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Our Ref: 2009/0880
Contact: Theo Zotos
9821 9317
t.zotos@iverpool.nsw.gov.au
Date: 20 September 2010

Adrian Checchin
Mirvac
Level 26, 60 Margaret Street
SYDNEY NSW 2000

Dear Mr Checchin,

Vegetation offsetting opportunities adjacent to Hinchinbrook Creek, Len Waters Estate

The following information is provided in response to the request to vegetate Council land between the eastern side of Hinchinbrook Creek and Cowpasture Road at Len Waters Estate. It is understood that this area would be used to offset the potential loss of vegetation from the future construction of detention Basin 6 and Hinchinbrook Creek bridge overpass.

Note that the following constraints should be considered during the formulation of an offset proposal:

Flooding
There is to be no planting within areas shown as High Flood Risk on Councils flood mapping. Planting within the Medium Flood Risk category may be permissible subject to hydraulic impact assessment. Therefore a report must be provided to demonstrate that there will be no adverse impacts on flood levels resulting from the planting. Planting is permissible in areas shown as Low Flood Risk.

Proposed road
There is to be no planting within the area proposed for a future Hinchinbrook Creek crossing. It is understood that plans indicating the location and footprint of the connector road and bridge are yet to be finalised.

Proposed playing field
Council is currently considering the provision of playing fields north of the proposed bridge crossing. Further consideration is also being given in regards to playing field within the Basin 6 footprint. There is to be no planting within any proposed playing field reservation.

Hinchinbrook Creek Riparian Area
Revegetation of the Core Riparian Zone (CRZ) of Hinchinbrook Creek has been secured through the Voluntary Planning Agreement that applies to the former Hoxton Park airport. The CRZ areas are not to be considered as part of proposed vegetation offsets.

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Further consideration of the offset proposal can be given upon receipt of specific details for offset revegetation.

Should you have any questions or require further information please do not hesitate to contact Theo Zotos on 9821 9317.

Yours sincerely,

Theo Zotos
Executive Planner

CLIENTS | PEOPLE | PERFORMANCE

Mirvac Projects Pty Ltd

Former Hoxton Park Airport Development

Vegetation Management Plan for Proposed Access Road and Bridge

September 2010

INFRASTRUCTURE | MINING & INDUSTRY | DEFENCE | PROPERTY & BUILDINGS | ENVIRONMENT

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Glossary of Terms

- **Regeneration:** Refers to natural regeneration of the vegetation community.
- **Bush regeneration:** Refers to techniques used to assist and promote natural regeneration without utilising plant material propagated in nurseries.
- **Revegetation:** Refers to the planting of tube stock or similar grown from local provenance seed to re-establish vegetation.
- **Restoration:** Refers to a combination of restoration activities and management techniques to restore native vegetation.
- **Practical completion:** Refers to the completion of installation of revegetation activities.
- **Establishment:** Refers to the minimum 36 month maintenance program applied to revegetation work to ensure plant establishment.
- **Final Completion:** Refers to the successful completion of the entire restoration program.

List of Abbreviations

DECC	Department of Environment and Climate Change
DECCW	Department of Environment, Climate Change and Water
DECCW (NOW)	Department of Environment, Climate Change and Water (NSW Office of Water)
DEWHA	Commonwealth Department of Environment, Water, Heritage and the Arts
DoP	Department of Planning
EEC	Endangered Ecological Community
EP&A Act	Environmental Planning and Assessment Act
EPBC Act	Environmental Protection and Biodiversity Conservation Act
LEP	Local Environment Plan (Liverpool City Council)
LGA	Local Government Area (Liverpool City Council)
NOW	NSW Office of Water
RFEF	River Flat Eucalypt Forest
TSC Act	Threatened Species Conservation Act
VMP	Vegetation Management Plan

Executive Summary

GHD has been engaged by Mirvac Projects Pty Limited (‘Mirvac”) to prepare a Vegetation Management Plan (VMP) for the proposed construction of an access road and bridge within the development at the former Hoxton Park Airport.

The VMP outlines the restoration program for the area impacted by the ‘project’ and includes details on plant species, planting techniques, revegetation methods and maintenance requirements for the offset site.

The revegetation activities will consist of appropriate mixes of canopy, mid-storey and groundcover species representative of the River Flat Eucalypt Forest (RFEF) as an Endangered Ecological Community and Cumberland Plains Woodland vegetation community listed as an Critically Endangered Ecological Community under the *Threatened Species Conservation (TSC) Act 1995 (NSW).*

The restoration program will be the subject of a three year maintenance program that will include watering, weed and feral control, bushfire management and supplementary planting where necessary.

Ongoing monitoring will be undertaken in order to evaluate the success of the restoration program against established performance criteria.. Results of the annual monitoring program will be reported to DECCW and DoP.

1. Introduction

1.1 Project Description

GHD has prepared this Vegetation Management Plan (VMP) on behalf of Mirvac for the proposed construction of an access road and bridge that spans Hinchinbrook Creek ('the Project'). The site for this report comprises the footprint for a proposed access road that joins the M7 in the west with Cowpasture Road in the east via the former Hoxton Park Airport development site and the vegetated riparian corridor associated with Hinchinbrook Creek ('the site'). The proposed access road would provide alternate flood free access and egress to the industrial development currently under construction and future proposed residential developments adjoining the site.

Development at the site is to be assessed as a Section 75W Modification to a concept plan approval 10-007 and infrastructure approval 10-008 obtained under Part 3A of the *Environmental Planning & Assessment Act 1979* (EP&A Act). Part 3A provides the assessment and approvals process for major infrastructure projects.

This report has been prepared in accordance with the requirements of the Water Management Act (WMA) 2000 and associated guidelines for the preparation of VMP's. This VMP also has been prepared to provide a clear, concise and practical framework for the restoration of native vegetation impacted by the proposed bridge and approaches.

See Appendix A for figures.

1.2 Objectives

The objectives of the VMP are:

- To determine the characteristics of the local vegetation communities.
- To describe the proposed revegetation activities for native vegetation on the impacted sections of Hinchinbrook Creek.
- Describe the maintenance program to ensure establishment.
- Provide an appropriate costing for the restoration work.

1.3 Relationship with existing reports

The VMP has considered the information contained in the following documentation:

- GHD *Vegetation Management Plan for Hoxton Park Airport Development,* November 2007.
- GHD *Offset Strategy for Hoxton Park Airport,* October 2007.
- GHD *Report for the former Hoxton Park Airport Ecology Assessment,* February 2010.
- Biosis Research *Flora and Fauna Assessment of the Stage 1 Subdivision, Hoxton Park Airport*, July 2006.
- NPWS *National Parks and Wildlife Service Vegetation of the Cumberland Plain*, 2002.

All work to be performed on site will be in accordance with the following guidelines:

- DEC *Recovering Bushland: Best Practice Guidelines for Vegetation Restoration on the Cumberland Plain*, 2005;
- Florabank *Seed Collection and Management Guidelines*, updated 2004;
- DIPNR's *Best Practice Guidelines for Bush Regeneration on the Cumberland Plain*, 2004; and
- Greening Australia NSW *Best Practice Revegetation Guidelines*, 1999.

1.4 Relevant Legislation and Policies

The VMP has been prepared in accordance with the provisions contained in relevant legislation and policy guidelines, including but not limited to the following:

1.4.1 Water Management Act

Controlled activities carried out in, on or under waterfront land are now regulated by the Water Management Act 2000 (WMA). The NSW Government Office of Water is required to assess the impact of a controlled activity to ensure that minimal harm will be done to any waterfront land, i.e. the bed and a distance inland of 40 metres from a river, lake or estuary.

Under the WMA, a controlled activity means:

- The erection of a building or the carrying out of a work (within the meaning of the EP&A Act), or
- The removal of material (whether or not extractive material) or vegetation from land, whether by way of excavation or otherwise, or
- The deposition of material (whether or not extractive material) on land, whether by way of landfill operations or otherwise, or
- The carrying out of any other activity that affects the quantity or flow of water in a water source.

1.4.2 Threatened Species Conservation Act 1995

The objectives of the Threatened Species Conservation Act (TSC Act) 1995 are to:

- conserve biological diversity and promote ecologically sustainable development
- to prevent the extinction and promote the recovery of threatened species, populations and ecological communities
- to protect the critical habitat of those threatened species, populations and ecological communities that are endangered
- to eliminate or manage certain processes that threaten the survival or evolutionary development of threatened species, populations and ecological communities
- to ensure that the impact of any action affecting threatened species, populations and ecological communities is properly assessed
- to encourage the conservation of threatened species, populations and ecological communities by the adoption of measures involving co-operative management.

The TSC Act includes schedules that list threatened species, populations and ecological communities and key threatening processes.

Vegetation to be removed includes approximately 0.08 ha of River Flat Eucalypt Forest and 0.79 ha of Shale Plains Woodland that is consistent with the relevant threatened ecological communities descriptions listed under the TSC Act.

1.4.3 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth Environment Protection and Biodiversity Conservation Act (EPBC Act) makes it an offence for a person to undertake an action that has the potential to significantly impact on a matter of 'national environmental significance' without first obtaining a permit from the Commonwealth Minister for Environment and Heritage. Matters of national environmental significance include: declared World Heritage areas; declared Ramsar wetlands; listed threatened species and ecological communities; listed migratory species; listed marine species; nuclear actions; and the environment of Commonwealth marine areas.

The vegetation to be removed includes approximately 0.79 ha of Shale Plains Woodland which is listed as a Critically Endangered Ecological Community under the EPBC Act.

1.4.4 Noxious Weeds Act 1993 (NW Act)

The *Noxious Weeds Act 1993* (NW Act) provides for the declaration of noxious weeds by the Minister of Agriculture. Noxious weeds may be considered noxious on a National, State, Regional or Local scale. All private landowners, occupiers, public authorities and Councils are required to control noxious weeds on their land under Part 3 Division 1 of the NW Act. As such, if present, noxious weeds on the site should be controlled in accordance with the control category specifications.

1.4.5 Other Legislation and Policies

Other legislation and policies that are relevant to the VMP include:

- Sydney Harbour Catchment Blue Print and Action Plan;
- Local Government Act 1993 and Local Government Amendment (Community Land Management) Act 1998; and
- Other local Council legislation and Local Environmental Plans.

The above listed legislation has been identified as being relevant to the restoration activities outlined in this VMP; however the list by no means covers all relevant legislation pertaining to the site.

2. Site Description

2.1 Site Location & Layout

The study area is located adjoining the former Hoxton Park Airport, in the southwest of Sydney, NSW. It is situated between the M7 Westlink Freeway and Cowpasture Road and is entered via Cowpasture Road. The study area is located in the Liverpool Local Government Area (LGA), between the suburbs of Cecil Park, Cecil Hills, West Hoxton, Green Valley and Hinchinbrook.

For the purposes of this report 'the site' or 'the project' refers to the footprint of the proposed access road and bridge, which will run from Cowpasture Road, across Hinchinbrook Creek and along the northern edge of the Employment Zone Development. Refer to Appendix A.

The proposed access road passes through the Hinchinbrook Creek riparian corridor. The riparian corridor is within the RE1 Public Recreation Land and contains remnant and regenerating native vegetation. Vegetation within the riparian zone of the creek line is predominately Alluvial Woodland (consistent with the EEC River Flat Eucalypt Forest). These communities grade to Shale Plains Woodland (SPW) (consistent with the CEEC Cumberland Plain Woodland) outside the riparian zone.

The site is adjoined by 'the employment zone development' to the south, which is subject to the existing Part 3A development approval granted to Mirvac and is currently under construction. A proposed 'northern basin and spillway' to the west, will be subject to a separate development approval but are considered to be components of the overall development.

When the employment zone development area was rezoned for development by Liverpool City Council (LCC), the rezoning included an offset strategy to compensate for impacts on native biota arising from those developments (GHD, 2007a; 2007b). This offsets strategy provides for the conservation and remediation or revegetation of an offset site within the western portion of the Hinchinbrook Creek riparian corridor. The western portion of the access road will create a minor impact on this offset site. This impact has been considered in the preparation of this VMP.

2.2 Climate

The Commonwealth Bureau of Meteorology website provides the following climatic information taken from Badgerys Creek weather station (closest station to site). Mean rainfall peaks in summer and ranges from 95 mm in January and February to 33 mm in July. Mean daily maximum temperatures range from 28.5°C in summer to 17°C in winter with mean daily minimum temperatures ranging from 17°C in summer and 4°C in winter.

2.3 Topography

The study area is located on a relatively level area of low topographic relief. The unnamed creek to the north contains a variety of channels and pools, with some eroded creek banks being moderately steeply inclined.

2.4 Geology and Soils

The Penrith 1:100 000 Geological Series Sheet 9030 indicates that the Hoxton Park airport is characterised by Wianamatta Shale, which supports shale, carbonaceous claystone, claystone, laminite, fine to medium grained lithic sandstone, rare coal and tuff.

The Penrith 1:100 000 Soil Series Sheet 9030 indicates that the soil around the Hoxton Park Airport is characterised floodplains, valley flats and drainage depressions of the Cumberland Plain, with deep layered sediments over bedrock or relict soils.

2.5 Hydrology

Hinchinbrook Creek runs through the eastern portion of the study area, and forms part of the wider Georges River catchment. The Project will intersect with this feature.

An unnamed drainage line runs through the central portion of the northern basin area, from the M7 underpass in the west to a culvert and drain beneath the former airport runway and then eastwards to Hinchinbrook Creek. There are an additional two artificial ephemeral drainage lines and freshwater wetlands.

2.6 Vegetation

The vegetation along Hinchinbrook Creek is in good condition with high biodiversity, despite on-going grazing and encroaching development.

The dominant canopy species are Cabbage Gum (*Eucalyptus amplifolia*) and Swamp Oak (*Casuarina glauca*), but also includes Spotted Gum (*Corymbia maculata*), Thin-leaved Stringybark (*Eucalyptus eugenoides*), Rough-barked Apple (*Angophora floribunda*), Forest Red Gum (*Eucalyptus tereticornis*), and Grey Box (*Eucalyptus moluccana*).

Dominant mid-storey species include Prickly-leaved Paperbark (*Melaleuca stypheloides*) and Blackthorn (*Bursaria spinosa*). Other mid-storey species include Parramatta Green Wattle (*Acacia parramattensis*), Hickory Wattle (*Acacia implexa*), White Sallow Wattle (*Acacia floribunda*) and Daviesia's (D*aviesia genistifolia; Daviesia ulicifolia*). The site also contained species that indicated it had had not been impacted by fire for some time. These included Coffee Bush (*Breynia oblongifolia*), Hairy Clerodendrum (*Clerodendrum tormentosum*), Mock Olive (*Notelea longifolia*) and Rough-fruit Pittosporum (*Pittosporum revolutum*).

Understorey species include Blady Grass (*Imperata cylindrica*), Three-awned Spear Grass (*Aristida* sp.), Native Raspberry (*Rubus parviflorus*), Spiny-headed Mat-rush (*Lomandra longifolia*), Native Wandering Jew (*Commelina cyanea*) and Kidney Weed (*Dichondra repens*).

This community of vegetation contains species predominately characteristic of River-flat Eucalypt Forest (RFEF), listed as an Endangered Ecological Community (EEC) under the NSW TSC Act. This said species such as Spotted Gum and Thin-leaved Stringybark are more typically associated with Cumberland Plain Woodland (Shale Plains Woodland), which is also listed as an EEC under the NSW TSC Act as well as under the Commonwealth EPBC Act. As such, this community is likely to be a remnant of River-flat Forest located on the transitional zone of Cumberland Plain Woodland.

2.7 Noxious Weeds

The Noxious Weeds Act 1993 provides for the declaration of noxious weeds in local government areas. Landowners and occupiers must control noxious weeds according to the control category specified in the Act. Public authorities must control noxious weeds according to the control category to the extent necessary to prevent their spread to adjoining land.

The study area contains six species declared as noxious weeds in Liverpool LGA as shown in Table 1 below.

Table 1 Noxious weeds recorded in the study area

Common name	Scientific name	Control category
Bridal Creeper	*Asparagus asparagoides*	5
African Box Thorn	*Lycium ferocissimum*	4
Small-leaved Privet	*Ligustrum sinense*	4
Large-leaved Privet	*Ligustrum lucidum*	4
Blackberry complex	*Rubus fruticosus* sp. agg.	4
Green Cestrum	*Cestrum parqui*	3

For Category 5 weeds, *"the requirements in the NW Act for a notifiable weed must be complied with".* For Category 4 weeds, *"the growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority"* and for Category 3 weeds, "*the plant must be fully and continuously suppressed and destroyed"*.

2.8 Vegetation Removal

Construction for the Project would require the clearing or permanent modification of native vegetation within the development footprints for the access road and bridge as outlined in Appendix A. It is assumed that no additional vegetation clearing would be required for temporary construction features. It is also assumed that construction compounds, laydown areas and access roads would be located within infrastructure disturbance footprints or previously cleared and disturbed land.

Table 2 Vegetation Removal for Construction of the Proposal

Vegetation Type	TSC Act Status	EPBC Act Status	Area of Vegetation Removal (ha)
Shale Plains Woodland	CEEC	CEEC	0.79
River Flat Eucalypt Forest	EEC		0.08
Total Woodland			***0.87***
Exotic Grassland			0.33

Vegetation Type	TSC Act Status	EPBC Act Status	Area of Vegetation Removal (ha)
Disturbed/Cleared Land			0.18
Total			**1.38**

2.9 Description of Construction Impacts

The proposed access road and bridge would connect the development with Cowpasture Road (as shown in Appendix A) and span the Hinchinbrook Creek channel, including the creek banks. Construction would not permanently remove vegetation or habitat beneath the bridge span. This area would be permanently modified through the removal of mature trees and through increased shading and rainfall interception. It is likely that the majority of native understorey species would readily persist in the environment beneath the bridge. Similarly, any in-stream vegetation would be currently heavily shaded by the overhanging closed canopy and the impact of overshadowing from the bridge should be minor and localised.

Vegetation within the access road and approaches to the bridge would be removed as outlined in section 2.8 above. A separate offset strategy is being prepared to mitigate this impact and is included in the ecological assessment for the bridge and road (GHD 2010).

The proposed construction is highly unlikely to remove a significant proportion of any threatened plant populations since no local populations were detected or have previously been recorded in the study area (DECCW, 2010a; Biosis, 2006).

Hinchinbrook Creek provides good habitat resources for aquatic species. The proposed M-lock bridge will ensure minimal disturbance to Hinchinbrook Creek- the only direct disturbance will be the installation of the in-stream piles which will not be located in the low-flow area of the creek. This disturbance will be minor and will not significantly affect the natural flow of the creek.

Provided standard environmental management practices are adopted through the construction process the proposal is unlikely to result in significant indirect impacts.

3. VMP Direction

3.1 Site Opportunities and Constraints

Hinchinbrook Creek riparian corridor, as described in this VMP, provides opportunities in riparian system rehabilitation. Opportunities embraced in the restoration program include:

- Rehabilitating an area of existing native vegetation.
- Utilising 'best practice' vegetation restoration techniques endorsed by DECC for the Cumberland Plain.
- Integrating ecological function and engineering design to achieve a stable watercourse and riparian while allowing for the construction of the road and bridge.

Constraints encountered during project design include:

- Presence of RFEF and SPW, listed EEC's under current legislation;
- Minimising the impact of in-stream works.
- The role of the site as a floodplain for the sub catchment.
- Surrounding land uses.

3.2 Project Tasks and Objectives

This VMP has been prepared according to the current principles '*Guidelines for controlled activities - Vegetation Management Plans'*. This requires the VMP to address the following issues:

- Site assessment and summary of constraints (eg. flora and fauna, habitat and corridor values, hydrology, fire issues, services, drainage, topography, weeds, etc).
- Definition of project tasks (description of all tasks necessary to implement the plan).
- Preparation of a program of works.
- Preparation of a plant species lists, and maps and diagrams;
- Details on site preparation (protection of existing plants, erosion control, site works, weed control, soil amelioration, seed collection, etc);
- Description of planting program and methodology;
- Description of maintenance program;
- Description of monitoring and review process;
- Preparation of costing of restoration works.
- Liaison with other consultants, landscape architects, government agencies and local Bushcare groups, as required;
- Addressing other potential issues (signage, other relevant legislation, other site areas, public relations, community involvement, etc); and

4. Restoration Program

The following information provides a detailed description of all activities required to implement the VMP. The required activities were determined using field investigations to assess the types and location of native vegetation and weeds on site, as well as to assess habitat, corridor connectivity, soil types and stream bank conditions. This information was supplemented by desktop research of existing reports pertaining to the site and current vegetation maps. The preparation of this VMP also involved liaison with the following stakeholders and/ or review of their relevant documents pertaining to the proposed development:

- NOW and DECCW.
- GANSW.
- Liverpool City Council.
- Relevant landowners and their consultant teams.

4.1 Restoration Zones

The site has been divided into two distinct zones for the purpose of vegetation rehabilitation, management and erosion protection. The zones are described below and their locations are shown on Figure 2, Appendix B. The restoration activities required in each zone are identified below and explained in detail in Sections 4.3 to 4.7.

4.1.1 Zone 1 – Riparian Corridor (River Flat Eucalypt Forest)

This zone incorporates the riparian corridor either of side of Hinchinbrook Creek (approximately 20 metres on each side of the creek line from 'top of bank') that will be impacted by vegetation clearing. The vegetation in this area is consistent with RFEF.

Figure 1 Photograph depicting typical Zone 1 Features

The restoration activities required in this zone include:

- Hydro-mulching with sterile cover crop and treated native seed;
- Limited plantings of native plant species with a mix of the species from Table 3.The planting densities are deliberately limited as additional native species are expected to regenerate from within the within the soil layer.
- Maintain and monitor the restoration program for this zone.

Table 3 Recommended Species for Hand Planting within Zone 1

		Planting density
Eucalyptus amplifolia	Cabbage Gum	Up to a maximum of 60 trees
Casuarina glauca	Swamp Oak	
Eucalyptus tereticornis.	Forest Red gum	
Angophora floribunda	Rough-barked Apple	
	Native grasses	Hand broadcast

4.1.2 Zone 2 – Outside Riparian Corridor (Shale Plains Woodland)

This zone incorporates the remainder of the impact zone (width of 10 metres on each side of the road). The vegetation in this area is consistent with RFEF. Following construction works this zone site will need to be restored with appropriate species.

Figure 2 Photograph depicting typical Zone 2 Features

The restoration activities required in this zone include:

- Hydro-mulching with sterile cover crop and treated native seed;

- Limited plantings of native plant species with a mix of the species from Table 4. The planting densities are deliberately limited as additional native species are expected to regenerate from within the within the soil layer.
- Maintain and monitor the restoration program for this zone.

Table 4 Recommended Species for Zone 2

Scientific Name	Common Name	Planting densities
Eucalyptus eugenoides	Thin-leaved Stringybark	Up to a maximum of 120 trees
Corymbia maculata	Spotted Gum	
Eucalyptus tereticornis	Forest Red Gum	
Eucalyptus moluccanna	Grey Box	
Acacia paramattensis	Parramatta wattle	20
Lomandra longifolia	Matrush	80
Dianella spp		80
Themada australis	Kangaroo grass	160

4.2 Legislative Requirements

4.2.1 TSC Act, Section 132C Licence

This legislation states that if any revegetation or weed control works are undertaken in an EEC, a Section 132C licence is required under the provisions of the TSC Act. As the restoration of RFEF and SPW is proposed for the development site, a Section 132C licence will be required. This licence is readily granted by DECCW if the Department is satisfied that the proponents undertaking the works comply with all of the requirements under the licence. Similarly, DECCW simply request an additional copy of the regular half yearly monitoring reports to be sent to them (as for NOW) to keep them updated of the progress of the works.

4.3 Site Preparation

4.3.1 Site Protection

To ensure the success of the restoration program it will be necessary to control access to all the rehabilitation zones. Fencing will be limited to temporary fencing to delineate the restoration zones until completed.

Appropriate sediment fencing and other erosion control initiatives should be undertaken within the development site to ensure sediment runoff into the restoration zone is controlled.

4.4 Weed Control

GHD recommends noxious, several environmental and some large woody weeds be treated along the edge of the existing vegetation after clearing in a targeted weed control program prior to revegetation work commencing and that all remaining weeds be included in the bush regeneration program.

For a complete list of weeds to be treated, their classification and program for treatment refer to Appendix C. All weed control and bush regeneration activities are to be completed by suitably qualified and experienced contractors.

4.5 Revegetation

To implement the VMP, GHD recommends the revegetation program be implemented immediately following the completion of the site preparation and weed control activities.

4.5.1 Hydro Mulching

To help protect against erosion GHD recommends that the areas of the site impacted during construction be hydro-mulched with a sterile cover crop and treated native seed. The sterile cover crop will act as a guard against erosion while providing a microclimate for the propagation of native species. Native species that have been proven to perform well in hydro-mulching include treated Acacia and other pea species (Family *Fabaceae*). These are often coloniser species that are well suited to restoration sites.

It is anticipated this activity would be completed as part of the construction works.

4.5.2 Plant Propagation

Plant propagation refers to the germinating of collected seed and the 'growing on' of plants in enviro cells, hiko cells or forestry tubes. This activity should be managed by a suitably qualified and experienced native plant production nursery.

4.5.3 Installation of Native Tube stock

The vegetation to be restored on site will consist of the appropriate species for each zone as shown in Table 3 and Table 4.

Selected species will be planted as hiko or enviro cells. All tree and shrub species will be suitably guarded to prevent herbivory and weed competition, and to encourage optimum growing conditions. Guards will comprise a plastic tree guard and three bamboo stakes.

In general, autumn is the best season for planting as summer temperatures can be too high for young plants to establish and frosts in winter impede survival rates.

4.5.4 Hand Broadcasting of Native Seed

To supplement the establishment of native trees, shrubs and lower storey species, GHD recommends native grass seed is hand broadcast throughout the maintenance period of the restoration program. This will add further diversity to the site, particularly ground covers.

4.6 Maintenance Program

The completion of the revegetation (planting works) and target weed control activities will be considered the date of 'Practical Completion' for the restoration works and will signal the commencement of the 3 year plant maintenance program. The completion of the 3 year maintenance program will be considered as 'Final Completion' for the revegetation works. Activities will include such things as watering, herbicide spraying and general maintenance.

Eight general maintenance visits have been scheduled throughout the first two years of the maintenance period, three in the first two years and two in the third.

4.6.1 General Maintenance

General maintenance activities will include repairing damaged tree guards, monitoring survival rates, installing replacement plants as required, weeding inside the tree guards, collecting and broadcasting seed and continued follow-up spot spraying.

4.6.2 Watering

All plants will be 'watered in' on installation, with each plant receiving a minimum five litres. All plantings will then receive a further three applications of water during the first 2 months to assist establishment. Should weather conditions remain dry for an extended period of time follow-up watering may be required. If so, negotiations between client and contractor may be necessary to cover the cost of additional watering.

4.6.3 Maintenance Spraying

To ensure the success of the revegetation activities it is essential to control weed infestation. Weeds compete with the newly installed plants for nutrients, light and water thereby limiting their survival and growth rates.

Areas where revegetation activities are comprise hand planting will be sprayed with Roundup® Biactive herbicide using 'back packs' and preferably mixed with a surfactant. A qualified contractor should undertake the spraying of herbicides. Spraying should only occur on still days to avoid spray drift and should not occur whilst moisture from rainfall or morning dew is present on foliage.

4.7 Monitoring and Reporting

In order to accurately evaluate the success of the restoration works, GHD recommends an initial report be prepared at 'Practical Completion' and then a summary report be prepared at 'Final Completion'. These reports should be brief, approximately one page and be provided to the client and NOW.

The monitoring and evaluation program should address the following issues:

- Average plant growth, percentage cover and survival rates;
- Plant losses through herbivory, disease, vandalism, storm damage or other factors;
- Weed regrowth and control measures;
- Plant replacement;

- Guard repair and weeding inside guards;
- Maintenance watering regime; and
- Stream bank erosion.

GHD recommends that the above issues be monitored and evaluated through the set-up of one representative quadrat, at the practical completion stage. It is also essential to keep an accurate photo-record of the progress of the restoration works by setting up an appropriate number of representative fixed photo-points across all restoration zones. Photos should be taken by digital camera and recorded in the project file by date and discrete photo-point number. Photo-point locations should be clearly marked on site and mapped by a surveyor or by GPS.

The monitoring reports should also contain recommendations by the restoration contractor to the client in regard to issues affecting the ongoing success, or otherwise, of the restoration works, and the possible need for additional activities that may be required outside the normal maintenance program.

5. Program of Works, Cost Estimate and Funding

5.1 Program of Works

It is envisaged that the site preparation works, which includes; installation of temporary fencing will begin as soon as the implementing contractor has been engaged and as soon as site conditions allow. This will be followed by the revegetation, bush regeneration, maintenance and monitoring works described above.

5.2 Estimated Project Costs

Table 5 provides a summary of the costs associated with the restoration program as recommended in this VMP.

Table 5 Estimated Project Costs

Task	Description	Approx. Cost
Project Management	Project Management	$ 1,800
Site Preparation	Site Protection/Erosion Control	$ 1,500
Weed Control	Targeted Weed control	$ 900
Revegetation	Planting (trees, shrubs and 'clump' grasses	$ 2,430
Maintenance	General Maintenance (8 visits team of 2)	$ 7,800
	Watering	$ 2,900
Monitoring/Reporting	Monitoring/Reporting	$ 2,500
Total		$19,830.00

Note: Works quoted above are for the 3-year maintenance period.

The cost estimates presented in this section are typically developed based on extrapolation of recent similar project pricing, budget quotes for some equipment items, industry unit rates and GHD experience. The accuracy of these estimates is not expected to be better than about ± 25% for the scope of work described in this report.

6. References and Recommended Reading

- Auld, B.A. and Medd, R.W. (1987) Illustrated Botanical Guide to the Weeds of Australia, Department of Agriculture NSW, Inkata Press.
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Appendix A

Figures

Figure 3 Area of Impact and Rehabilitation Zones

CREEK

ROAD

Z2

Z1

Z2

Z1

Z2

A
FIG.03

A
FIG.03

HINCHINBROOK

COWPASTURE

Z1 - RESTORATION ZONE 1

Z2 - RESTORATION ZONE 2

0 10 20 30m

SCALE 1:1000 AT ORIGINAL SIZE (A3)

LEGEND

PROPOSED ACCESS ROAD & BRIDGE

ALLUVAL WOODLANDS (RFEF)

SHALE PLAINS WOODLANDS

10m OFFSET

GHD

MIRVAC
HOXTON PARK
AIRPORT DEVELOPMENT

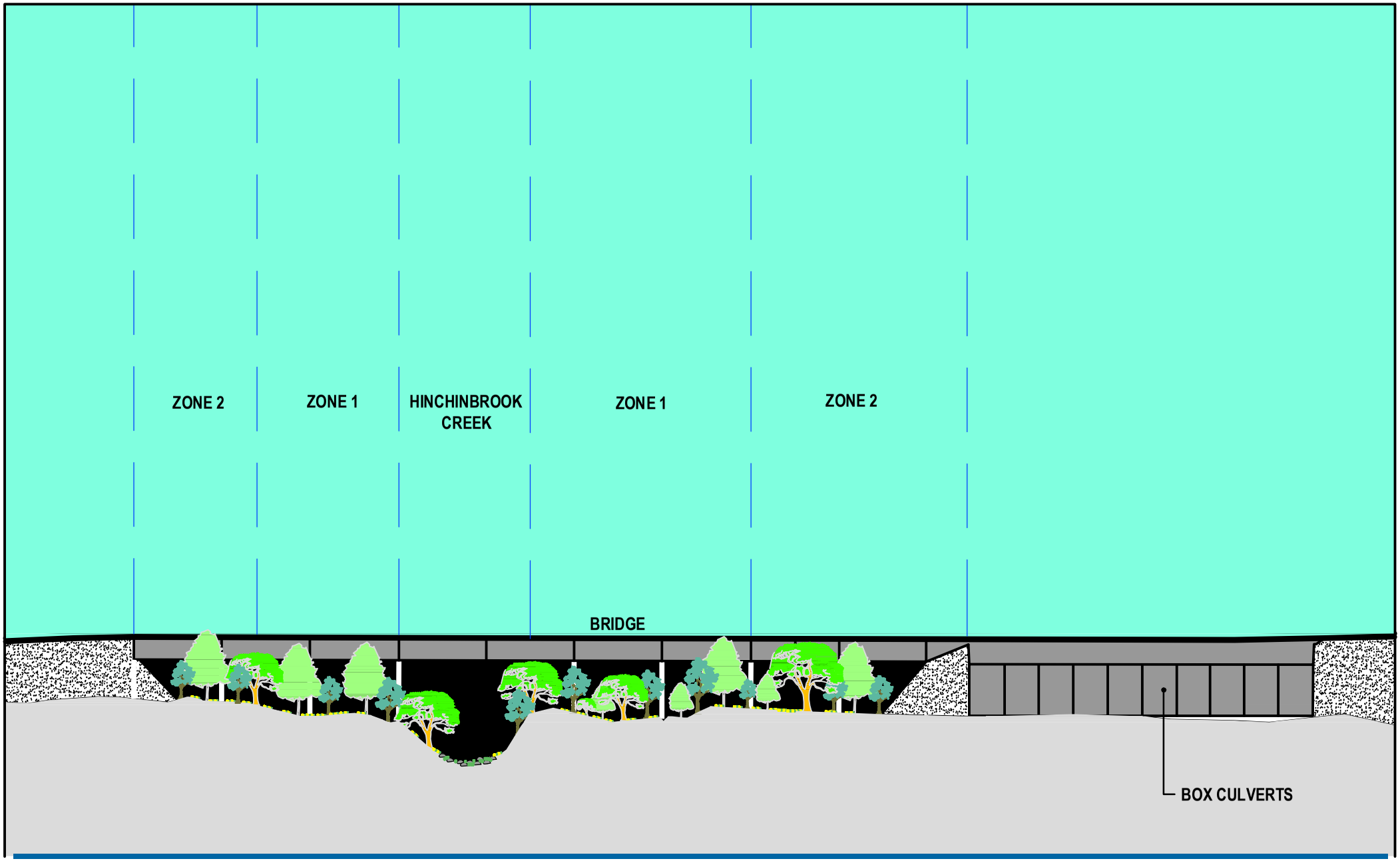
VMP FOR PROPOSED ACCESS ROAD & BRIDGE

Job Number 22-14911
Revision A
Date JULY 2010

Figure 03

230 Harbour Drive Coffs Harbour NSW 2450 Australia **T** 61 2 6650 5600 **F** 61 2 6650 5601 **E** cfsmail@ghd.com **W** www.ghd.com

Plot Date: 17 September 2010 - 2:24 PM Plotted by: Junnifer M Kama/CoffsHarbour/GHD/AU Cad File No: N:\AU\PortMacquarie\Projects\22\14911\CADD\Drawings\22-14911_RGS.dwg



MIRVAC
HOXTON PARK
AIRPORT DEVELOPMENT
SECTION A

Job Number	22-14911
Revision	A
Date	JULY 2010

Figure 04

230 Harbour Drive Coffs Harbour NSW 2450 Australia **T** 61 2 6650 5600 **F** 61 2 6650 5601 **E** cfsmail@ghd.com **W** www.ghd.com

Plot Date: 17 September 2010 - 2:03 PM Plotted by: Junnifer M Kama/CoffsHarbour/GHD/AU Cad File No: N:\AU\PortMacquarie\Projects\22\14911\CADD\Drawings\22-14911_FIGS.dwg

Appendix B

Description of RFEF and SPW

River-flat Eucalypt Forest on Coastal Floodplains Endangered Ecological Community (DEC 2005)

RFEF is found on the river flats of the coastal floodplains. It has a tall open tree layer of eucalypts, which may exceed 40 m in height, but can be considerably shorter in regrowth stands or under conditions of lower site quality. While the composition of the tree stratum varies considerably, the most widespread and abundant dominant trees include *Eucalyptus tereticornis (forest red gum)*, *E. amplifolia* (cabbage gum), *Angophora floribunda* (rough-barked apple) and *A. subvelutina* (broad-leaved apple). *Eucalyptus baueriana* (blue box), *E. botryoides* (bangalay) and *E. elata* (river peppermint) may be common south from Sydney, *E. ovata* (swamp gum) occurs on the far south coast, *E. saligna* (Sydney blue gum) and *E. grandis* (flooded gum) may occur north of Sydney, while *E. benthamii* is restricted to the Hawkesbury floodplain.

A layer of small trees may be present, including *Melaleuca decora, M. styphelioides* (prickly-leaved teatree), *Backhousia myrtifolia* (grey myrtle), *Melia azaderach* (white cedar), *Casuarina cunninghamiana* (river oak) and *C. glauca* (swamp oak).

Scattered shrubs include *Bursaria spinosa* , *Solanum prinophyllum, Rubus parvifolius, Breynia oblongifolia, Ozothamnus diosmifolius, Hymenanthera dentata, Acacia floribunda* and *Phyllanthus gunnii*.

The groundcover is composed of abundant forbs, scramblers and grasses including *Microlaena stipoides, Dichondra repens, Glycine clandestina, Oplismenus aemulus, Desmodium gunnii, Pratia purpurascens, Entolasia marginata, Oxalis perennans* and *Veronica plebeia* . The composition and structure of the understorey is influenced by grazing and fire history, changes to hydrology and soil salinity and other disturbance, and may have a substantial component of exotic shrubs, grasses, vines and forbs.

For a comprehensive list of species that characterize the community open the Scientific Determination link in the top right box.

The combination of features that distinguish River-Flat Eucalypt Forest on Coastal Floodplains from other endangered communities on the coastal floodplains include: its dominance by either a mixed eucalypt canopy or by a single species of eucalypt belonging to either the genus *Angophora* or the sections *Exsertaria* or *Transversaria* of the genus *Eucalyptus* ; the relatively low abundance or sub-dominance of *Casuarina* and *Melaleuca* species; the relatively low abundance of *Eucalyptus robusta* ; and the prominent groundcover of soft-leaved forbs and grasses.

River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions includes and replaces Sydney Coastal River-Flat Forest Endangered Ecological Community.

Distribution

Known from parts of the Local Government Areas of Port Stephens, Maitland, Singleton, Cessnock, Lake Macquarie, Wyong, Gosford, Hawkesbury, Baulkham Hills, Blacktown, Parramatta, Penrith, Blue Mountains, Fairfield, Holroyd, Liverpool, Bankstown, Wollondilly, Camden, Campbelltown, Sutherland, Wollongong, Shellharbour, Kiama, Shoalhaven, Palerang, Eurobodalla and Bega Valley but may occur elsewhere in these bioregions.

Major examples once occurred on the floodplains of the Hunter, Hawkesbury, Moruya, Bega and Towamba Rivers, although many smaller floodplains and river flats also contain examples of the community. The remaining area is likely to represent much less than 30% of its original range. Recently recorded, major occurrences include: about 2,000 ha in the lower Hunter region; less than 10,000 ha on the NSW south coast from Sydney to Moruya, of which up to about three-quarters occurred on the Cumberland Plain in 1998; and less than 1,000 ha in the Eden region.

Small areas of the community are contained within existing conservation reserves, including Blue Mountains, Cattai, Dharug, Georges River, Marramarra, Morton, Deua and Wadbilliga National Parks, and Gulguer and Mulgoa Nature Reserves, but these are unevenly distributed throughout the range and unlikely to represent the full diversity of the community. The reserved examples are on localised, sheltered river flats between hills, rather than the large open floodplains that comprised the majority of the original habitat.

Habitat and ecology

- Associated with silts, clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains.
- Generally occurs below 50 m elevation, but may occur on localised river flats up to 250 m above sea level.
- The structure of the community may vary from tall open forests to woodlands, although partial clearing may have reduced the canopy to scattered trees.
- Typically form mosaics with other floodplain forest communities and treeless wetlands, and often fringe treeless floodplain lagoons or wetlands with semi-permanent standing water.
- Given its habitat, the community has an important role in maintaining river ecosystems and riverbank stability

Threats

- Further clearing for urban and rural development, and the subsequent impacts from fragmentation
- Flood mitigation and drainage works
- Landfilling and earthworks associated with urban and industrial development
- Grazing and trampling by stock and feral animals (particularly pigs)
- Changes in water quality, particularly increased nutrients and sedimentation
- Weed invasion
- Climate change
- Activation of acid sulfate soils
- Removal of dead wood
- Rubbish dumping
- Frequent burning which reduces the diversity of woody plant species

Recovery strategies

- Instigate feral animal control programs.
- Ensure that the fire sensitivity of the community is considered when planning hazard reduction and asset management burning.
- Protect habitat by minimising further clearing of the community. This requires recognition of the values of all remnants in the land use planning process, particularly development consents, rezonings and regional planning.
- Promote regeneration by avoiding prolonged or heavy grazing.

- Undertake restoration including bush regeneration, revegetation and weed control, and promote public involvement in this restoration.

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Cumberland Plain Woodland (DEC 2005)

Grey Box *Eucalyptus moluccana* and Forest Red Gum *E. tereticornis* are the dominant canopy trees, with Narrow-leaved Ironbark *E. crebra*, Spotted Gum *Corymbia maculata* and Thin-leaved Stringybark *E. eugenioides* occurring less frequently. The shrub layer is dominated by Blackthorn *Bursaria spinosa*, and it is common to find abundant grasses such as Kangaroo Grass *Themeda australis* and Weeping Meadow Grass *Microlaena stipoides* var *stipoides*. Contains many more species and other references should be consulted to identify these.

Distribution

Before European settlement was extensive across the Cumberland Plain, western Sydney. Today, only 9 percent of the original extent remains intact, with the remnants scattered widely across the Cumberland Plain. Good examples can be seen at Scheyville National Park and Mulgoa Nature Reserve.

Habitat and ecology

- Occurs on soils derived from Wianamatta Shale, and throughout the driest part of the Sydney Basin.
- Well adapted to drought and fire, and the understorey plants often rely on underground tubers or profuse annual seed production to survive adverse conditions.

Threats

- The main threat is further clearing for urban or rural development, and the subsequent impacts from fragmentation.
- Grazing and mowing, which stops regrowth of the community.
- Inappropriate water run-off entering the site, which leads to increased nutrients and sedimentation.
- Weed invasion.
- Inappropriate fire regimes, which have altered the appropriate floristic and structural diversity.

What needs to be done to recover this species?

- Promote public involvement in restoration activities.

- Apply necessary fire regimes to maintain the community's appropriate floristic and structural diversity.
- Protect habitat by minimising further clearing of the community. This requires recognition of the values of all remnants of the community in the land use planning process, particularly development consents, rezonings and regional planning.
- Promote regeneration by avoiding mowing or prolonged or heavy grazing.
- Protect habitat by controlling run-off entering the site if it would change water, nutrient or sediment levels or cause erosion.
- Weed control.
- Undertake restoration including bush regeneration and revegetation.

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Appendix C

Noxious Weeds in the LGA

Noxious weed declarations for Liverpool City Council

Weed	Class	Legal requirements
African feathergrass [Pennisetum macrourum]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
African olive [Olea europaea subspecies cuspidata]	4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority and the plant may not be sold, propagated or knowingly distributed
African turnipweed [Sisymbrium runcinatum]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
African turnipweed [Sisymbrium thellungii]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Alligator weed [Alternanthera philoxeroides]	3	The plant must be fully and continuously suppressed and destroyed
Anchored water hyacinth [Eichhornia azurea]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Annual ragweed [Ambrosia artemisiifolia]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Arrowhead [Sagittaria montevidensis]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Artichoke thistle [Cynara cardunculus]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Athel pine [Tamarix aphylla]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Bear-skin fescue [Festuca gautieri]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Bitou bush [Chrysanthemoides monilifera subspecies rotundata]	3	The plant must be fully and continuously suppressed and destroyed
Black knapweed [Centaurea nigra]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Blackberry [Rubus fruticosus aggregate species] except cultivars Black satin, Chehalem, Chester Thornless, Dirksen Thornless, Loch	4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority and the plant may not be sold, propagated or knowingly distributed This is an All of NSW declaration

Ness, Murrindindi, Silvan, Smoothstem, Thornfree		
Boneseed [Chrysanthemoides monilifera subspecies monilifera]	3	The plant must be fully and continuously suppressed and destroyed
Bridal creeper [Asparagus asparagoides]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Broomrapes [Orobanche species] Includes all Orobanche species except the native O. cernua variety australiana and O. minor	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Burr ragweed [Ambrosia confertiflora]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Cabomba [Cabomba caroliniana]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Castor oil plant [Ricinus communis]	4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority
Cayenne snakeweed [Stachytarpheta cayennensis]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Chilean needle grass [Nassella neesiana]	4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority and the plant may not be sold, propagated or knowingly distributed
Chinese violet [Asystasia gangetica subspecies micrantha]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Clockweed [Gaura parviflora]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Corn sowthistle [Sonchus arvensis]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Dodder [Cuscuta species] Includes All Cuscuta species except the native species C. australis, C. tasmanica and C. victoriana	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
East Indian hygrophila [Hygrophila polysperma]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Espartillo [Achnatherum brachychaetum]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration

Eurasian water milfoil [Myriophyllum spicatum]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Fine-bristled burr grass [Cenchrus brownii]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Fountain grass [Pennisetum setaceum]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Gallon's curse [Cenchrus biflorus]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Glaucous starthistle [Carthamus glaucus]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Golden thistle [Scolymus hispanicus]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Green cestrum [Cestrum parqui]	3	The plant must be fully and continuously suppressed and destroyed
Harrisia cactus [Harrisia species]	4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority and the plant may not be sold, propagated or knowingly distributed This is an All of NSW declaration
Hawkweed [Hieracium species]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Horsetail [Equisetum species]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Hygrophila [Hygrophila costata]	2	The plant must be eradicated from the land and the land must be kept free of the plant
Hymenachne [Hymenachne amplexicaulis]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Karoo thorn [Acacia karroo]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Kochia [Bassia scoparia] except Bassia scoparia subspecies trichophylla	1	except B.scoparia subspecies trichophylla The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Lagarosiphon [Lagarosiphon major]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Lantana [Lantana species]	4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority

Lantana [Lantana species]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Leafy elodea [Egeria densa]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Lippia [Phyla canescens]	4	The plant must not be sold, propagated or knowingly distributed by any person other than a person involved in hay or lucerne production. The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority. This is an All of NSW declaration
Long-leaf willow primrose [Ludwigia longifolia]	3	The plant must be fully and continuously suppressed and destroyed
Long-leaf willow primrose [Ludwigia longifolia]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Ludwigia [Ludwigia peruviana]	3	The plant must be fully and continuously suppressed and destroyed
Mexican feather grass [Nassella tenuissima]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Mexican poppy [Argemone mexicana]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Miconia [Miconia species]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Mimosa [Mimosa pigra]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Mossman River grass [Cenchrus echinatus]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Onion grass [Romulea species] Includes all Romulea species and varieties except R. rosea var. australis	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Oxalis [Oxalis species and varieties] Includes all Oxalis species and varieties except the native species O. chnoodes, O. exilis, O. perennans, O. radicosa, O. rubens, and O. thompsoniae	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Pampas grass [Cortaderia species]	3	The plant must be fully and continuously suppressed and destroyed
Parthenium weed [Parthenium hysterophorus]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Pellitory [Parietaria judaica]	4	The growth and spread of the plant must be controlled according to

		the measures specified in a management plan published by the local control authority
Pond apple [Annona glabra]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Prickly acacia [Acacia nilotica]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Prickly pear [Cylindropuntia species]	4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority and the plant may not be sold, propagated or knowingly distributed This is an All of NSW declaration
Prickly pear [Opuntia species except O. ficus-indica]	4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority and the plant may not be sold, propagated or knowingly distributed This is an All of NSW declaration
Red rice [Oryza rufipogon]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Rhus tree [Toxicodendron succedaneum]	4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority This is an All of NSW declaration
Rubbervine [Cryptostegia grandiflora]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Sagittaria [Sagittaria platyphylla]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Salvinia [Salvinia molesta]	2	The plant must be eradicated from the land and the land must be kept free of the plant
Sand oat [Avena strigosa]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Senegal tea plant [Gymnocoronis spilanthoides]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Serrated tussock [Nassella trichotoma]	4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority and the plant may not be sold, propagated or knowingly distributed
Siam weed [Chromolaena odorata]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Smooth-stemmed turnip [Brassica barrelieri subspecies oxyrrhina]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration

Soldier thistle [Picnomon acarna]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Spotted knapweed [Centaurea maculosa]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
St. John's wort [Hypericum perforatum]	4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority
Texas blueweed [Helianthus ciliaris]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Water caltrop [Trapa species]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Water hyacinth [Eichhornia crassipes]	2	The plant must be eradicated from the land and the land must be kept free of the plant
Water lettuce [Pistia stratiotes]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Water soldier [Stratiotes aloides]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Willows [Salix species] Includes all Salix species except S. babylonica, S. x reichardtii, S. x calodendron	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration
Witchweed [Striga species] Includes all Striga species except native species and Striga parviflora	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Yellow burrhead [Limnocharis flava]	1	The plant must be eradicated from the land and the land must be kept free of the plant This is an All of NSW declaration
Yellow nutgrass [Cyperus esculentus]	5	The requirements in the Noxious Weeds Act 1993 for a notifiable weed must be complied with This is an All of NSW declaration

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