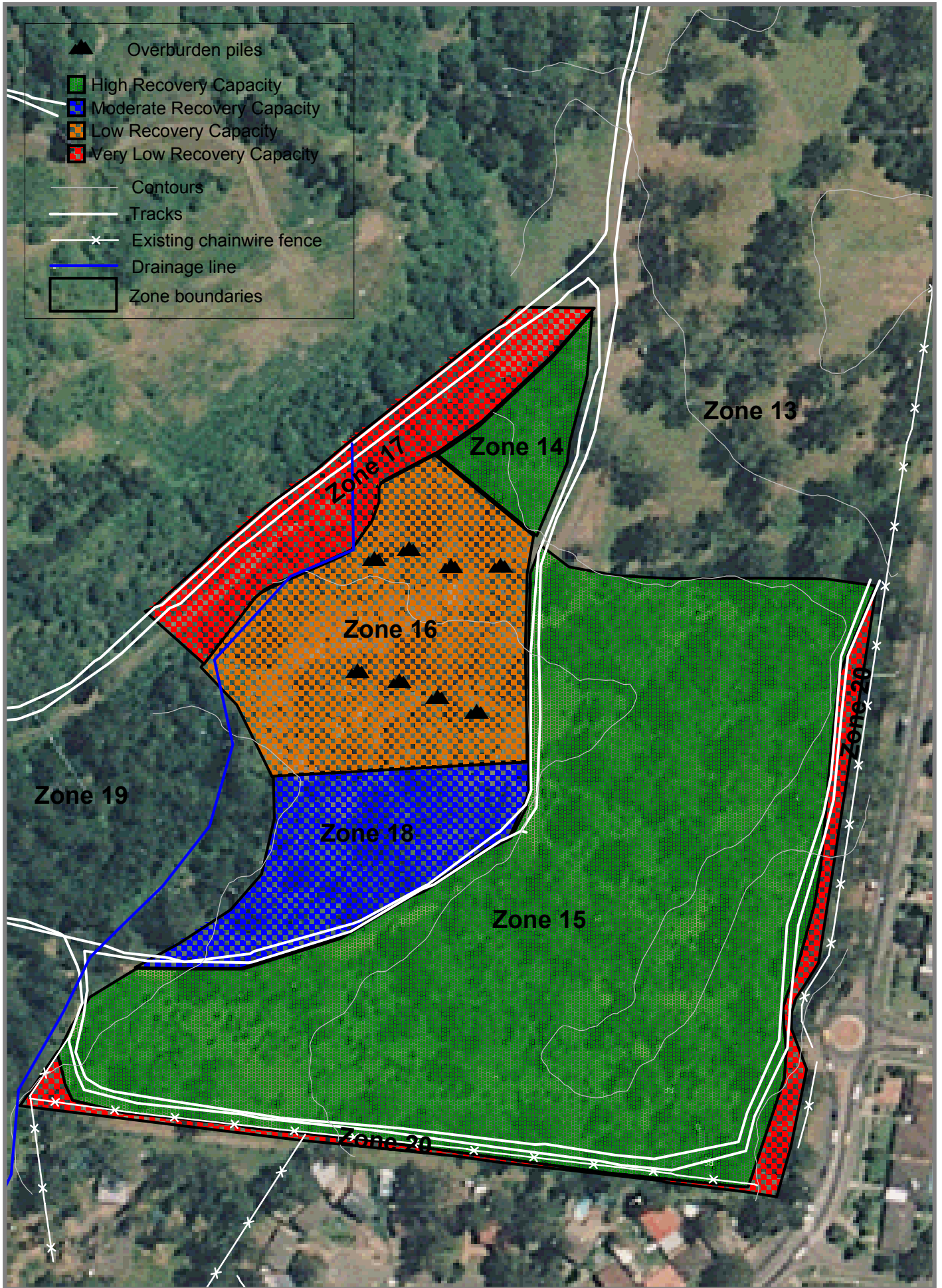


Figure 3.1

Land Attributes within Grey Box Reserve

3.4

RELEVANT CHARACTERISTICS OF AREA, CATCHMENT AND REGION

The Reserve is situated in the south eastern corner of the Southern Residential Lands (SRL) of the Greystanes Estate (refer *Figure 1.1*). The SRL is bounded by Watkin Tench Drive to the north, Prospect Hill ridgeline to the west, Greystanes Road to the east and the Lower Prospect Water Supply Canal Reserve to the south.

Housing within the SRL will include larger blocks for freestanding housing together with multi-unit housing. Extensive planting of indigenous trees to replace existing pine trees will provide screening to houses and minimise impact on the environment, commencing with initial development approval and continuing over successive stages (ERM 2002).

The topography of the Reserve is characteristic of the gentle undulating hills of the Cumberland Plain. The Reserve is situated mostly on a gentle west-facing slope within a small water catchment that drains (ephemerally) southwards to Prospect Creek.

The drainage line is situated close to the boundary of Zone 16 and 17, and exits at the west of the Buffer Area (Zone 17) into the highly disturbed area (Zone 19) and is dominated by woody weeds. The drain is sourced by water from a large proportion of the SRL. However, this may alter following the development of the SRL and the establishment of stormwater control works.

A small drain has also been cut into the slope along the northern boundary of Zone 15 that receives runoff from Zone 13 and diverts it towards the west and the main drainage line in the Reserve.

The soil within the Reserve is clay derived from Wianamatta Shale Group. However, the soil within Zone 17 is dominated by fill material, and a significant proportion of Zone 16 is covered with over-burden piles left from historical mining works after Boral ceased works in the area.

3.5

CURRENT USE OF THE LAND

At the time of preparation of this draft POM, the Reserve had no active land use. There were no buildings or other structures within the Reserve. The only evidence of past land use was the over-burden piles in Zone 16, indicative of stockpiling from Boral mining works during their ownership of the land.

3.6

NATURAL ENVIRONMENT

3.6.1

Vegetation And Ecological Communities

Remnant bushland in the Holroyd LGA is dominated by three main ecological communities described and mapped by NPWS (2002). These communities are:

- Shale Plains Woodland (a form of Cumberland Plain Woodland);
- Shale Hills Woodland (a form of Cumberland Plain Woodland); and
- Alluvial Woodland (a form of Sydney Coastal River Flat Forest).

At a regional scale, a significant proportion of these vegetation communities has been cleared for urban development or other land uses, and only isolated remnants remain.

Grey Box Reserve is approximately 6.5 ha of remnant native vegetation. The *Southern Residential Lands Flora and Fauna Assessment* (Cumberland Ecology 2004) concluded that the vegetation within the Reserve was dominated by a form of Cumberland Plain Woodland (CPW), an ecological community listed as endangered under the TSC Act and the EPBC Act. NPWS (2002) mapped the vegetation communities within the Reserve as Shale Hills Woodland (refer *Figure 3.2*). *Pimelea spicata*, an endangered flora species, has previously been identified within the Reserve.

To the north and west of the Reserve, Zones 13 and 19 will be retained as urban bushland to provide buffers to the Reserve. These zones are characterised by remnant tree canopy with degraded understoreys. Mowing has recently ceased in Zone 13, hence the mid storey is depauperate and the ground cover is dominated by a mixture of exotic and native grasses. However, regeneration of *Eucalypt* spp. has occurred. The mid storey in Zone 19 is dominated by woody weeds.

Weeds are currently in moderate to high densities within the ground and mid-storey of the woodland. The weed species will also have high concentrations of seeds stored in the soil (also known as the 'seed bank'). The main weeds within the Reserve are woody weeds (*Olea europea* ssp. *africana* and *Lantana camara*) in the mid storey, and grass and annual weeds in the ground cover (dominated by *Eragrostis curvula*).

3.6.2

Fauna And Fauna Habitat

Cumberland Ecology (2004) undertook detailed desktop and field assessments of the fauna and fauna habitats within the SRL, including the Reserve. The assessment identified the following vertebrate fauna within the SRL:

- one introduced fish species;
- three native frog species;
- five native reptile species;
- sixteen mammals including ten native species and six exotic species; and
- over fifty bird species including forty six native species.

Cumberland Ecology (2004) identified the Reserve as the area of highest conservation value within the SRL. *Table 3.2* summaries the threatened species observed by Cumberland Ecology (2004) on site, and those that were considered likely to occur based on available habitat (even if they were not observed on site).

Fly By Night Bat Surveys Pty Ltd undertook echolocation call detection at four sites in the remnant woodland and drainage lines with Greystanes Estate and identified five microbat species. These were:

- White-striped Mastiff Bat (*Tadarida australis*);
- Eastern Freetail Bat (*Mormopterus norfolkensis*);
- Little Freetail Bat (*Mormopterus* sp.2);
- Gould's Wattle Bat (*Chalinolobus gouldii*); and
- Eastern Broad-nosed Bat (*Scotorepens orion*).

In August 2003, Glenn Hoye of Fly By Night Bat Surveys Pty Ltd installed hollow bearing logs and artificial bat boxes in some of the trees within the Reserve to provide additional roosting sites for microchiropteran bats and other hollow-dependent fauna, to compensate for any trees removed during clearing operations. Inspection of the boxes in October 2004 revealed Gould's Wattle Bat using three of the boxes (Hoye 2004).

Table 3.2 *Threatened Fauna Species within Grey Box Reserve.*

Name	Species	Observed on Site	Occurrence likley
Mammals			
Squirrel Glider	<i>Petaurus norfolcensis</i>	√	
Eastern Fre tail Bat	<i>Mormopterus norfolkensis</i>	√	
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	√	
Eastern Broad-nosed Bat	<i>Scoteanax rueppellii</i>	√	
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	√	
Birds			
Masked Owl	<i>Tyto novaehollandiae</i>		√
Powerful Owl	<i>Ninox strenua</i>		√
Amphibians			
Green and Golden Bell Frog	<i>Litoria aurea</i>		√
Invertabrates			
Cumberland Plain Land Snail	<i>Meridolum corneovirens</i>		√
1. Source: Southern Residential Lands Flora and Fauna Assessment (Cumberland Ecology 2004)			

3.6.3 *Habitat Corridors*

The Reserve is directly linked to five main habitat corridors of remnant vegetation and fauna habitats within the vicinity. These are:

- the former Lower Prospect Canal Cycleway, which was recently acquired by HCC for open space and conservation. This corridor is characterised by discontinuous patches of CPW and Alluvial Woodland remnants and scattered native trees;
- the approximately two linear kilometres of remnant woodland (including sections of CPW) between Gardenia Parade and Woodpark Road that includes Alpha Road Park, Widemere Reserve and Gardenia Parade Park;
- Prospect Creek and the Alluvial Woodland within the Long Street Park that follows the creek to Fairfield;
- the extensive area of core habitat of CPW surrounding the Prospect Reservoir to the west; and
- Greystanes Creek via the wooded parklands within the Northern Residential Lands (NRL). This corridor links the Reserve to the major habitat corridors within Parramatta LGA including Toongabbie Creek, Quarry Branch Creek and Lake Parramatta.

The main habitat corridors from the Reserve based on conservation significance mapping undertaken by NPWS (2002) are mapped in *Figure 3.2*.

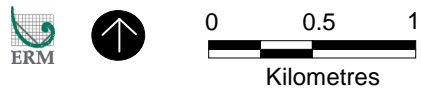
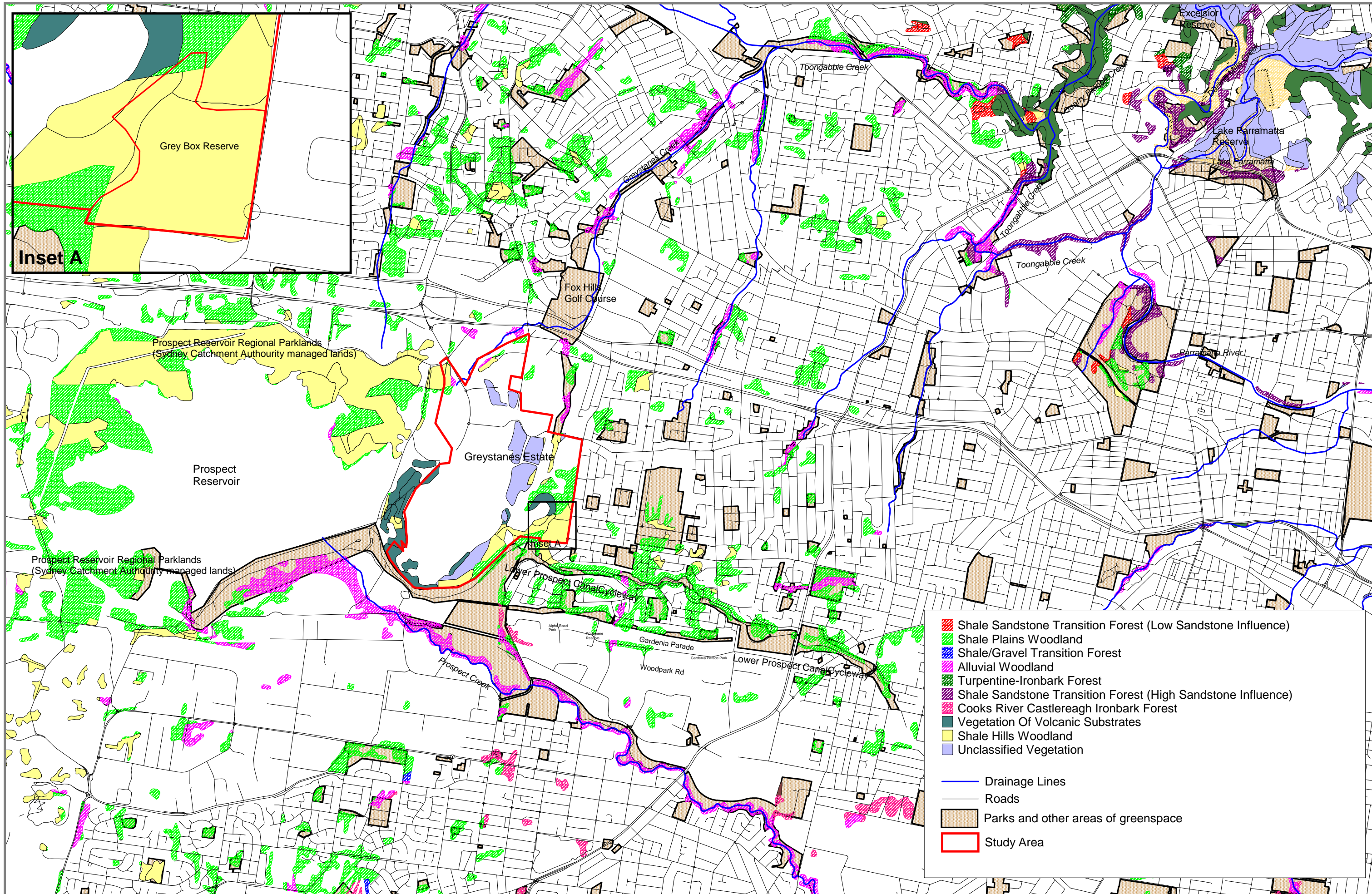


Figure 3.2 **Vegetation Communities and Habitat Corridors**

3.7 **DESCRIPTION OF LAND ATTRIBUTES IN ACCORDANCE WITH RELEVANT STATUTORY INSTRUMENTS**

Table 3.3 provides the description of the land attributes that should be described in accordance with specific statutory instruments.

Table 3.3 Land attributes in accordance with relevant legislative requirements

Relevant Legislation	Characteristic	Description
LG Act 36 (3(a.))	Category of Land	Natural Area - Bushland
	Condition of Land	Moderately disturbed bushland
	Use of Land	Conservation (no active land use)
LG (General) Regulation	Stormwater on Site	None
	Waste Management (and rubbish on site)	No active waste management. There were general rubbish and over-burden piles within the bushland.
	Commercial Pressures	The land will be dedicated to HCC for conservation. There were no utilities within the Reserve.
	State of the Environment Issues	None identified.
SEPP 19, Section 8 (4) c	Vehicle Access (and perimeter fencing)	A 1.8 m chain-wire fence along the southern and eastern boundary of the Reserve. Three-strand wire perimeter fence was also situated along some of the other boundaries of the area. One vehicle access point was situated on the eastern boundary fence close to the roundabout at the intersection of Merrylands and Greystanes Rd. Vehicle access tracks within the reserve are situated along the southern and eastern boundary, and through the centre of the area along the western boundary of Zones 15.
	Recreational use of the bushland	No recreational access to the bushland was available at the time of preparation of this POM. There were no walking tracks within the Reserve apart from the vehicle access tracks.
	Bush Regeneration and Weed Control	Contract and volunteer (community) bush regeneration and weed control works have been undertaken to date within the Reserve by the Conservation Volunteers Australia and Illawarra Bushworks. Evidence of these works were some burn piles of woody weeds and uncollected calico bags filled with weeds (some of which were growing weeds). NPWS issued a TSC Act Section 95 (2) Certificate (No. CPPD/02/04) to undertake these works in a endangered ecological community.

This chapter presents recommendations for the management of Grey Box Reserve in accordance with the relevant statutory instruments and the various management plans prepared to date for the site. The recommendations have been presented in relation to the following areas:

- permitted and non-permitted land uses;
- general management objectives, the means by which they will be achieved and performance measures; and
- specific management works and associated costs.

4.1***PERMITTED AND NON-PERMITTED LAND USES***

Although Grey Box Reserve will be dedicated to HCC as a 'Reserve', under SEPP 59, the land is zoned as 'Residential Zone'.

The permitted and non-permitted land uses within the Reserve are derived from numerous legislative instruments relating to the use of community land, the management of non-threatened and threatened species, the management of weeds and pest species, and the environmental assessment and approval process of developments.

4.1.1***Land Use Permitted Without Consent***

Recreational and educational activities that are of no to minimal environmental impact are permitted without development consent (such as the installation or maintenance of walkways, pathways, bridges, causeways, observation platforms, signs³). This may extend to management activities in accordance with this POM, following acceptance by Council.

The bushland in the conservation zone may be disturbed for bush fire hazard reduction work⁴, or other bush fire hazard reduction in accordance with the recommendations of the *Greystanes Estate Bushfire Hazard Management Plan* (ERM 2003) if this is found to be necessary.

³ LG Act - Section 47B

⁴ RF Act - Section 100C

4.1.2

Land Use Permitted In Accordance With Consent From Council Or Other Specific Permit

With exception of those activities outlined in the previous section, all activities that result in disturbance within the Reserve will require consent from council, or must be undertaken under, and in accordance with, a permit. Due to the presence of threatened species and ecological communities as defined by the TSC Act, development that results in disturbance to the environment is not permitted in the Reserve without the consent of council (i.e. there is no exempt development within the Reserve for activities that result in disturbance to environment)⁵.

Proposed bushfire hazard reduction burns in Grey Box Reserve would require a *bushfire hazard reduction certificate* issued by the NSW Rural Fires Service. Ecological / bush regeneration burns are not included in the definition of a bushfire hazard reduction burn, and require a permit from the regional manager of the Environmental Protection Authority (EPA).

Other activities, although not requiring development consent, should only be completed under and in accordance with a licence or permit, including:

- to pick or collect any native plants from within the CPW (for conservation or scientific purposes) should only be undertaken following issue of a scientific licence under section 132C of the NP&W Act; and
- the release of any animal within the Reserve should only be undertaken following issue of a licence under section 127 of the NP&W Act.

4.1.3

Non-Permitted Land Use

The following activities would not be considered as actions requiring council consent. However, they should not be permitted within the Reserve under other legislative instruments or plans of management that have been previously developed for the Greystanes Estate:

- exercising or release of domestic or exotic animals (ERM 2002);
- the planting of flora species other than locally indigenous species is prohibited in the Reserve (ERM 2002);
- any activity that causes damage to the CPW (i.e. all bushland within the Reserve);

⁵ SEPP 59 Schedule 2 specifies that exempt development is development specified under the heading "Development type" in paragraph 2 of this Schedule ... and that is not carried out or proposed to be carried out on any of the following [including] land containing critical habitat or threatened species, or both, within the meaning of the TSC Act.

- to harm any protected (native) animal (i.e. any animal that is not listed schedule 11 of the NP&W Act); and
- to undertake any activity that is a key threatening process listed under the TSC Act or the EPBC Act, including:
 - removal of bush-rock;
 - clearing of native vegetation;
 - light an unauthorised fire (undertake high frequency fires);
 - assist in the invasion of native plant communities by exotic perennial grasses (including by dumping of lawn clippings); and
 - removal of dead wood and dead trees (including for firewood collection).

4.2

GENERAL MANAGEMENT PRESSURES, PROBLEMS AND ISSUES

The key pressures, problems and issues relating to the management of the Reserve have been summarised in *Table 4.1*. This table outlines the general management objective relating to pressures, problems and issues, the means to achieve the objective, performance measure, organisation responsible to achieve the objective and any permits or licences required in association with works relating to the objective.

Detailed descriptions of the works required for each performance measure is provided in *Section 4.3*.

Table 4.1 Summary of Management Pressure / Problem / Issue

Pressure / Problem / Issue	Objective	Means to Achieve Objective	Performance Measure	Responsibility	License, Permit or Approval Requirements
Stormwater control	Stormwater entering the Reserve is of suitable energy level, water quality and free of gross pollutants.	Stormwater Management Plan (SMP) that diverts stormwater from SRL around Reserve where possible. Installation of Gross Pollutant Traps (GPT) on all stormwater drains that can not be diverted around Reserve	SMP in place that reflects the objective. No indication of erosion resulting from stormwater within the Reserve.	Delfin Lend Lease.	Development Application
Drainage lines	Maintain drainage line in a stable condition and prevent erosion resulting from changes to flow regime in response to development in the SRL.	Stormwater Management Plan (SMP) that diverts stormwater from SRL around Reserve where possible.	All stormwater outlets that enter Reserve have suitable GPTs installed. No weed proliferation around stormwater outlets or accumulation of gross pollutants within Reserve.	Delfin Lend Lease.	Development Application
Erosion and Sediment Control	Prevent sedimentation within the Reserve.	Preparation of Erosion and Sediment Control Plan (ESCP) in accordance with the <i>Managing Urban Stormwater - Soils and Construction</i> (The Blue Book) produced by the NSW Department of Housing 3rd Edition August 1998	SMP in place that reflects the objective. No indication of erosion resulting from stormwater within the Reserve	Delfin Lend Lease.	Development Application

Pressure/ Problem / Issue	Objective	Means to Achieve Objective	Performance Measure	Responsibility	License, Permit or Approval Requirements
Waste Management and prevention of rubbish dumping	To minimise litter and waste within the reserve. To prevent dumping of rubbish in the Reserve.	Installation and maintenance of erosion and sediment control devices during and following construction phase. Removal of the rubbish and overburden piles within the Reserve. Restrict vehicle access to the Reserve.	Erosion and sediment control structures that are preventing sediment moving into the drainage lines (and other areas of the Reserve). No rubbish or over burden piles remaining in the Reserve at the time of hand over to HCC. Perimeter control that prevents vehicles accessing the Reserve to dump rubbish.	Delfin Lend Lease. Boral / Delfin Lend Lease. Delfin Lease	Development Application
Fencing / Access to the Reserve	Access to Grey Box Reserve should be minimised to allow the site to regenerate with minimal human disturbance.	All boundaries to the Reserve should be fenced with 1.8 m chain-wire fence similar to that of the southern and eastern boundaries.	Installation of interpretive signage or by other suitable means or initiation of other educational program. Installation of remaining perimeter fences at the time of hand over to HCC.	HCC Delfin Lease	Lend
Recreational use of the bushland	Minimise recreational use of bushland. Access to the Reserve for suitable educational purposes must be provided in a safe manner.	The areas to the north and west of the Reserve (Zones 13 and 19) will be retained as general access areas for recreational and educational purposes to alleviate the pressure on the Reserve.	Minimisation of disturbance resulting from recreational use of the Reserve	Delfin Lease	Lend -
Hazard from bushfire	To maintain the bushland in a state that minimises the threat of bushfire	Implementation of the Bushfire Management Plan (ERM 2002)	Measures recommended in the Bushfire Management Plan (ERM 2002) are	HCC	Not applicable.

Pressure/ Problem / Issue	Objective	Means to Achieve Objective	Performance Measure	Responsibility	License, Permit or Approval Requirements
	to surrounding persons, property and plant.		implemented.		
Ecological Burns	To simulate a natural fire regime to stimulate regeneration of fire dependant species.	Ecological burns to simulate a natural fire regime.	Ecological burns are undertaken in the Reserve in areas clear of <i>P. spicata</i> .	HCC	Section 9 Approval POEO Control of Burning Regulation
Weed Control and Bush Regeneration	To prevent degradation of bushland through infestation with weeds, and to restore and regenerate degraded areas of bushland To maintain and improve biodiversity and ecological functioning of the remnant bushland	Weed control and restoration works in accordance with the BMP. Revegetation and native seed broadcasting.	Reduction in the density and diversity of exotic flora species. No new weed infestations.	HCC	DA
Threatened Species Management	To conserve the threatened Ecological Community and species identified on the site.	Incorporation of the <i>P. spicata</i> draft recovery plan (DEC 2004) into the POM Establish detailed monitoring program for the <i>P. spicata</i> .	Maintenance of the <i>P. spicata</i> population within the Reserve. Monitoring program undertaken by HCC. Persistence of healthy <i>P. spicata</i> and CPW.	Delfin Lease HCC	Lend - -

4.3

SPECIFIC MANAGEMENT WORKS AND INDICATIVE COSTING

The following subsections describe the specific works required to achieve the objectives outlined in *Table 4.1*. The location of all specific works is mapped in *Figure 4.1*, and an indicative costing for all works is provided in *Table 4.2*.

4.3.1

Stormwater Control And Drainage Lines

At the time of preparation of this POM there were no stormwater outlets draining into the Reserve. The only natural drainage line within the Reserve was in a relatively stable condition despite high-density woody weed infestations.

Stormwater can have detrimental impacts on urban bushland including:

- erosion of the drainage lines;
- deposition of sediments and gross pollutants;
- waterlogging and nitrification of soils; and
- secondary impacts including increased weed infestation.

However, development of the SRL will incorporate the installation of a stormwater drain network that redirects stormwater runoff away from the Reserve (Hyder Consulting 2005).

The management of stormwater within the SRL will be in accordance with the *Nelsons Ridge Southern Residential Lands Stormwater Management Plan (SMP)* (Hyder Consulting 2005) approved component of the Development Application.

The SMP will incorporate the following components to improve its environmental performance:

- Gross Pollutant Trap (GPTs) to prevent rubbish moving in the stormwater;
- detention or retention ponds to allow the stormwater to slow down and particles to fall out of suspension. The incorporating of reed beds within these ponds would assist in catching sediments and allow for the uptake of some nutrients; and / or
- drainage line rehabilitation at the interface of the stormwater outlet to prevent erosion.

4.3.2 *Erosion And Sediment Control*

At the time of preparation of this POM, sediment from the SRL was being prevented from entering the Reserve by a sediment control fence at the eastern edge of Zone 17. This fence was near full and starting to fail in some areas.

The sediment from the SRL has the potential to impact the Reserve if not adequately controlled prior to, during and following construction within the SRL.

When construction of the SRL commences, **new sediment control fences should be installed along the eastern and western boundary of Zone 17.** These fences should be monitored and maintained until rehabilitation of Zone 17 is complete.

4.3.3 *Waste Management And Prevention Of Rubbish Dumping*

Within the Reserve the main waste management issues were the over-burden piles, general rubbish and the old calico weed bags.

Approximately 1000 m² of fill material has been stockpiled in the over-burden piles within Zone 16. The over-burden piles were found to be dominated by weeds, with very low potential for natural regeneration. However, removal of the stock piles would involve extensive excavation works and disturbance to the area. It is considered that these works would be potentially detrimental to fauna habitat and surrounding remnant trees and vegetation and therefore, it is recommended that the **stock piles should be left in situ and revegetated through planting and/or direct seeding to further enhance the buffer zone between Zone 15 and Zone 17.**

Removal of other remaining rubbish within the Reserve should also be undertaken and will involve manual loading of the rubbish, old fences and old weed bags into a small (3T) tipper-truck utilising the existing tracks within the Reserve.

Waste management following the initial removal of the rubbish should be minimal due to the limited recreational access to the Reserve, and should be incorporated into the bush regeneration program.

4.3.4 *Vehicle Access And Track Maintenance*

Vehicle access to the Reserve should be minimised and restricted to council's vehicles, and the vehicles of their contractors undertaking bush regeneration, bushfire and control and other service works.

The perimeter tracks on the eastern and southern boundaries of the Reserve should be retained and maintained in such a manner as to allow access for fire fighting activities to be undertaken if necessary. These tracks should be maintained as close to the fence lines as possible to ensure their maintenance does not encroach into the remnant bushland (as specified in the BMP). Options for delineation of the tracks include a three strand wire fence with 1.8 m star posts driven into the soil every 5 m, or use of recycled power line posts laid end to end.

At the south-eastern corner of the Reserve, approximately 20 m of the access trail was eroding, and its repair was identified as a priority (Perkins 2004). Repair of this track will involve some minor regrading; including the possible addition of approximately 2 T of suitable fill material such as crushed sandstone (as opposed to crusher dust or road base that have a high pH).

Prevention of erosion can be achieved through the installation of approximately 5 m of sediment control fence in a U shape at the top of the slope to function as a simple detention bay and slow the water causing the erosion. A second 'detention bay' of the same construction at the base of the slope will detain the water that falls on the track surface, and the sediment it carries.

4.3.5 *Perimeter Fencing*

Perimeter fencing should be installed along the sections of the Reserve perimeter where other fencing does not already exist, which are specifically along:

- the northern boundary of the conservation zone - 240 m including gate access;
- the southern boundary of Zone 17 - 210 m at top of batter; and
- the western boundary of the Reserve - 220 m including gate access.

These sections of fencing should be of similar type to the existing 1.8 m chain-wire fence on the eastern and southern boundaries to prevent pedestrian and vehicle access to the Reserve. However, barbed wire will no longer be necessary for the new sections of fence.

Vehicle access points should be incorporated into the new sections of perimeter fencing at the northern and southern ends of the existing central access track.

4.3.6 *Recreational Use Of Grey Box Reserve*

Access to the Reserve for general recreation activities will be discouraged as far as possible to allow for the maximum conservation potential of the area.

This will be compensated for by providing access to the buffer areas to the north and west of the Reserve for recreational and educational purposes, and the other extensive open space areas within the Greystanes Estate.

4.3.7 *Bushfire Hazard Control*

The Greystanes Residential Estate, including the area dedicated for Grey Box Reserve, is not located within land designated as bushfire prone land (ERM 2003). However, the *Greystanes Estate Residential Lands Bushfire Management Plan* (ERM 2003) proposed that suitable Asset Protection Zones (APZs) be maintained for the properties on the eastern side of Greystanes Road.

Due to the small size of the Reserve, the proposed APZ (ERM 2003) was approximately 18.5 m. This would constitute the 15.5 m width of Greystanes Road, and the minimum 3 m setback of the properties on the eastern side of Greystanes Road. As this APZ is accommodated off-site, no bushfire hazard reduction works are required along this boundary of the Reserve. However, the existing tracks on the eastern and southern perimeter of the Reserve will be maintained and will provide additional buffer areas to residences from any potential bushfire hazard. The tracks will also provide access for fire fighters should a bushfire start within the Reserve, or ecological or hazard reduction burns be undertaken.

Properties on the northern side of Bilpin St are situated along the southern boundary of the Conservation Zone. The vegetation within 10-15 m of this boundary (Zone 20) should remain cleared and accessible to vehicles to allow for fire fighting activities. Maintenance of this area should involve regular mowing and herbicide weed control to prevent the exotic African Love Grass (*Eragrostis curvula*), and other weed species, from supplementing weed seed in the Reserve.

The north western boundary of the Reserve adjacent to the SRL should be rehabilitated in a manner that does not increase the bush fire hazard. This will be achieved by revegetating with predominantly canopy and low ground cover species, and maintaining a sparse mid storey.

4.3.8

Ecological Bushfires For The Conservation Of Biodiversity

Cumberland Plain Woodland and *P. spicata* are both recognised as benefiting from bushfire for regeneration and germination. However, the critical fire frequency for *P. spicata* survival has not yet been determined (DEC 2004). In the absence of this information, a precautionary approach should be taken and disturbance should not be actively implemented at less than 10 year intervals (DEC 2004). Therefore, ecological fires should not be undertaken in close proximity to the *P. spicata* (Zone 14) within the Reserve until a greater understanding of the critical fire frequencies for survival is determined.

In the interim, ecological burns within the Reserve should be limited to small piles burns or low intensity grass burns in restricted areas not inhabited by the *P. spicata*.

Ecological burns require approval from the Rural Fire Services and the EPA under a Section 9 Approval of the POEO (Control of Burning) Regulation.

4.3.9

Bush Regeneration And Weed Control

The BMP (Perkins 2004) provides an approach for the bush regeneration, reconstruction and weed control works within discrete zones of the Reserve. This approach should be followed, and the indicative costings for the bush regeneration program are based on these works.

The bush regeneration works will take many years (decades) to thoroughly treat the weed infestations within the Reserve. Weeds are currently in moderate to high densities within the ground and mid-storey of the woodland. The weed species will also have high concentrations of seeds stored in the soil (also known as the 'seed bank'). In addition, weed seed will continue to enter the Reserve via natural transport mechanisms including wind, water, gravity and birds. As each generation of weed is treated, disturbance to the soil and increased light reaching the soil will trigger the germination of another generation of weeds from the seed bank.

The rate at which the bush regeneration program will be able to sustainably treat the weeds within the Reserve will depend on the resources available for the program. Resources may be sourced from direct allocation of council funds and resources, environmental grants, S94 contributions, establishment of volunteer a BushCare group/s, and community days (such as National Tree Planting day).

However, regardless of the resources available, the works outlined in the BMP (Perkins 2004) should be completed in a strategic manner to address the conservation and statutory objectives of the Reserve. The following prioritisation should be followed when directing weed control works within the Reserve:

- 1) *Conservation of threatened species* – specifically weed control around the *Pimelea spicata* in Zone 14. All works will contribute to the conservation of the CPW. Identification of *P. spicata* should be incorporated into all occupational health and safety inductions and environmental management plans for all workers (and visitors) to the Reserve;
- 2) *Treatment of W1 and W2 noxious weeds listed under the NW Act, or Weeds of National Significance (WONS)* – W2 weeds in the Reserve include Blackberry, Lantana and Pampas Grass and these must be fully and continuously suppressed and destroyed across the entire Reserve (Annex B provides the complete noxious weeds list for the Holroyd Control Area);
- 3) *Simplification of the weed complex* - This involves minimising the diversity of weed species within the Reserve. Simplification of the weed complex is achieved by priority treatment of new and minor weed infestations, and species with low capacity to regenerate following treatment (such as Prickly Pear Cactus) and follows the principal of W1 listed weeds under the NW Act (i.e. weeds not usually found in an area, or if they are, occur in rare or isolated infestations, however have significant potential to cause damage);
- 4) *Treatment of other noxious and environmental weeds that are suppressing natural regeneration or changing the structure of the woodland or increasing the bushfire hazard* - This refers to the woody weeds that have formed a dense mid-storey across a large area of the Reserve, and their treatment will require a staged approach over numerous years. Treatment of these areas should commence by delineating boundaries to areas of higher bushland resilience, and progressively working towards the areas of lower resilience (treatment of bands approximately 5 m wide along each boundary per year would be considered suitable and would minimise edge effects); and
- 5) *Selective treatment of high density weeds with high regeneration capacity* - This is the treatment of weeds such as African Love Grass. Species within this category should be selectively treated in and around areas of high native resilience, in the areas treated under the other priorities, or in a broad scale approach (such as spraying or slashing) in areas where retaining native regeneration is not a priority (such as along tracks).

4.3.10

Reconstruction

Reconstruction of the bushland within the Reserve will be required in Zone 16, through the removal of weeds and subsequent revegetation of the overburden stock piles, and throughout Zone 17.

The reconstruction of these zones should be completed to create a woodland structure similar to that of other natural remnants of CPW with a scattered canopy layer of eucalypts (10-30% foliage projective cover), a sparse mid-storey with scattered clumps of shrubs, and a moderate to dense grassy groundcover. This should be achieved through a combination of revegetation with stock sourced from site (or within a suitable provenance) and continued seed broadcasting with seed collected from site (and suitably treated if required).

Reconstruction works should be completed in an order and timing that does not draw excess maintenance funds away from the bush regeneration program in the remnant bushland. This may be achieved through the following principles:

- 1) *Weed control prior to the commencement of reconstruction* - Control of the existing weed issues prior to the commencement of reconstruction works is the most cost effective manner over the life span of the project. The overburden piles in Zone 16 should be subject to mechanical weed removal prior to revegetation works.

Zone 17 had a high density of weeds that will continue to germinate for numerous years. Capping of this area with a weed free medium (to a minimum depth of 300 mm) will bury the weed seed bank at a depth from which they can not germinate, hence significantly reducing the maintenance costs to control these weeds in subsequent years. Capping should consist of soil that is similar in composition to the existing soil to which the native plant species are specifically adapted;

- 2) *Suppressing further weed germination using weed free mulch* - A tub-ground leaf mulch will reduce the light on the soil surface and hence reduce germination of weed seeds. Mulches also increase the retention of water and add to the organic matter in the newly forming soil;
- 3) *Establish the canopy species only in the first year* - Canopy species should be planted at a density of approximately 1 tube / 4 m², however in a random arrangement of localised clusters to form a discontinuous canopy. This will allow for the establishment of a suitable canopy density allowing for some failure. Planting the canopy species alone allows clear access for the treatment of annual and grass weeds by spraying (which is the most cost effective manner). In addition, once established these trees will provide a more hospitable microclimate for the survival of shrub and ground-cover plantings in subsequent years;

- 4) *Supplementary plantings should be added on an annual basis* - This will allow for the ongoing collection of seed from the Reserve for propagation, rather than limiting the diversity to the species available in one season of one year; and

Supplementary seed broadcasting - Direct seed broadcasting is a relatively cheap and simple technique to increase the density and diversity of flora species within the reconstruction area. The technique involves sowing the seeds directly on the site where the plants are to grow. Seed collection should also be undertaken in conjunction with the bush regeneration program whenever native seed is available within the Reserve. The greater the diversity of seed broadcast, the better. However, the seed of some species requires specific treatment to stimulate germination, while others species (especially some native grasses and members of the Asteraceae family) possess an after-ripening period (a dormancy following the release of the seed from the plant), and assessment of results should account for these factors.

The costings shown in *Table 4.2* for the reconstruction program are indicative of the works required for restoration of the overburden stock piles in Zone 16, and the establishment of the entire area of Zone 17.

4.3.11 *Threatened Species Management*

Cumberland Plain Woodland

Cumberland Plain Woodland is listed as an endangered ecological community in Schedule 1, Part 3 of the TSC Act and as an endangered ecological community under the EPBC Act.

A draft recovery plan for CPW had not been gazetted at the time of preparation of this POM. However, ***Recovering bushland on the Cumberland Plain Best practice guidelines for the management and restoration of bushland* (DEC 2005) provides good guidelines for restoration works in areas of remnant CPW, and should be referred to** in conjunction with this POM and the BMP (Perkins 2004) when undertaking bush regeneration works in the Reserve.

Pimelea spicata

P. spicata is listed as endangered under the TSC Act and as endangered under the EPBC Act. The ***Draft NSW and National Recovery Plan - Pimelea spicata R. Br* (DEC 2004) provides detailed information relating to the management of the species and should be referred to** in conjunction with this POM and the BMP (Perkins 2004) when undertaking bush regeneration works in the Reserve (the requirements for this POM specified in the draft recovery plan are summarised in *Table A.2* and *Annex 1*).

P. spicata is inadequately represented within Reserves in Western Sydney (DEC 2004). However, the third largest population in Western Sydney occurs within the regional parklands surrounding the Prospect Reservoir, managed by the Sydney Catchment Management Authority (c. 700 plants recorded in 1992) (NPWS 1997). This population is connected by habitat corridors to the Reserve (refer to *Figure 3.2*). The population within the Reserve is much smaller (within the ≤ 10 or 10 to ≤ 50 size classes).

P. spicata is dependant on seed production for recruitment of new individuals, and plants may flower opportunistically year round (DEC 2004). The seed of the species has no obvious adaptations to aid seed dispersal, and therefore seeds within the seed bank are most likely to occur in close proximity to adult plants.

Germination appears to be triggered by fire, or other soil disturbance, and adult plants are capable of resprouting from a tap root following defoliation (such as following a fire). However, the age at which the tap root is sufficient size to facilitate resprouting, or the critical fire (or physical disturbance) frequencies for survival have not yet been determined. Therefore, a precautionary approach should be taken and fire or other disturbance should not be actively implemented at less than 10 year intervals (DEC 2004).

Other threat abatement works that are outlined in the Draft Recovery Plan include fencing and other forms of protection, bush regeneration, and rubbish removal. These have been, or will continue to be, implemented in the Reserve where applicable.

4.3.12

Monitoring

Monitoring of the threatened species is one of the specific objectives outlined in the *Draft NSW and National Recovery Plan - Pimelea spicata R. Br* (DEC 2004). **The monitoring of *P. spicata* at the Reserve should be integrated into the program that is proposed to be developed by DEC.** In the interim, a monitoring program should be established by HCC that collates the following information (derived from the draft recovery plan):

- an estimate of the number of *P. spicata* individuals and location details (specific location details not to be included in the public document);
- an assessment of existing and potential threats to *P. spicata* at the site;
- details of threat abatement measures to be implemented to address these threats; and

- details of a monitoring program that:
 - assesses the effectiveness of threat abatement measures; and
 - provides information on the viability of *P. spicata* within the reserve.

Monitoring of the other regeneration / reconstruction works and fire events within the Reserve should also be collated by HCC. The BMP (Perkins 2004) provides a suitable *pro forma* for this monitoring.

Table 4.2 *Indicative costing for recommended works in Grey Box Reserve.*

Item	Unit	Rate	Quantity	Item Cost (ex GST)	Subtotal
Stormwater Control and Drainage lines					\$0.00
Works will be part of SRL	-	-	-	-	
Erosion and Sediment Control					\$4,500.00
Sediment Control Fences along west boundary of Zone 17	metre	\$15.00	300	\$4,500.00	
Rubbish Removal					\$1,980.00
3T Tipper Hire	day	\$115.00	2	\$230.00	
Labour	hour	\$35.00	50	\$1,750.00	
Vehicle Access Track Delineation					\$2,299.00
<i>Three Strand Fence (480m)</i>					
Wire	1000 m roll	\$150.00	2	\$300.00	
Star Posts	each	\$7.48	50	\$374.00	
Labour	hour	\$35.00	20	\$700.00	
<i>Track Repair in South Eastern Corner</i>					
Excavator	hour	\$120.00	4	\$480.00	
Bush Regeneration Supervisor	hour	\$35.00	2	\$70.00	
Crushed Sandstone	tonne	\$15.00	5	\$75.00	
<i>Detention Bays</i>					
Erosion and Sediment Control Fences	metre	\$15.00	20	\$300.00	
Perimeter Fencing					\$23,450.00
Northern Boundary of Zone 15	metre	\$35.00	240	\$8,400.00	
Southern Boundary of Zone 17	metre	\$35.00	210	\$7,350.00	
Western Boundary of Zone 18	metre	\$35.00	220	\$7,700.00	
Recreational Use of the Reserve					\$0.00
no specific works required at this time				\$0.00	
Bushfire Hazard Control					\$2,560.00
Slashing of Southern and Eastern APZs (biannually)	hour	\$80.00	8	\$640.00	
Spraying of Southern and Eastern APZs (biannually)	hour	\$120.00	16	\$1,920.00	

Item	Unit	Rate	Quantity	Item Cost (ex GST)	Subtotal
Ecological Burns					\$0.00
no specific works required at this time				\$0.00	
Bush Regeneration (annually)					\$35,000.00
Zone 14 (4 crew days)	hour	\$35.00	200	\$7,000.00	
Zone 15 (8 crew days)	hour	\$35.00	400	\$14,000.00	
Zone 16 (3 crew days)	hour	\$35.00	150	\$5,250.00	
Zone 18 (5 crew days)	hour	\$35.00	250	\$8,750.00	
Reconstruction					\$190,600.00
<i>Zone 16 (6 ha)</i>					
Year 1					
Supply and install mulch	metre ³	\$30.00	580	\$17,400.00	
Supply and install tube stock	each	\$3.50	1500	\$5,250.00	
Watering and Maintenance	hour	\$35.00	100	\$3,500.00	
<i>Zone 17(10 ha)</i>					
Supply and Install soil capping	metre ³	\$30.00	3165	\$94,950.00	
Supply and install mulch	metre ³	\$30.00	1500	\$45,000.00	
Supply and install tube stock	each	\$3.50	3000	\$10,500.00	
Watering and Maintenance	hour	\$35.00	400	\$14,000.00	
Threatened Species Management					\$0.00
works incorporated into bush regeneration program					
Monitoring					\$8,640.00
Establish Monitoring Program	hour	\$120.00	40	\$4,800.00	
6 monthly monitoring sessions	hour	\$120.00	32	\$3,840.00	
Total					\$269,029.00

1. Prices quoted are indicative only.

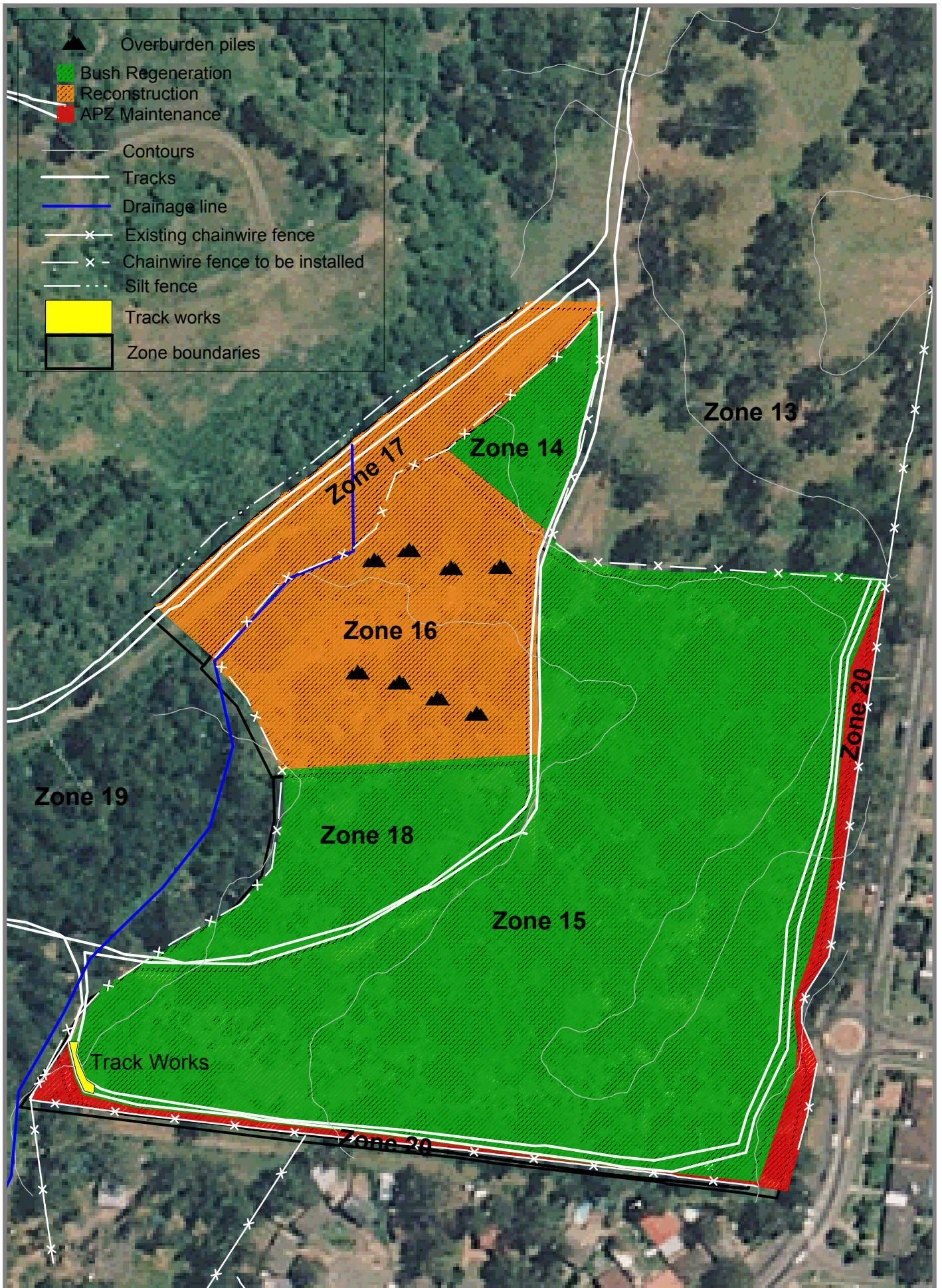
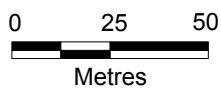


Figure 4.1

Works Required within Grey Box Reserve



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Annex A

Legislation Relevant To The
Preparation Of The Draft Plan
Of Management

A.1 LEGISLATIVE REQUIREMENTS OF THE PLAN OF MANAGEMENT

A.1.1 Local Government Act 1993

Section 36 Preparation of draft plans of management for community land	Section of POM in which addressed
(1) A council must prepare a draft plan of management for community land.	Entire POM
(2) A draft plan of management may apply to one or more areas of community land, except as provided by this Division.	n/a
(3) A plan of management for community land must identify the following:	-
(a) the category of the land,	Section 3.2
(b) the objectives and performance targets of the plan with respect to the land,	Table 4.1
(c) the means by which the council proposes to achieve the plan's objectives and performance targets,	Section 4.3
(d) the manner in which the council proposes to assess its performance with respect to the plan's objectives and performance targets,	Table 4.1,
and may require the prior approval of the council to the carrying out of any specified activity on the land.	Section 4.1
(3A) A plan of management that applies to just one area of community land:	-
(a) must include a description of:	-
(i) the condition of the land, and of any buildings or other improvements on the land, as at the date of adoption of the plan of management, and	Section 3.3
(ii) the use of the land and any such buildings or improvements as at that date, and	Section 3.5
(b) must:	-
(i) specify the purposes for which the land, and any such buildings or improvements, will be permitted to be used, and	Chapter 4
(ii) specify the purposes for which any further development of the land will be permitted, whether under lease or licence or otherwise, and	Section 4.1
(iii) describe the scale and intensity of any such permitted use or development.	Section 4.1
(4) For the purposes of this section, land is to be categorised as one or more of the following:	Section 3.2
(a) a natural area,	√
(b) a sportsground,	-
(c) a park,	-
(d) an area of cultural significance,	-
(e) general community use.	-
(5) Land that is categorised as a natural area is to be further categorised as one or more of the following:	-
(a) bushland,	√
(b) wetland,	-
(c) escarpment,	-
(d) watercourse,	-
(e) foreshore,	-
(f) a category prescribed by the regulations.	-
Local Government (General) Regulation 1999 Part 3 Categorisation, use and management of community land Division 1 Guidelines for the categorisation of community land Guidelines for categorisation of land as a natural area	

Section 36 Preparation of draft plans of management for community land	Section of POM in which addressed
<p>Land should be categorised as a natural area under section 36 (4) of the Act if the land, whether or not in an undisturbed state, possesses a significant geological feature, geomorphological feature, landform, representative system or other natural feature or attribute that would be sufficient to further categorise the land as bushland, wetland, escarpment, watercourse or foreshore under section 36 (5) of the Act.</p> <p>Section 36B of the Act provides that community land all or part of which is directly affected by a recovery plan or threat abatement plan under the <i>Threatened Species Conservation Act 1995</i> or the <i>Fisheries Management Act 1994</i> must be categorised as a natural area.</p> <p>Section 36C of the Act provides that community land that is the site of a known natural, geological, geomorphological, scenic or other feature that is considered by the council to warrant protection or special management considerations, or that is the site of a wildlife corridor, must be categorised as a natural area.</p>	Section 3.2
<p>15 Guidelines for categorisation of land as bushland</p> <p>(1) Land that is categorised as a natural area should be further categorised as bushland under section 36 (5) of the Act if the land contains primarily native vegetation and that vegetation:</p> <ul style="list-style-type: none"> (a) is the natural vegetation or a remainder of the natural vegetation of the land, or (b) although not the natural vegetation of the land, is still representative of the structure or floristics, or structure and floristics, of the natural vegetation in the locality. <p>(2) Such land includes:</p> <ul style="list-style-type: none"> (a) bushland that is mostly undisturbed with a good mix of tree ages, and natural regeneration, where the understorey is comprised of native grasses and herbs or native shrubs, and which contains a range of habitats for native fauna (such as logs, shrubs, tree hollows and leaf litter), or (b) moderately disturbed bushland with some regeneration of trees and shrubs, where there may be a regrowth area with trees of even age, where native shrubs and grasses are present in the understorey even though there may be some weed invasion, or (c) highly disturbed bushland where the native understorey has been removed, where there may be significant weed invasion and where dead and dying trees are present, where there is no natural regeneration of trees or shrubs, but where the land is still capable of being rehabilitated. 	<p>Section 3.2</p> <p>√</p> <p>√</p> <p>-</p> <p>√</p> <p>√</p> <p>√</p>
<p>Part 4 Draft management plans</p>	
<p>27 Guidelines</p> <p>In preparing a draft management plan required under Part 2 of Chapter 13 of the Act, a council must have regard to any relevant guidelines or directions issued to the council by the Director-General.</p>	
<p>28 Additional matters to be included in draft management plans</p>	
<p>(1) For the purposes of the fifth dot point of section 403 (1) of the Act, any proposed council activity relating to the management of any of the following is prescribed:</p>	Table 3.1
<ul style="list-style-type: none"> (a) stormwater, 	Section 4.3.1
<ul style="list-style-type: none"> (b) coasts and estuaries, 	-
<ul style="list-style-type: none"> (c) sewage, 	-
<ul style="list-style-type: none"> (d) waste. 	Section 4.3.3
<ul style="list-style-type: none"> (a) particulars of the relevant characteristics of the area, catchment or region in which the proposed activity is to be conducted, with special reference to: 	Section 3.4
<ul style="list-style-type: none"> (i) any commercial pressures, and 	Table 3.1

Section 36 Preparation of draft plans of management for community land	Section of POM in which addressed
<p>(ii) any problems or issues identified in relation to the proposed activity in the council's state of the environment reports,</p> <p>(b) particulars of the council's evaluation of possible methods of dealing with those pressures, problems and issues,</p> <p>(c) particulars of the council's membership (or proposed membership) of any bodies relating to the proposed activity, including particulars of any significant variation in the way the activity is proposed to be carried out from any recommendation of such a body (together with the reasons for the variation),</p> <p>(d) particulars of any action to be taken jointly with other councils or bodies, including particulars of any significant variation in the way the activity is proposed to be carried out from any recommendation of such a council or body (together with the reasons for the variation),</p> <p>(e) particulars of any significant variation in the council's plan from any guidelines or directions issued by the Director-General (together with the reasons for the variation).</p>	<p>Table 3.1</p> <p>Section 4.2</p> <p>-</p> <p>-</p> <p>-</p>
<p>29 Draft management plan—activities relating to ecologically sustainable development</p> <p>(1) When preparing the part of its draft management plan dealing with environmental protection activities, a council must do the following:</p> <p>(a) it must apply the principles of ecologically sustainable development,</p> <p>(b) it must consider its most recent comprehensive state of the environment report,</p> <p>Note. Under clause 40, a comprehensive state of the environment report is taken to include any subsequent supplementary state of the environment reports relating to the same area.</p> <p>(c) it must consult the community (including environmental groups),</p> <p>(d) it must involve the community (including environmental groups) in the development of environmental management strategies.</p> <p>(2) In this clause, environmental protection activities means the principal activities that the council proposes to conduct in order to properly manage, develop, protect, restore, enhance and conserve the environment in a manner that is consistent with and promotes the principles of ecologically sustainable development (as referred to in section 403 (2) of the Act).</p>	<p>Responsibility of HCC</p> <p>-</p> <p>√</p> <p>Table 3.1</p> <p>-</p> <p>-</p> <p>-</p>
<p>30 Additional matters to be included in draft management plans—implementation of access and equity activities</p> <p>(1) For the purposes of the fifth dot point in section 403 (1) of the Act, any proposed council activity relating to access and equity activities to meet the needs of residents in the council's area is prescribed as a matter with respect to which a draft management plan must contain a statement.</p> <p>(2) The statement in a draft management plan of a council relating to any proposed activity referred to in subclause (1) must contain particulars (in the form required by the Department) of the access and equity activities it proposes to undertake during the period covered by the draft management plan (including access and equity initiatives prioritised in the council's community or social plan prepared in accordance with guidelines issued from time to time by the Department for the period to which the draft management plan relates).</p>	<p>Section 4.3.6</p> <p>n/a</p>

A.1.2 SEPP 19 Bushland In Urban Areas Section

8 Plans of Management	Section of POM in which addressed
<p>(4) The plan of management shall not be inconsistent with the aims of this Policy and, in respect to bushland to which applies, it shall:</p> <ul style="list-style-type: none"> (a) identify the bushland to which the plan applies, (b) describe and analyse the bushland taking into consideration the matters listed in clause 2 (2) (a)-(m), and (c) specify measures to be taken: <ul style="list-style-type: none"> (i) to implement the specific aims of this Policy, (ii) to enable recreational use of the bushland, (iii) to reduce hazard from bushfire, (iv) to prevent degradation of bushland, including degradation through alteration of drainage patterns, rubbish dumping, infestation with weeds and exotic plants or the intrusion of vehicles, and (v) to restore and regenerate degraded areas of bushland. 	<p>Section 3.1 Section 3.6 Chapter 4 Section 4.3.6 Section 4.3.7 Chapter 4 Section 4.3.9 and 4.3.10</p>

A.1.3 Development Control Determination

The Lot 715 application, paragraph 279 'A POM shall include the proposed works, asset value and annual maintenance estimates'.

A.1.4 Draft NSW And National Recovery Plan - *Pimelea Spicata* R. Br

Relevant objectives, actions, performance criteria and section in which they are addressed in the POM of the Draft NSW and National Recovery Plan - *Pimelea Spicata* R. Br Prepared by the Department of Environment and Conservation (NSW), October 2004

Objective	Action	Performance Criteria	Section of POM in which addressed
Specific Objective 1: To conserve <i>P. spicata</i> using land-use and conservation planning mechanisms	Action 1.2: Councils and the Department of Infrastructure Planning and Natural Resources are to ensure that adequate targeted surveys for <i>P. spicata</i> are conducted (by the proponent) prior to assessing development or rezoning applications that affect potential habitat for the species.	Performance Criterion 1.2: Adequate targeted survey for <i>P. spicata</i> is conducted for all development or rezoning applications that affect potential habitat for the species.	Addressed in the Flora and Fauna Assessment undertaken by Cumberland Ecology.
Specific Objective 2: To identify and minimise the threats operating at sites where the species occurs	Action 2.3: Council's will incorporate site specific threat abatement measures for <i>P. spicata</i> into Plans of Management for community land Site specific information to be incorporated into these plans includes: <ul style="list-style-type: none"> • an estimate of the number of <i>P. spicata</i> individuals and location details (specific location details not to be included in the public document); • an assessment of existing and potential threats to <i>P. spicata</i> at the site; • details of threat abatement measures to be implemented to address these threats; and • details of a monitoring program that <ul style="list-style-type: none"> (i) assess the effectiveness of threat abatement measures and (ii) provides information on the viability of <i>P. spicata</i> within the reserve. 	Performance Criterion 2.3: In-situ protection measures for the species incorporated into Plans of Management for council managed community land within three years.	Section 4.3.11

Objective	Action	Performance Criteria	Section of POM in which addressed
	<p>Where a Plan of Management has already been prepared that does not address the matters listed above, an addendum to the plan will be prepared to address these matters.</p>		
	<p>Action 2.4: Council will implement threat abatement measures in accordance with the site specific recommendations incorporated into the Plan of Management prepared under Action 2.3.</p>	<p>Performance Criterion 2.4: Threat abatement measures for relevant sites implemented in accordance with Plan of Management by year five.</p>	<p>Section 4.3.11</p>
<p>Specific Objective 4: To raise awareness of the community with information that assists in conserving the species</p>	<p>Action 4.3: Councils and the Department of Infrastructure Planning and Natural Resources (DIPNR) will inform the Department of Environment and Conservation of decisions that may directly affect <i>P. spicata</i>. Councils and DIPNR will inform the DEC if planning or development decisions are made that may affect <i>P. spicata</i> or its known habitat. This includes information on decisions that protect habitat, as well as those that lead to a reduction in habitat and/or individuals. This information will assist the DEC in the coordination of the species' recovery program.</p>	<p>Performance Criterion 4.3: The Department of Environment and Conservation informed of landuse and planning decisions that affect <i>P. spicata</i> or its habitat.</p>	<p>The recommendation of this report should be forwarded to DEC.</p>
<p>Specific Objective 5: To raise awareness of the species and involve the community in the recovery program</p>	<p>Action 5.2: The Department of Environment and Conservation and Councils who manage community land that supports <i>P. spicata</i> will raise awareness of, and encourage community involvement in, the recovery program.</p>	<p>Performance Criterion 5.2: At least two community groups are actively involved in the implementation of recovery actions each year.</p>	<p>Section 4.3.6</p>

The Draft Recovery Plan identified six of the Key Threatening Processes⁶ (KTP) listed under the TSC Act that have potential to significantly impact on the viability of *P. spicata*. The KTPs identified were:

- Clearing of native vegetation;
- Invasion of native plant communities by exotic perennial grasses;
- High frequency fire resulting in the disruption of life cycle process in plants and animals and loss of vegetation structure and composition;
- Invasion of native plant communities by *Chrysanthemoides monilifera* (with specific reference to the coastal Illawarra populations);
- Infection of native plants by *Phytophthora cinnamomi*; and
- Anthropogenic climate change.

Three KTPs currently listed under the EPBC Act 1999 are likely to, or potentially, threaten *P. spicata*. These KTPs are similar to TSC Act 1995 listed KTPs and include; dieback caused by the root-rot fungus (*Phytophthora cinnamomi*), land clearance, and loss of climatic habitat caused by anthropogenic emissions of greenhouse gases.

In addition to these listed key threatening processes, a range of other processes are generally recognised as threatening the survival of *P. spicata*.

⁶ A key threatening process is defined in the TSC Act as a process that threatens, or could threaten, the survival or evolutionary development of species, populations or ecological communities.

Annex B

Holroyd Control Area Noxious Weeds List

B.1

HOLROYD

The following weeds are declared noxious in the Holroyd control area.

Table B.1 *Noxious Weeds listed in the Holroyd Control Area*

Common name	Scientific name	Category
Alligator weed	<i>Alternanthera philoxeroides</i>	W1
Bitou bush	<i>Chrysanthemoides monilifera</i>	W3
Boneseed		
Black knapweed	<i>Centaurea nigra</i>	W1
Blackberry	<i>Rubus fruticosus</i> (agg. spp.)	W2
Broomrape	<i>Orobanche</i> spp.	W1
Cabomba	<i>Cabomba</i> spp.	W4g
Castor oil plant	<i>Ricinus communis</i>	W2
Green cestrum	<i>Cestrum parqui</i>	W2
Harrisia cactus	<i>Harrisia</i> spp.	W4f
Hawkweed	<i>Hieracium</i> spp.	W1
Horsetail	<i>Equisetum</i> spp.	W1
Karoo thorn	<i>Acacia karroo</i>	W1
Kochia	<i>Kochia scoparia</i>	W1
Lagarosiphon	<i>Lagarosiphon major</i>	W1
Lantana (Pink flowered)	<i>Lantana camara</i>	W2
Lantana (Red flowered)	<i>Lantana camara</i>	W2
Ludwigia	<i>Ludwigia peruviana</i>	W2
Mexican feather grass	<i>Nassella tenuissima</i> syn <i>Stipa tenuissima</i>	W1
Miconia	<i>Miconia</i> spp.	W1
Pampas grass	<i>Cortaderia</i> spp.	W2
Parthenium weed	<i>Parthenium hysterophorus</i>	W1
Pellitory	<i>Parietaria judaica</i>	W3
Prickly pears	<i>Opuntia</i> spp.	W4f
Rhus tree	<i>Toxicodendron succedaneum</i>	W2
Salvinia	<i>Salvinia molesta</i>	W1
Senegal tea plant	<i>Gymnocoronis spilanthoides</i>	W1
Siam weed	<i>Chromolaena odorata</i>	W1
Spotted knapweed	<i>Centaurea maculosa</i>	W1
St John's wort	<i>Hypericum perforatum</i>	W2
Water hyacinth	<i>Eichhornia crassipes</i>	W1
Water lettuce	<i>Pistia stratiotes</i>	W1
Willows	<i>Salix</i> spp.	W4g

1. Source: Department of Primary Industries – Agriculture

Table B.2 *Minimum Treatment for Noxious Weed Categories listed under the NW Act*

Category	Description
W1	The presence of the weed on land must be notified to the local control authority and the weed must be fully and continuously suppressed and destroyed.
W2	The weed must be fully and continuously suppressed and destroyed.
W3	The weed must be prevented from spreading and its numbers and distribution reduced.
W4a	The weed must not be sold, propagated or knowingly distributed and any part of the weed must be prevented from growing within 3 metres of the boundary of a property.
W4b	The weed must not be sold, propagated or knowingly distributed and any existing weed must be prevented from flowering and fruiting.
W4c	The weed must not be sold, propagated or knowingly distributed and the weed must be prevented from spreading to an adjoining property.
W4d	The weed: (a) must not be sold, propagated or knowingly distributed; and (b) must be fully and continuously suppressed and destroyed unless it is: · listed on the state heritage register under the Heritage Act 1977; listed for preservation or protection as a heritage item under an Environmental Planning Instrument under the Environmental Planning and Assessment Act 1979; · listed for preservation or protection in a tree preservation order of the council for the Local Government area; · included for preservation or protection in a Plan of Management for a local government area under section 40 of the Local Government Act 1993; or · included for preservation or protection in a noxious weed policy or a noxious weed control program approved by the local control authority for the area for which it is the local control authority.
W4e	The weed must be fully and continuously suppressed and destroyed. All reasonable precautions must be taken to ensure produce, soil, livestock, equipment and vehicles are free of the weed before sale or movement from an infested area of the property.
W4f	The weed must not be sold, propagated or knowingly distributed. Any biological control or other control program directed by the local control authority must be implemented.
W4g	The weed must not be sold, propagated or knowingly distributed.
1. Source: Department of Primary Industries - Agriculture	

ERM consulting services worldwide www.erm.com



Environmental Resources Management Australia

Building C, 33 Saunders Street

Pymont NSW 2009

Telephone (02) 8584 8888

Facsimile (02) 8584 8800

