Annual Compliance Report

24 June 2018 to 23 June 2019 EPBC 2013/6866
Woodlinks Village – Master Planned Residential Community,
Collingwood Park, Queensland
Canberra Estates Consortium No. 36 Pty Ltd
21 September 2019

Woodlinks Village

Job No: 7189 E

Document control

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Document Issue

Issue	Date	Prepared By	Checked By
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1. Introduction

Saunders Havill Group were engaged by Canberra Estates Consortium No. 36 Pty Ltd to prepare an *Annual Compliance Report* for the Woodlink Project – Master Planned Residential Community granted under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (ref EPBC 2013/6866), and is specifically required by condition 8 of the approval granted on 4 March 2014 (**Appendix A**). The project is referred to in this report as *Woodlinks Village* which is the residential estate name.

The project area covers approximately 78 hectares (ha) and is located approximately 12 kilometres (km) by road east of Ipswich (refer to **Figure 1**).

This report delivers an annual overview of the project's progression towards achieving the primary objective:

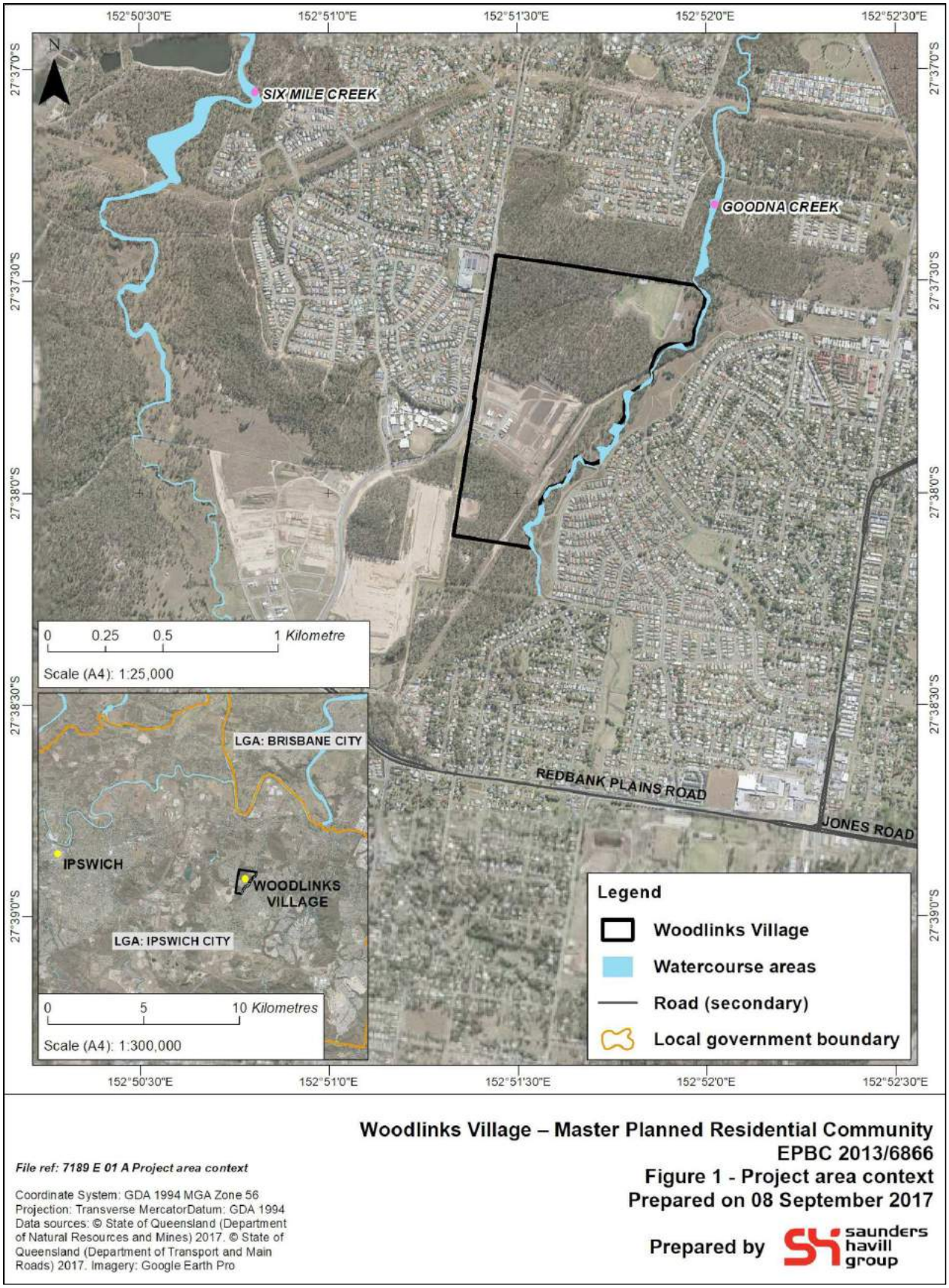
To create a self-sustaining system that provides habitat critical to the survival of the Koala while creating a locally significant corridor connecting habitat areas along Goodna Creek.

The project's progress and notable events during the reporting period are detailed in Section 3. The assessment of compliance with the approval conditions is presented in **Section 4**. This report is the fourth Annual Compliance Report for the approved action.

1.1. Approval summary

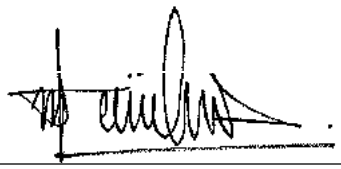
Department reference	EPBC 2013/6866
Approval holder	Canberra Estates Consortium No. 36 Pty Ltd
ACN	156 442 312
Approval date	4 March 2014
Expiry date of approval	31 January 2034
Approved action	To develop the Woodlink residential community in Collingwood Park, Queensland
Controlling provision	Approved - listed threatened species and communities (sections 18 & 18A)
Reporting period	24 June 2018 to 23 June 2019
Address	246-326 Collingwood Drive, Collingwood Park
Local government area	Ipswich City Council

Figure 1: Project area locality



2. Declaration of accuracy

In making this declaration, I am aware that sections 490 and 491 of the EPBC Act make it an offence in certain circumstances to knowingly provide false or misleading information or documents. The offence is punishable on conviction by imprisonment or a fine, or both. I declare that all the information and documentation supporting this compliance report is true and correct in every particular. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed	
Full name	Murray Saunders
Position	Director
Organisation	Saunders Havill Group (ABN 24 144 972 949)
Date	21 September 2019

3. Description of activities

Woodlinks Village is a residential community located in the suburb of Collingwood Park. The development of residential land parcels and open space areas is under establishment, with approximately 157 houses constructed since the commencement of the action in 2015. As residential development advances, the adjoining Goodna Creek open space area is rehabilitated with a focus on enhancing koala habitat. Other open space areas providing local park facilities and general amenities in the development area have also been established.

Clearing work associated with the residential development was undertaken during the 2018-2019 reporting period with the assistance of Queensland Fauna Consultancy (QFC). As part of this work, a fauna spotter was in attendance at all times during clearing activities. QFC reported on the clearing activities and these reports are provided to the Department as part of this Annual Compliance Report (refer **Appendix B**).

Since the 2018 Annual Compliance Report, development activities have included:

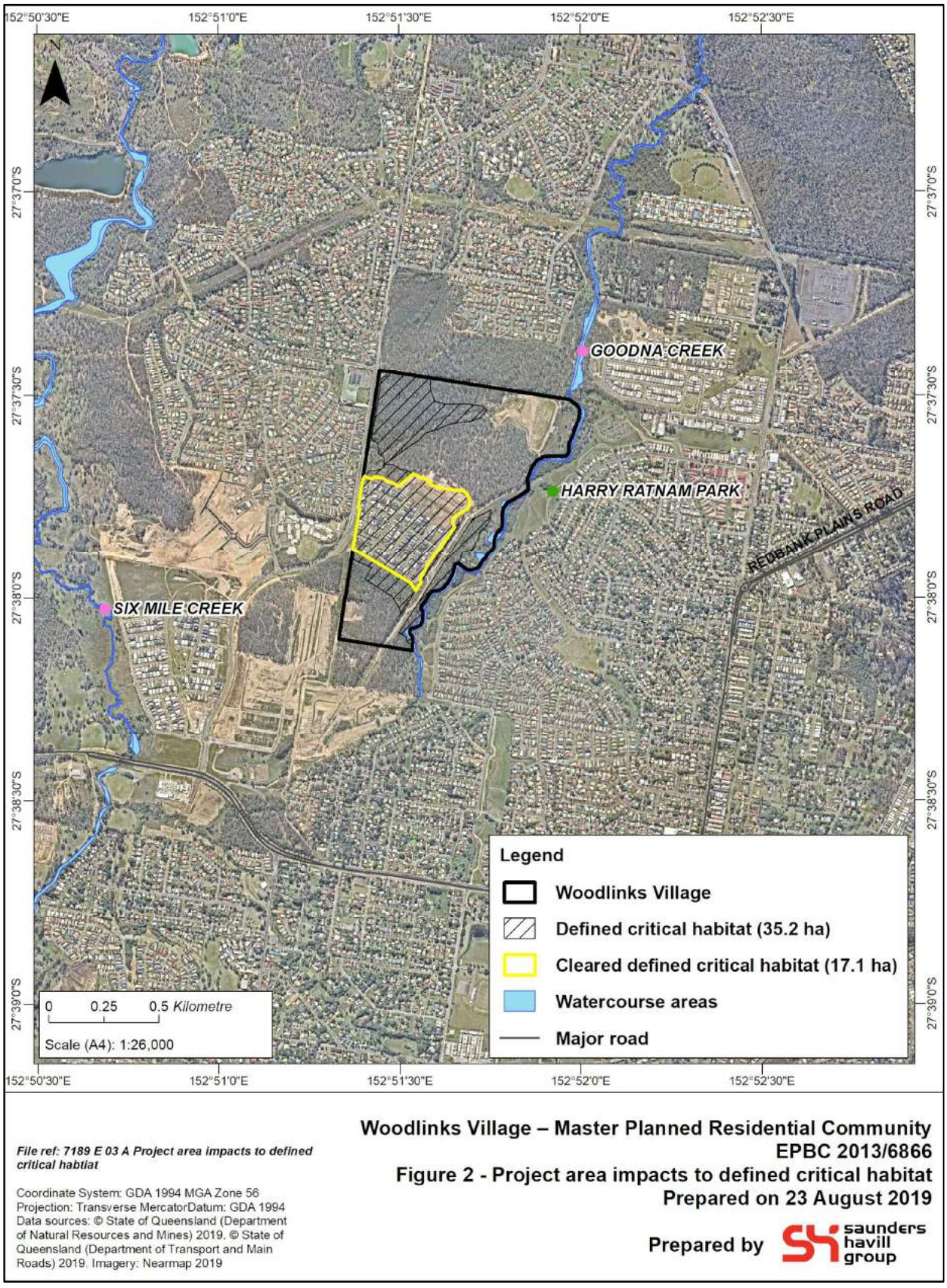
- vegetation clearing;
- house construction;
- landscape and drainage works; and
- offset area improvement works.

The project has delivered 157 residential lots to the market since commencement. **Table 1** summarises the current status of the project in conjunction with **Section 4.2** below. **Figure 2** illustrates the impacts to habitat critical to the survival of the Koala as defined in the approval and listed in **Table 1**.

Table 1: Development details

Total dwellings (approved)	1,000
Dwellings under construction/constructed	157
Total defined critical habitat onsite	35.2 ha
Approved total clearing of defined critical habitat only	25.9 ha
Total current clearing of defined critical habitat only	17.1 ha
Total current clearing of non- critical habitat	5.9 ha
Total current clearing (critical and non-critical habitat)	23.0 ha

Figure 2: Project area impacts to defined critical habitat



4. Offset actions

As per the detail preliminary documentation, the offset land is made up of two distinct areas:

1. **Open space dedications**

   New land created and improved along the Goodna Creek conservation corridor.

2. **Harry Ratnam Park**

   Improvement works for the establishment of new habitat within existing degraded Ipswich City Council parkland.

As part of the EPBC Act approval process, it was determined that offset areas adjacent to Goodna Creek would be created, rehabilitated and improved as Koala habitat. The purpose of the offset was to bolster and enhance the existing local Koala corridor movement along Goodna Creek.

The Offset Management Plan (OMP) lodged under condition 4 of the approval, and approved by the Department on 15 October 2014, details the progressive works to occur throughout the area. Condition 3 of the approval outlines the need for the approval holder to implement "mechanisms" to provide enduring protection. For new offset land on the west of Goodna Creek this involves the creation of parkland allotments and the dedication of the land to Ipswich City Council for conservation purposes.

The process for completing this dedication and enduring protection includes the steps listed below.

1. The western parkland dedication area has been designated as three separate future allotments aligning to development staging:
   i. Lot 7000
   ii. Lot 7001
   iii. Lot 7002 and 7003 completed as one scope of works
2. A detailed operational works drawing set must be completed and lodged for Ipswich City Council approval.
3. Once approved the works are tendered and commissioned.
4. Improvement/rehabilitation works completed including weed removal, revegetation with Koala trees, rubbish removal and fixing of erosion issues.
5. At the completion of works a thorough onsite inspection is completed by Ipswich City Council and once satisfactory the area is accepted as "on-maintenance".
6. After 24 months, if the completed works continue to satisfy Ipswich City Council during the regular inspections, the works are considered "off-maintenance".
7. Once the works are considered completed the created allotment can be registered with the Queensland Government titles office and dedicated to Ipswich City Council.

There are two constraints which limit the timeframe for dedications of offset land:

1. The offset allotment is created as the development allotments are reconfigured. This occurs post approval of the stage adjoining the Goodna Creek conservation corridor.
2. The improvement works must have occurred prior to Ipswich City Council accepting the dedicated land (Ipswich City Council will not accept the land title prior to the developer completing all weed management and revegetation works).

The Harry Ratnam Park offset area, which makes up approximately 13.5 ha of the offset area, is already under Ipswich City Council ownership and is therefore secured and protected. Improvement works are on hold awaiting formal feedback and clarity from Ipswich City Council as to the deed of access currency. In the meantime, improvement efforts have been focused on Lot 7002/7003.

Collectively, the 32.8 ha Koala offset area is made up of:

- created allotment 7000 (5.58 ha);
- created allotment 7001 (2.41 ha);
- created allotment 7002 and 7003 (8.5 ha);
- Goodna Creek watercourse allotments (2.8 ha); and
- Harry Ratnam Park allotments (13.5 ha).

4.1. Offset status

At the four years post commencement date, the approved offset has achieved the following status:

Lot 7000:

- Operational works permits achieved.
- Works tendered and complete.
- Plan parcel sealed.
- Pending off-maintenance with Ipswich City Council.

Lot 7001:

- Operational works permits achieved.
- Works tendered and complete.
- Plan parcel sealed.
- Pending off-maintenance with Ipswich City Council.

Lot 7002 and 7003:

- Operational works permits achieved.
- Works tendered and complete.
- Plan parcel sealed.
- Improvement works understood to have reached practical completion stage from 2 July 2019, with 12 weeks establishment completion scheduled for completion on 24 September 2019.
- Subject to successful establishment, off-maintenance is scheduled for 24-months after the end of establishment (*i.e.*, 24 September 2021).

Harry Ratnam Park:

- Operational works documentation updated post-discussions with Ipswich City Council.
- Full land access agreement in place and executed between approval holder and Ipswich City Council.
- Works tendered.
- Commencement of improvement works awaiting formal feedback from Ipswich City Council as to Deed of Access currency.
- Ongoing use and harvest of the Koala harvest area.

The following documents are provided as supporting documentation to the current offset area status:

- **Appendix C** – revised Harry Ratnam Park operational works drawings.

In summary, 16.5 ha of the 32.8 ha offset area has been completely rehabilitated for improved Koala habitat. This completed area includes lots 7000, 7001, 7002 and 7003, and has a protection mechanism in place under the Preliminary Approval overriding the planning scheme. Additionally, Harry Ratnam Park is a protected park area.

4.2. Offset inspection

During the reporting period, several meetings were held with Ipswich City Council to support the advancement of the offset. Some of these meetings were held on-site to allow for immediate investigations/review. The meetings concentrated on particulars around the operational works, including how the operational works were advancing and how to streamline future works. These meetings will continue to be held throughout the upcoming off-maintenance phase.

4.2.1 Rehabilitation observations

An assessment of improvement works on Lot 7002 and 7003 was conducted by two ecologists from Saunders Havill Group on 18 July, 2019. Improvement works were assessed as having reached practical completion stage (refer **Photo set 1**, **Photo set 2** and **Photo set 3**) and are now transitioning to a 24-month maintenance period before being handed to Ipswich City Council as off-maintenance.

Photo set 1: Improvement works from Lot 7002 and 7003 following practical completion.

Photo set 2: Improvement works from Lot 7002 and 7003 following practical completion.

Photo set 3: Improvement works from Lot 7002 and 7003 following practical completion.

4.2.2 Fauna observations

A fauna assessment was conducted across the Goodna Creek corridor site on 18 July, 2019 to identify and describe on-ground habitat features (e.g. habitat trees, koala habitat), signs of fauna activity (e.g. scats, tracks, scratch marks on trees, nests etc.) and observations of species present within the area. Particular consideration was also given to the ecological significance of the site in the context of the utilisation of the site by the local Koala population. No specific surveys for reptiles (e.g. pitfall traps) nor nocturnal animals (e.g. spotlighting) were used.

The following observations have been made based on field survey:

- 19 SAT surveys for Koala scats were carried out across the rehabilitation portion of the site. Evidence of Koala usage was found throughout (refer to **Photo set 4**), mostly occurring in the northern portion of the site. No direct observations of Koalas were made.
- Of the 19 SAT surveys carried out across the site, SAT 2 and SAT 5, each of which were located in the northern portion of the site, recorded 'High Use' and 'Moderate Use' respectively using the Phillips and Callaghan (2011) Guide for 'The *Spot Assessment Technique*'. All remaining SAT surveys recorded 'Low Use'. No scats were identified within SAT 4, SAT 6 and SAT 10.
- The majority of fauna observed on site were highly mobile bird species.
- A number of hollows and nests were observed within the Goodna Creek Corridor, likely supporting common fauna such as *Trichosurus vulpecula* (Brushtail Possum) and common bird species (refer to **Photo set 4**).


Photo set 4: **Koala scat (left) and hollow in arboreal termite nest observed within Goodna Creek Corridor.**

4.2.3 Waterway observations

Six waterway assessments were carried out on 18 July, 2019 along the extent of Goodna Creek where it traverses the rehabilitation portion of the site. Goodna Creek was observed as predominantly containing permanent water of at least a metre in depth, with a U-shaped channel and banks largely dominated by introduced weed species. The bank full width averaged approximately 5 metres and limited macrophytes were observed throughout. A small fish species was observed within the water column, however, it was unable to be identified. Characteristics observed within Goodna Creek concluded this waterway does provide aquatic habitat. Refer to **Photo set 5**, **Photo set 7** and **Photo set 6** for images from each waterway assessment location.


Photo set 5: **Images from Waterway Assessment 1 and 2, respectively.**


Photo set 6: **Images from Waterway Assessment 3 and 4 respectively.**


Photo set 7: **Images from Waterway Assessment 5 and 6 respectively.**

5. EPBC approval conditions compliance table

The EPBC approval conditions for the project are replicated in **Table 2** with a designation on compliance or non-compliance if the condition was applicable during the reporting period, and evidence and comments as necessary. A copy of the EPBC approval and conditions is provided in **Appendix A**.

Table 2: EPBC approval conditions compliance table.

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
1	The approval holder must not remove or fragment more than 25.9 hectares of habitat critical to the survival of the Koala. Impacts to habitat critical to the survival of the Koala must be limited to the project area shown in Attachment 1.	Compliant	A total of approximately 17.1 ha of habitat critical to the survival of the koala has been cleared in the project area (refer to **Figure 2** for the location). Note: at the time of assessment and approval, critical habitat was defined in accordance with the interim advice note. Under this advice, only portions of the site achieved the criteria. Current vegetation cleared on site equals 23.0 ha of which 17.1 ha is considered critical habitat in accordance with the approval.
2	The approval holder must prepare a Koala Management Plan to address management measures to avoid and mitigate impacts to Koalas. a) The Koala Management Plan must be submitted to the Minister for approval no less than three months prior to its intended implementation. Once approved the Koala Management Plan must be implemented. b) The Koala Management Plan must be implemented prior to commencement of the action, or as otherwise directed in writing by the Minister.	Compliant	On 15 October 2014 the Department approved the KMP and provided confirmation that the KMP met the requirements of condition 2. Implementation of the KMP is detailed in section 7 of this report and **Table 3**.

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
	c) The Koala Management Plan must include, but not be limited to: i. details of pre-clearance survey methods for Koalas within the project area to be undertaken prior to the commencement of the action, ii. details of measures to mitigate impacts to Koalas within the project area, including, but not limited to: 1. provision for a qualified fauna spotter-catcher to undertake surveys and handling of Koalas prior to and during commencement of the action; 2. construction and permanent fauna exclusion fencing; 3. implementation of appropriate vehicle speed limits; 4. utilisation of plant species in the project area that will not attract Koalas to the project area; 5. implementation of traffic calming awareness signage; and 6. provision of off-leash dog facilities, on-leash areas and dog prohibited areas. iii. details of methods for Koala relocation activities, to be undertaken prior to and during the commencement of the action including the identification and description of suitable recipient Koala habitat. iv. process for reporting results from pre-clearance surveys and relocation activities, including, but not be limited to: 1. identification of a website in which information would be made available to the public,		

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
	2. timing and frequency for providing reporting information to the Department, 3. provision of the following details, at a minimum, to be recorded if any Koalas are captured during relocation activities: • sex • age class • time and date of capture • method of capture • location of capture (Global Positioning System (GPS)) • state of health • any veterinary intervention required • time held in captivity • location of release (GPS) and date 4. provision of the following details at a minimum to be recoded for incidents if any Koalas are injured or killed: • time, location (GPS) and nature of extent • details of Koalas (including sex and age class) • measures taken to address incident		
3	To offset the residual impacts to Koala, the approval holder must implement mechanisms to provide enduring protection, over a minimum of 27 hectares, to the offset site, referred to as 'Goodna Creek Offset and Rehabilitation Area' as shown in Attachment 1.	Compliant	As described in *Section 4 Offset Actions*, dedication and enduring protection of the offset area is a sequential process and 8.5 ha of rehabilitated land is awaiting to become off-maintenance and handed over to Ipswich City Council. Improvement works in Harry

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
	The protection mechanisms implemented by the approval holder, including but not limited to, land access agreements, dedication of land title and zoning under the Ipswich Planning Scheme must be consistent with the conditions of this approval and the principles of the EPBC Act Offsets Policy. Within three years of the date of the approval, the approval holder must provide written evidence to the Department demonstrating that the protection mechanisms have been implemented.		Ratnam Park are pending formal feedback from Ipswich City Council as to the deed of access currency In total, 32.8 ha is currently protected (including Goodna Creek). It is noted that project commencement occurred twelve months after the issuing of the approval. The Preliminary Approval overriding the planning scheme provides protection over the land.
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. b. the Offset Management Plan must include, but not be limited to: i. a detailed description of all affected values and the extent and likely timing of the impact/s on each, 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, iii. detailed descriptions of how enhanced conservation outcomes for the affected Koalas will be achieved in accordance with the EPBC Act Offsets Policy, iv. contribution of funding to the management and maintenance of the Offset Management Plan,	Compliant	The Woodlinks Village OMP was approved by the Department on 15 October 2014 and the approval confirmed the OMP met the requirements of condition 4. Implementation of the OMP is described in section 8 of this report and **Table 4**.

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
	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, vi. discussion of the risks and uncertainties associated with proposed offsets, vii. mechanisms for monitoring and reporting 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 effectivity achieving a net benefit or key milestones are not being or 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. c. The Offset Management Plan must be developed in consultation with the Department and other relevant stakeholders, including but not limited to, the Ipswich City Council and Ipswich Koala Protection Society. d. The approval holder must give consideration to how offsets will contribute to programs or incentives that align with the broader strategies and programs for the conservation and protection of Koalas. e. The Offset Management Plan must be submitted to the Minister for approval no less than three months prior to its intended		

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
	implementation. Once approved the Offset Management Plan must be implemented. The Offset Management Plan must be implemented prior to the commencement of the action, or as otherwise directed in writing by the Minister.		
5	The most recent approved version of the Koala Management Plan and Offset Management Plan must remain accessible to the public on the website of the approval holder for the duration of the action.	Compliant	The approved versions of the KMP and OMP are accessible to the public via the Woodlinks Village website.
6	Within ten days after the commencement of the action, the approval holder must advise the Department in writing of the actual date of commencement.	Compliant	The date of the commencement of the action was 24 June 2015 and the Department was notified on 25 June 2015.
7	The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the plans required by this approval, and make them available upon request to the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	Compliant	The Saunders Havill Group records and holds all relevant information for this EPBC approval on behalf of the approval holder. Electronic records of all material are held collectively by the Saunders Havill Group and approval holder and will be made available upon request in accordance with section 458 of the EPBC Act, or if required to verify compliance with the conditions of approval.
8	Any potential or suspected non-compliance with these conditions of approval must be reported to the department in writing within 48 hours of the approval holder becoming aware of the potential or suspected non-compliance. Within three months of every 12 month anniversary of the commencement of the action, the approval holder must publish a report on their website addressing compliance with each of the conditions of this	Compliant	The anniversary of the commencement of the action is 24 June. The annual deadline for publishing the report addressing compliance with each of the conditions of the approval (i.e. this Annual Compliance Report) is 23 September. Documentary evidence providing proof of the date of publication will be provided to the Department when the report is published. Where the annual deadline is not a business day

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
	approval, including implementation of any plans as specified in the conditions. Documentary evidence providing proof of the date of publication must be provided to the Department at the same time as the compliance report is published.		in Brisbane, the following business day is taken to be the due date. The 2018 Annual Compliance Report due date was Saturday 23 September, 2019 and notification to the Department was provided on 24 September, 2018. The approval holder and Saunders Havill Group are not aware of any potential or suspected non-compliance with the conditions during the reporting period.
9	Upon the direction of the Minister, the approval holder must ensure that an independent audit of compliance with conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	Not applicable	The Minister has not directed the approval holder to conduct an independent audit of compliance with the conditions of the approval.
10	If the approval holder wishes to carry out any activity otherwise than in accordance with a plan as specified in the conditions, the approval holder must submit to the Department for the Minister's written approval a revised version of that plan. The varied activity shall not commence until the Minister has approved the revised plan, that plan must be implemented in place of the plan originally approved.	Not applicable	The approval holder has not wished to carry out any activity that is not in accordance with the approved KMP and OMP.
11	If the Minister believes that it is necessary or convenient for the better protection of Koala to do so, the Minister may request that the approval holder make specified revisions to a plan specified in the conditions and submit the revised plan for the Minister's written approval. The approval holder must comply with any such request. The revised approved plan must be implemented. Unless the Minister has approved the revised plan,	Not applicable	The Minister has not provided a direction to revise a plan specified in the conditions.

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
	then the approval holder must continue to implement the plan originally approved, as specified in the conditions.		
12	If, at any time after five years from the date of this approval, the approval holder has not commenced the action, then the approval holder must not connective without written agreement of the Minister.	Not applicable	The action commenced on 24 June 2015.

6. Koala Management Plan

A review of the KMP commitments and implementation is provided in **Table 3**.

Table 3: Koala Management Plan implementation

No.	Commitment	Evidence/comments/status
KMP-1	**Awareness** To achieve the objectives of the KMP, it is important that site personnel (e.g. contractors and sub-contractors) are aware of the plan and the requirements pertaining to the protection of the Koala. As part of working on-site, the civil contractor is responsible for ensuring civil works personnel are aware of the KMP and impacts to the Koala are reported to the approval holder.	During the reporting period a total of 2.9 ha of clearing activities were undertaken. Throughout the clearing activities, site personnel (e.g. contractors and sub-contractors) were made aware of the KMP requirements and could readily access a copy via the Woodlinks Village website at all times. While on-site, the temporary site office displayed a copy of the KMP. Induction material, daily meetings and reporting captured information pertaining to fauna management while the civil contractor's undertook work at Woodlinks Village.
KMP-2	**Construction management - fauna** Engage a registered fauna spotter/catcher to protect wildlife from the impacts of clearing. This includes the preparation of management plans (e.g. Wildlife Protection and Management Plan (WPMP) and Wildlife and Habitat Impact Mitigation Plan (WHIMP)), attendance at key project milestones such as the pre-start meeting, pre-clearance reporting and post-works reporting. The fauna spotter/catcher management plans incorporate methods for relocating fauna during clearing activities.	During the reporting period a total of 2.9 ha of clearing activities were undertaken. Throughout these clearing activities (including pre-clearance and post-clearance), QFC was engaged to provide fauna spotter/catcher services at Woodlinks Village. QFC reports include data on Koalas encountered during clearing and are included as **Appendix B** of this report. Reporting to the Department on clearing activities is undertaken in accordance with the approval conditions.
KMP-3	**Construction management - vegetation clearing** Clearing, rehabilitation and revegetation will occur in stages over the life of the project and pre-starts will be held with stakeholders.	Stage 15 and 16 of vegetation clearing was completed during this reporting period and aligned with the development of residential land. Prior to clearing, the works area was demarcated and an on-site pre-start held with Ipswich City Council.

	Vegetation clearing activities are supervised by suitably qualified person/s that adhere to current industry practices that protect the welfare of animals. These activities require demarcating the vegetation clearing limit prior to commencing clearing work. Subsequent reporting is made available to stakeholders and the public.	QFC supervised all vegetation clearing activities which included inspecting the demarcated boundary of the works area and ensuring clear paths for fauna to reach safe havens were provided. QFC's Standard Operating Procedure detailed the processes employed to safely and effectively minimise the potential harm caused to fauna during vegetation clearance. QFC supervised all clearing work and their services reports are provided in **Appendix B**.
KMP-4	**Construction management - vegetation clearing** All site trees will be mulched for re-use in on-site erosion and sediment control and revegetation.	All suitable site trees cleared during the reporting period were mulched for re-use in on-site erosion and sediment control and revegetation requirements wherever possible.
KMP-5	**Construction management - vegetation clearing - fencing** Prior to vegetation clearing, install a temporary fauna exclusion fence around the area of clearing works and maintain the fence until the completion of major civil works.	Stage 15 and 16 of vegetation clearing and major civil works were completed during this reporting period. Prior to clearing, the works area was demarcated by Golding Contractors and the fencing was signed-off by Ipswich City Council at the pre-start meeting. The fencing installed permitted fauna to exit the works area safely and without impediment.
KMP-6	**Operational management – general** Manage and protect the Goodna Creek open space area including: • undertake weed management and revegetation activities • install landscape furniture and ecological feature signage • establish a cat and dog restriction zone • disallowing pet friendly areas (e.g. open grassed areas) • providing a dog off-leash area outside the corridor • inform new residents of the corridor values and importance.	Weed management and landscape (i.e. revegetation) works had been undertaken in the Goodna Creek open space area adjacent to the residential development area during the previous reporting period, with these works approved by Ipswich City Council and currently under active management. The next phase of works was planned to advance into Harry Ratnam Park, however improvement works are still awaiting formal feedback as to the deed of access currency and consequently improvement works have been delayed in this area. Instead, weed management and landscape activities proceeded along the corridor into Lot 7002 and 7003, which were carried out as one scope of works. Corridor signage has been installed to inform the local residents of the restrictions relating to dogs, however the power line easement is used as a thoroughfare historically by non-residents walking dogs who do not access the area via the development. This issue is the partly result of prior trespassing on

		the land pre-development. As the development expands and the vacant land is transitioned to housing, the trespassing will diminish. Communication between the approval holder and residents is facilitated using the Woodlinks Village website, the on-site sales village and letterbox pamphlets. These provide current information on the commitments to protecting and improving the Goodna Creek open space area and how residents can contribute to protecting Koalas.
KMP-7	**Operational management – fencing and planting** Neighbourhood design will include road frontage between residential allotments and the Goodna Creek open space area. Additionally, landscape design will avoid planting known Koala food or shelter trees in areas outside of the Goodna Creek open space area to discourage Koalas from entering residential areas. Residents will be informed of the preference for planting non-Koala food and habitat trees on private land.	The residential layout constructed has provided road frontage to the open space area as an interface between the residential and open space land uses. Approved landscape works do not include Koala trees in the species mix. Community awareness of the Goodna Creek corridor and function is an ongoing campaign and the fencing requirements required are strongly emphasised. Residential buyers are informed of the Koala management measures as part of the land purchasing process. Additional information and guidelines are provided on the Woodlinks Village website and letterbox pamphlets (refer to the lifestyle guidelines for Woodlinks Village in **Appendix D**). The majority of homes are still under construction, where a small number have very recently been complete. Fencing associated with completed houses was observed to be compliant with the Koala Management Plan residential allotment fencing controls (refer photo below).

KMP-8	**Operational management - traffic** Install traffic calming measures and signage to alert drivers to the potential presence of fauna. Install fauna exclusion fencing in areas of high traffic volume.	Construction of roads within phase 1 was ongoing during the reporting period. Speed limits within the estate are a maximum of 50 km/h and the existing traffic volume has not necessitated the installation of fauna exclusion fencing along roads. A road was established along the Goodna Creek esplanade and traffic awareness measures (i.e., signage) installed during the previous reporting period. The street is not a thoroughfare and traffic calming measures have not been implemented at this early stage.

7. Offset Management Plan

A review of the OMP commitments and implementation is provided in **Table 4**.

Table 4: Offset Management Plan implementation

No.	Commitment	Evidence/comments/status
OMP-1	Implement a vegetation clearing and management plan.	Vegetation clearing and management was coordinated between QFC, Ipswich City Council and the approval holder with guidance and reference to the approved OMP and KMP.
OMP-2	Engage a registered fauna spotter/catcher to protect wildlife from the impacts of clearing. Adhere to industry standards whereby construction activities work alongside, and under instruction from, fauna spotter/catcher personnel in order to avoid impacting wildlife.	During the reporting period a total of 2.9 ha of clearing activities were undertaken. Throughout these clearing activities (including pre-clearance and post-clearance), QFC was engaged to provide fauna spotter/catcher services at Woodlinks Village. Consultant QFC provides fauna spotter catcher services in line with current industry standards and in accordance with permit requirements administered by the Queensland Government. QFC reports include data on Koalas encountered during clearing and are included as **Appendix B**. Reporting to the Department on clearing activities is undertaken in accordance with the approval conditions.
OMP-3	Rehabilitate (i.e. weed removal and revegetation) the Goodna Creek corridor offset area.	As described in *Section 4 Offset Actions*, dedication and enduring protection of the offset area is a sequential process and 8.5 ha of rehabilitated land is awaiting to become off-maintenance and handed over to Ipswich City Council. Improvement works in Harry Ratnam Park are pending formal feedback from Ipswich City Council as to the deed of access currency In total, 32.8 ha is currently protected (including Goodna Creek).
OMP-4	Improve access to the koala tree foliage harvest facility in Harry Ratnam Park.	The access upgrade infrastructure is part of the habitat improvement works to Harry Ratnam Park. The approval holder was not made aware of any access

		issues during the reporting period, and this has likely been due to the below-average rainfall over the 12 month period.
OMP-5	Commence offset area rehabilitation during stage 1 of the development with an on-maintenance period of 18 months. Each stage of rehabilitation is scheduled for completion within three years of stage commencement. 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.	Rehabilitation allotment 7000 and 7001 met scheduling targets during the previous reporting period and is pending handover over to Ipswich City Council. Stage 7002 and 7003 were completed as one scope of works during this reporting period and were considered to have reached practical completion 2 July, 2019 with 12 weeks establishment completion scheduled for completion on 24 September, 2019. In total, 32.8 ha is currently protected (including Goodna Creek).
OMP-6	Publish the current OMP online.	The OMP was made available via the Woodlinks Village website.
OMP-7	Monitor landscape works until the relevant area is handed over to Ipswich City Council. Monitoring will include the identification of corrective actions required to progress the works towards the objective of handing over to Ipswich City Council.	The approval holder engaged a landscaping contractor to undertake rehabilitation and regeneration works across Lots 7000, 7001, 7002 and 7003. These works were under active management by the contractor with periodic inspections by a registered landscape architect and Ipswich City Council identifying the corrective actions. Corrective actions are issued to the contractor for remedying.
OMP-8	All upfront costs associated with the weed management and revegetation of Goodna Creek will be the responsibility of the proponent.	Costs associated with the weed management and revegetation of the Goodna Creek open space area were, and will continue to be, met by the approval holder.
OMP-9	The offset area will be transferred to Ipswich City Council as part of their larger conservation land holdings.	As described in Section 4 Offset Actions, the offset area is made up of four newly created allotments, the Goodna Creek waterway and the existing Harry Ratnam Park (13.5 ha) managed by Ipswich City Council. At this stage, Lot 7000 and 7001 are pending off-maintenance with Ipswich City Council, with improvement works at Harry Ratnam Park still awaiting formal feedback as to the deed of access currency. Lot 7002 and 7003 were completed as one scope of works during this reporting period. Lot 7002 and 7003 were considered to have

		reached practical completion on 2 July, 2019 with 12 weeks establishment completion scheduled for completion on 24 September, 2019.
OMP-10	Ongoing monitoring and reporting of works to assess the success of weed removal and control, natural regeneration and new threats that may arise. Progress the landscape works through the on-maintenance and off-maintenance periods in order to transfer ownership to Ipswich City Council.	The protected Goodna Creek open space area where revegetation works are complete was regularly inspected by a registered landscape architect and Ipswich City Council to review the success of works completed. As part of this process, both parties provided advice and directions to the contractor on additional works required to achieve the off-maintenance objective. Lot 7002 and 7003 were considered to have reached practical completion on 2 July, 2019 with 12 weeks establishment completion scheduled for completion on 24 September, 2019. Improvement works in this area will be regularly inspected by a registered landscape architect and Ipswich City Council to review the success of works completed.
OMP-11	Inform the public on the progress of weed removal and control and landscape works in the Goonda Creek open space area in a timely manner.	This Annual Compliance Report delivers an assessment of the progress of landscape works (weed control and rehabilitation) for the project and will be made available on the Woodlinks Village website.

8. Appendices

Appendix A

EPBC approval and conditions granted 30 October 2014

Appendix B

QFC Fauna Spotter Catcher Services Reports

Appendix C

Harry Ratnam Park operational works drawings (17 August 2018)

Appendix D

Lifestyle guidelines for Woodlinks Village

Appendix A

EPBC approval and conditions granted

30 October 2014

Australian Government
Department of the Environment

Approval

Woodlink Project – Master Planned Residential Community, Collingwood Park, QLD, (EPBC 2013/6866)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	Canberra Estates Consortium No. 36 Pty Ltd
proponent's ACN (if applicable)	ACN: 156 442 312
proposed action	To develop the Woodlink residential community in Collingwood Park, Queensland [See EPBC Act referral 2013/6866].

Approval decision

Controlling Provision	Decision
Listed threatened species and communities (sections 18 & 18A)	Approve

conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 31 January 2034.

Decision-maker

name and position	Chris Murphy Acting Assistant Secretary Queensland and Sea Dumping Assessment Branch
signature	
date of decision	4. March 2014

Conditions attached to the approval

1. The **approval holder** must not remove or fragment more than 25.9 hectares of **habitat critical to the survival of the Koala**. Impacts to **habitat critical to the survival of the Koala** must be limited to the **project area** shown in Attachment 1.

2. The **approval holder** must prepare a Koala Management Plan to address management measures to avoid and mitigate impacts to Koalas.
    a. The Koala Management Plan must be submitted to the **Minister** for approval no less than three months prior to its intended implementation. Once approved the Koala Management Plan must be implemented.
    b. The Koala Management Plan must be implemented prior to **commencement of the action**, or as otherwise directed in writing by the **Minister**.
    c. The Koala Management Plan must include, but not be limited to:
        i. details of pre-clearance survey methods for Koalas within the **project area** to be undertaken prior to **commencement of the action**.
        ii. details of measures to mitigate impacts to Koalas within the **project area**, including, but not limited to:
            1. provision for a **qualified fauna spotter-catcher** to undertake surveys and handling of Koalas prior to and during **commencement of the action**;
            2. construction of temporary and permanent fauna exclusion fencing;
            3. implementation of appropriate vehicle speed limits;
            4. utilisation of plant species in the **project area** that will not attract Koalas to the **project area**;
            5. implementation of traffic calming and awareness signage; and
            6. provision of off-leash dog facilities, on-leash areas and dog prohibited areas.
        iii. details of methods for Koala **relocation activities,** to be undertaken prior to and during **commencement of the action** including the identification and description of suitable recipient Koala habitat.
        iv. process for reporting results from pre-clearance surveys and **relocation activities**, including, but not be limited to:
            1. identification of a website in which information would be made available to the public;
            2. timing and frequency for providing reporting information to the **Department**;
            3. provision of the following details, at a minimum, to be recorded if any Koalas are captured during **relocation activities**:
                - sex
                - age class
                - time and date of capture
                - method of capture

- location of capture (Global Positioning System (GPS))
- state of health
- any veterinary intervention required
- time held in captivity
- location of release (GPS) and date

4. provision of the following details, at a minimum, to be recorded for incidents if any Koalas are injured or killed:
   - time, location (GPS) and nature of incident
   - details of Koalas (including sex and age class)
   - measures taken to address incident.

3. To offset the residual impacts to Koala, the **approval holder** must implement mechanisms to provide enduring protection, over a minimum of 27 hectares, to the offset site referred to as 'Goodna Creek Offset and Rehabilitation Area' as shown at Attachment 1.

The protection mechanisms implemented by the **approval holder**, including but not limited to, land access agreements, dedication of land title and zoning under the Ipswich Planning Scheme must be consistent with the conditions of this approval and the principles of the **EPBC Act Offsets Policy**.

Within three years of the date of the approval, the approval holder must provide written evidence to the **Department** demonstrating that the protection mechanisms have been implemented.

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.

b. The Offset Management Plan must include, but not be limited to:
   i. a detailed description of all affected values and the extent and likely timing of the impact/s on each;
   ii. the offset delivery mechanism(s) comprising land offsets and management, and maintenance of Koala population offset within the 'Goodna Creek Corridor' as shown at Attachment 1;
   iii. detailed descriptions of how enhanced conservation outcomes for the affected Koalas will be achieved in accordance with the **EPBC Act Offsets Policy**;
   iv. contribution of funding to the management and maintenance of the Offset Management Plan;
   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**;
   vi. discussion of the risks and uncertainties associated with proposed offsets;
   vii. mechanisms for monitoring and reporting of offset milestones and

outcomes, including timing and frequency of monitoring and reporting;

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 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**.

c. The Offset Management Plan must be developed in consultation with the **Department** and other relevant stakeholders, including but not limited to, the Ipswich City Council and the Ipswich Koala Protection Society.

d. The **approval holder** must give consideration to how offsets will contribute to programs or incentives that align with the broader strategies and programs for the conservation and protection of Koalas.

e. The Offset Management Plan must be submitted to the **Minister** for approval no less than three months prior to its intended implementation. Once approved the Offset Management Plan must be implemented.

f. The Offset Management Plan must be implemented prior to **commencement of the action**, or as otherwise directed in writing by the **Minister**.

5. The most recent approved version of the Koala Management Plan and Offset Management Plan must remain accessible to the public on the website of the **approval holder** for the duration of the action.

6. Within ten days after the **commencement of the action**, the **approval holder** must advise the **Department** in writing of the actual date of commencement.

7. The **approval holder** must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the plans required by this approval, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department**'s website. The results of audits may also be publicised through the general media.

8. Any potential or suspected non-compliance with these conditions of approval must be reported to the department in writing within 48 hours of the **approval holder** becoming aware of the potential or suspected non-compliance. Within three months of every 12 month anniversary of the **commencement of the action**, the **approval holder** must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any plans as specified in the conditions. Documentary evidence providing proof of the date of publication must be provided to the **Department** at the same time as the compliance report is published.

9. Upon the direction of the **Minister**, the **approval holder** must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the **Minister**. The independent auditor must be approved by the **Minister** prior to the commencement of the audit. Audit criteria must be agreed to by the **Minister** and the audit report must address the criteria to the satisfaction of the **Minister**.

10. If the **approval holder** wishes to carry out any activity otherwise than in accordance with a plan as specified in the conditions, the **approval holder** must submit to the **Department** for the **Minister**'s written approval a revised version of that plan. The varied activity shall not commence until the **Minister** has approved the varied plan in writing. If the **Minister** approves the revised plan, that plan must be implemented in place of the plan originally approved.
11. If the **Minister** believes that it is necessary or convenient for the better protection of Koala to do so, the **Minister** may request that the **approval holder** make specified revisions to a plan specified in the conditions and submit the revised plan for the **Minister**'s written approval. The **approval holder** must comply with any such request. The revised approved plan must be implemented. Unless the **Minister** has approved the revised plan, then the **approval holder** must continue to implement the plan originally approved, as specified in the conditions.
12. If, at any time after five years from the date of this approval, the **approval holder** has not **commenced the action**, then the **approval holder** must not **commence the action** without the written agreement of the **Minister**.

Definitions:

Approval holder: means the person to whom the approval is granted.

Commencement of the action/commence(d) the action: means any works involved in the construction phase of the project, including clearing vegetation, the erection of any onsite temporary structures and the use of heavy duty equipment for the purpose of breaking the ground for buildings or infrastructure. This excludes the erection of signage, fences, barriers or bunting for the purposes of excluding areas containing listed threatened species.

Department: the Australian Government Department responsible for the *Environment Protection and Biodiversity Conservation Act 1999.*

EPBC Act: means the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999.*

EPBC Act Offsets Policy: means the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (October 2012) or any subsequent revisions.

Habitat critical to the survival of the Koala: Koala habitat that is considered to be important for the species' long-term survival and recovery. An impact area that scores five or more using the habitat assessment tool for the Koala in Table 3 of the *Draft EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)* contains habitat critical to the survival of the Koala.

Minister: The Minister responsible for administering the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

Offset attributes: means an '.xls' file capturing relevant attributes of the offset site, including the EPBC Act reference ID number, the physical address of the offset site, coordinates of the boundary points in decimal degrees, the EPBC Act protected matters that the offset compensates for, any additional EPBC Act protected matters that are benefitting from the offset, and the size of the offset site in hectares.

Project area: refer to '*Woodlink development / works area incl. parks & vegetation corridor areas'* at Attachment 1: Development and Offset / Rehabilitation Areas.

Qualified fauna spotter-catcher: must be licensed under relevant state legislation, and have demonstrated experience in surveying for and identifying listed threatened species, including Koala.

Shapefile: means an ESRI Shape file containing '.shp', '.shx' and '.dbf' files and other files capturing attributes of the offset site, including the shape, EPBC reference ID number and EPBC protected matters present at the relevant site. Attributes should also be captured in '.xls' format.

Suitable recipient Koala habitat: means an area that:

- is known to contain, or has historically contained Koalas;
- contains **Koala habitat** which is the same in type to the habitat in the project area, or is known to be able to support Koalas proposed to be translocated and contains appropriate and sufficient sources of food;
- is of sufficient size to allow for dispersal of individuals from the point of release, and
- is not at maximum carrying capacity for Koalas and translocated individuals are not considered likely to have significant impacts on resident Koalas.

Relocation activities: means any human-mediated activity involved in the capture and release of Koalas from the project area into suitable recipient **Koala habitat** within the offset area, including trapping, handling, holding in captivity, veterinary treatment, transportation and release.

Legend

- Woodlinks Project Area
- Woodlink development / works area incl. parks & vegetation corridor areas
- Goodna Creek offset & rehabilitation area

Figure 1 *Development and Offset / Rehabilitation Areas*

File ref. *6177 E Figure 1 - Site Development Area A*
Date *24.09.13*
Project *Woodlinks*

0 50 100 200 300 m
Scale (A4): 1:8,500 [GDA 1994 MGA Z56]

N

saunders havill group

Layer Sources: DCDB (DNRM 2013), Aerial (Google 2013)

Appendix B

QFC Fauna Spotter Catcher Services Reports

QFC
QUEENSLAND FAUNA CONSULTANCY
Pty Ltd

February 2019

Fauna Management and Spotter/Catcher Services Report

Woodlinks Village – Stage 15, Collingwood Park

Report prepared for Golding Contractors

Report prepared by

QLD Fauna Consultancy Pty Ltd

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Date:	04/03/19
Title:	Fauna Management and Spotter/Catcher Services Report Woodlinks Village – Stage 15, Collingwood Park
Author/s:	Bryan Robinson, Ramona Rohwedder
Reviewed by:	Stephanie Robinson
Field personnel:	Rebecca Ferris, Scott Lewis
Status:	Final Report
Filed as:	QFC FMR Golding Contractors Woodlinks Feb 2019.doc

Contents

1 Introduction

Qld Fauna Consultancy Pty Ltd has been engaged by Golding Contractors to conduct Fauna Spotter/Catcher and Fauna Management activities for works at Woodlinks Village – Stage 15, Maudsley Circuit, Collingwood Park.

All activities were conducted under the provisions of Rehabilitation Permit (WA0001454) issued to Queensland Fauna Consultancy Pty Ltd by the Department of Environment and Science (DES), formerly the Department of Environment and Heritage Protection (DEHP), approving the observation and relocation of protected animals.

This report covers clearance activities undertaken in February 2019.

2 Methodology

2.1 Clearance Investigations

A standard set of observational and active searching techniques were employed each day during clearance to ascertain and identify existing fauna values for each location. These include:

- Assessment of terrestrial microhabitats such as ground hollows, rock, burrows, leaf litter, fallen branches and bark exfoliations,
- Observation and assessment of occupancy of arboreal microhabitats such as tree hollows, fissures and exfoliations,
- Direct observation of active or exposed fauna,
- Identification of scats, tracks and scratchings to determine fauna present on the site.

All microhabitats were identified and subsequently inspected during clearance.

2.2 Specific methodology for Koalas *Phascolarctos cinereus*

Due to the specific requirements relating to the Koala the following techniques were employed at the clearance site to ascertain presence/absence status:

- Use of binoculars to inspect the crown, forks and trunk of trees;
- 'Drip zone' searches at the base of known food trees for the presence of scats to a radius equal to that of the crown of individual trees;
- Inspection of trunks for scratchings indicative of use by Koalas.

Recent changes to Koala management strategies highlighted in the *Nature Conservation (Koala) Conservation Plan 2017* have resulted in particular conditions placed on vegetation clearance involving the removal of Koala food trees.

Further provisions include the restriction of all clearance that may directly interfere with the tree a Koala is residing in. Koalas are to leave via their own volition and may not be interfered with by any means. Only when Koalas have vacated a tree can clearance operations include the host tree and surrounding vegetation.

2.3 Felling Procedures

Trees identified as having potential fauna values (such as hollows, fissures and exfoliating bark) were clearly marked for supervision during felling and inspected once felled. Efforts were made to determine potentially occupant species by way of investigations for indicative signs (scats, scratchings and tracks). Where no signs were found or occupant species undeterminable, machinery operators were instructed to fell trees in a manner directed at minimising the potential risk of injury to fauna.

Limbs were inspected and the direction of felling determined with regards to safety of both machinery and operators. Considerations to potentially occupant fauna were assessed and felling procedures formulated. Felling procedures may have included the following techniques:

- Machinery blades were utilised to shake the tree in an attempt to disturb fauna out of hollows or fissures to determine species present.
- If fauna were present, the tree was either left standing overnight to allow the occupant animal(s) time to leave via their own volition, or if species detected were able to be encouraged from the tree by shaking or direct capture by a wildlife spotter(s). The tree was felled with considerations to potentially undetected fauna.
- Where possible potentially occupied trees were felled with the identified microhabitat receiving minimal contact on impact.
- Adjacent felled trees were utilised to absorb the impact of potential fauna bearing trees.

2.4 Communications during Clearance

Each spotter/catcher was equipped with a hand held radio to make positive communications with machinery operators. Communications by radio and positive hand signals were utilised to indicate intentions to machinery operators.

3 Results

The following daily inventory details fauna based investigation results for the clearing area. Inspection activities, location, habitat values and fauna found are documented where required. Refer to Appendix A for fauna photos.

Tuesday 26th February

- Pre-clearance activities carried out (refer to Methodology) at Woodlinks Village – Stage 15
- Vegetation clearance carried out at Woodlinks Village – Stage 15
- Refer to **Fauna Register** for fauna found
- 11 trees flagged
- Two personnel in attendance

Arboreal Microhabitats: No. flagged tree/s felled: 20
Nest (N) ☒Y ☐N Hollows (H) ☒Y ☐N Arboreal termitaria (ATM) ☒Y ☐N Other: Exfoliating bark
No. & size of hollow/s (mm): 0-49: 9 50-99: 8 100-149: 4 150-199: 2 200-249: 4 250-299: 1
Terrestrial Microhabitats:
Hollow logs ☒Y ☐N Woody debris ☒Y ☐N Rock piles ☐Y ☒N Burrows ☐Y ☒N
Other: Dense leaf litter, bark exfoliations, termitaria, artificial debris
Aquatic habitat/s: Dam ☐Y ☒N Creek ☐Y ☒N Wetland ☐Y ☒N

Wednesday 27th February

- Pre-clearance activities carried out (refer to Methodology) at Woodlinks Village – Stage 15
- Vegetation clearance carried out at Woodlinks Village – Stage 15
- Refer to **Fauna Register** for fauna found
- 1 tree flagged
- Two personnel in attendance

Arboreal Microhabitats: No. flagged tree/s felled: 4
Nest (N) ☒Y ☐N Hollows (H) ☒Y ☐N Arboreal termitaria (ATM) ☒Y ☐N Other: Exfoliating bark
No. & size of hollow/s (mm): 0-49: 3 50-99: 3 150-199: 1
Terrestrial Microhabitats:
Hollow logs ☒Y ☐N Woody debris ☒Y ☐N Rock piles ☐Y ☒N Burrows ☐Y ☒N
Other: Dense leaf litter, bark exfoliations
Aquatic habitat/s: Dam ☐Y ☒N Creek ☐Y ☒N Wetland ☐Y ☒N

4 Fauna Register

				Capture Location						Release Details			Actions					
Collectors Name	**Date**	**Time**	**Capture Location**	**Latitude**	**Longitude**	**Count Type**	**Status**	***Common Name - Scientific Name***	**Count**	**Date**	**Latitude**	**Longi-tude**	**R 1**	**R 2**	**D**	**I**	**Release Location Description**	**Comments**
Rebecca Ferris	26/02/2019	06:55	Woodlinks Village - Stage 15, Maudsley Cct, Collingwood Park	-27.6283	152.8575	Alive	Vulnerable	Koala *Phascolarctos cinereus*	1	NA	NA	NA				X	Left in situ in Spotted Gum	Exclusion zone established; Koala monitored during clearance activities. Appeared healthy.
Rebecca Ferris	26/02/2019	09:06	Woodlinks Village - Stage 15, Maudsley Cct, Collingwood Park	-27.6286	152.8584	Alive	Least Concern	Common Brushtail Possum *Trichosurus vulpecula*	1	26/02/2019	-27.6301	152.8591	X				Adjacent Bushland	Tree also had European Bee hive - Therefore Possum was encouraged to self-relocate into adjacent bushland from a safe distance due to swarming bees.
Rebecca Ferris	26/02/2019	09:12	Woodlinks Village - Stage 15, Maudsley Cct, Collingwood Park	-27.6285	152.8592	Alive	Least Concern	Eastern Grey Kangaroo *Macropus giganteus*	2	26/02/2019	NA	NA	X				Self-relocated into adjacent bushland	
Rebecca Ferris	26/02/2019	11:05	Woodlinks Village - Stage 15, Maudsley Cct, Collingwood Park	-27.6284	152.8601	Alive	Least Concern	Common Brushtail Possum *Trichosurus vulpecula*	1	26/02/2019	-27.6270	152.8601	X				Hollow tree	
Rebecca Ferris	26/02/2019	12:57	Woodlinks Village - Stage 15, Maudsley Cct, Collingwood Park	-27.6287	152.8610	Alive	Least Concern	Unidentified Microbat sp.	3	26/02/2019	NA	NA	X				Flew out of tree being felled into adjacent bushland	

Rebecca Ferris	26/02/2019	14:05	Woodlinks Village - Stage 15, Maudsley Cct, Collingwood Park	-27.6293	152.8618	Alive	Least Concern	Eastern Bearded Dragon *Pogona barbata*	1	26/02/2019	-27.6286	152.8625	X				Ground timber	
Rebecca Ferris	26/02/2019	15:41	Woodlinks Village - Stage 15, Maudsley Cct, Collingwood Park	-27.6291	152.8610	Alive	Least Concern	Eastern Bearded Dragon *Pogona barbata*	1	26/02/2019	-27.6302	152.8620	X				Ground timber	
Rebecca Ferris	27/02/2019	07:06	Woodlinks Village - Stage 15, Maudsley Cct, Collingwood Park	-27.6281	152.8575	Alive	Vulnerable	Koala *Phascolarctos cinereus*	1	NA	NA	NA				X	Left in situ	Koala found approximately 15m outside clearing boundary, exclusion zone established, and all work crew notified. Koala left in situ and monitored during clearing activities.
Rebecca Ferris	27/02/2019	08:22	Woodlinks Village - Stage 15, Maudsley Cct, Collingwood Park	-27.6287	152.8580	Alive	Least Concern	Squirrel Glider *Petaurus norfolcensis*	1	27/02/2019	NA	NA	X				Self-relocated into adjacent bushland	

5 Conclusion

All vegetation clearance was supervised as requested by Golding Contractors and in accordance with stipulations as expressed in the *Nature Conservation (Koala) Conservation Plan 2017.*

Koalas were observed during clearance. Exclusion zones were established, and Koalas monitored during clearance activities. Other fauna found during clearance works were relocated (or self-relocated) to adjacent localities comprising suitable refugia and feeding resources consistent with individual species requirements.

All supervised clearance activities were conducted with the full co-operation of onsite personnel and machinery operator/s.

6 References

Department of Environment and Heritage Protection (2017) *Nature Conservation (Koala) Conservation Plan 2017*. Queensland Government.

References for nomenclature

Menkhorst, K. & Knight, F. (2011) *A Field Guide to the Mammals of Australia*. 3rd edn. Oxford University Press, South Melbourne.

Simpson, K. & Day, N. (2004) *Field Guide to the Birds of Australia*. Penguin Group, Australia

Strahan, R. And Van Dyck, S. (2008) *The Mammals of Australia*, 3rd edn Sydney: New Holland Publishers.

Wilson, S. (2015) *A Field Guide to Reptiles of Queensland*. 2nd edn, Sydney: New Holland Publishers.

7 Appendix A: Fauna Photos

Koala
Phascolarctos cinereus

Eastern Bearded Dragon
Pogona barbata

QFC
QUEENSLAND FAUNA CONSULTANCY
Pty Ltd

May 2019

Fauna Management and Spotter/Catcher Services Report

Woodlinks Village – Stage 16, Collingwood Park

Report prepared for Golding Contractors

Report prepared by

QLD Fauna Consultancy Pty Ltd

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Reviewed by:	Stephanie Robinson
Field personnel:	Nicholas Heard, Rodney Whitaker, Brett Bennett
Status:	Final Report
Filed as:	QFC FMR Golding Contractors Woodlinks May 2019.doc

Contents

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All activities were conducted under the provisions of Rehabilitation Permit (WA0001454) issued to Queensland Fauna Consultancy Pty Ltd by the Department of Environment and Science (DES), formerly the Department of Environment and Heritage Protection (DEHP), approving the observation and relocation of protected animals.

This report covers clearance activities undertaken in May 2019.

2 Methodology

2.1 Clearance Investigations

A standard set of observational and active searching techniques were employed each day during clearance to ascertain and identify existing fauna values for each location. These include:

- Assessment of terrestrial microhabitats such as ground hollows, rock, burrows, leaf litter, fallen branches and bark exfoliations,
- Observation and assessment of occupancy of arboreal microhabitats such as tree hollows, fissures and exfoliations,
- Direct observation of active or exposed fauna,
- Identification of scats, tracks and scratchings to determine fauna present on the site.

All microhabitats were identified and subsequently inspected during clearance.

2.2 Specific methodology for Koalas *Phascolarctos cinereus*

Due to the specific requirements relating to the Koala the following techniques were employed at the clearance site to ascertain presence/absence status:

- Use of binoculars to inspect the crown, forks and trunk of trees;
- 'Drip zone' searches at the base of known food trees for the presence of scats to a radius equal to that of the crown of individual trees;
- Inspection of trunks for scratchings indicative of use by Koalas.

Recent changes to Koala management strategies highlighted in the *Nature Conservation (Koala) Conservation Plan 2017* have resulted in particular conditions placed on vegetation clearance involving the removal of Koala food trees.

Further provisions include the restriction of all clearance that may directly interfere with the tree a Koala is residing in. Koalas are to leave via their own volition and may not be interfered with by any means. Only when Koalas have vacated a tree can clearance operations include the host tree and surrounding vegetation.

2.3 Felling Procedures

Trees identified as having potential fauna values (such as hollows, fissures and exfoliating bark) were clearly marked for supervision during felling and inspected once felled. Efforts were made to determine potentially occupant species by way of investigations for indicative signs (scats, scratchings and tracks). Where no signs were found or occupant species undeterminable, machinery operators were instructed to fell trees in a manner directed at minimising the potential risk of injury to fauna.

Limbs were inspected and the direction of felling determined with regards to safety of both machinery and operators. Considerations to potentially occupant fauna were assessed and felling procedures formulated. Felling procedures may have included the following techniques:

- Machinery blades were utilised to shake the tree in an attempt to disturb fauna out of hollows or fissures to determine species present.
- If fauna were present, the tree was either left standing overnight to allow the occupant animal(s) time to leave via their own volition, or if species detected were able to be encouraged from the tree by shaking or direct capture by a wildlife spotter(s). The tree was felled with considerations to potentially undetected fauna.
- Where possible potentially occupied trees were felled with the identified microhabitat receiving minimal contact on impact.
- Adjacent felled trees were utilised to absorb the impact of potential fauna bearing trees.

2.4 Communications during Clearance

Each spotter/catcher was equipped with a hand held radio to make positive communications with machinery operators. Communications by radio and positive hand signals were utilised to indicate intentions to machinery operators.

3 Results

The following daily inventory details fauna based investigation results for the clearing area. Inspection activities, location, habitat values and fauna found are documented where required. Refer to Appendix A for fauna photos.

Friday 10th May

- Pre-clearance activities carried out (refer to Methodology) at Woodlinks Village – Stage 16
- Vegetation clearance carried out at Woodlinks Village – Stage 16
- 1 tree flagged
- One personnel in attendance

Arboreal Microhabitats: No. flagged tree/s felled: 0 Nest (N) ☐Y ☒N Hollows (H) ☐Y ☒N Arboreal termitaria (ATM) ☐Y ☒N No. & size of hollow/s (mm): 0
Terrestrial Microhabitats: Hollow logs ☒Y ☐N Woody debris ☐Y ☒N Rock piles ☐Y ☒N Burrows ☐Y ☒N
Aquatic habitat/s: Dam ☐Y ☒N Creek ☐Y ☒N Wetland ☐Y ☒N
No Fauna Found

Monday 13th May

- Pre-clearance activities carried out (refer to Methodology) at Woodlinks Village – Stage 16
- Vegetation clearance carried out at Woodlinks Village – Stage 16
- Refer to **Fauna Register** for fauna found
- 14 trees flagged
- Two personnel in attendance

Arboreal Microhabitats: No. flagged tree/s felled: 14 Nest (N) ☐Y ☒N Hollows (H) ☒Y ☐N Arboreal termitaria (ATM) ☒Y ☐N Other: Exfoliating bark No. & size of hollow/s (mm): 0-49: 11 50-99: 8 100-149: 3 150-199: 6 200-249: 6 300+: 2
Terrestrial Microhabitats: Hollow logs ☒Y ☐N Woody debris ☒Y ☐N Rock piles ☐Y ☒N Burrows ☐Y ☒N Other: Termitaria, artificial debris
Aquatic habitat/s: Dam ☐Y ☒N Creek ☐Y ☒N Wetland ☐Y ☒N

Tuesday 14th May

- Pre-clearance activities carried out (refer to Methodology) at Woodlinks Village – Stage 16
- Vegetation clearance carried out at Woodlinks Village – Stage 16
- Refer to **Fauna Register** for fauna found
- 15 trees flagged
- Two personnel in attendance

Arboreal Microhabitats: No. flagged tree/s felled: 8
Nest (N) ☒Y ☐N Hollows (H) ☒Y ☐N Arboreal termitaria (ATM) ☒Y ☐N Other: Exfoliating bark
No. & size of hollow/s (mm): 0-49: 25 50-99: 13 100-149: 8 150-199: 8 200-249: 4 250-299: 3 300+: 2
Terrestrial Microhabitats:
Hollow logs ☒Y ☐N Woody debris ☒Y ☐N Rock piles ☒Y ☐N Burrows ☐Y ☒N Other: Termitaria
Aquatic habitat/s: Dam ☐Y ☒N Creek ☒Y ☐N (Dry) Wetland ☐Y ☒N

Wednesday 15th May

- Pre-clearance activities carried out (refer to Methodology) at Woodlinks Village – Stage 16
- Vegetation clearance carried out at Woodlinks Village – Stage 16
- Refer to **Fauna Register** for fauna found
- 17 trees flagged
- One personnel in attendance

Arboreal Microhabitats: No. flagged tree/s felled: 17
Nest (N) ☒Y ☐N Hollows (H) ☒Y ☐N Arboreal termitaria (ATM) ☐Y ☒N Other: Exfoliating bark
No. & size of hollow/s (mm): 0-49: 23 50-99: 17 100-149: 8 150-199: 3
Terrestrial Microhabitats:
Hollow logs ☒Y ☐N Woody debris ☒Y ☐N Rock piles ☒Y ☐N Burrows ☒Y ☐N
Other: Dense leaf litter
Aquatic habitat/s: Dam ☐Y ☒N Creek ☒Y ☐N (Dry) Wetland ☐Y ☒N

Thursday 16th May

- Pre-clearance activities carried out (refer to Methodology) at Woodlinks Village – Stage 16
- Vegetation clearance carried out at Woodlinks Village – Stage 16
- Refer to **Fauna Register** for fauna found
- 7 trees flagged
- One personnel in attendance

Arboreal Microhabitats: No. flagged tree/s felled: 7 Nest (N) ☒Y ☐N Hollows (H) ☒Y ☐N Arboreal termitaria (ATM) ☐Y ☒N Other: Exfoliating bark No. & size of hollow/s (mm): 0-49: 7 50-99: 4 200-249: 1
Terrestrial Microhabitats: Hollow logs ☒Y ☐N Woody debris ☒Y ☐N Rock piles ☒Y ☐N Burrows ☒Y ☐N Other: Dense leaf litter, bark exfoliations
Aquatic habitat/s: Dam ☐Y ☒N Creek ☒Y ☐N (Dry) Wetland ☐Y ☒N

Monday 20th May

- Pre-clearance activities carried out (refer to Methodology) at Woodlinks Village – Stage 16
- Vegetation clearance carried out at Woodlinks Village – Stage 16
- 3 trees flagged
- One personnel in attendance

Arboreal Microhabitats: No. flagged tree/s felled: 3 Nest (N) ☒Y ☐N Hollows (H) ☒Y ☐N Arboreal termitaria (ATM) ☐Y ☒N No. & size of hollow/s (mm): 0-49: 4 50-99: 2 100-149: 1 150-199: 2
Terrestrial Microhabitats: Hollow logs ☐Y ☒N Woody debris ☐Y ☒N Rock piles ☐Y ☒N Burrows ☐Y ☒N
Aquatic habitat/s: Dam ☐Y ☒N Creek ☐Y ☒N Wetland ☐Y ☒N
No Fauna Found

Wednesday 22nd May

- Pre-clearance activities carried out (refer to Methodology) at Woodlinks Village – Stage 16
- Vegetation clearance carried out at Woodlinks Village – Stage 16
- Refer to **Fauna Register** for fauna found
- 2 trees flagged
- One personnel in attendance

Arboreal Microhabitats: No. flagged tree/s felled: 2 Nest (N) ☐Y ☒N Hollows (H) ☒Y ☐N Arboreal termitaria (ATM) ☐Y ☒N No. & size of hollow/s (mm): 0-49: 5 50-99: 2 100-149: 1 150-199: 1
Terrestrial Microhabitats: Hollow logs ☐Y ☒N Woody debris ☐Y ☒N Rock piles ☐Y ☒N Burrows ☐Y ☒N
Aquatic habitat/s: Dam ☐Y ☒N Creek ☐Y ☒N Wetland ☐Y ☒N

4 Fauna Register

				Capture Location						Release Details			Actions					
Collectors Name	**Date**	**Time**	**Capture Location ***	**Latitude**	**Longitude**	**Count Type**	**Status**	***Common Name - Scientific Name***	**Count**	**Date**	**Latitude**	**Longitude**	**R1**	**R2**	**D**	**I**	**Release Location Description**	**Comments**
Nicholas Heard	13/05/2019	10:14	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6276	152.8598	Alive	Least Concern	Robust Velvet Gecko *Nebulifera robusta*	4	13/05/2019	-27.6295	152.8574	X				On stag in exclusion zone	Found in hollow size 250-299mm
Nicholas Heard	13/05/2019	11:17	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6270	152.8599	Alive	Least Concern	Bynoe's Gecko *Heteronotia binoei*	2	13/05/2019	-27.6334	152.8545	X				On stag in exclusion zone	Found in hollow size 150-199mm
Nicholas Heard	13/05/2019	11:37	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6287	152.8630	Alive	Least Concern	Bynoe's Gecko *Heteronotia binoei*	1	13/05/2019	-27.6290	152.8583	X				On stag in exclusion zone	Found in hollow size 250-299mm
Rodney Whitaker	13/05/2019	08:34	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6285	152.8580	Alive	Least Concern	Robust Velvet Gecko *Nebulifera robusta*	1	13/05/2019	-27.6280	152.8579	X				In hollow-bearing stag	
Rodney Whitaker	13/05/2019	08:15	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6287	152.8574	Alive	Least Concern	Eastern Bearded Dragon *Pogona barbata*	1	13/05/2019	-27.6292	152.8619	X				In woody debris pile	
Rodney Whitaker	13/05/2019	07:30	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6283	152.8577	Alive	Least Concern	Squirrel Glider *Petaurus norfolcensis*	1	13/05/2019	-27.6280	152.8578	X				Hollow-bearing tree	Found in hollow size 50-99mm
Brett Bennett	14/05/2019	07:24	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6283	152.8616	Alive	Least Concern	Common Ringtail Possum *Pseudocheirus peregrinus*	1	14/05/2019	NA	NA	X				Self-relocation into adjacent bushland	Found in hollow size 100-149mm
Brett Bennett	14/05/2019	07:52	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6265	152.8626	Alive	Least Concern	Robust Velvet Gecko *Nebulifera robusta*	2	14/05/2019	-27.6285	152.8598	X				On tree trunk	
Rodney Whitaker	14/05/2019	13:01	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6281	152.8633	Alive	Least Concern	Common Brushtail Possum *Trichosurus vulpecula*	1	14/05/2019	-27.6283	152.8642	X				Dense riparian vegetation	Found in hollow size 150-199mm

Rodney Whitaker	14/05/2019	13:06	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6280	152.8633	Alive	Least Concern	Squirrel Glider *Petaurus norfolcensis*	3	14/05/2019	-27.6284	152.8634	X				Self-relocation into hollow-bearing tree outside clearing zone	Found in hollow size 50-99mm
Rodney Whitaker	14/05/2019	16:02	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6267	152.8633	Alive	Least Concern	Squirrel Glider *Petaurus norfolcensis*	1	14/05/2019	-27.6271	152.8641	X				Self-relocation into hollow-bearing tree outside clearing zone	Found in hollow size 100-149mm
Rodney Whitaker	14/05/2019	16:19	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6267	152.8633	Deceased	Least Concern	Common Brushtail Possum *Trichosurus vulpecula*	1	14/05/2019	NA	NA			X		NA	Died during tree felling (hollow not visible from ground). Hollow size 200-249mm
Brett Bennett	15/05/2019	09:30	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6306	152.8596	Alive	Vulnerable (EPBC)	Greater Glider *Petauroides volans*	1	15/05/2019	NA	NA	X				Self-relocation into adjacent bushland	Found in hollow size 50-99mm
Brett Bennett	15/05/2019	09:32	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6334	152.8619	Alive	Least Concern	Robust Velvet Gecko *Nebulifera robusta*	1	15/05/2019	-27.6270	152.8612	X				Under bark on tree	
Brett Bennett	15/05/2019	11:29	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6279	152.8613	Alive	Least Concern	Common Ringtail Possum *Pseudocheirus peregrinus*	1	15/05/2019	NA	NA	X				Self-relocation in hollow-bearing tree	
Brett Bennett	15/05/2019	08:29	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6289	152.8621	Alive	Vulnerable (EPBC)	Greater Glider *Petauroides volans*	3	15/05/2019	NA	NA	X				Self-relocation into adjacent bushland	Found in hollow size 50-99mm
Brett Bennett	15/05/2019	13:15	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6426	152.8698	Alive	Vulnerable (EPBC)	Greater Glider *Petauroides volans*	1	15/05/2019	NA	NA	X				Self-relocation into adjacent bushland	
Brett Bennett	15/05/2019	16:03	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6277	152.8621	Alive	Least Concern	Eastern Bearded Dragon *Pogona barbata*	1	15/05/2019	-27.6270	152.8612	X				Under log	
Brett Bennett	16/05/2019	07:12	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6279	152.8633	Alive	Least Concern	Eastern Bearded Dragon *Pogona barbata*	1	16/05/2019	-27.6278	152.8606	X				On tree trunk	

Brett Bennett	16/05/2019	10:13	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6314	152.8648	Alive	Least Concern	Gould's Wattled Bat *Chalinolobus gouldii*	1	16/05/2019	NA	NA	X				Self-relocation into adjacent bushland	
Brett Bennett	16/05/2019	10:53	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6317	152.8651	Alive	Least Concern	Robust Velvet Gecko *Nebulifera robusta*	2	16/05/2019	NA	NA	X				Self-relocation into adjacent bushland	
Brett Bennett	16/05/2019	12:01	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6270	152.8626	Alive	Least Concern	Sugar Glider *Petaurus breviceps*	1	16/05/2019	NA	NA	X				Self-relocation into adjacent bushland	
Brett Bennett	16/05/2019	14:50	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6289	152.8572	Alive	Least Concern	Eastern Bearded Dragon *Pogona barbata*	1	16/05/2019	152.8604	152.8604	X				On rock	
Rodney Whitaker	22/05/19	08:15	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6281	152.8613	Alive	Least Concern	Common Brushtail Possum *Trichosurus vulpecula*	1	22/05/19	-27.6280	152.8610	X				Self-relocation in to adjacent hollow-bearing tree	Found in hollow size 200-249mm
Rodney Whitaker	22/05/19	09:16	Woodlinks Village - Stage 16, Neumann Drive, Collingwood Park	-27.6289	152.8630	Alive	Least Concern	Eastern Bearded Dragon *Pogona barbata*	1	NA	NA	NA			X		NA	Rear leg injury. Taken to RSPCA Wildlife Hospital for euthanasia.

5 Conclusion

All vegetation clearance was supervised as requested by Golding Contractors and in accordance with stipulations as expressed in the *Nature Conservation (Koala) Conservation Plan 2017.*

No Koalas were observed during clearance activities. Other fauna found during clearance works were relocated (or self-relocated) to adjacent localities comprising suitable refugia and feeding resources consistent with individual species requirements. One injured Eastern Bearded Dragon was humanely euthanised as rehabilitation was not possible.

All supervised clearance activities were conducted with the full co-operation of onsite personnel and machinery operator/s.

6 References

Department of Environment and Heritage Protection (2017) *Nature Conservation (Koala) Conservation Plan 2017*. Queensland Government.

References for nomenclature

Menkhorst, K. & Knight, F. (2011) *A Field Guide to the Mammals of Australia*. 3rd edn. Oxford University Press, South Melbourne.

Strahan, R. And Van Dyck, S. (2008) *The Mammals of Australia*, 3rd edn Sydney: New Holland Publishers.

Wilson, S. (2015) *A Field Guide to Reptiles of Queensland*. 2nd edn, Sydney: New Holland Publishers.

7 Appendix A: Fauna Photos

Robust Velvet Gecko
Nebulifera robusta

Bynoe's Gecko
Heteronotia binoei

Squirrel Glider
Petaurus norfolcensis

Greater Glider
Petauroides volans

Gould's Wattled Bat
Chalinolobus gouldii

Eastern Bearded Dragon
Pogona barbata

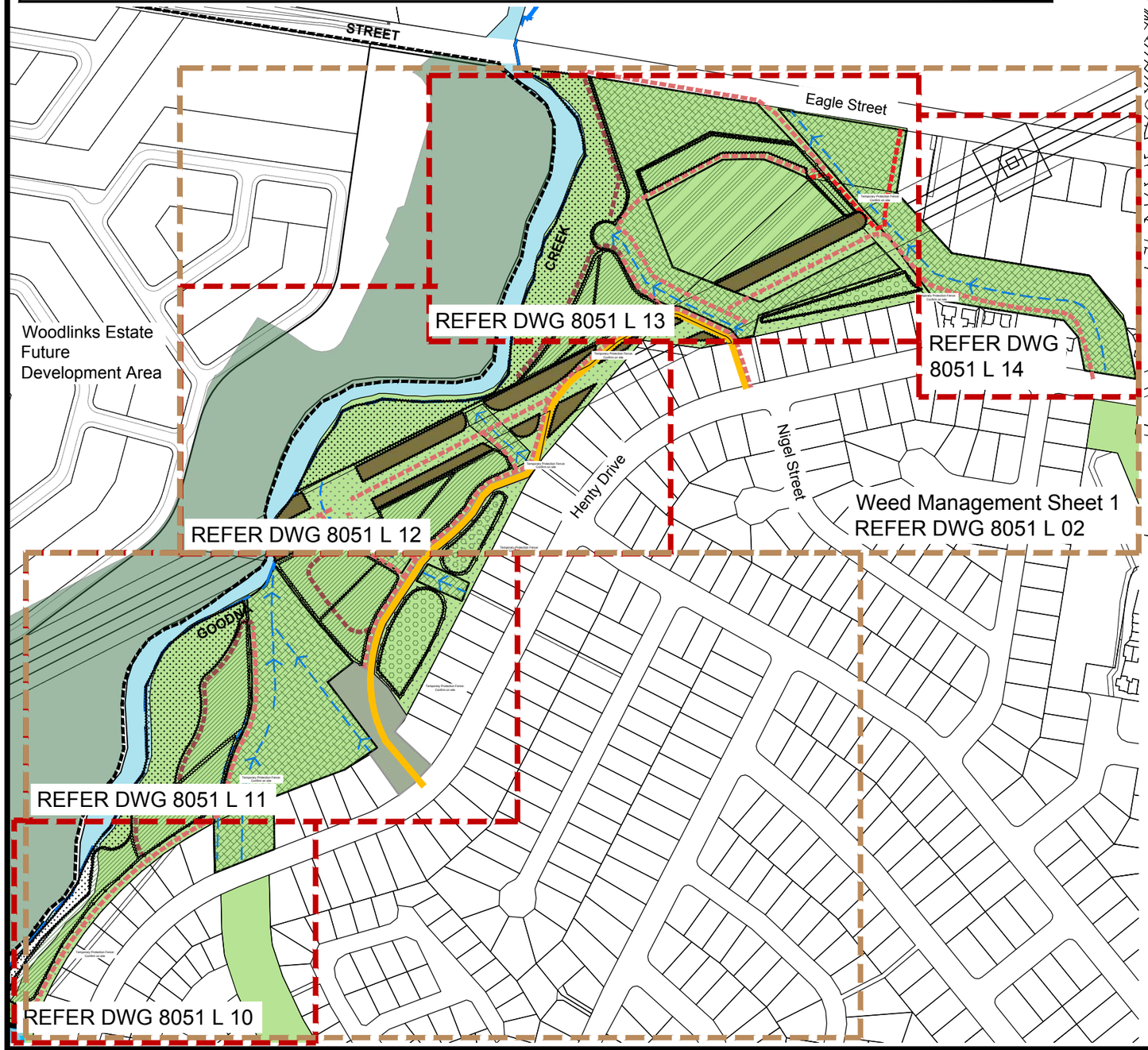
Appendix C

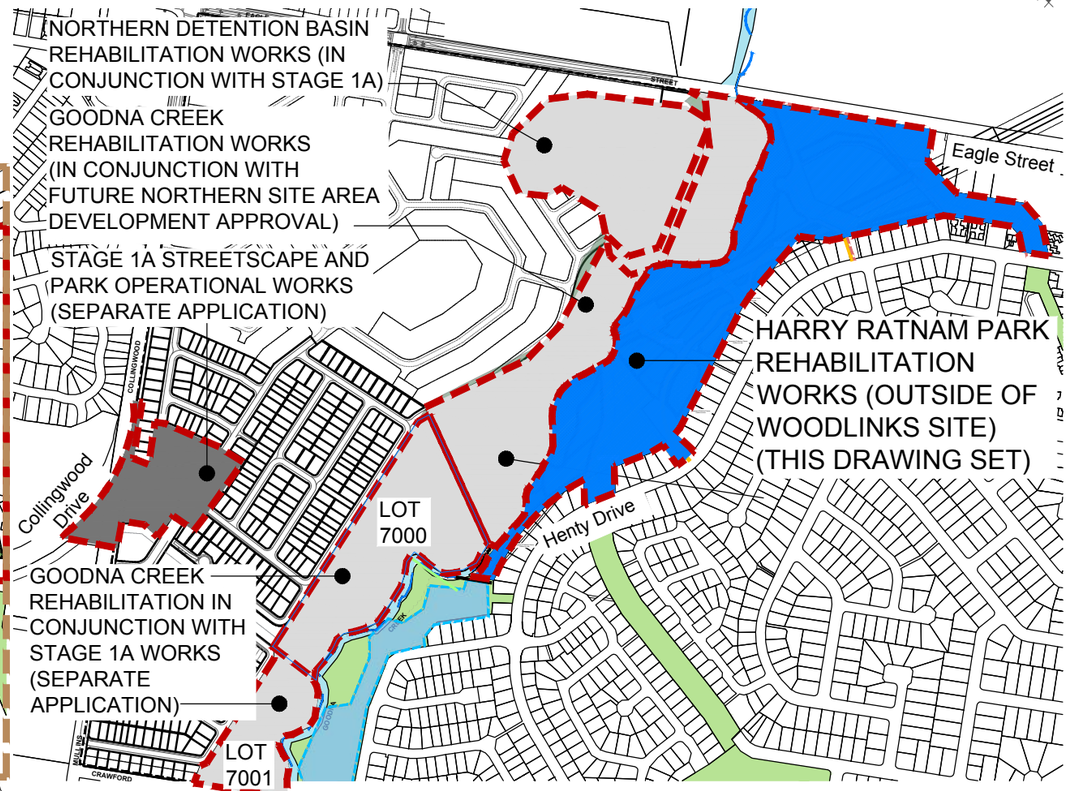
Harry Ratnam Park operational works drawings (17 August 2018)

Woodlinks Village Estate - Harry Ratnam Park

Weed Management & Rehabilitation Works

SITE LAYOUT: 1:2000 @ A1





DRAWING SCHEDULE

Dwg No.	Drawing Title	Issue	Date
8051 L 01	Cover Sheet	C	02.08.18
8051 L 02	Weed Management Plan - Sheet 1	B	22.03.16
8051 L 03	Weed Management Plan - Sheet 2	B	22.03.16
8051 L 04	Weed Management Notes	B	22.03.16
8051 L 05	Weed Treatment & Removal Strategy - Sheet 1	B	22.03.16
8051 L 06	Weed Treatment & Removal Strategy - Sheet 2	B	22.03.16
8051 L 07	Weed Treatment & Removal Strategy - Sheet 3	B	22.03.16
8051 L 08	Weed Treatment & Removal Strategy - Sheet 4	B	22.03.16
8051 L 09	Rehabilitation General Notes - Sheet 1	C	09.07.18
8051 L 10	Rehabilitation Zone Notes - Sheet 2	C	09.07.18
8051 L 11	Rehabilitation Plan - Sheet 1	C	09.07.18
8051 L 12	Rehabilitation Plan - Sheet 2	D	09.07.18
8051 L 13	Rehabilitation Plan - Sheet 3	C	09.07.18
8051 L 14	Rehabilitation Plan - Sheet 4	D	09.07.18
8051 L 15	Rehabilitation Plan - Sheet 5 & Plant Schedules	B	22.03.16
8051 L 16	Rehabilitation Plan Plant Schedules - Sheet 1	B	22.03.16
8051 L 17	Rehabilitation Plan Plant Schedules - Sheet 2	C	09.07.18
8051 L 18	Rehabilitation Sections	C	09.07.18
8051 L 19	Single Tree Planting - Typical Layout Plan	B	09.07.18

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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	09.07.2018	Phase 1 Tender	GC
C	17.08.2018	Revised Tender	GC

Date Feb 16

Scale N.T.S

Plan of: Harry Ratnam Park
Rehabilitation Works - Cover Sheet

Drawn by. FW

Checked by GC / MS

Project: Woodlinks Village Estate H.R.Park

Client: Canberra Estate Consortium No. 36

SCALE:
1:2000@A1
1:4000@A3
0 20 100m

North

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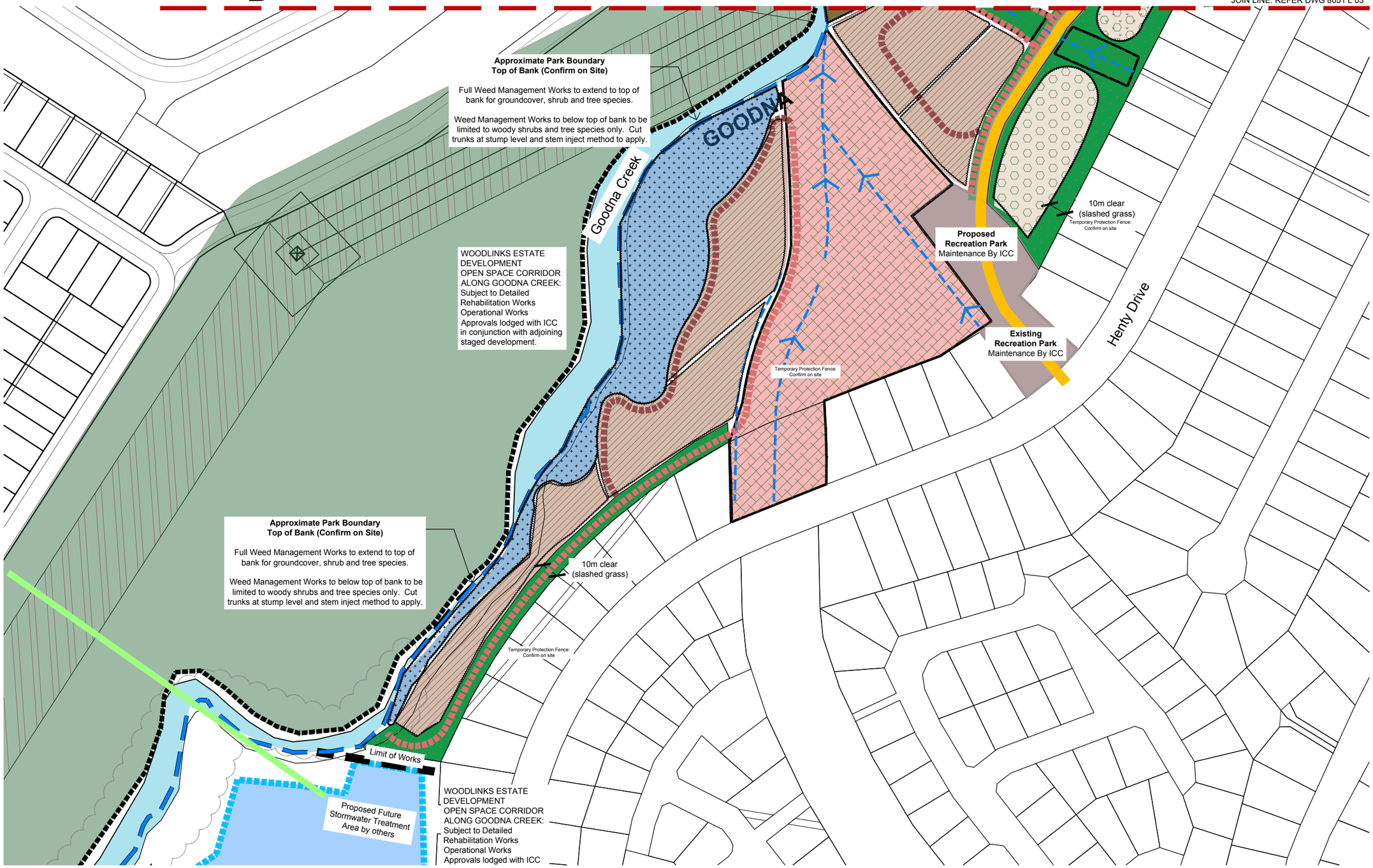
Dwg No. 8051 L 01 C

Woodlinks Village Estate - Harry Ratnam Park

Weed Management Plan - Sheet 1



LEGEND

WOODLINKS ESTATE GOODNA CREEK REHABILITATION WORKS AREA: Subject to separate management plan & not part of scope for H. R. Park works package.

FUTURE ICC WORKS AREAS: These areas to be managed by ICC & not part of scope for H. R. Park works package. No allowance for contractor to weed manage, mow or slash grass in these areas.

OVERLAND FLOWS & GRASSED ACCESS AREAS (CONTRACTOR): These are areas proposed to be managed by the Landscape Contractor as part of scope for H. R. Park works package. Contractor to make allowance to mow or slash grass in these areas.

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

PROPOSED BROAD-SCALE MULCHED PLANTED AREAS: Full conversion from grass to mulched planting areas.
- In these areas the Contractor is to allow for full eradication of existing slashed grass cover through usage of prescribed herbicides and methods.

PROPOSED TREE PLANTING MULCHED PLANTED AREAS: In these areas the Contractor is to allow for selective individual and grouped tree plantings into existing slashed grass. Contractor to allow for eradication of grass cover through usage of prescribed herbicides and methods in locations confirmed on site with Superintendent.

ELECTRICAL EASEMENT: No works in the initial phase.

NOTES

NOTE 1: Where indicative dominant weed locations are noted in approximate locations from site observations these do not represent all weeds on site.

All weeds listed on Drawings 8051 L 05, 06 & 07 "Weed Treatment and Removal Strategy Sheets 1 to 3" are to be removed.

NOTE 2: All works in accordance with Notes on Drawing 8051 L 04 "Weed Management Notes"

NOTE 3: All planting areas to be maintained weed free following establishment.

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address 9 Thompson St Bowen Hills Q 4006

amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	17.08.2018	Revised Tender	GC

Date Feb 16

Plan of: Harry Ratnam Park
Weed Management Plan - Sheet 1

Drawn by. FW

Checked by GC / MS

Project: Woodlinks Village Estate H.R.Park

Client: Canberra Estate Consortium No. 36

SCALE:
1:1000@A1
1:2000@A3
0 10 20 50m

North

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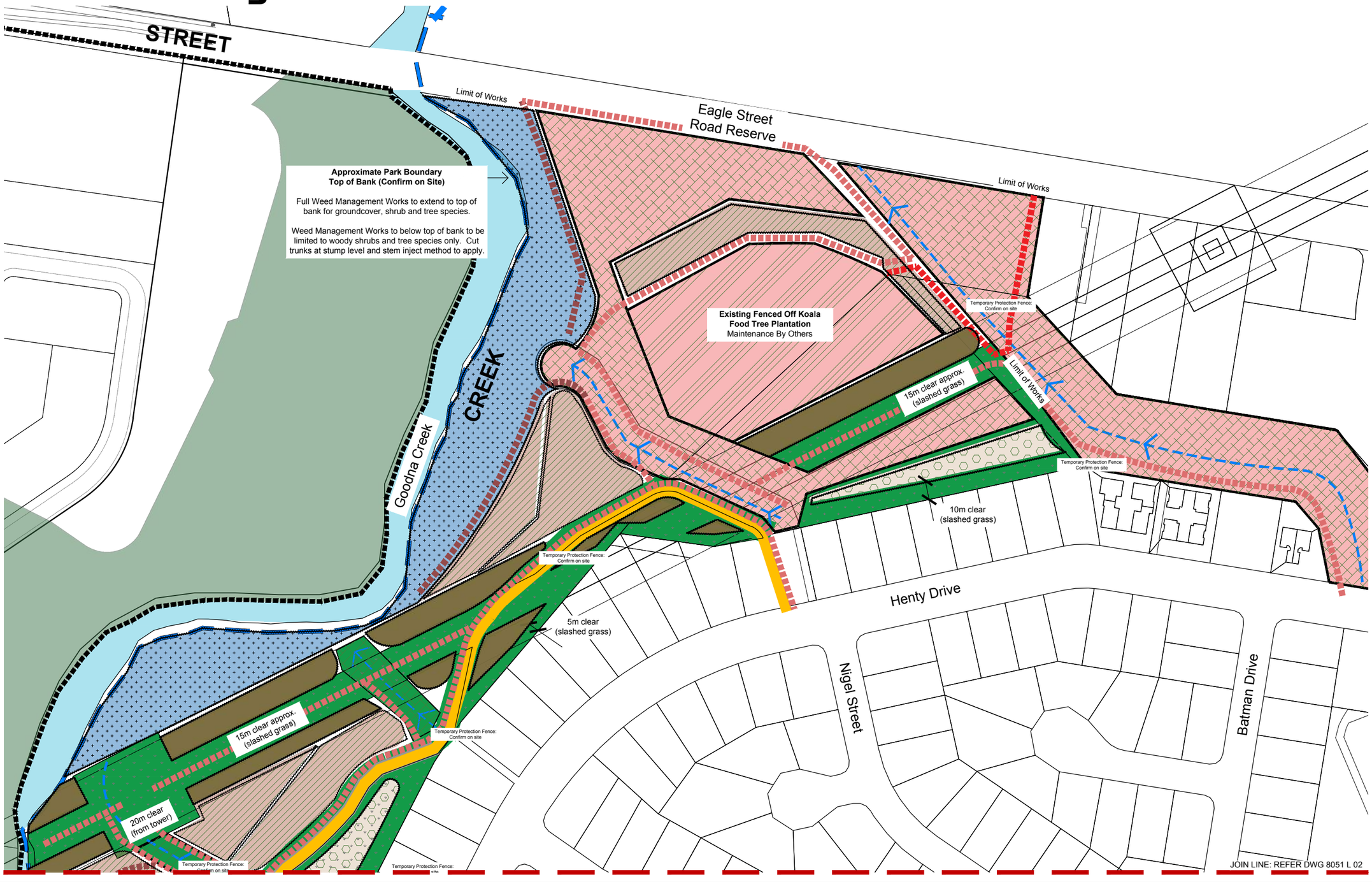
Dwg No. 8051 L 02 B

Woodlinks Village Estate - Harry Ratnam Park

Weed Management Plan - Sheet 2



LEGEND

WOODLINKS ESTATE GOODNA CREEK REHABILITATION WORKS AREA: Subject to separate management plan & not part of scope for H. R. Park works package.

FUTURE ICC WORKS AREAS: These areas to be managed by ICC & not part of scope for H. R. Park works package. No allowance for contractor to weed manage, mow or slash grass in these areas.

OVERLAND FLOWS & GRASSED ACCESS AREAS (CONTRACTOR): These are areas proposed to be managed by the Landscape Contractor as part of scope for H. R. Park works package. Contractor to make allowance to mow or slash grass in these areas.

EXISTING VEGETATION MANAGEMENT AREA:
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In these areas the Contractor is to allow for selective individual and grouped tree plantings into existing slashed grass. Contractor to allow for eradication of grass cover through usage of prescribed herbicides and methods in locations confirmed on site with Superintendent.

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address 9 Thompson St Bowen Hills Q 4006

amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	17.08.2018	Revised Tender	GC

Date Feb 16

Plan of: Harry Ratnam Park
Weed Management Plan - Sheet 2

Drawn by. FW

Checked by. GC / MS

Project: Woodlinks Village Estate H.R.Park

Client: Canberra Estate Consortium No. 36

SCALE:
1:1000@A1
1:2000@A3
0 10 20 50m

North

saunders havill group

Dwg No. 8051 L 03 B

Woodlinks Village Estate - Harry Ratnam Park

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 proposed Rehabilitation Works within **Harry Ratnam Park** adjacent to "Woodlinks Village" residential estate.

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. **All weed control works shall be undertaken by an experienced and qualified ecological restoration and management contractor.**

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.

Primary Weed Removal Stage - Consists of the initial weed removal / treatment of site weeds via the methods detailed in this Drawing Set. 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.
- **All Herbicides are to be applied by an appropriately qualified / supervised person in accordance with the Agricultural Chemicals and Distribution Control Act 1966** at rates as identified on registered product labels or an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to SEQ Ecological Restoration Framework for additional guidance.
- 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 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.

NOTE

ALL WEED SPECIES IDENTIFIED IN THE "BIOSECURITY ACT 2014" AND
QLD HERBARIUM INVASIVE WEED SPECIES LISTS

Maintenance Weeding Phase - 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.

	▪ "Frilling" facilitates a similar process but subjects the tree to consistent 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 cambrium 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

NOTES

Method	Description
Bag	▪ Place in suitable container and remove from site
Dig	▪ Dig and remove tuberous/rhizomatous root system ▪ Remove roots or whole plant in hard/compacted soils
Hand-Pull	▪ Remove totally from ground by hand (human) ▪ Applicable to small infestations or areas of environmental sensitivity (including sensitive watercourses, when frogs are breeding, or presence of threatened species) ▪ Perform when soil is moist
Basal Bark	▪ Requires application of herbicide dilution (generally in a diesel diluent) to 300mm of stem immediately above ground level ▪ Suitable for small shrubs and juvenile trees ▪ Unsuitable in sensitive areas (e.g. waterways) due to the dispersive nature of diesel
Cut-Stump	▪ Cut tree up to 2.5m high at base and apply appropriate herbicide containing a wetting agent within thirty (30) seconds
Foliar Herbicide Application	▪ Useful for large infestations of exotic grasses, herbs, shrubs and opportunistic vines acting as a monotypic groundcover ▪ Requires thorough coverage of foliage of target species (may be indiscriminate, i.e. affect non-target species) ▪ Involves dilution of herbicide in water or diesel (the latter is not suitable near waterways)
Stem-Inject	▪ Useful for large trees that may encourage seed recruitment via roosting birds and provide canopy cover while senescing ▪ In the same plane, drill holes at 50mm centres around the entire trunk and immediately inject appropriate herbicide into the cambium layer of trees greater than 2.5m in height

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.

NOTES

- 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 MILESTONES

For weed removal and revegetation three main Milestones will apply for the monitoring process. These include:

Pre-Start Inspection - *On-site meeting prior to the initial commencement of work. Will involve Consultant, Contractor and Council to confirm weed treatment areas and clarify works to proceed.*

On-Maintenance - *At the completion of the Primary Weed Removal Stage and any required revegetation, an On-Maintenance meeting will be held to inspect the works on-site in relation to the approved plans and previously agreed on-maintenance criteria.*

Off- Maintenance - *At the completion of all site weeding works and the agreed maintenance timeframe a final inspection will be held to determine if works have been completed to the required level for completion. The completion of ongoing maintenance duties during the maintenance period will be critical to enable "Off Maintenance" to be acheived.*

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:

- On Maintenance requirements;
  - Primary weed removal completed;
  - Secondary weed removal completed
- 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

NOTES

5. RESOURCES / ROLES & RESPONSIBILITIES

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

PROPONENT

- 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.

CONSULTANTS

- 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.

COUNCIL

- 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.

CONTRACTOR

- 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.

PROJECT 8051 HARRY RATNAM PARK

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

COLOUR KEY TO WORK ITEMS — Weed Management | Soil Preparation and Mulching | Planting Works | Watering, Monitoring and Reporting

	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 Council, Contractor and Superintendant	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 Jutematting 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 plants staking for identification	Weed management - "knockdown spray" in mulched areas	Weed management - "knockdown spray" re-apply 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 - "knockdown spray" re-apply woody weeds	Weed management - "knockdown spray" in mulched areas
WEEK 3	Weed management works - removal 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 access paths	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

MILESTONE: PRACTICAL COMPLETION

MILESTONE: COUNCIL "ON MAINTENANCE"

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

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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	17.08.2018	Revised Tender	GC

Date Feb 16

Plan of: Harry Ratnam Park
Weed Management Notes

Drawn by. FW

Checked by GC / MS

Project: Woodlinks Village Estate H.R.Park

Client: Canberra Estate Consortium No. 36

saunders havill group

Dwg No. 8051 L 04 B

Woodlinks Village Estate - Harry Ratnam Park

Weed Treatment & Removal Strategy - Sheet 1

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

All Herbicides are to be applied by an appropriately qualified / supervised person in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates as identified on registered product labels or an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to SEQ Ecological Restoration Framework for additional guidance.

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUB-REGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
1	Verbenaceae	Lantana camara var. camara (lantana)	10	S/O	Seedlings: Hand pull	Seedlings: CS&P (G1.5); Shrubs: blanket spray G100 or cut down and spray regrowth G100 or splatter gun using 1 part G to 9 parts water - apply only when plants is growing, not dormant (ref 1).
2	Asteraceae	Baccharis halimifolia (groundsel bush)	10	S/O	Seedlings: Hand pull	Shrubs: CS&P or F/ (G1); Seedlings: CS&P (G1.5) or spray G200 (ref 1).
3	Crassulaceae	Bryophyllum delagoense (mother of millions)	8	H/O	Hand pull and dispose	Plantlets: spray G200 + MM or MM (ref 1).
4	Bignoniaceae	Macfadyena unguis-cati (cat's claw creeper)	3	V/O	Tubers: crown or dig up, bag and remove.	Regrowth and tuberlings: spray G100 + MM or F100 (ref 1).
5	Basellaceae	Anredera cordifolia (madeira vine)	8	V/O	Small Vines & Tubers: Hand pull. Bag and dispose.	Ascending Stems: S&P (GU); Tubers: gouge, scrape and paint (GU); Ground infestations: spray G200 or G200 – MM (ref 1).
6	Asparagaceae	Asparagus africanus (ornamental asparagus, asparagus fern)	7	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 mL per 1 L diesel/kerosene
7	Ulmaceae	Celtis sinensis (Chinese celtis)	8	T/O	remove when small .hand pull or dig out small seedlings combine dozing, burning and controlled grazing for large infestations	Stem injection, glyphosate (360 g/L) @ Undiluted at 1mL per 2 cm of hole or cut
8	Lauraceae	Cinnamomum camphora (camphor laurel)	7	T/O	Seedlings: Hand pull	Saplings: CS&P (G1.5); Trees: F/I (G1 or G1.5) or C&P GL for stems up to 8 diameter); Seedlings: spray G200 or G200 + MM (ref 1).
9	Anacardiaceae	Schinus terebinthifolius (broad-leaf pepper tree)	6	T/O	Seedlings: Hand pull	Saplings: CS&P (G1.5): Trees: F/ (G1.5); Seedlings: spray G200 (ref 1).
10	Salviniaceae	Salvinia molesta (salvinia)	8	Ha/F	Mechanical removal of small infestations; Salvinia weevil (Biological control)	Aquatic areas: calcium dodecylbenzene sulphanate (AF-100) @ 1 part to 10 parts kerosene: diquat (vegetrol) 50-100l/ha or 4 /100l water; diquat (weedtrol) 50-100L/Ha or 4l /100l water diquat (reglone) 5-10L/Ha or 400mL + 150mL Agral / 100L water (see ref 2.
11	Cabombaceae	Cabomba caroliniana (cabomba, fanwort)	4	Ha/F	Mechanical removal of small infestations	2, 4-D N-Butyl Ester (Rubber Vine Spray) @ 12.5 /L water (see ref 2. for application guide).
12	Asteraceae	Chrysanthemoides monilifera subsp. rotundata (bitou bush)	3	S/OA	N/A	Stems: CS&P or F/I (G1.5); Bushes: spray or cut down and spray regrowth G100 or MM (ref 1).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
13	Pontederiaceae	Eichhornia crassipes (water hyacinth)	4	H/A/F	Mechanical removal of small infestations	Waterways: 2, 4-D acid (AF 300) @ 1:200 with water; Aquatic Areas: glyphosate @1:1.3L/100L water (see ref 2 for application guide).
14	Acanthaceae	Hygrophila costata (Glush weed)	3	H/A/F	Hand pull small infestations. Can be controlled by planting competitive native species.	Glyphosate known to be effective.Species known to occur in waterways so CPA should be contacted before spraying (ref 4).
15	Oleaceae	Ligustrum lucidum (tree privet)	5	T/O	Seedlings: Hand pull	Saplings: CS&P or C&P (G1.5); Trees: F/ (G1 or G1.5) or C&P GU for stems up to 8cm diameter; Seedlings: spray MM or G200 – MM if other weeds such as Lantana or Camphor Laurel are present (ref 1).
16	Asteraceae	Sphagneticola trilobata (Singapore daisy)	6	H/O	Hand pull	Hand pull and/or spray G200 – MM (ref 1).
17	Asteraceae	Ageratina adenophora (crofton weed)	6	H/O	Hand pull and bag to dry.	Spray MM or G200 or G200 – MM if other weeds such as Lantana or Camphor Laurel are present (ref 1).
18	Verbenaceae	Lantana montevidensis (creeping lantana)	8	S/O	Fire and/or mechanical control	Spray (march to may): glyphosate 1L/100L water; metsulfuron methyl 10g/100l water; metsulfuron methyls + glyphosate 173g/100L water; Basal bark (anytime): triclopyr 1L/60L Diesel, picloram + triclopyr @ 1 /60L Diesel. Glyphosate, neat application. Splat:
19	Fabaceae	Neonotonia wightii (glycine)	5	H/A	N/A	Vines: CS&P (1:1.5) or spray G100 + MM or MM (ref 1).
20	Poaceae	Panicum maximum (green panic and guinea grass)	8	H/A	Hand or mechanical removal of small infestations	Spray: glyphosate @ 13mL/1L water (ref 2.).
21	Oleaceae	Ligustrum sinense (Chinese privet)	4	T/O	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 are present (ref 1).
22	Ochnaceae	Ochna serrulata (ochna)	7	S/O	N/A	Stems: CS&P or S&P or F/ (G1.5); Seedlings and Regrowth: Spray G200 – MM or MM. Trial basal bark F100 or G200 + MM (ref 1).
23	Asparagaceae	Asparagus aethiopicus cv. Sprengeri (asparagus ground fern)	5	H/O	dig out unwanted plants and dispose of at the appropriate council landfill. remove the entire crown of underground stem of plant to prevent regrowth	Spot spray metsulfuron methyl (600 g/L) @ 10 g per 100 L water plus wetting agent or 100 g/ha plus wetting agent. Cut stump: spot spray. Apply neat Diesel

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
24	Poaceae	Sporobolus pyramidalis and S. natalensis (giant rat's tail grasses)	8	H/ J?	Hand or mechanical removal of small infestations	Small infestations: spray glyphosate @ 15mL / water, flupropanate @ 2mL/L water + ionic wetter @ 1mL/1water; Dense infestations: blanket spraying glyphosate 3 /ha, flupropanate 2l /ha (ref 2).
25	Asteraceae	Ageratina riparia (mistflower)	6	H/O	Hand pull and bag to dry.	Spray G100 or MM (ref 1).
26	Asclepiadaceae	Araujia sericifera (moth vine)	9	V/O	Seedlings & Vines Hand pull Bag and remove fruit.	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	H/O	Hand pull and dispose	Plantlets: spray G200 + MM or MM (ref 1).
28	Convolvulaceae	Ipomoea cairica (mile a minute)	7	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).
29	Sapindaceae	Cardiospermum grandiflorum (balloon vine)	7	V/O	Seedlings & Small Vines: Hand Pull	Stems: CS&P (G1.5); Seedlings or Small vines: spray G200 or G200 – MM (ref 1).
30	Asclepiadaceae	Cryptostegia grandiflora (rubber vine)	6	V/O	Scattereded or medium density infestations: Where possible, repeated slashing close to ground level is recommended.	Foliar spray - Follow-up basal bark/cut stump/foliar spray as necessary with Triclopyr + picloram (Grazon DS, Grass up, etc.) @ 0.33–0.5 L /100 L water
31	Phytolaccaceae	Rivina humilis (baby pepper)	8	H/O	Hand pull and hang to dry.	Spray G100 (ref 1).
32	Poaceae	Sporobolus africanus (Parramatta grass)	8	H/ J	Hand or mechanical removal of small infestations	Small infestations: spray glyphosate @ 15mL / water, flupropanate @ 2mL/L water + ionic wetter @ 1mL/1water; Dense infestations: blanket spraying glyphosate 3 /ha, flupropanate 2L/ha (ref 2).
33	Poaceae	Sporobolus fertilis (giant Parramatta grass)	9	H/ J	Hand or mechanical removal of small infestations	Small infestations: spray glyphosate @ 15mL / water, flupropanate @ 2mL/L water + ionic wetter @ 1mL/1water; Dense infestations: blanket spraying glyphosate 3 /ha, flupropanate 2l /ha (ref 2).
34	Poaceae	Eragrostis curvula (African lovegrass)	7	H/O	Chipped out before they Flower. When chipping out the plant ensure that the tussock crowns are removed, as this will prevent regrowth. If in seed, the stems must be cut and bagged first.	Glyphosate (360 g/L) (e.g. Weedmaster® DUO) @ 10 mL / L water
35	Asteraceae	Gymnocoronis spilanthoides (Senegal tea)	3	Ha/F	place plant material in a sealed plastic bag, leave in sunlight to rot then burn or dispose of at a council-approved landfill site	Glyphosate and metsulfuron-methyl @ 15mL/L water

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
36	Amaranthaceae	Alternanthera philoxeroides (alligator weed)	1?	H/a/O	physical removal of plant should not be attempted	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 floating plants: Glyphosate (Roundup Bioactive®) 10 mL/L
37	Passifloraceae	Passiflora suberosa (cork passionflower)	8	V/O	N/A	Stems: CS&P; Seedlings & Regrowth: spray G200 or G200 – MM (ref 1).
38	Poaceae	Melinis minutiflora (molasses grass)	5	H/A	Grazing or mowing	Spray: Fluazifop P 212g/L @ 2L/Ha, Glyphosate 360g/L @ 1L/100L water (ref 2).
39	Aristolochiaceae	Aristolochia elegans (Dutchman's pipe)	8	V/O	Stems: Hand pull; Fruit: Bag and remove.	Stems: CS&P (G1.5); Seedlings: spray G200 or G200 + MM or MM (ref 1).
40	Convolvulaceae	pomoea indica (blue morning glory)	5	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 F150 (ref 1)
41	Mimosaceae	Leucaena leucocephala (leucaena)	6	ST/A	Small plants: Hand pull or mechanical removal	Herbicide Control - Basal Bark application: triclopyr 240g/L + picloram 120g/L @ 1L/60L diesel. C&P triclopyr 240g/L + picloram 120g/L @ 1 per 60L diesel; spray triclopyr 300g/L + picloram 120g/L @ 350mL per 100L water. Combination of chemical and mecha
42	Poaceae	Brachiaria mutica (para grass)	6	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).
43	Hydrocharitaceae	Egeria densa (egeria waterweed)	7	Ha/F	hand pulling, cutting and digging with machines effective	N/A
44	Pinaceae	Pinus elliottii (slash pine)	4	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).
45	Caesalpiniaceae	Senna pendula var. glabrata (Easter cassia)	7	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).
46	Poaceae	Chloris gayana (Rhodes grass)	9	H/A	Hand pulling and removal and digging of larger clumps	Spray: glyphosate @ 1l/100L water
47	Crassulaceae	Bryophyllum pinnatum (resurrection plant)	6	H/O	Hand pull and dispose	Plantlets: spray G200 + MM or MM (ref 1).
48	Asteraceae	Parthenium hysterophorus (parthenium weed)	6	H/U	hand pulling of small areas is not recommended	Spot spray 2,4-D amine 500 g/L @ 0.4 /100 L
49	Caprifoliaceae	Lonicera japonica (Japanese honeysuckle)	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).
50	Acanthaceae	Thunbergia alata (black eyed susan)	5	H/O	N/A	CS&P (G1.5); spray G200 or G200 + MM (ref 1).

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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	17.08.2018	Revised Tender	GC

Date Feb 16

Plan of: Harry Ratnam Park
Weed Treatment & Removal Strategy
Sheet 1

Drawn by. FW
Checked by GC / MS
Project: Woodlinks Village Estate H.R.Park
Client: Canberra Estate Consortium No. 36

SCALE: AS NOTED

North

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Woodlinks Village Estate - Harry Ratnam Park

Weed Treatment & Removal Strategy - Sheet 2

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

All Herbicides are to be applied by an appropriately qualified / supervised person in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates as identified on registered product labels or an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to SEQ Ecological Restoration Framework for additional guidance.

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
51	Fabaceae	Macroptilium atropurpureum (siratro)	8	V/A	N/A	Vines: CS&P (1-1.5) or spray G100 + MM or MM (ref 1).
52	Rosaceae	Rubus ellipticus (yellowberry)	4	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
53	Colchicaceae	Gloriosa superba (glory lily)	3	V/O	N/A	Young Shoots: spray G200 or G200 + MM. Best results in Oct- Nov and by using 'Pulse' as surfactant (ref 1).
54	Verbenaceae	Phyla canescens (lippia, Condamine couch)	3	Ha/O	a combined approach of different control methods including chemical and mechanical with land management practices is most effective	Foliar spray 600g/l Dichlorprop @ 5 ml / 1 L water or 2,4-D amine (500 g/L) + 1% crop oil @ 2–4 L/ha + 1% crop oil
55	Solanaceae	Solanum seaforthianum (Brazilian nightshade)	8	V/O	Hand pull	Spray G100 (ref 1).
56	Araceae	Pistia stratiotes (water lettuce)	3	Ha/OF	Mechanical removal of small infestations	Glyphosate 360g/L @ 1-1.3L/100L water or 0.9L/Ha; diquat 20g/L @ 4L/100L water or 50-100 mL/Ha (see ref 2. for application guide).
57	Asparagaceae	Asparagus plumosus (asparagus fern)	4	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).
58	Commelinaceae	Tradescantia fluminensis, [Qld use T. albiflora) (wandering jew)	3	H/O	N/A	Spray F150 (as per label) or G200 or G400 – MM; Collect and bag or roll and rake carefully. Dispose (ref 1).
59	Solanaceae	Cestrum parqui (green cestrum)	6	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	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	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	S/O	Hand pull	Spray G100 (ref 1).
63	Passifloraceae	Passiflora subpeltata (white passion flower)	10	V/O	Stems: Hand pull	Stems: CS&P; Seedlings & Regrowth: spray G200 or G200 + MM (ref 1).
64	Fabaceae	Desmodium uncinatum (silverleaf desmodium)	5	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	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	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).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
67	Onagraceae	Oenothera drummondii subsp. drummondii (beach evening primrose)	3	H/O	Hand pull	Spray G100 (ref 1).
68	Tiliaceae	Triumfetta rhomboidea (Chinese burr)	7	H/A	Hand pull	Spray G100 (ref 1).
69	Haloragaceae	Myriophyllum aquaticum (parrot's feather)	3	Ha/F	N/A	Spray: glyphosate 360g/l @ 100ml/10l water (ref 1).
70	Passifloraceae	Passiflora foetida (stinking passion flower)	7	V/O	Hand Pull	CS&P (G1.5), spray G200 or G200 – MM (ref 1).
71	Asteraceae	Verbesina encelioides (crownbeard)	7	H/A	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	H/A	N/A	Spray G200 - resistant to weaker strength (ref 1).
73	Poaceae	Paspalum dilatatum (paspalum grass)	10	H/A	Hand pull or dig up	Spray G100 (ref 1).
74	Ruppiaceae	Ruppia maritima (sea tassel)	?	Ha/F	Hand pull or dig up	Spray G100 (ref 1).
75	Arecaceae	Syagrus romanzoffiana (queen palm)	47	T/O	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?	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 Bioactive & Weedmaster Duo) + 1 L/100L water or 10 L/ha delivered by boom
77	Asteraceae	Senecio tamoides (Canary creeper)	3	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	H/A	Hand or mechanical removal of young plants	Herbicide Control - Glyphosate 7mL/L water; Dichlobenil 500g/100m2; Fluazifop 50-100mL/10L water (ref 2).
79	Acanthaceae	Thunbergia grandiflora (thunbergia, blue thunbergia)	2	V/O	N/A	CS&P (G1.5); spray G200 (ref 1).
80	Cactaceae	Opuntia tamentosa (velvet tree pear)	8	S/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	Spray: Basal Bark application; injection: Tridopyr: 1L/60L diesel. Picloram + Tridopyr: 1L/60L diesel. Amitrole: 1mL/3cm (ref 3).
81	Euphorbiaceae	Ricinus communis (castor oil plant)	?	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	H/J	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).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
83	Cyperaceae	Cyperus involucratus (African sedge)	6	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 spa. Land—commercial/industrial, rights of way - Glyphosate-spa, glyphosate-mas, imazapyr
84	Asteraceae	Tithonia diversifolia (Mexican sunflower)	5	H/O	N/A	Stems: CS&P (G1.5) or cut and spray regrowth and seedlings (G100 or MM) (ref 1).
85	Poaceae	Setaria sphacelata (South African pigeon grass)	9	H/A	Hand pull or dig up	Spray G100 (ref 1).
86	Asclepiadaceae	Gomphocarpus physocarpus (balloon cotton bush)	10	S/OU	Slash in winter and burn cuttings. Wanderer Butterfly can also be used as biological control.	Spray: glyphosate @ 1:1000 with water, in spring before seeding (ref 3).
87	Poaceae	Digitaria didactyla (Queensland blue couch)	9	H/A	Hand pull or cultivation	Spot Spray: glyphosate or 2,2-DPA (ref 3)
88	Caesalpiniaceae	Gleditsia triacanthos (honey locust)	?	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 75ml/100 L diesel
89	Poaceae	Paspalum notatum (bahia grass)	4	H/A	Hand pull or dig up	Spray G100 (ref 1).
90	Cactaceae	Opuntia monacancha (drooping tree pear, syn. O. vulgaris)	2	S/O	Biological controls available: cactoblastis cactorum successful Mechanical control difficult. Fire can be used.	Spray; Basal Bark application; injection: Tridopyr: 1L/60L diesel. Picloram + Tridopyr: 1L/60L diesel. Amitrole: 1mL/3cm (ref 3).
91	Poaceae	Paspalum conjugatum (paspalum grass)	7	H/A	Cut below crown.	Spot Spray: glyphosate or 2,2-DPA (ref 3).
92	Malpighiaceae	Hiptage benghalensis (hiptage)	3	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	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	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	H/O	Hand Pull	Spot Spray: glyphosate or 2,2-DPA (ref 3)
96	Verbenaceae	Duranta erecta (duranta)	6	ST/O	Shrubs: CS&P (1-1.5)	Spray G100 (ref 1).
97	Brassicaceae	Nasturtium officinale (Qld use Rorippa nasturtium aquaticum) (watercress)	7	Ha/FU	Manually grub and destroy.	Spray G100 and replace with local species (ref 1).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
98	Polygonaceae	Acetosa sagittata (rambling dock)	4	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	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	ST/O	N/A	Stems: CS&P (G1.5) or spray G200; Seeds: collect, bag and remove (ref 1).
101	Rosaceae	Rhaphiolepis indica (Indian hawthorn)	3	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	S/A	N/A	Pastures - Fluroxypyr/Starane 200 @ 1.5 L/ha. Between cropping applications (conservation tillage) - Dicamba/Banvel 200 @ 0.8-1.4 L/ha
103	Commelinaceae	Callisia fragrans (purple succulent)	3	H/O	N/A	Spray F300 or G300 or G200 + MM; Collect and bag or roll and rake carefully. Dispose (ref 1).
104	Scrophulariaceae	Paulownia tomentosa (paulownia)	3	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	H/O	N/A	Spray F300 or G200 or G200 + MM; Collect and bag or roll and rake carefully. Dispose (ref 1).
106	Acanthaceae	Ruellia malacosperma (ruellia)	5	H/O	N/A	Spray G200 + MM (ref 1).
107	Poaceae	Pennisetum clandestinum (kikuyu grass)	4	H/A	Hand Pull	Spot Spray: glyphosate or 2,2-DPA (ref 3)
108	Liliaceae	Lilium formosanum (Taiwan lily)	5	H/O	Hand pull or crown and dispose	Spray G100 + MM or MM (ref 1).
109	Asteraceae	Sigesbeckia orientalis (Indian weed)	10	H/U	Hand pull or cultivation	Spray with 2,4-D amine or sodium, or MCPA + dicamba (ref 3).
110	Asteraceae	Bidens pilosa (cobbler's pegs)	10	H/U	Hand pull or cultivation	Spray with 2,4-D amine or sodium, or MCPA + dicamba (ref 3).
111	Cactaceae	Opuntia stricta (common prickly pear)	7	S/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	Spray; Basal Bark application; injection: Tridopyr: 1L/60L diesel. Picloram + Tridopyr: 1L/60L diesel. Amitrole: 1mL/3cm (ref 3).
112	Poaceae	Eleusine indica (crowsfoot grass)	8	H/A	Pull and chip. Replant with native couch	Spray: glyphosate or 2,2-DPA (ref 3).
113	Poaceae	Axonopus compressus (broad leaved carpet grass)	5	H/AO	Cut stems from roos	Spot spray with Glyphosate (ref 3).
114	Lamiaceae	Salvia coccinea (red salvia)	9	H/O	remove small areas by hand or machine	Aquatic areas (drains, channels, margins of streams, lakes and dams) - calcium dodecylbenzene sulphonate (AF-100) @ 1 part in 10 parts kerosene
115	Asteraceae	Ageratum houstonianum (blue billygoat weed)	8	H/UO	N/A	Spray G100 or hand pull and spray regrowth G100 (ref 1).

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Date Feb 16

Plan of: Harry Ratnam Park
Weed Treatment & Removal Strategy
Sheet 2

Drawn by. FW | Project: Woodlinks Village Estate H.R.Park

Checked by GC / MS | Client: Canberra Estate Consortium No. 36

SCALE: AS NOTED

North

saunders havill group

Dwg No. 8051 L 06 B

Woodlinks Village Estate - Harry Ratnam Park

Weed Treatment & Removal Strategy - Sheet 3

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

All Herbicides are to be applied by an appropriately qualified / supervised person in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates as identified on registered product labels or an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to SEQ Ecological Restoration Framework for additional guidance.

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
116	Myrtaceae	Psidium guajava and P. guineense (yellow guava and West Indies guava)	4	ST/AO	N/A	Shrubs: CS&P or F/I (G1.5) or spray G200 – MM or MM. Trial basal bark @100 or G200 + MM (ref 1).
117	Rosaceae	Rubus bellobatus (kittatinny blackberry)	5	S/O	slashing hinders growth, giving some control if plants are slashed before they seed	Grazor DS picloram/triclopyr 1:200 parts water + wetting agent
118	Myrtaceae	Eugenia uniflora (Brazilian cherry)	4	ST/O	N/A	Stems: CS&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	T/A	Seedlings: Hand pull	Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 or G200 + MM (ref 1).
120	Poaceae	Brachiaria decumbens (signal grass)	4	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).
121	Fabaceae	Stylosanthes scabra (shrubby stylo)	4	H/A	N/A	Vines: CS&P (1:1.5) or spray G100 + MM or MM (ref 1).
122	Commelinaceae	Commelina benghalensis (hairy wandering jew)	4	H/O	Collect and Bag	Spray G200 or G200 – MM (ref 1).
123	Poaceae	Pennisetum purpureum (elephant grass)	2	H/O	Grazing or mechanical removal	N/A (ref 2).
124	Zingiberaceae	Hedychium coronarium (wild ginger)	2	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).
125	Phytolaccaceae	Phytolacca octandra (inkweed)	10	H/O	Hand pull or crown	CS&P (G1.5) or CS&P (G1.5); spray G100 (ref 1).
126	Asclepiadaceae	Asclepias curassavica (red cotton bush)	9	S/O	Hand pull; Slash	Slash and/or spray G100 (ref 1).
127	Solanaceae	Lycium ferocissimum (African boxthorn)	1?	S/O	N/A	Stems: CS&P (G1.5); Regrowth: spray G200 + MM (ref 1).
128	Mimosaceae	Prosopis pallida (algaroba)	2	ST/O	When using mechanical control methods, it is important to remove the bud zone of the root system (about 30cm below the ground surface). If this is not removed, re-shooting can occur.	Basal bark - triclopyr + pidoram Access® @ 1L/60L diesel Cut stump - triclopyr + pidoram Access® @ 1L/60L diesel Overall spray - triclopyr + pidoram Grazon DS® @ 350ml/100L water plus a wetting agent if plant is growing actively
129	Juncaceae	Juncus articulatus (jointed rush)	1	Ha/FO	Hand pull.	Spot spray with Glyphosate, 2,2-DPA or MCPA + dicamba (ref 3).
130	Cactaceae	Opuntia aurantiaca (tiger pear)	1	S/O	Biological controls available. cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	Spray; Basal Bark application. Injection. Triclopyr .8 /60l diesel. Picloram + Triclopyr. 1L/60L diesel. Amitrole: 1m /3cm (ref 3).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
131	Poaceae	Arundo donax (giant reed)	1	H/O	Physical removal of small infestations.	Spot spray or cut stump and spray with Glyphosate (ref 5).
132	Cactaceae	Opuntia imbricata (rope pear)	1	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).
133	Bignoriaceae	Pyrostegia venusta (flame vine)	1	V/O	N/A	CS&P (G1.5); spray G200 (ref 1).
134	Poaceae	Cortaderia selloana (pampas grass)	2	H/O	Small Plants: dig out by hand or machine	Stems: C&P (G1.5) or cut back and slash and spray regrowth G100 (ref 1).
135	Solanaceae	Solanum hispidum (giant devil's fig)	5	S/O	Hand pull	Spray G100 (ref 1).
136	Agavaceae	Furcraea foetida (Cuban hemp)	3	S/OA	Dig out by hand or machine	CS& P near ground or spray MM (ref 1).
137	Agavaceae	Furcraea selloa (hemp)	1	S/OA	Dig out by hand or machine	CS& P near ground or spray MM (ref 1).
138	Agavaceae	Agave americana (century plant)	4	S/OA	Dig out by hand or machine	CS& P near ground or spray MM (ref 1).
139	Rutaceae	Murraya paniculata cv. Exotica (murraya)	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	S/OA	slashing hinders growth, giving some control if plants are slashed before they seed	Grazor 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	H/O	Manually grub and destroy.	Spray G100 and replace with local species (ref 1).
142	Balsaminaceae	Impatiens walleriana (balsam)	2	H/O	N/A	Spray G100 (ref 1).
143	Agavaceae	Agave sisalana (sisal)	2	S/OA	Dig out by hand or machine	CS& P near ground or spray MM (ref 1).
144	Agavaceae	Agave vivipara var. vivipara (sisal)	2	S/OA	Dig out by hand or machine	CS& P near ground or spray MM (ref 1).
145	Rosaceae	Prunus munsoniana (wild goose plum)	7	ST/A	Seedlings: Hand pull	Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 (ref 1).
146	Poaceae	Echinochloa crus-galli (barnyard grass)	6	H/A	Hand pull or dig out small infestations.	Spot spraying with Glyphosate or 2,2-DPA (ref 3).
147	Asteraceae	Solidago canadensis var. scabra (Canadian goldenrod)	7	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	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	Ha/FO	Physical removal of small infestations.	Spot Spray with Glyphosate at 1.0L:100L water (ref 5).
150	Nymphaeaceae	Nymphaea mexicana (yellow waterlily)	2	Ha/O	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	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	S/O	Hand pull	Spray G100 (ref 1).
153	Malvaceae	Sida rhombifolia (Paddy's lucerne)	9	S/O	Hand pull or dig out.	Spray with 2,4-D amine or fluoxypyr (ref 3).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
154	Poaceae	Themeda quadrivalvis (grader grass)	8	H/A	Hand pull or dig out small infestations.	Spot spraying with Glyphosate or 2,2-DPA (ref 3).
155	Poaceae	Andropogon virginicus (whisky grass)	6	H/A	Hand pull or dig out small infestations.	Spot spraying with Glyphosate or 2,2-DPA (ref 3).
156	Bignoriaceae	Jacaranda mimosifolia (jacaranda)	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 (squirrel tail)	2	S/O	Hand pull small 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')	1	T/O	Mechanical or chain removal.	Basal Bark or cut stump application. Triclopyr 600g/L at 1.0L:120L diesel, Triclopyr + Pidoram 240 g/l + 120 g/l at 1.0L:60L diesel, Pidoram 45 g/kg undiluted (ref 5).
159	Simaroubaceae	Ailanthus altissima (tree of heaven)	1?	T/O	Seedlings: Hand pull	Seedlings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 or MM (ref 1).
160	Poaceae	Echinochloa colona (awnless barnyard grass)	9	H/A	Hand or mechanical removal of small infestations	Spray: glyphosate @ 13mL/1L water (ref 2).
161	Cyperaceae	Cyperus brevifolius (Mullumbimby couch)	8	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 .and—commercial/industrial. rights of way - Glyphosate-ipa, glyphosate mas, imazapyr
162	Moraceae	Morus alba (white mulberry)	3	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	Araceaceae	Colocasia esculenta (taro)	3	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	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 madagascarensis (buddleja)	5	S,V/O	N/A	Stems: CS&P (1:1.5); Vines: spray or cut down and spray regrowth G200 (ref 1).
166	Bignoriaceae	Tecoma capensis (Cape honeysuckle)	3	ST/O	N/A	Stems. CS&P (G1.5) or spray G200. Seeds: collect, bag and remove (ref 1).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
167	Cactaceae	Harrisia martinii (harrisia cactus)	2?	S/O	The use of the biological mealy-bug agent is recommended	Triclopyr + picloram at 1.0L:60L diesel, Dichloprop 600g/L at 1.0L/60L water, metsulfuron methyl 600 g/l at 2.0l :100L water Ref 5).
168	Acanthaceae	Thunbergia laurifolia (laurel clock vine)	1	V/O	N/A	CS&P (G1.5); spray G200 (ref 1).
169	Fabaceae	Erythrina crista-galli (cockspur coral tree)	2?	T/O	N/A	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?	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?	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).
172	Acanthaceae	Hypoestes phyllostachya (polka-dot plant	3	H/O	Hand pull or crown and dispose	Spray G200 or G200 + MM (ref 1).
173	Caprifoliaceae	Sambucus canadensis (American elder)	3	ST/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).
174	Asteraceae	Conyza sumatrensis (tall fleabane)	9	H/O	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).
175	Fabaceae	Tipuana tipu (tipuana)	2	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	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).
177	Caesalpiniaceae	Chamaecrista rotundifolia (round-leaf cassia)	6	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	H/A	Hand or mechanical removal of young plants	Herbicide Control - Glyphosate 7m /L water; Dichloberil 600g/100m2; Fluazifop 50-100mL/10L water (ref 2).

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Notes:
Note: Herbicides must be applied by appropriately qualified/ supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered products (such rates supersede those noted in above tables), or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable.
Note: Source for information contained on this page from Queensland Herbarium (Qld Gov't).

amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	17.08.2018	Revised Tender	GC

Date Feb 16

Plan of: Harry Ratnam Park
Weed Treatment & Removal Strategy
Sheet 3

Drawn by. FW
Checked by GC / MS
Project: Woodlinks Village Estate H.R.Park
Client: Canberra Estate Consortium No. 36

SCALE: AS NOTED

North

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Woodlinks Village Estate - Harry Ratnam Park

Weed Treatment & Removal Strategy - Sheet 4

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
179	Asteraceae	Conyza canadensis (Canadian fleabane)	10	H/O	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 cyathophara (painted spuge)	8	H/O	Hand pull	Spray G100 (ref 1).
181	Poaceae	Setaria palmitolia (palm leaf setaria)	5	H/O	Hand pull or dig up	Spray G100 (ref 1).
182	Euphorbiaceae	Euphorbia heterophylla (milk weed)	5	H/O?	Hand pull	Spray G100 (ref 1).
183	Fabaceae	Desmodium intortum (greenleaf desmodium)	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. Monitor regrowth over 2 - 3 years (ref 1).
184	Poaceae	Pennisetum setaceum (fountain grass)	3	H/O	Hand Pull	Spot Spray: glyphosate or 2,2-DPA (ref 3)
185	Asteraceae	Conyza bonariensis (flax-leaf fleabane)	7	H/O	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 tobacco bush)	7	S/O	Hand pull	Spray G100 (ref 1).
187	Poaceae	Stenotaphrum secundatum (buffalo grass)	3	H/AO	Hand or mechanical removal of small infestations	Spray: glyphosate @ 13mL/1L water (ref 2)
188	Apocynaceae	Cascabela thevetia (syn. Thevetia peruviana) (yellow oleander)	5	ST/O	Hand pull small infestations. Slashing can be used but should be followed up by herbicide application.	Basal bark application of fluroxypyr (35mL:1L Diesel); Stem injection Glyphosate (1L:2L Water); Cut stump application of fluroxypyr (1.5L Diesel: Foliar Spray of fluroxypyr 1:100 for larger plants. 1:200 for seedlings (ref 2).
189	Rubiaceae	Coffea arabica (coffee)	3	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).
190	Bignoniaceae	Spathodea campanulata (African tulip tree)	12	T/O	N/A	Saplings: CS&P (G1.5) Trees: F/I (G1.5); Seedlings: spray G200 (ref 1).
191	Fabaceae	Macroptilomaxillare (perennial horse gram)	4	V,H/A	N/A	Vines: CS&P (1:1.5) or spray G100 – MM or MM (ref 1).
192	Iridaceae	Watsonia meriana var. bulbillifera (bulbil watsonia)	?	H/O	Dig up, bag and remove	Spray G200 + MM (ref 1).
193	Passifloraceae	Passiflora edulis (passior fruit)	6	V/AO	Hand Pull	CS&P (G1.5); spray G200 or G200 + MM (ref 1).
194	Asteraceae	Zinnia peruviana (wild zinnia)	6	H/O	Seedlings: Hand pull	Shrubs: CS&P or F/I (G1); Seedlings: CS&P (G1.5) or spray G200 (ref 1).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
195	Dracaenaceae	Sansevieria trifasciata (sansevieria)	??	H/O	Hand pull or dig up	Spray G100 + MM (ref 1).
196	Poaceae	Digitaria eriantha (pangola grass)	5	H/A	Hand pull or cultivation	Spot Spray: glyphosate or 2,2-DPA (ref 3)
197	Rosaceae	Friobotrya japonica (loquat)	3	T/O	Seedlings: Hand pull	Saplings: CS&P (G1.5) Trees: F/I (G1.5); Seedlings: spray G200 or G200 + MM or MM (ref 1).
198	Cactaceae	Acanthocereus tetragonus (sword pearl	1	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 3).
199	Mimosaceae	Acacia nilotica subsp. indica (prickly acacia)	3	T/A	Mechanical or chain removal	Basal Bark or cut stump application. Triclopyr 600g/L at 1.0L:120L diesel, Triclopyr + Picloram 240 g/L + 120g/L at 1.0L 60L diesel. Picloram 45 g/kg undiluted (ref 5).
200	Mimosaceae	Acacia farnesiana (mimosa bush)	6	T/A	Mechanical removal of small plants.	Basal Bark or cut stump application of Triclopyr + Picloram 240 g/L + 120 g/L at 1.0L:50L diesel. Foliar application of Clopyralid 300g/L at 500mL:1L water ref 5).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

Explanatory notes:

Sub-region: Number of the ten sub-regions of the Southeast Queensland bioregion (Young and Dillewaard 1999) within which species recorded (Queensland Herbarium data).

Recno.: Total number of records for species within study area, Queensland Herbarium CORVEG and HERBRECS data.

Scores: Based on panel data of invasiveness, 5 (highest) to 1 (moderate). ? indicate doubtful scores.

Life forms: T-tree (woody plant >5m), ST-small tree (2-5m), S-shrub (woody <2m). H-herb (grasses & forbes), Ha-aquatic herbs

Source: A agriculture, O ornamental and landscaping, F fish aquarium, U unintentional introduction and/or contaminant.

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

Abbreviations: Control Methods

CS&P = cut scrape and paint

S&P = scrape and paint

C&P = cut and paint

F/I = frill or inject stem

Abbreviations: Herbicides

G = Glyphosate, eg. Roundup Bioactive, Weedmaster Duo

MM = Metsulfuron methyl, eg. Brush-off

F = Fluroxypyr, eg. Starane

Abbreviations: Herbicide Dilution Rates for High Concentration Applications

GU – Glyphosate undiluted

G1 = 1 part water : 1 part glyphosate

G1.5 = 1.5 parts water to 1 part glyphosate

G4 – 4 parts water to 1 part glyphosate

Abbreviations: Herbicide Spray Concentrations

G100 – 100ml glyphosate per 10L of water + surfactant, eg 30mL L 700per 10L

G200 = 200mL glyphosate per 10L of water + surfactant, eg 50mL L 700per 10L

G100 + MM = 100mL glyphosate – 1.5g metsulfuron methyl per 10L of water – wetting agent, eg. 2mL Agral per 10L water

G200 + MM – 200mL glyphosate + 1.5g metsulfuron methyl per 10L of water + wetting agent, eg. 2mL Agral per 10L water

MM = 1.5g metsulfuron methyl per 10L water – wetting agent, eg. 2mL Agral per 30L water

F100 = 100mL fluroxypyr per 10L water

F150 = 150mL fluroxypyr per 10L water

Other Abbreviations

N = Locally non-indigenous native species

Ref 1. Big Scrub Rainforest Landcare Group (2008), 'Common Weeds of Subtropical Rainforests of Eastern Australia: A practical manual on their identification and control'

Ref 2. Department of Primary Industries and Fisheries (QLD), 'Weeds and pest animals and ants'.

Ref 3. Holland et al. (1995), 'Suburban Weeds'. DPI QLD.

Ref 4. Port Stephens Council (NSW), 'Weed Busters'.

Ref 5. Department 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 berghaltensis. Weed Biology and Management, 9 (1). pp. 54-62.

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

All Herbicides are to be applied by an appropriately qualified / supervised person in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates as identified on registered product labels or an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to SEQ Ecological Restoration Framework for additional guidance.

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Date Feb 16

Plan of: Harry Ratnam Park
Weed Treatment & Removal Strategy
Sheet 4

Drawn by. FW

Checked by GC / MS

Project: Woodlinks Village Estate H.R.Park

Client: Canberra Estate Consortium No. 36

SCALE: AS NOTED

North

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Dwg No. 8051 L 08 B

Woodlinks Village Estate - Harry Ratnam Park **Rehabilitation Notes**

NOTE:
- ALL WORKS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE ACCESS DEED FOR PARK REHABILITATION BETWEEN CANBERRA ESTATES CONSORTIUM NO. 36 PTY LTD & IPSWICH CITY COUNCIL.
- REFER TO SHG LANDSCAPE SPECIFICATIONS AND PRELIMINARIES DESCRIPTION FOR ADDITIONAL REQUIREMENTS FOR CONSTRUCTION AND SITE MANAGEMENT.

REHABILITATION DESIGN & LAYOUT

This Site Based Rehabilitation Plan has been prepared for Canberra Estate Consortium No. 36 Pty Ltd and is designed to enhance and expand the Goodna Creek existing native vegetation areas within the existing Harry Ratnam Park adjacent to the Woodlinks Village 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 is already established, low impact weed removal and rehabilitation techniques are required.

In patches that have undergone previous clearing and disturbance, a more aggressive approach to weed removal and revegetation will be applied.

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 detail.
- Planting densities to achieve an ultimate established tiered vegetation structure.
- 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:

REHABILITATION INTENT
A combination of the following core rehabilitation methods will be employed throughout the site depending on the level of site disturbance, weed infiltration and existing native species vegetation present.

NATURAL REGENERATION

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.

RECONSTRUCTION

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 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

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.

FABRICATION (Type Conversion)

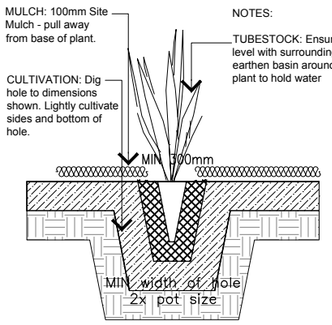
Applies:
- Where site conditions have been irreversibly changed.
- When it is not possible to restore the original native plant community.
- Where a better-adapted local plant community can be planted that will function within the changed conditions.
- In situations such as the construction of a wetland plant community to mitigate increased urban stormwater run-off.
- N.B Revegetation (planting) is the major component in a fabrication program.

The re-establishing planted community should be similar to the naturally occurring plant community of the same type e.g. freshwater wetlands in structure, composition and diversity.

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.

CULTIVATION AND PLANTING



Coat sides of holes and incorporate Gypsum at 5kg per m^3 and water crystals to maintenance recommendations.

Each individual planting location should be spot cultivated to at least 2 times the depth and twice the width of the plant stock size. Refer detail for more specifications:

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 allowed to assist in establishment.

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 deemed as too steep or not suitable for mulching due to frequent overland flows may utilise a combination of mulch and Jute mat and / or suitably anchored natural fibre weed mat installed to manufacturer's 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. Refer to individual schedules for proposed proportions of groundcovers, shrubs and trees within planting areas. Revegetation planting locations shall be generally setout in accordance with a random grid pattern.

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

To maximise plant establishment success rates and minimise plant failure, installation methodology for revegetation works within rehabilitation areas shall include:

- Revegetation works shall be either undertaken or directly supervised by an experienced and qualified contractor.
- All works shall be in accordance with the provisions of this Site Based Rehabilitation Plan & local government policies.
- 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 damage.
- Plants are to be planted immediately after delivery to the planting site. Otherwise, they shall be stored in shade and watered sufficiently.
- 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 to decrease root stress and assess infiltration through soil.
- Incorporate into plant hole, water crystals / hydrating product to manufacturer's recommendations (Hortex 'Rainsaver' / 'Moisturaid' or similar approved).
- Place plant into hole and backfill ensuring that the plant is upright and the stem is not covered in less than 10mm or any more than 20mm of planting medium.
- Plants are to be watered thoroughly immediately after planting (deep irrigation) and thereafter as required during establishment 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 to be applied during planting to manufacturer's recommendations (Nutricote or similar approved) .
- To ensure successful establishment, all planting surfaces must be covered in:
  - a 100mm layer of high quality weed-free composted mulch (site mulch) - Note: avoid possible stem rot ensure mulch is 'dished' and not covering plant stem by more than 20mm.
  - suitable individual anchored natural fibre weed mat; or
- Seedlings and saplings to be encouraged and maintained throughout the establishment period.

MAINTENANCE SCHEDULE

MAINTENANCE SCHEDULE	
Maintenance schedule for revegetation areas of the proposed development as specified on the Landscape 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.*
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 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
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	
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.
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 control measures shall be employed over the rehabilitaion area of the site

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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	09.07.2018	Phase 1 Tender	GC
C	17.08.2018	Revised Tender	GC

Date Feb 16

Plan of: Harry Ratnam Park
Rehabilitation General Notes
Sheet 1

Drawn by. FW
Checked by GC / MS
Project: Woodlinks Village Estate H.R.Park
Client: Canberra Estate Consortium No. 36

SCALE: AS NOTED

North

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Dwg No. 8051 L 09 C

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Zones Notes Sheet 2

ZONES DESCRIPTION

In keeping with the Core Rehabilitation Methods described above, 5 Distinct Zones are applied throughout the rehabilitation areas describing a range of work in Harry Ratnam Park. Refer to Drawing sheets 8051 L 10-17 for an associated full description of proposed plant species, sizes, densities and numbers.

ZONES 1, 1A & 1B Ex.Veg.

Existing Vegetation Areas with Infill Planting and Assisted Natural Regeneration
This large area of intact Vegetation is predominantly weed free with the exception of isolated occurrences of weed species (Lantana, Pepper Trees, Chinese Elms, Blue Billy Goats weed, Singapore Daisy etc) mainly along the creek banks. In the majority of the Zone 1 area the intent is for ongoing native species re-growth to be encouraged from the existing intact seed bank, through the elimination of competition from weed species.

Allowance will be made to allocate reinforcement and re-planting tubestock for this zone. The exact revegetation area and number will be determined following weed management and detailed assessment on site following the initial weed management phase, to revegetate bare areas.

Re-planting in Zone 1 is to be undertaken in two (or possibly more) broad phases:

Intial phases - Higher proportion of tree species in planting mix to increase canopy cover and Follow-up phases - Higher proportion of Shrubs Planting to introduce mid storey open forest structure.

Minor disturbances within Zone 1 will occur as a result of removal of larger areas of weed infestation. Weed treatment will be hand removal and follow up spot spraying. Where significant areas of weed removal occurs such as bare ground areas greater than 10m2, Blanket mulching (or Coir matting in overland flow areas) and tubestock is to be installed.

It is noted that in the majority of locations, a generally continuous layer of existing groundcovers of native grasses such as Blady Grass is present, providing topsoil stability. Accordingly the intent is to install revegetation as single hole plantings amongst retained and protected existing groundcovers and to only install new groundcovers to replace removed weeds. The Planting Mixes for these zones are all weighted primarily towards tree species with some shrub layer species and minimal groundcovers.

Where larger sections of weeds (such as Singapore Daisy) are to be removed in overland flow areas, Coirmatting and high density tubestock planting to min. 3 per m^2 may be required for stablisation.

Within the broader Zone 1 area there are some sections where Canopy cover is more open. In these areas specific higher density revegetation planting mixes are proposed (Zones 1A and 1B as indicated on plan). The exact extent of areas requiring re-planting will be determined following the initial weed management phase.

ZONE 1A Ex.Veg. **(Lower Creek Bank)**

Mainly canopy planting is allowed in this zone to create upper level shade cover through individual plantings typically with 1M dia. mulch circles within existing native grass cover.

The species mix in these locations utilise a higher proportion of plants tolerant of frequent innundation.

ZONE 1B Ex.Veg. **(Mid Creek Bank)**

Mainly canopy planting is allowed in this zone to create upper level shade cover through individual plantings typically with 1M dia. mulch circles within existing native grass cover.

The species mix in these locations utilise a higher proportion of open Eucalypt forest species plants.

ZONES DESCRIPTION CONTINUED

ZONES 2 to 5 Revegetation Planting

As a result of previous land uses, clearing and weed treatments works, these areas are to be rehabilitated through reconstruction procedures. Areas to be rehabilitated include those that are denuded, disturbed and or where bare areas exist following the weed management. Any weed species regrowth is to be eradicated and the area mulched (or matted where nominated in overland flow zones) and revegetated with Koala food and habitat trees, and native shrubs and ground covers. Planting zones are to be dominated by trees, shrub and ground cover species with species selected from pre clear species. Initial Phase planting will focus on the tree planting to promote canopy cover and establish the structure. The ultimate outcome will replicate an established Open Eucalypt Forest.

ZONE 2 Mulch Planting Areas

EXISTING CLEARED AREAS TO BE CONVERTED FROM GRASS TO TIERED PLANTING

MULCHED PLANTING AREAS, TIERED PLANTING STRUCTURE:
Ultimate species mix of Trees, Shrubs and Groundcovers.
75mm Tubestock Rehabilitation, 100mm Site Mulch on Modified Site Topsoil to 1: 4 Max. batters.
Refer to Plant Schedules for species composition and density.

ZONE 2A **(Mid Creek Bank)**

These zones are located between the creek and the mapped Q100 high inundation line. The species mix in these locations utilise a higher proportion of plants tolerant of frequent innundation.

ZONE 2B **(Upper Creek Bank)**

These zones are located between the mapped Q100 high inundation line and the pathway edges to the east. The species mix in these locations utilise a higher proportion of open Eucalypt forest species plants.

ZONE 3 Mulch Plant. Power. **POWERLINE EASEMENT - MULCHED**

DISTURBED AREAS FOLLOWING EARTHWORKS (OUTSIDE OF FLOW PATHS)
PLANTING AREAS - NOTE: NOT PART OF INITIAL PHASE WORKS

ZONES DESCRIPTION CONTINUED

ZONE 4 Tree Planting

MULCHED SINGLE AND GROUPED TREES IN EXISTING GRASSED AREAS:
In areas between existing pathway and house lots, tree species are proposed into existing grassed areas with no understorey planting, trees will be set back from pathway edges and rear lot boundaries to allow for safe management and CPTED sightlines.

Trees planted in Tree Guards
75mm Tubestock Rehabilitation species, 100mm Site Mulch x 1.0M Dia. circles into Modified Site Topsoil planting holes.
Refer to Plant Schedules and Typical Layout Plan 8051 L 18 for species composition and density.

ZONE 5 Future Works

STORMWATER REHABILITATION & SHARED USE AREAS BY ICC
These areas have been designated by ICC for future works to install stormwater devices and local recreational park outcomes. These areas will be maintained as slashed open grass to maintain flexibililty for construction outcomes by ICC in the future.

NOTE: Coir Mat Plant.

COIR MATTING PLANTING AREAS IF REQUIRED ON SITE
If during site investigations following weed removal or during construction works it is considered by the Site Superintendant that site mulch should be substituted with a bio-degradable matting solution, Coir matting will be installed. Matting will be installed to manufacturer's recommendations to existing & disturbed ground in areas only where frequent overland flows are expected.

PLANTING DETAILS:
75mm Tubestock Rehabilitation species mix of Trees, Shrubs and Groundcovers.
"Coir Matting Polyfabrics Tecmat TMC9" (Thickest Version rated to cater for flow velocity of 4.8m/s).

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Date Feb 16

Plan of: Harry Ratnam Park
Rehabilitation Zone Notes Sheet 2

Drawn by. FW
Checked by GC / MS
Project: Woodlinks Village Estate H.R.Park
Client: Canberra Estate Consortium No. 36

SCALE: AS NOTED

North

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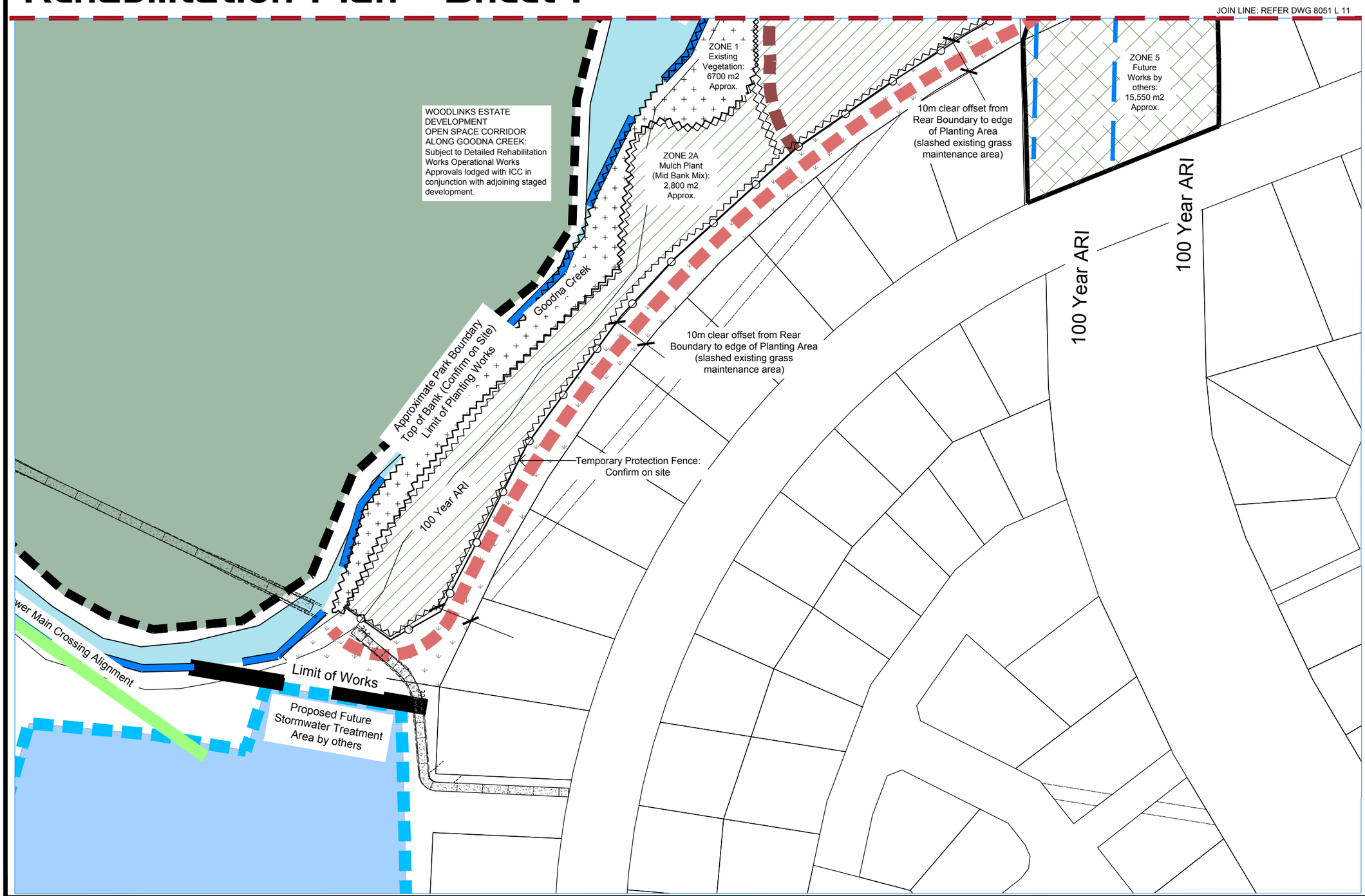
Dwg No. 8051 L 10 C

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plan - Sheet 1



LEGEND

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REFER TO DWG 8051 L 08 & 09
REHABILITATION NOTES FOR DETAILED DESCRIPTIONS
REFER TO DWGS 8051 L 16
FOR DETAILED PLANT SCHEDULES

INTIAL PHASE WORKS

ZONE 1Ex.Veg. (See Notes)
EXISTING VEGETATION COVER -
INFILL OPEN AREAS WITH FUTURE PHASE WORKS, REINFORCEMENT PLANTING AS REQUIRED TO EXISTING BARE AREAS & BARE AREAS AFTER INITIAL WEED MANAGEMENT

ZONE 2A (Mid Bank) & ZONE 2B (Upperbank)
BROAD SCALE REVEGETATION -
MULCHED PLANTING AREA

ZONE 3 - NOT PART OF INITIAL WORKS
POWERLINE EASEMENT -
MULCHED PLANTING AREAS, NO TREES OR LARGE SHRUBS PLANTING STRUCTURE

ZONE 4
TREE PLANTING -
MULCHED SINGLE TREES WITHIN MANAGED EXISTING GRASS

ZONE 5
FUTURE WORK BY OTHERS -
STORMWATER & REHABILITATION SHARED USE AREAS: BY ICC

CONCRETE PEDESTRIAN / CYCLE PATH -
EXISTING 2M WIDE INSIDE PARK

3M WIDE MAINTENANCE TRACKS -
REHABILITATION AREAS FOR ONGOING MANAGEMENT
REFER TO NOTES ON PLANS:

(EXISTING GRASS SLASHED TRACK)

(WEED SPRAY & 100MM MULCH SPREAD ON EXISTING GROUND)

EXISTING DRAINAGE SWALES -
AREAS EXCLUDED FROM WORKS TO ALLOW UNIMPEDED FLOWS AND PREVENT SCOURING TO REHABILITATION AREAS.

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PLANTING LIMIT OF WORKS APPROXIMATE ONLY - CONFIRM LOCATION ON SITE. BASED ON ACTUAL TOP OF BANK LIMIT.

TEMPORARY PROTECTION FENCING -
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Date Feb 16

Plan of: Harry Ratnam Park
Rehabilitation Plan LOT 7000
Sheet 1

Drawn by. FW

Checked by GC / MS

Project: Woodlinks Village Estate H.R.Park

Client: Canberra Estate Consortium No. 36

SCALE:
1:500@A1
1:1000@A3
0 5 10 25m

North

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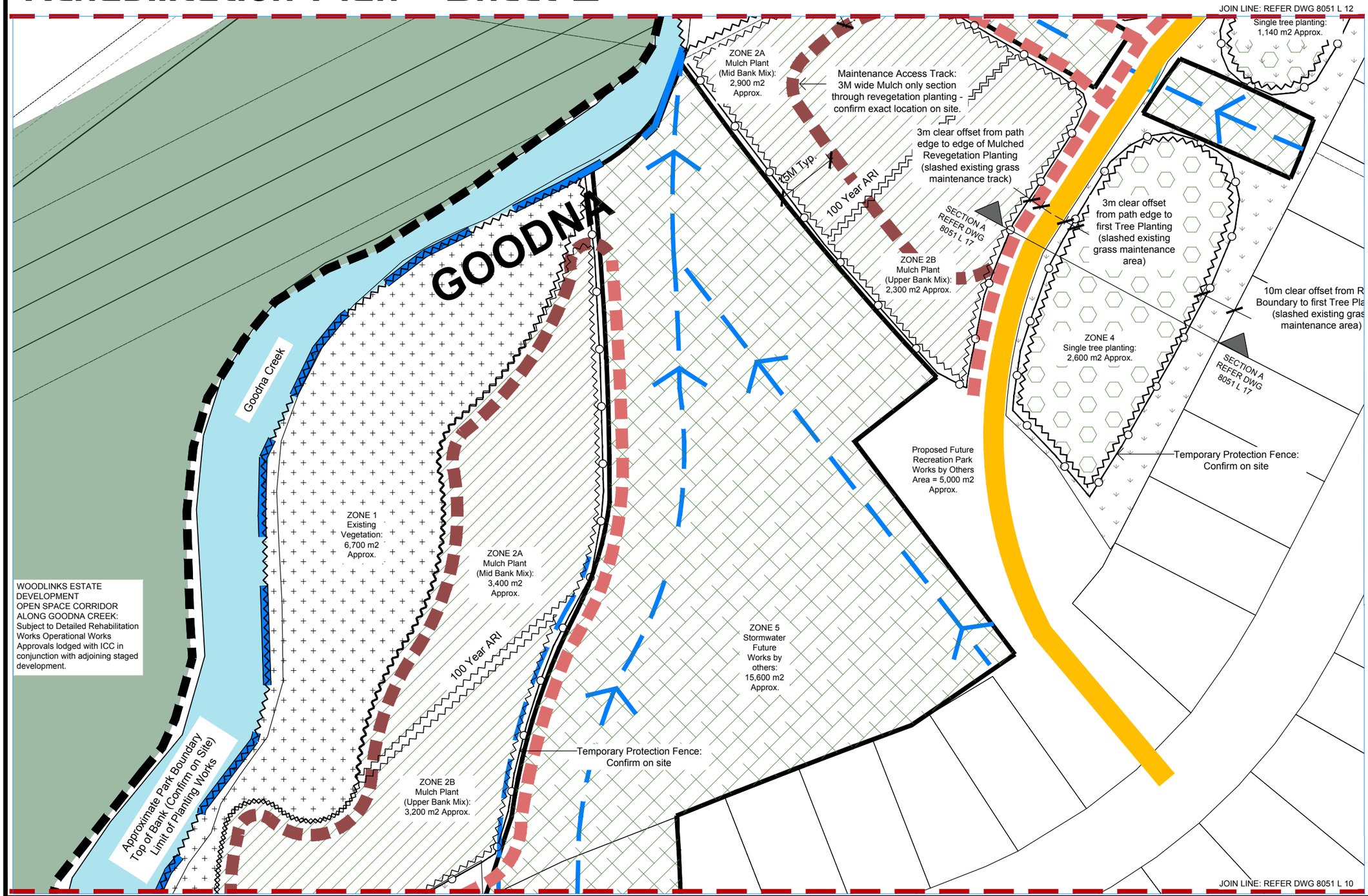
Dwg No. 8051 L 11 C

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plan - Sheet 2



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REFER TO DWG 8051 L 08 & 09
REHABILITATION NOTES FOR DETAILED DESCRIPTIONS
REFER TO DWGS 8051 L 16
FOR DETAILED PLANT SCHEDULES

INTIAL PHASE WORKS

ZONE 1Ex.Veg. (See Notes)
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ZONE 4
TREE PLANTING -
MULCHED SINGLE TREES WITHIN MANAGED EXISTING GRASS

ZONE 5
FUTURE WORK BY OTHERS -
STORMWATER & REHABILITATION SHARED USE AREAS: BY ICC

CONCRETE PEDESTRIAN / CYCLE PATH -
EXISTING 2M WIDE INSIDE PARK

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REHABILITATION AREAS FOR ONGOING MANAGEMENT
REFER TO NOTES ON PLANS:

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(WEED SPRAY & 100MM MULCH SPREAD ON EXISTING GROUND)

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A	12.02.2016	Preliminary	GC
B	20.11.2017	Tender (Stage 7)	GC
C	09.07.2018	Phase 1 Tender	GC
D	17.08.2018	Revised Tender	GC

Date Feb 16

Plan of: Harry Ratnam Park
Rehabilitation Plan LOT 7000
Sheet 2

Drawn by. FW
Checked by GC / MS
Project: Woodlinks Village Estate H.R.Park
Client: Canberra Estate Consortium No. 36

SCALE:
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1:1000@A3
0 5 10 25m

North

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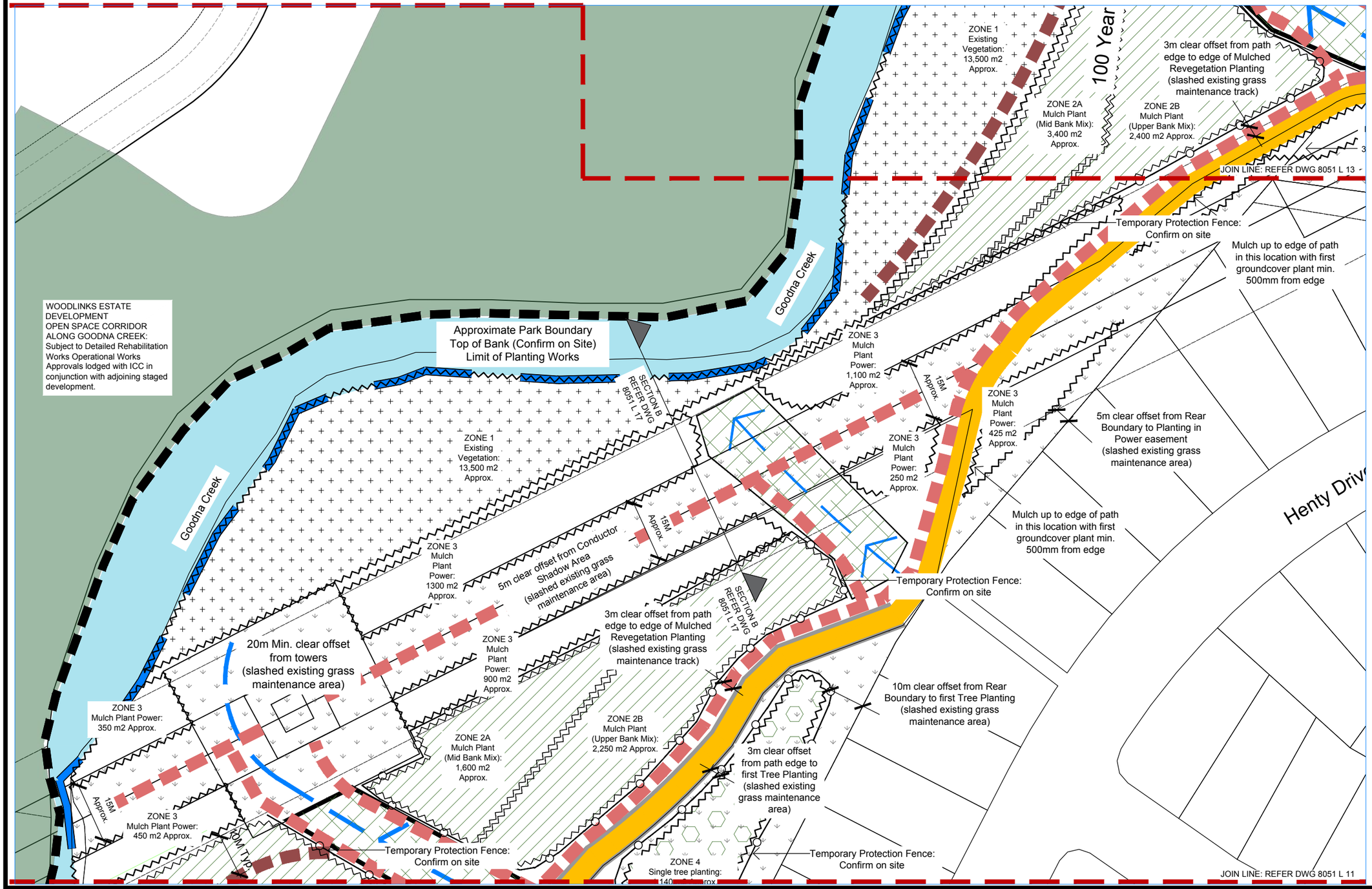
Dwg No. 8051 L 12 D

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plan - Sheet 3



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FOR DETAILED PLANT SCHEDULES

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ZONE 5
FUTURE WORK BY OTHERS -
STORMWATER & REHABILITATION SHARED USE AREAS: BY ICC

CONCRETE PEDESTRIAN / CYCLE PATH -
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C	17.08.2018	Revised Tender	GC

Date Feb 16

Plan of: Harry Ratnam Park
Rehabilitation Plan LOT 7000
Sheet 3

Drawn by. FW
Checked by GC / MS
Project: Woodlinks Village Estate H.R.Park
Client: Canberra Estate Consortium No. 36

SCALE:
1:500@A1
1:1000@A3
0 5 10 25m

North

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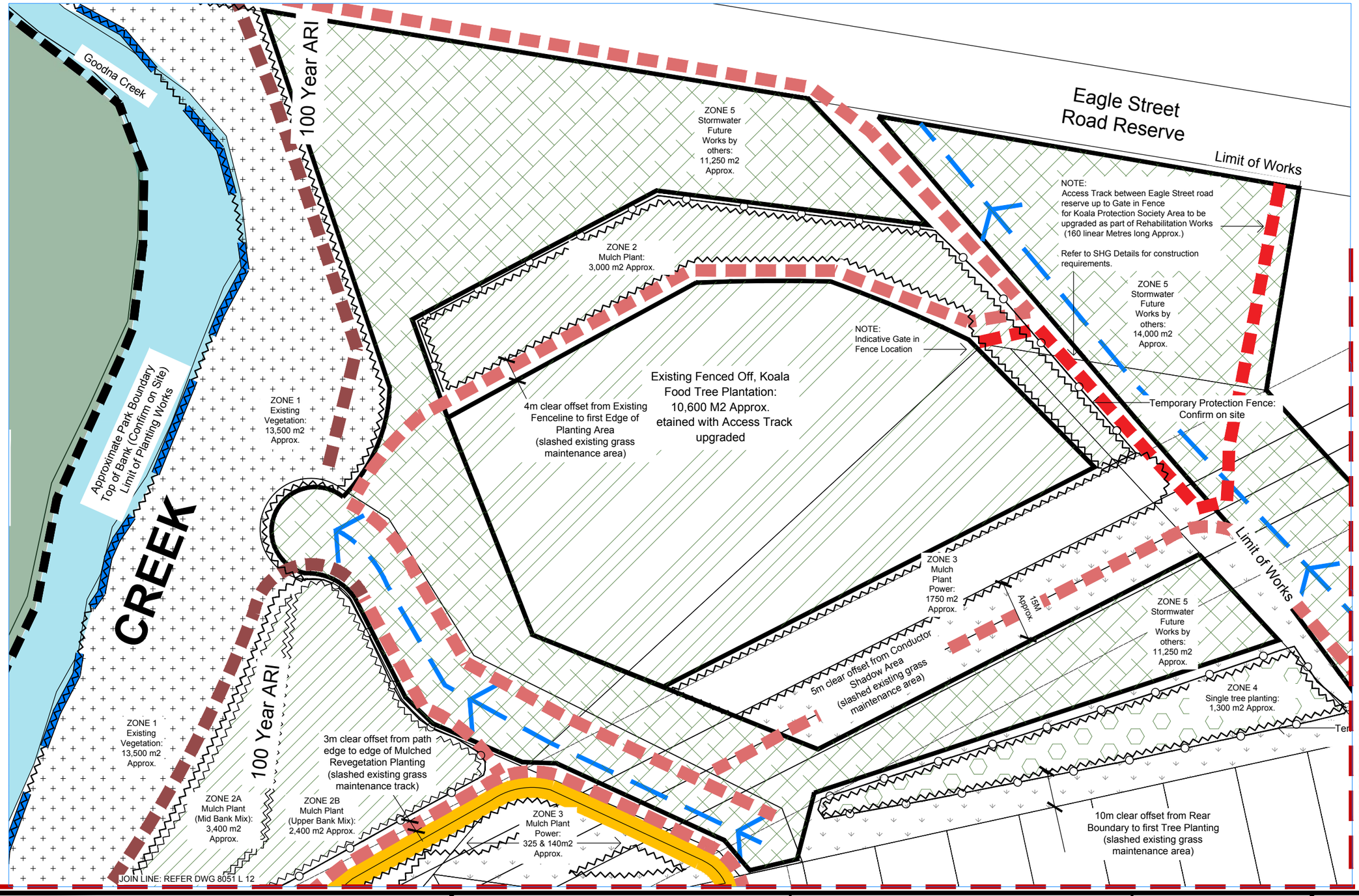
Dwg No. 8051 L 13 C

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plan - Sheet 4



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REHABILITATION NOTES FOR DETAILED DESCRIPTIONS
REFER TO DWGS 8051 L 16
FOR DETAILED PLANT SCHEDULES

INTIAL PHASE WORKS

ZONE 1Ex.Veg. (See Notes)
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TREE PLANTING -
MULCHED SINGLE TREES WITHIN MANAGED EXISTING GRASS

ZONE 5
FUTURE WORK BY OTHERS -
STORMWATER & REHABILITATION SHARED USE AREAS: BY ICC

CONCRETE PEDESTRIAN / CYCLE PATH -
EXISTING 2M WIDE INSIDE PARK

3M WIDE MAINTENANCE TRACKS -
REHABILITATION AREAS FOR ONGOING MANAGEMENT
REFER TO NOTES ON PLANS:

(EXISTING GRASS SLASHED TRACK)

(WEED SPRAY & 100MM MULCH SPREAD ON EXISTING GROUND)

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C	09.07.2018	Phase 1 Tender	GC
D	17.08.2018	Revised Tender	GC

Date Feb 16

Plan of: Harry Ratnam Park
Rehabilitation Plan LOT 7000
Sheet 4

Drawn by. FW
Checked by GC / MS
Project: Woodlinks Village Estate H.R.Park
Client: Canberra Estate Consortium No. 36

SCALE:
1:500@A1
1:1000@A3
0 5 10 25m

North

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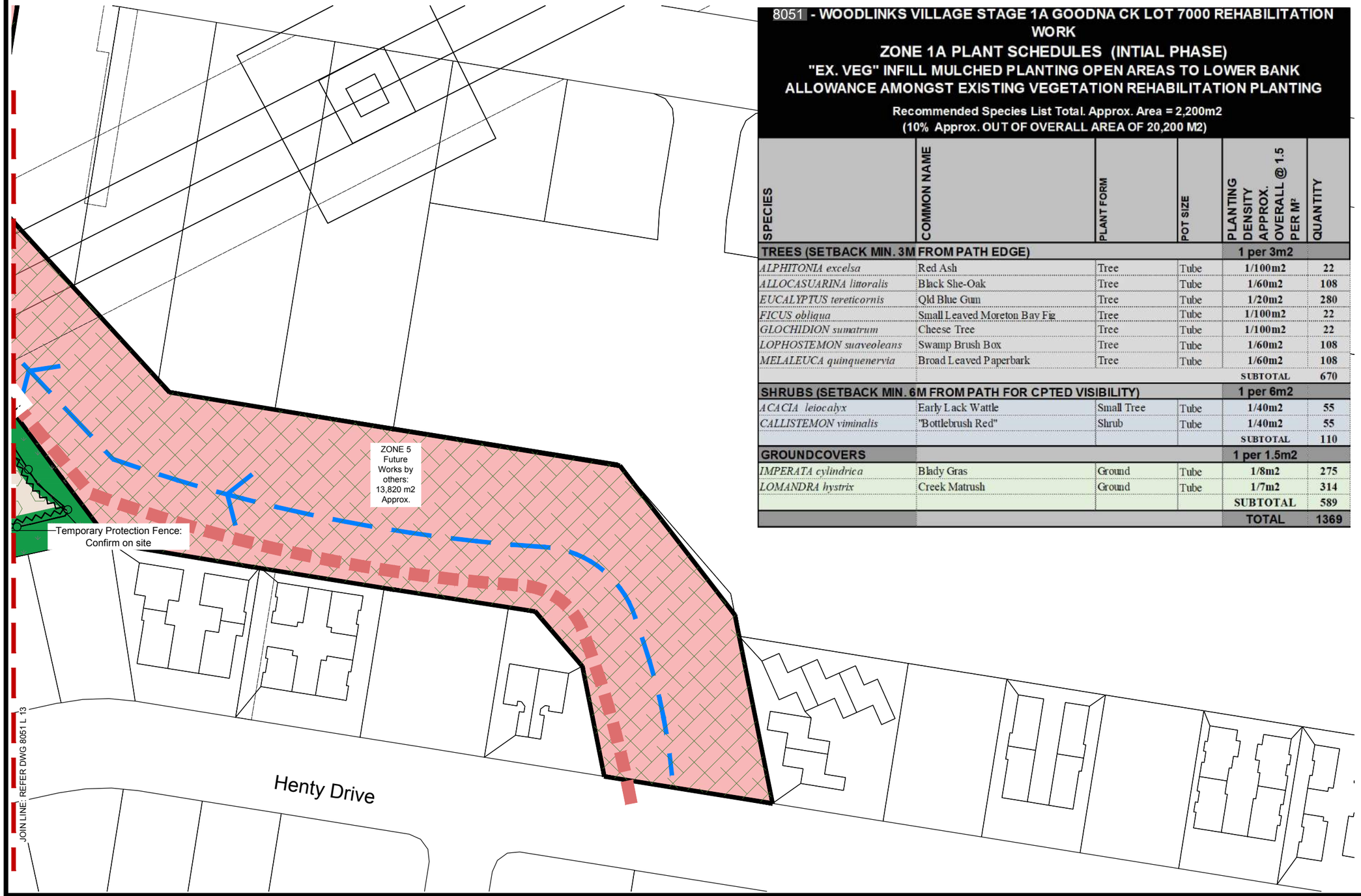
Dwg No. 8051 L 14 D

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plan - Sheet 5



8051 - WOODLINKS VILLAGE STAGE 1A GOODNA CK LOT 7000 REHABILITATION WORK

ZONE 1A PLANT SCHEDULES (INTIAL PHASE)

"EX. VEG" INFILL MULCHED PLANTING OPEN AREAS TO LOWER BANK ALLOWANCE AMONGST EXISTING VEGETATION REHABILITATION PLANTING

Recommended Species List Total. Approx. Area = 2,200m2
(10% Approx. OUT OF OVERALL AREA OF 20,200 M2)

SPECIES	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY APPROX. OVERALL @ 1.5 PER M²	QUANTITY
TREES (SETBACK MIN. 3M FROM PATH EDGE)				**1 per 3m2**	
ALPHITONIA excelsa	Red Ash	Tree	Tube	1/100m2	22
ALLOCASUARINA littoralis	Black She-Oak	Tree	Tube	1/60m2	108
EUCALYPTUS tereticornis	Qld Blue Gum	Tree	Tube	1/20m2	280
FICUS obliqua	Small Leaved Moreton Bay Fig	Tree	Tube	1/100m2	22
GLOCHIDION sumatrum	Cheese Tree	Tree	Tube	1/100m2	22
LOPHOSTEMON suaveoleans	Swamp Brush Box	Tree	Tube	1/60m2	108
MELALEUCA quinquenervia	Broad Leaved Paperbark	Tree	Tube	1/60m2	108
				SUBTOTAL	670
SHRUBS (SETBACK MIN. 6M FROM PATH FOR CPTED VISIBILITY)				**1 per 6m2**	
ACACIA leiocalyx	Early Lack Wattle	Small Tree	Tube	1/40m2	55
CALLISTEMON viminalis	"Bottlebrush Red"	Shrub	Tube	1/40m2	55
				SUBTOTAL	110
GROUNDCOVERS				**1 per 1.5m2**	
IMPERATA cylindrica	Blady Gras	Ground	Tube	1/8m2	275
LOMANDRA hystrix	Creek Matrush	Ground	Tube	1/7m2	314
				SUBTOTAL	589
				TOTAL	1369

LEGEND

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REFER TO DWG 8051 L 08 & 09
REHABILITATION NOTES FOR DETAILED DESCRIPTIONS
REFER TO DWGS 8051 L 16
FOR DETAILED PLANT SCHEDULES

INTIAL PHASE WORKS

ZONE 1Ex.Veg. (See Notes)
EXISTING VEGETATION COVER -
INFILL OPEN AREAS WITH FUTURE PHASE WORKS, REINFORCEMENT PLANTING AS REQUIRED TO EXISTING BARE AREAS & BARE AREAS AFTER INITIAL WEED MANAGEMENT

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TREE PLANTING -
MULCHED SINGLE TREES WITHIN MANAGED EXISTING GRASS

ZONE 5
FUTURE WORK BY OTHERS -
STORMWATER & REHABILITATION SHARED USE AREAS: BY ICC

CONCRETE PEDESTRIAN / CYCLE PATH -
EXISTING 2M WIDE INSIDE PARK

3M WIDE MAINTENANCE TRACKS -
REHABILITATION AREAS FOR ONGOING MANAGEMENT
REFER TO NOTES ON PLANS:

(EXISTING GRASS SLASHED TRACK)

(WEED SPRAY & 100MM MULCH SPREAD ON EXISTING GROUND)

EXISTING DRAINAGE SWALES -
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Date Feb 16

Plan of: Harry Ratnam Park
Rehabilitation Plan LOT 7000
Sheet 5

Drawn by. FW
Checked by GC / MS
Project: Woodlinks Village Estate H.R.Park
Client: Canberra Estate Consortium No. 36

SCALE:
1:500@A1
1:1000@A3
0 5 10 25m

North

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Dwg No. 8051 L 15 B

Zone 2A

8051 - HARRY RATNAM PARK, GOODNA CK REHABILITATION WORK
ZONE 2A (MID BANK - BELOW Q100) PLANT SCHEDULES (INTIAL PHASE)
"MULCH PLANT" MULCHED REHABILITATION PLANTING AREAS
Recommended Species List Total. Approximate Area = 12,200m2

SPECIES	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY APPROX. OVERALL @ 2.0 PER 1M²	QUANTITY
TREES (SETBACK MIN. 3M FROM PATH EDGE)				**1 per 4m2**	
ALPHITONIA excelsa	Red Ash	Tree	Tube	1/100m2	122
ALLOCASUARINA littoralis	Black She-Oak	Tree	Tube	1/60m2	172
CORYMBIA intermedia	Pink Bloodwood	Tree	Tube	1/60m2	200
CORYMBIA tessellaris	Moreton Bay Ash	Tree	Tube	1/80m2	305
EUCALYPTUS crebra	Narrow Leaved Ironbark	Tree	Tube	1/80m2	305
EUCALYPTUS moluccana	Grey Box	Tree	Tube	1/80m2	305
EUCALYPTUS propinqua	Grey Gum	Tree	Tube	1/100m2	122
EUCALYPTUS siderophloia	Northern Grey Ironbark	Tree	Tube	1/80m2	305
EUCALYPTUS tereticornis	Qld Blue Gum	Tree	Tube	1/20m2	610
GLOCHIDION sumatrum	Cheese Tree	Tree	Tube	1/100m2	122
LOPHOSTEMON confertus	"Brush Box"	Tree	Tube	1/100m2	122
LOPHOSTEMON suaveoleans	Swamp Brush Box	Tree	Tube	1/60m2	180
MELALEUCA quinquenervia	Broad Leaved Paperbark	Tree	Tube	1/60m2	180
				SUBTOTAL	**3050**
SHRUBS (SETBACK MIN. 6M FROM PATH FOR CPTED VISIBILITY)				**1 per 6m2**	
ACACIA leiocalyx	Early Lack Wattle	Small Tree	Tube	1/40m2	305
BANKSIA integrifolia	Coastal Banksia	Small Tree	Tube	1/75m2	163
CALLISTEMON viminalis	"Bottlebrush Red"	Shrub	Tube	1/40m2	305
DAVIESIA villifera	Prickly Pea	Shrub	Tube	1/75m2	163
DODONAEA triquetra	Forest Hop Bush	Shrub	Tube	1/75m2	163
HOVEA acutifolia	Purple Pea Bush	Shrub	Tube	1/40m2	305
JACKSONIA scoparia	Dogwood	Shrub	Tube	1/75m2	163
LEPTOSPERMUM polygafolium	Wid May	Shrub	Tube	1/40m2	305
PITTOSPORUM undulatum	"Sweet Pittosporum"	Shrub	Tube	1/75m2	163
				SUBTOTAL	**2033**
GROUNDCOVERS				**1 per 12m2**	
BOTHRIOCHLOA sp.	"Beardgrass"	Ground	Tube	1/80m2	33
DIANELLA caerulea	Flax Lilly	Ground	Tube	1/10m2	33
GOODENIA rotundifolia	Star Goodenia	Ground	Tube	1/80m2	49
IMPERATA cylindrica	Blady Gras	Ground	Tube	1/8m2	159
LOMANDRA hystrix	Creek Matrush	Ground	Tube	1/7m2	219
LOMANDRA longifolia	Matrush	Ground	Tube	1/6m2	369
MYOPORUM ellipticum	Boobiala	Ground	Tube	1/10m2	69
THEMEDA triandra	Kangaroo Grass	Ground	Tube	1/10m2	69
				SUBTOTAL	**1000**
				TOTAL	**6083**

Zone 1B

8051 - WOODLINKS VILLAGE STAGE 1A GOODNA CK LOT 7000 REHABILITATION WORK
ZONE 1B PLANT SCHEDULES (INTIAL PHASE)
"EX. VEG" INFILL MULCHED PLANTING OPEN AREAS TO MID CREEK BANK
Recommended Species List Total. Approx. Area = 1300m2 (10% OUT OF OVERALL AREA OF 20,200 M2)

SPECIES	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY APPROX. OVERALL @ 1.0 PER 1M²	QUANTITY
TREES (SETBACK MIN. 3M FROM PATH EDGE)				**1 per 3m2**	
ALPHITONIA excelsa	Red Ash	Tree	Tube	1/100m2	22
ALLOCASUARINA littoralis	Black She-Oak	Tree	Tube	1/60m2	36
CORYMBIA intermedia	Pink Bloodwood	Tree	Tube	1/60m2	36
CORYMBIA tessellaris	Moreton Bay Ash	Tree	Tube	1/80m2	71
EUCALYPTUS crebra	Narrow Leaved Ironbark	Tree	Tube	1/80m2	75
EUCALYPTUS moluccana	Grey Box	Tree	Tube	1/80m2	73
EUCALYPTUS propinqua	Grey Gum	Tree	Tube	1/100m2	22
EUCALYPTUS siderophloia	Northern Grey Ironbark	Tree	Tube	1/80m2	72
EUCALYPTUS tereticornis	Qld Blue Gum	Tree	Tube	1/40m2	169
GLOCHIDION sumatrum	Cheese Tree	Tree	Tube	1/100m2	22
LOPHOSTEMON suaveoleans	Swamp Brush Box	Tree	Tube	1/60m2	36
MELALEUCA quinquenervia	Broad Leaved Paperbark	Tree	Tube	1/60m2	36
				SUBTOTAL	**670**
SHRUBS (SETBACK MIN. 6M FROM PATH FOR CPTED VISIBILITY)				**1 per 12m2**	
ACACIA leiocalyx	Early Lack Wattle	Small Tree	Tube	1/40m2	93
CALLISTEMON viminalis	"Bottlebrush Red"	Shrub	Tube	1/40m2	92
				SUBTOTAL	**185**
GROUNDCOVERS				**1 per 2m2**	
IMPERATA cylindrica	Blady Gras	Ground	Tube	1/8m2	293
LOMANDRA hystrix	Creek Matrush	Ground	Tube	1/7m2	332
LOMANDRA longifolia	Matrush	Ground	Tube	1/6m2	385
				SUBTOTAL	**1010**
				TOTAL	**1865**

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plants Sheet 1

saunders havill group
40 YEARS 1975–2015
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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	17.08.2018	Revised Tender	GC

Date Feb 16

Plan of: Harry Ratnam
Intial Phase Rehabilitation Plan Plants Sheet 1

Drawn by. FW
Checked by GC / MS
Project: Woodlinks Village Estate H.R.Park
Client: Canberra Estate Consortium No. 36

SCALE: AS NOTED

North

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Dwg No. 8051 L 16 B

Zone 2B

8051 - HARRY RATNAM PARK, GOODNA CK REHABILITATION WORK
ZONE 2B (UPPER BANK - ABOVE Q100 LINE) PLANT SCHEDULES
(INTIAL PHASE)
"MULCH PLANT" MULCHED REHABILITATION PLANTING AREAS

Recommended Species List Total. Approximate Area = 10,150m2

SPECIES	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY APPROX. OVERALL @ 2.0 PER 1M²	QUANTITY
TREES (SETBACK MIN. 4M FROM PATH EDGE)				**1 per 4m2**	
ALPHITONIA excelsa	Red Ash	Tree	Tube	1/60m2	166
CORYMBIA intermedia	Pink Bloodwood	Tree	Tube	1/60m2	254
CORYMBIA tessellaris	Moreton Bay Ash	Tree	Tube	1/50m2	324
EUCALYPTUS crebra	Narrow Leaved Ironbark	Tree	Tube	1/80m2	223
EUCALYPTUS moluccana	Grey Box	Tree	Tube	1/50m2	324
EUCALYPTUS propinqua	Grey Gum	Tree	Tube	1/80m2	218
EUCALYPTUS siderophloia	Northern Grey Ironbark	Tree	Tube	1/80m2	219
EUCALYPTUS tereticornis	Qld Blue Gum	Tree	Tube	1/30m2	677
LOPHOSTEMON confertus	Brush Box	Tree	Tube	1/75m2	135
				SUBTOTAL	2540
SHRUBS (SETBACK MIN. 4M FROM PATH - LOW DENSITY FOR CPTED VISIBILITY				**1 per 6m2**	
ACACIA leiocalyx	Early Lack Wattle	Small Tree	Tube	1/40m2	254
BANKSIA integrifolia	Coastal Banksia	Small Tree	Tube	1/75m2	135
CALLISTEMON viminalis	"Bottlebrush Red"	Shrub	Tube	1/40m2	254
CRYPTOCARYA triplinervis	"Three-veined Cryptocarya"	Shrub	Tube	1/75m2	135
DAVIESIA villifera	Prickly Pea	Shrub	Tube	1/75m2	135
DODONAEA triquetra	Forest Hop Bush	Shrub	Tube	1/75m2	135
HOVEA acutifolia	Purple Pea Bush	Shrub	Tube	1/50m2	203
JACKSONIA scoparia	Dogwood	Shrub	Tube	1/75m2	135
LEPTOSPERMUM polygafolium	Wid May	Shrub	Tube	1/50m2	203
PITTOSPORUM undulatum	"Sweet Pittosporum"	Shrub	Tube	1/75m2	135
				SUBTOTAL	1726
GROUNDCOVERS				**1 per 12m2**	
BOTHRIOCHLOA sp.	"Beardgrass"	Ground	Tube	1/35m2	70
CYMOBOPOGON refractus	Barb-wire Grass	Ground	Tube	1/20m2	118
IMPERATA cylindrica	Blady Gras	Ground	Tube	1/7m2	162
LOMANDRA longifolia	Matrush	Ground	Tube	1/4m2	263
THEMEDA triandra	Kangaroo Grass	Ground	Tube	1/5m2	237
				SUBTOTAL	850
				TOTAL	5116

Single Tree Planting

8051 - HARRY RATNAM PARK, GOODNA CK REHABILITATION WORK
IINTIAL PHASE - TREE PLANTING
SINGLE TREE PLANTING IN GRASSED AREAS BETWEEN PATHWAY AND HOUSES WITHIN ZONE 4

Recommended Species List Total. Approximate Area = 5,040m2

SPECIES	COMMON NAME	PLANT FORM	POT SIZE	MATURE HEIGHT (m)	DENSITY OVERALL @ 1.0 PER 18M²	QTY.
TREES (PHASE 1)						
CORYMBIA tessellaris	Moreton Bay Ash	Tree	Tube	35	1/360m2	14
EUCALYPTUS crebra	Narrow Leaved Ironbark	Tree	Tube	35	1/180m2	28
EUCALYPTUS moluccana	Grey Box	Tree	Tube	35	1/180m2	28
EUCALYPTUS propinqua	Grey Gum	Tree	Tube		1/180m2	28
EUCALYPTUS siderophloia	Northern Grey Ironbark	Tree	Tube	35	1/180m2	28
EUCALYPTUS tereticornis	Qld Blue Gum	Tree	Tube	45	1/51m2	98
LOPHOSTEMON confertus	Brush Box	Tree	Tube	35	1/360m2	14
LOPHOSTEMON suaveoleans	Swamp Brush Box	Tree	Tube	35	1/360m2	14
MELALEUCA quinquenervia	Broad Leaved Paperbark	Tree	Tube	25	1/180m2	28
					TOTAL	280

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plants Sheet 2

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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	09.07.2018	Phase 1 Tender	GC
C	17.08.2018	Revised Tender	GC

Date Feb 16

Plan of: Harry Ratnam
Intial Phase Rehabilitation Plan Plants Sheet 1

Drawn by. AB
Checked by GC / MS
Project: Woodlinks Village Estate H.R.Park
Client: Canberra Estate Consortium No. 36

SCALE: AS NOTED

North

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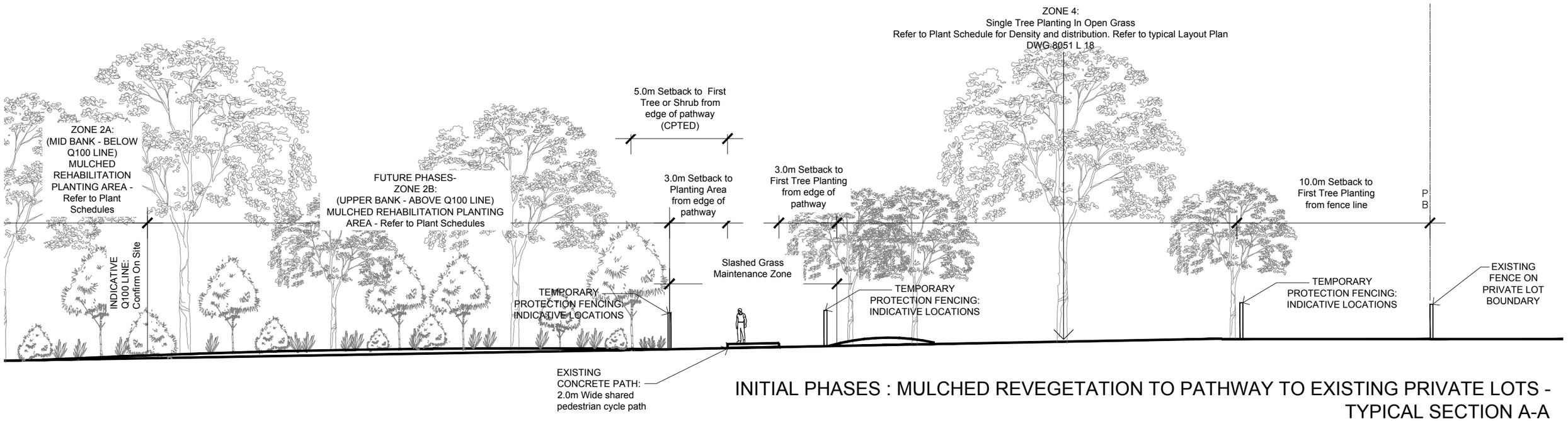
Dwg No. 8051 L 17 C

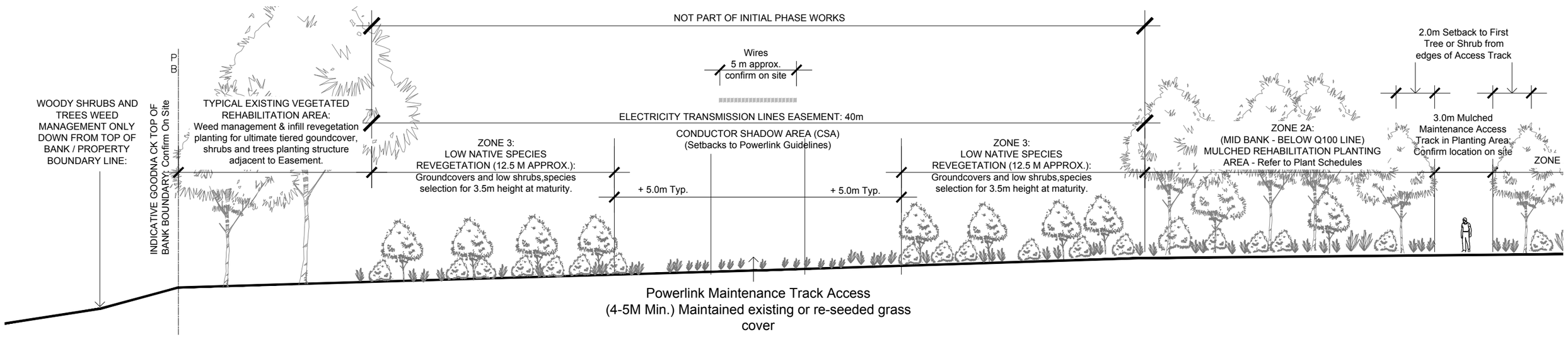
Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plan Sections



INITIAL PHASES : MULCHED REVEGETATION TO PATHWAY TO EXISTING PRIVATE LOTS - TYPICAL SECTION A-A

Approximate Scales 1:100 @A1 / 1:200 @ A3



FUTURE PHASES: GOODNA CREEK TO POWERLINK EASEMENT TO MULCHED REVEGETATION - TYPICAL SECTION B-B

Approximate Scales 1:100 @A1 / 1:200 @ A3

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A	12.02.2016	Preliminary	GC
B	09.07.2018	Phase 1 Tender	GC
C	17.08.2018	Revised Tender	GC

Date Feb 16

Plan of: Harry Ratnam Park
Rehabilitation Sections

Drawn by. FW

Checked by GC / MS

Project: Woodlinks Village Estate H.R.Park

Client: Canberra Estate Consortium No. 36

SCALE:
AS SHOWN

North

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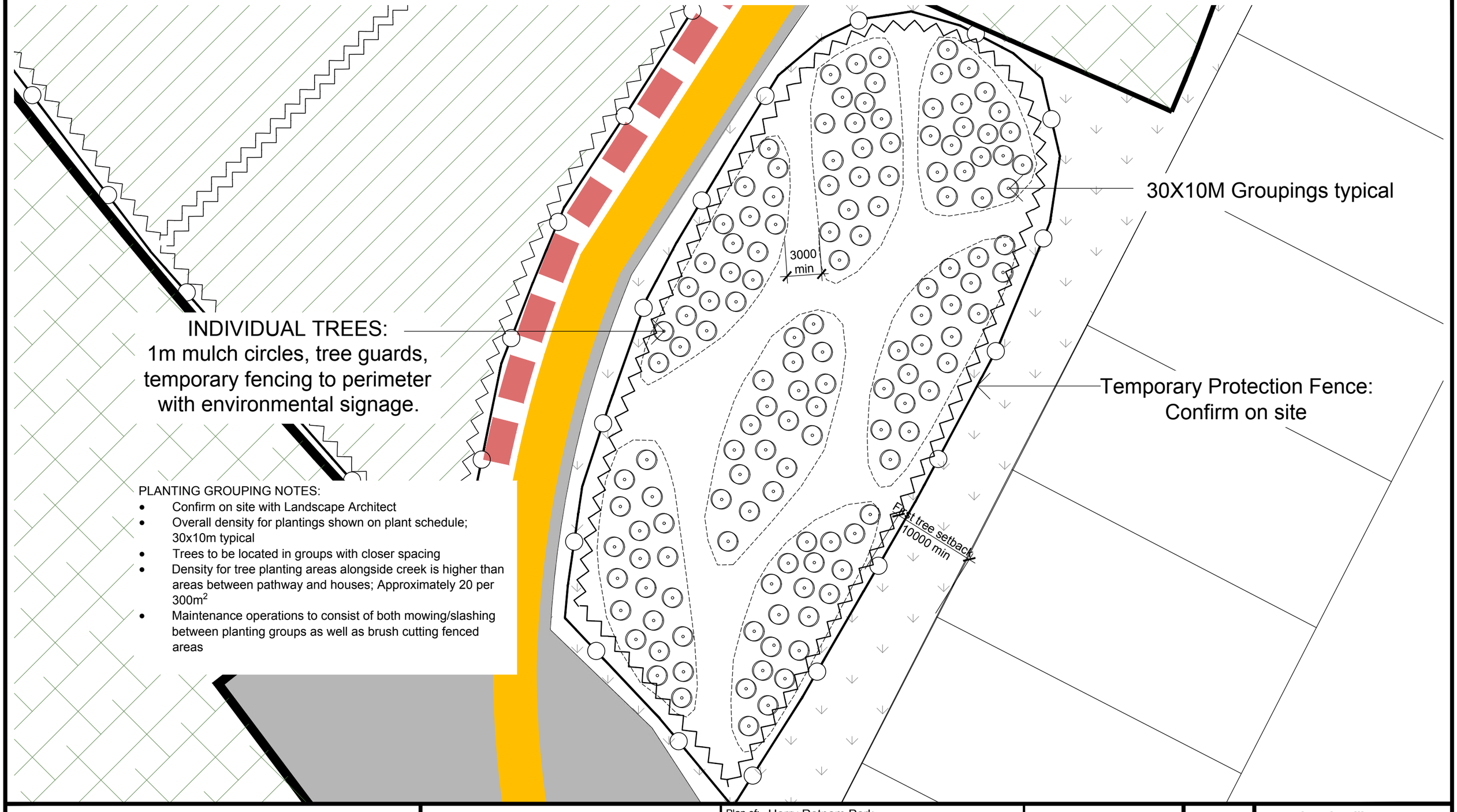
Dwg No. 8051 L 18 C

Woodlinks Village Estate - Harry Ratnam Park

Phase 1 - Single Tree Planting Typical Layout Plan



PLANTING GROUPING NOTES:

- Confirm on site with Landscape Architect
- Overall density for plantings shown on plant schedule; 30x10m typical
- Trees to be located in groups with closer spacing
- Density for tree planting areas alongside creek is higher than areas between pathway and houses; Approximately 20 per 300m^2
- Maintenance operations to consist of both mowing/slashing between planting groups as well as brush cutting fenced areas

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amendments:

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Date Feb 16

Plan of: Harry Ratnam Park
Phase 1 - Single Tree Plating Layout Plan

Drawn by. AB
Checked by GC / MS
Project: Woodlinks Village Estate H.R.Park
Client: Canberra Estate Consortium No. 36

SCALE:
1:250@A1
1:500@A3
0 5 10m

North

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Dwg No. 8051 L 19 B

Appendix D

Lifestyle guidelines for Woodlinks Village

Protecting and supporting

the local koala population at Woodlinks Village

WOODLINKS

Did you know...

koalas have a relatively well-defined home range and regularly visit the same trees?

As a new resident to Woodlinks Village you also form part of the future custodians of the Goodna Creek Environmental Corridor. You may not have seen them yet, however from time to time you will hear or glimpse the local koala population living side by side with residents of Woodlinks. The vegetated land on Goodna Creek has been purposely set aside, protected and rehabilitated to ensure the existing local koala usage of the site continues as the village is constructed and ultimately completed. To ensure Goodna Creek continues to function for koala movement all residents need to play a role in making sure this vulnerable species is able to coexist as the estate evolves into a full community.

Despite the retention of the corridor and trees along Goodna Creek, as a resident there are a simple ways you can help reduce the dangers koalas face when traversing urban environments.

Legislation

The koala is listed as a Vulnerable Fauna Species under the Commonwealth Government's Environment Protection and Biodiversity Conservation Act 1999 and the Queensland Government's Nature Conservation Act 1992. Along with specific controls put in place by Ipswich City Council all of these levels of government have had a role in the assessment and approval of the Woodlinks Village estate. The Goodna Creek Corridor is one of the first environmental offsets approved by the Commonwealth Government since the listing of the Koala in 2012.

Koala Trees in Landscaping

Did you know an adult koala can eat up to 1 kilo of gum leaves each night?

Any tree can provide shelter or refuge for a koala when avoiding predators or adverse weather, however a number of the large Eucalypt and Corymbia species along Goodna Creek are preferred for food and habitat. These trees have been protected and are currently being bolstered for this purpose. Importantly none of the street trees or fresh landscaping away from the Goodna Creek includes new koala food tree plantings. These have been deliberately excluded from the estate to avoid attracting koalas outside of the corridor to where housing occurs and the risk of dog attack or vehicle strike is amplified.

You can support this outcome by ensuring you don't plant large gum trees around your own house and gardens (these species are not that suitable for these areas regardless of the koala).

Road Etiquette & Koala Safety

Did you know koalas are mostly asleep during the day and are actively moving around and feeding at night?

A common cause of koala deaths in urbanised parts of Queensland is being run over by a motor vehicle. When complete you will see signage and traffic calming devices along the Goodna Creek Esplanade Road as a constant reminder for drivers to be aware of the potential for a koala to wander through this area. Residents are encouraged to adhere to the reduced speed limits applied to this road, particularly at night.

Responsible Pet Ownership

Dog attacks on koalas result in death or very serious injuries. All dogs have the ability to cause stress to koalas with medium and large dogs more responsible for physical attacks. The Goodna Creek Corridor Parkland should only be utilised by dogs on a lead in constant control of the pet owner. Once the esplanade road is completed signage explaining these requirements will be installed at all entry and exit points to the parkland.

Dogs can behave differently when their owner is not present, particularly if a strange person or animal enters their territory. You can minimise the potential for your dog to attack a koala by ensuring it's contained to your property when not on a lead, particularly at night.

If You Find a Sick, Injured or Orphaned Koala

Don't try to handle a sick or injured koala, as you may put yourself or the animal in a situation where there is a risk of further injury. Koalas can also become easily stressed. Leave the koala undisturbed and ensure it is safe from further threats then contact either of the following groups for assistance:

The Ipswich Koala Protection Society – Koala Rescue
Phone: (07) 5464 6274 or
(07) 3832 5035

Daisy Hill Koala Centre
Daisy Hill Road,
Daisy Hill Qld 4127
Phone: (07) 3299 1032

Prepared by: saunders havill group