environmental management





Offset Management Plan

246-326 Collingwood Drive, Collingwood Park Canberra Estates Consortium No 36 Pty Ltd [ABN: 90 156 442 312] EPBC Ref: 2013/6866 SHG Ref: 7189 September 2014

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Signed:

Full Name: <u>Murray Saunders</u>

Organisation: <u>Saunders Havill Group</u>

Date: <u>24.09.2014</u>

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 - (a) provides information or a document to another person (the recipient); and
 - (b) knows the recipient is:
 - (i) an authorised officer; or
 - (ii) the Minister; or
 - (iii) an employee or officer in the Department; or
 - (iv) a commissioner;
 - performing a duty or carrying out a function under this Act or the regulations; and
 - (c) knows the information or document is false or misleading in a material particular.
- (2) The offence is punishable on conviction by imprisonment for a term not more than 1 year, a fine not more than 60 penalty units, or both.
 - Note: Subsection 4B(3) of the Crimes Act 1914 lets a court fine a body corporate up to 5 times the maximum amount the court could fine a person under this subsection.



Document Control

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Reports and/or Plans by Others

Reports and/or plans by others may be included within this Offset Management Plan to support the document.



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I. Executive Summary

The Woodlinks Village project site was deemed a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on the 14th of June 2013 due to potential impacts on the vulnerably listed Koala. The project gained subsequent approval on the 4th of March 2014 after being assessed by Preliminary Documentation. This <u>Offset Management Plan</u> has been developed in response to Condition 4 of the EPBC Act approval package and outlines the immediate, mid-term and long-term offset goals for the project.

Woodlinks Village is a residential master planned development with ancillary retail and commercial uses, located in Collingwood Park, South East Queensland. While a number of management plans will be in place to avoid and mitigate impacts to Koalas, impacts to Koalas that must be offset as per Condition 4 include:

- The loss of 25.9 hectares of habitat critical to the survival of the Koala; and
- Injury and mortality to Koalas.

This <u>Offset Management Plan</u> has the purpose of providing high level guidance for the creation and implementation of offset mechanisms. The primary offset mechanisms include:

- Rehabilitation and reinstatement of 27 hectares of vegetation along Goodna Creek. This includes areas
 adjacent to the development on the western side of Goodna Creek and areas within Harry Ratnam Park,
 located on the eastern side of Goodna Creek.
- Construction of access facilities (road) to the Koala Harvest Plantation in Harry Ratnam Park, which will facilitate access to this foliage plantation for the Ipswich Koala Protection Society.

The successful implementation of these offset mechanisms will create a self-sustaining, continuous corridor of high quality Koala habitat, facilitating Koala dispersal between habitat patches within the local landscape. This will help to achieve **lpswich City Council's** vision to create a locally significant conservation corridor along Goodna Creek.

I.I. Conditions of Approval Reference Table

| Condition | OMP Reference | Comments | | |
|--|--------------------|---|--|--|
| Condition 4: The approval holder must prepare an Offset Management Plan to address significant residual impacts to Koalas as a result of the action. | | | | |
| a) Impacts to Koalas that must be offset include: i. The loss of 25.9 hectares of habitat critical to the survival of the Koala, and ii. Injury and mortality of Koalas. | N/A | This <u>Offset Management Plan</u> provides guidance on how both the loss of 25.9 hectares of habitat critical to the survival of the Koala and potential injury and mortality will be offset. | | |
| b) The Offset Management Plan must include, but r | not be limited to: | | | |
| i. A detailed description of all affected | Section 3 | Section 3 provides a description of the habitat values on site and the | | |

| Condition | | OMP Reference | Comments |
|-----------|--|---------------|---|
| | values and the extent and likely timing of the impact/s on each; | | impacts from the action. It also discusses mitigation measures and residual impacts that require offsetting. |
| ii. | The offset delivery mechanism(s) comprising land offsets and management, and maintenance of Koala population offset within the 'Goodna Creek Corridor' as shown in Attachment 1; | Section 4.4 | Section 4.4 provides a detailed description of key delivery mechanisms of the offset. This includes rehabilitation of Goodna Creek and providing access to the Koala Harvest Plantation. |
| 111. | Detailed descriptions of how enhanced conservation outcomes for the affected Koalas will be achieved in accordance with the EPBC Act Offsets Policy; | Section 4.5 | The requirements and objectives of the EPBC Act Offsets Policy are described in Section 4.5. This is accompanied by a description of how the proposed offset meets the desired objectives. |
| iv. | Contribution of funding to the management and maintenance of the Offset Management Plan; | Section 5.2 | Section 5.2 describes the role of Canberra Estates Consortium No 36 as the primary contributor to funding. |
| v. | Timeframes and key milestones for implementation of offsets including, but not limited to, beginning to implement the offset plan prior to commencement of the action; | Section 5.1 | Timeframes and milestones, as well as the responsible person/ entity are described in a schedule in Section 5.1. |
| vi. | Discussion of the risks and uncertainties associated with proposed offsets; | Section 6 | Section 6 provides a detailed analysis of the risks and uncertainties relating to restoration ecology. Measures to minimise these risks are also proposed. |
| vii. | Mechanisms for monitoring and reporting of offset milestones and outcomes, including timing and frequency of monitoring and reporting; | Section 5.3 | Section 5.3 describes monitoring and reporting mechanisms |
| viii. | Corrective actions and contingency measures to be implemented (including the timing of implementation of these) where monitoring of the offset area/s under the offset plan shows that offset strategies are not effectively | Section 5.4 | Adaptive management techniques are described in Section 5.4 which will identify corrective actions and contingency measures. |

| Condition | 1 | OMP Reference | Comments |
|--------------------------|---|--|--|
| | achieving a net benefit or key milestones are not being or are unlikely to be met; and | | |
| ix. | Include textual descriptions and maps clearly defining the locations and boundaries of offset areas. These must be accompanied by a Shapefile. | Plan 1 and Section 4. Shapefile has accompanied the report. | Plan 1 shows the offset area. Section 4 provides a detailed description of the offset site. |
| devel Depa incluo | rtment and other relevant stakeholders, ding but not limited to, the Ipswich City cil and the Ipswich Koala Protection | Section 2.4 | This Offset Management Plan has been developed in consultation with identified stakeholders. |
| to ho incen strate | approval holder must give consideration w offsets will contribute to programs or tives that align with the broader gies and programs for the conservation protection of Koalas. | Section 4.1, Figure 4. | The contextual conservation object of both Ipswich City Council and the Ipswich Koala Protection Society is listed in Section 4.1. This is accompanied by Figure 4 which shows the strategic zoning of the offset area as a conservation corridor under the Ipswich Planning Scheme. |
| subm than imple | Offset Management Plan must be itted to the Minister for approval no less three months prior to its intended mentation. Once approved the Offset gement Plan must be implemented. | N/A | The action will not commence until the OMP and KMP have been approved. It is anticipated that construction will commence in late 2014/ early 2015. |
| imple the a | Offset Management Plan must be mented prior to the commencement of ction, or as otherwise directed in writing e Minister. | N/A | This <u>Offset Management Plan</u> will be implemented prior to the commencement of the action. |

2. Introduction

The *Environmental Management Division* of **Saunders Havill Group** was engaged by **Canberra Estates Consortium No 36** to prepare an <u>Offset Management Plan</u> for Woodlinks Village, located at 246-326 Collingwood Drive, Collingwood Park. The development proposal can be described as a master planned residential development with ancillary commercial and retail purposes with a designated open space/ conservation area.

Woodlinks Village was referred under the *Environment Protection and Biodiversity Conservation Act* (EPBC Act) on the 16th of May 2013 and subsequently declared a "controlled action" pursuant to section 18 and 18A (listed threatened species and communities) (EPBC Act reference 2013/6866). The trigger for the controlling provision was due to potential impacts on the Koala (*Phascolarctos cinereus*), which is listed as Vulnerable under the EPBC Act. Under the **Department of the Environment's** Preliminary Documentation requirements, an offset proposal to compensate for the impacts on 25.9 hectares of *habitat critical to the survival of the koala* was prepared in consultation with **Ipswich City Council** and the **Ipswich Koala Protection Society** (IKPS). The offset proposal included the rehabilitation and reinstatement of 27 hectares of degraded vegetation along Goodna Creek, and the creation of access facilities to the Harry Ratnam Park Koala Foliage Harvest Plantation.

The project was approved on the 4th of March 2014, subject to twelve conditions. Condition 4 of the approval provides that 'the approval holder must prepare an Offset Management Plan to address significant residual impacts to Koalas as a result of the action.' As such, this <u>Offset Management Plan</u> has been developed to satisfy the requirements of Condition 4 of the EPBC Act approval and to guide the implementation and management of offset activities. As per the requirements of the approval, this <u>Offset Management Plan</u> will include:

- A detailed description of all affected values and the expected timing of these impacts;
- The offset delivery mechanisms;
- A description of how the conservation outcomes of the *EPBC Act Environmental Offsets Policy* will be achieved and enhanced;
- Management mechanisms, including timeframes, funding, maintenance, monitoring/ reporting and corrective actions; and
- Identification of the risks and uncertainties associated with the offset.

Overarching Objective:

The successful implementation of proposed offset mechanisms will create a self-sustaining, continuous corridor of high quality Koala habitat, facilitating Koala dispersal between habitat patches within the local landscape. This will help to achieve **lpswich City Council's** vision to create a locally significant conservation corridor along Goodna Creek.



2.I. Key Site Details

| Address | 246-326 Collingwood Drive, Collingwood Park |
|--------------------------|---|
| RPD | Lot 1 on SP266990 |
| Area | 77.97 hectares |
| Approval Summary | The site retains a Preliminary Approval overriding the Ipswich City Council Planning Scheme for the establishment of the Corymbia Woods Master Plan, allowing for: -1966 total dwellings (site density of 25.3/ha) - 6.1 ha Urban Centre which, along with dwellings, includes the following possible uses: Business uses/ professional offices Fast food Retail Cafes Medical centre |
| Tenure | Freehold |
| Local Government Area | Ipswich City Council |
| Action Commencement Date | Late 2014/ Early 2015 |

2.2. Site Context

Contextually, Woodlinks Village is located three kilometres north-west of Redbank Plains and is bounded by residential housing to the north, rural allotments and Redbank Plains Road to the south and Goodna Creek to the east. The surrounding suburbs of Redbank Plains and Collingwood Park are highly urbanised and contain a mixture of residential housing, commercial properties and industrial land uses. Refer to **Figure 1** for the site context and **Figure 2** for the site aerial.







2.3. Project Scope and Activities

Woodlinks Village is to be developed in accordance with the flexible Preliminary Approval outcomes set out in the Corymbia Woods Master Plan and the Development Permit issued by **Ipswich City Council** in September 2008. While the Preliminary Approval refers to 'Corymbia Woods,' the project name has been since been changed to 'Woodlinks Village.'

The project can be described as a residential master planned development with ancillary local shopping, business and retail uses. The primary statistics include:

| Site Area: | = | 77hectares |
|------------------------------------|---|-----------------------|
| Development Footprint as zoned | = | 52 hectares |
| Area of Open Space (Various Forms) | = | 15 hectares |
| Total number of approved dwellings | = | 1966 (includes units) |
| Action Commencement Date | = | Late 2014/ Early 2015 |



The types of residential dwellings proposed include:

- Apartment houses
- Cottage allotments
- Side yards allotments
- Traditional house lots (400-600m²)

The primary layout feature of the development proposal is a clear delineation between 'residential' areas and 'conservation' areas, as shown in the adjacent image. This will achieve conservation outcomes by discouraging Koalas, and other fauna species, into urban areas where they are more susceptible to injury and mortality caused by vehicle strike and dog attack.

Instead, the conservation area designated on both sides of Goodna Creek will provide safe habitat opportunities for fauna and will contribute to the creation of a continuous ecological corridor, connecting habitat areas to the north and south of the site.

2.4. Stakeholder Consultation

Woodlinks Village has undergone three community consultation phases which has allowed for the identification and resolution of planning and development issues.

Stakeholder consultation has been made available through:

 The Collingwood Drive Design Forum- held over three days in 2007 in Ipswich, with attendees from the general community, **Ipswich City Council**, State Government and project team representatives (refer to image opposite).



- 2. Ongoing consultation with the **Ipswich Koala Protection Society** (IKPS) to identify offset areas and outcomes and to assist in developing the <u>Woodlink Koala Management Plan</u>.
- 3. Publication of referral documentation for public comment during the assessment stage of the project as required by the EPBC Act.

This <u>Offset Management Plan</u> has been developed in direct consultation with the **Department of the Environment, IKPS** and **Ipswich City Council**.

2.5. Offset Management Plan Objectives





3. Habitat Description and Likely Impacts

The subject site has been extensively surveyed since 2005, with more contemporary surveys focusing on potential EPBC Act issues, particularly the Koala. The range of ecological surveys conducted, which have spanned over nine years, has provided a detailed understanding of the ecological values that are present across the site. The following provides a description of the values which are likely to be affected as a result of construction activities.

3.I. Flora Values

The site currently supports a number of different vegetation communities identified under Regulated Vegetation mapping, as shown in **Figure 3** (Regional Ecosystem Map):

RE12.9-10.17 (Least Concern)

Open forest to woodland complex generally with a variety of stringybarks, grey gums, ironbarks and in some areas spotted gum. Canopy trees include *Eucalyptus siderophloia, E. propinqua* or E. *major, E. acmenoides* or *E. portuensis, E. carnea* and/or *E. microcorys* and/or *Corymbia citriodora* subsp. variegata. Other species that may be present locally include *Corymbia intermedia, C. trachyphloia, Eucalyptus tereticornis, E. biturbinata, E. moluccana, E. longirostrata, E. fibrosa subsp. fibrosa* and *Angophora leiocarpa. Lophostemon confertus* or Whipstick *Lophostemon confertus* often present in gullies and as a sub canopy or understorey tree. Mixed understorey of grasses, shrubs and ferns. Hills and ranges of Cainozoic and Mesozoic sediments.

RE12.9-10.19 (Least Concern)

Eucalyptus fibrosa subsp. fibrosa woodland +/- *Corymbia citriodora* subsp. variegata, *E. acmenoides* or *E. portuensis, Angophora leiocarpa, E. major.* Understorey often sparse. Localised occurrences of *Eucalyptus sideroxylon.* Occurs on Cainozoic and Mesozoic sediments.

RE12.9-10.3 (Of Concern)

Eucalyptus moluccana +/- *Corymbia citriodora* subsp. variegata open forest. Other species include *Eucalyptus siderophloia* or E. *crebra, E. tereticornis*. Understorey generally sparse but can become shrubby in absence of fire. Occurs on Cainozoic and Mesozoic sediments, especially shales. Prefers lower slopes.

RE12.3.3 (Endangered)

Eucalyptus tereticornis woodland. *Eucalyptus crebra* and *E. moluccana* are sometimes present and may be relatively abundant in places, especially on edges of plains and higher level alluvium. Other species that may be present as scattered individuals or clumps include *Angophora subvelutina* or *A. floribunda, Corymbia clarksoniana, C. intermedia, C. tessellaris, Lophostemon suaveolens* and *E. melanophloia*. Occurs on Quaternary alluvial plains, terraces and fans where rainfall is usually less than 1000mm/y.

Field surveys confirmed the occurrence of these Regional Ecosystems and found that the majority of the site was dominated by eucalypt and corymbia species. Generally, a larger number of *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus seeana* (Narrow-leaved Red Gum) and *Eucalyptus mollucana* (Gum Topped Box) were identified towards the eastern property boundary along Goodna Creek and a greater number of *Corymbia citriodora* (Spotted Gum) and *Eucalyptus crebra* (Narrow Leaf Ironbark) were dominant along ridgelines with less fertile soils.

The alluvial plain of Goodna Creek was assessed as highly disturbed as a result of historic land clearing, slashing and weed invasion. Most areas surveyed were devoid of a shrub layer however there was a consistent density in coverage of native canopy trees. The site contained forty-three (43) weed species, which included *Lantana camara* (lantana), *Opuntia* (prickly pear), *Ipomoea cairica* (mile-a-minute) and *Celtis sinensis* (Chinese elm). Goodna Creek is identified as an ecological corridor within the **Ipswich Planning Scheme.**



Legend



Figure 3 Regional Ecosystem v6.1

File ref.7189 E Figure 3 - RE CDate01.07.14ProjectWoodlinks Village

0 100 200 400 600 m Scale (A4): 1:14,000 [GDA 1994 MGA Z56]



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Layer Sources DCDB (DNRM 2013), Aerial (Google 2013), Zoning (Ipswich City Council 2013)

3.2. Koala Habitat

Approximately 35.2 hectares of vegetation on-site was assessed as achieving the definition of *habitat critical to survival of the Koala*. As there were no referral guidelines for the Koala released at the time of assessment, this interpretation was formulated against the *Interim Koala Referral Advice for Proponents* (2012).

Ecological experts from **BAAM** who completed studies across the site in 2008 and 2013 as a lead into the EPBC Act referral surveyed the site and surrounding areas and concluded in their letter dated the 27th of September 2013 that:

Although the subject site supports areas of highly suitable habitat, as assessed by the dominance of primary food trees, repeated surveys of the site indicate that koala usage of this resource is very low. It is expected that the condition of the soil profile, together with environmental factors, are such that the food trees do not provide the necessary foliar nutrients or moisture required to sustain a koala.

Fauna surveys across the site did not result in the identification of other EPBC Act listed species or ecological communities, however evidence of low level Koala usage in the form of scats was found. The site was assessed as supporting 1-2 individual Koalas. It is noted that Koala densities in the Collingwood Park area are relatively low, with most individual restricted to 'Riffle Range,' a state reserve located to the north of the site, connected to the site by Goodna Creek.

3.3. Impact Summary

The development of Woodlinks Village will result in the following ecological impacts on MNES:

- a) Removal and fragmentation of 52 hectares of vegetation, which includes 25.9 hectares of *habitat critical to the survival of the koala;*
- b) Decrease in availability of habitat for Koalas and other fauna species in the local area;
- c) Risk of injury or mortality to Koalas
- d) Changes to site topography through earthworks;
- e) Change to site hydrology introduced through hardstand and additional hard and soft drainage structure;
- f) Expansion of housing;
- g) Increase in vehicle use on access roads to service new housing; and
- h) Increase in domestic animals through the local area.

Table 1: Risk Assessment

| Impact | Likelihood | Consequence | Risk Rating |
|---|--------------------|-------------|-------------|
| Construction Phase | | | |
| Loss of habitat | Almost certain (A) | Minor (2) | High |
| Loss of 25.9 hectares of critical habitat | Almost certain (A) | Minor (2) | High |
| Injury and mortality due to vegetation clearing | Unlikely (D) | Major (4) | High |
| Injury and death due to | Unlikely (D) | Major (4) | High |

| Impact | Likelihood | Consequence | Risk Rating |
|---|--------------------|--------------|-------------|
| increased vehicle usage | | | |
| Species displacement into other habitat areas | Possible (C) | Minor (2) | Moderate |
| Impacts on breeding | Unlikely (D) | Moderate (3) | Moderate |
| Operational Phase | | | |
| Loss of habitat | Almost certain (A) | Minor (2) | High |
| Injury and death from dogs | Possible (C) | Major (4) | Extreme |
| Injury and death from cars | Possible (C) | Major (4) | Extreme |
| Barriers to dispersal | Possible (C) | Minor (2) | Moderate |
| Dispersal of koalas into residential areas | Possible (C) | Moderate (3) | High |

As identified from the risk assessment above, management measures will focus on avoiding and mitigating impacts caused by:

- Loss of habitat
- Risk of injury and death caused by:
 - Vegetation clearing
 - Dog attack
 - Vehicle strike
- Dispersal into residential areas

3.4. Avoidance and Mitigation

Following the Mitigation Hierarchy set out within the *EPBC Act Biodiversity Offsets Policy*, measures to avoid and mitigate impacts have been developed to reduce the quantity of residual impacts on MNES that require offsetting. Post the "Controlled Action Determination," consultation with the **IKPS** and **Ipswich City Council** has led to the incorporation of two (2) primary factors into the project to help avoid and mitigate development impacts on Koalas during the operational stage of the project. These include:

- 1. Minor Alterations to the Plan of Development
- 2. Preparation of a Woodlink Koala Management Plan

In addition, a number of management plans will be imposed to ensure impacts from construction are minimised, particularly in relation to preventing injury and mortality to Koalas and other species during construction.

3.4.1 Alterations to the Plan of Development

The original Development Permit and proposal issued to the **Department of the Environment** for referral was based on the 2008 Corymbia Woods Master Plan. Amongst a range of leading urban design outcomes, the open space network included a number of lineal tree protection zones connecting internal local recreation parks with the rehabilitated Goodna Creek area set aside for environmental protection. While improving the walkability of the estate and linkage of the parkland, this outcome resulted in the substantial fragmentation of existing vegetated areas and could potentially have the effect of drawing fauna up from the Goodna Creek corridor into high density residential areas where vehicles and dogs would be more prevalent. Post an on-site workshop with **Ipswich City Council** officers, it also became clear that many of these lineal opens pace areas will be heavily effected by earthworks and new infrastructure alignments.

Similarly, a more detailed review of Council's Planning and Development (PD) online database shows the approved footprint of surrounding developments and new roads which completely eliminate the potential connectivity of site vegetation to the west of the project area (refer to **Figure 4**).

In response to these concerns, the preference was for a minor redesign which clearly demarcated areas of the site to be developed and areas to be retained and enhanced for the environment, reducing the integration of the two uses. The new proposal now infills much of the internal linear open space system with development footprint, with limited direct connectivity between internal recreation open space and the Goodna Creek Corridor. The trade-off for this outcome is the commitment to undertake major replanting works to the eastern side of Goodna Creek in the existing Council owned Harry Ratnam Park. This is discussed further in **Section 4.**

Figure 4: Contextual Development Footprint



3.4.2 Woodlink Koala Management Plan

A number of potential and necessary koala and other fauna controls and management measures were discussed through the additional consultation with Council and the **IKPS**. To embed all of these controls and measures in a single management document, the <u>Woodlink Koala Management Plan</u> has been prepared and will be lodged in addition to this <u>Offset Management Plan</u>. The Management Plan includes details on:

- 1. The existing broad ecological values of the site
- 2. The environmental and development context of the Collingwood Park area
- 3. Outlines the various components of the proposal
- 4. Lists out Vegetation Controls for the Control of Clearing Works
- 5. Details the Fauna Management Protocols during and post construction
- 6. Lists a range of proposed operational management measures (dogs, vehicles)
- 7. Outlines the works proposed to be completed on and off site along Goodna Creek

The <u>Woodlink Koala Management Plan</u> has been prepared for approval to form an overarching commitment to wildlife management and the Goodna Creek Corridor enhancement for the life of the project.

Some of the more specific management considerations in the management plan include:

1. Road Design and Vehicle Controls

Vehicle strikes are a major contributor to injuries and fatalities in Koalas and so it has been recognised that measures need to be in place to safeguard Koalas from vehicle related injuries. The new Woodlinks Village development proposal no longer introduces a network of complex open space linkages intertwined within the internal road network, with the environmental focus of the project limited to the Goodna Creek Corridor. The project proposes a low speed residential scale esplanade road along the edge of the corridor separating the new housing from the corridor area. By law, the maximum speed for this road is 50km per hour, however enquires have been made to **Ipswich City Council** and **Queensland Department of Transport and Main Roads** to further reduce this zone to 40km per hour.

With the road travelling adjacent to and not across the corridor, traffic calming, awareness signage and the specific landscape design of the road verge will all contribute towards slowing cars and maximising driver visibility of moving fauna. The streetscape and adjoining houses will be planted out with non-Koala tree native species to reduce any encouragement for Koalas and other native fauna to venture away from the Goonda Creek corridor.

The external road upgrades of Collingwood Drive and the Future Eagle Street have been designed and implemented by **Ipswich City Council**, with Woodlink having no control over these major infrastructure items. Representations have been made to **Ipswich City Council** to incorporate a fauna culvert in the Eagle Street upgrade allowing for the continued connectivity of this site and retained habitats along the creek to the north.

2. Dog Controls – Goodna Creek Corridor

To minimise the risk of injury to Koalas by dog attacks, controls will be in place requiring all dogs to be on a leash and/or prohibited from the Goodna Creek Corridor. Dog off-leash facilities will be provided within the local parks scattered throughout the estate to offset this on lead control along Goodna Creek. These requirements will be signed throughout the estate and particularly along the entry and exit points to the Goodna Creek open space. The design of the Goodna Creek Corridor is primarily rehabilitation works with no major recreation facilities or



open turf areas which would attract dog use. **Ipswich City Council** operates an existing animal control local law which requires all dogs to be registered.

3. Education and Awareness

Education and awareness signage along the Goodna Creek pedestrian link and esplanade road will be installed, detailing the importance of the corridor, its potential use by koalas and how residents can support this use. This signage will be developed in conjunction with **IKPS**.

The Woodlink Village lifestyle guideline documentation will be issued to each new resident and is designed to help promote a range of ecological sustainable living principles. The guideline will be used to directly educate and raise awareness of a large audience towards the management of the Goodna Creek Corridor. Topics included within the education documents include:

- Appropriate plant selection on allotments
- Inappropriate planting species (known local or declared weed species)
- Management of house hold scale run-off
- Protection of native animals and the types of native animals residents could expect to see within Goodna Creek
- Understanding stormwater devices
- Appropriate management of domestic animals
- Location of dog on-leash and off-leash areas
- Key local and state phone numbers to contact if distressed or orphaned fauna is located.

Through raising awareness, the lifestyle guidelines will help new residents take direct ownership of the local streetscapes and the existing vegetated and recently rehabilitated portions of the Goodna Creek Open Space.

In addition to these specific restrictions and awareness requirements, many of the previously discussed management plans will incorporate ongoing monitoring and reporting on the function of the corridor open space system.

4. Urban Infrastructure

The need to ensure Koalas remain within the Goodna Creek Corridor and avoid entering the adjoining residential areas is a paramount concern. During the 30th October 2013 meeting with **Department of the Environment** representatives, discussions centred around the potential use of colorbond fencing within the allotments adjoining domestic animals internally and preventing koalas from accessing these areas. The Woodlinks Village Koala Management Plan provides details on measures which can be used to retain Koalas within the Goodna Creek Corridor and to restrain them from entering adjoining residential areas. Some of the options considered include:

- Considerations for fauna exclusion fencing (via combination of retaining and fencing) to the periphery of the Goodna Creek Corridor. The goal would be to provide a one way access barrier which enables animals to enter the corridor but not exit where it interfaces with the new residential development areas.
- The inclusion of fauna friendly or exclusion fencing in specific locations throughout the estate where deemed to provide a functional outcome in the protection of koalas
- A non-koala tree landscape mix to be used in estate landscaping. Ensure street and park trees while being planted out with non-invasive native trees don't specifically include any primary or secondary Koala food trees. The goal of this approach is to minimise the attraction for Koalas to exit the corridor area.

3.4.3 Additional Management Measures

To manage these impacts, a number of procedures will be implemented prior to and during vegetation clearing works and construction. This includes the implementation of a <u>Vegetation Clearing and Management Plan</u> (VC&MP) and use of a registered Fauna Spotter Catcher recommended by **IKPS** to protect wildlife from the impacts of clearing. In addition, to ensure the highest level of environmental management is incorporated into the project, the <u>RSPCA/ ESU of WW Draft Code for Fauna Spotting</u> will be adopted to ensure that fair, reasonable and appropriate measures are undertaken to minimise the adverse impacts on wildlife.

3.5. Risks of Injury and Morality to Koalas

Given the extensive management measures to be imposed throughout the construction and operational phases of Woodlinks Village, it is unlikely that injury or mortality to Koalas will occur. However, should an incident occur during the construction of Woodlinks Village that results in injury to Koalas, the animal's full rehabilitation costs will be covered by the proponent.

3.6. Residual Impacts on MNES

While incorporating a number of measures to avoid and mitigate impacts on the Koala, the proposal results in the direct removal or fragmentation of 25.9 hectares of *habitat critical to the survival of the Koala*. This residual impact is to be offset in accordance with Condition 4 of the EPBC Act Approval through the rehabilitation and reinstatement of a portion of Goodna Creek adjacent to the development site, as well as through the construction of access facilities to the Koala Foliage Harvest Plantation locate don Harry Ratnam Park for the **Ipswich Koala Protection Society**.

4. Offset Design

4.I. Background

The rehabilitation of a 27 hectare area along Goodna Creek has been identified as the most effective and efficient offset opportunity to compensate for the residual impacts on Koala habitat as a result of the development of Woodlinks Village. This offset area is depicted in **Plan 1.** Its selection as an offset area came after extensive consultation with **Ipswich City Council** and the **Ipswich Koala Protection Society**, who both identified its rehabilitation as the preferred conservation outcome for the local area. The Goodna Creek ecological corridor has been strategically designated within the Ipswich Planning Scheme to retain and enhance linkages between areas of remnant vegetation within Collingwood Park and Redbank (refer to **Figure 5**). The Goodna Creek corridor will play an important role in maintaining connectivity between protected vegetation areas such as the "Riffle Range" (State reserve) to the north and to other habitat areas along Six Mile Creek and the Brisbane River.

The proposed offset area includes 16 hectares along the western side of Goodna Creek, adjacent to Woodlinks Village, and 11 hectares to the east of the Creek in Harry Ratnam Park (refer to **Plan 1**). Not only will rehabilitation works allow for the creation of a continuous corridor along Goodna Creek, but it will facilitate **IKPS's** access to Koala leaf collection areas in Harry Ratnam Park. This particular portion of Goodna Creek has been chosen for rehabilitation as it is heavily degraded and provides an important opportunity to increase Koala habitat and connectivity opportunities in the local area. Once the rehabilitation works are complete, the offset area will be transferred to Council ownership to ensure its continued protection and maintenance.

4.2. Location

Contextually, the offset area is located to the east of the Woodlinks Village development site, flanking both sides of Goodna Creek (refer to **Plan 1**). The offset area totals approximately 27 hectares, which is made up of:

- a) 16 hectares of land within the Woodlinks Village project area boundaries; and
- b) 11 hectares of land within Harry Ratnam Park, which is owned by **Ipswich City Council**.

Under the Ipswich Planning Scheme, a large proportion of the Goodna Creek Corridor offset area is protected from development through its 'recreation' zoning (refer to **Figure 5** and **Plan 2**). This corridor adjoins the Brisbane River and Six Mile Creek, both located to the north of the site. This corridor also adjoins a State Reserve known as 'Riffle Range,' located approximately two kilometres north along Goodna Creek. The recreational zoning ensures that incompatible development and land uses that impede the ability of Goodna Creek to act as an ecological corridor do not occur. The location of the offset area has been identified in recognition of Ipswich City Council's long term vision for Goodna Creek to act as a primary ecological corridor within the landscape.

The offset area is contained within parts of the following allotments:

Woodlinks Village Project Area

Harry Ratnam Park:

- Lot 1 on SP266990
- A/RP116226 (easement)

- Lot 5 on RP221982
- Lot 519 on SL10400
- Lot 901 on SP198179



ISO 14001 Environmental inagement System QMS ===

Goodna Creek Offset & Rehabilitation Area

DCBD (DNRM, 2013), Aerial (QLD Globe, 2013) RE & HVR (EHP, 2013)

SHG File 7189 E 01 Offset Proposal B



Layer Sources DCDB (DNRM 2013), Aerial (Google 2013), Zoning (Ipswich City Council 2013)





4.3. Offset Site- Basic Description

In its current state, the vegetation alongside Goodna Creek is heavily degraded as a result of previous land clearing and weed invasion. Only small patches of vegetation within the 27 hectare offset site are mapped as remnant vegetation, with the remaining portions retaining mostly disturbed regrowth vegetation or cleared pastoral paddocks. The alluvial plain of Goodna Creek is dominated by *Lantana camara* (lantana), *Ipomoea cairica* (mile-a-minute) and *Celtis sinensis* (Chinese Elm). No consistent coverage of vegetation aligns the creek and the dense infestations of weeds limits the creeks ability to support native fauna due to dispersal impediments and lack of suitable habitat, particularly for Koalas.

The north-east portion of the offset area located in Harry Ratnam Park contains a Koala tree foliage area for local conservation groups to collect eucalyptus leaves to feed Koalas in their care. While a number of plantation trees exist in this area, they are almost completely inaccessible, with recent attempts resulting in car boggings.



Photos:

4.4. Delivery Mechanisms

4.4.I Rehabilitation Works- Goodna Creek

The area either side of Goodna Creek has always been strategically zoned for ecological enhancement and open space within the Ipswich Planning Scheme, representing a lineal corridor dedicated in a series of fragments up and downstream from the project. The corridor portion within the Woodlinks Village project is heavily degraded and requires substantial weed management and replanting.

To offset for the loss of vegetation within the development area, major replanting works will occur across 16 hectares adjacent to Woodlinks Village and Goodna Creek. An additional 11 hectares have been negotiated with Council within their existing land holdings on the eastern side of



Goodna Creek known as Harry Ratnam Park. These works provide an additional 11 hectares of current open grass land adjoining Goodna Creek to be replanted with native species. Two detailed Weed Management and Rehabilitation Plan Series have been prepared as technical documents to show the precise commitment works within this corridor, attached in **Appendix A & B**. The core works proposed on these documents include:

a) Weed Management

Weed management will comprise a major part of the site works within the corridor area and will provide a basis of aiding natural regeneration within the riparian corridor. Where significant disturbance occurs, infill tubestock planting will be utilised to aid stabilisation and native vegetation succession. Weed removal will be undertaken in three stages: primary weed removal stage, secondary or follow-up weeding and maintenance weeding phase. This, along with monitoring, will provide effective weed management within rehabilitation areas.

b) <u>Revegetation</u>

Post weed-removal, rehabilitation areas will undergo revegetation to varying degrees, depending on the level of disturbance. It involves the cultivation and planting of native species and maintenance in the form of watering, continued weed removal, erosion control and ongoing management. The <u>Rehabilitation Management Plan</u> provides details on the types of plant species which will be used in particular rehabilitation areas. The



rehabilitation areas have been divided into four separate categories, each with varying degrees of rehabilitation:

i. Zone 1- Existing Vegetation Area (Natural Regeneration)

This area is predominantly free of weeds and disturbance from the development will be kept to a minimum. Minimal weed removal will occur, allowing for natural regeneration of this area.



ii. Zone 2- Mass Koala Regeneration Area (Reconstruction)

Due to previous land uses and clearing, these areas will be reconstructed through the removal of invasive species and the replanting of native vegetation such as koala habitat trees, native shrubs and ground covers.

iii. Zone 3- Koala Infill Revegetation Area (Assisted Natural Regeneration/ Reconstruction)

Zone 3 occurs along the fringes of easement areas which have been previously cleared for construction and electrical infrastructure. These areas have been identified as partially disturbed and will require partial assisted natural regeneration and reconstruction approaches.

iv. Zone 4- Powerline Revegetation Area (Reconstruction)

There is currently an electrical easement traversing the site which is highly disturbed due to clearing and slashing over many years. This area is generally covered in pastoral grasses with minor regrowth occurrences. This area will be rehabilitated with small trees, shrubs and groundcovers and access tracks will be stabilised with rock and mulch.

v. Zone 5- Rehabilitation and Stormwater Shared Use Area

Zone 5 is restricted to parts of Harry Ratnam Park and includes areas to be planted with species tolerant to frequent inundation.

4.4.2 Koala Foliage Harvest Plantation

Within Harry Ratnam Park, **Ipswich City Council** has provided an existing 1.5 hectare Koala tree foliage harvest facility for use by the **Ipswich Koala Protection Society**. Discussions with **Ipswich Koala Protection Society** have revealed that this facility is not currently used as no traversable vehicle access has been provided, with previous attempts resulting in major vehicle boggings. As part of the replanting of Harry Ratnam Park, legitimate access facilities will be provided for the **Ipswich Koala Protection Society**.



Picture: Koala Foliage Harvest Plantation on Harry Ratnam Park



4.5. Offset Requirements (EPBC Act Offsets Policy Objectives)

Condition 4 of the EPBC Act approval requires the preparation of an <u>Offset Management Plan</u> to address significant residual impacts to Koalas, in accordance with the *EPBC Act Biodiversity Offset Policy*. The extent of impacts on the Koala which require offsetting under the EPBC Act approval include:

- a) The loss of 25.9 hectares of habitat critical to the survival of the Koala; and
- b) Injury and mortality to Koalas.

The main **objective** of the offset is to:

To create a self-sustaining system that provides habitat critical to the survival of the Koala while creating a locally significant corridor connecting habitat areas along Goodna Creek.

It is anticipated that this objective will be achieved through its fulfilment of the performance requirements set out in the in *EPBC Act Environmental Offset Policy*, as demonstrated in **Table 2**.

Table 2: EPBC Act Offset Policy Requirements

| Policy Requirement | √/x | Strategy |
|---|-----|---|
| Suitable offsets must deliver and overall conservation outcome that improves or maintains the viability of the protected matter. | | The development of Woodlinks Village will result in the unavoidable removal or fragmentation of 25.9 hectares of habitat critical to the survival of the Koala. As this will reduce the availability of habitat for Koalas in the local area, the offset has been designed to rehabilitate 27 hectares of degraded vegetation along Goodna Creek to improve its ecological value to Koalas and other local fauna species. This is considered to improve or maintain the value (that being, Koala habitat), which is being lost as a result of the development. In addition, the rehabilitation of Goodna Creek will improve connectivity between Riffle Range, an area known to support local koalas located to the north, and areas further south of the site. The offset will improve or maintain Koala habitat . |
| Suitable offsets must be built around direct offsets but may include compensatory measures. | ~ | As discussed above, the offset includes the direct rehabilitation and restoration of 27 hectares along Goodna Creek. The Offsets Calculator shows that this will achieve a 100.39% direct offset of residual impacts, going beyond the 90% minimum. The offset area will be secured under the protection of Ipswich City Council. The offset is built on direct offsets. |





| Policy Requirement 🗸 / x | Strategy |
|--------------------------|---|
| | providing a clear direction on required actions Efficiency is encapsulated in the fact that land has already been acquired- rather than having to buy up additional land to provide an offset, the proponent has been able to use 16 hectares of degraded land within the ownership boundaries of Woodlinks Village and 11 hectares of Council owned land to the east. This allows more funding to be available to effectively rehabilitate the site, rather than used to buy land. The design of the offset has focused on recreating Koala habitat- replanting works will focus on ensuring there is a high mix of primary and secondary Koala food trees to ensure the rehabilitation is efficiently and effectively recreating the habitat lost as a result of the development. |
| | Timely To reduce time-lag between the loss of vegetation and the establishment of offset vegetation, rehabilitation works are scheduled to commence with the first action on-site. It is noted that clearing is to occur in 6 or more stages and span the life of the project (6-8 years). It is expected that the initial weed removal and replanting works should be completed/ established within 18 months of the initial commencement of works, leaving the vegetation to regenerate and grow throughout the lifespan of the project. |
| | Transparent As per the requirements of the EPBC Act approval, the most up- to-date version of this <u>Offset Management Plan</u> will be available online for view by the public. In addition, monitoring and reporting will be made available to the Department of the Environment on request. |
| | Scientifically Robust The rehabilitation program has been designed in collaboration between qualified landscape architects, ecologists and environmental managers with experience in vegetation rehabilitation within South East Queensland. It is this experience that ensures the rehabilitation program will successfully achieve short and long term outcomes to appropriately compensate for the loss of Koala habitat. |
| | The aim of rebabilitation works will be to establish an ecosystem |

The aim of rehabilitation works will be to establish an ecosystem

| Policy Requirement | √/x | Strategy |
|--|----------|--|
| | | with the physical structure and function of woodland dominated by primary and secondary Koala food trees. |
| | | Reasonable The offset design has been based upon achieving conservation outcomes for the local Ipswich area. By considering Ipswich City Council's Planning Scheme, it was clear that Council had the intention of creating a conservation corridor along Goodna Creek. It was reasonable, in the context of offsetting impacts in Ipswich, to create a conservation outcome that services the Ipswich locality. The offset is efficient, effective, timely, transparent, scientifically robust and reasonable. |
| Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced. | √ | Monitoring of the rehabilitation and regeneration works will be undertaken by contractors consistently throughout the offset establishment phase, which will allow for transparency in monitoring. Monitoring will be based upon objective criteria which will determine whether rehabilitation works are meeting weed removal and rejuvenation success thresholds. Should offset works fail to meet objectives, corrective actions will be undertaken to identify why the rehabilitation works hadn't achieved desired objectives and new strategies will be designed and implemented. |
| | | The offset will have a transparent governance arrangement. |



5. Offset Management

5.I. Management Actions- Timing of Delivery

Rehabilitation works along Goodna Creek will commence with the first stage of development and is programed to be completed within the first three years. This will allow for the establishment of the offset area in a faster time frame compared to the rate of vegetation removal, which is expected to span across eight years. After the completion of works, the proponent will maintain the offset area until is it ready for hand over and dedicated to **Ipswich City Council**. **Table 3 and 4** provide an indicative schedule of work items and maintenance sequencing for works:

Milestone Timeframe **Prior to Commencement** Pre-start **Commencement of Action – Offset Establishment (18 months)** 6 months prior to commencement 3 months prior to Construction Establishment Ongoing Ongoing Onc commencement Period (3 months-Period (3 Maintenance (3 Maintenance (3 Mai Winter) months- Spring) monthsmonthsmor Win Summer) Autumn) Offset Management Plan Saunders Havill Group Design Stakeholder Consultation **Saunders Havill Group** Saunders Havill Group Submission to the Minister for Submission by Saunders Havill Approval **Group to Kate Paull** (Department of the **Environment**) **Council officers**, **Pre-Start Meeting** Les Milne, Murray Saunders, development contracts, fauna spotter catcher Fauna Management Fauna Fauna Fauna Fauna Fauna Faur Spotter/Catcher Spotter/Catcher Spotter/Catcher Spotter/Catcher Spot Spotter/Catcher Environmental Training (all Site contractors Site contractors **Site contractors** Site contractors Site contractors Site site contractors) Rehabilitation Weed Contractors Contractors Contractors Contractors Contractors Cont Management regeneration Soil Contractors of Goodna Preparation Creek Mulching Contractors Initial Contractors Planting and Watering

Table 3: Indicative Timing Schedule/ Responsible Person or Entity

| | | >18 Months post |
|--|---|--------------------------|
| going ntenance (3 nths- .ter) | Ongoing Maintenance (3 months- Spring) | commencement |
| | | |
| | | |
| | | |
| | | |
| | | |
| na tter/Catcher | Fauna Spotter/Catcher | Fauna Spotter/Catcher |
| contractors | Site contractors | Site contractors |
| tractors | Contractors | Contractors |
| | | |
| | Contractors | |
| | | |
| | | |



| Milestone | | Timeframe | | | | | | | | | | | | |
|--------------------------------|---|--------------------------------|--------------------------------|-----------|--|---|---|---|---|---|--------------------|--|--|--|
| | | Prior to Commencement | | Pre-start | Commencement of | >18 Months post | | | | | | | | |
| | | 6 months prior to commencement | 3 months prior to commencement | | Construction Period (3 months- Winter) | Establishment Period (3 months- Spring) | Ongoing Maintenance (3 months- Summer) | Ongoing Maintenance (3 months- Autumn) | Ongoing Maintenance (3 months- Winter) | Ongoing Maintenance (3 months- Spring) | commencement | | | |
| | Replacement of Failed Plants | | | | | Contractors | Contractors | | | Contractors | | | | |
| | Formative Pruning | | | | | | | Contractors | | | | | | |
| | Monitoring | | | | Contractors | Contractors | Contractors | Contractors | Contractors | Contractors | | | | |
| | Reporting | | | | Contractors | Contractors | Contractors | Contractors | Contractors | | | | | |
| | of Access Koala Foliage tation (Harry | | | | Contractors | | | | | | | | | |
| Review of Offse Plan/ Audit | et Management | | | | | | | Saunders Havill Group | | | | | | |
| Handover of (Council | Offset Land to | | | | | | | | | | Proponent/ Council | | | |



Table 4: Rehabilitation Works Indicative Schedule

| | Winter | | | Spring | | | Summer | | | Autumn | | | Winter | | | Spring | | |
|-----------|--|---|--|--|--|--|--|--|--|--|------------|--|------------|------------|--|--|--|--|
| | Construction Period (3 months) | | | Establishment Period (3 months) | | Ongoing Maintenance | | | Ongoing Maintenance | | | Ongoing Maintenance | | | Ongoing Maintenance | | | |
| | Month 1 | Month 2 | Month 3 | Month 1 | Month 2 | Month 3 | Month 1 | Month 2 | Month 3 | Month 1 | Month 2 | Month 3 | Month 1 | Month 2 | Month 3 | Month 1 | Month 2 | Month 3 |
| WEEK 1 | Pre-start meeting with Council, Contractor and Superintendent | Weed management- "knockdown spray" | Mulch spreading and Jute-mat installation | Watering and monitoring and reporting (throughout establishment) | Watering and monitoring and reporting (throughout establishment) | Watering and monitoring and reporting (throughout establishment) | Monitoring and reporting (watering to replacement plants only) | Monitoring and reporting | Monitoring and reporting | Monitoring (watering to replacement plants only) | | Monitoring and reporting | | | Monitoring and reporting | Mulch- top up depths to 100mm and replace/ repair Jute matting as required | Monitoring (watering to replacement plants only) | Monitoring (watering to replacement plants only) |
| WEEK 2 | Initial weed management works- wood weed removal/ "knockdown spray" | Soil preparation and cultivation | Natural regeneration, plant staking for identification | Weed management- "knockdown spray" in mulched areas | Weed management- "knockdown spray" reapply to woody weeds | Weed management- "knockdown spray" in mulched areas | Weed management- rotation "knockdown spray" in mulched areas | Weed management- rotation "knockdown spray" in mulched areas | Weed management- rotation "knockdown spray" in mulched areas | Weed management- rotation "knockdown spray" in mulched areas | | Weed management- rotation "knockdown spray" in mulched areas | | | Weed management- rotation "knockdown spray" in mulched areas | Natural regeneration plants- weed management | Weed management- rotation "knockdown spray" in mulched areas | Weed management- rotation "knockdown spray" in mulched areas |
| WEEK 3 | Weed management works- removed by hand | Soil preparation and modification | Planting and watering | Natural regeneration plants- weed management | Replacement of failed plants | Replacement of failed plants | Natural regeneration plants- weed management | Natural regeneration plants- weed management | Replacement of failed plants | Natural regeneration plants- weed management | | Trees formative pruning | | | | Replacement of failed plants | Replacement of failed plants | Natural regeneration plants- weed management |
| WEEK 4 | Weed management- slashing of maintenance plants | Mulch- stockpiled on site | Planting and watering | Weed management- slashing of maintenance access paths | Weed management- slashing of maintenance access paths | Weed management- slashing of maintenance access paths | Weed management- slashing of maintenance access paths | Weed management- slashing of maintenance access paths | Weed management- slashing of maintenance access paths | Weed management- slashing of maintenance access paths | | Weed management- slashing of maintenance access paths | | | Weed management- slashing of maintenance access paths | Replacement of failed plants | Weed management- slashing of maintenance access paths | Weed management- slashing of maintenance access paths |

** Note: assumes planting at end of Winter to allow for establishment and maintenance over two growing seasons

Key:

Weed Management

Planting Works

Watering, Monitoring and Reporting

Soil Preparation and Mulching
5.2. Funding

All upfront costs associated with the weed management and revegetation of Goodna Creek will be the responsibility of the proponent (**Canberra Estates Consortium No. 36**). The detailed rehabilitation plans submitted with the Preliminary Documentation Submission will be lodged with Council as operational works drawings to obtain final works approvals. As part of this approval process council will set timeframes and criteria for the works to be considered complete, on establishment and on and off maintenance. Council will require a bond for the works to enable the project to advance ahead of the completion of the rehabilitation works. Under current Council policy the bond is calculated as 1.5 times the tendered cost of the works including full maintenance. In recent revegetation projects completed on Ironpot Creek, Council conditioned a 2 years establishment period followed by a 3 year maintenance period before the works would be accepted under Council ownership (5 years from practical completion). If at any stage the success of the works remain the responsibility of the developer. Council retain the value of the works (at 1.5 times) until they are satisfied with the level of success. If the developer was to fail to undertake the works then Council under law must use the bond to complete the works.

As indicated in a meeting with the Department on the 30th of October 2013, **Canberra Estates Consortium No 36** is committed toproviding ongoing funding for weed management and rehabilitation during and beyond the life of the project. This may be arranged in the future either with the Council or through direct funding of local community environmental organisations. Returning the grass land areas to remnant status will ultimately take 20 years, however the revegetation is likely to be self-sustaining and functional between 7-9 years, during which time the proponent is committed to weed management and rehabilitation of the offset site.

In the long term, beyond the life of the project, the offset area will be made up of a combination of recently dedicated and existing Council parklands. The entire offset area will be transferred to **Ipswich City Council as part of their larger** conservation land holdings and will be managed through budget revenue created through the expanded Collingwood Park rates base.

5.3. Monitoring and Reporting Procedures

The objective on this <u>Offset Management Plan</u> is to maintain or enhance the Koala habitat values lost as a result of the development within the Goodna Creek rehabilitation area. As such, monitoring and reporting of the offset site will need to be undertaken to determine if this objective has been or is going to be achieved. This will include both short term and long term criteria to measure success. To offset the impacts from the development, Goodna Creek is to be rehabilitated through weed removal and the replanting of native species. Monitoring the weed management and revegetation works allows for:

- A review of the pre-established performance indicators for measuring the success of the weed removal and control;
- Ensure level of protection for existing identified native vegetation inclusive of that which has naturally regenerated;
- Review the rate of spread or contraction of weed infestation within the control program;
- Monitor the rate of assisted regeneration and revegetation of desirable native species promoted in areas where weeds have been removed; and



 Identification of new weed threats or other factors which may be affecting areas designated for rehabilitation.

5.3.I Benchmarks

The weed management and rehabilitation works aims to improve the flora and fauna value along the Creek corridor through weed removal and promoting native species growth. The following breakdown of works as well as on and off maintenance milestones is proposed:

- a) Existing Vegetation Areas:
 - On maintenance requirements:

environmental management Offset Management Plan

- Primary weed removal completed
- Secondary wed removal completed
- Minimum 50% weed removal from existing vegetation
- Off maintenance requirements:
 - o 10% or less weeds present on site
 - Any additional revegetation required has 80% success rate

b) Revegetation Areas

- On maintenance requirements:
 - All required planting completed
 - Evidence of ongoing weed management
 - Maximum of 10% plant failures at time of inspection
- Off maintenance requirements:
 - Maximum 20% plant failures
 - Plants established and generally free of weeds

5.3.2 Monitoring Timeframes

As per the schedule provided in **Table** 4, initial monitoring and reporting of weed removal and revegetation/ regeneration works will be undertaken monthly within the initial 18 months. This will measure whether weed removal and regeneration targets are met.

Once the rehabilitated areas have been established, monitoring will continue every up until final changeover to Council ownership. The purpose of this monitoring will be to identify:

- Whether weed invasion has been controlled
- Whether the number of individuals within the vegetation community is being sustained or increased by natural recruitment
- Whether adequate levels of biodiversity (genetic variation) are maintained through generations of flora.
- Occurrence and utilisation by native fauna to assess ecosystem restoration.

5.3.3 Reporting

Throughout the monitoring of rehabilitation works, results will be recorded as part of a progress report and be made available via the **Saunders Havill Group** and **Village Building Company** websites within 10 business days of the monitoring event. This will allow for an assessment of whether the rehabilitation works are achieving set objectives and targets and will trigger corrective actions should results fall short of targets.



This <u>Offset Management Plan</u> will adopt an adaptive management approach to allow for reassessment and reevaluation of offset management measures and techniques. Through the practical implementation of this <u>Offset</u> <u>Management Plan</u>, monitoring and reporting processes and document review procedures will allow for the identification of knowledge and procedural gaps and will facilitate an evaluation of successes and failures. This process will also allow for the identification of necessary corrective actions which have not been contemplated in the initial design of the offset proposal.

5.4.I Contingency Measures

The following potential risks to the successful implementation of Goodna Creek have been identified:

- Failure of successful regeneration of juvenile/ planted specimens
- Failure of weed management
- Failure to create a self-sustaining ecosystem

Should the initial weed removal and revegetation works fail to achieve the objectives for the offset area, monitoring and reporting procedures will facilitate the identification of the cause of failure, whether that be due to flooding, drought, poor soil quality, inadequacy of weed removal techniques, impacts from human disturbance or other causative events. Once the causative event of failure is identified, corrective actions can be imposed to implement new procedures, techniques or management measures.

Potential contingency measures include:

- Use of different plant species or using higher ratios of successful species;
- Implementation of more aggressive weed removal and management techniques;
- Utilising a variety of water sources during drought, including irrigation;
- Replanting where damage has occurred as a result of unexpected events such as flooding and fire;
- Erection of fences or signs where failure has occurred as a result of human disturbance; and
- Maximising surface roughness to slow runoff, which reduces erosion and provides more time for plants to absorb water.

As noted previously, the proponent has provided a dedication to the ongoing funding of rehabilitation works until a self-sustaining ecosystem has been created. In addition, rehabilitation works must be established to an acceptable standard before Council will take on ownership and management of the corridor. The process of accepting the completed works requires regular monitoring and acceptance by Council that objectives have been achieved. Council will retain a monetary bond from the proponent to mitigate the risk of non-compliance. The purpose of the bond is so that Council have the means to complete rehabilitation works with bond money should the proponent fail to do so. However, the onus to rehabilitate the Goodna Creek Corridor lies on the proponent and must be achieved in order to comply with Commonwealth and Local Government approval conditions.

5.5. Protection Mechanisms

As stated above, once rehabilitated, the offset area will be dedicated to Council for the long term management and protection of the conservation corridor. This will involve the dedication of land into Council ownership to facilitate the long term protection of the offset land in accordance with the recreational zoning of Goodna Creek.

6. Risks and Uncertainties

The use of biodiversity offsets provides an opportunity to balance development and conservation outcomes in order to achieve sustainable development by compensating for development impacts on the environment. In particular, the *EPBC Act Biodiversity Offset Policy* requires 'not net loss' or 'net gain' of Matters of National Environmental Significance (MNES) compensated under the offset regime. By imposing an obligation on proponents to achieve 'no net loss' or 'net gain' via a minimum 90% direct offset, the theoretical application of the policy will ensure that the MNES values lost as a result of development will be adequately compensated through offset activities. This approach is considered to halt the rate of biodiversity loss for MNES and in some circumstances, provides an opportunity to exceed the 'no net loss' requirement.

In order to offset the impacts on Koalas caused by the loss of 25.9 hectares of *habitat critical to the survival of the Koala,* this <u>Offset Management Plan</u> aims to guide the rehabilitation and regeneration of 27 hectares of degraded vegetation along Goodna Creek in order to create new habitat areas for Koalas, as well as to improve connectivity between habitat patches in the local landscape. **Table 5** explores some of the theoretical and practical risks and uncertainties that have been identified in relation to this offsets proposal. This is accompanied by a number of management strategies that will seek to avoid or minimise the identified risks and uncertainties.

| Risk/ Uncertainty | Management Strategy |
|--|---|
| Currency: Have the ecological values present on the development and offset sites been adequately identified and captured to determine losses and gains? | The EPBC Act Biodiversity Offset Policy seeks to address this problem by considering a wide range of values to accurately measure values lost and to be replaced. This has allowed the offset proposal to be measured against a number of metrics, including: The quality of habitat as a measure of conditions, context and species stocking rate; The time over which loss is averted The time until the ecological benefit; The risk of loss; and Confidence in results. The use of a wide range of metrics has allowed for a more comprehensive and robust assessment of lost and gained ecological values. |
| Equivalence: Will the offset restore the functionality of habitat that has been lost? | While there are questions relating the whether the offset will actually recreate the quality of critical habitat lost as a result of the development, the functionality of the habitat within the development footprint is expected to diminish drastically in the future as a result of the expansion of development surrounding the site. Even if the habitat was retained, the influx in surrounding development will remove connectivity between the site and surrounding habitat areas, particularly given the degraded state of |

Table 5: Offset Risks/ Uncertainties and Management Strategies

environmental management Offset Management Plan

| Risk/ Uncertainty | Management Strategy |
|---|---|
| | the Goodna Creek corridor. Rather, the rehabilitation of Goodna Creek will see the continuation of a local ecological corridor linking vegetation to the north and south of the site and will cater for safe Koala movement opportunities in the area while also providing an extra 27 hectares of valued habitat. In the long term, the rehabilitation of Goodna Creek is expected to provide greater value to Koalas within the landscape than if the offset was not provided and vegetation on site was fragmented from surrounding habitat areas. |
| | Case Study 1 , described below, provides an example of a situation where Koala habitat has been recreated which is successfully utilised by Koalas. The rehabilitated vegetation contained a higher diversity and density of Koala habitat trees than undisturbed habitat and was used by Koalas as part of their main home range. It is anticipated that by replanting a mix of primary and secondary Koala habitat trees along Goodna Creek (in accordance with the rehabilitation plans in Appendix A), the proposed offset will recover the functions lost as a result of the development. |
| | The issue of equivalence has been a focus in the design of the offset program. Under the EPBC Act assessment, it was identified that the development would impact on <i>habitat critical to the survival of the</i> <i>Koala</i> . Therefore, it has been paramount that the offset creates new habitat which will achieve the <i>critical habitat</i> threshold in the future. As such, the offset site will be rehabilitated with native species known to be primary and secondary Koala food trees. |
| Time lag: How do you minimise time lag between losses and gains? | To avoid time-lag issues between the removal of habitat and the restoration of Goodna Creek, rehabilitation works will commence with the first action on-site. It is noted that clearing is to occur in 6 or more stages and span the life of the project (6-8 years). It is expected that the initial weed removal and replanting works should be completed/ established within 18 months of the initial commencement of works, leaving the vegetation to regenerate and grow throughout the lifespan of the project. |
| Direct vs Indirect Offsets: | In accordance with the EPBC Act Offset Policy, the proposed offset will achieve a 100.39% direct offset, satisfying both the minimum 90% direct offset requirement and 'no net loss' requirement. |
| Measuring ecological outcomes: How do you measure success and failure? | The purpose of the offset is to ensure there is 'no net loss' of <i>habitat critical to the survival of the species</i> . Success will be measured by the |

environmental management Offset Management Plan

| Risk/ Uncertainty | Management Strategy |
|---|--|
| | restoration of Koala habitat, the recreation of an ecological corridor and the use of vegetation within the offset site by local native fauna species, including Koalas and other mammals, birds, reptiles and amphibians. The purpose of the offset was to compensate for lost Koala habitat and to rehabilitate Goodna Creek so that it could become a continuous lineal corridor. Success will be measured by how successfully the offset achieves these objectives. |
| Uncertainty: Howe do you manage uncertainty to ensure lost values are realised in the offset? | Within the scientific community there is still uncertainty surrounding how effective restoration programs are, given the relative youth of the discipline. During the assessment against the <i>EPBC Act Offset Policy</i> , a 90% confidence in success of the offset was identified. In other words, there is a 90% confidence that the rehabilitation of Goodna Creek will restore the habitat values which will be lost as a result of the development of Woodlinks Village. Restoration actions will relate directly to weed removal and replanting native vegetation, particularly eucalyptus species which are known to be favoured koala food trees. As the offset area is located within an identified ecological corridor under the Ipswich Planning Scheme, it will be subject to ongoing protection, as well as improvement in values as other areas along the corridor are rehabilitated. This will also contribute to creating a continuous corridor from 'Riffle Range' through to areas to the south of the site. |
| | Restoration Success The project will result in the removal of 25.9 hectares of <i>habitat</i> <i>critical to the survival of the Koala</i> , which is categorised given its high density of primary Koala food trees. Eucalypt species are known favoured Koala food trees, with Corymbia and Lopostemon species also supporting Koalas within areas containing Eucalypts. Rehabilitation of creek corridors has been successful within other areas of South-East Queensland, with weed removal and revegetation resulting in increased ecological values along ecological corridors. Appropriate rehabilitation techniques, such as those described in the Rehabilitation Management Plan in Appendix A will be used to ensure the restoration of habitat along Goodna Creek is successful. Utilisation by Koalas Case Study 1, provided below, provides an example of a study undertaken to compare the usage of vegetation within a |

| Risk/ Uncertainty | Management Strategy |
|-------------------|--|
| | rehabilitation site and within undisturbed habitat by Koalas on Stradbroke Island. The results showed that Koalas utilised areas subject to rehabilitation just as much as undisturbed areas and that the rehabilitated vegetation supported healthy, reproductive Koalas. In addition, species diversity and density was higher within rehabilitation areas. In terms of recreating Koala habitat, this venture has successfully created habitat comparable to habitat within undisturbed areas. |
| | This study provides support for high confidence that should the recreation of habitat along Goodna Creek be successful, Koalas will benefit from it equally compared to undisturbed habitat. |

Case Study I- Koala Usage of a Rehabilitated Mine Site

Reference: Cristescu, R, Banks, P, Carrick, F and Frere, C 2013, 'Potential 'Ecological Traps' for Restored Landscapes: Koalas *Phascolarctos cinereus* Re-Occupy a Rehabilitated Mine Site', *PLOS One*, vol. 8, no. 11, pp.e80469-e80481.

This study compared Koala usage between a rehabilitated mine site and an undisturbed habitat bushland area. While the first hypothesis was that rehabilitated areas could become ecological sinks (failures in terms of supporting wildlife), the observations throughout the study refuted this. No evidence was found to suggest recreated koala habitat was of a lower quality to undisturbed koala habitat (indicators being species richness and density and predator densities) and no evidence was found to suggest that koalas in rehabilitated areas were of a lower density, in a poorer condition or had lower rates of reproduction to koalas in undisturbed areas. The study found that radio-tracked koalas spent equivalent time in undisturbed and rehabilitated habitats and included a wide age range of healthy, reproductive koalas. Rather than rehabilitated areas acting as sinks, the study found that the subject koalas actually used rehabilitated areas as a substantial part of their home ranges. In addition, rehabilitated areas were found to contain a higher tree density and species richness and similar canopy cover (for habitats rehabilitated before 1997) which in turn provided high koala food tree densities with shorter travel distances between them.



Appendix A

Onsite Rehabilitation Plans

Woodlink Estate - Rehabilitation Plan Series I - Onsite Works Weed Management and Rehabilitation Works

SITE LAYOUT: 1:3000 @ A1



WOODLINK ESTATE- WEED MANAGEMENT & REHABILITATION WORKS

(EPBC PRELIMINARY DOCUMENTATION SUBMISSION)

As part of the original development permit for the Woodlink Project (as known as "Corymbia Woods") a large linear open space dedication was proposed between the development zone and the Goodna Creek channel. The requirement to provide this open space area lined up with long term zonings of the Ipswich City Council Planning Scheme and is consistent with up and downstream development approvals and housing construction patterns. As part of the old Corymbia Woods proposal the layout included a number of narrow open space strips which linked internal recreation open space with Goodna Creek. Since the Controlled Action Determination made by the Department of Sustainability, Environment, Water Populations and Communities (SEWPaC) on the 14 of June 2013 further consultation has been held with Ipswich City Council and the Ipswich Koala Protection Society. This included a joint on-site inspection with a number of Council experts representing various disciplines (planning, environment, engineering, open space).

Post these consultations events a number of minor changes have been made to the design which reflect less integration of the proposed urban and environmental areas and more focus on Goodna Creek as a long term ecological corridor. Part of the negotiations for the on lot clearing was the commitment to undertake substantial replanting on existing Council owned land on the eastern Edge of Goodna Creek in Harry Ratnam Park. Council have agreed to make approximately 11 hectares of this land available for this replanting use which enables the Woodlink project to commit to reinstating a large portion of the corridor.

In addition the specific works required within the replanting areas has been brought forward by way of detailed rehabilitation plans. Rehabilitation Plan Series 1 outlines extensive weed management and revegetation works to occur on the application site. When works are completed in this zone it will be dedicated to Council and from part of the local area environment network.

DRAWING SCHEDULE

| Dwg No. | Drawing Title | Issue | Date |
|-----------|--|-------|----------|
| 6777 L 01 | Cover Sheet | С | 23-09-14 |
| 6777 L 02 | Site Based Rehabilitation Plan Weed Management- Sheet 1 | С | 23-09-14 |
| 6777 L 03 | Site Based Rehabilitation Plan Weed Management- Sheet 2 | С | 23-09-14 |
| 6777 L 04 | Site Based Rehabilitation Plan Weed Management Notes | С | 23-09-14 |
| 6777 L 05 | Site Based Rehabilitation Plan Weed Treatment & Removal Strategy | С | 23-09-14 |
| 6777 L 06 | Site Based Rehabilitation Plan Weed Treatment & Removal Strategy | С | 23-09-14 |
| 6777 L 07 | Site Based Rehabilitation Plan Weed Treatment & Removal Strategy | С | 23-09-14 |
| 6777 L 08 | Site Based Rehabilitation Plan Rehabilitation Notes | С | 23-09-14 |
| 6777 L 09 | Site Based Rehabilitation Plan Rehabilitation - Sheet 1 | С | 23-09-14 |
| 6777 L 10 | Site Based Rehabilitation Plan Rehabilitation - Sheet 2 | С | 23-09-14 |
| 6777 L 11 | Site Based Rehabilitation Plan Rehabilitation - Plant Schedules | С | 23-09-14 |
| | | | |

AMENDMENTS (C)

| saunders | web www.saundershavill.com | | | | | | | Plan of Cov | er She | et | |
|--|--|----------|------------------------------|-----------------------------------|----------|-------|----------|----------------|--------|--|--------|
| havill | phone (07) 3251 9444 fax (07) 3251 9455 | ame | endmen | ts: | | | | | | | LODGEM |
| group | address 9 Thompson St Bowen Hills Q 4006 | A R | Date 28/08/13 23/09/13 | Details Client Comment | Approved | Date | 23-09-14 | Drawn by. | RM | Project Woodlink Estate | DRAF |
| // surveying // town planning // urban des | sign 🛢 environmental management 🍠 landscape architecture | <u>с</u> | 23/09/13 | SEWPAC Lodgement DoE Lodgement | | Scale | N.T.S | Checked by | . MS | Client Canberra Estate Consortium No. 36 | |

MENT FT



saunders havill group

Dwg No. 6777 L 01 C





Woodlink Estate - Rehabilitation Plan Series I - Onsite Works Site Based Rehabilitation - Weed Management Notes

NOTES

1. INTRODUCTION The Saunders Havill Group was engaged by Canberra Estate Consortium No.36 Pty Ltd to prepare this Rehabilitation and Weed Management Plan covering the residential estate adjacent to "Woodlink", Collingwood Drive Collingwood Park. The site is described as Lot 2 RP197480. It is bordered by the Collingwood Dr, Eagle St and Crawford St.

This Rehabilitation Plan comprises of two main components:

- Weed Management
- Revegetation

This Rehabilitation and Weed Management Plan will aid to enhance the natural vegetation through extensive weed management, selective infill planting and natural regeneration.

2. WEED MANAGEMENT

Weed management will comprise a major part of the site works within the park areas. Weed management will provide the basis of aiding natural regeneration within the riparian corridor. Where significant disturbance occurs, infill tubestock planting will be utilized to aid stabilization and native vegetation succession.

Native species should be identified and tagged as required prior to weed removal and throughout the maintenance period. This is to ensure maximum regeneration and reducing likelihood of accidental weed spraying to native vegetation. Regenerating species to be treated and maintained in a similar manner to newly planted revegetation tubestock.

WEED CONTROL PROGRAM TIMING

The primary stage of manual weed removal, treatment and disposal for the parkland dedication is programmed. A primary weed removal strategy over the initial months of commencement will remove most of the existing weeds and minimize erosion issues and impacts, whilst secondary removal over the following months will ensure very minimum weed regrowth. Ongoing maintenance weeding will occur for the remainder of the period until off maintenance.

<u>Primary Weed Removal Stage</u> - Consists of the initial weed removal / treatment of site weeds via the methods detailed on 6777 L 05-07 of this Rehabilitation Plan. It essentially involves the manual removal, stock piling and disposal and initial usage of prescribed herbicides staged over a 2 month period- minimizing possible erosion issues. Additional notes below include:

Implemented weed control method according to this Rehabilitation Plan.

- Program timing; primary weed removal phase is considered to be completed when all existing weeds within
 the designated Park have been removed initially. Both the secondary phase and the primary phase of weed
 removal can occur concurrently in different work areas over time. Primary weeding methods to minimize
 mass clearing and cause erosion issues.
- A key map is to be provided logging the progress of areas from primary to secondary phases of weed
 removal and areas of rehabilitation as part of the reporting progress.

<u>Secondary or Follow-up Weeding</u> - for parkland areas will involve the quarterly inspection of areas having undergone Primary Weed Removal and treatment of infestations or outbreak as required. Additional notes below include:

- Implemented weed control method according to this Rehabilitation Plan.
- Program timing; primary weed removal phase is considered to be completed when all existing weeds within
 the designated Park have been removed initially. Both the secondary phase and the primary phase of weed
 removal can occur concurrently in different work areas over time.
- A key map is to be provided logging the progress of areas from primary to secondary phases of weed
 removal and areas of rehabilitation as part of the reporting progress.

<u>Maintenance Weeding Phase</u> - final stage of weeding which occurs in areas where the majority of weeds have been removed and treated. Maintenance weeding continues to remove additional outbreaks but also allows for the fostering of natural regeneration and regrowth seedlings. Additional notes below include:

- Implemented weed control method according to this Rehabilitation Plan.
- Program timing; primary weed removal phase is considered to be completed when all existing weeds within
 the designated Park have been removed initially. Both the secondary phase and the primary phase of weed
 removal can occur concurrently in different work areas over time.
- A key map is to be provided logging the progress of areas from primary to secondary phases of weed
 removal and areas of rehabilitation as part of the reporting progress.



NOTES

| | "Frilling" facilitates a similar process but subjects the tree to consisten structural/trunk injury that may result in a tree that is structurally unsafe (not suitable open space areas) |
|---------------------|---|
| Scrape and Paint | Remove outer bark to reveal cambium layer and apply appropriate herbicide with a brush Applicable for vines with aerial tubers (e.g. *Anredera cordifolia) |
| Mechanical | Involves the use of machinery (e.g. Brushcutter, Chainsaw, Slasher, Dozer, Excavator) Suitable for large infestations and weed trees Initially cost-effective but requires immediate revegetation of site or matting/mulch application and extensive maintenance periods Generates excessive soil and vegetation disturbance |

CLASS 2 PESTS

Class 2 pests are established in Queensland and have, or could have, an adverse economic, environmental or social impact.

- The management of these pests requires coordination and they are subject to programs led by local government, community or landowners.
- · Landowners must take reasonable steps to keep land free of Class 2 pests.

CLASS 3 PESTS

Class 3 pests are established in Queensland and have, or could have, an adverse economic, environmental or social impact.

• The primary objective of Class 3 listing is to prevent sale, therefore preventing the spread of these pests into new areas.

• Landholders are not required to control Class 3 plants unless their land is adjacent to an environmentally significant area. (Extract from Department of Environment and Resource Management website).

Refer to Weed Management Techniques for detail and specifications on removal / treatment of all weed species in accordance with the Qld Herberium List.

3. MONITORING AND REPORTING PROCEDURES

- Monitoring of the park weed management and revegetation works allows for:
- Review of the pre-established performance indicators for measuring the success of the weed removal and control.
- Ensure level of protection for existing identified native vegetation inclusive of that which has naturally regenerated
- Review the rate of spread or contraction of weed infestation within the control program.
- Monitor the rate of assisted regeneration and revegetation of desirable native species promoted in areas where weeds have been removed.
 Identification of new weed threats or other factors which may be effecting areas designated for rehabilitation.

Monitoring is required for weed eradication, revegetation and assisted regeneration.

MONITORING TIMEFRAMES

For weed removal and revegetation three (3) Council determined time frames form the anchor of the monitoring process. These include:

<u>Council</u> <u>Pre-Start</u> - On-site meeting prior to the initial commencement of work. Will involve Consultant, Contractor and Council to work through weed treatment areas and clarify works approved and appointed. <u>On-Maintenance</u> - At the completion of the Primary Weed Removal Stage and any required revegetation, an

on-maintenance meeting will be held with Council to inspect the works on-site in relation to the approved plans and previously agreed on-maintenance criteria. • Ensure all consultants, contractors, sub contractors or others utilizing the parkland area are aware of the <u>Rehabilitation Plan</u>.

<u>Off- Maintenance</u> - At the completion of all site weeding works and the agreed maintenance timeframe a final inspection will be held by Council to determine if works have been completed to the required level for Council hand over.

4. BENCHMARKS

This rehabilitation and weed management plans aims to improve the flora and fauna value along the Creek corridor through weed removal and promoting native species growth. To ensure clear and reasonable result benchmarks, we propose the following breakdown of works in to be conjunction with on and off maintenance milestones:

| | EXISTING VEGETATION AREAS: | Brief |
|---|--|---|
| | On Maintenance requirements; Primary weed removal completed; Secondary weed removal completed Min. 50% weed removal from existing vegetation Off Maintenance requirements; 10% or less weeds present on site Any additional revegetation required has 80% success rate | Atten Under Be av chang |
| | | Liaise |
| 5 | REVEGETATION AREAS: On Maintenance requirements; All required planting completed; evidence of ongoing weed management; Max. 10% plant failures at time of inspection Off Maintenance requirements; Max 20% plant failures Plants established and generally free of weeds | COUNC Provid Attenu Under Reduc Accept |
| | | CONTR |
| | | Comp |
| | | Recor |
| | | Atten |
| | | |

| OUR KEY TO WO | ORK ITEMS | | Weed Managen | | | Soil Preparatio | | | | | nd maintenan Planting Works | | 5 | Watering, Moni | toring and Rep | orting | | | |
|---------------|----------------------------|-----------------|--------------------------|--------------------------|-------------------------------|--------------------------|---------|-----------------------------|----------------|--------------|--------------------------------|---------|----------------|----------------------|----------------|----------------|-------------------|-----------------|------------------|
| | | | | | | | | | | | | | | | | | | | |
| | | WINTER | | | SPRING | | | | SUMMER | | | AUTUMN | | WINTER | | | SPRING | | |
| | | CTION PERIOD | | | FABLISHMENT PERIOD (3 months) | | | ONGOING MAINTENANCE | | | ONGOING MAINTENANCE | | | ON GOING MAINTENANCE | | | ONGOING MAINTENAN | | 1 |
| | Month 1 | Month 2 | Month 3 | Month 1 | Month 2 | Month 3 | | Month 1 | Month 2 | Month 3 | Month 1 | Month 2 | Month 3 | Month 1 | Month 2 | Month 3 | Month 1 | Month 2 | Mo |
| | Pre-start | Weed | Mulch | Watering and | Watering and | Watering and | | | Monitoring and | | Monitoring | | Monitoring and | | | Monitoring and | | Monitoring | Monito |
| | meeting | | spreading and | Monitoring and | | | | reporting | reporting | reporting | (watering to | | reporting | | | reporting | | (watering to | (water replac |
| WEEK 1 | Council, Contractor and | "knockdown | Jute-mat installation | reporting (throughout | reporting (throughout | reporting (throughout | | (watering to replacement | | | replacement plants only) | | | | | | replace / repair | replacement | plants |
| | Superintendant | spray | Installation | | establishment) | | i. | plants only) | | | praints offiy) | | | | | | Jutematting as | prants only) | plants |
| | Superinteritani | | | Z | establishment | establishinentj | | plants only) | | | | | | | | | required | | |
| | Initial weed | Soil | Natural | Weed | Weed | Weed | NANG | Weed | Weed | Weed | Weed | | Weed | | | Weed | Natural | Weed | Weed |
| | management | Preparation | regeneration | management - | management - | management - | AINTE | management - | management - | management - | management - | | management - | | | management - | | management - | mana |
| WEEK 2 | works - wood | and cultivation | plants staking | S "knockdown | "knockdown | "knockdown | | rotation | rotation | rotation | rotation | | rotation | | | rotation | plants - weed | "knockdown | "knock |
| VILLIN Z | weed removal | | for | o spray" in | spray" re-apply | spray" in | MZ | "knockdown | "knockdown | "knockdown | "knockdown | | "kn ockdown | | | "knockdown | management | spray" re-apply | spray" |
| | /"knockdown" | | identification | S mulched areas | woody weeds | mulched areas | NO. | spray" in | spray" in | spray" in | spray" in | | spray" in | | | spray" in | | woody weeds | mulch |
| | spray | | | Ĕ | | | ÷. | | mulched areas | | mulched areas | | mulched areas | | | mulched areas | | | |
| | Weed | Soil | Planting and | Natural | Replacement | Replacement | COUNCIL | Natural | Natural | Replacement | Natural | | Trees | | | | | Replacement | Natura |
| | management | Preparation | Watering | R regeneration | of Failed | of Failed | 5 | regeneration | regeneration | of Failed | regeneration | | formative | | | | | of Failed | regen |
| WEEK 3 | works - | and | | jants - weed | Plants | Plants | 0 | plants - weed | plants - weed | Plants | plants - weed | | pruning | | | | Plants | Plants | plants |
| | removal by | modification | | management | | | N. | management | management | | management | | | | | | | | mana |
| | hand | | | E | | | STO | | | | | | | | | | | | |
| | Weed | Mulch - | Planting and | Weed | Weed | Weed | E. | Weed | Weed | Weed | Weed | | Weed | | | Weed | | Weed | Weed |
| | Management - | stockpiled on | Watering | Management - | Management - | Management - | N | Management - | Management - | Management - | Management - | | Management - | | | Management - | | Management - | Mana |
| WEEK 4 | slashing of | site | | slashing of | slashing of | slashing of | | slashing of | slashing of | slashing of | slashing of | | slashing of | | | slashing of | | slashing of | slashi |
| WEEK 4 | maintenance | | | maintenance | maintenance | maintenance | | maintenance | maintenance | maintenance | maintenance | | maintenance | | | maintenance | | m ainten ance | maint |
| | access paths | | | access paths | access paths | access paths | | access paths | access paths | access paths | access paths | | access paths | | | access paths | | access paths | acces |

| 📕 🏮 saunders | web www.saundershavill.com | | | Plan of Site Based | Rehabilitation Plan | |
|-------------------------------------|--|-----------------------------|---------------|-----------------------|--|--------|
| havill | phone (07) 3251 9444 fax (07) 3251 9455 | amendments: | | Weed Mana | agement Notes | LODGEN |
| | address 9 Thompson St Bowen Hills Q 4006 | p 32/00/42 SEWPAC Lodgement | Date 23-09-14 | Drawn by. RM | Project Woodlink Estate | DRAH |
| / surveying town planning urban des | sign 🛛 environmental management 🖉 landscape architecture | DEL L | Scale N/A | Checked by. MS | Client Canberra Estate Consortium No. 36 | |

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NOTES

5. RESOURCES / ROLES & RESPONSIBILITIES

All resources required to implement this <u>Rehabilitation Plan</u> will be provided by the proponent. The following roles are applicable:

PROPONENT

· Provide security via an uncompleted works bond and maintenance bond for the cost of works if required.

· Cover the costs of all necessary resources to ensure works are completed as per the approved documents.

CONSULTANTS

ef proponent on their requirements in implementing and maintaining works as per the Rehabilitation Plan.

end pre start, on maintenance and off maintenance meetings.

dertake monitoring and reporting to Ipswich City Council as set up by this document.

available to respond to technical queries to the approved documentation when on-site conditions require anges.

ise with Council throughout all stages of approval, initial works and maintenance of works.

NCIL

ovide technical expertise via commentary on the approval of documentation

end pre-start, on and off maintenance inspections.

dertake random inspections through the Secondary weed management and Maintenance phases.

duce and release securities held against works at the completion of successful milestone inspections.

cept and review quarterly reports as dictated in this document.

TRACTOR

mplete works in strict accordance with the documentation.

commend changes to the documentation when specific experience or on-site conditions require so.

end pre-start, on and off maintenance inspections.

saunders havill group

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Dwg No. 6777 L 04 C

Woodlink Estate - Rehabilitation Plan Series I - Onsite Works Site Based Rehabilitation - Weed Treatment & Removal Stra

| Rank | Family | Scientific and common | Subregion | Rec No | Score | Life form | | Chemical Control |
|------|-----------------|---|-----------|--------|----------|-----------------|--|--|
| 1 | Verbenaceae | Lantana camara var. | 10 | 455 | 5 | & Source S/O | Control Seedlings: Hand | Seedlings: CS&P (G1.5); |
| | | camara <mark>(</mark> lantana) | | | - | | pull | Shrubs: blanket spray G1 |
| | | | | | | | | or cut down and spray regrowth G100 or splatter |
| | | | | | | | | using 1 part G to 9 parts |
| | | | | | | | | - apply only when plant is |
| 2 | Asteraceae | Baccharis halimifolia | 10 | 168 | 4.8 | S/0 | Seedlings: Hand | prowing, not dormant (ref. Shrubs: CS&P or F/I (G1) |
| | | (groundsel bush) | | | | | pull | Seedlings: CS&P (G1.5) |
| 3 | Crassulaceae | Bryophyllum delagoense | 8 | 38 | 4.9 | H/O | Hand pull and | spray G200 (ref 1). Plantlets: spray G200 + M |
| 5 | Crassulaceae | (mother of millions) | 0 | 20 | 4.9 | H/U | dispose | or MM (ref 1). |
| 4 | Bignoniaceae | Macfadyena unguis-cati | 5 | 36 | 4.9 | V/O | Tubers: crown or | Regrowth and tuberlings: |
| | | (cat's claw creeper) | | | | | dig up, bag and remove. | spray G100 + MM or F10 |
| | Basellaceae | Anredera cordifolia (madeira | 8 | 16 | 4.9 | V/O | Small Vines & | 1). Ascending Stems: S&P (|
| | | vine) | | | | | | Tubers: gouge, scrape an |
| | | | | | | | Bag and dispose. | paint (GU); Ground infestations: spray G200 |
| | | | | | | | | G200 + MM (ref 1). |
| 6 | Asparagaceae | Asparagus africanus | 7 | 26 | 4.9 | V/O | dig out roots and | fluroxypyr (200 g/L) @ 35 |
| | | (ornamental asparagus, | | | | | dispose of at local | per 1 L |
| | | asparagus fern) | | | | | council landfill site. remove entire | diesel/kerosene |
| | | | | | | | crown and | |
| | | | | | | | underground stem | |
| 7 | Ulmaceae | Celtis sinensis (Chinese | 8 | 19 | 4.9 | T/O | to prevent regrowth remove when small | Stem injection, glyphosat |
| | | celtis) | - | | | | hand pull or dig | (360 g/L) @ Undiluted at |
| | | | | | | | out small | per 2 cm of hole or |
| | | | | | | | seedlings. combine dozing, burning | cut |
| | | | | | | | and controlled | |
| | | | | | | | grazing for large | |
| 8 | Lauraceae | Cinnamomum camphora | 7 | 25 | 4.8 | T/O | infestations Seedlings: Hand | Saplings; CS&P (G1.5); |
| 0 | Luuruccuc | (camphor laurel) | | 20 | 4.0 | | pull | Trees: F/I (G1 or G1.5) or |
| | | | | | | | | C&P (G1.5 or GU for sten |
| | | | | | | | | up to 8 diameter); Seedlin spray G200 or G200 + MI |
| 9 | Anacardiaceae | Schinus terebinthifolius | 6 | 49 | 4.8 | T/O | Seedlings: Hand | Saplings: CS&P (G1.5); |
| | | (broad-leaf pepper tree) | | | | | pull | Trees: F/I (G1.5); Seedlin |
| | Salviniaceae | Salvinia molesta (salvinia) | 8 | 57 | 4.9 | Ha/F | Mechanical | spray G200 (ref 1). Aquatic areas: calcium |
| | | (ournul) | | | | | removal of small | dodecylbenzene sulphana |
| | | | | | | | infestations; | (AF-100) @ 1 part to 19 p |
| | | | | | | | Salvinia weevil (Biological control) | kerosene; diquat (vegetro 100L/ha or 4L/100L water |
| | | | | | | | (Diological control) | diquat (watrol) 50-100L/H |
| | | | | | | | | 4L/100L water; diquat |
| | | | | | | | | (regione) 5-10L/Ha or 400 150mL Agral / 100L wate |
| | | | | | | | | (see ref 2. |
| | | | | | Į | | | |
| 11 | Cabombaceae | Cabomba caroliniana (cabomba, fanwort) | 4 | 12 | 4.9 | Ha/F | Mechanical removal of small | 2, 4-D N-Butyl Ester (Rub Vine Spray) @ 12.5L/ML |
| | | (cabornoa, rainvort) | | | | | infestations | water (see ref 2. for |
| | | | | | <u>.</u> | | | application guide). |
| 12 | Asteraceae | Chrysanthemoides monilifera subsp. rotundata | 3 | 23 | 4.9 | S/OA | N/A | Stems: C&P or F/I (G1.5) Bushes: spray or cut dow |
| | | (bitou bush) | | | | | | and spray regrowth G100 |
| | | | | | ļ | | | MM (ref 1). |
| 13 | Ponte deriaceae | Eichhornia crassipes (water hyacinth) | 4 | 8 | 4.9 | Ha/OF | Mechanical removal of small | Waterways: 2, 4-D acid (300') @ 1:200 with water; |
| | | nyacintinj | | | | | infestations | Aquatic Areas: glyphosat |
| | | | | | | | | @1-1.3L/100L water (see |
| 14 | Acanthaceas | Hygrophila costata (Glush | 3 | 7 | 5 | Ha/E | Hand null smal | 2. for application guide). |
| 14 | Acanthaceae | Hygrophila costata (Glush weed) | 3 | 1 | 2 | Ha/F | Hand pull smal infestations. Can | Glyphosate known to be effective.Species known t |
| | | | | | | | be controlled by | occur in waterways so EF |
| | | | | | | | planting | should be contacted befo |
| | 1 | | | | | | competitive native species. | spraying (ref 4). |
| | Oleaceae | Ligustrum lucidum (tree | 5 | 9 | 4.8 | T/O | Seedlings: Hand | Saplings: CS&P or C&P |
| | | privet) | | | | | pull | (G1.5); Trees: F/I (G1 or 0 |
| | 1 | | | | | | | or C&P GU for stems up 8cm diameter; Seedlings |
| | | | | | | | | spray MM or G200 + MM |
| | | | | | | | | other weeds such as Lan |
| 16 | Asteraceae | Sphagneticola trilobata | 6 | 34 | 4.6 | H/O | Hand pull | or Camphor Laurel are pre Hand pull and/or spray G |
| | Julia | (Singapore daisy) | | | 4.0 | | | + MM (ref 1) |
| 17 | Asteraceae | Ageratina adenophora | 6 | 38 | 4.6 | H/O | Hand pull and hang | Spray MM or G200 or G2 |
| | 1 | (crofton weed) | | | | | to dry. | MM if other weeds such a Lantana or Camphor Laur |
| | | | | | | | | Lantana or Camphor Laur are present (ref 1). |
| 18 | Verbenaceae | Lantana montevidensis | 8 | 62 | 4.8 | S/O | Fire and/or | Spray (march to may): |
| | | (creeping lantana) | | | | | mechanical control | glyphosate 1L/100L wate |
| | | | | | | | | metsulfuron methyl 10g/1 |
| | | | | | | | | water; metsulfuron methy glyphosate 173g/100L wa |
| | | | | | | | | Basal bark (anytime): tric |
| | | | | | | | | 1L/60L Diesel, picloram + |
| | 1 | | | | | | | triclopyr @ 1L/60L Diesel |
| | | | | | | | | Glyphosate, neat applicat Splatter Gun: glyphosate |
| | | | | | | | | 1L/9L water, metsulfuron |
| | 1 | 1 | | | { | | | methyl 2n/L water (ref.2). |

| V | | CU II | C | | | | IIL (| | | V (| 91 - | |
|----|------------------|---|---|------------------|-----|------|--|---|----|------------|------------------------------|---|
| 19 | Fabaceae | Neonotonia wightii (glycine) | 5 | 16 | 4.7 | H/A | N/A | Vines: CS&P (1:1.5) or spray G100 + MM or MM (ref 1). | | 36 | Amaranthaceae | Alternanthera philoxe (alligator weed) |
| | Poaceae | Panicum maximum (green panic and guinea grass) | 8 | 78 | 4.6 | H/A | Hand or mechanical removal of small | Spray: glyphosate @ 13mL/1L water (ref 2.) | | | | (|
| 21 | Oleaceae | Ligustrum sinense (Chinese privet) | 4 | 11 | 4.6 | T/O | infestations Seedlings: Hand pull | Saplings: CS&P or C&P (G1.5); Trees: F/I (G1.5); Seedlings: spray MM or G200 + MM if other weeds such as Lantana or Camphor Laurel | | 37 | Passifloraceae | Passiflora suberosa (|
| 22 | Ochnaceae | Ochna serrulata (ochna) | 7 | 33 | 4.5 | S/O | N/A | are present (ref 1). Stems: CS&P or S&P or F/I (G1.5); Seedlings and | | 38 | Poaceae | Melinis minutiflora (molasses grass) |
| 23 | Asparagaceae | Asparagus aethiopicus cv. | 5 | 35 | 4.5 | H/O | dig out unwanted | Regrowth: spray G200 + MM or MM. Trial basal bark F100 or G200 + MM (ref 1). Spot spray - | | 39 | Aristolochiaceae | Aristolochia elegans (Dutchman's pipe) |
| 20 | , open uge court | sprenger (asparagus ground fern) | | | 4.0 | | plants and dispose of at the appropriate council landfill. remove the entire crown of underground stem of plant to prevent | metsulfuronmethyl (600 g/L) @ 10 g per 100 L water plus wetting | | 40 41 | Convolvulaceae Mimosaceae | Ipomoea indic a (blue moming glory) Leucaena leucocepha (leucaena) |
| 24 | Poaceae | Sporobolus pyramidalis and S. natalensis (giant rat's tail grasses) | 8 | 72 | 4.8 | H/U? | regrowth Hand or mechanic al removal of small infestations | Small infestations: spray glyphosate @ 15mL/L water, flupropanate @ 2mL/L water + ionic wetter @ 1mL/Lwater, Dense infestations: blanket spraying glyphosate 3L/ha, flupropanate 2L/ha (ref 2). | | | | |
| | Asteraceae | Ageratina riparia | 5 | 38 | 4.6 | H/O | | Spray G100 or MM (ref 1). | | 42 | Poaceae | Brachiaria mutica (pa grass) |
| 26 | Asclepiadaceae | (mistflower) Araujia sericifera (mothvine) | 9 | 38 | 4.4 | V/O | | Vines: CS&P (G1.5); Seedlings: spray G200 or G200 + MM or MM (ref 1). | | | | |
| 27 | Crassulaceae | Bryophyllum daigremontianum x B. delagoense (hybrid mother- of millions) | 6 | 15 | 4.5 | H/O | Hand pull and dispose | Plantlets: spray G200 + MM or MM (ref 1). | - | 43 | Hydrocharitacea e | Egeria densa (egeria waterweed) |
| 28 | Convol vulac eae | lpomoea cairica (mile-a- minute) | 7 | 56 | 4.4 | V/O | Vines & Runners: hand pull, roll up and hand up to dry. | Vines and Runners: CS&P (G1.5); Larger Stems, Roots and Nodes: spray G100 + MM (ref 1). | | 44 | Pinaceae | Pinus elliottii (slash p |
| 29 | Sapindaceae | Cardiospermum grandiflorum (balloon vine) | 7 | 31 | 4.4 | V/O | Seedlings & Small Vines: Hand Pull | Stems: CS&P (G1.5); Seedlings or Small vines; spray G200 or G200 + MM (ref 1). | | 45 | Caesalpiniaceae | Senna pendula var. g (Easter cassia) |
| 30 | Asclepiadaceae | Cryptostegia grandiflora (rubber vine) | 6 | <mark>1</mark> 9 | 4.4 | V/O | possible, repeated | | • | 46 | Poaceae | Chloris gayana (Rhoo grass) |
| | | | | | | | slashing close to ground level is recommended. | (Grazon DS, Grass-up, etc.) @ 0.35–0.5 L /100 L water | | 47 48 | Crassulaceae Asteraceae | Bryophyllum pinnatur (resurrection plant) Parthenium hysteropi |
| 31 | Phytolaccaceae | Rivina humilis (baby pepper) | 8 | 61 | 4.3 | H/O | Hand pull and hang to dry. | Spray G100 (ref 1). | - | 49 | Caprifoliaceae | (parthenium weed) Lonicera japonica |
| 32 | Poaceae | Sporobolus africanus (Parramatta grass) | 8 | 48 | 4.5 | H/U | Hand or mechanical removal of small infestations | Small infestations: spray glyphosate @ 15mL/L water, flupropanate @ 2mL/L water + ionic wetter @ 1mL/Lwater; | | 49 50 | Acanthaceae | (Japanese honeysuc) |
| | | | | | | | | Dense Infestations: blanket spraying glyphosate 3L/ha, | | 51 | Fabaceae | eyed susan) Macroptilium atropun |
| 33 | Poaceae | Sporobolus fertilis (giant Parramatta grass) | 9 | 27 | 4.5 | H/U | Hand or mechanical removal of small infestations | flupropanate 2L/ha (ref 2). Small infestations: spray glyphosate @ 15mL/L water, flupropanate @ 2mL/L water + ionic wetter @ 1mL/Lwater, | | 52 | Rosaceae | (siratro) Rubus ellipticus (yellowberry) |
| 34 | Poaceae | Eragrostis curvula (African | 7 | 29 | 4.3 | H/U | Chipped out before | Dense Infestations: blanket spraying glyphosate 3L/ha, flupropanate 2L/ha (ref 2). Glyphosate (360 g/L) | r. | 53 | Colchicaceae | Gloriosa superba (glo |
| | | lovegrass) | | 20 | | | they flower. When chipping out the plant ensure that the tussock crowns are | (e.g. Weedmaster® Duo) @ 10 ml/1 L water | | 54 | Verbenaceae | Phyla canescens (lip Condamine couch) |
| | | | | | | | removed, as this will prevent regrowth. If in seed, the stems must be c ut and | | | | | |
| 35 | Asteraceae | Gymnocoronis | 3 | 4 | 4.7 | Ha/F | bagged first. place plant | Glyphosate and metsulfuron- | | 55 | Solanaceae | Solanum seaforthianu |
| ~ | . GRADOOK | spilanthoides (Senegal tea) | 3 | + | | TIGH | material in a sealed plastic bag, leave in sunlight to rot then burn or dispose of at a | methyl @ 15mL/L water | | 56 | Araceae | (Braz Illan nightshade Pistia stratiotes (wate lettuce) |
| | | | | | | | council-approved land fill tip | | | 57 | As paragaceae | Asparagus plumosus (asparagus fern) |

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Plan of Site Based Rehabilitation Plan amendments: Weed Treatment & Removal Strategy ssue Date Detail DRAFT 28/08/13 Client Comment 23/09/13 SEWPAC Lodger Date 23-09-14 Drawn by. RM Project Woodlink Estate DoE Lodgemen 23/09/14 Scale N/A Checked by. MS Client Canberra Estate Consortium No. 36

🛛 дго 🍠 surveying 🍯 town planning 🥔 urban design 🗊 environmental management 🗊 landscape architecture

| trat | E | JŲ | | | | |
|--|--------|----------|-------------------|------------|---|--|
| emanthera philoxeroides igator weed) | 1? | 3 | 5 | Ha/U | | Terrerstrial plants use Metsulfuron methyl (Brushoft®) + ImL/L non-ionic wetter @ 80g/ha + 1mL/L non-ionic wetter or 10g/100L water + 1mL/L non- ionic wetter. Free floating plants Glyphosate (Roundup Direction®) 40 mL |
| ssiflora suberosa (cork sionflower) | 8 | 166 | 4.2 | V/O | N/A | Biactive®) 10 mL/L Stems: CS&P Seedlings & Regrowth: spray G200 or G200 + MM (ref 1). |
| linis minutiflora plasses grass) | 5 | 17 | 4.5 | H/A | Grazing or mowing | Spray: Fluazifop-P 212g/L @ 2L/Ha, Glyphosate 360g/L @ 1L/100L water (ref 2). |
| stolochia elegans tchman's pipe) | 8 | 30 | 4.3 | V/O | Stems: Hand pull; Fruit: Bag and remove. | Stems: CS&P (G1.5); Seedlings: spray G200 or G200 + MM or MM (ref 1). |
| moea indica (blue ming glory) | 5 | 24 | 4.3 | V/O | Vines and Runners: hand pull, roll up and hang to | Vines and Runners: CS&P (G1.5); Larger Stems, Roots and Nodes: spray G100 + MN |
| r: aena leucocephala ir: aena) | 6 | 14 | 4.3 | ST/A | | tor F150 (ref 1). Herbicide Control - Basal Bari application: thriclopyr 240g/L + picloram 120g/L @ 1L/60L deset; C&P: thriclopyr 240g/L + picloram 120g/L @ 1L per 60L deset; spray thriclopyr 300g/l + picloram 120g/L @ 350mL per 100L water. Combination of chemical and mecha |
| chiaria mutica (para ss) | 6 | 18 | 4.4 | Ha/A | Grazing | Herbicide Control - Foliar application (Knapsack): glyphosate 360g/L @ 200mL/15L water, Foliar: glyphosate 360g/L @ 9L/Ha; Handgun: glyphosate 360g/L @ 1.3L/100L water (ref 2). |
| eria densa (egeria erweed) | 2 | 7 | 4.4 | Ha/F | hand pulling, cutting and digging with machines effective | ŇA |
| us elliottii (slash pine) | 4 | 22 | 4.3 | T/A | Seedlings: Hand pull; Saplings and Trees: cut close to ground or ring-bark | Saplings and Trees: F/I (G1.5 ensuring thick bark is penetrated (ref 1). |
| nna pendula var. glabrata ister cassia) | 7 | 33 | 4.2 | ST/O | Seedlings: Hand pull | Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 or G200 + MM or MM; collect and bag seeds (ref 1). |
| oris gayana (Rhodes ss) | 9 | 55 | 4.3 | H/A | Hand pulling and removal and digging of larger | Spray: glyphosate @ 1l/100L water |
| ophyllum pinnatum | 6 | 17 | <mark>4</mark> .2 | H/O | clumps Hand pull and | Plantlets: spray G200 + MM |
| urrection plant) thenium hysterophorus thenium weed) | 6 | 14 | 4.2 | H/U | dispose hand pulling of small areas is not recommended | or MM (ref 1). Spot spray 2,4-D amine 500 g/L @ 0.4 L/100 L |
| icera japonica banese honeysuckle) | 3 | 6 | 4.3 | V/O | Vines and Runners: hand pull, roll up and hang to dry. | Vines and Runners: CS&P (G1.5); Larger Stems, Roots and Nodes: spray G100 + MM or MM (ref 1). |
| inbergia alata (black ed susan) croptilium atropurpureum | 5 8 | 22 39 | 4.2 4.2 | H/O V/A | N/A N/A | CS&P (G1.5); spray G200 or G200 + MM (ref 1). Vines: CS&P (1:1.5) or spray |
| atro) sus ellipticus llowberry) | 4 | 26 | 4.1 | S/O | slashing hinders growth, giving some control if plants are slashed before they seed | G100 + MM or MM (ref 1) Grazon DS pic loram/tric lopyr 1:200 parts water + wetting agent |
| riosa superba (glory lily) | 3 | 26 | 4.1 | V/O | N/A | Young Shoots: spray G200 or G200 + MM. Best results in Oct-Nov and by using 'Pulse' as surfucant (ref 1). |
| /la canesc ens (lippia, idamine couch) | 3 | 4 | 4.2 | Ha/O | a combined approach of different control methods including chemical and mechanical with land management practices is most effective | Foliar spray 600 g/L Dichlorprop @ 5 ml/1 L water or 2,4-D mine (500 g/L) + 1% crop oil @ 2-4 L/ha + 1% crop oil |
| anum seaforthianum azilian nightshade) | 8 | 78 | 4 | V/0 | Hand pull | Spray G100 (ref 1). |
| ia stratiotes (water uce) | 3 | 8 | 4.1 | Ha/OF | Mechanical removal of small infestations | Glyphosate 360g/L @ 1- 1.3L/100L water or 6.9L/Ha; diquat 20g/L @ 4L/100L water or 50-100L/Ha (see ref 2. for application guide). |
| paragus plumosus paragus fem) | 4 | 8 | 4.1 | V/O | Rhizomes: crown and hang to dry. | Rhizomes: gouge and paint (G1.5); Stems: wind up and spray or cut high and low and spray regrowth G200 or G200 + MM (ref 1). |

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LODGEMENT

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Dwg No. 6777 L 05 L

Woodlink Estate - Rehabilitation Plan Series I - Onsite Works

Site Based Rehabilitation - Weed Treatment & Removal Strategy

| 58 | Commelinaceae | Tradescantia fluminensis (Qld use T. albiflora) (wandering jew) | 5 | 9 | 4.1 | H/O | N/A | Spray F150 (as per label) or G200 or G200 + MM; Collect and bag or roll and rake carefully. Dispose (ref 1). |
|----|-------------------|--|----|-----|-----|-------|---|---|
| 59 | Solanaceae | Cestrum parqui (green | 6 | 36 | 3.9 | S/O | Seedlings: Hand | Stems: CS&P (G1.5) or spray G100 (ref 1). |
| 60 | Caes alpiniace ae | cestrum) Senna septemtrionalis (arsenic bush, was S. flori bunda) | 6 | 25 | 4 | S/O | pull Seedlings: Hand pull | Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 or G200 + MM or MM; collect |
| 61 | Solanaceae | Solanum mauritianum (wild tobacco tree) | 8 | 30 | 4 | S/O | Seedlings: Hand pull | and bag seeds (ref 1). Shrubs: CS&P (G1.5) or F/I (G1:1.5); Seedlings: spray G200 (ref 1). |
| 62 | Apocynaceae | Catharanthus roseus (pink | 5 | 22 | 4 | S/0 | Hand pull | Spray G100 (ref 1). |
| 63 | Passifloraceae | periwinkle) Passiflora subpeltata (white passion flower) | 10 | 60 | 3.9 | V/O | Stems: Hand pull | Stems: CS&P Seedlings & Regrowth: spray G200 or G200 + MM (ref 1). |
| 64 | Fabaceae | Desmodium uncinatum (silverleaf desmodium) | 5 | 14 | 4 | H/A | Hand pull or crown and dispose | CS&P tuberous roots (G1.5); spray G200 or G200 + MM or MM; collect and bag seeds (ref 1). |
| 65 | Poaceae | Melinis repens (red Natal grass) | 10 | 134 | 4.1 | H/A | Grazing or mowing | Spray: Fluazifop-P 212g/L @ 2L/Ha, Glyphosate 360g/L @ 1L/100L water (ref 2). |
| 66 | Nymphaeace ae | Nymphaea caerulea subsp. zanzibarensis (blue lotus) | 4 | 17 | 4 | Ha/OF | Hand pull small infestations. | Spray with or Diquat Glyphosate. Occurs in waterways, thus EPA should be notified before any herbicide use (ref 5). |
| 67 | Onagraceae | Oenothera drummondii subsp. drummondii (beach evening primrose) | 3 | 17 | 4 | H/O | Hand pull | Spray G100 (ref 1). |
| 68 | Tiliaceae | Triumfetta rhomboide a | 7 | 44 | 4 | H/U | Hand pull | Spray G100 (ref 1). |
| 69 | Haloragaceae | (Chinese burr) Myriophyllum aquaticum | 3 | 15 | 4 | Ha/F | N/A | Spray: glyphosate 360g/L @ |
| 70 | Passifloraceae | (parrot's feather) Passiflora foetida (stinking | 7 | 50 | 3.9 | V/0 | Hand Pull | 100mL/10L water (ref 1). CS&P (G1.5); spray G200 or |
| 71 | Asteraceae | passion flower) Verbesina encelioides (crownbeard) | 7 | 34 | 4 | H/U | Vines: Hand pull and remove; Runners: Roll up | G200 + MM (ref 1). Stems: S&P (GU); Regrowth and seedlings: spray G200 or G200 + MM (ref 1). |
| 72 | Poaceae | Paspalum mandiocanum | 3 | 6 | 4 | H/A | and hang to dry. N/A | Spray G200 - resistant to |
| 73 | Poaceae | (broad leaf paspalum) Paspalum dilatatum | 10 | 30 | 3.9 | H/A | Hand pull or dig up | weaker strength (ref 1). Spray G100 (ref 1). |
| 74 | Ruppiaceae | (paspalum grass) Ruppia maritima (sea | 2 | 8 | 4 | Ha/F | Hand pull or dig up | Spray G100 (ref 1). |
| 75 | Arecaceae | tassel) Syagrus romanzoffiana (queen palm) | 4? | 10 | 3.9 | T/O | Seedlings: Hand pull or crown; Trees: cut below | Trees: F/I (G1.5); Seedlings: spray G200 + MM (ref 1). |
| 76 | Poaceae | Hymenachne amplexicaulis cv. Olive (hymenachne) | 1? | 1 | 4 | Ha/A | growing point a combined approach of different control methods including mechanical, chemical and biological with land management practices is most effective | 360 g/L Glyphosate (includes Roundup Biactive & Weedmaster Duo) – 1 L/100L water or 10 L/ha delivered by boom |
| 77 | Asteraceae | Senecio tamoides (Canary creeper) | 3 | 8 | 4 | V/O | Vines: Hand pull and remove; Runners: Roll up and hang to dry. | Stems: S&P (GU); Regrowth and seedlings: spray G200 or G200 + MM (ref 1). |
| 78 | Poaceae | Cenchrus ciliaris (buffel grass) | 4 | 15 | 4.1 | H/A | Hand or mechanical removal of young plants | Herbicide Control - Glyphosate 7mL/L water; Dichlobenil 600g/100m2; Fluazifop 50-100mL/10L wate (ref 2). |
| 79 | Acanthaceae | Thunbergia grandiflora (thunbergia, blue thunbergia) | 2 | 3 | 5? | V/O | N/A | CS&P (G1.5); spray G200 (re 1). |
| 80 | Cactaceae | Opuntia tomentosa (velvet tree pear) | 8 | 46 | 3.9 | S/0 | Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used. | Spray; Basal Bark application Injection: Triclopyr: .8L/60L diesel. Picloram + Triclopyr: 1L/60L diesel. Amitrole: 1mL/3cm (re 3). |
| 81 | Euphorbiaceae | Ricinus communis (castor oil plant) | 7 | 20 | 3.9 | S/O | Seedlings: Hand pull | Shrubs: S: CS&P or F/I (G1.5); Seedlings: spray G20 (ref 1). |
| 82 | Asteraceae | Senecio madagascariensis (fire weed) | 6 | 28 | 3.8 | H/U | Vines: Hand pull and remove; Runners: Roll up and hang to dry. | Stems: S&P (GU); Regrowth and seedlings: spray G200 or G200 + MM (ref 1). |
| 83 | Cyperaceae | Cyperus involucratus (African sedge) | 6 | 15 | 3.8 | Ha/OF | Each has to be dug out with a spade and the entire plant turned over, exposing the root system while making sure all aerial parts of the plant are completely covered. | Aquatic areas - Glyphosate- ipa Land—commercial/industrial, rights of way - Glyphosate-ipa glyphosate-mas, imazapyr |

| V | | | | | L | | | | | V | |
|-----|-----------------|--|----|-----|-----|-------|---|---|-----|-----|-------------|
| 84 | Asteraceae | Tithonia diversifolia (Mexican sunflower) | 5 | 11 | 3.9 | H/O | N/A | Stems: CS&P (G1.5) or cut and spray regrowth and seedlings (G100 or MM) (ref 1). | | 114 | Lamiaceae |
| 85 | Poaceae | Setaria sphacelata (South African pigeon grass) | 9 | 41 | 3.8 | H/A | Hand pull or dig up | | | | |
| 86 | Asclepiadaceae | Gomphocarpus physocarpus (balloon cotton bush) | 10 | 132 | 3.7 | S/OU | burn cuttings. | Spray: glyphosate @ 1:1000 with water, in spring before seeding (ref 3). | | 115 | Asteracea |
| 87 | Poaceae | Digitaria didacty la | 9 | 70 | 3.7 | H/A | can also be used Hand pull or | Spot Spray: glyphosate or 2,2- | - | 116 | Myrtaceae |
| 88 | Caesalpiniaceae | (Queensland blue couch) Gleditsia triacanthos (honey) | 7 | 12 | 3.8 | T/O | cultivation For the control of | DPA (ref 3) pastures | | | |
| | | locust) | | | | | on grazing land, buming followed by spot spraying is an economical | | | 117 | Rosaceae |
| 89 | Poaceae | Paspalum notatum (bahia | 4 | 10 | 3.8 | H/A | control method. Hand pull or dig up | Spray G100 (ref 1). | | 118 | Myrtaceae |
| 90 | Cactaceae | grass) Opuntia monacantha (drooping tree pear, syn. O. vulgaris) | 2 | 3 | 4 | S/O | available: cactoblastis cactorum | Spray; Basal Bark application; Injection: Triclopyr: .8L/60L diesel. Picloram + Triclopyr: 1L/60L | | 119 | Oleaceae |
| | | | | | | | successful. Mechanical control difficult. Fire can be used. | diesel. Amitrole: 1mL/3cm (ref 3). | | 120 | Poaceae |
| 91 | Poaceae | Paspalum conjugatum (paspalum grass) | 7 | 38 | 3.8 | H/A | Cut below crown. | Spot Spray: glyphosate or 2,2- DPA (ref 3). | | 120 | Tuaceae |
| 92 | Malpighiaceae | (hiptage) (hiptage) | 3 | 5 | 4 | S,V/O | | Seedings: Foliar spray of dicamba, fluroxypyr, and triclopy #picloram. Larger plants cut stump application of fluroxypyr and triclopy #picloram with diesel, | | 121 | Fabaceae |
| | | | | | | | | gly phosate with water and | | 122 | Commelin |
| 93 | Solanaceae | Solanum torvum (devil's fig) | 6 | 39 | 3.9 | S/O | Seedlings: Hand | picloram undiluted (ref 7). Shrubs: CS&P (G1.5) or F/I | - | | Poaceae |
| | | ļ | | | | | pull | (G1:1.5); Seedlings: spray G200 (ref 1). | | .23 | . Juodae |
| 94 | | Caesalpinia decapetala (thorny poinciana) | 4 | 20 | 3.9 | S,V/O | Seed-heads: Bag and remove. | Stems: CS&P (G1.5); Seedlings: spray G200 or G200 + MM or MM (ref 1). | | 124 | Zingiberac |
| 95 | Poaceae | Pennisetum alopecuroides (swamp foxtail) | 7 | 29 | 3.8 | HVO | Hand Pull | Spot Spray: glyphosate or 2,2- DPA (ref 3) | | | |
| 96 | Verbenaceae | Duranta erecta (duranta) | 6 | 14 | 3.6 | ST/O | Shrubs: CS&P (1:1.5) | Spray G100 (ref 1). | | | |
| 97 | Brassicaceae | Nasturtium officinale (QId use Rorippa nasturtium- | 7 | 19 | 3.7 | Ha/FU | Manually grub and | Spray G100 and replace with local species (ref 1). | | 125 | Phytolacc |
| 98 | Polygonaceae | aquaticum) (watercress) A cetosa sagittata (rambling | 4 | 18 | 3.7 | V/U | Tubers: Dig up, | Tubers: Spray G200 or G200 | - | 126 | Asclepiad |
| 99 | Poaceae | dock) Cynodon dactylon (couch, Bahama grass introduced cultivars) | 10 | 45 | 3.6 | H/OA | | + M.M. or M.M. (ref 1). Spray: glyphosate @ 200mL/15L.water. Follow up spray (ref 3). | | 127 | Solanacea |
| 100 | Bignoniaceae | Tecoma stans (yellow bells): | 4 | 16 | 3.6 | ST/O | or smother with mulch. N/A. | Stems: CS&P (G1.5) or spray | - | 128 | Mimosace |
| | | | | | | | | G200; Seeds: collect, bag and remove (ref 1). | | | |
| | Rosaceae | Rhaphiolepis indica (Indian hawthorn) | 3 | 10 | 3.5 | ST/O | Seedlings: Hand pull | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 or G200 + MM or MM (ref 1). | | | |
| 102 | Mimosaceae | Mimosa pudica (common sensitive plant) | 4 | 12 | 3.7 | SIA | | Pastures - Fluroxy pyr/Starane 200 @ 1.5 Uha Between cropping applications (conservation tillage) - Dicamba/Banvel 200 @ 0.8- | | | |
| 103 | | Callisia fragrans (purple succulent) | 3 | 9 | 3.9 | HVO | N/A | 1.4 L/ha Spray F100 or G200 or G200 + MM; Collect and bag or roll | | 129 | Juncaceae |
| | | | | | | | | and rake carefully. Dispose (ref 1). | | 130 | Cactacea |
| 104 | | Paulownia tomentosa (paulownia) | 3 | 5 | 4 | T/AO | Seedlings: Hand pull | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 (ref 1). | | | |
| 105 | Commelinaceae | Tradescantia zebrina (zebrina) | 3 | 12 | 3.7 | ΗØ | N/A | Spray F100 or G200 or G200 + MM; Collect and bag or roll and rake carefully. Dispose (ref 1). | | | |
| 106 | Acanthaceae | Ruellia malacosperma (ruellia) | 5 | 16 | 3.8 | HIO | N/A | Spray G200 + MM (ref 1). | | 131 | Poaceae |
| 107 | Poaceae | Pennisetum clandestinum (kikuyu grass) | 4 | 12 | 3.8 | H/A | Hand Pull | Spot Spray: glyphosate or 2,2- DPA (ref 3) | - | 132 | Cactacea |
| 108 | Liliaceae | Lilium formosanum (Taiwan Iily) | 5 | 10 | 3.8 | HVO | Hand pull or crown and dispose | Spray G100 + MM or MM (ref 1). | | | |
| 109 | Asteraceae | Sigesbeckia orientalis (Indian weed) | 10 | 148 | 3.6 | H/U | Hand pull or cultivation. | Spray with 2,4-D amine or sodium, pr MCPA + dicamba (ref 3). | | | |
| 110 | Asteraceae | Bidens pilosa (cobbler's pegs) | 10 | 110 | 3.5 | H/U | Hand pull or cultivation. | Spray with 2,4-D amine or sodium, pr MCPA + dicamba (ref 3). | | 100 | D ia |
| 111 | Cactaceae | Opuntia stricta (common | 7 | 67 | 3.6 | S/0 | | Spray; Basal Bark application; | | | Bignoniac |
| | | prickly pear) | | | | | available: cactoblastis cactorum | Injection: Triclopyr: .8L/60L diesel. Picloram + Triclopyr: 1L/60L | | 134 | Poaceae |
| | | | | | | | successful. Mechanical control | diesel. Amitrole: 1mL/3cm (ref | - | 135 | Solanacea |
| 442 | Deeree | | | | | 1122 | difficult. Fire can be used. | | | 136 | Agavacea |
| 112 | Poaceae | Eleusine indica (crowsfoot grass) | 8 | 55 | 3.5 | H/A | Pull and chip. Replant with native | Spray: glyphosate or 2,2-DPA (ref 3). | - | 137 | Agavacea |
| 113 | Poaceae | Axonopus compressus (| 5 | 23 | 3.6 | H/AO | couch. Cut stems from | Spot spray with Glyphosate | 1 F | 138 | Agavacea |

| | ø saunders | web www.saundershavill.com | | | | | | | Plan of Site | Based | Rehabilitation Plan | |
|----------|----------------------------------|--|----------|------------------------------|---|----------|---------|----------|-----------------|--------|--|--------|
| | havill | phone (07) 325I 9444 fax (07) 325I 9455 | | endmen | | | | | Wee | d Trea | tment & Removal Strategy | LODGEN |
| | group | address 9 Thompson St Bowen Hills Q 4006 | | Date 28/08/13 23/09/13 | Details Client Comment SEWPAC Lodgement | Approved | Date 2 | 23-09-14 | Drawn by. | RM | Project Woodlink Estate | DRAH |
| / survey | jing 🛢 town planning 🟉 urban de: | sign 🛛 environmental management 🖉 landscape architecture | <u> </u> | 23/09/14 | DoE Lodgement | | Scale 1 | N/A | Checked by. | MS | Client Canberra Estate Consortium No. 36 | |

EMENT **\FT**

saunders havill group

| | Salvia coccinea (red salvia) | 9 | 46 | 4 | H/O | remove small areas | Aquatic areas (drains, |
|----|--|----|------------------|-------------------|-------|---|--|
| | ounia coconida (reu saiVia) | 5 | 40 | * | 110 | by hand or machine | channels, margins of streams, lakes and dams) - calcium dodecylbenzene |
| | | | | | | | sulphonate (AF-100) @ 1 part in 19 parts kerosene |
| | Ageratum houstonianum | 8 | 81 | 3.8 | H/UO | N/A | Spray G100 or hand pull and |
| | (blue billygoat weed) Psidium guajava and P. | 4 | 7 | 3.7 | ST/AO | N/A | spray regrowth G100 (ref 1). Shrubs: CS&P or F/I (G1.5) or |
| | guineense (yellow guava and West Indes guava) | | | | | | spray G200 + MM or MM. Trial basal bark F100 or G200 + MM (ref 1). |
| | Rubus bellobatus (kittatinny blackberry) | 5 | 22 | 3.5 | S/O | slashing hinders growth, giving some control if plants are slashed before they seed | Grazon DS picloram/triclopyr 1:200 parts water + wetting agent |
| | Eugenia uniflora (Brazilian | 4 | 19 | <u>3.5</u> | ST/O | N/A | Stems: C&P or F/I (G1.5); |
| | cherry) | | | | | | Bushes: spray or cut down and spray regrowth G100 or MM (ref 1). |
| | Olea europaea (olive) | 2 | 6 | 4? | T/A | Seedlings: Hand | Saplings: CS&P (G1.5); Troos: E/L (G1.5): Soodlings: |
| | | | | | | pull | Trees: F/I (G1.5); Seedlings: spray G200 or G200 + MM (ref 1). |
| | Brachiaria decumbens (signal grass) | 4 | 14 | 3.5 | H/A | Grazing | Herbicide Control - Foliar application (Knapsack): glyphosata 360g/L @ 200mL/15L water; Foliar: glyphosata 360g/L @ 9L/Ha; Handgun: glyphosate 360g/L @ 1.3L/100L water (ref 2). |
| | Stylosanthes scabra | 4 | 4 | 4.3? | H/A | N/A | Vines: CS&P (1:1.5) or spray |
| ae | (shrubby stylo) Commelina benghalensis (hairy wandering jew) | 4 | 7 | 3.5 | H/O | Collect and Bag | G100 + MM or MM (ref 1). Spray G200 or G200 + MM (ref 1). |
| | Pennisetum purpureum (elephant grass) | 2 | 9 | 3.5 | H/O | Grazing or mechanical removal | N/A (ref 2). |
| | Hedychium coronarium (wild ginger) | 2 | 2 | 3.5 | H/O | | Small Plants: spray G200 or G200 + MM; Large Plants: cu and spray regrowth. If rhizomes are at ground level, cut stem and gouge rhizome fill hole with G1.5 with injector |
| ie | Phytolacca octandra (inkweed) | 10 | <mark>5</mark> 0 | 3. <mark>4</mark> | H/O | Hand pull or crown | kit or similar (ref 1). CS&P (G1.5) or C&P (G1.5); spray G100 (ref 1). |
| e | Asclepias curassavica (red | 9 | 43 | 3.4 | S/O | Hand pull; Slash | Slash and/or spray G100 (ref |
| | cotton bush) Lycium ferocissimum (African boxthorn) | 1? | 5 | 4.4? | S/O | N/A | 1). Stems: C&P (G1.5); Regrowth: spray G200 + MM (ref 1). |
| | Prosopis pallida (algaroba) | 2 | 2 | 4 | ST/O | When using mechanical control methods, it is important to remove the bud zone of the root system (about 30 cm below the ground surface). If this is not removed, re- shooting can occur. | Basal bark - triclopyr + picloram Access® @ 11/60L diesel. Cut stump - triclopyr + picloram Access® @ 11/60L diesel. Overall spray - triclopyr + picloram Grazon DS® @ 350ml/100L water plus a wetting agent if plant is growing actively |
| | Juncus articulatus (jointed rush) | 1 | 2 | 4 | Ha/FO | Hand pull. | Spot spray with Glyphosate, 2,2-DPA or MCPA + dicamba (ref 3). |
| | Opuntia aurantiaca (tiger pear) | 1 | 2 | 4 | S/O | Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used. | Spray; Basal Bark application Injection: Triclopyr: .8L/60L diesel. Picloram + Triclopyr: 1L/60L diesel. Amitrole: 1mL/3cm (ref |
| | Arundo donax (giant reed) | 1 | 4 | 3.8 | H/O | Physical removal of small infestations. | Spot spray or cut stump and spray with Glyphosate (ref 5). |
| | Opuntia imbricata (rope pear) | 1 | 1 | 4 | H/O | Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used. | Spray; Basal Bark application Injection: Triclopyr: .8L/60L diesel. Picloram + Triclopyr: 1L/60L diesel. Amitrole: 1mL/3cm (re 3). |
| | Pyrostegia venusta (flame | 1 | 1 | 4 | V/O | N/A | CS&P (G1.5); spray G200 (re |
| | vine) Cortaderia selloana (pampas grass) | 2 | 1 | 3.7 | H/O | Small Plants: dig out by hand or | 1). Stems: C&P (G1.5) or cut back and slash and spray |
| | Solanum hispidum (giant | 5 | 23 | 3.6 | S/O | machine Hand pull | regrowth G100 (ref 1). Spray G100 (ref 1). |
| | devil's fig) Furcraea foetida (Cuban | 3 | 4 | 4.3? | S/OA | Dig out by hand or | CS& P near ground or spray |
| | hemp) Furcraea selloa (hemp) | 1 | 2 | 4? | S/OA | machine Dig out by hand or | MM (ref 1). CS& P near ground or spray |
| | Agave americana (century | 4 | 9 | 3.7 | S/OA | machine Dig out by hand or | MM (ref 1). CS& P near ground or spray |
| | plant) | | | | | machine | MM (ref 1). |



Dwg No. 6777 L 06 C

Woodlink Estate - Rehabilitation Plan Series I - Onsite Works Site Based Rehabilitation - Weed Treatment & Removal

| | | Sase | | | | | | |
|------------|-----------------------|---|----|---------|------------------|--------------|--|--|
| 139 | Rutaceae | Murraya paniculata cv. Exotica (murraya) | 6 | 26 | 3.6 | S/O | Seedlings: Hand pull | Shrubs: CS&P or F/I (G1.5 Seedlings: spray G200 (ref |
| 140 | Rosaceae | Rubus discolor (R. fruticosus complex, a blakbeny) | 4 | 10 | 3.7 | s/oa | | Grazon DS pic loram/tric lopyr 1:200 pa water + wetting agent. A variety of herbicides may b used to control this specie |
| 141 | Brassicaceae | Cakile edentula (American sea rocket) | 4 | 24 | 3.7 | H/U | Manually grub and destroy. | including (ref 5). Spray G100 and replace w local species (ref 1). |
| 142 | Balsaminaceae | Impatiens walleriana (balsam) | 2 | 6 | 3.7 | H/O | N/A | Spray G100 (ref 1). |
| 143 | Agavac eae | Agave sisalana (sisal) Agave vivipara var. vivipara | 2 | 4 | 3.7 | S/OA | Dig out by hand or machine | CS& P near ground or spr MM (ref 1). CS& P near ground or spr |
| 144 145 | Agavaceae Rosaceae | Agave vivipara var. vivipara (sisal) Prunus munsoniana (wild | 2 | 3 31 | 3.7 3.7 | S/OA ST/A | Dig out by hand or machine Seedlings: Hand | CS& P near ground or spra MM (ref 1). Shrubs: CS&P or F/I (G1.5 |
| | | goose plum) | , | | | | pull | Seedlings: spray G200 (re |
| 146 | Poaceae | Echinochloa crus-galli (bamyard grass) | 6 | 34 | 3.7 | H/A | Hand pull or dig out small infestations. | Spot spraying with Glyphosate or 2,2-DPA (re |
| 147 | Asteraceae | Solidago canadensis var. scabra (Canadian goldenrod) | 7 | 15 | 4? | H/O | to dry. | Spray MM or G200 or G20 MM if other weeds such as Lantana or Camphor Laure are present (ref 1). |
| 148 | Fabac eae | Pueraria lobata (kudzu) | 3 | 4 | <mark>3.8</mark> | V,S/O | Slash; Diminish by shading site | CS&P (G1.5); spray G200 MM (ref 1). |
| 149 | Alismataceae | Sagittaria graminea var. platyphylla (sagittaria arrowhead) | 3 | 7 | 3.5 | Ha/FO | Physical removal of small infestations. | Spot Spray with Glyphosa at 1.0L 100L water (ref 5). |
| | Nymphaeaceae | Nymphaea mexic ana (yellow waterlily) | 2 | 4 | 3.7 | Ha/OF | Hand pull small infestations. | Spray with or Diquat Glyphosate. Occurs in waterways, thus EPA sho be notified before any herbicide use (ref 5). |
| | Poaceae | Phyllostachys aurea (fishpole bamboo) | 1 | 2 | 3.7 | S/O | N/A | Stems: cut and fill segmer (G1.5); Regrowth: spray G (ref 1). |
| | Euphorbiac eae | Jatropha gossypiifolia (cotton-leaf physic nut, bellyache bush) | 1 | 1 | 3.7 | S/O | Hand pull | Spray G100 (ref 1). |
| 153 | Malvaceae | Sida rhombifolia (Paddy's lucerne) | 9 | 69 | 3.6 | S/U | Hand pull or dig out. | Spray with 2,4-D amine or fluoxypyr (ref 3). |
| 154 | Poaceae | Themeda quadrivalvis (grader grass) | 8 | 25 | 3.6 | H/A | Hand pull or dig out small infestations. | Spot spraying with Glyphosate or 2,2-DPA (re |
| 155 | Poaceae | Andropogon virginicus (whisky grass) | 6 | 14 | 3.6 | H/A | Hand pull or dig out small infestations. | Spot spraying with Glyphosate or 2,2-DPA (re |
| 156 | Bignoniaceae | Jacaranda mimosifolia (jacaranda) | 4 | 12 | 3.4 | T/O | Seedlings: Hand pull | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedling spray G200 (ref 1). |
| 157 | Ac anthaceae | Justicia betonica (squimeltail) | 2 | 4 | 4 | S/O | be controlled by planting | Glyphosate known to be effective.Species known to occur in waterways, DERN should be contacted befor spraying in waterways (ref |
| 158 | Mimos aceae | Acacia boliviana (Bolivian wattie) | 1 | 1 | 4 | T/O | Mechanical or chain removal. | Basal Bark or cut stump application. Triclopyr 600g at 1.0L:120L diesel, Triclog + Picloram 240 g/l + 120 g 1.0L:60L diesel, Picloram g/kg undiluted (ref 5). |
| 159 | Simaroubaceae | Ailanthus altissima (tree of heaven) | 1? | 3 | 3.5 | T/O | Seedlings: Hand pull | Seedlings: CS&P (G1.5); Trees: F/I (G1.5); Seedling spray G200 or MM (ref 1). |
| | Poaceae | Echinochioa colona (awniess barnyard grass) | 9 | 44 | 3.3 | H/A | removal of small infestations | Spray: glyphosate @ 13m water (ref 2.) |
| 161 | Cyperaceae | Cyperus brevitolius (Muliumbimby couch) | 8 | 53 | 3.4 | H/O | with a spade and | Aquatic areas - Glyphosat ipa Landcommercial/industr rights of way - Glyphosate glyphosate-mas, imazapyr |
| 162 | Moraceae | Morus alba (white mulberry) | 3 | 10 | 3.4 | T/O | N/A | Trees: F/I (G1.5), stack cu branches above the ground dry; Saplings: CS&P (G1.5 Seedlings: spray G200 (re |
| 163 | Arecaceae | Colocasia esculenta (taro) | 3 | 4 | 3.4 | H/AO | | Cut at base and apply glyphosate or metsulfuron methyl. Plant often occurs waterways so consult DEF prior to application (ref 6). |
| 164 | Cannaceae | Canna indica (canna lily) | 3 | 9 | 3.3 | H/O | Dig out entire plant | Cut/Slash and spay regrov G200 or G200 + MM; Colle |

| 165 | Buddlejaceae Bignoniaceae | Buddleja madagascariensis (buddleja) Tecoma capensis (Cape | 3 | 8 | 3.4 | S,V/O | N/A N/A | Stems: CS&P (1:1.5); Vines: spray or cut down and spray regrowth G200 (ref 1). Stems: CS&P (G1.5) or spray | 100 | Apocynaceae | Cascabela thevetia (sy Thevetia peruviana) (ye oleander) |
|-----|------------------------------|--|----|------------------|------------------|-------|--|---|---|---|---|
| | 5 | honeysuckle) | | | | | | G200; Seeds: collect, bag and remove (ref 1). | | | |
| 167 | Cactaceae | Harrisia martinii (harrisia cactus) | 2? | 4 | 4 | S/O | The use of the biological mealy- bug agent is recommended | Triclopyr + picloram at 1.0L:60L diesel, Dichlorprop 600 g/l at 1.0L/60L water, metsulfuron methyl 600 g/l at | 189 | Rubiaceae | Coffea arabica (coffee) |
| 168 | Acanthaceae | Thunbergia laurifolia (laurel | 1 | 1 | 4 | V/O | N/A | 2.0L:100L water Ref 5). CS&P (G1.5); spray G200 (ref | | | |
| 69 | Fabaceae | clock vine) Erythrina crista-galli | 2? | 4 | 3.5 | T/O | N/A | 1). F/I (G1.5) or C&P stumps. Cut | <mark>1</mark> 90 | Bignoniaceae | Spathodea campanula |
| | | (cockspur coral tree) | | | | | | and stack branches above ground to dry to prevent | 191 | Fabaceae | (African tulip tree) Macrotyloma axillare |
| | | | | | | | | resprouting. F/I sprouted branches (G1.5) or spray | 192 | Iridaceae | (perennial horse gram) Watsonia meriana var. |
| | | | | | | | | regrowth G200 + MM or MM. Trial Tordon (ref 1). | 193 | Passifloraceae | bulbillifera (bulbil watso Passiflora edulis (pass |
| 70 | Sapindaceae | Koelreuteria elegans (Chinese rain tree) | 1? | 1 | 3.6? | T/O | Seedlings: Hand pull | Trees: F/I (G1.5) or C&P stumps (G1.5); Saplings: CS&P (G1); stack cut branches above ground to dry; | 194 | Asteraceae | fruit) Zinnia peruviana (wild zinnia) |
| | | | | | | | | Seedlings: spray (G200) (ref 1). | 195 | Dracaenaceae | Sansevieria trifasciata (sansevieria) |
| 171 | Zingiberaceae | Hedychium gardnerianum (ginger lily) | 1? | 3 | <mark>3.6</mark> | H/O | Small Plants: Hand pull and dispose | Small Plants: spray G200 or G200 + MM; Large Plants: cut | <mark>1</mark> 96 | Poaceae | Digitaria eriantha (pang grass) |
| | | (An Rec ma) | | | | | pan ana dispose | and spray regrowth. If rhizomes are at ground level, cut stem and gouge rhizome - fill hole with G1.5 with injector | 197 | Rosaceae Cactaceae | Eriobotrya japonica (loc Acanthocereus tetrago |
| 172 | Acanthaceae | Hypoestes phyllostachya | 3 | 5 | 3.5 | H/O | | kit or similar (ref 1). Spray G200 or G200 + MM | 130 | Juciacede | (sword pear) |
| 173 | Caprifoliaceae | (polka-dot plant Sambucus canadensis (American elder) | 3 | 7 | 3.4 | ST/O | roll up and hang to | (ref 1). Vines and Runners: CS&P (G1.5); Larger Stems, Roots and Nodes: spray G100 + MM cc MM (ref 1). | | | |
| 174 | Asteraceae | Conyza sumatrensis (tall fleabane) | 9 | 45 | 3.3 | H/U | dry. Hand or mechanical removal of small infestations | or MM (ref 1). Seedlings: Altrazine or Chloros ulfuron in combination with competitive native species; Plants: Glyphosate and Tordon 75-D mix. Glyphosate ration depends on | 199 | Mimosaceae | Acacia nilotica subsp. indica (prickly acacia) |
| 175 | Fabaceae | Tipuana tipu (tipuana) | 2 | 5 | 3.4 | T/O | Seedlings: Hand pull | other weeds present (ref 2). Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: | 200 | Mimosaceae | Acacia farnesiana (min bush) |
| 176 | Asteraceae | Tagetes minuta (stinking roger) | 8 | 32 | 3.3 | H/U | | spray G200 (ref 1). Spray MM or G200 or G200 + MM if other weeds such as | | | |
| 177 | Caesalpiniaceae | Chamaecrista rotundifolia | 6 | 14 | 3.3 | ST/A | Seedlings: Hand | Lantana or Camphor Laurel are present (ref 1). | | | |
| | | (round-leafcassia) | | | | | pull | Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 or G200 + MM or MM; collect and bag seeds (ref 1). | Sub-re Rec no | .: Total number o | he ten sub-regions of the S f records for species withir data of invasiveness. 5 (hi |
| 178 | Poaceae | Cenchrus echinatus (Mossman river grass) | 8 | 43 | 3.3 | H/A | Hand or mechanical removal of young plants | Herbicide Control - Gyphosate 7mL/L water; Dichlobenil 600g/100m2; Fluazifop 50-100mL/10L water (ref 2). | Life for Source | ms: T-tree (woody e: A-agriculture, O | / plant >5m), ST-small tree -ornamental and landscapi |
| 179 | Asteraceae | Conyz a canadensis (Canadian fleabane) | 10 | 55 | 3.3 | H/U | Hand or mechanical removal of small infestations | Seedlings: Altrazine or Chioros ulturon in combination with competitive native species; Plants: Glyphosate and Tordon 75-D mix. Glyphosate ration depends on other weeds present (ref 2). | C S&P S&P = C&P = F/I = fr Abbre G = G | viations: Control = cut scrape and scrape and paint cut and paint ill or inject stem viations: Herbici yphosate, eg. Ro Metsulfuron meth | paint ides undup Biactive, Weedmast |
| 180 | Euphorbiac eae | Euphorbia cyathophora (painted spuge) | 8 | 20 | 3.3 | H/O | Hand pull | Spray G100 (ref 1). | | uroxypyr, eg. Star | |
| 181 | Poaceae | Setaria palmifolia (palm leaf setaria) | 5 | 13 | 3.3 | H/O | Hand pull or dig up | Spray G100 (ref 1). | GU = (| Glyphosate undilu | |
| 182 | Euphorbiac eae | Euphorbia heterophylla (milk weed) | 5 | 12 | 3.4 | H/O? | Hand pull | Spray G100 (ref 1). | G1 = 1 G1.5 = | part water to 1 p 1.5 parts water t | art glyhphosate o 1 part glyphosate |
| 183 | Fabaceae | Desmodium intortum (greenleaf desmodium) | 4 | 11 | 3.3 | H/A | and dispose | CS&P tuberous roots (G1.5); spray G200 or G200 + MM or MM; collect and bag seeds. Monitor regrowth over 2 - 3 years (ref 1). | Abbre G100 G200 | = 100mL glyphosa = 200mL glyphosa | part glyphosate ide Spray Concentration: ate per 10L of water + surfu ate per 10L of water + surfu yphosate + 1.5g metsulfur; |
| 184 | Poaceae | Pennisetum setaceum (fountain grass) | 3 | 11 | 3.3 | H/O | Hand Pull | Spot Spray: glyphosate or 2,2- DPA (ref 3) | G200 · | + MM = 200mL gl | yphosate + 1.5g metsulfur methyl per 10L water + we |
| 185 | Asteraceae | Conyza bonanensis (flax- leaf fleabane) | 7 | 38 | 3.3 | H/U | Hand or mechanical removal of small infestations | Seedlings: Altrazine or Chioros ulturon in combination with competitive native species; Plants: Glyphosate and Tordon 75-D mix. Glyphosate ration depends on other weeds present (ref 2). | F100 = F150 = Other # = Lo <i>Ref. 1.</i> | 100mL fluroxypy 150mL fluroxypy Abbreviations cally non-indigend Big Scrub Rainfo | rr per 10L water rr per 10L water ous native species orest Landcare Group (2004 |
| 186 | Solanaceae | Solanum erianthum (a | 7 | <mark>1</mark> 9 | 3.2 | S/O | Hand pull | Spray G100 (ref 1). | Ref. 3. | Holland et al. (19 | rimary Industries and Fish 996), 'Suburban Weeds', D |
| 187 | Poaceae | tobac co bush) Stenotaphrum secundatum (buffalo grass) | 3 | 23 | 3.2 | H/AO | Hand or mechanical | Spray: glyphosate @ 13mL/1L water (ref 2.) | Ref 5. | Depertment of Pr | ouncil (NSW), "Weed Bust imary Industries (NSW), "N nvironment and Conservatio |

| | ø saunders | web www.saundershavill.com | | | | | | Plan of Site | Based | Rehabilitation Plan | |
|-----------|-------------------------------|--|--------|------------------------------|---|----------|---------------|-----------------|--------|--|-----|
| | havill | | | endmen | | | | Wee | d Trea | atment & Removal Strategy | LOI |
| | group | address 9 Thompson St Bowen Hills Q 4006 | A B | Date 28/08/13 23/09/13 | Details Client Comment SEWPAC Lodgement | Approved | Date 23-09-12 | Drawn by. | RM | Project Woodlink Estate |] |
| / surveyi | ng 🟉 town planning 🟉 urban de | sign 🗊 environmental management 🖉 landscape architecture | C | 23/09/14 | DoE Lodgement | | Scale N/A | Checked by. | MS | Client Canberra Estate Consortium No. 36 | |

| | Strat | | αι | | | | |
|--|---|---|--|--------------------------------------|--|---|---|
| eae | Cascabela thevetia (syn. Thevetia peruviana) (yellow oleander) | 5 | 9 | 3.1 | ST/O | Hand pull small infesttions. Slashing can be used but should be followed up by herbicide application. | Basal bark application of fluroxypyr (35mL-11. Diesel); Stem injection Glyphosate (1L-2U Vater): Cut stump application of fluroxypyr (1L-56. Diesel; Foliar Spray of fluroxypyr 1:100 for larger plants. 1:200 for seedlings (ref 2). |
| | Coffea arabica (coffee) | 3 | 7 | 3.2 | ST/A | Saplings: Hand pull | Shrubs: F/I (G1) between flower and fruit set; Saplings: CS&P (G1); Seedlings: spray G200 or G200 + MM (ref 1). |
| ae | Spathodea campanulata (African tulip tree) | 1? | 1 | 3.4 | T/O | N/A | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 (ref 1). |
| | Macrotyloma axillare (perennial horse gram) | 4 | 12 | 3.1 | V,H/A | N/A | Vines: CS&P (1:1.5) or spray G100 + MM or MM (ref 1). |
| | Watsonia meriana var. bulbillifera (bulbil watsonia) | 2 | 3 | 3.1 | H/O | Dig up, bag and remove | Spray G200 + MM (ref 1). |
| eae | Passiflora edulis (passion fruit) | 6 | 12 | 3.2 | V/AO | Hand Pull | CS&P (G1.5); spray G200 or G200 + MM (ref 1). |
| Ð | Zinnia peruviana (wild zinnia) | 6 | 33 | 3.1 | H/O | Seedlings: Hand pull | Shrubs: CS&P or F/I (G1); Seedlings: CS&P (G1.5) or |
| eae | Sansevieria trifasciata | 2? | 7 | 3.1 | H/O | Hand pull or dig up | spray G200 (ref 1). Spray G100 + MM (ref 1). |
| | (sansevieria) Digitaria eriantha (pangola grass) | 5 | 20 | 3.1 | H/A | Hand pull or cultivation | Spot Spray: glyphosate or 2,2 DPA (ref 3) |
| | grass) Eriobotrya japonica (loquat) | 3 | 5 | 3.1 | T/O | cultivation Seedlings: Hand pull | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 or G200 + MM or |
| | Acanthocereus tetragonus (sword pear) | 1 | 1 | 3.3 | S/O | Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can | MM (ref 1). Spray, Basal Bark application Injection: Triclopyr: .8L/60L diesel. Picloram + Triclopyr: .1L/60L diesel. Amitrole: 1mL/3cm (ref 3). |
| ae | Acacia nilotica subsp. indica (prickly acacia) | 3 | 3 | 4.4? | T/A | be used. Mechanical or chain removal. | Basal Bark or cut stump application. Triclopyr 600g/L at 1.0L:120L diesel, Triclopyr + Picloram 240 g/l + 120 g/l at 1.0L:60L diesel, Picloram 45 g/kg.undiluted (ref 5). |
| ae | Acacia farnesiana (mimosa bush) | 6 | 15 | 3.1 | T/A | Mechanical removal of small plants. | Basal Bark or cut stump application of Triclopyr + Pricloram 240 g/H + 120 g/l at 1.0L:60L diesel. Foliar application of Clopyralid 300g/L at 500mL:1L water ref 5). |
| ber of panel voody re, O- | e ten sub-regions of the Southea records for species within study data of invasiveness, 5 (highest) plant >5m), ST-small tree (2-5m ormarmental and landscaping, F-f Methods paint | area, Que to 3 (mode), S-shrub | ensland He rate). ? ind (woody <2) | rbarium (licate dou m), H-her | CORVEG a ubtful score b (grasses | ind HERBRECS data s. & forbes), Ha-aquati | ı. c herbs. |
| | ndup Biactive, Weedmaster Duo I, eg, Brushoff | | | | | | |
| indilut o 1 pa ater to | le Dilution Rates for High Con ed rt glyhphosate 1 part glyphosate art glyphosate | centratior | n Applicati | ions | | | |
| ohosat ohosat | le Spray Concentrations e per 10L of water + surfuctant, por 10L of water + surfuctant, phosate + 1.5g metsulfuron met ethyl per 10L water + wetting ap per 10L water per 10L water | eg 50mL L hyl per 10L hyl per 10L | of water + | 0L wetting wetting | agent, eg. | | |
| nL gly uron n xypyr | per for water | | | | | | |
| mL gly uron n xypyr xypyr ms | is native species | | | | | | |

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Woodlink Estate - Rehabilitation Plan Series I - Onsite Works Site Based Rehabilitation - Rehabilitation Notes

REHABILITATION DESIGN & LAYOUT

REHABILITATION DESIGN & LAYOUT

This Site Based Rehabilitation Plan has been prepared for Canberra Estate Consortium No. 36 Pty Ltd and is designed to enhance the existing native vegetation areas on completion of the weed management process within the open space areas of the Woodlink Estate. This plan set has been produced by overlaying existing site data with proposed works to determine impacts and disturbance. This Site Based Rehabilitation Plan is to identify and control necessary site disturbance as provided for the site plan layout. Where existing native vegetation has established, low impact weed removal and rehabilitation techniques are required. In patches that have undergone clearing and major disturbances, a more aggressive approach to weed removal can be applied, in consultation with the Assessment Manage

SITE PREPARATION

Areas designated for revegetation have undergone various stages of disturbance whether it be post weed management processes or existing historical areas of clearing. Once planting locations have been determined each planting location is to be spot sprayed (1 square

metre) prior to soil cultivation. (knockdown, non residual herbicide = Glyphosate or equivalent used at minimum rate of 2 litres per ha of spot spraying).

However, if individual weeds have been identified throughout the existing established native vegetation then manual removal should be applied and replaced with a native revegetation species as identified within this plan set.

The planting densities and species selection for Rehabilitation Zones have been chosen to maximise habitat, linkage and movement opportunities

Rehabilitation treatment is to generally include the following points:

- A number of weeds are recorded for removal within shrub & ground layer
- Weed removal and management will utilise low impact methods preventing further degradation to the riparian corridor.
- Revegetation species will include a variety of ground, shrub and canopy species selected from pre-clear vegetation communities and specific species - Refer to rehabilitation plant schedules for
- Planting densities to achieve a minimum of 1 per m2 throughout all rehabilitation areas. Low impact weed removal techniques will be applied within this zone. This method is used to eliminate, or greatly reduce, further degradation to the soil and "riparian" zone.
- Native trees will replace all woody weeds removed from vegetated zones.
- Ground layer and shrub layer weeds will be removed utilising low impact weed removal methods and replaced with locally occurring native species.

Ecologists from Saunders Havill Group assessed on-site waterways within the Woodlinks Estate providing information on locations of scouring, erosion and disturbances along the drainage lines. This data provides the base information required to compile the various rehabilitation approaches required within this Site Based Rehabilitation Plan. The various approaches are described below:

| NATURAL REGENERATION | RECONSTRUCTION |
|---|--|
| Applies: To relatively large, intact and weed-free areas of native vegetation. Where the native plants are healthy and capable of regenerating without human intervention. When native plant seed is stored in the soil or will be able to reach the site from nearby natural areas, by birds or other animals, wind or water. Where the plant community has a high potential for recovery after any short-lived disturbance, such as a fire or cyclonic winds. When preventative action is all that is required to avert on-going disturbance, e.g. erection of fencing to prevent intrusion from cattle. Planting in such sites can work against the aims of restoration by interfering with natural regeneration. The re-establishing plant community will be similar in structure, composition and diversity to the original vegetation. | Applies: Where the site is highly degraded or altered. When the degree of disturbance has been so great and long-standing that the pre-existing native plant community cannot recover by natural means. To sites such as areas of fill, sites affected by stormwater flow, and areas that have been drastically cleared, either mechanically or by stock even though there may be a few remaining native trees or shrubs. When a greater degree of human intervention is required, such as meder removal, cessation or grazing and/or slashing, amelioration of soil conditions such as importation of soils, drainage works or reshaping of the landscape. When a major component is the importation of native species through planting. The re-establishing planted community should be similar to the original vegetation in structure composition and diversity. |
| ASSISTED NATURAL REGENERATION | FABRICATION (Type Conversion) |
| Applies: To natural areas where the native plant community is largely healthy and functioning. When native plant seed is still stored in the soil or will be able to reach the site from nearby natural areas, by birds or other animals, wind or water. Where the natural regeneration processes (seedling germination, root suckering etc.) are being inhibited by external factors, such as weed invasion, soil compaction, cattle grazing, mechanical slashing etc. When limited human intervention, such as weed removal, minor amelioration of soil conditions, erection of fencing, cessation of slashing, etc. will be enough to trigger the recovery processes through natural regeneration. When major component is weed control. Planting in such sites can work against the aims of restoration by interfering with natural regeneration. | Applies: Where site conditions have been irreversibly changed. Where it is not possible to restore the original native plant community. Where a better-adapted local plant community can be planted that will function within the change conditions. In situations such as the construction of a wetland plant community to mitigate increased urba stormwater run-off. N.B Revegetation (planting) is the major component in a fabrication program. |
| Therefore, Revegetation occurs in 4 distinct zones throughout the rehabilitation area. Refer to Drawing sheets 6777 L 11 for a full description of proposed plant species, sizes, densities and numbers. Zone 1 - Existing Vegetation Area (Natural Regeneration) This large area of intact Vegetation is predominately weed free except for the northern creek corrdior where lengths of weed species (Lantana, Pepper Trees, Chinese Elms, Blue Billy Goats weed, etc) | Zone 3 - Koala Infill Revegetation Area (Assisted Natural Regeneration/ Reconstruction) As a result of previous clearing works for construction of electrical infrastructure, these fring easement areas have been identified as being partially disturbed which will require partial assister regeneration and reconstruction rehabilitation approaches. Rehabilitation works to occur along the disturbed edges and batters of the electrical easement following weed management in the area. A 10n approx. corridor is to be mulched to specifications and planted with species selected from Koak |

where lengths of weed species (Lantana, Pepper Trees, Chinese Elms, Blue Billy Goats weed, etc) can be seen along the creek banks. Disturbance to this area will be a minimum as weed treatment will be hand removal / spot spraying only. Due to the existing seed bank being undisturbed it is recommended that reduced revegetation works are undertaken allowing for natural regeneration to occur throughout the area. Where signicant weed removal occurs along the creek banks, jutemat and tubestock to be installed.

Zone 2 - Mass Koala Revegetation Area (Reconstruction)

As a result of previous land uses, clearing and the minor weed treatments works required to remove the isolated weeds throughout the area, it is recommended that the area is rehabilitated through an reconstruction procedures. Areas to be rehabilitated include those that are denuded, disturbed and or where bare areas exist following the weed management process. pastoral grasses to be slashed and sprayed, mulched and revegetated with Koala food and habitat trees, and native shrubs and ground covers. Planting zone to be dominated by trees, shrub and ground cover species only with species selected from pre clear species at densities of 1 plant per square metre.

SITE PREPARATION

Areas designated for revegetation have undergone various stages of disturbance whether it be affected by introduced species of through the necessary development process. Once planting locations have been determined each planting location is to be spot sprayed (1 square

metre) prior to soil cultivation. (knockdown, non residual hebercide = Glyphosate or equivalent used at minimum rate of 2 litres per ha of spot spraying) Several herbicide applications maybe required to ensure appropriate kill rates where long grass exists. Note: Weed spray to single plantings only at top of bank.

However, if individual weeds have been identified throughout the existing established native vegetation, then manual removal should be applied and replaced with a native revegetation species as identified on this drawing sheet.

NOTES

CULTIVATION AND PLANTING





MULCHING & MATTING

Areas to be blanket mulched to a minimum depth of 100mm leaving a 50mm gap surrounding the trunk of planted stock. Areas which are too steep or where overland flows may occur, a combination of mulch and Jute mat and / or suitably anchored natural fibre weed mat installed to manufactures specifications have been specified

PLANTING STOCK

All planting species to be selected in accordance with the species sizes and numbers setout on the species schedules on this drawing sheet

Revegetation planting locations shall be generally setout in accordance with a typical random grid pattern as shown on this drawing sheet below



All stock shall be true scheduled nomenclature, well formed, hardened off to suit final revegetation location, nursery stock. The root system should be well formed without being tube bound or large roots extruding from the tube containe The landscape coordinator has the right to inspect and reject stock prior to planting.

INSTALLATION METHODOLOGY

The following outlines the preferred installation methodology for revegetation works within the rehabilitation areas. It has been designed to maximise plant establishment success rates and minimise plant mortality. Revegetation works shall be either undertaken or directly supervised by an experienced and qualified bush regenerator. All works shall be in accordance with the provisions of this Site Based Rehabilitation Plan, and local government policies and Australian Standarde

Plant installation methods shall include

Plants are to be vigorous, well established, hardened off, consistent with species or variety, free from disease and insect pests, with large root systems and no evidence of having been restricted or damaged



Habitat and food trees at densities of 1 plant per 8 square metres. Additional shrub and groundcover

Current electrical easement highly disturbed over years of clearing and slashing. The majority of these

areas are pastoral grasses with minor occurances of regrowth. Typically these areas will require a

combination of mulching and Jut Matting and dense revegetation of native species to reconstruct these

disturbed drainage lines. Small trees, shrubs and groundcovers will comprise most of the revegetation

species. Maintenance access tracks current exist through the easement- stabilization through rock and

plantings may be required in bare areas greater than 5 square metres.

Zone 4 - Powerline Revegetation Area (Reconstruction)

mulch required to eroded areas of track.

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INSTALLATION METHODOLOGY (Continued)

Plants are to be planted immediately after delivery to the planting site. If not possible, they should be stored in the shade and watered sufficiently during the day Planting is to be undertaken in accordance with the planting module contained within this

drawing sheet. Excavate planting medium to a depth suitable for the installation of tube or pot specimens. In

areas where planting substrate is deemed to be very poor (compacted, nutrient depauperate, hydrophobic etc.) and above areas of potential frequent inundation and water flow, topsoil may be used or the ground mechanically ripped where access is feasible.

Pre-water plant hole, if soil is dry, to decrease root stress upon planting and assess the infiltration of water through the soil. Incorporate into the planting substrate the appropriate quantity of prepared water crystals or

other suitable hydrating product such as Hortex 'Rainsaver' or 'Moisturaid Place plant into hole and backfill ensuring that the plant is upright and the stem is not covered

in any less than 10mm or any more than 20mm of planting medium

Plants are to be watered thoroughly immediately after planting (ensure deep irrigation) and thereafter as required during the construction phase of the development depending on climatic conditions. Creation of a concave hollow around the base of each plant will aid water infiltration to the plant roots.

A complete slow release fertiliser is recommended and is to be administered appropriately during planting. Top dressing with slow release fertiliser is preferred to avoid toxic levels of fertiliser accumulating in the plant hole around the plant roots. To ensure successful establishment, all planting surfaces must be covered in:

- •• a 100mm layer of high quality weed-free composted chip mulch (site mulch) Note: to avoid possible stem rot in some 'drier' species ensure mulch is 'dished' and not covering plant , stem by more than 20mm.
- suitable individual anchored natural fibre weed mat; or •• as presented within other section, where available mulch material will be sourced from cleared vegetation material if adequately seasoned.

A long term slow release fertiliser, such as Nutricote or similar product should be used for all plantings after initial plant establishment.

Seedlings and saplings are to be encouraged and maintained throughout the establishment period

MAINTENANCE SCHEDULE

MAINTENANCE SCHEDULE

| ESTABLISHMENT | Establishment is to occur at the completion of the primary and |
|--------------------------------|---|
| LOTADLIOINNLINI | secondary weed removal phases and any rehabilitation planting. |
| | During this period any failed stock are to be replaced and/or defects |
| | identified then reparations are to be made to site works.W |
| 1. Watering | Watering shall be carried out to ensure establishment of revegetation. |
| 1. Watering | At the time of planting soak the root ball of each plant in a diluted solution |
| | of liquid seaweed according to the directions on product label to assist in |
| | establishment. |
| | Plants are to be watered deeply only once at the time of planting and then |
| | allowed to establish within the prevailing climatic conditions. If it is |
| | observed during the maintenance process that the plant is under stress |
| | then a subsequent watering is allowe |
| | The second |
| 2.Weed Removal | Weeds evident during the Establishment period but should be removed |
| | as part of a monthly weed management program. Best Practice weed |
| | management techniques should be employed for weed removal amongst |
| | revegetation areas. |
| | |
| | Where grass seeding or turf establishes within planted areas it should be |
| | treated with approved herbicide for waterways. |
| MAINTENANCE | (Weeks 13- 2 years) |
| 1. Watering | No specified watering regime is provided during the maintenance period |
| | The intent is for the area to become self sufficient in utilising natural rain |
| | patterns and run off. Watering should occur during extended dry periods |
| | to ensure continued establishm |
| | |
| 2. Weed Removal | Weeds should be tended to on a monthly program. Treatment |
| | techniques vary within the landscape planted areas versus revegetation |
| | and retention areas. |
| | |
| Management | Throughout the establishment and maintenance periods areas where |
| | planting stock has not achieved a 90% success survival additional |
| | planting shall be installed. |
| 4. Erosion Control | Prior to the commencement of works and to remain throughout the |
| | establishment and maintenance period an erosion and sediment control |
| | measures shall be employed over the rehabilitation area of the site. |
| | include of the step of the rendering of the step. |

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| saunders havill | | | Scale 1:1500 - Lengths are in Me 1 <th>1</th> <th colspan="2">Metres. 0 160 180 200 220</th> <th colspan="2">Plan of Site Based Rehabilitation Plan Sheet 1</th> <th>LODGEMEN</th> | | | | | 1 | Metres. 0 160 180 200 220 | | Plan of Site Based Rehabilitation Plan Sheet 1 | | LODGEMEN | |
|---|--|----------|--|-----------------------------------|--|--------|-----|--------------|------------------------------|-----|--|----|--|-------|
| group | address 9 Thompson St Bowen Hills Q 4006 | | Date 28/08/13 23/09/13 | Details Client Com SEWPAC L | | Approv | ved | Date | e 23-09-1 | 4 | Drawn by. | RM | Project Woodlink Estate | DRAFT |
| // surveying // town planning // urban de | sign 🛢 environmental management 🛢 landscape architecture | <u> </u> | 23/09/14 | DoE Lodge | | | | _ <u>Sca</u> | e 1:1500 | @A1 | Checked by. | MS | Client Canberra Estate Consortium No. 36 | |

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LEGEND



Zone 1: EXISTING VEGETATION: Existing native vegetation- infill bare areas greater than 5m2 with Koala species. Weed management throughout.

Any disturbed area as a result of civil earthworks to be blanket mulched to a minimum depth of 100mm to suppress weed growth and revegetated.

Where batters steeper than 1:3 exist Jute mat is proposed to stabilise and provide protection against erosion and scouring.

Species densities planted at minimum 1 plant per square metre with species selected from preclear mapping.

Zone 2: MASS KOALA REVEGETATION AREA:

Cleared pastoral areas with minor existing regrowth. Revegetation at 1plant/ m2 using Koala habitat/ food tree species and native shrub and groundcover mix.

All disturbed/ bare areas to be blanket mulched to a minimum depth of 100mm to suppress weed growth and revegetated.

Where batters steeper than 1:3 exist Jute mat is proposed to stabilise and provide protection against erosion and scouring.



Zone 3: INFILL KOALA REVEGETATION AREA:

Existing spatial native vegetation adjacent to power line corridor. Revegetation at 1plant/ 8m2 using Koala habitat/ food tree . species

All disturbed/ bare areas to be blanket mulched to a minimum depth of 100mm to suppress weed growth and revegetated.



Zone 4: POWERLINE REVEGETATION AREA:

Revegetation using small trees, native shrubs and groundcovers species. Revegetation at 1plant/ m2.

Existing pastoral cover to be slashed and sprayed out prior to cultivation and revegetation works.

All disturbed/ bare areas to be blanket mulched to a minimum depth of 100mm to suppress weed growth and revegetated.





MAINTENANCE ACCESS TRAIL: Existing track through site. Stabilize with rock and mulch as required.

SITE BOUNDARY

NOTE 1: All works in accordance with Ipswich City Council Landscape Development Manual. NOTE 2: Where plans refer to engineering drawings, refer to plans provided by HDR/DKS CONSULTING ENGINEERS.

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Woodlink Estate - Rehabilitation Plan Series I - Onsite Works Site Based Rehabilitation - Rehabilitation Schedules

REHABILITATION SCHEDULES

| Species to be planted in random grid matrix pattern | | | | | | | | |
|---|--------------------------------|-----------------------------|-----------|----|--|--|--|--|
| FORM (Position in Community) | Botanical Name | Common Name | Size | Qt | | | | |
| Canopy Layer | CORYM BIA citriodora | "Lemon scented Gum" | Tube | - | | | | |
| | CORYM BIA intermedia | "Pink Bloodwood" | Tube | - | | | | |
| | CORYM BIA tessellaris | "Moreton Bay ash" | Tube | - | | | | |
| | EUCALYPTUS acmenoides | "Queensland White Mahogany" | Tube | - | | | | |
| | EUCALYPTUS crebra | "Narrow leafed ironbark" | Tube | - | | | | |
| | EUCALYPTUS moluccana | "Gum Top Gum" | Tube | - | | | | |
| | EUCALYPTUS portuensis | "Bloodwood" | Tube | - | | | | |
| | EUCALYPTUS robusta | "Swamp Maohgany" | Tube | - | | | | |
| | EUCALYPTUS siderophloia | "Grey Ironbark" | Tube | - | | | | |
| | EUCALYPTUS tereticornis | "Queensland Blue Gum" | Tube | - | | | | |
| | LOPHOSTEMON suaveolens | "Swamp Box" | Tube | 1 | | | | |
| | | | SUB TOTAL | (| | | | |
| Shrub Layer | BABINGTONIA similis | "Twiggy Myrtle" | Tube | | | | | |
| | BACKHOUSIA myrtifolia | "Backhousia" | Tube | - | | | | |
| | BANKSIA robur | "Swamp Banksia" | Tube | - | | | | |
| | BANKSIA spinulosa | "Hairpin Banksia" | Tube | | | | | |
| | CRYPTOCARYA triplinervis | "Three-veined Cryptocarya" | Tube | - | | | | |
| | JACKSONIA scoparia | "Dogwood" | Tube | | | | | |
| | LEPTOSPERMUM polygalifolium | "Wild May" | Tube | - | | | | |
| | PITTOSPORUM undulatum | "Sweet Pittosporum" | Tube | | | | | |
| | | | SUB TOTAL | (| | | | |
| Ground Layer | BOTHRIOCHLOA sp. | "Beardgrass" | Tube | - | | | | |
| | CAREX brunnea | "Greater Brown Sedge" | Tube | - | | | | |
| | CYMBOPOGON refractus | "Barbwire Grass" | Tube | | | | | |
| | CYPERUS spp. | "Sedges" | Tube | | | | | |
| | DIANELLA caerulea | "Flax Lilly" | Tube | - | | | | |
| | DIANELLA caerulea var caerulea | "Dianella" | Tube | | | | | |
| | IMPERATA cylindrica | "Blady Grass" | Tube | | | | | |
| | LOMANDRA longifolia | "Spiny-headed mat-rush" | Tube | | | | | |
| | | "Kangaroo Grass" | Tube | | | | | |
| | | | SUB TOTAL | (| | | | |
| | | | TOTAL | 0 | | | | |

| ZONE 1 - EXISTING | EGETATION: CREEK CHANN | | | CHEDULE |
|-------------------|---------------------------------------|-----------------------------------|-----------|---------|
| | (IF AREAS DIS TURBED FOLL | |) | |
| | ed within the Water Sensitive Urba | | | |
| square metre. If | batters greater than 1:3 install in J | utemat Thickmat to manufacturer's | recommend | ations |
| FORM (Position in | Botanical Name | Common Name | Size | Qty |
| Community) | | | | |
| Ground Layer | CAREX appressa | "Tall Sedge" | Tube | - |
| | LOMANDRA hystrix | "Lomandra" | Tube | - |
| | CYPERUS difformis | "Rice Sedge" | Tube | - |
| | CYPERUS polystachyos | "Common Sedge" | Tube | - |
| | ISOLEPSIS nodosa | "Knobby Club Rush" | Tube | - |
| | JUNCUS usitatus | "Common Rush" | Tube | - |
| | PERSICARIA decipens | "Slender Knotweed" | Tube | - |
| | PHILYDRUM lanugino sum | "Woolly Frogmouth" | Tube | - |
| | SCHOENOPLECTUS validus | "River Clubrush" | Tube | - |
| | | | TOTAL | 0 |

| | Species to be planted in | random grid matrix pattern | | |
|---------------------------------|--------------------------------|-----------------------------|-----------|------|
| FORM (Position in Community) | Botanical Name | Common Name | Size | Qty |
| Canopy Layer | ACACIA complanata | "Flat-stemmed Wattle" | Tube | 350 |
| | ACACIA concurrens | "Black Wattle" | Tube | 350 |
| | ACACIA disparrima | "Hickory Wattle" | Tube | 350 |
| | ACACIA fimbriata | "Brisbane Wattle" | Tube | 350 |
| | ALPHITONIA excelsa | "Red Ash" | Tube | 350 |
| | ANGOPHORA woodsiana | "Roughbark Apple" | Tube | 350 |
| | ANGOPHORA leiocarpa | "Smooth-barked Apple" | Tube | 350 |
| | CORYMBIA citriodora | "Lemon scented Gum" | Tube | 350 |
| | CORYMBIA intermedia | "Pink Bloodwood" | Tube | 400 |
| | CORYMBIA tessellaris | "Moreton Bay ash" | Tube | 350 |
| | EUCALYPTUS acmenoides | "Queensland White Mahogany" | Tube | 350 |
| | EUCALYPTUS crebra | "Narrow leafed ironbark" | Tube | 400 |
| | EUCALYPTUS moluccana | "Gum Top Gum" | Tube | 350 |
| | EUCALYPTUS portuensis | "Bloodwood" | Tube | 350 |
| | EUCALYPTUS robusta | "Swamp Maohgany" | Tube | 350 |
| | EUCALYPTUS siderophloia | "Grey Ironbark" | Tube | 400 |
| | EUCALYPTUS tereticornis | "Queensland Blue Gum" | Tube | 400 |
| | LOPHOSTEMON suaveolens | "Swamp Box" | Tube | 350 |
| | | onano box | SUB TOTAL | 6500 |
| Shrub Layer | BABINGTONIA similis | "Twiggy Myrtle" | Tube | 747 |
| | BACKHOUSIA myrtifolia | "Backhousia" | Tube | 748 |
| | BANKSIA robur | "Swamp Banksia" | Tube | 747 |
| | BANKSIA spinulosa | "Hairpin Banksia" | Tube | 748 |
| | CALLICARPA pedunculata | "Callicarpa" | Tube | 747 |
| | CASSINIA subtropica | "Cough bush" | Tube | 747 |
| | CRYPTOCARYA triplinervis | "Three-veined Cryptocarya" | Tube | 747 |
| | JACKSONIA scoparia | "Dogwood" | Tube | 747 |
| | LEPTOSPERMUM polygalifolium | | Tube | 748 |
| | NEOLITSEA dealbata | "White Bolly Gum" | Tube | 747 |
| | PILIDIOSTIGMA glabrum | "Plum Myrtle" | Tube | 747 |
| | PITTOSPORUM undulatum | "Sweet Pittosporum" | Tube | 748 |
| | RHODOMYRTUS psidioides | "Native Guava" | Tube | 747 |
| | Nilobom incros psidioides | Native Odava | SUB TOTAL | 9715 |
| Ground Layer | BOTHRIOCHLOA sp. | "Beardgrass" | Tube | 1350 |
| Ciound Layer | CAREX brunnea | "Greater Brown Sedge" | Tube | 1350 |
| | CAREX maculata | "Carex" | Tube | 1350 |
| | CYMBOPOGON refractus | "Barbwire Grass" | Tube | 1350 |
| | CYPERUS spp. | "Sedges" | Tube | 1350 |
| | DIANELLA caerulea | "Flax Lilly" | Tube | 1350 |
| | DIANELLA caerulea var caerulea | | Tube | 1350 |
| | GEITONOPLESIUM cymosum | "Scrambling Lillly" | Tube | 1350 |
| | JUNCUS usitatus | "Common Rush" | Tube | 1350 |
| | IMPERATA cylindrica | "Blady Grass" | Tube | 1350 |
| | LOMANDRA longifolia | "Spiny-headed mat-rush" | Tube | 1350 |
| | | | | |
| | THEMEDA triandra | "Kangaroo Grass" | Tube | 1350 |

| ORM (Position in | Botanical Name | random grid matrix pattern Common Name | Size | Qty |
|------------------|--------------------------------|---|-----------|------|
| Community) | | | | Qty |
| anopy Layer | CORYMBIA citriodora | "Lemon scented Gum" | Tube | 81 |
| | CORYMBIA intermedia | "Pink Bloodwood" | Tube | 81 |
| | CORYMBIA tessellaris | "Moreton Bay ash" | Tube | 81 |
| | EUCALYPTUS acmenoides | "Queensland White Mahogany" | Tube | 81 |
| | EUCALYPTUS crebra | "Narrowleafed ironbark" | Tube | 81 |
| | EUCALYPTUS moluccana | "Gum Top Gum" | Tube | 81 |
| | EUCALYPTUS portuensis | "Bloodwood" | Tube | 81 |
| | EUCALYPTUS robusta | "Swamp Maohgany" | Tube | 81 |
| | EUCALYPTUS siderophloia | "Grey Ironbark" | Tube | 81 |
| | EUCALYPTUS tereticornis | "Queensland Blue Gum" | Tube | 81 |
| | LOPHOSTEMON suaveolens | "Swamp Box" | Tube | 81 |
| | | | SUB TOTAL | 891 |
| rub Layer | BABINGTONIA similis | "Twiggy Myrtle" | Tube | 45 |
| | BACKHOUSIA myrtifolia | "Backhousia" | Tube | 45 |
| | BANKSIA robur | "Swamp Banksia" | Tube | 45 |
| | BANKSIA spinulosa | "Hairpin Banksia" | Tube | 45 |
| | CRYPTOCARYA triplinervis | "Three-veined Cryptocarya" | Tube | 45 |
| | JACKSONIA scoparia | "Dogwood" | Tube | 45 |
| | LEPTOSPERMUM polygalifolium | "Wild May" | Tube | 45 |
| | PITTOSPORUM undulatum | "Sweet Pittosporum" | Tube | 45 |
| | | | SUB TOTAL | 360 |
| und Layer | BOTHRIOCHLOA sp. | "Beardgrass" | Tube | 60 |
| | CAREX brunnea | "Greater Brown Sedge" | Tube | 60 |
| | CYMBOPOGON refractus | "Barbwire Grass" | Tube | 60 |
| | CYPERUS spp. | "Sedges" | Tube | 60 |
| | DIANELLA caerulea | "Flax Lilly" | Tube | 60 |
| | DIANELLA caerulea var caerulea | | Tube | 60 |
| | IMPERATA cylindrica | "Blady Grass" | Tube | 60 |
| | LOMANDRA longifolia | "Spiny-headed mat-rush" | Tube | 60 |
| | THEMEDA triandra | "Kangaroo Grass" | Tube | 60 |
| | | | SUB TOTAL | 540 |
| | | | TOTAL | 1701 |

| saunders | web www.saundershavill.com | | | | | | | Plan of Site | Based | Rehabilitation Plan | |
|--|--|------------|----------------------|-----------------------------------|----------|------|----------|-----------------|-----------|--|-------|
| havill | phone (07) 3251 9444 fax (07) 3251 9455 | ame | endmen | ts: | | | | Reh | abilitati | on Schedules | LODGE |
| group | address 9 Thompson St Bowen Hills Q 4006 | Issue A | Date 28/08/13 | Details Client Comment | Approved | Date | 23-09-14 | Drawn by. | RM | Project Woodlink Estate | DRA |
| 🕫 surveying 🛭 town planning 🕫 urban design 🖉 environmental management 🖉 landscape architecture | | | 23/09/13 23/09/14 | SEWPAC Lodgement DoE Lodgement | | | | Checked by | . MS | Client Canberra Estate Consortium No. 36 | |

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| Species to be planted in random grid matrix pattern | | | | | | | | | |
|---|--------------------------------|-----------------------------|-------------|-------|--|--|--|--|--|
| FORM (Position in Community) | Botanical Name | Common Name | Size | Qty | | | | | |
| Shrub Layer | BANKSIA robur | "Swamp Banksia" | Tube | 1013 | | | | | |
| | BANKSIA spinulosa | "Hairpin Banksia" | Tube | 1013 | | | | | |
| | CALLICARPA pedunculata | "Callicarpa" | Tube | 1012 | | | | | |
| | CASSINIA subtropica | "Daviesia" | Tube | 1012 | | | | | |
| | CRYPTOCARYA triplinervis | "Three-veined Cryptocarya" | Tube | 1013 | | | | | |
| | DAVIESIA arborea | "Daviesia" | Tube | 1012 | | | | | |
| | DAVIESIA ulcifolia | "Bitter Pea" | Tube | 1012 | | | | | |
| | DODONAEA triquetra | "Common Hop Bush" | Tube | 1013 | | | | | |
| | HOVEA acutifolia | "Pointed Leaf Hovea" | Tube | 1013 | | | | | |
| | INDIGOFERA australis | "Austral Indigo" | Tube | 1012 | | | | | |
| | JACKSONIA scoparia | "Dogwood" | Tube | 1013 | | | | | |
| | LEPTOSPERMUM polygalifolium | "Tea tree" | Tube | 1013 | | | | | |
| | NOTELAEA longifolia | "Long-leaved Mock Olive" | Tube | 1012 | | | | | |
| | NOTELAEA ovata | "A Mock Olive" | Tube | 1012 | | | | | |
| | PULTENA EA villo sa | "Hairy Bush Pea" | Tube | 1013 | | | | | |
| | SENNA artemisioides | "Feathery senna" | Tube | 1012 | | | | | |
| | | | SUB TOTAL | 16200 | | | | | |
| Ground Layer | CAREX brunnea | "Greater Brown Sedge" | Tube | 2210 | | | | | |
| | CAREX maculata | "Carex" | Tube | 2210 | | | | | |
| | CYMBOPOGON refractus | "Barbwire Grass" | Tube | 2210 | | | | | |
| | CYPERUS spp. | "Sedges" | Tube | 2210 | | | | | |
| | DIANELLA brevipedunculata | "Short-flowered Flax Lilly" | Tube | 2210 | | | | | |
| | DIANELLA caerulea | "Flax Lilly" | Tube | 2210 | | | | | |
| | DIANELLA caerulea var caerulea | "Dianella" | Tube | 2210 | | | | | |
| | JUNCUS usitatus | "Common Rush" | Tube | 2210 | | | | | |
| | LOMANDRA filiformis | "Wattle mat-rush" | Tube | 2210 | | | | | |
| | LOMANDRA laxa | "A mat-rush" | Tube | 2210 | | | | | |
| | THEMEDA triandra | "Kangaroo Grass" | Tube | 2210 | | | | | |
| | | | SUB TOTAL | 24310 | | | | | |
| | | ΤΟΤΛΙ | (1nlant/m2) | 40510 | | | | | |

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Appendix B

Offsite Rehabilitation Plans



| Saunders web www.saundershavill.com | | | Plan of Cover Sheet | |
|---|----------------------------|--------------|---|--------|
| havill phone (07) 3251 9444 fax (07) 3251 9455 | | | | LODGEN |
| address 9 Thompson St Bowen Hills Q 4006 | D 94/00/12 SEWDACLedgement | ate 24-09-13 | Drawn by. RM Project Woodlink Estate | DRA |
| // surveying // town planning // urban design // environmental management // landscape architecture | | cale N.T.S | Checked by. MS Client Canberra Estate Consortium No. 36 | |

HARRY RATNAM PARK -WEED MANAGEMENT & REHABILITATION - EXTERNAL WORKS

(EPBC PRELIMINARY DOCUMENTATION SUBMISSION)

As part of the original development permit for the Woodlink Project (as known as "Corymbia Woods") a large linear open space dedication was proposed between the development zone and the Goodna Creek channel. The requirement to provide this open space area lined up with long term zonings of the Ipswich City Council Planning Scheme and is consistent with up and downstream development approvals and housing construction patterns. As part of the old Corymbia Woods proposal the layout included a number of narrow open space strips which linked internal recreation open space with Goodna Creek. Since the Controlled Action Determination made by the Department of Sustainability, Environment, Water Populations and Communities (SEWPaC) on the 14 of June 2013 further consultation has been held with Ipswich City Council and the Ipswich Koala Protection Society. This included a joint on-site inspection with a number of Council experts representing various disciplines (planning,

Post these consultations events a number of minor changes have been made to the design which reflect less integration of the proposed urban and environmental areas and more focus on Goodna Creek as a long term ecological corridor. Part of the negotiations for the on lot clearing was the commitment to undertake substantial replanting on existing Council owned land on the eastern Edge of Goodna Creek in Harry Ratnam Park. Council have agreed to make approximately 11 hectares of this land available for this replanting use which enables the Woodlink project to commit to reinstating a large portion of the corridor.

In addition the specific works required within the replanting areas has been brought forward by way of detailed rehabilitation plans. Rehabilitation Plan Series 2 specifies works proposed offsite within the existing Harry Ratnam Park.

DRAWING SCHEDULE

| | Issue | Date |
|-----------------------------------|-------|----------|
| | с | 24-09-14 |
| Weed Management- Sheet 1 | С | 24-09-14 |
| Weed Management- Sheet 2 | С | 24-09-14 |
| Weed Management Notes | С | 24-09-14 |
| Weed Treatment & Removal Strategy | С | 24-09-14 |
| Weed Treatment & Removal Strategy | С | 24-09-14 |
| Weed Treatment & Removal Strategy | с | 24-09-14 |
| Rehabilitation Notes | С | 24-09-14 |
| Rehabilitation - Sheet 1 | С | 24-09-14 |
| Rehabilitation - Sheet 2 | с | 24-09-14 |
| Rehabilitation - Plant Schedules | с | 24-09-14 |

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| saunders havill | web www.saundershavill.com phone (07) 3251 9444 fax (07) 3251 9455 | • | 20 dments | 40 60 80 | - Lengths are in M | etres. 1 160 | I I J 180 200 220 | | | ehabilitation Plan agement- Sheet 1 | LODGEN |
|-----------------------------------|---|-------------|----------------------------|---|--------------------|--------------------|----------------------|-------------|----|--|--------|
| | address 9 Thompson St Bowen Hills Q 4006 | D 0. | ate 8/09/13 24/09/13 | Details Client Comment SEWPAC Lodgement | Approved | Date | Sep -13 | Drawn by. | RM | Project Woodlink Estate | DRAF |
| surveying down planning durban de | sign 🛛 environmental management 🖉 landscape architecture | C 23 | 23/09/14 | DoE Lodgement | | Scale | 1:1500@A1 | Checked by. | MS | Client Canberra Estate Consortium No. 36 | |

not represent all weeds on site NOTE 2: All works in accordance with Ipswich City Council Landscape Development Manual. NOTE 3: Where plans refer to engineering drawings, refer to plans provided by HDR CONSULTING ENGINEERS.

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EXISTING DRAINAGE CHANNELS:

INDICATIVE WEED INFESTATION Refer to notes

with maintained grassed und

AREA:

Areas to be planted with plant species tolerant of frequent inundation in conjunction with stormwater detention and bio-retention basins implementation. Details to be confirmed with Ipswich City Council for construction.

EXISTIING OPEN SINGLE TREE PLANTING IN SLASHED GRASS: Areas adjacent to houses to be planted with tree species in mulched groups

FUTURE WORKS & RECREATIONAL FACILITIES LOCATIONS:

By ICC

TOP OF BANKS



| saunders | web www.saundershavill.com | L | Scale 1:1500 | - Lengths are in Ma | etres. 1 160 | <u> </u> | Plan of Exte | rnal Re | habilitation Plan | |
|----------------------------------|--|--|---|-------------------------|--------------------|-----------|-----------------|---------|--|--------|
| havill | phone (07) 3251 9444 fax (07) 3251 9455 | amendmer | | | | | Wee | d Man | agement- Sheet 2 | LODGEM |
| group 📕 | address 9 Thompson St Bowen Hills Q 4006 | Issue Date A 18/09/13 B 24/09/13 | Details Client Comment SEWPAC Lodgement | Approved | Date | Sep 13 | Drawn by. | RM | Project Woodlink Estate | DRAF |
| surveying town planning urban de | sign 🛛 environmental management 🖉 landscape architecture | C 23/09/14 | DoE Lodgement | | Scale | 1:1500@A1 | Checked by. | MS | Client Canberra Estate Consortium No. 36 | |

LEGEND

| EX.VEG. |
|---------|
| |

EXISTING VEGETATION: Full weed management throughout involving manual and lightweight removal, stock piling and disposal and initial usage of prescribed herbicides.

EXISTING OPEN PASTORAL AREAS (FUTURE REVEGETATION AREA) Ongoing weed management to eradicate general pastoral weeds and throughout revegetation process.



EXISTING OVERGROWN KOALA TREE FOLIAGE PLANTATION: Currently inaccessible. New access infrastructure to be provided by developer for the lpswich Koala Protection Society (IKPS)



EXISTING ELECTRICAL EASEMENT: Ongoing weed management to eradicate general pastoral weeds throughout revegetation process.



STORMWATER & REHABILITATION SHARED USE AREAS: Areas to be planted with plant species tolerant of frequent inundation in conjunction with stormwater detention and bio-retention basins implementation Details to be confirmed with Ipswich City Council for construction.



EXISTIING OPEN SINGLE TREE PLANTING IN SLASHED GRASS: Areas adjacent to houses to be planted with tree species in mulched aroups with maintained grassed understorey.



INDICATIVE WEED INFESTATION AREA: Refer to notes



FUTURE WORKS & RECREATIONAL FACILITIES LOCATIONS: By ICC



TOP OF BANKS

EXISTING DRAINAGE CHANNELS:

NOTES

NOTE 1: Indicative dominant weed locations are noted in approximate locations from site observations and do not represent all weeds on site. NOTE 2: All works in accordance with Ipswich City

Council Landscape Development Manual. NOTE 3: Where plans refer to engineering drawings, refer to plans provided by HDR CONSULTING ENGINEERS.

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Dwg No. 6777 L ER 03 C

Harry Ratnam Park - Rehabilitation Plan Series 2 - External Works **External Rehabilitation - Weed Management Notes**

NOTES

1. INTRODUCTION The Saunders Havill Group was engaged by Canberra Estate Consortium No.36 Pty Ltd to prepare this Rehabilitation and Weed Management Plan covering the revegeation areas adjacent to "Woodlink" Estate, Collingwood Drive Collingwood Park. The development site is described as Lot 2 RP197480. It is bordered by the Collingwood Dr, Eagle St and Crawford St.

This Rehabilitation Plan comprises of two main components:

- Weed Management
- Revegetation

This Rehabilitation and Weed Management Plan will aid to enhance the natural vegetation through extensive weed management, selective infill planting and natural regeneration.

2. WEED MANAGEMENT

Weed management will comprise a major part of the site works within the park areas. Weed management will provide the basis of aiding natural regeneration within the riparian corridor. Where significant disturbance occurs. nfill tubestock planting will be utilized to aid stabilization and native vegetation succession.

Native species should be identified and tagged as required prior to weed removal and throughout the maintenance period. This is to ensure maximum regeneration and reducing likelihood of accidental weed spraying to native vegetation. Regenerating species to be treated and maintained in a similar manner to newly ed revegetation tubestock.

WEED CONTROL PROGRAM TIMING

The primary stage of manual weed removal, treatment and disposal for the offset revegetation is programmed. A primary weed removal strategy over the initial months of commencement will remove most of the existing weeds and minimize erosion issues and impacts, whilst secondary removal over the following months will ensure very ninimum weed regrowth. Ongoing maintenance weeding will occur for the remainder of the period until of maintenance.

<u>Primary Weed Removal Stage</u> - Consists of the initial weed removal / treatment of site weeds via the methods detailed on 6777 L ER 05-07 of this Rehabilitation Plan. It essentially involves the manual removal, stock piling and disposal and initial usage of prescribed herbicides staged over a 2 month period- minimizing possible erosion issues. Additional notes below include:

- Implemented weed control method according to this Rehabilitation Plan.
- Program timing: primary weed removal phase is considered to be completed when all existing weeds within the designated Park have been removed initially. Both the secondary phase and the primary phase of weed removal can occur concurrently in different work areas over time. Primary weeding methods to minimize mass clearing and cause erosion issues.
- A key map is to be provided logging the progress of areas from primary to secondary phases of weed removal and areas of rehabilitation as part of the reporting progress.

Secondary or Follow-up Weeding - for parkland areas will involve the guarterly inspection of areas having undergone Primary Weed Removal and treatment of infestations or outbreak as required. Additional notes below include

- Implemented weed control method according to this Rehabilitation Plan.
- Program timing; primary weed removal phase is considered to be completed when all existing weeds within the designated Park have been removed initially. Both the secondary phase and the primary phase of weed removal can occur concurrently in different work areas over time.
- A key map is to be provided logging the progress of areas from primary to secondary phases of weed removal and areas of rehabilitation as part of the reporting progress.

Maintenance Weeding Phase - final stage of weeding which occurs in areas where the majority of weeds have peen removed and treated. Maintenance weeding continues to remove additional outbreaks but also allows for the fostering of natural regeneration and regrowth seedlings. Additional notes below include:

- Implemented weed control method according to this Rehabilitation Plan
- Program timing; primary weed removal phase is considered to be completed when all existing weeds within the designated Park have been removed initially. Both the secondary phase and the primary phase of weed removal can occur concurrently in different work areas over time.
- A key map is to be provided logging the progress of areas from primary to secondary phases of weed removal and areas of rehabilitation as part of the reporting progress.



NOTES



CLASS 2 PESTS

• Class 2 pests are established in Queensland and have, or could have, an adverse economic, environmental or social impact.

• The management of these pests requires coordination and they are subject to programs led by local

· Landowners must take reasonable steps to keep land free of Class 2 pests

government, community or landowners.

CLASS 3 PESTS

· Class 3 pests are established in Queensland and have, or could have, an adverse economic, environmental or social impact

• The primary objective of Class 3 listing is to prevent sale, therefore preventing the spread of these pests into new areas.

· Landholders are not required to control Class 3 plants unless their land is adjacent to an environmentally significant area, (Extract from Department of Environment and Resource Management website).

Refer to Weed Management Techniques for detail and specifications on removal / treatment of all weed species in accordance with the Old Herberium List.

3. MONITORING AND REPORTING PROCEDURES

Monitoring of the park weed management and revegetation works allows for

- Review of the pre-established performance indicators for measuring the success of the weed removal and control.
- · Ensure level of protection for existing identified native vegetation inclusive of that which has naturally regenerated
- Review the rate of spread or contraction of weed infestation within the control program. Monitor the rate of assisted regeneration and revegetation of desirable native species promoted in areas where weeds have been removed.
 - Identification of new weed threats or other factors which may be effecting areas designated for rehabilitation

Monitoring is required for weed eradication, revegetation and assisted regeneration

| NOTES | |
|---|------|
| MONITORING TIMEFRAMES | |
| For weed removal and revegetation three (3) Council determined time frames form the anchor of the monitor process. These include: | ng |
| Council <u>Pre-Start</u> - On-site meeting prior to the initial commencement of work. Will involve Consult. Contractor and Council to work through weed treatment areas and clarify works approved and appointed. | ant, |
| Dn-Maintenance - At the completion of the Primary Weed Removal Stage and any required revegetation, Dn-Maintenance meeting will be held with Council to inspect the works on-site in relation to the approved ple and previously agreed on-maintenance criteria. | |
| Off- Maintenance - At the completion of all site weeding works and the agreed maintenance timeframe a finspection will be held by Council to determine if works have been completed to the required level for Countral over. | |
| 4. BENCHMARKS | |
| This rehabilitation and weed management plans aims to improve the flora and fauna value along the Cre corridor through weed removal and promoting native species growth. To ensure clear and reasonable res benchmarks, we propose the following breakdown of works in to be conjunction with on and off maintenar milestones: | ult |
| miesiones. | |
| EXISTING VEGETATION AREAS: | |
| On Maintenance requirements; | |
| - Primary weed removal completed; | |
| - Secondary weed removal completed | |
| - Min. 50% weed removal from existing vegetation | |
| Off Maintenance requirements; | |
| - 10% or less weeds present on site | |
| - Any additional revegetation required has 80% success rate | |
| REVEGETATION AREAS: | |
| On Maintenance requirements; | |
| - All required planting completed; | |
| - evidence of ongoing weed management; | |
| - Max. 10% plant failures at time of inspection | |
| Off Maintenance requirements; | |
| - Max 20% plant failures | |
| - Plants established and generally free of weeds | |
| | |
| | |
| | |
| | |
| | |
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| | |

PROJECT 6777 WOODLINK ESTATE REVEGETATION AND REHABILITATION WORKS - INDICATIVE SCHEDULE OF WORK ITEMS AND MAINTENANCE SEQUENCING NOTE: Assumes planting at end of Winter to allow for establishment and maintenance over two growing seasons OUR KEY TO WORK ITEMS Soil Preparation and Mulching Planting Works nitoring and Reporting WINTER SUMMER AUTUMN WINTER SPRING ESTABLISHMENT PERIOD (3 months) TION PERIOD (3 months) AINTENANCE Month 1 Month 2 Month 3 Month 1 Month 2 Month 3 Month 1 Month 2 Month 3 Mo Month 1 Month 2 Month 3 Month 1 Month 2 Month 3 atering to orting ring ar oring a rting ering to orting porting porting eporting throughout reporting (throughout WEEK 1 reporting (throughout ntractor an oray" tallation lants only) nts only) latura egen lants nana nanagement otation mockdown regeneration plants stakin management -"knockdown spray" re-apply nagem managemen rotation "knockdown manageme rotation "knockdown managemen knockdown spray" in managen otation tation nockdown WEEK 2 ation ockdown d remova knockdow spray" in ockdowr ntification liched areas woody weeds ulched area spray' in sprav" in spray" in orav" in spray" in pray" in ulched are Iched area ched are ched area ulched ar ched are of Failed Plants of Failed Plants regeneration plants - weed formative pruning generation ofFailed eneration ofFail generation WEEK 3 oval by nagemer nagemer anageme nagemen Planting and Weed Veed Managemen slashing of maintenance lanagement lashing of naintenance anagemer lashing of laintenanc agement hing of ntenance Management slashing of maintenance Management slashing of maintenance Managemer slashing of ofFaile nagement ishing of lashing of WEEK 4 cess paths cess paths ccess paths ccess paths ess paths cess paths cess path cess paths ccess path ccess path

NOTE: Assumes Coordination Works Carried Out Prior To Council Pre-start: Council approval, appointment of suitability of qualified contractor by developer, procurement of all plant stock and materials, establishment of protection fencing around nominated

| web www.saundershavill.com | | | | ehabilitation Plan | |
|--|---|---------------|----------------|--|--------|
| havill phone (07) 325I 9444 fax (07) 325I 9455 | amendments: | | Weed Man | agement Notes | LODGEN |
| address 9 Thompson St Bowen Hills Q 4006 | P 94/00/12 CEWDAC Ladesmont | Date 24-09-13 | Drawn by. RM | Project Woodlink Estate | DRAI |
| 🍠 surveying 🥏 town planning 🍠 urban design 🖉 environmental management 🖉 landscape architecture | B 24/09/13 SEVERAL Loggement C 23/09/14 DoE Lodgement | Scale N/A | Checked by. MS | Client Canberra Estate Consortium No. 36 | |

NOTES

RESOURCES / ROLES & RESPONSIBILITIES

resources required to implement this Rehabilitation Plan will be provided by the proponent. The following les are applicable ROPONENT

Ensure all consultants, contractors, sub contractors or others utilizing the parkland area are aware of the Rehabilitation Plan.

Appoint appropriate consultants and contractors to undertake works as prescribed on the drawings and conditioned by Ipswich City Council

Provide security via an uncompleted works bond and maintenance bond for the cost of works if required.

Cover the costs of all necessary resources to ensure works are completed as per the approved documents

ONSULTANTS

Brief proponent on their requirements in implementing and maintaining works as per the Rehabilitation Plan.

Attend pre start, on maintenance and off maintenance meetings

Undertake monitoring and reporting to **Ipswich City Council** as set up by this document.

Be available to respond to technical queries to the approved documentation when on-site conditions require changes.

Liaise with Council throughout all stages of approval, initial works and maintenance of works

DUNCI

Provide technical expertise via commentary on the approval of documentation.

Attend pre-start, on and off maintenance inspections

Undertake random inspections through the Secondary weed management and Maintenance phases.

Reduce and release securities held against works at the completion of successful milestone inspections

Accept and review quarterly reports as dictated in this document.

ONTRACTOR

Complete works in strict accordance with the documentation

· Recommend changes to the documentation when specific experience or on-site conditions require so.

· Attend pre-start, on and off maintenance inspections

| | SPRING | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|
| ONGOING MAINTENANCE nth 1 Month 2 Month 3 | | | | | | | | | | |
| - top up to n and e / repair atting as | Monitoring (watering to replacement plants only) | Monitoring (watering to replacement plants only) | | | | | | | | |
| l eration - weed gement | Weed management - "knockdown spray" re-apply woody weeds | Weed management - "knockdown spray" in mulched areas | | | | | | | | |
| ement ed | Replacement of Failed Plants | Natural regeneration plants - weed management | | | | | | | | |
| ement ed | Weed Management - slashing of maintenance access paths | Weed Management - slashing of maintenance access paths | | | | | | | | |
| | | | | | | | | | | |

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Dwg No. 6777 L ER 04 C

External Rehabilitation - Weed Treatment & Removal Strate

| allik | Family | Scientific and common | Subregion | INEC INC | ocole | Life form | | Chemical Control |
|-------|----------------|---|-----------|----------|-------|-----------------|---|--|
| 1 | Verbenaceae | names Lantana camara var. | 10 | 455 | 5 | & Source S/O | Control Seedlings: Hand | Seedlings: CS&P (G1.5); |
| | | camara (lantana) | | | | | pull | Shrubs: blanket spray G1 or cut down and spray regrowth G100 or splatter using 1 part G to 9 parts v - apply only when plant is growing, not domant (ref |
| 2 | Asteraceae | Baccharis halimifolia (groundsel bush) | 10 | 168 | 4.8 | S/O | Seedlings: Hand pull | Shrubs: CS&P or F/I (G1) Seedlings: CS&P (G1.5) o spray G200 (ref 1). |
| 3 | Crassulaceae | Bryophyllum delagoense (mother of millions) | 8 | 38 | 4.9 | H/O | Hand pull and dispose | Plantlets: spray G200 + N or MM (ref 1). |
| 4 | Bignoniaceae | Macfadyena unguis-cati (cat's claw creeper) | 5 | 36 | 4.9 | V/O | Tubers: crown or dig up, bag and remove. | Regrowth and tuberlings: spray G100 + MM or F10 1). |
| | Basellaceae | Anredera cordifolia (madeira vine) | 8 | 16 | 4.9 | V/O | Small Vines & Tubers: Hand pull. Bag and dispose. | Ascending Stems: S&P (Tubers: gouge, scrape an paint (GU); Ground infestations: spray G200 G200 + MM (ref 1). |
| 6 | Asparagaceae | Asparagus africanus (omamental asparagus, asparagus fem) | 7 | 26 | 4.9 | V/O | dig out roots and dispose of at local council landfill site. remove entire crown and underground stem to prevent regrowth | fluroxypyr (200 g/L) @ 35 per 1 L diesel/kerosene |
| 7 | Ulmaceae | Celtis sinensis (Chinese celtis) | 8 | 19 | 4.9 | T/O | remove when small hand pull or dig out small seedlings. combine dozing, buming and controlled grazing for large infestations | Stem injection, glyphosat (360 g/L) @ Undiluted at per 2 cm of hole or cut |
| 8 | Lauraceae | Cinnamomum camphora (camphor laurel) | 7 | 25 | 4.8 | T/O | Seedlings: Hand pull | Saplings; CS&P (G1.5); Trees: F/I (G1 or G1.5) or C&P (G1.5 or GU for sten up to 8 diameter); Seedlir spray G200 or G200 + MI |
| 9 | Anacardiaceae | Schinus terebinthifolius (broad-leaf pepper tree) | 6 | 49 | 4.8 | T/O | Seedlings: Hand pull | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlin spray G200 (ref 1). |
| | Salviniaceae | Salvinia molesta (salvinia) | 8 | 57 | 4.9 | Ha/F | Mechanical removal of small infestations; Salvinia weevil (Biological control) | Aquatic areas: calcium dodecylbenzene sulphana (AF-100) @1 part to 19 p kerosene; diquat (vegetroi 100L/ha or 4L/100L water; diquat (vatrol) 50-100L/h4 4L/100L water; diquat (reglone) 5-10L/Ha or 400 150mL Agral / 100L water (see ref 2. |
| 1 | Cabombaceae | Cabomba caroliniana (cabomba, fanwort) | 4 | 12 | 4.9 | Ha/F | Mechanical removal of small infestations | 2, 4-D N-Butyl Ester (Rub Vine Spray) @ 12.5L/ML water (see ref 2. for application guide). |
| 12 | Asteraceae | Chrysanthemoides monilifera subsp. rotundata (bitou bush) | 3 | 23 | 4.9 | S/OA | N/A | Stems: C&P or F/I (G1.5) Bushes: spray or cut dow and spray regrowth G100 MM (ref 1). |
| 13 | Pontederiaceae | Eichhomia crassipes (water hyacinth) | 4 | 8 | 4.9 | Ha/OF | Mechanical removal of small infestations | Waterways: 2, 4-D acid (300') @ 1:200 with water; Aquatic Areas: glyphosat @1-1.3L/100L water (see 2. for application guide). |
| 14 | Acanthaceae | Hygrophila costata (Glush weed) | 3 | 7 | 5 | Ha/F | Hand pull smal infestations. Can be controlled by planting competitive native species. | Glyphosate known to be effective.Species known t occur in waterways so EF should be contacted befor spraying (ref 4). |
| | Oleaceae | Ligustrum lucidum (tree privet) | 5 | 9 | 4.8 | T/O | Seedlings: Hand pull | Saplings: CS&P or C&P (G1.5); Trees: F/I (G1 or (or C&P GU for stems up 8cm diametor; Seedlings: spray MM or G200 + MM other weeds such as Lan or Camphor Laurel are pro |
| 6 | Asteraceae | Sphagneticola trilobata (Singapore daisy) | 6 | 34 | 4.6 | H/O | Hand pull | Hand pull and/or spray G2 + MM (ref 1). |
| 17 | Asteraceae | Ageratina adenophora (crofton weed) | 6 | 38 | 4.6 | H/O | Hand pull and hang to dry. | Spray MM or G200 or G20 MM if other weeds such a Lantana or Camphor Laur |
| 18 | Verbenaceae | Lantana montevidensis (creeping lantana) | 8 | 62 | 4.8 | S/O | Fire and/or mechanical control | are present (ref 1). Spray (march to may). Sjyphosate 1L/100L wate metsulfuron methyl 10g/1 water, metsulfuron methy glyphosate 173g/100L wa Basal bark (anytime): tric 1L/60L Diesel, picloram + triclopyr @ 1L/60L Diesel Glyphosate, neat applical Splatter Gur; glyphosate |

| Fabaceae Poaceae Oleaceae Ochnaceae Asparagaceae Poaceae | Neonotonia wightii (glycine) Panicum maximum (green panic and guinea grass) Ligustrum sinense (Chinese privet) Ochna serrulata (ochna) Asparagus aethiopicus cv. Sprengeri (asparagus ground fem) Sporobolus pyramidalis and S. natalensis (giant rat's tail grasses) | 5 8 4 7 5 8 | 16 78 11 33 35 | 4.7 4.6 4.6 4.5 4.5 | H/A H/A T/O S/O | of at the | Vines: CS&P (1:1.5) or spray G100 + MM or MM (ref 1). Spray: glyphosate @ 13mL/1L water (ref 2.) Saplings: CS&P or C&P (G1.5): Trees: F/I (G1.5): Seedlings: spray MM or G200 + MM if other weeds such as Lantana or Camphor Laurel are present (ref 1). Stems: CS&P or S&P or F/I (G1.5): Seedlings and Regrowth: spray G200 + MM or MM. Trial basal bark F100 or G200 + MM (ref 1). Spot spray - metsuftronmethyl | 36 37 38 39 | Amaranthaceae Passifloraceae Poaceae Aristolochiaceae Convolvulaceae | Altemanthera philoxe (alligator weed) Passiflora suberosa (passionflower) Melinis minutiflora (molasses grass) Aristolochia elegans (Dutchman's pipe) |
|---|--|---|---|--|---|--|--|--|---|---|
| Oleaceae Ochnaceae Asparagaceae | panic and guinea grass) Ligustrum sinense (Chinese privet) Ochna serrulata (ochna) Asparagus aethiopicus cv. Sprengeri (asparagus ground fem) Sporobolus pyramidalis and S. natalensis (giant rat's tail | 4 7 5 | 33 | 4.6 | T/O S/O | mechanical removal of small infestations Seedlings: Hand pull N/A dig out unwanted plants and dispose of at the | Spray: glyphosate @ 13mL/1L water (ref 2.) Saplings: CS&P or C&P (G1.5); Trees: F/I (G1.5); Seedlings: spray MM or G200 + MM if other weeds such as Lantana or Camphor Laurel are present (ref 1). Stems: CS&P or S&P or F/I (G1.5); Seedlings and Regrowth: spray G200 + MM or MM. Trial basal bark F100 or G200 + MM (ref 1). Spot spray - | 38 | Poaceae Aristolochiaceae | Passifora suberosa (passionflower) Melinis minutiflora (molasses grass) Aristolochia elegans (Dutchman's pipe) |
| Ochnaceae Asparagaceae | privet) Ochna serrulata (ochna) Asparagus aethiopicus cv. Sprengeri (asparagus ground fem) Sporobolus pyramidalis and S. natalensis (giant rat's tail | 7 | 33 | 4.5 | S/O | Seedlings: Hand pull N/A dig out unwanted plants and dispose of at the | (G15): Trees: F/I (G15): Seedlings: spray MM or G200 + MM if other weeds such as Lantana or Camphor Laurel are present (ref 1). Stems: CS&P or S&P or F/I (G15): Seedlings and Regrowth: spray G200 + MM or MM. Trial basal bark F100 or G200 + MM (ref 1). Spot spray - | 38 | Poaceae Aristolochiaceae | passionflower) Melinis minutiflora (molasses grass) Aristolochia elegans (Dutchman's pipe) |
| Asparagaceae | Asparagus aethiopicus cv. Sprengeri (asparagus ground fem) Sporobolus pyramidalis and S. natalensis (giant rat's tail | 5 | | | | dig out unwanted plants and dispose of at the | Lantana or Camphor Laurel are present (ref 1). Stems: CS&P or S&P or F/I (G1.5); Seedings and Regrowth: spray G200 + MM or MM. Trial basal bark F100 or G200 + MM (ref 1). Spot spray - | 38 | Poaceae Aristolochiaceae | passionflower) Melinis minutiflora (molasses grass) Aristolochia elegans (Dutchman's pipe) |
| Asparagaceae | Asparagus aethiopicus cv. Sprengeri (asparagus ground fem) Sporobolus pyramidalis and S. natalensis (giant rat's tail | 5 | | | | dig out unwanted plants and dispose of at the | (G1.5); Seedlings and Regrowth: spray G200 + MM or MM. Trial basal bark F100 or G200 + MM (ref 1). Spot spray - | 39 | Aristolochiaceae | (molasses grass) Aristolochia elegans (Dutchman's pipe) |
| | Sprengeri (asparagus ground fem) Sporobolus pyramidalis and S. natalensis (giant rat's tail | | 35 | 4.5 | H/O | plants and dispose of at the | or G200 + MM (ref 1). Spot spray - | | | (Dutchman's pipe) |
| Poaceae | ground fem) Sporobolus pyramidalis and S. natalensis (giant rat's tail | 8 | | | | of at the | metsulfuronmethyl | 40 | Convolvationego | |
| Poaceae | S. natalensis (giant rat's tail | 8 | | | | landfill. remove the entire crown of | (600 g/L) @ 10 g per 100 L water plus wetting agent or 100 g/ha plus wetting agent. Cut | 40 | Mimosaceae | Ipomoea indica (blue moming glory) Leucaena leucocepha |
| Poaceae | S. natalensis (giant rat's tail | 8 | ÷ | | | underground stem of plant to prevent regrowth | stump, spot spray, Apply neat Diesel | | | (leucaena) |
| | | | 72 | 4.8 | H/U? | Hand or mechanical removal of small infestations | Small infestations: spray glyphosate @ 15mL/L water, tlupropanate @ 2mL/L water + ionic wetter @ 1mL/Lwater; Dense Infestations: blanket spraying glyphosate 3L/ha, | | | |
| Asteraceae | Ageratina riparia | 5 | 38 | 4.6 | H/O | | flupropanate 2L/ha (ref 2). | 42 | Poaceae | Brachiaria mutica (pa grass) |
| Asclepiadaceae | (mistilower) Araujia sericifera (mothvine) | 9 | 38 | 4.4 | V/O | Seedlings & Vines: | | | | |
| Crassulaceae | Bryophyllum daigremontianum x B. delagoense (hybrid mother- | 6 | 15 | 4.5 | H/O | Hand pull and dispose | Plantlets: spray G200 + MM or MM (ref 1). | 43 | Hydrocharitacea e | Egeria densa (egeria waterweed) |
| Convolvulaceae | Ipomoea cairica (mile-a- minute) | 7 | 56 | 4.4 | V/O | Vines & Runners: hand pull, roll up and hand up to dry. | | 44 | Pinaceae | Pinus elliottii (slash p |
| Sapindaceae | Cardiospermum grandiflorum (balloon vine) | 7 | 31 | 4.4 | V/O | Seedlings & Small Vines: Hand Pull | Stems: CS&P (G1.5); Seedlings or Small vines: spray G200 or G200 + MM | 45 | Caesalpiniaceae | Senna pendula var. g (Easter cassia) |
| Asclepiadaceae | Cryptostegia grandiflora (rubber vine) | 6 | 19 | 4.4 | V/O | Scattereded or medium-density infestations: Where possible_repeated | Foliar spray - Follow-up basal bark/cut stump/foliar spray as necessary with Triclopyr + | 46 | Poaceae | Chloris gayana (Rhoc grass) |
| | | | | | | slashing close to ground level is recommended. | (Grazon DS, Grass-up, etc.) @ 0.35–0.5 L /100 L water | 47 48 | Crassulaceae Asteraceae | Bryophyllum pinnatur (resurrection plant) Parthenium hysteropl |
| Phytolaccaceae | Rivina humilis (baby pepper) | 8 | 61 | 4.3 | H/O | | Spray G100 (ref1). | 40 | Contificação | (parthenium weed) Lonicera japonica |
| Poaceae | Sporobolus africanus (Parramatta grass) | 8 | 48 | 4.5 | H/U | Hand or mechanical removal of small | Small infestations: spray glyphosate @ 15mL/L water, flupropanate @ 2mL/L water + | | | (Japanese honeysuch |
| | | | | | | intestations | Dense Infestations: blanket | | | Thunbergia alata (bla eyed susan) Macroptilium atropurg |
| Poaceae | Sporobolus fertilis (giant | 9 | 27 | 4.5 | H/U | Hand or | flupropanate 2L/ha (ref 2). | | | (siratro) Rubus ellipticus |
| | Parramatta grass) | | | | | mechanical removal of small infestations | glyphosate @ 15mL/L water, flupropanate @ 2mL/L water + ionic wetter @ 1mL/Lwater; Dense Infestations: blanket | | | (yellowberry) |
| Poaceae | Eragrostis curvula (African | 7 | 29 | 4.3 | H/U | Chipped out before | spraying glyphosate 3L/ha, flupropanate 2L/ha (ref 2). Glyphosate (360 g/L) | 53 | Colchicaceae | Gloriosa superba (glo |
| | lovegrass) | | | | | they flower. When chipping out the | (e.g. Weedmaster® Duo) @ 10 ml/1 L water | 54 | Verbenaceae | Phyla canescens (lip |
| | | | | | | the tussock crowns are removed, as this will prevent regrowth. If in seed, the sterns must be cut and | | | | Condamine couch) |
| Asteraceae | Gymnocoronis spilanthoides (Senegal tea) | 3 | 4 | 4.7 | Ha/F | place plant | Glyphosate and metsulfuron- | | | Solanum seaforthianu (Brazilian nightshade |
| | opilantiioides (oeffegal tea) | | | | | sealed plastic bag, leave in sunlight to rot then bum or | meanyi w ionitziz watef | 56 | Araceae | Pistia stratiotes (wate lettuce) |
| | | | | | | council-approved | | 57 | Asparagaceae | Asparagus plumosus (asparagus fern) |
| F F | Asclepiadaceae Crassulaceae Convolvulaceae Sapindaceae Asclepiadaceae Phytolaccaceae Poaceae Poaceae Poaceae Poaceae | (mistfower) Asclepiadaceae Araujia sericifera (mothvine) Crassulaceae Bryophyllum daigremontianum x B. delagoense (hybrid mother- of millions) Convolvulaceae Ipomoea cairica (mile a- minute) Sapindaceae Cardiospernum grandiforum (balloon vine) Asclepiadaceae Cryptostegia grandifora (rubber vine) Phytolaccaceae Rivina humilis (baby pepper) Poaceae Sporobolus africanus (Parramatta grass) Poaceae Eragrostis cunvula (African lovegrass) | Asclepiadaceae (mistlower) Asclepiadaceae Araujia sericifera (mothvine) 9 Crassulaceae Bryophyllum daigremontianum x B. delagoenes (hybrid mother- of millions) 6 Convolvulaceae Ipomoca cairica (mile a- minute) 7 Sapindaceae Cardiospemum grandiforum (balloon vine) 7 Asclepiadaceae Cryptostegia grandifora (rubber vine) 6 Phytolaccaceae Rivina humilis (baby pepper) 8 Poaceae Sporobolus africanus (Parramatta grass) 9 Poaceae Eragrostis curvula (African lovegrass) 9 Asteraceae Gymnocoronis 3 | Asclepiadaceae (mistlower) 9 38 Asclepiadaceae Araujia sericifera (mothvine) 9 38 Crassulaceae Bryophyllum x B. delagoense (hybrid mother-of millions) 6 15 Convolvulaceae Ipomeea calrica (mile a-minute) 7 56 Sapindaceae Cardiospermum grandiforum (balloon vine) 7 31 Asclepiadaceae Cryptostegia grandifora (rubber vine) 6 19 Phytolaccaceae Rivina humilis (baby pepper) 8 61 Poaceae Sporobolus africanus (Parramatta grass) 8 48 Poaceae Eragrostis curvula (African Parramatta grass) 9 27 Poaceae Eragrostis curvula (African I Parramatta grass) 29 29 Asteraceae Gymnocoronis 3 4 | Asclepiadaceae(mistlower)9384.4AsclepiadaceaeAraujia sericifera (mothvine)9384.4CrassulaceaeBryophyllum x B. delagorenes (hybrid mother- of millions)6154.5ConvolvulaceaeIpomoea cairica (mile-a- minute)7564.4SapindaceaeCardiospernum grandiflorum (balloon vine)7314.4AsclepiadaceaeCryptostegia grandifora (rubber vine)6194.4PhytolaccaceaeRivina humilis (baby pepper)8614.3PoaceaeSporobolus africanus (Parramatta grass)9274.5PoaceaeEragrostis cunvula (African lovegrass)9274.5AsteraceaeCymnocoronis344.7 | Asclepiadaceae(mistlower)9384.4V/OAsclepiadaceaeBryophyllum x B. delagoreno tinum x B. delagoreno tinum x D. delagoreno tinute.6154.5H/OConvolvulaceaeIpomeea cairica (mile a- minute)7564.4V/OSapindaceaeCardiospernum grandiforum (balloon vine)7314.4V/OAsclepiadaceaeCryptostegia grandifora (rubber vine)6194.4V/OPhytolaccaceaeRivina humilis (baby pepper)8614.3H/OPoaceaeSporobolus africanus (Parramatta grass)8484.5H/UPoaceaeEragrostis cunvula (African lovegrass)9274.5H/UPoaceaeEragrostis cunvula (African lovegrass)7294.3H/U | (mistiower) Image: Second se | Asteraceae (mistower) Aperatina (paria (mistower) Solution (mistower) Asteraceae (mistower) Approximation (mistower) Approximation (| Ageratina riparia 5 6 1 <th1< th=""> 1 1</th1<> | Asteraceae Instruction Ageratia inparta 5 38 4.0 Ho tand put and |

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| 🔁 havill | phone (07) 3251 9444 fax (07) 3251 9455 | ame | ndment | s: |
| 📕 group | address 9 Thompson St Bowen Hills Q 4006 | A | Date 18/09/13 | Details Client Comment |
| veying 🟉 town planning 🗲 urban desig | gn 🛛 environmental management 🖉 landscape architecture | B C | 24/09/13 23/09/14 | SEWPAC Lodgement DoE Lodgement |

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| e 19/13 19/13 | Details Client Comment SEWPAC Lodgement | Approved | Date | 24-09-13 | Drawn by. | RM | Project Woodlink Estate | DRAFT |
| 19/14 | DoE Lodgement | | Scale | N/A | Checked by. | MS | Client Canberra Estate Consortium No. 36 | |

| ategi | | | | | | |
|---|----|-----|-----|-------|---|--|
| Altemanthera philoxeroides (alligator weed) | 1? | 3 | 5 | Ha/U | | Terrerstrial plants use Metsulfuron methyl (Brushoff®) + 1mL/L non-ionic wetter @ 80g/ha + 1mL/L non-ionic wetter or 10g/100L water + 1mL/L non- ionic wetter. Free foating plants Glyphosate (Roundup |
| Passiflora suberosa (cork passionflower) | 8 | 166 | 4.2 | V/O | N/A | Biactive®) 10 mL/L Stems: CS&P Seedlings & Regrowth: spray G200 or G200 + MM (ref 1). |
| Melinis minutiflora (molasses grass) | 5 | 17 | 4.5 | H/A | Grazing or mowing | Spray: Fluazifop-P 212g/L @ 2L/Ha, Glyphosate 360g/L @ 1L/100L water (ref 2). |
| Aristolochia elegans (Dutchman's pipe) | 8 | 30 | 4.3 | V/O | Stems: Hand pull; Fruit: Bag and remove. | Stems: CS&P (G1.5); Seedlings: spray G200 or G200 + MM or MM (ref 1). |
| lpomoea indica (blue moming glory) | 5 | 24 | 4.3 | V/O | Vines and Runners: hand pull, | Vines and Runners: CS&P (G1.5); Larger Stems, Roots and Nodes: spray G100 + MM or F150 (ref 1). |
| Leucaena leucocephala (leucaena) | 6 | 14 | 4.3 | ST/A | Small plants: Hand | Herbicide Control - Basal Bark application: triclopyr 240g/L + picloram 120g/L @ 1L/60L diesel; C&P: triclopyr 240g/L + picloram 120g/L @ 1L per 60L diesel; spray triclopyr 300g/l + picloram 120g/L @ 350mL per 100L water. Combination of chemical and mecha |
| Brachiaria mutica (para grass) | 6 | 18 | 4.4 | Ha/A | Grazing | Herbicide Control - Foliar application (Knapsack): glyphosate 360g/L @ 200mL/15L water; Foliar: glyphosate 360g/L @ 9L/Ha; Handgun: glyphosate 360g/L @ 1.3L/100L water (ref 2). |
| Egeria densa (egeria waterweed) | 2 | 7 | 4.4 | Ha/F | hand pulling, cutting and digging with machines effective | N/A |
| Pinus elliottii (slash pine) | 4 | 22 | 4.3 | T/A | Seedlings: Hand pull; Saplings and Trees: cut close to ground or ring-bark | Saplings and Trees: F/I (G1.5) ensuring thick bark is penetrated (ref 1). |
| Senna pendula var. glabrata (Easter cassia) | 7 | 33 | 4.2 | ST/O | Seedlings: Hand pull | Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 or G200 + MM or MM; collect and bag seeds (ref 1). |
| Chloris gayana (Rhodes grass) | 9 | 55 | 4.3 | H/A | Hand pulling and removal and digging of larger | Spray: glyphosate @ 1I/100L water |
| Bryophyllum pinnatum | 6 | 17 | 4.2 | H/O | clumps Hand pull and | Plantlets: spray G200 + MM |
| (resurrection plant) Parthenium hysterophorus (parthenium weed) | 6 | 14 | 4.2 | H/U | dispose hand pulling of small areas is not | or MM (ref 1). Spot spray 2,4-D amine 500 g/L @ 0.4 L/100 L |
| Lonicera japonica (Japanese honeysuckle) | 3 | 6 | 4.3 | V/O | | Vines and Runners: CS&P (G1.5); Larger Stems, Roots and Nodes: spray G100 + MM |
| Thunbergia alata (black eyed susan) | 5 | 22 | 4.2 | H/O | N/A | or MM (ref 1). CS&P (G1.5); spray G200 or G200 + MM (ref 1). |
| Macroptilium atropurpureum (siratro) | 8 | 39 | 4.2 | V/A | N/A | Vines: CS&P (1:1.5) or spray G100 + MM or MM (ref 1). |
| Rubus ellipticus (yellowberry) | 4 | 26 | 4.1 | S/O | slashing hinders growth, giving some control if plants are slashed before they seed | Grazon DS picloram/triclopyr 1:200 parts water + wetting agent |
| Gloriosa superba (glory lily) | 3 | 26 | 4.1 | V/O | N/A | Young Shoots: spray G200 or G200 + MM. Best results in Oct-Nov and by using 'Pulse' as surfucant (ref 1). |
| Phyla canescens (lippia, Condamine couch) | 3 | 4 | 4.2 | Ha/O | a combined approach of different control methods including chemical and mechanical with land management practices is most effective | Foliar spray 600 g/L Dichlorptop @ 5 ml /1 L water or 2,4-D amine (500 g/L) + 1% crop oil @ 2-4 L/ha + 1% crop oil |
| Solanum seaforthianum (Brazilian nightshade) | 8 | 78 | 4 | V/O | Hand pull | Spray G100 (ref 1). |
| (brazilian nightsnade) Pistia stratiotes (water lettuce) | 3 | 8 | 4.1 | Ha/OF | Mechanical removal of small infestations | Glyphosate 360g/L @ 1- 1.3L/100L water or 6.9L/Ha; diquat 20g/L @ 4L/100L water or 50-100L/Ha (see ref 2. for application guide). |
| Asparagus plumosus (asparagus fern) | 4 | 8 | 4.1 | V/O | Rhizomes: crown and hang to dry. | Rhizomes: gouge and paint (G1.5), Stems. wind up and spray or cut high and low and spray regrowth G200 or G200 + MM (ref 1). |

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TENT FT Dwg No. 6777 L ER 05 C

External Rehabilitation - Weed Treatment & Removal Strategy

| 58 | Commelinaceae | Tradescantia fluminensis (Qld use T. albiflora) (wandering jew) | 5 | 9 | 4.1 | H/O | N/A | Spray F 150 (as per label) or G200 or G200 + MM; Collect and bag or roll and rake carefully. Dispose (ref 1). |
|----|-----------------|---|----|-----|-----|-------|--|---|
| 59 | Solanaceae | Cestrum parqui (green cestrum) | 6 | 36 | 3.9 | S/O | Seedlings: Hand pull | Stems: CS&P (G1.5) or spray G100 (ref 1). |
| 60 | Caesalpiniaceae | Senna septemtrionalis (arsenic bush, was S. floribunda) | 6 | 25 | 4 | S/O | Seedlings: Hand pull | Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 or G200 + MM or MM; collect and bag seeds (ref 1). |
| 61 | Solanaceae | Solanum mauritianum (wild tobacco tree) | 8 | 30 | 4 | S/O | Seedlings: Hand pull | Shrubs: CS&P (G1.5) or F/I (G1:1.5); Seedlings: spray G200 (ref 1). |
| 62 | Apocynaceae | Catharanthus roseus (pink periwinkle) | 5 | 22 | 4 | S/O | Hand pull | Spray G100 (ref 1). |
| 63 | Passifloraceae | Passiflora subpeltata (white passion flower) | 10 | 60 | 3.9 | V/O | Stems: Hand pull | Stems: CS&P Seedlings & Regrowth: spray G200 or G200 + MM (ref 1). |
| 64 | Fabaceae | Desmodium uncinatum (silverleaf desmodium) | 5 | 14 | 4 | H/A | Hand pull or crown and dispose | CS&P tuberous roots (C1.5); spray G200 or G200 + MM or MM; collect and bag seeds (ref 1). |
| 65 | Poaceae | Melinis repens (red Natal grass) | 10 | 134 | 4.1 | H/A | Grazing or mowing | Spray: Fluazifop-P 212g/L @ 2L/Ha, Glyphosate 360g/L @ 1L/100L water (ref 2). |
| 66 | Nymphaeaceae | Nymphaea caerulea subsp. zanzibarensis (blue lotus) | 4 | 17 | 4 | Ha/OF | Hand pull small infestations. | Spray with or Diquat Glyphosate. Occurs in waterways, thus EPA should be notified before any herbicide use (ref 5). |
| 67 | Onagraceae | Oenothera drummondii subsp. drummondii (beach evening primrose) | 3 | 17 | 4 | H/O | Hand pull | Spray G100 (ref 1). |
| 68 | Tiliaceae | Triumfetta rhomboidea (Chinese burr) | 7 | 44 | 4 | H/U | Hand pull | Spray G100 (ref 1). |
| 69 | Haloragaceae | Myriophyllum aquaticum (parrot's feather) | 3 | 15 | 4 | Ha/F | N/A | Spray: glyphosate 360g/L @ 100mL/10L water (ref 1). |
| 70 | Passifloraceae | Passiflora foetida (stinking passion flower) | 7 | 50 | 3.9 | V/O | Hand Pull | CS&P (G1.5); spray G200 or G200 + MM (ref 1). |
| 71 | Asteraceae | Verbesina encelioides (crownbeard) | 7 | 34 | 4 | H/U | Vines: Hand pull and remove; Runners: Roll up and hang to dry. | Stems: S&P (GU), Regrowth and seedlings: spray G200 or G200 + MM (ref 1). |
| 72 | Poaceae | Paspalum mandiocanum (broad leaf paspalum) | 3 | 6 | 4 | H/A | N/A | Spray G200 - resistant to weaker strength (ref1). |
| 73 | Poaceae | Paspalum dilatatum (paspalum grass) | 10 | 30 | 3.9 | H/A | Hand pull or dig up | Spray G100 (ref 1). |
| 74 | Ruppiaceae | Ruppia maritima (sea tassel) | 2 | 8 | 4 | Ha/F | Hand pull or dig up | Spray G100 (ref 1). |
| 75 | Arecaceae | Syagrus romanzoffiana (queen palm) | 4? | 10 | 3.9 | т/О | Seedlings: Hand pull or crown; Trees: cut below growing point | Trees: F/I (G1.5); Seedlings: spray G200 + MM (ref 1). |
| 76 | Poaceae | Hymenachne amplexicaulis cv. Olive (hymenachne) | 1? | 1 | 4 | Ha/A | a combined approach of different control methods including mechanical, chemical and biological with land management practices is most effective | 360 g/L Glyphosate (includes Roundup Biactive & Weedmaster Duo) – 1 L/100L water or 10 L/ha delivered by boom |
| 77 | Asteraceae | Senecio tamoides (Canary creeper) | 3 | 8 | 4 | V/O | Vines: Hand pull and remove; Runners: Roll up and hang to dry. | Stems: S&P (GU); Regrowth and seedlings: spray G200 or G200 + MM (ref 1). |
| 78 | Poaceae | Cenchrus ciliaris (buffel grass) | 4 | 15 | 4.1 | H/A | Hand or mechanical removal of young plants | Herbicide Control - Glyphosate 7mL/L water; Dichlobenil 600g/100m2; Fluazifop 50-100mL/10L water (ref 2). |
| 79 | Acanthaceae | Thunbergia grandiflora (thunbergia, blue thunbergia) | 2 | 3 | 5? | V/O | N/A | CS&P (G1.5); spray G200 (ref 1). |
| 80 | Cactaceae | Opuntia tomentosa (velvet tree pear) | 8 | 46 | 3.9 | \$/O | Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used. | |
| 81 | Euphorbiaceae | Ricinus communis (castor oil plant) | 7 | 20 | 3.9 | S/O | Seedlings: Hand pull | Shrubs: S: CS&P or F/I (G1.5); Seedlings: spray G200 (ref 1). |
| 82 | Asteraceae | Senecio madagascariensis (fire weed) | 6 | 28 | 3.8 | H/U | Vines: Hand pull and remove; Runners: Roll up and hang to dry. | Stems: S&P (GU); Regrowth and seedlings: spray G200 or G200 + MM (ref 1). |
| 83 | Cyperaceae | Cyperus involucratus (Λfrican sedge) | 6 | 15 | 3.8 | Ha/OF | Each has to be dug out with a spade and the entire plant turned over, exposing the root system while making sure all aerial parts | Aquatic areas - Glyphosate- ipa Land—commercial/industrial, rights of way - Glyphosate-ipa glyphosate-mas, imazapyr |

| | | |] [] | | | | | |
|-----|------------------|--|------|-----|-----|-------|---|--|
| 84 | Asteraceae | Tithonia diversifolia (Mexican sunflower) | 5 | 11 | 3.9 | H/O | WA | Stems: CS&P (G1.5) or cut and spray regrowth and seedlings (G100 or MM) (ref |
| 85 | Poaceae | Setaria sphacelata (South | 9 | 41 | 3.8 | H/A | Hand pull or dig up | 1). Spray G100 (ref 1). |
| 86 | Asclepiadaceae | African pigeon grass) Gomphocarpus physocarpus (balloon cotton bush) | 10 | 132 | 3.7 | S/OU | Slash in winter and bum cuttings. Wanderer Butterfly can also be used | Spray: glyphosate @ 1:1000 with water, in spring before seeding (ref 3). |
| 87 | Poaceae | Digitaria didactyla (Queensland blue couch) | 9 | 70 | 3.7 | H/A | Hand pull or cultivation | Spot Spray: glyphosate or 2,2 DPA (ref 3) |
| 88 | Caesalpiniaceae | Gleditsia triacanthos (honey locust) | 7 | 12 | 3.8 | T/O | For the control of dense infestations on grazing land, burning followed by spot spraying is an economical control method. | pastures non-agricultural land fluroxpyr1 (Starane 200®) @ 1.5 L - |
| 89 | Poaceae | Paspalum notatum (bahia grass) | 4 | 10 | 3.8 | H/A | | Spray G100 (ref 1). |
| 90 | Cactaceae | Öpuntia monacantha (drooping tree pear, syn. O. wlgaris) | 2 | 3 | 4 | S/O | Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used. | Spray; Basal Bark application Injection: Triclopyr: .8L/60L diesel. Picloram + Triclopyr: 1L/60L dicsel. Amitrole: 1mL/3cm (ref 3). |
| 91 | Poaceae | Paspalum conjugatum | 7 | 38 | 3.8 | H/A | Cut below crown. | Spot Spray: glyphosate or 2,2 DPA (ref 3). |
| 92 | Malpighiaceae | (paspalum grass) Hiptage benghalensis (hiptage) | 3 | 5 | 4 | S,V/O | Hand pull small infestations. | Seedlings: Foliar spray of dicamba, fluroxypyr, and triclopyr/picloram. Larger plants cut stump application of fluroxypyr and triclopyr/picloram with diesel, glyphosate with water and picloram undiluted (ref 7). |
| 93 | Solanaceae | Solanum torvum (devil's fig) | 6 | 39 | 3.9 | S/O | Seedlings: Hand pull | Shrubs: CS&P (G1.5) or F/I (G1:1.5); Seedlings: spray G200 (ref 1). |
| 94 | Caesalpiniaceae | Caesalpinia decapetala (thorny poinciana) | 4 | 20 | 3.9 | S,V/O | Seed-heads: Bag and remove. | Stems: CS&P (G1.5); Seedlings: spray G200 or G200 + MM or MM (ref 1). |
| 95 | Poaceae | Pennisetum alopecuroides (swamp foxtail) | 7 | 29 | 3.8 | H/O | Hand Pull | Spot Spray: glyphosate or 2,2 DPA (ref 3) |
| 96 | Verbenaceae | Duranta erecta (duranta) | 6 | 14 | 3.6 | ST/O | Shrubs: CS&P (1:1.5) | Spray G100 (ref 1). |
| 97 | Brassicaceae | Nasturtium officinale (Qld use Rorippa nasturtium- aquaticum) (watercress) | 7 | 19 | 3.7 | Ha/FU | Manually grub and destroy. | Spray G100 and replace with local species (ref 1). |
| 98 | Polygonaceae | Acetosa sagittata (rambling dock) | 4 | 18 | 3.7 | V/U | Tubers: Dig up, bag and remove. | Tubers: Spray G200 or G200 + MM or MM (ref 1). |
| 99 | Poaceae | Cynodon dactylon (couch, Bahama grass introduced cultivars) | 10 | 45 | 3.6 | H/OA | Hand pull small infestations, removing all roots or smother with mulch. | Spray: glyphosate @ 200mL/15L water. Follow up spray (ref 3). |
| 100 | Bignoniaceae | Tecoma stans (yellow bells) | 4 | 16 | 3.6 | ST/O | N/A | Stems: CS&P (G1.5) or spray G200; Seeds: collect, bag and remove (ref 1). |
| 101 | Rosaceae | Rhaphiolepis indica (Indian hawthom) | 3 | 10 | 3.5 | ST/O | Seedlings: Hand pull | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 or G200 + MM or MM (ref 1). |
| | Mimosaceae | Mimosa pudica (common sensitive plant) | 4 | 12 | 3.7 | S/A | ₩A | Pastures - Fluroxypyr/Starane 200 @ 1.5 U/ha Between cropping applications (conservation tillage) - Dicamba/Banuel 200 @ 0.8- 1.4 U/ha |
| 103 | Commelinaceae | Callisia fragrans (purple succulent) | 3 | 9 | 3.9 | H/O | NA | Spray F100 or G200 or G200 + MM; Collect and bag or roll and rake carefully. Dispose (ref 1). |
| 104 | Scrophulariaceae | (paulownia) | 3 | 5 | 4 | T/AO | Seedlings: Hand pull | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 (ref 1). |
| 105 | Commelinaceae | Tradescantia zebrina (zebrina) | 3 | 12 | 3.7 | H/O | N/A | Spray F100 or G200 or G200 + MM; Collect and bag or roll and rake carefully. Dispose (ref 1). |
| 106 | Acanthaceae | Ruellia malacosperma | 5 | 16 | 3.8 | H/O | ₩A | Spray G200 + MM (ref 1). |
| 107 | Poaceae | (ruellia) Pennisetum clandestinum (kikuyu grass) | 4 | 12 | 3.8 | H/A | Hand Pull | Spot Spray: glyphosate or 2,2 |
| 108 | Liliaceae | (kikuyu grass) Lilium formosanum (Taiwan | 5 | 10 | 3.8 | H/O | Hand pull or crown | DPA (ref 3) Spray G100 + MM or MM (ref |
| 109 | Asteraceae | lily) Sigesbeckia orientalis (Indian weed) | 10 | 148 | 3.6 | H/U | and dispose Hand pull or cultivation. | 1). Spray with 2,4-D amine or sodium, pr MCPA + dicamba |
| 110 | Asteraceae | Bidens pilosa (cobbler's pegs) | 10 | 110 | 3.5 | H/U | Hand pull or cultivation. | (ref 3). Spray with 2,4-D amine or sodium, pr MCPA + dicamba (ref 3). |
| 111 | Cactaceae | Opuntia stricta (common prickly pear) | 7 | 67 | 3.6 | S/O | Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used. | (ter 3), Spray; Basal Bark application, Injection: Triclopyr: 8L/60L diesel. Pictoram + Triclopyr: 1L/60L diesel. Amitrole: 1mL/3cm (rei 3). |
| 112 | Poaceae | Eleusine indica (crowsfoot grass) | 8 | 55 | 3.5 | H/A | Pull and chip. Replant with native | Spray: glyphosate or 2,2-DPA (ref 3). |
| | | | | | | | couch. | |

| | 🥒 saunders | web www.saundershavill.com | | | | | | | Plan of Exte | ernal R | ehabilitation Plan | |
|------------------|---------------------------------|--|----------|------------------------------|--|--------------|-------|----------|-----------------|---------|--|--------|
| | havill | phone (07) 3251 9444 fax (07) 3251 9455 | ame | əndmər | | | | | Wee | ed Trea | atment & Removal Strategy | LODGEM |
| | group | address 9 Thompson St Bowen Hills Q 4006 | D | Date 18/09/13 24/09/13 | Details Client Comme SEWPAC Lode | Approved | Date | 24-09-13 | Drawn by. | RM | Project Woodlink Estate | DRAF |
| ø surve <u>i</u> | ying ┛ town planning ┛ urban de | sign 🛭 environmental management 🖉 landscape architecture | <u> </u> | 23/09/14 | | | Scale | N/A | Checked by | . MS | Client Canberra Estate Consortium No. 36 | |

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| 4 | Lamiaceae | Salvia coccinea (red salvia) | 9 | 46 | 4 | H/O | | Aquatic areas (drains, |
|-----|----------------|---|----|----|------|-------|---|--|
| | | | | | | | by hand or machine | channels, margins of streams, lakes and dams) - calcium dodecylbenzene sulphonate (AF-100) @ 1 part |
| 15 | Asteraceae | Ageratum houstonianum | 8 | 81 | 3.8 | H/UO | N/A | in 19 parts kerosene Spray G100 or hand pull and |
| 16 | Myrtaceae | (blue billygoat weed) Psidium guajava and P. guineense (yellow guava and West Indes guava) | 4 | 7 | 3.7 | ST/AO | N/A | spray regrowth G100 (ref 1). Shrubs: CS&P or F/I (G1.5) or spray G200 + MM or MM. Trial basal bark F100 or G200 + MM (ref 1). |
| 17 | Rosaceae | Rubus bellobatus (kittatinny blackberry) | 5 | 22 | 3.5 | S/O | slashing hinders growth, giving some control if plants are slashed before they seed | Grazon DS picloram/triclopyr 1:200 parts water + wetting agent |
| 18 | Myrtaceae | Eugenia uniflora (Brazilian cherry) | 4 | 19 | 3.5 | ST/O | N/A | Stems: C&P or F/I (G1.5); Bushes: spray or cut down and spray regrowth G100 or MM (ref 1). |
| 119 | Oleaceae | Olea europaea (olive) | 2 | 6 | 4? | T/A | Seedlings: Hand pull | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 or G200 + MM (ref 1). |
| 20 | Poaceae | Brachiana decumbens (signal grass) | 4 | 14 | 3.5 | H/A | Grazing | Herbicide Control - Foliar application (Knapsack); glyphosate 360g/L @ 200mL/15L water; Foliar: glyphosate 360g/L @ 9L/Ha; Handgun: glyphosate 360g/L @ 1.3L/100L water (ref 2). |
| 21 | Fabaceae | Stylosanthes scabra (shrubby stylo) | 4 | 4 | 4.3? | H/A | N/A | Vines: CS&P (1:1.5) or spray G100 + MM or MM (ref 1). |
| 22 | Commelinaceae | Commelina benghalensis (hairy wandering jew) | 4 | 7 | 3.5 | H/O | Collect and Bag | Spray G200 or G200 + MM (ref 1). |
| 23 | Poaceae | (itally walidening jew) Pennisetum purpureum (elephant grass) | 2 | 9 | 3.5 | H/O | Grazing or mechanical removal | N/A (ref 2). |
| 124 | Zingiberaceae | Hedychium coronarium (wild ginger) | 2 | 2 | 3.5 | H/O | Small Plants: Hand pull and dispose | Small Plants: spray G200 or G200 + MM; Large Plants: cut and spray regrowth. If rhizomes are at ground level, cut stem and gouge rhizome - fill hole with G1.5 with injector kit or similar (ref 1). |
| 25 | Phytolaccaceae | Phytolacca octandra (inkweed) | 10 | 50 | 3.4 | H/O | Hand pull or crown | CS&P (G1.5) or C&P (G1.5); spray G100 (ref 1). |
| 26 | Asclepiadaceae | Asclepias curassavica (red cotton bush) | 9 | 43 | 3.4 | S/O | Hand pull; Slash | Slash and/or spray G100 (ref 1). |
| 27 | Solanaceae | Lycium ferocissimum (African boxthorn) | 1? | 5 | 4.4? | S/O | N/A | Stems: C&P (G1.5); Regrowth: spray G200 + MM (ref 1), |
| 128 | Mimosaceae | Prosopis pallida (algaroba) | 2 | 2 | 4 | ST/O | When using mechanical control methods, it is important to remove the bud zone of the root system (about 30 cm below the ground surface). If this is not removed, re- shooting can occur. | Basal bark - triclopyr + picloram Access® @ 11/60L diesel. Cut stump - triclopyr + picloram Access® @ 11/60L diesel. Overall spray - triclopyr + picloram Grazon DS® @ 350ml/100L water plus a wetting agent if plant is growing actively |
| 129 | Juncaceae | Juncus articulatus (jointed rush) | 1 | 2 | 4 | Ha/FO | Hand pull. | Spot spray with Glyphosate, 2,2-DPA or MCPA + dicamba |
| 130 | Cactaceae | Opuntia aurantiaca (tiger pear) | 1 | 2 | 4 | S/O | Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used. | (ref 3). Spray: Basal Bark application; Injection: Triclopyr. 8U/60L diesel. Picloram + Triclopyr. 1L/60L diesel. Amitrole: 1mL/3cm (ref 3). |
| 131 | Poaceae | Arundo donax (giant reed) | 1 | 4 | 3.8 | H/O | Physical removal of small infestations. | Spot spray or cut stump and spray with Glyphosate (ref 5). |
| 32 | Cactaceae | Opuntia imbricata (rope pear) | 1 | 1 | 4 | H/O | Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used. | Spray; Basal Bark application; Injection: Triclopyr. 8L/60L diesel. Picloram + Triclopyr. 1L/60L diesel. Amitrole: 1mL/3cm (ref 3). |
| 33 | Bignoniaceae | Pyrostegia venusta (flame vine) | 1 | 1 | 4 | V/O | N/A | CS&P (G1.5); spray G200 (ref |
| 34 | Poaceae | Cortaderia selloana (pampas grass) | 2 | 1 | 3.7 | H/O | Small Plants: dig out by hand or machine | 1). Stems: C&P (G1.5) or cut back and slash and spray regrowth G100 (ref 1). |
| 35 | Solanaceae | Solanum hispidum (giant devil's fig) | 5 | 23 | 3.6 | S/O | Hand pull | Spray G100 (ref 1). |
| 36 | Agavaceae | Furcraea foetida (Cuban hemp) | 3 | 4 | 4.3? | S/OA | Dig out by hand or machine | CS& P near ground or spray MM (ref 1). |
| 37 | Agavaceae | Furcraea selloa (hemp) | 1 | 2 | 4? | S/OA | Dig out by hand or machine | CS& P near ground or spray MM (ref 1). |
| 38 | Agavaceae | Agave americana (century | 4 | 9 | 3.7 | S/OA | Dig out by hand or machine | CS& P near ground or spray MM (ref 1). |



Dwg No. 6777 L ER 06 C

External Rehabilitation - Weed Treatment & Removal Strategy

| 139 | Rutaceae | Murraya paniculata cv. Exotica (murraya) | 6 | 26 | 3.6 | S/O | Seedlings: Hand pull | Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 (ref 1) |
|-----|-----------------------|---|---|---------|------------|--------------|---|--|
| 140 | Rosaceae | Rubus discolor (R. fruticosus complex, a blakberry) | 4 | 10 | 3.7 | S/OA | slashing hinders growth, giving some control if plants are slashed before they seed | Grazon DS picloram/triclopyr 1:200 parts water + wetting agent. A variety of herbicides may be used to control this species including (ref 5). |
| 141 | Brassicaceae | Cakile edentula (American sea rocket) | 4 | 24 | 3.7 | H/U | Manually grub and destroy. | Spray G100 and replace with local species (ref 1). |
| 142 | Balsaminaceae | Impatiens walleriana (balsam) | 2 | 6 | 3.7 | H/O | N/A | Spray G100 (ref 1). |
| 143 | Agavaceae | Agave sisalana (sisal) | 2 | 4 | 3.7 | S/OA | Dig out by hand or machine | CS& P near ground or spray MM (ref 1). |
| 144 | Agavaceae Rosaceae | Agave vivipara var. vivipara (sisal) Prunus munsoniana (wild | 2 | 3 31 | 3.7 3.7 | S/OA ST/A | Dig out by hand or machine | CS& P near ground or spray MM (ref 1). |
| 145 | | goose plum) | ' | 31 | | | Seedlings: Hand pull | Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 (ref 1) |
| 146 | Poaceae | Echinochloa crus-galli (barnyard grass) | 6 | 34 | 3.7 | H/A | Hand pull or dig out small infestations. | Glyphosate or 2,2-DPA (ref 3) |
| 147 | Asteraceae | Solidago canadensis var. scabra (Canadian goldenrod) | 7 | 15 | 4? | H/O | Hand pull and hang to dry. | Spray MM or G200 or G200 + MM if other weeds such as Lantana or Camphor Laurel are present (ref 1). |
| 148 | Fabaceae | Pueraria lobata (kudzu) | 3 | 4 | 3.8 | V,S/O | Slash; Diminish by shading site | CS&P (G1.5); spray G200 or MM (ref 1). |
| 149 | Alismataceae | Sagittaria graminea var. platyphylla (sagittaria arrowhead) | 3 | 7 | 3.5 | Ha/FO | Physical removal of | Spot Spray with Glyphosate at 1.0L:100L water (ref 5). |
| 150 | Nymphaeaceae | Nymphaea mexicana (yellow waterlily) | 2 | 4 | 3.7 | Ha/OF | Hand pull small infestations. | Spray with or Diquat Glyphosate. Occurs in waterways, thus EPA should be notified before any herbicide use (ref 5). |
| 151 | Poaceae | Phyllostachys aurea (fishpole bamboo) | 1 | 2 | 3.7 | S/O | N/A | Stems: cut and fill segment (G1.5); Regrowth: spray G100 (ref 1). |
| 152 | Euphorbiaceae | Jatropha gossypiifolia (cotton-leaf physic nut, bellyache bush) | 1 | 1 | 3.7 | S/O | Hand pull | Spray G100 (ref 1). |
| 153 | Malvaceae | Sida rhombifolia (Paddy`s luceme) | 9 | 69 | 3.6 | S/U | Hand pull or dig out. | Spray with 2,4-D amine or fluoxypyr (ref 3). |
| 154 | Poaceae | Themeda quadrivalvis (grader grass) | 8 | 25 | 3.6 | H/A | Hand pull or dig out small infestations. | |
| 155 | Poaceae | Andropogon virginicus (whisky grass) | 6 | 14 | 3.6 | H/A | Hand pull or dig out small infestations. | Spot spraying with Glyphosate or 2,2-DPA (ref 3) |
| 156 | Bignoniaceae | Jacaranda mimosifolia (jacaranda) | 4 | 12 | 3.4 | T/O | Seedlings: Hand pull | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 (ref 1). |
| 157 | Acanthaceae | Justicia betonica (squirreltail) | 2 | 4 | 4 | S/O | Hand pull smal infestations. Can be controlled by planting competitive native species. | Glyphosate known to be effective.Species known to occur in waterways, DERM should be contacted before spraying in waterways (ref 4). |
| 158 | Mimosaceae | Acacia boliviana (Bolivian wattle) Ailanthus altissima (tree of | 1 | 1 | 4 | T/O T/O | Mechanical or chain removal. Seedlings: Hand | Basal Bark or cut stump application. Triclopyr 600g/L at 1.0L:120L diesel, Triclopyr + Picloram 240 g/l + 120 g/l a 1.0L:60L diesel, Picloram 45 g/kg undiluted (ref 5). Seedlings: CS&P (G1.5); |
| | | heaven) | | | | | pull | Trees: F/I (G1.5); Seedlings: spray G200 or MM (ref 1). |
| 160 | Poaceae | Echinochloa colona (awnless barnyard grass) | 9 | 44 | 3.3 | H/A | Hand or mechanical removal of small infestations | Spray: glyphosate @ 13mL/11 water (ref 2.) |
| 161 | Cyperaceae | Cyperus brevifolius (Mullumbimby couch) | 8 | 53 | 3.4 | H/O | Each has to be dug out with a spade and the entire plant turned over, exposing the root system while making sure all aerial parts of the plant are completely covered. | Aquatic areas - Glyphosate- ipa Land—commercial/industrial, rights of way - Glyphosate-ipa glyphosate-mas, imazapyr |
| 162 | Moraceae | Morus alba (white mulberry) | 3 | 10 | 3.4 | T/O | N/A | Trees: F/I (G1.5), stack cut branches above the ground to dry; Saplings: CS&P (G1.5); Seedlings: spray G200 (ref 1) |
| 163 | Arecaceae | Colocasia esculenta (taro) | 3 | 4 | 3.4 | H/AO | Hand pull. | Cut at base and apply glyphosate or metsulfuron methyl. Plant often occurs in waterways so consult DERM prior to application (ref 6). |
| 164 | Cannaceae | Canna indica (canna lily) | 3 | 9 | 3.3 | H/O | Dig out entire plant | Cut/Slash and spay regrowth G200 or G200 + MM; Collect and bad seeds. Resistant to herbicide (ref 1). |

| 165 | Buddlejaceae | Buddleja madagascariensis (buddleja) | 5 | 6 | 3.4 | S,V/O | N/A | Stems: CS&P (1:1.5); Vines: spray or cut down and spray regrowth G200 (ref1). |
|-----|-----------------|---|----|----|------|-------|--|--|
| 166 | Bignoniaceae | Tecoma capensis (Cape honeysuckle) | 3 | 8 | 4 | ST/O | N/A | Stems: CS&P (G1.5) or spray G200; Seeds: collect, bag and remove (ref 1). |
| 167 | Cactaceae | Harrisia martinii (harrisia oaotus) | 2? | 4 | 4 | S/O | The use of the biological mealy- bug agent is recommended | Triclopyr + picloram at 1.0L:60L diesel, Dichlorprop 600 g/l at 1.0L/60L water, metsulfuron methyl 600 g/l at |
| 168 | Acanthaceae | Thunbergia laurifolia (laurel clock vine) | 1 | 1 | 4 | V/O | N/A | 2.0L:100L water Ref 5). CS&P (G1.5); spray G200 (ref 1). |
| 169 | Fabaceae | Erythrina crista-galli (cockspur coral tree) | 2? | 4 | 3.5 | T/O | N/A | 1). F/I (G1.5) or C&P stumps. Cut and stack branches above ground to dry to prevent resprouting. F/I sprouted branches (G1.5) or spray regrowth G200 + MM or MM. Trial Tordon (ref 1). |
| 170 | Sapindaceae | Koelreuteria elegans (Chinese rain tree) | 1? | 1 | 3.6? | T/O | Seedlings: Hand pull | Trees: F/I (G1.5) or C&P stumps (G1.5); Saplings: CS&P (G1); stack cut branches above ground to dry; Seedlings: spray (G200) (ref 1). |
| 171 | Zingiberaceae | Hedychium gardnerianum (ginger lily) | 1? | 3 | 3.6 | H/O | pull and dispose | Small Plants: spray G200 or G200 + MM; Large Plants: cut and spray regrowth. If thizomes are at ground level, cut stem and gouge thizome - fill hole with G1.5 with injector kit or similar (ref 1). |
| 172 | Acanthaceae | Hypoestes phyllostachya (polka-dot plant | 3 | 5 | 3.5 | H/O | Hand pull or crown and dispose | Spray G200 or G200 + MM (ref 1). |
| 173 | Caprifoliaceae | Sambucus canadensis (American elder) | 3 | 7 | 3.4 | ST/O | Vines and Runners: hand pull, | Vines and Runners: CS&P (G1.5); Larger Stems, Roots and Nodes: spray G100 + MM or MM (ref 1). |
| 174 | Asteraceae | Conyza sumatrensis (tall fleabane) | 9 | 45 | 3.3 | H/U | Hand or mechanical removal of small infestations | Seedlings: Altrazine or Chiorosulfuron in combination with competitive native species; Plants: Glyphosate and Tordon 75-D mix. Glyphosate ration depends on other weeds present (ref 2). |
| 175 | Fabaceae | Tipuana tipu (tipuana) | 2 | 5 | 3.4 | T/O | Seedlings: Hand pull | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 (ref 1). |
| 176 | Asteraceae | Tagetes minuta (stinking roger) | 8 | 32 | 3.3 | H/U | Hand pull and hang to dry. | Spray MM or G200 or G200 + MM if other weeds such as Lantana or Camphor Laurel are present (ref 1). |
| 177 | Caesalpiniaceae | Chamaecrista rotundifolia (round-leaf cassia) | 6 | 14 | 3.3 | ST/A | Seedlings: Hand pull | Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 or G200 + MM or MM; collect and bag seeds (ref 1). |
| 178 | Poaceae | Cenchrus echinatus (Mossman river grass) | 8 | 43 | 3.3 | H/A | Hand or mechanical removal of young plants | Herbicide Control - Glyphosate 7mL/L water, Dichlobenil 600g/100m2; Fluazifop 50-100mL/10L water (ref 2). |
| 179 | Asteraceae | Conyza canadensis (Canadian fleabane) | 10 | 55 | 3.3 | H/U | Hand or mechanical removal of small infestations | Seedlings: Altrazine or Chlorosulfuron in combination with competitive native species; Plants: Glyphosate and Tordon 75-D mix. Glyphosate ration depends on other weeds present (ref 2). |
| 180 | Euphorbiaceae | Euphorbia cyathophora (painted spuge) | 8 | 20 | 3.3 | H/O | Hand pull | Spray G100 (ref 1). |
| 181 | Poaceae | Setaria palmifolia (palm leaf setaria) | 5 | 13 | 3.3 | H/O | Hand pull or dig up | Spray G100 (ref 1). |
| 182 | Euphorbiaceae | Euphorbia heterophylla (milk weed) | 5 | 12 | 3.4 | H/O? | Hand pull | Spray G100 (ref 1). |
| 183 | Fabaceae | Desmodium intortum (greenleaf desmodium) | 4 | 11 | 3.3 | H/A | Hand pull or crown and dispose | CS&P tuberous roots (G1.5); spray G200 or G200 + MM or MM; collect and bag seeds. Monitor regrowth over 2 - 3 years (ref 1). |
| 184 | Poaceae | Pennisetum setaceum (fountain grass) | 3 | 11 | 3.3 | H/O | Hand Pull | Spot Spray: glyphosate or 2,2- DPA (ref 3) |
| 185 | Asteraceae | Conyza bonariensis (flax- leaf fleabane) | 7 | 38 | 3.3 | H/U | Hand or mechanical removal of small infestations | Seedlings: Altrazine or Chlorosulfuron in combination with competitive native species; Plants: Glyphosate and Tordon 75-D mix. Glyphosate ration depends on other weeds present (ref 2). |
| 186 | Solanaceae | Solanum erianthum (a | 7 | 19 | 3.2 | S/O | Hand pull | Spray G100 (ref 1). |
| 187 | Poaceae | tobacco bush) Stenotaphnum secundatum (buffalo grass) | 3 | 23 | 3.2 | H/AO | Hand or mechanical removal of small infestations | Spray: glyphosate @ 13mL/1L water (ref 2.) |

| Image: Selection of S | Big Cateland Cateland <thcateland< th=""> Cateland C</thcateland<> | | | Thevetia peruviana) (yellow oleandor) | | | | | infesttions. Slashing can be used but should be followed up by herbicide application. | fluroxypyr (35mL:1L Diesel); Stem injection Glyphocate (1L:2L Water); Cut stump application of fluroxypyr (1L:5L Diesel; Foliar Spray of fluroxypyr 1:100 for larger plants. 1:200 for seedlings (ref 2). |
|---|--|---|---|---|---|--|---|----------------------------------|--|--|
| 100 Bip onlexaces Statubace campanulate 17 1 3.4 TO I/A Bip integer (25.4) (5.6) (5.6) (5.6) (7 | 00 Bigronitacee Spatial company late 17 1 3.4 TO N.A Ibspatial company late 01 Reace and maxima array late 2 3.1 VAA NA User State (0.16), State (0.16), Vace CSBP (0.17), Vace CSBP (0 | 189 | Rubiaceae | Coffea arabica (coffee) | 3 | 7 | 3.2 | ST/A | Saplings: Hand pull | flower and fruit set; Saplings: CS&P (G1); Seedlings: spray |
| 191 Floate-case Macrotychma axillare 4 12 3.1 VI-MA WiA Wide CSAP (11, 5) or page (10, 5) or page (20, 5) - MA (erf.) 192 Macroscele regime and how gamp 2 3 3.1 HiO Dig in high and CSAP (11, 5) or page (200 - MA (erf.)) 193 PassRovecee PassRov eduit (passion 6 6 12 3.3 3.1 HiO Dig in high and CSAP (11, 5) or page (200 - MA (erf.)) 194 FassRovecee PassRov eduits (passion 6 6 12 3.3 3.1 HiO Reading: CSAP (11, 5) or page (200 - MA (erf.)) 195 Case-case Sensories inflation (and (200 - CSAP (11, 5)) or page (200 - MA (erf.)) 196 Sensories inflation (page (200 - CSAP (11, 5)) or page (200 - CSAP | 91 Placese Material has applied 4 12 3.1 VIAA NA Viaa CSEP (1:1) for party (1:1) for pa | 190 | Bignoniaceae | | 1? | 1 | 3.4 | T/O | N/A | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: |
| Interface Interface <thinterface< th=""> <thinterface< th=""> <thi< td=""><td>Image: Section of the point of the section of the section</td><td></td><td></td><td>(perennial horse gram)</td><td></td><td></td><td></td><td></td><td></td><td>Vines: CS&P (1:1.5) or spray G100 + MM or MM (ref1).</td></thi<></thinterface<></thinterface<> | Image: Section of the point of the section | | | (perennial horse gram) | | | | | | Vines: CS&P (1:1.5) or spray G100 + MM or MM (ref1). |
| 194 Attracecee Zenna parutane (unid zenna) 6 33 3.1 Hull parl of up of parts (SF) (SF) parts (SF) (SF) parts (SF) (SF) (SF) parts (SF) (SF) (SF) (SF) (SF) (SF) (SF) (SF) | 94 Artersceee Zonia purvana (wild 6 33 3.1 HUO Seedings: Less (LS) or fined to the service of t | | | bulbillifera (bulbil watsonia) | | | | | remove | CS&P (G1.5); spray G200 or |
| Image: Solution of the | bit Discense Sameweis tribucial 27 7 3 HO Head bit of gesprey Synchests of 2.3 60 Decesse Discense Sameweis tribucial 3 6 3.1 HA Head put of Sameweis tribucial Sameweis tribucial 3 6 3.1 HA Head put of Sameweis tribucial Sameweis tribucial 3 6 3.1 HA Head put of Sameweis tribucial Sameweis tribucial 3 6 3.1 HA Head put of Sameweis tribucial The sameweis tribucial 3 6 3.1 Th Discense Sameweis tribucial 2.6 Sameweis tribucial 3 6 3 1 Th Sameweis tribucial Notes tribucial Sameweis tribucial Head tribucial Sameweis tribucial Head tribucial Sameweis tribucial Sameweis tribucial Head tribucial Head tribucial Head tribucial <td< td=""><td>194</td><td>Asteraceae</td><td>Zinnia peruviana (wild</td><td>6</td><td>33</td><td>3.1</td><td>H/O</td><td></td><td>Shrubs: CS&P or F/I (G1);</td></td<> | 194 | Asteraceae | Zinnia peruviana (wild | 6 | 33 | 3.1 | H/O | | Shrubs: CS&P or F/I (G1); |
| 196 Pacease Digital a sinahle (angula for a sinahle sinahle sinahle for a sinahle sinahle for a sinahle f | 86 Pacese Opjatis eraintin (pargda 5 20 3.1 H/A Hund puil or cultification Spid Symp: cythesete 0.2.5 (PA (4P (3))) 77 Reacease Extectory appoints (pargda 3 0 3.1 TO Swating: Hand Sparty: CS&P (61), the puil of the spin spin spin spin spin spin spin spin | 195 | Dracaenaceae | Sansevieria trifasciata | 2? | 7 | 3.1 | H/O | Hand pull or dig up | spray G200 (ref1). |
| 197 Reascese Enodorya japonica (loquati) 3 5 3.1 TO Seedings Hand Spling: CSAP (G1.5), Seedings Hand 198 Cataceae Acanthocereus tetragonus 1 1 3.3 SiO Biological or total is general analysis of the solution of the seedings of the solution of the soluti | P7 Descence Enclosity appoint (book) 3 5 3.1 TOC Sendings-transmission 80 Catacese Acathocewas tarragonus 1 1 3.3 S/O Biological controls Final sets 80 Catacese Acathocewas tarragonus 1 1 3.3 S/O Biological controls Final sets 80 Minosacese Acatin final controls Final sets Final sets Final sets 80 Minosacese Acatin final controls Final sets Final sets Final sets 80 Minosacese Acacin final controls S/O Final sets Final sets Final sets 80 Minosacese Acacin timesing (minosa 6 15 3.1 T/A Michanial or estats Basil Batr or cut sturp sets Basil Batr or cut sets <td< td=""><td>196</td><td>Poaceae</td><td>Digitaria eriantha (pangola</td><td>5</td><td>20</td><td>3.1</td><td>H/A</td><td></td><td></td></td<> | 196 | Poaceae | Digitaria eriantha (pangola | 5 | 20 | 3.1 | H/A | | |
| 198 Cartacese Acarthoceeus tetragonus 1 1 3.3 S/O Biological controls Sperge: Basis Bark application 199 Mimosacese Acarthoceeus tetragonus 1 1 3.3 S/O Biological controls Sperge: Basis Bark application 199 Mimosacese Acacia influica subsp. 3 3 4.47 T/A Mechanical or cut stump applications: findows application: | 88 Cactacese Acantocersus largoous 1 1 3.3 Sto Biological controls Spray: Basel Bark for Trickry: Bi/RL 99 Mimosacese Acacla mildica subap, indica (prokily secia) 3 3 4.47 T/A Mechanical control of the sub-facial on the proking of the sub-facial on the sub-facial o | 197 | Rosaceae | | 3 | 5 | 3.1 | т/О | Seedlings: Hand | Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 or G200 + MM or |
| 199 Mimosaceee Acacia ministica subsp. 3 3 4.47 TA Mechanical control 3, difficult, Fire can 199 Mimosaceee Acacia finitica subsp. 3 3 4.47 TA Mechanical or training application of the subsp. 10.1700/minitical subsp. 200 Mimosaceee Acacia finitesiana (mimosa 6 16 3.1 TA Mechanical memorial subsp. Basal Bark or cut stump application of finitopy 4000/minitopy 4000/minit | ge Inclusion Inclu | 198 | Cactaceae | | 1 | 1 | 3.3 | S/O | available: | Spray; Basal Bark application; Injection: Triclopyr: .8L/60L |
| indice (prickly acacia) indic (prickly acacia) indic (prickly | indica (prickly acacia) chain removal. explication. Trickopy: 60:0;L 00 Mimosaceae Acacia tamesiana (mimosa 6 15 3.1 T/A Mechanical explication. Trickopy: 60:0;L 00 Mimosaceae Acacia tamesiana (mimosa 6 15 3.1 T/A Mechanical explication. Trickopy: 60:1;L 00:0;L 00:0;E 00:0;E Mechanical explication. Trickopy: 60:1;L 00:0;E 00 | | | | | | | | cactorum successful. Mechanical control difficult. Fire can | Triclopyr: 1L/60L diesel. Amitrole: 1mL/3cm (ref |
| 200 Mimosaceee Acacia famesiana (mimosa 6 15 3.1 T/A Mechanical removal of small plants. application of Trictopyr + application of Trictopyr + plants. Plants | 00 Mimosacese Accis famesiana (mimosa bush) 6 15 3.1 T/A Machanical memoral of small plants. Basel Bark or cut stump explication of Tricopy + P Pictorem 20 gi + 120 gi at 10.00.00 deset. Foliar explication of Clopyrell 300gi at 500mL:1L water ref 5, denatory notes. Image: Small and Scaping - Tricopy - Tricopyrell 300gi at 500mL:1L water ref 5, denatory notes. Image: Small and Scaping - Tricopyrell 300gi at 500mL:1L water ref 5, denatory notes. Image: Small and Scaping - Tricopyrell 300gi at 500mL:1L water ref 5, denatory notes. Image: Small and Scaping - Tricopyrell 300gi at 500mL:1L water ref 5, denatory notes. Image: Small and Image: Sma | 199 | Mimosaceae | | 3 | 3 | 4.4? | T/A | | application. Triclopyr 600g/L at 1.0L:120L diesel, Triclopyr + Picloram 240 g/l + 120 g/l at 1.0L:60L diesel, Picloram 45 |
| Explanatory notes. Explanatory n | Janatory notes | 200 | Mimosaceae | | 6 | 15 | 3.1 | T/A | removal of small | application of Triclopyr + Picloram 240 g/l + 120 g/l at 1.0L:60L diesel. Foliar application of Clopyralid 300g/L at 500mL:1L water ref |
| Rec no: Total number of records for species within study area, Queensiand Herbarium CORVEG and HERRECS data. Scores: Based on panel data of imasiveness, 5 (highest) to 3 (moderate), 7 indicate doubtil scores. Life forms: T-tree (woody plant >5m), 3T-small tree (2-5m), 5-shrub (woody >2m), H-herb (grasses & forbes), He-quatic herbs. Source: A-agriculture, O-omamental and landscaping, F-fsh aquatum, U-unintentional introduction and/or contaminant. Abbreviations: Control Methods CS&P = cut screpe and paint SAP = scrape and paint CAP = cut and paint CAP = cut and paint F/I = fill or inject stem Abbreviations: Herbicides G = Glyphosate, eg, Roundup Biactive, Weedmaster Duo MM = Metsuffaron methyl, eg, Brushoff F = Fluroxypyr, eg, Starane Abbreviations: Herbicide Dilution Rates for High Concentration Applications GU = Olyphosate undiluted G1 = Olyphosate undiluted G1 = Olyphosate undiluted G1 = Olyphosate U = Dart glyphosate G4 = 4 parts water to 1 part glyphosate G4 = 4 parts water to 1 part glyphosate G10 = 100mL glyphosate pr 10L of water + surfuctant, eg 20mL LI 700 per 10L G200 = 200mL glyphosate pr 10L of water + surfuctant, eg 20mL LI 700 per 10L G200 = 200mL glyphosate pr 10L of water + surfuctant, eg 20mL LI 700 per 10L G200 = 200mL glyphosate pr 10L of water + surfuctant, eg 20mL LI 700 per 10L G200 = 200mL glyphosate pr 10L of water + surfuctant, eg 20mL LI 700 per 10L G200 = 100mL glyphosate pr 10L of water + surfuctant, eg 20mL LI 700 per 10L G200 = 100mL glyphosate pr 10L of water + surfuctant, eg 20mL LI 700 per 10L G100 + MM = 200mL glyphosate + 1.5g metsuffiron methyl per 10L of water + wetting agent, eg, 2mL Agral per 10L water F150 = 100mL fluroxypyr per 10L water | Inc. Total number of records for species within study area, Queensland Herbarium CORVEG and HERBRECS data. Incres: Based on panel data of invesiveness, 5 (fi)dest 0: 3 (moderate). 7 indicate doubtid scores. forms. Trive (woody plant >5m) 3T-small tree (2-5m). 3-shrub (woody ~2m). Hherb (grasses & totres). Ha-aquatic treets. urce: A-agriculture, O-omamental and landscaping. F-fsh aquarium, U-unintentional introduction and/or contaminant. breviations: Control Methods BP = cut scraps and paint P = scraps and paint< | Explan | atory notes. | | | | | | | |
| Ref. 3. Holland et al. (1996), 'Suburban Weeds', DPI QLD. Ref 4. Port Stephens Council (NSW), 'Weed Busters'. Ref 5. Depertment of Primary Industries (NSW). Noxious and Environmental Weed Handbook, 3rd Edition'. Ref 6. Department of Environment and Conservation, 'Florabase'. (DEC-WA) Ref 7. Vitelli, J.S. and Madigan, B.A. and Van Haaren, P.E. and Setter, S. and Logan, P. (2009) Control of the invasive liana, Hiptage benghalensis. | f. 3. Holland et al. (1996), 'Suburban Weeds', DPI QLD. f. 4. Port Stephens Council (NSW), Weed Busters'. f. 5. Depertment of Primary Industries (NSW). Noxicus and Environmental Weed Handbook, 3rd Edition'. f. 6. Department of Environment and Conservation, 'Florabase', (DEC- WA) f. 7. Vitelli, J.S. and Madigan, B.A. and Van Haaren, P.E. and Setter, S. and Logan, P. (2009) Control of the invasive liana, Hiptage benghalensis. ed Biology and Management, 9 (1). pp. 54-62. | Abbre: CS&P = CS&P = F/I = fr Abbre: G = G MM = F = F L Abbre: G100 = G100 = G100 = G100 = G100 = G100 = F100 | : A-agriculture, O- viations: Control = cut scrape and paint cut and paint ill or inject stem viations: Herbick yhosate, eg, Rou vietsulkron methy roxypyr, eg. Stara viations: Herbick Jlyphosate undilut vetsulkron methy roxypyr, eg. Stara viations: Herbick Jlyphosate undilut part water to 1 part art to 1 part swater to parts water to 1 part viations: Herbick 100mL glyphosat 200mL glyphosat 20 | ornamental and landscaping, F Methods painit les ndup Biactive, Weedmaster Du , eg, Brushoff ne le Dilution Rates for High Co ed t glyphosate 1.1 part glyphosate art glyphosate e per 10L of water + surfuctant e per 10L of water + surfuctant per 10L water per 10L water per 10L water surful expectes est Landcare Group (2008), "Occ mary Industries and Fisheries (| ro ncentration , eg 20mL L , eg 50mL t htyl per 10 thyl per 10 thyl per 10 thyl per 20 thyl per 20 thy | n Applicati I 700 per 10 I 700 per 11 Of water + of water + mL Agral pe | ons DL DL setting ar 10L wa | agent, eg. agent, eg. iter | n and/or contaminant. 2mL Agral per 10L w 2mL Agral per 10L w of Eastern Australia: | ater |
| | | Ref ? | Holland et al. (19 | 96), 'Suburban Weeds', DPI QL uncil (NSW), 'Weed Busters'. | D. | onmental W | | | | |
| | | Ref. 3. Ref 4. Ref 5. Ref 6. Ref 7. | Depertment of Prin Department of Env Vitelli, J.S. and M | <i>i</i> ronment and Conservation, 'Fl adigan, B.A. and Van Haaren, I | | | Logan, I | P. (2009) (| Control of the invasive | liana, Hiptage benghalensis. |

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| havill | phone (07) 3251 9444 fax (07) 3251 9455 | · · · | endmen | | | | Wee | ed Trea | tment & Removal Strategy | LODGEMEN |
| group 📕 | address 9 Thompson St Bowen Hills Q 4006 | A | Date 18/09/13 | | Approved | Date 24-09-13 | Drawn by. | RM | Project Woodlink Estate | DRAFT |
| // surveying // town planning // urban do | esign 🛛 environmental management 🖉 landscape architecture | <u>С</u> В | 24/09/13 23/09/14 | SEWPAC Lodgement DoE Lodgement | | Scale N/A | Checked by | MS | Client Canberra Estate Consortium No. 36 | |

Dwg No. 6777 L ER 07 C

External Rehabilitation - Rehabilitation Notes

RECONSTRUCTION

Applies

REHABILITATION DESIGN & LAYOUT

REHABILITATION DESIGN & LAYOUT

This External Rehabilitation Plan has been prepared for Canberra Estate Consortium No. 36 Pty Ltd and is designed to enhance the existing native vegetation areas on completion of the weed management process within the offset areas of the Woodlink Estate. This plan set has been produced by overlaying existing site data with proposed works to determine impacts and disturbance.

This External Rehabilitation Plan is to identify and control necessary site disturbance as provided for the offset revegetation requirements. Where existing native vegetation has established, low impact weed removal and rehabilitation techniques are required. In patches that have undergone clearing and major disturbances, a more aggressive approach to weed removal can be applied, in consultation with the Assessment Manager

SITE PREPARATION

NATURAL REGENERATION

Areas designated for revegetation have undergone various stages of disturbance whether it be post weed management processes or existing historical areas of clearing. Once planting locations have been determined each planting location is to be spot spraved (1 square

netre) prior to soil cultivation. (knockdown, non residual herbicide = Glyphos minimum rate of 2 litres per ha of spot spraving).

However, if individual weeds have been identified throughout the existing established native vegetation, then manual removal should be applied and replaced with a native revegetation species as dentified within this plan set.

The planting densities and species selection for Rehabilitation Zones have been chosen to maximise habitat, linkage and movement opportunities

Rehabilitation treatment is to generally include the following points

- A number of weeds are recorded for removal within shrub & ground layer. Weed removal and management will utilise low impact methods preventing further degradation to
- the riparian corridor. Revegetation species will include a variety of ground, shrub and canopy species selected from pre-clear vegetation communities and specific species - Refer to rehabilitation plant schedules for
- Planting densities to achieve a minimum of 1 per m2 throughout all rehabilitation areas
- Low impact weed removal techniques will be applied within this zone. This method is used to eliminate or greatly reduce further degradation to the soil and "riparian" zone Native trees will replace all woody weeds removed from vegetated zones.
- Ground layer and shrub layer weeds will be removed utilising low impact weed removal methods and replaced with locally occurring native species.

SITE PREPARATION

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Areas designated for revegetation have undergone various stages of disturbance whether it be affected by introduced species of through the necessary development process

Once planting locations have been determined each planting location is to be spot sprayed (1 square metre) prior to soil cultivation. (knockdown, non residual hebercide = Glyphosate or equivalent used at minimum rate of 2 litres per ha of spot spraying) Several herbicide applications maybe required to ensure appropriate kill rates where long grass exists. Note: Weed spray to single plantings only at top of bank.

However, if individual weeds have been identified throughout the existing established native vegetation, then manual removal should be applied and replaced with a native revegetation species as identified on this drawing sheet.

CULTIVATION AND PLANTING

| individual ng location d be spot ated to at 2 times the and twice idth of the stock size. detail for fications: | MULCH: 100mm Site Mulch - pull away from base of plant. CULTIVATION: Dig hole to bottom of hole. | NOTES: TUBESTOCK: Ensure top of rootball is lovel with surrounding ground - Form an earthen basin around the base of the plant to hold water WATERING: A m root ball of each product label to plants are to by the time of plant |
|--|--|--|
| | MIN 150 | establish within conditions. If it |

At the time of planting soak the At the time of planting soak the ch plant in a diluted solution of d according to the directions on to assist in establishment. be watered deeply only once at anting and then allowed to is the nervolling dimetion n the prevailing climatic is observed during the aintenance process that the plant is under stress then a subsequent watering is allowed assist in ostablishmont

MULCHING & MATTING

Areas to be blanket mulched to a minimum depth of 100mm leaving a 50mm gap surrounding the trunk of planted stock. Areas which are too steep or where overland flows may occur, a combination of mulch and Jute mat and / or suitably anchored natural fibre weed mat installed to manufactures specifications have been specified

PLANTING STOCK

All planting species to be selected in accordance with the species sizes and numbers setout on the species schedules on this drawing sheet

Revegetation planting locations shall be generally setout in accordance with a typical random grid pattern as shown on this drawing sheet below

| * | | * | * | * | * | * | * | * | * | * |] |
|---|---|----|-----|-----|----|----|----|----|----|----|--------------------------------|
| • | + | *(|)* | *(- |)* | *(|)* | *(|)* | *0 | |
| * | | * | * | * | * | * | * | * | * | * | Min Density 1 plant per 1m2 |
| * | + | * | * | * | * | * | * | * | * | * | Trees @ 1 per 8m2 |
| • | | *(|)* | *(|)* | *(|)* | *(|)* | *① | Shrubs @ 1 per 4m2 |
| * | + | * | * | * | * | * | * | * | * | * | Ground Cover @ 1 per 1m2 |
| | | * | * | * | * | * | * | * | * | * | |
| • | + | *(|)* | *(|)* | *(|)* | *(|)* | *0 | |
| * | | * | * | * | * | * | * | * | * | * | |
| * | | * |) - | * | * | * |)* | * | * | * | |

All stock shall be true scheduled nomenclature, well formed, hardened off to suit final revegetation location, nursery stock. The root system should be well formed without being tube bound or large roots extruding from the tube container

The landscape coordinator has the right to inspect and reject stock prior to planting

INSTALLATION METHODOLOGY

The following outlines the preferred installation methodology for revegetation works within the rehabilitation areas. It has been designed to maximise plant establishment success rates and minimise plant mortality. Revegetation works shall be either undertaken or directly supervised by an experienced and qualified bush regenerator. All works shall be in accordance with the provisions of this Site Based Rehabilitation Plan, and local government policies and Australian

Plant installation methods shall include

· Plants are to be vigorous, well established, hardened off, consistent with species or variety, free from disease and insect pests, with large root systems and no evidence of having been restricted or damaged.

| Saunders web www.saundershavill.com havill phone (07) 325I 9444 fax (07) 325I 9455 | amendments: | | Plan of External Re Rehabilitati | ehabilitation Plan on Notes | LODGEN |
|--|-----------------------------|---------------|--|--|--------|
| address 9 Thompson St Bowen Hills Q 4006 | P 24/00/12 SEWPAC Lodgement | Date 24-09-13 | Drawn by. RM | Project Woodlink Estate | DRAI |
| / surveying / town planning / urban design / environmental management / landscape architecture | C 22/09/14 DoE Lodgement | <u>Scale</u> | Checked by. MS | Client Canberra Estate Consortium No. 36 | |

Ecologists from Saunders Havill Group assessed on-site waterways within the Woodlinks Estate providing information on locations of scouring, erosion and disturbances along the drainage lines. This data provides the base information required to compile the various rehabilitation approaches required within this Site Based Rehabilitation Plan. The various approaches are described below

| To relatively large, intact and weed-free areas of native vegetation. To relatively large, intact and weed-free areas of native vegetation. Where the native plants are healthy and capable of regenerating without human intervention. When native plant seed is stored in the soil or will be able to reach the site from nearby natural areas, by birds or other animals, wind or water. Where the plant community has a high potential for recovery after any short-lived disturbance, such as a fire or cyclonic winds. When preventative action is all that is required to avert on-going disturbance, e.g. erection of fercing to prevent intrusion from cattle. Planting in such sites can work against the aims of restoration by interfering with natural regeneration. The re-establishing plant community will be similar in structure, composition and diversity to the original vegetation. | Where the site is highly degraded or altered. Where the site is highly degraded or altered. When the degree of disturbance has been so great and long-standing that the pre-existing native plant community cannot recover by natural means. To sites such as areas of fill, sites affected by stormwater flow, and areas that have been drastically cleared, either mechanically or by stock even though there may be a few remaining native trees or shrubs. When a greater degree of human intervention is required, such as weed removal, cessation of grazing and/or slashing, amelioration of soil conditions such as importation of soils, drainage works or reshaping of the landscape. When a major component is the importation of native species through planting. The re-establishing planted community should be similar to the original vegetation in structure, composition and diversity. |
|--|---|
| ASSISTED NATURAL REGENERATION | FABRICATION (Type Conversion) |
| Applies: To natural areas where the native plant community is largely healthy and functioning. When native plant seed is still stored in the soil or will be able to reach the site from nearby natural areas, by birds or other animals, wind or water. Where the natural regeneration processes (seedling germination, root suckering etc.) are being inhibited by external factors, such as weed invasion, soil compaction, cattle grazing, mechanical slashing etc. When limited human intervention, such as weed removal, minor amelioration of soil conditions, erection of fencing, cessation of slashing, etc. will be enough to trigger the recovery processes through natural regeneration. When major component is weed control. Planting in such sites can work against the aims of restoration by interfering with natural regeneration. The re-establishing plant community will be similar in structure, composition and diversity to the original vegetation. | Applies: Where site conditions have been irreversibly changed. When it is not possible to restore the original native plant community. Where a better-adapted local plant community can be planted that will function within the changed conditions. In situations such as the construction of a wetland plant community to mitigate increased urbar stormwater run-off. N.B Revegetation (planting) is the major component in a fabrication program. |
| Therefore, Revegetation occurs in 3 distinct zones throughout the rehabilitation area. Refer to Drawing sheets 6777 L 11 for a full description of proposed plant species, sizes, densities and numbers. Zone 1 - Existing Vegetation Area (Natural Regeneration) This large area of intact Vegetation is predominately weed free except for the northern creek corrdior where lengths of weed species (Lantana, Pepper Trees, Chinese Elms, Blue Billy Goats weed, etc) can be seen along the creek banks. Disturbance to this area will be a minimum as weed treatment will be hand removal / sort spraving only. Due to the existing seed bank being undisturbed it is | Zone 3 - Powerline Revegetation Area (Reconstruction) Current electrical easement highly disturbed over years of clearing and slashing. The majority of these areas are pastoral grasses with minor occurances of regrowth. Typically these areas will require a combination of mulching and Jut Matting and dense revegetation of native species to reconstruct these disturbed drainage lines. Small trees, shrubs and groundcovers will comprise most of the revegetation species. Maintenance access tracks current exist through the easement- stabilization through rock and mulch required to eroded areas of track. |

be hand removal / spot spraying only. Due to the existing seed bank being undisturbed it is ecommended that reduced revegetation works are undertaken allowing for natural regeneration to occur throughout the area. Where signicant weed removal occurs along the creek banks, jutemat and ubestock to be installed by ICC.

Zone 2 - Mass Koala Revegetation Area (Reconstruction)

As a result of previous land uses, clearing and the minor weed treatments works required to remove the isolated weeds throughout the area, it is recommended that the area is rehabilitated through an reconstruction procedures. Areas to be rehabilitated include those that are denuded, disturbed and or where bare areas exist following the weed management process. pastoral grasses to be slashed and sprayed, mulched and revegetated with Koala food and habitat trees, and native shrubs and ground covers. Planting zone to be dominated by trees, shrub and ground cover species only with species selected from pre clear species at densities of 1 plant per square metre



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INSTALLATION METHODOLOGY (Continued)

Plants are to be planted immediately after delivery to the planting site. If not possible, they should be stored in the shade and watered sufficiently during the day. Planting is to be undertaken in accordance with the planting module contained within this

- drawing sheet. Excavate planting medium to a depth suitable for the installation of tube or pot specimens. In areas where planting substrate is deemed to be very poor (compacted, nutrient depauperate, hydrophobic etc.) and above areas of potential frequent inundation and water flow, topsoil may
- be used or the ground mechanically ripped where access is feasible

Pre-water plant hole, if soil is dry, to decrease root stress upon planting and ass infiltration of water through the soil.

Incorporate into the planting substrate the appropriate quantity of prepared water crystals or other suitable hydrating product such as Hortex 'Rainsaver' or 'Moisturaid'

Place plant into hole and backfill ensuring that the plant is upright and the stem is not covered in any less than 10mm or any more than 20mm of planting medium.

Plants are to be watered thoroughly immediately after planting (ensure deep irrigation) and thereafter as required during the construction phase of the development depending on climatic conditions. Creation of a concave hollow around the base of each plant will aid water infiltration to the plant roots.

A complete, slow release fertiliser is recommended, and is to be administered appropriately during planting. Top dressing with slow release fertiliser is preferred to avoid toxic levels of fertiliser accumulating in the plant hole around the plant roots.

To ensure successful establishment, all planting surfaces must be covered in

- •• a 100mm layer of high quality weed-free composted chip mulch (site mulch) Note: to avoid possible stem rot in some 'drier' species ensure mulch is 'dished' and not covering plant stem by more than 20mm.
- •• suitable individual anchored natural fibre weed mat; or
- as presented within other section, where available mulch material will be sourced from cleared vegetation material if adequately seasoned. A long term slow release fertiliser, such as Nutricote or similar product should be used for all

plantings after initial plant establishment.

Seedlings and saplings are to be encouraged and maintained throughout the establishment period.

MAINTENANCE SCHEDULE

MAINTENANCE SCHEDULE

| Maintenance sche on the Landscape | ule for revegetation areas of the proposed development as specified Plans |
|--------------------------------------|--|
| ESTABLISHMENT | Establishment is to occur at the completion of the primary and secondary weed removal phases and any rehabilitation planting. During this period any failed stock are to be replaced and/ or defects identified then reparations are to be made to site works.W |
| 1. Watering | Watering shall be carried out to ensure establishment of revegetation. At the time of planting soak the root ball of each plant in a diluted solutic of liquid seaweed according to the directions on product label to assist establishment. Plants are to be watered deeply only once at the time of planting and the |
| | allowed to establish within the prevailing climatic conditions. If it is observed during the maintenance process that the plant is under stress then a subsequent watering is allowe |
| 2.Weed Removal | Weeds evident during the Establishment period but should be removed as part of a monthly weed management program. Best Practice weed management techniques should be employed for weed removal among revegetation areas. |
| | Where grass seeding or turf establishes within planted areas it should b treated with approved herbicide for waterways. |
| MAINTENANCE | (Weeks 13- 2 years) |
| 1. Watering | No specified watering regime is provided during the maintenance perior. The intent is for the area to become self sufficient in utilising natural rain patterns and run off. Watering should occur during extended dry period to ensure continued establishm |
| 2. Weed Removal | Weeds should be tended to on a monthly program. Treatment techniques vary within the landscape planted areas versus revegetation and retention areas. |
| 3. Management | Throughout the establishment and maintenance periods areas where planting stock has not achieved a 90% success survival additional planting shall be installed. |
| 4. Erosion Control | Prior to the commencement of works and to remain throughout the establishment and maintenance period an erosion and sediment contro measures shall be employed over the rehabilitaion area of the site. |
| | saunders havill group |
| GEMENT RAFT | |
| | Dwg No. 6777 L ER 08 C |



| | ø saunders | web www.saundershavill.com | Scale 1:1500 - Lengths are in Metres. 20 0 20 40 60 80 100 120 140 160 180 200 220 External Rehabilitation Plan | | | | | | | | | | |
|-----------|---------------------------------|--|--|----------------------|----------------------------------|----------|--|-------|-----------|------------|------|--|--------|
| | havill | phone (07) 325I 9444 fax (07) 325I 9455 | | endmer | | | | | | She | et 1 | | LODGEM |
| | group | address 9 Thompson St Bowen Hills Q 4006 | A | Date 18/09/13 | Details Client Comment | Approved | | Date | 24-09-13 | Drawn by. | RM | Project Woodlink Estate | DRAF |
| ø surveyi | ing 🗲 town planning 🗲 urban de: | sign 🛛 environmental management 🖉 landscape architecture | <u>С</u> | 24/09/13 23/09/14 | SEWPAC Lodgemen DoE Lodgement | n | | Scale | 1:1500@A1 | Checked by | . MS | Client Canberra Estate Consortium No. 36 | |

LEGEND





Zone 1: EXISTING VEGETATION: Existing native vegetation. Weed management and assisted regeneration throughout by Ipswich City Council.

Zone 2: MASS KOALA REVEGETATION AREA:

Cleared pastoral areas with minor existing regrowth. Revegetation at 1plant/ m2 using Koala habitat/ food tree species and native shrub and groundcover mix.

All disturbed/ bare areas to be blanket mulched to a minimum depth of 100mm to suppress weed growth and revegetated.

Where batters steeper than 1:3 exist Jute mat is proposed to stabilise and provide protection against erosion and scouring.



Zone 3: POWERLINE REVEGETATION AREA:

Revegetation using small trees, native shrubs and groundcovers species. Revegetation at 1plant/ m2.

Existing pastoral cover to be slashed and sprayed out prior to cultivation and revegetation works.

All disturbed/ bare areas to be blanket mulched to a minimum depth of 100mm to suppress weed growth and revegetated.

TOP OF BANKS



NOTE 1: All works in accordance with Ipswich City Council Landscape Development Manual. NOTE 2: Where plans refer to engineering drawings, refer to plans provided by HCR CONSULTING ENGINEERS.

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LEGEND





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TOP OF BANKS

NOTE 1: All works in accordance with Ipswich City Council Landscape Development Manual. NOTE 2: Where plans refer to engineering drawings, refer to plans provided by HCR CONSULTING ENGINEERS.



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External Rehabilitation - Rehabilitation Schedules

REHABILITATION SCHEDULES

| | | R EXISTING BARE AREAS) random grid matrix pattern | | |
|---------------------------------|--|--|----------------------|-----|
| FORM (Position in | Botanical Name | Common Name | Size | Qty |
| Community) | Dotamourranto | | | ~., |
| Canopy Layer | CORYMBIA citriodora | "Lemon scented Gum" | Tube | |
| callopy Layer | CORYMBIA intermedia | "Pink Bloodwood" | Tube | - |
| | CORYMBIA tessellaris | "Moreton Bay ash" | Tube | |
| | EUCALYPTUS acmenoides | "Queensland White Mahogany" | Tube | - |
| | EUCALYPTUS crebra | "Narrow leafed ironbark" | Tube | - |
| | EUCALYPTUS moluccana | "Gum Top Gum" | Tube | |
| | EUCALYPTUS portuensis | "Bloodwood" | Tube | - |
| | EUCALYPTUS robusta | "Swamp Maohgany" | Tube | - |
| | EUCALYPTUS siderophloia | "Grey Ironbark" | Tube | - |
| | EUCALYPTUS tereticornis | "Queensland Blue Gum" | Tube | - |
| | LOPHOSTEMON suaveolens | "Swamp Box" | Tube | - |
| | Eor Hoo PErior California | enanp box | SUB TOTAL | 0 |
| Shrub Layer | BABINGTONIA similis | "Twiggy Myrtle" | Tube | - |
| unab Layor | BACKHOUSIA myrtifolia | "Backhousia" | Tube | |
| | BACKI ICCOL III III III III III III III III III I | "Swamp Banksia" | Tube | - |
| | BANKSIA spinulosa | "Hairpin Banksia" | Tube | - |
| | CRYPTOCARYA triplinervis | "Three-veined Cryptocarya" | Tube | |
| | JACKSONIA scoparia | "Dogwood" | Tube | - |
| | LEPTOSPERMUM polygalifolium | | Tube | - |
| | PITTOSPORUM undulatum | "Sweet Pittosporum" | Tube | |
| | PTTTOSPOROW undulatum | Sweet Philosporum | SUB TOTAL | 0 |
| C | BOTHRIOCHLOA sp. | "Doordgrooo" | Tube | 0 |
| Ground Layer | | "Beardgrass" "Greater Brown Sedge" | Tube | - |
| | CAREX brunnea | | | - |
| | CYMBOPOGON refractus | "Barbwire Grass" "Sedges" | Tube Tube | - |
| | CYPERUS spp. DIANELLA caerulea | "Flax Lilly" | Tube | - |
| | | "Dianella" | Tube | - |
| | DIANELLA caerulea var caerulea | | | - |
| | IMPERATA cylindrica | "Blady Grass" | Tube Tube | - |
| | LOMANDRA longifolia THEMEDA triandra | "Spiny-headed mat-rush" "Kangaroo Grass" | Tube | - |
| | | Kangaroo Grass | SUB TOTAL | 0 |
| | | i | TOTAL | 0 |
| _ | | | | - |
| | VEGETATION: CREEK CHANNE (IF AREAS DISTURBED FOLL | OWING WEED MANAGEMENT | Γ) | |
| square metre. If | ted within the Water Sensitive Urban batters greater than 1:3 install in Ju | temat Thickmat to manufacturer's | s recommendat | |
| FORM (Position in Community) | Botanical Name | Common Name | Size | Qty |
| Ground Layer | CAREX appressa | "Tall Sedge" | Tube | - |
| | LOMANDRA hystrix | "Lomandra" | Tube | - |
| | CYPERUS difformis | "Rice Sedge" | Tube | - |
| | CYPERUS polystachyos | "Common Sedge" | Tube | - |
| | ISOLEPSIS nodosa | "Knobby Club Rush" | Tube | _ |
| | JUNCUS usitatus | "Common Rush" | Tube | |
| | | | | |
| | PERSICARIA decinens | "Slandar Knotwood" | | |
| | PERSICARIA decipens | "Slender Knotweed" | Tube | - |
| | PERSICARIA decipens PHILYDRUM lanuginosum SCHOENOPLECTUS validus | "Slender Knotweed" "Woolly Frogmouth" "River Clubrush" | Tube Tube Tube | - |

| Species to be planted in random grid matrix pattern | | | | | | | | | |
|---|-----------------------------------|-----------------------------|--------------|-------|--|--|--|--|--|
| FORM (Position in Community) | Botanical Name | Common Name | Size | Qty | | | | | |
| Canopy Layer | ACACIA complanata | "Flat-stemmed Wattle" | Tube | 885 | | | | | |
| | ACACIA concurrens | "Black Wattle" | Tube | 885 | | | | | |
| | ACACIA disparrima | "Hickory Wattle" | Tube | 885 | | | | | |
| | ACACIA fimbriata | "Brisbane Wattle" | Tube | 885 | | | | | |
| | ALPHITONIA excelsa | "Red Ash" | Tube | 885 | | | | | |
| | ANGOPHORA woodsiana | "Roughbark Apple" | Tube | 885 | | | | | |
| | ANGOPHORA leiocarpa | "Smooth-barked Apple" | Tube | 885 | | | | | |
| | CORYMBIA citriodora | "Lemon scented Gum" | Tube | 885 | | | | | |
| | CORYMBIA intermedia | "Pink Bloodwood" | Tube | 885 | | | | | |
| | CORYMBIA tessellaris | "Moreton Bay ash" | Tube | 885 | | | | | |
| | EUCALYPTUS acmenoides | "Queensland White Mahogany" | Tube | 885 | | | | | |
| | EUCALYPTUS crebra | "Narrow leafed ironbark" | Tube | 885 | | | | | |
| | EUCALYPTUS moluccana | "Gum Top Gum" | Tube | 885 | | | | | |
| | EUCALYPTUS portuensis | "Bloodwood" | Tube | 885 | | | | | |
| | EUCALYPTUS robusta | "Swamp Maohgany" | Tube | 885 | | | | | |
| | EUCALYPTUS siderophloia | "Grey Ironbark" | Tube | 885 | | | | | |
| | EUCALYPTUS tereticomis | "Queensland Blue Gum" | Tube | 885 | | | | | |
| | LOPHOSTEMON suaveolens | "Swamp Box" | Tube | 885 | | | | | |
| | | | SUB TOTAL | 1593 | | | | | |
| Shrub Layer | BABINGTONIA similis | "Twiggy Myrtle" | Tube | 1838 | | | | | |
| | BACKHOUSIA myrtifolia | "Backhousia" | Tube | 1838 | | | | | |
| | BANKSIA robur | "Swamp Banksia" | Tube | 1838 | | | | | |
| | BANKSIA spinulosa | "Haimin Banksia" | Tube | 1838 | | | | | |
| | CALLICARPA pedunculata | "Callicarpa" | Tube | 1838 | | | | | |
| | CASSINA subtropica | "Cough bush" | Tube | 1838 | | | | | |
| | CRYPTOCARYA triplinervis | "Three-veined Cryptocarya" | Tube | 1838 | | | | | |
| | JACKSONIA scoparia | "Dogwood" | Tube | 1838 | | | | | |
| | LEPTOSPERMUM polygalifolium | "Wild May" | Tube | 1838 | | | | | |
| | NEOLITSEA dealbata | "White Bolly Gum" | Tube | 1838 | | | | | |
| | PILIDIOSTIGMA glabrum | "Plum Myrtle" | Tube | 1838 | | | | | |
| | PITTOSPORUM undulatum | "Sweet Pittosporum" | Tube | 1838 | | | | | |
| | RHODOMYRTUS psidioides | "Native Guava" | Tube | 1838 | | | | | |
| | Tri loboli introo palaloidea | Nullive Guava | SUB TOTAL | 2389 | | | | | |
| Ground Layer | BOTHRIOCHLOA sp. | "Beardgrass" | Tube | 3320 | | | | | |
| Slound Layer | CAREX brunnea | "Greater Brown Sedge" | Tube | 3320 | | | | | |
| | CAREX maculata | "Carex" | Tube | 3320 | | | | | |
| | | | | 3320 | | | | | |
| | CYMBOPOGON refractus | "Barbwire Grass" | Tube Tube | 3320 | | | | | |
| | CYPERUS spp. DIANELLA caerulea | "Sedges" "Flax Lilly" | Tube | 3320 | | | | | |
| | | | ÷ | | | | | | |
| | DIANELLA caerulea var caerulea | "Dianella" | Tube | 3320 | | | | | |
| | GEITONOPLESIUM cymosum | "Scrambling Lillly" | Tube | 3320 | | | | | |
| | JUNCUS usitatus | "Common Rush" | Tube | 3320 | | | | | |
| | IMPERATA cylindrica | "Blady Grass" | Tube | 3320 | | | | | |
| | LOMANDRA longifolia | "Spiny-headed mat-rush" | Tube | 3350 | | | | | |
| | THEMEDA triandra | "Kangaroo Grass" | Tube | 3350 | | | | | |
| | | | SUB TOTAL | 3990 | | | | | |
| | | | TOTAL | 79724 | | | | | |

| NOTE | Species provided within the Po | werline Guidelines provided by PO | WERLINK. | |
|-------------------|--------------------------------|-----------------------------------|----------|-----|
| | Species to be planted | in random grid matrix pattern | | |
| FORM (Position in | Botanical Name | Common Name | Size | Qty |
| Community) | | | | |
| Shrub Layer | BANKSIA robur | "Swamp Banksia" | Tube | 665 |
| | BANKSIA spinulosa | "Hairpin Banksia" | Tube | 665 |
| | CALLICARPA pedunculata | "Callicarpa" | Tube | 665 |
| | CASSINIA subtropica | "Daviesia" | Tube | 665 |
| | CRYPTOCARYA triplinervis | "Three-veined Cryptocarya" | Tube | 665 |
| | DAVIESIA arborea | "Daviesia" | Tube | 665 |
| | DAVIESIA ulcifolia | "Bitter Pea" | Tube | 665 |
| | DODONAEA triquetra | "Common Hop Bush" | Tube | 665 |
| | HOVEA acutifolia | "Pointed Leaf Hovea" | Tube | 665 |
| | INDIGOFERA australis | "Austral Indigo" | Tube | 665 |
| | JACKSONIA scoparia | "Dogwood" | Tube | 665 |

ZONE 3 - ELECTRICAL EASEMENT REVEGETATION AREA (26,600M2)

| | DODONAEA IIIquella | Common Hop Bush | Tube | 660 |
|--------------|--------------------------------|-----------------------------|-----------------|-------|
| | HOVEA acutifolia | "Pointed Leaf Hovea" | Tube | 665 |
| | INDIGOFERA australis | "Austral Indigo" | Tube | 665 |
| | JACKSONIA scoparia | "Dogwood" | Tube | 665 |
| | LEPTOSPERMUM polygalifolium | "Tea tree" | Tube | 665 |
| | NOTELAEA longifolia | "Long-leaved Mock Olive" | Tube | 665 |
| | NOTELAEA ovata | "A Mock Olive" | Tube | 665 |
| | PULTENAEA villosa | "Hairy Bush Pea" | Tube | 665 |
| | SENNA artemisioides | "Feathery senna" | Tube | 665 |
| | | | SUB TOTAL | 10640 |
| Ground Layer | CAREX brunnea | "Greater Brown Sedge" | Tube | 1450 |
| | CAREX maculata | "Carex" | Tube | 1450 |
| | CYMBOPOGON refractus | "Barbwire Grass" | Tube | 1450 |
| | CYPERUS spp. | "Sedges" | Tube | 1450 |
| | DIANELLA brevipedunculata | "Short-flowered Flax Lilly" | Tube | 1450 |
| | DIANELLA caerulea | "Flax Lilly" | Tube | 1450 |
| | DIANELLA caerulea var caerulea | "Dianella" | Tube | 1450 |
| | JUNCUS usitatus | "Common Rush" | Tube | 1450 |
| | LOMANDRA filiformis | "Wattle mat-rush" | Tube | 1460 |
| | LOMANDRA laxa | "A mat-rush" | Tube | 1450 |
| | THEMEDA triandra | "Kangaroo Grass" | Tube | 1450 |
| | | | SUB TOTAL | 15960 |
| | | TOT | AL (1plant/ m2) | 26600 |

NOTE: Zone 1- Existing Vegetated Areas currently maintained and undergoing weed management and infill revegetation by ICC.

ΤΟΤΑΙ

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| saunders havill | web www.saundershavill.com phone (07) 3251 9444 fax (07) 3251 9455 | | | | | | | Plan of External Rehabilitation Plan Rehabilitation Schedules | | | LODG |
|--------------------|---|--|--|--|--|--|-----------------------|---|----------|---|------|
| 🚽 🛛 group | | | Date 18/09/13 24/09/13 23/09/14 | Details Client Comment SEWPAC Lodgement DoE Lodgement | | | 24-09-13 1:1500@A1 | Drawn by. Checked by. | RM MS | Project Woodlink Estate Client Canberra Estate Consortium No. 36 | DR |



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