

Annual Compliance Report

24 June 2019 to 23 June 2020 – EPBC 2013/6866 Woodlinks Village – Master Planned Residential Community, Collingwood Park, Queensland Canberra Estates Consortium No. 36 Pty Ltd 23 September 2020

Woodlinks Village

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by Saunders Havill Group for Canberra Estates Consortium No. 36 Pty Ltd.

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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.

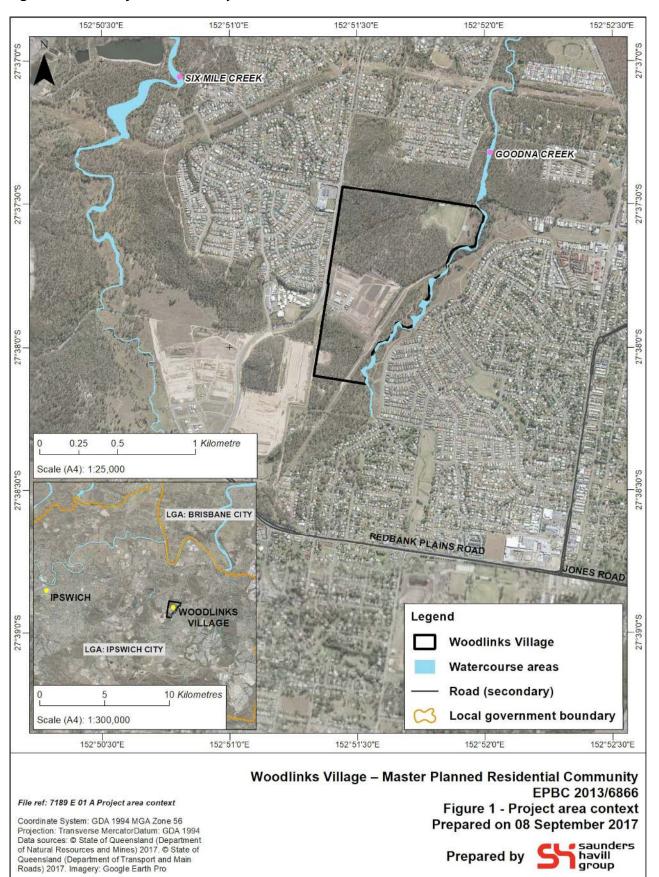
The project's progress and notable events during the reporting period are detailed in Section 3. The assessment of compliance with the approval conditions is presented in **Section 4**. This report is the fourth Annual Compliance Report for the approved action.

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 2019 to 23 June 2020
Address	246-326 Collingwood Drive, Collingwood Park
Local government area	Ipswich City Council



Figure 1: Project area locality



EPBC 2013/6866 Woodlinks Village 23 September 2020



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	the eticlina.
Full name	Murray Saunders
Position	Director
Organisation	Saunders Havill Group (ABN 24 144 972 949)
Date	22 September 2020

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 217 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 2019-2020 reporting period with the assistance of AW Environmental Consultants (AWEC). As part of this work, a fauna spotter was in attendance at all times during clearing activities. AWEC 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 2019 Annual Compliance Report, development activities have included:

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

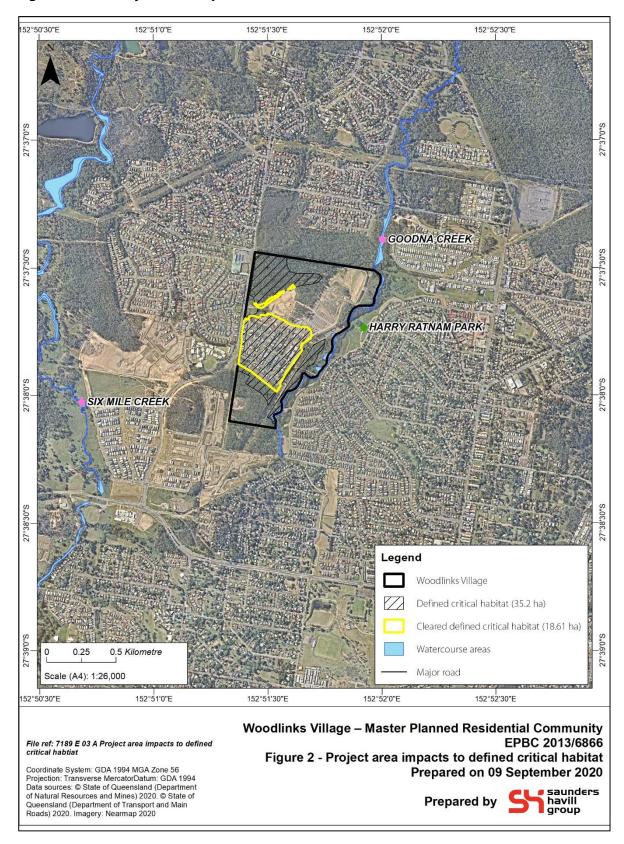
The project has delivered 217 residential lots to the market since commencement. **Table 1** summarises the current status of the project in conjunction with **Section 4.2** below. **Figure 2** illustrates the impacts to habitat critical to the survival of the Koala as defined in the approval and listed in **Table 1**.

Table 1: Development details

Total dwellings (approved)	1,000
Dwellings under construction/constructed	217
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	18.61 ha
Total current clearing of non- critical habitat	16.48 ha
Total current clearing (critical and non-critical habitat)	35.09 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.
- 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 lpswich City Council ownership and is therefore secured and protected. Improvement works are on hold awaiting formal feedback and clarity from lpswich 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 five 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 achieved practical completion stage on 2 July 2019.
- On-maintenance commenced 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
- 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 and weed management and rehabilitation works status overview.

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 across all rehabilitation allotments, with a particular focus on Lot 7002 and 7003 was conducted by two ecologists from Saunders Havill Group on 31 August, 2020. Improvement works have reached practical completion stage, and were assessed as showing successful establishment (refer **Photo set 1**, **Photo set 2** and **Photo set 3**) 11-months into the 24-month on-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 31 August, 2020 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:

- The 2020 SAT survey results indicated Koala presence throughout the rehabilitation portion of the site, particularly along the Goodna Creek Corridor. Four (4) SAT surveys for Koala scats were carried out across the rehabilitation portion of the site to determine if Koala presence has continued in this area. Evidence of Koala usage was found throughout (refer to **Photo set 4**), indicating continued presence along the Goodna Creek Corridor. No direct observations of Koalas were made.
- All 4 SAT surveys carried out across the site recorded 'Low Use' using the Phillips and Callaghan (2011)
 Guide for 'The Spot Assessment Technique'.
- 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).

It should be noted that due to economic pressures associated with COVID-19, a thermal UAV survey to determine Koala presence along the Goodna Creek corridor was not undertaken during this reporting period.







Photo set 4: Koala scats observed within the Goodna Creek Corridor.

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.	·	A total of approximately 18.61 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 35.09 ha of which 18.61 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.	Compliant	On 15 October 2014 the Department approved the KMP and provided confirmation that the KMP met the requirements of condition 2.
	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.		Implementation of the KMP is detailed in section 7 of this report and Table 3 .
	b) The Koala Management Plan must be implemented prior to commencement of the action, or as otherwise directed in writing by the Minister.		



Condition	Condition	Is the project	Evidence/comments
number /		compliant with	
reference		this condition?	

- c) The Koala Management Plan must include, but not be limited to:
 - 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	implement med of 27 hectares,	residual impacts to Koala, the approval holder must chanisms to provide enduring protection, over a minimum to the offset site, referred to as 'Goodna Creek Offset and crea' as shown in Attachment 1.	Compliant	As described in <i>Section 4 Offset Actions</i> , dedication and enduring protection of the offset area is a sequential process and 16.5 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.		Ratnam Park are pending formal feedback from Ipswich City Counc as to the deed of access currency In total, 32.8 ha is currently protected (including Goodna Creek).
	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.		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: 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 		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.
	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,		



Condition number / reference	Condition	on	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.		
	the lim	e Offset Management Plan must be developed in consultation with e Department and other relevant stakeholders, including but not nited to, the Ipswich City Council and Ipswich Koala Protection ciety.		
	co	e approval holder must give consideration to how offsets will ntribute to programs or incentives that align with the broader ategies and programs for the conservation and protection of alas.		
	e. Th	e 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.	·	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.	•	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.		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		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 2019 Annual Compliance Report due date was Monday 23 September, 2019 and notification to the Department was provided on 24 September, 2019.
			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.		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.		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,		The Minister has not provided a direction to revise a plan specified in the conditions.



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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.	• •	The action commenced on 24 June 2015.

It should be noted that the 2019 Annual Compliance Report (prepared by Saunders Havill Group) incorrectly documented the total clearing activities for the 24 June 2018 – 23 June 2019 period. It has been clarified that clearing documented in the 2019 Annual Compliance Report, in particular Stage 16, included clearing for Stages 17, 18 and 22. As such, the clearing for the reporting period should have totalled 9.72 ha (2.59 ha was defined as critical habitat). The clearing for Stages 16, 17, 18 and 22 was reported in the QFC Fauna Management and Spotter/Catcher Services Report (May 2019) which was included in the 2019 Annual Compliance Report.



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.	aware of the KMP requirements and could readily access a copy via the
KMP-2	Protection and Management Plan (WPMP) and Wildlife and Habitat Impact Mitigation Plan (WHIMP)), attendance at key project milestones such as the prestart meeting, pre-clearance reporting and post-works reporting. The fauna	During the reporting period a total of 5.25 ha of clearing activities were undertaken (0.59 ha was defined as critical habitat). Throughout these clearing activities (including pre-clearance and post-clearance), AWEC was engaged to provide fauna spotter/catcher services at Woodlinks Village. AWEC reports include data on fauna 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.
КМР-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 23, firebreak management and sewer construction 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 onsite pre-start held with Ipswich City Council.



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stakeholders and the public.

Vegetation clearing activities are supervised by suitably qualified person/s that AWEC supervised all vegetation clearing activities which included inspecting adhere to current industry practices that protect the welfare of animals. These the demarcated boundary of the works area and ensuring clear paths for fauna activities require demarcating the vegetation clearing limit prior to to reach safe havens were provided. AWEC's Standard Operating Procedure commencing clearing work. Subsequent reporting is made available to detailed the processes employed to safely and effectively minimise the potential harm caused to fauna during vegetation clearance. AWEC 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 23, firebreak management and sewer construction vegetation clearing and Stage 9, 17, 18, 19, 22, 23 and 24 major civil works were completed during this reporting period. Prior to clearing, the works area was demarcated and the fencing was signed-off by Ipswich City Council at the pre-start meeting. The fencing installed excluded fauna from entering the works area. Additionally, daily inspections of the fencing were completed by the contractor.

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 previous reporting periods, 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 residential areas. Residents will be informed of the preference for planting non- emphasised. 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.

allotments and the Goodna Creek open space area. Additionally, landscape Approved landscape works do not include Koala trees in the species mix. design will avoid planting known Koala food or shelter trees in areas outside of Community awareness of the Goodna Creek corridor and function is an the Goodna Creek open space area to discourage Koalas from entering ongoing campaign and the fencing requirements required are strongly

> 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.

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 previous reporting periods.



■ Annual Compliance Report

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 AWEC, lpswich City Council and the approval holder with guidance and reference to the approved OMP and KMP.
OMP-2	of clearing. Adhere to industry standards whereby construction activities work	During the reporting period a total of 5.25 ha of clearing activities were undertaken. Throughout these clearing activities (including pre-clearance and post-clearance), AWEC was engaged to provide fauna spotter/catcher services at Woodlinks Village. Consultant AWEC provides fauna spotter catcher services in line with current industry standards and in accordance with permit requirements administered by the Queensland Government. AWEC reports include data on fauna 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 <i>Section 4 Offset Actions</i> , dedication and enduring protection of the offset area is a sequential process and 16.50 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.
OMP-5	an on-maintenance period of 18 months. Each stage of rehabilitation is scheduled for completion within three years of stage commencement. After the	Rehabilitation allotment 7000 and 7001 met scheduling targets during the 2017-2018 reporting period and is pending handover over to Ipswich City Council. Stage 7002 and 7003 were completed as one scope of works during the previous reporting period and achieved practical completion on 2 July 2019 with on-maintenance beginning 24 September 2019 due for completion 24 September 2021. 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	Council. Monitoring will include the identification of corrective actions required	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. Lots 7002 and 7003 were completed as one scope of works during the previous reporting period and achieved practical completion 2 July



		2019 with on-maintenance beginning 24 September 2019 due for completion 24 September 2021.
OMP-10	removal and control, natural regeneration and new threats that may arise.	The protected Goodna Creek open space area where revegetation works are complete was regularly inspected by a registered landscape architect and lpswich 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.
		Lots 7002 and 7003 were completed as one scope of works during the previous reporting period and achieved practical completion 2 July 2019 with onmaintenance beginning 24 September 2019 due for completion 24 September, 2021. Improvement works in this area are being 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

AWEC Fauna Spotter Catcher Services Reports

Appendix C

Harry Ratnam Park operational works drawings (17 August 2018) and weed management and rehabilitation works status overview

Appendix D

Lifestyle guidelines for Woodlinks Village



Appendix A

EPBC approval and conditions granted 30 October 2014





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 i	s 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

- 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:
 - provision for a qualified fauna spotter-catcher to undertake surveys and handling of Koalas prior to and during commencement of the action;
 - construction of temporary and permanent fauna exclusion fencing;
 - 3. implementation of appropriate vehicle speed limits;
 - 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
 - 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:
 - identification of a website in which information would be made available to the public;
 - timing and frequency for providing reporting information to the Department;
 - 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.

Attachment 1:



Appendix B

AWEC Fauna Spotter Catcher Services Reports





Fauna Post-clearance Report

SHADFORTH CIVIL CONTRACTORS

4280/2015/MAMC/A

Palaszczuk Avenue

Collingwood Park, QLD

Clearing Works- 10th -13th & 17th December 2019



Document prepared by:

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Revision History

Rev No	Issue Date	Revision Details	Prepared By	Reviewed By	Approved By
0	December 2019	Issue for Use	Yolande Venter	Joel Keady	Joel Keady
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2					

Document Approval

Approved:	Name	Signature ///	Date
Company Director	Joel Keady	W. A.	January 2020
		fleath	

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1. Introduction

1.1. Background

Australia Wide Environmental Consultants (AWEC) were commissioned by SHADFORTH CIVIL CONTRACTORS to manage fauna during the clearing works on Palaszczuk Avenue in Collingwood Park, Queensland (See Figure 1).

1.2. Ecologist and Qualifications

The AWEC nominated Ecologist is Yolande Venter who is a degree qualified ecologist/environmental coordinator with over 10 years of field experience within the ecology and environmental sectors.

1.3. Scope

- A desktop review of the site's potential ecological value and any planning constraints, including but not limited to-
 - a. QLD Nature Conservation Act 1992 (NC Act) flora and fauna species database (Wildlife Online);
 - Development Assessment Provisions Module 8 Native
 Vegetation Clearing State Code & QLD Vegetation Management Act 1999;
 - c. QLD SEQ Koala State Regulatory Planning Provisions;
 - d. Commonwealth's Environment Protection and Biodiversity Conservation Act
 1999 (EPBC Act) Protected Matters Search Tool database.
- 2. A site inspection which included ground trothing the desktop review findings and a fauna survey.
- 3. Managing fauna during clearing works

2. Methodology

2.1. Pre-clearance Survey

The purpose of the survey is to record the sites overall habitat value, significant habitat features, vegetation connectivity within the site and surrounding lots, fauna signs and opportunistic fauna sightings and the site's suitability for the significant flora species likely to occur in the area.



For this survey, significant fauna habitat features are described as tree hollows (branch and crown), native wildlife nests (stick nests), burrows (feeding burrows), fallen/felled timber, thick ground-cover, fissured bark, rocky outcrops, aquatic habitat and flora species considered Koala habitat trees under the Nature conservation (Koala) conservation plan 2006.

This survey is to include a targeted amphibian search which will incorporate frog call recording, playing frog calls, an active search in suitable habitat and dip netting.

Prior to clearing works commencing there is a load reduction trapping program proposed for 1-3 days.



Figure 1- Extent of clearing

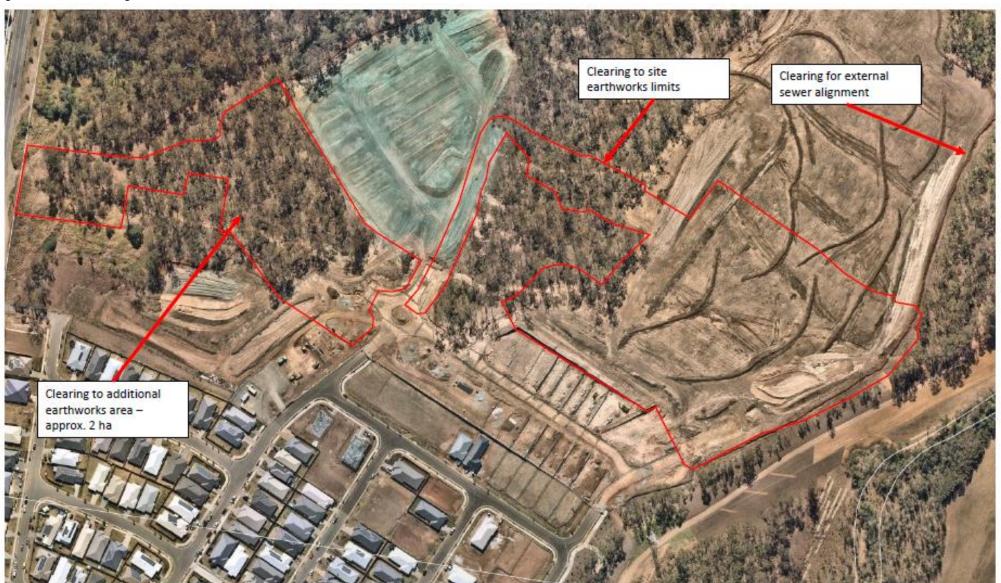




Figure 2- Extent of clearing- Sewer Alignment





Figure 3- Extent of clearing- Fire Break





3. Statutory Requirements and Guidelines

Table 1- Statutory Requirements and Guidelines

LEGISLATION	PURPOSE OF LEGISLATION	IMPACT ON PROJECT PERSONNEL
Environmental Protection Regulation 2008	Gives legislative support to various national guidelines, plans and Australian Standards. This regulation also outlines requirements for the management of fauna and flora.	To abide by the regulations within Santos Environmental Authorityies governed by the DEHP.
Environmental Protection and Biodiversity Conservation Act 1999	The EPBC Act focuses Australian Government interests on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance.	To comply with the relevant sections of the Act that relate to matters of national significance which are present in the vicinity of the project works.
Nature Conservation Act 1992	The Act provides for the legilative protection of Queensland's threatended biota. It is aligned with the IUCN redlist which categorises biota into their current status in the wild.	To comply with the relevant sections of the Act and regulations and the Environmental Authority administered by the DEHP.
Nature Conservation (Wildlife) Regulation 2006	This Regulation lists the plants and animals considered presumed extinct, endangered, vulnerable, rare, common, international, and prohibited. It discusses their significance and states the declared management intent and the principles to be observed in any taking and use for each group.	List those animals that may be potentially found on sites being developed as part of the project and limitations for management.
Nature Conservation (Wildlife Management) Regulation 2006	This Regulation provides for the management of wildlife (including taking, keeping and using wildlife including protected plants).	Provides guidance for the management of wildlife on site, particularly in relation to the interference with native wildlife during the clearing process.
Nature Conservation (Koala) Conservation plan	Guideline for identifying koala habitatManaging koala habitat	Provides guidance on where spotter/catcher's are legally required and how they are to manage koala habitat
Animal Care and Protection Act 2001	• Animal Welfare	Outlines that animal ethics approval is needed for research, survey and/or monitoring involving vertebrates, where activities such as trapping, census leading to disturbance of animals (such as spotlighting or call play-back), abnormal interruption of behaviour or marking/tagging are involved.
Australian code for the care and use of animals for scientific purposes 8 th edition (2013)	 Ethical framwork for animals used for scientific purposes 	Governing principles set out in the Code provide guidance for investigators, teachers, institutions, animal ethics committees and all the people involved in the care and use of animals for scientific purposes.
Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (2013)	Guidelines for Fauna Surveys	Detailed guidelines on designing a survey, the different survey methadologies and the ethical considerations that need to be made for each methadology.
Queensland Hygiene protocol for handling amphibians	 Protocol for handling amphibian species 	Outlines how to handle and manage amphibian species to prevent the spread of diseases among specimens and colonies.



Code of Practice- Care
and rehabilitation of
orphaned, sick or
injured protected
animals by wildlife
carers

 Provides guidelines on the rehabilitation and care of wildlife

Detailed guidelines, in regards to hygiene, housing, capture and release, euthanasia and relevant legistation

Australia Wide Environmental Consultants holds a current DEHP rehabilitation permit (**Permit #WIRP15140914**), with an extended authority issued by the Department of Environment and Heritage Protection specifying that the holder may take, keep or use an animal whose habitat is about to be destroyed by human activity.

4. Results

4.1. Desktop Review

Site is mapped as containing a remnant vegetation community and is mapped as essential habitat for Vulnerable Koala (See Figure 3).

The site is not located within a Koala Assessable Development Area and the areas proposed for disturbance contains areas mapped as medium value koala bushland habitat according to the South East Queensland Koala Conservation-State Planning Regulatory Provisions (See Figure 4).

See Table 2 for a list of significant fauna species previously recorded within 5 km of the project area or with essential habitat within 2kms of the site.

Table 2- Significant Species

SIGNIFICANT FAUNA

Significant Amphibian Species





Listed in the Nature Conservation Act as Vulnerable

1 Confirmed sightings within 2 km of the site

Site is mapped as containing essential habitat for this species

No suitable breeding or foraging habitat was found for this species during the fauna pre-clearance survey. The chances of encountering this species is low.



Significant Mammal Species

Koala (Phascolarctos cinereus)



Listed in the Environmental Protection and Biodiversity Conservation Act as Vulnerable Listed in the Nature Conservation Act as Vulnerable 20 Confirmed sightings within 2 km of the

site

Site contains moderate value habitat for this species and good linkage to other bushland habitat. No signs of this species utilising this site were recorded during the fauna pre-clearance survey. The chances of encountering this species is low.

Grey-headed flying fox (Pteropus poliocephalus)



Listed in the Environmental Protection and Biodiversity Conservation Act as Vulnerable

2 Confirmed sightings within 2 km of the site

Site contains low value food sources for this species and doesn't contain any suitable roosting habitat for this species. The chances of encountering this species on site is low.

Greater Glider (Petauroides volans)



Listed in the Environmental Protection and Biodiversity Conservation Act as Vulnerable

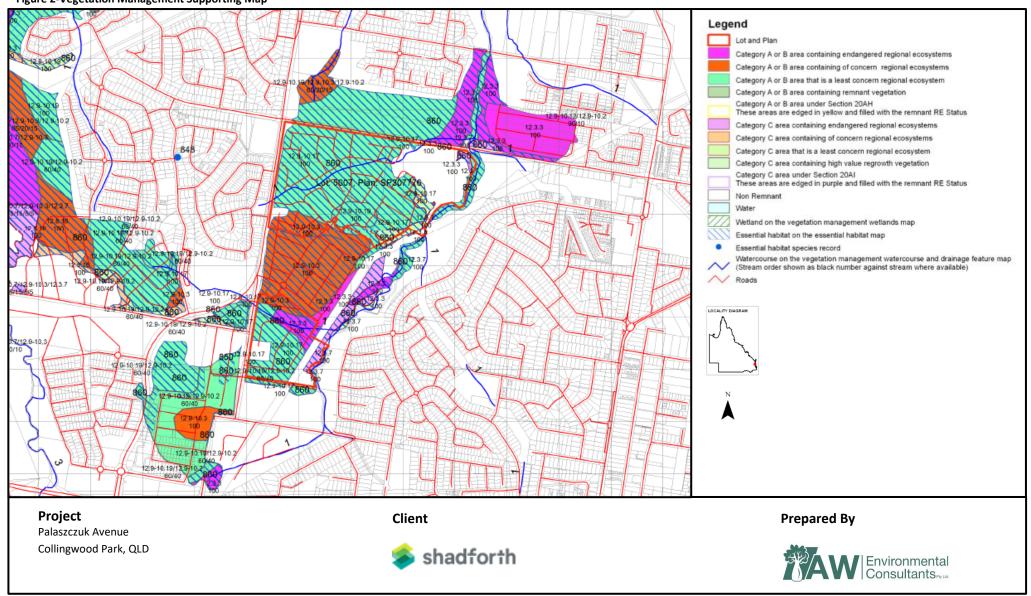
Listed in the Nature Conservation Act as Vulnerable

2 Confirmed sightings within 5 km of the site

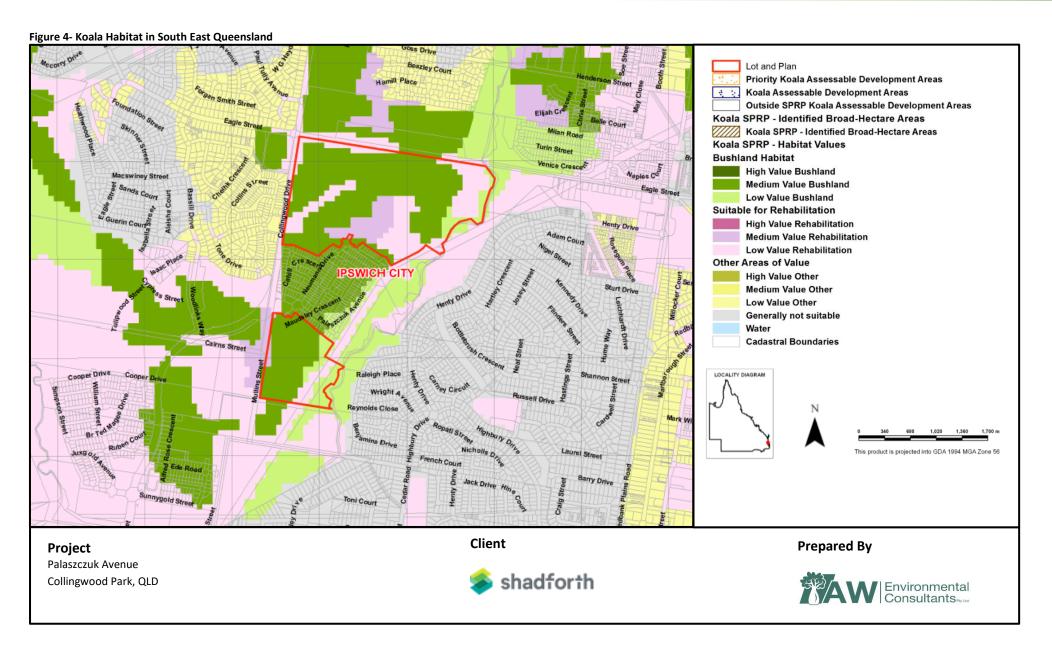
Listed as a Threatened Species in the Matters of National Environmental Significance Site contained suitable foraging habitat and a handful of hollows large enough to be utilised by this species. The chances of encountering this species on site is moderate.



Figure 2-Vegetation Management Supporting Map









4.2. Survey Results

No fauna species with significant conservation statuses were sighted on site and no active breeding sites were seen in the fauna pre-clearance survey.

All the significant habitat features within the site are listed in table 4. They included branch and crown hollows, large debris piles, large hollows stags, hollow arboreal termite mounds, dam, fissured bark, small amounts of woody debris, un-occupied stick nests and flowering eucalypts.

There's evidence in the form of stick nests and bird nesting material in a number of the hollows that during bird breeding season (Sep-Jan) there would be active breeding sites within the site.

The significant species most likely to be encountered is the Vulnerable Koala and Southern Greater Glider. There was no evidence in the form of scratch marks and scat that the Vulnerable Koala utilizes the site as a food source and/or movement corridor.

Table 3- Sighted Fauna Biodiversity

COMMON NAME	SCIENTIFIC NAME	CONSERVATION STATUS
Avian		
Australian Magpie	Cracticus tibicen	Least Concern
Australian White Ibis	Threskiornis molucca	Least Concern
Bar-shouldered Dove	Geopelia humeralis	Least Concern
Black-faced cuckoo-shrike	Coracina novaehollandiae	Least Concern
Black-shouldered Kite	Elanus axillaris	Least Concern
Blue-faced Honeyeater	Entomyzon cyanotis	Least Concern
Crested Pigeon	Ocyphaps lophotes	Least Concern
Galah	Cacatua roseicapilla	Least Concern
Grey Fantail	Rhipidura fuliginosa	Least Concern
Laughing Kookaburra	Dacelo novaeguineae	Least Concern
Little Corella	Cacatua sanguinea	Least Concern
Magpie-lark	Grallina cyanoleuca	Least Concern
Masked Lapwing	Vanellus miles	Least Concern
Noisy Friarbird	Philemon corniculatus	Least Concern
Noisy miner	Manorina melanocephala	Least Concern
Pale-headed Rosella	Platycercus adscitus	Least Concern
Pied Butcherbird	Cracticus nigrogularis	Least Concern
Rainbow Lorikeet	Trichoglossus haematodus	Least Concern
Sacred Kingfisher	Todiramphus sanctus	Least Concern
Scaly-breasted Lorikeet	Trichoglossus chlorolepidotus	Least Concern
Spangled Drongo	Dicrurus bracteatus	Least Concern
Sulphur-crested Cockatoo	Cacatua galerita	Least Concern
Torresian Crow	Corvus orru	Least Concern



COMMON NAME	SCIENTIFIC NAME	CONSERVATION STATUS
Welcome Swallow	Hirundo neoxena	Least Concern
Willy Wagtail	Rhipidura leucophrys	Least Concern
Mammal		
Common Ringtail Possum	Pseudocheirus peregrinus	Least Concern
Eastern grey kangaroo	Macropus giganteus	Least Concern
Amphibian		
Cane Toad	Rhinella marina	Declared Pest
Reptile		
Garden Skink	Lampropholis delicate	Least Concern

Table 4- Significant Habitat Features

Number	Habitat Feature Description	Location
1	Hollow bearing arboreal termite mound	-27.627403,152.858491
2	2x Crown hollows	-27.627734,152.858450
3	Stick nest (still being built)	-27.627801,152.859016
4	2x Trunk hollows	-27.627689,152.858520
5	Hollow bearing stag tree	-27.627850,152.858052
6	Hollow bearing arboreal termite mound	-27.627781,152.857971
7	Hollow bearing arboreal termite mound	-27.627800,152.858251

Table 5- Relocated Fauna

Date	Common Name	Scientific Name	Capture Location	Release Location	Number Caught	Notes
10-12-19	Eastern bearded dragon	Pogona barbata	-27.627095, 152.865079	-27.627614, 152.864930	1	
12-12-19	Robust Velvet gecko	Nebulifera robusta	-27.627442, 152.858428	-27.627145, 152.858204	2	



13-12-19	Eastern bearded dragon	Pogona barbata	-27.627374, 152.858416	-27.626957, 152.858424	1	
13-12-19	Eastern bearded dragon	Pogona barbata	-27.627458, 152.858068	-27.626838, 152.857679	1	
13-12-19	Rainbow lorikeet	Trichoglossus moluccanus	-27.627540, 152.858811	N/A	2	Juvenile chicks taken to carer
17-12-19	Bearded dragon	Pogona barbata	-27.632074, 152.857913	-27.633105, 152.857344	1	Approx SVL 250mm

5. Conclusion

Australia Wide Environmental Consultants (AWEC) were commissioned by SHADFORTH CIVIL CONTRACTORS to manage fauna during the clearing works on Palaszczuk Avenue in Collingwood Park, Queensland (See Figure 1).

Suitably qualified fauna spotter/catcher was on site for the duration of clearing works and ensured all the management measures in the 4280/2015/MAMC/A were adhered to. During clearing works four least concern reptiles were relocated out of the clearing site. Two least concern avian chicks were transferred to Eumundi Wildlife Rehabilitation Centre to be rehabilitated. No fauna fatalities or injuries occurred during clearing works. No significant fauna species were encountered.



References

Eyre TJ, Ferguson DJ, Hourigan CL, Smith GC, Mathieson MT, Kelly, AL, Venz MF & Hogan, LD. 2012. Terrestrial Vertebrate Fauna Survey Assessment Guidelines for Queensland Department of Science, Information Technology, Innovation and the Arts, Queensland Government, Brisbane. Nature Conservation Act 1992 (Qld), https://www.legislation.qld.gov.au/Acts SL N.htm

Nature Conservation (Koala) Conservation Plan 2006 (Qld), http://www.legislation.qld.gov.au/Acts SL N.htm

Ryan M, 2007, Wildlife of the Greater Brisbane, Queensland Museum, South Brisbane

Wilson S, 2005, A Field Guide to Reptiles of Queensland, Reed New Holland, Sydney

Ryan M, 2007, Wild plants of the Greater Brisbane, Queensland Museum, South Brisbane

Lee K Curtis & Andrew J Dennis, 2012, Queensland's Threatened Animals, CSIRO Publishing, Collingwood, Victoria

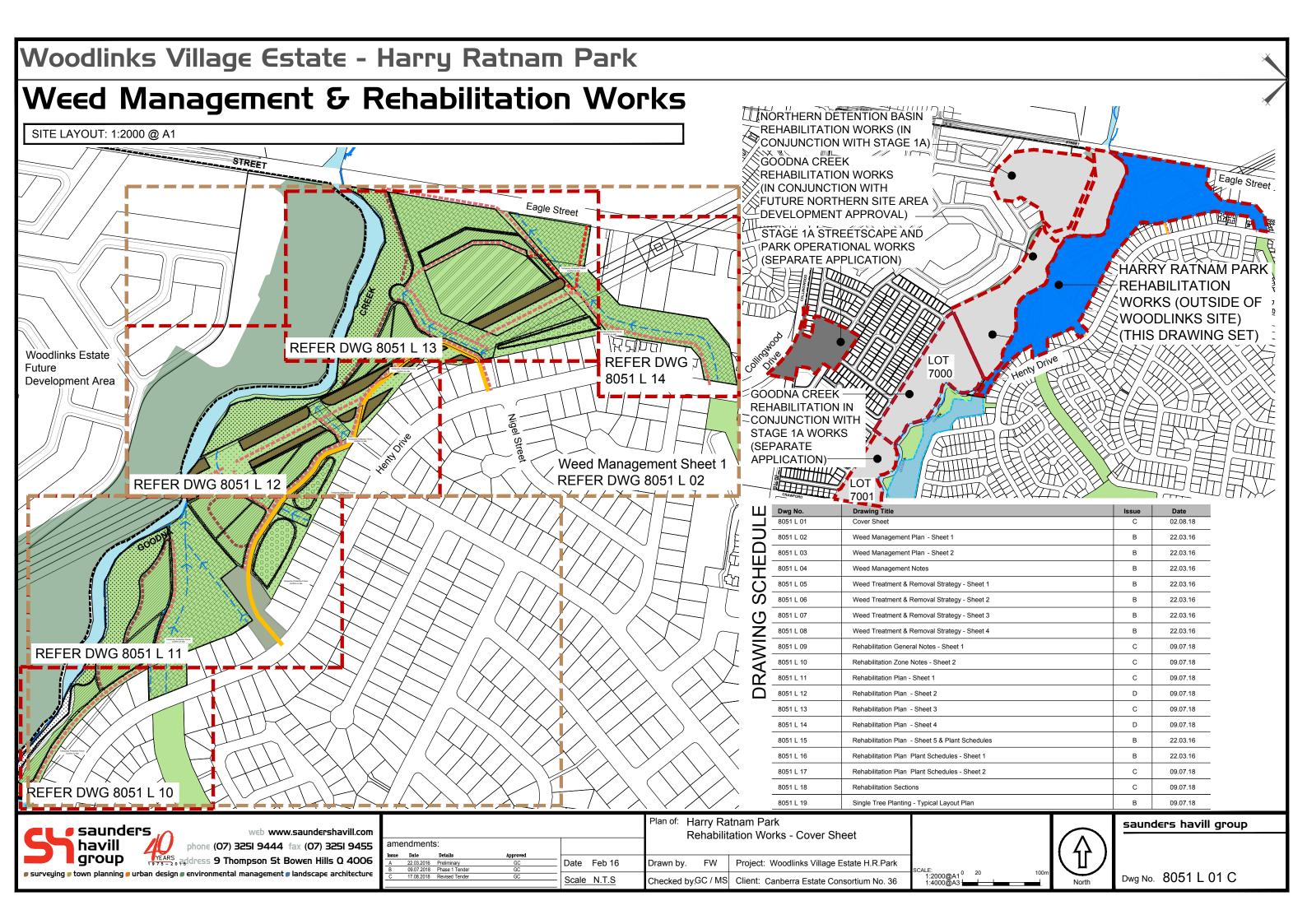
Nita C.Lester, 2008, Woodland to Weeds- Southern Queensalnd Brigalow Belt, Second Edition, CopyRight Publishing, Brisbane

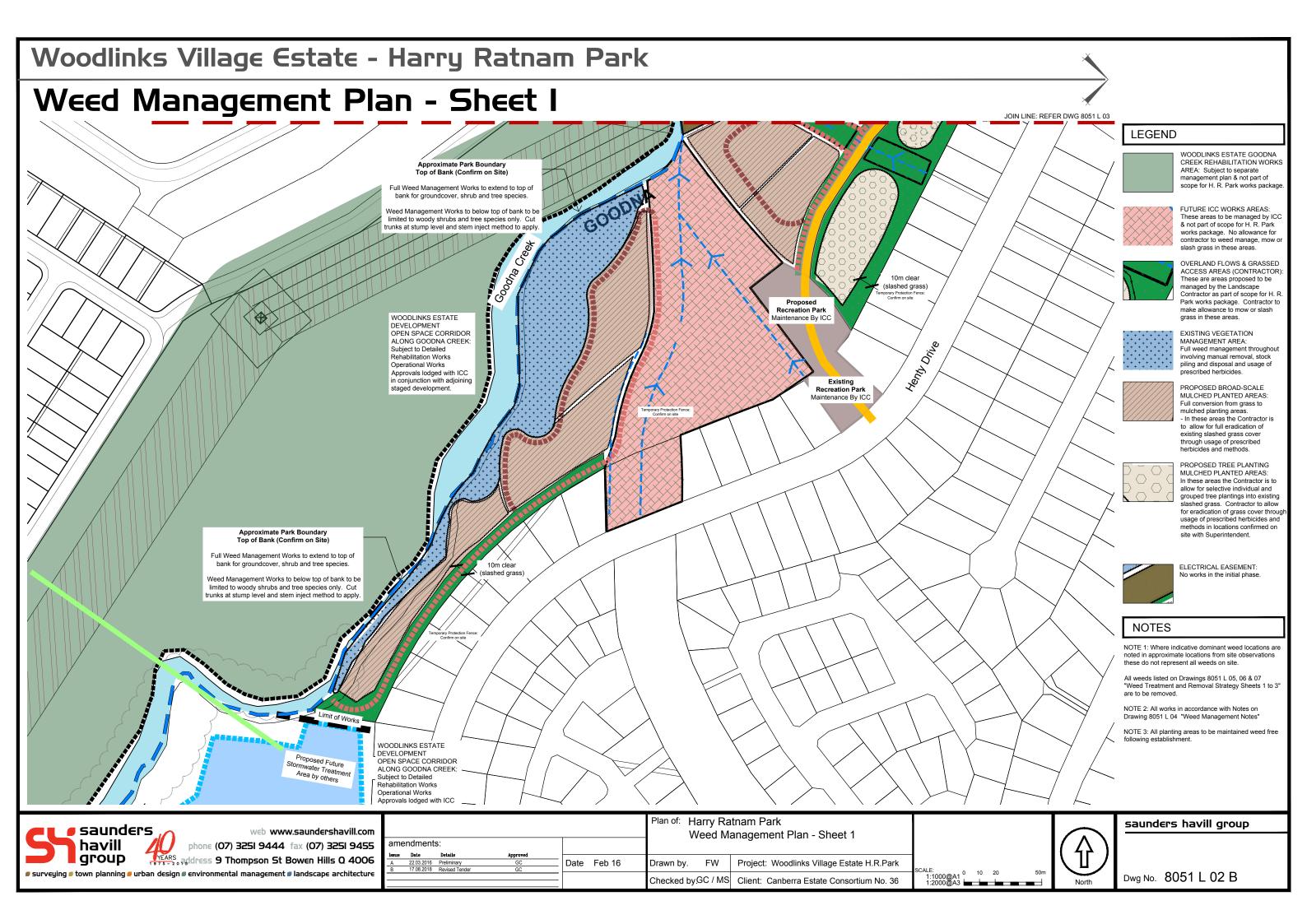
Nick Romanowski, 2011, Australian Grasses, Hyland House Publishing, Australia

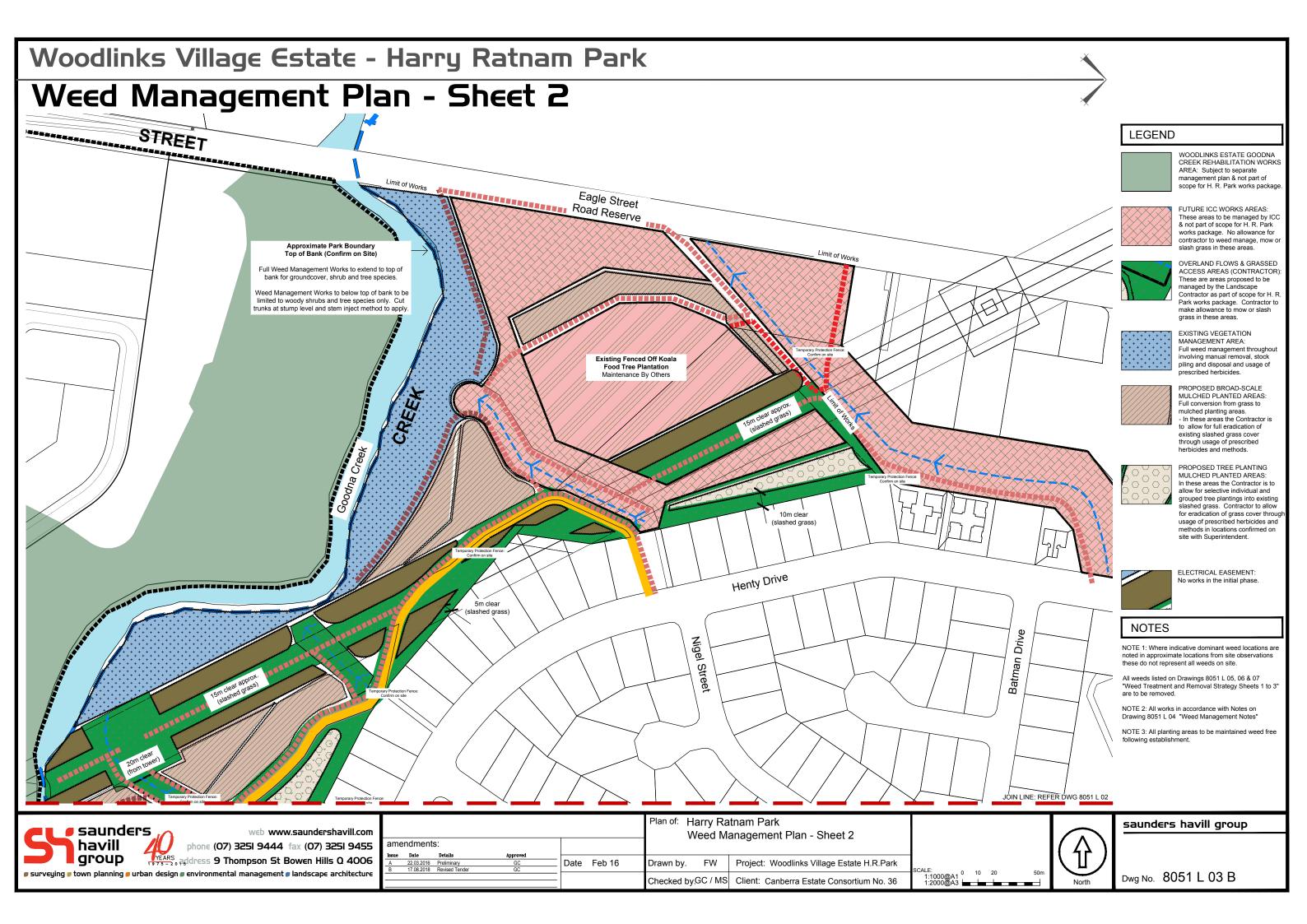
Appendix C

Harry Ratnam Park operational works drawings (17 August 2018) and weed management and rehabilitation works status overview









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

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

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 paracing 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

<u>Primary Weed Removal Stage</u> - 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

- 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.

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

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 peen removed and treated. Maintenance weeding continues to remove additional outbreaks but also allows for the fostering of natural regeneration and regrowth seedlings. Additional notes below include:

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

	 "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 carnbium 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 of
- 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
- The primary objective of Class 3 listing is to prevent sale, therefore preventing the spread of these pests into
- 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

NOTES

- Ensure level of protection for existing identified native vegetation inclusive of that which has naturally
- 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

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, ractor 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

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
- 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

- Ensure all consultants, contractors, sub contractors or others utilizing the parkland area are aware of the
- Appoint appropriate consultants and contractors to undertake works as prescribed on the drawings and
- 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

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

- · 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.

JR KEY TO WO	RK ITEMS		Weed Manage	ment		Soil Preparation	and N	Mulching			Planting Works			Watering, Mon	itoring and Rep	orting			
	CONSTRU	WINTER	(3 months)	ESTABLI	SPRING SHMENT PERIOR) (3 months)		ONG	SUMMER OING MAINTENA	ANCE	ONG	AUTUMN OING MAINTEN	ANCE	ONG	WINTER OING MAINTEN	ANCE	ONG	SPRING OING MAINTEN	ANCE
	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	$\overline{}$	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month
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 establishmen	reporting (throughout	Watering and Monitoring and reporting (throughout establishment)	rep (wa		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 replaceme 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" re-apply s woody weeds	Weed management - "knockdown spray" in mulched areas	no wain TE	tation nockdown oray" in	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 s pray" in mulched areas	Natural regeneration plants - weed management	Weed management - "knockdown spray" re-apply woody weeds	Weed managem "knockdow spray" in mulched a
WEEK 3	Weed management works - removal by hand	Soil Preparation and modification	Planting and Watering	Natural regeneration plants - weed management	Replacement of Faile d Plants	Replacement of Failed Plants	reg pla		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 regenerat plants - w managen
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	Ma sla ma	ashing of aintenance	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 Managen slashing maintena access p



						Plan of: Harry Ratnam Park Weed Management Notes				
	ndment	S: Details	A					anagement tetes		
A B	Date 22.03.2016 17.08.2018		Approved GC GC	Date	Feb 16	Drawn by.	FW	Project: Woodlinks Village Estate H.R.Park		
						Checked by	<u>G</u> C / MS	Client: Canberra Estate Consortium No. 36		

saunders havill group

Dwg No. 8051 L 04 B

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

Weed Treatment & Removal Strategy - Sheet I 🗸

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

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 to 9 parts water - apply only when plant is growing, not dormant (re 1).
2	Asteraceae	Baccharis halimifolia (groundsel bush)	10	s/o	Seedlings: Hand pull	Shrubs: CS&P or F/I (G1) Seedlings: CS&P (G1.5) of spray G200 (ref 1).
3	Crassulaceae	Bryophyllum delagoense (mother of millions)	8	н/о	Hand pull and dispose	Plantlets: spray G200 + MM or MM (ref 1).
4	Bignoniaceae	Macfadyena unguis- cati (cat's claw creeper)	5	V/0	Tubers: crown or dig up, bag and remove.	Regrowth and tuberling spray G100 + MM or F10 (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: spr G200 or G200 + MM (ref:
6	Asparagaceae	Asparagus africanus (ornamental asparagus, asparagus fern)	7	V/0	dig out roots and dispose of at local council landfill site. remove entire crown and underground stem to prevent regrowth	fluroxypyr (200 g/L) @ 3 mL per 1 L diesel/kerosene
7	Ulmaceae	Celtis sinensis (Chinese celtis)	8	т/о	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 1 mL 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) c C&P (G1.5 or GU for ster up to 8 diameter); Seedlings: spray G200 c G200 + MM (ref 1).
9	Anacardiaceae	Schinus terebinthifolius (broad-leaf pepper tree)	6	Т/О	Seedlings: Hand pull	Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 (r 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) @ part to 19 parts kerosen diquat (vegetrol) 50- 100L/ha or 4L/100L wate diquat (watrol) 50-100L/ 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) @ 12.5L/ML water (see ref for application guide)
12	Asteraceae	Chrysanthemoides monilifera subsp. rotundata (bitou bush)	3	S/OA	N/A	Stems: C&P or F/I (G1.5 Bushes: spray or cut do and spray regrowth G10 or MM (ref 1).

QUE	ENSLAND HERE	BARIUM INVASIVE	NATU	RALISED F	PLANTS IN SOUTI	H EAST QUEENSLAND
RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBRE GION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
13	Pontederiaceae	Eichhornia crassipes (water hyacinth)	4	Ha/OF	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	Ha/F	Hand pull smal infestations. Can be controlled by planting competitive native species.	Glyphosate known to be effective. Species known to occur in waterways so EPA should be contacted before spraying (ref 4).
15	Oleaceae	Ligustrum lucidum (tree privet)	5	т/о	Seedlings: Hand pull	Saplings: CS&P or C&P (G1.5); Trees: F/I (G1 or G1.5) or C&P GU for stems up to &cm 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	Н/О	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).
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): tridopyr 1L/60L Diesel, picloram + tridopyr @ 1L/60L biesel, Glyphosate, neat application; Splatt
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	Т/О	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/I (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	н/о	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 - metsulfuronmethyl (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

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBRE GION	LIFE FORM & SOURCE	CONTROL	CHEMICAL CONTROL
24	Poaceae	Sporobolus pyramidalis and S. natalensis (giant rat's tail grasses)	8	H/U?	Hand or mechanical removal of small infestations	Small infestations: spray glyphosate @ 15mL/L water, flupropanate @ 2mL/L water + ionic wette @ 1mL/Lwater; Dense Infestations: blanket spraying glyphosate 3L/hafflupropanate 2L/ha (ref 2)
25	Asteraceae	Ageratina riparia (mistflower)	5	Н/О	Hand pull and hang to dry.	Spray G100 or MM (ref 1).
26	Asclepiadaceae	Araujia sericifera (mothvine)	9	V/0	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	н/о	Hand pull and dispose	Plantlets: spray G200 + MM or MM (ref 1).
28	Convolvulaceae	lpomoea 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/0	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/0	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. @ 0.35–0.5 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	Н/О	Hand or mechanical removal of small infestations	Small infestations: spray glyphosate @ 15mL/L water, flupropanate @ 2mL/L water + ionic wette @ 1mL/L water; Dense infestations: blanket spraying glyphosate 3L/ha flupropanate 2L/ha (ref 2)
33	Poaceae	Sporobolus fertilis (giant Parramatta grass)	9	н/∪	Hand or mechanical removal of small infestations	Small infestations: spray glyphosate @ 15mL/L water, flupropanate @ 2mL/L water + ionic wette @ 1mL/Lwater; Dense infestations: blanket spraying glyphosate 3L/ha flupropanate 2L/ha (ref 2)
34	Poaceae	Eragrostis curvula (African lovegrass)	7	H/U	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.	Glyphos ate (360 g/L) (e.g. Weedmas ter* Duo) @ 10 ml/1 L water
35	Asteracea e	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 land fill tip	Glyphosate and metsulfuron methyl @ 15mL/L water

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.

RANK	FAMILY	SCIENTIFIC &	SUBRE GION	LIFE FORM & SOURCE	NON-CHEMICAL	CHEMICAL CONTRO
36	Amaranthaceae	Alternanthera	1?	Ha/U	physical removal of	Terrerstrial plants u
	7	philoxeroides		, .	plant should not be	Metsulfuron methy
		(alligator weed)			attempted	(Brushoff®) + 1mL/
		, , ,			·	non-ionic wetter @
						80g/ha + 1mL/L non-io
						wetter or 10g/100L wa
						1mL/L non-ionic wett
						Free floating
						plants Glyphosate
						(Roundup
						Biactive®) 10 mL/L
37	Passifloraceae	Passiflora suberosa	8	V/0	N/A	Stems: CS&P Seedling
		(cork passionflower)				Regrowth: spray G200
20	D	NA-Pata ada at Casa	5	11/4	C	G200 + MM (ref 1).
38	Poaceae	Melinis minutiflora	5	H/A	Grazing or mowing	Spray: Fluazifop-P 212
		(molasses grass)				@ 2L/Ha, Glyphosat 360g/L @ 1L/100L was
						(ref 2).
39	Aristolochiaceae	Aristolochia elegans	8	V/0	Stems: Hand pull;	Stems: CS&P (G1.5)
33	Anstolocillaceae	(Dutchman's pipe)	"	1,0	Fruit: Bag and	Seedlings: spray G200
		(Seterman Spipe)			remove.	G200 + MM or MM (ref
40	Convolvulaceae	Ipomoea indica (blue	5	V/0	Vines and Runners:	Vines and Runners: CS
		morning glory)	-	""	hand pull, roll up	(G1.5); Larger Stems
					and hang to dry.	Roots and Nodes: spr
						G100 + MM or F150 (re
41	Mimosaceae	Leucaena	6	ST/A	Small plants: Hand	Herbicide Control - Ba
		leucocephala			pull or mechanical	Bark application: tricle
		(leucaena)			removal	240g/L + picloram 120
						@ 1L/60L diesel; C&
						triclopyr 240g/L + piclo
						120g/L @ 1L per 60L die
						spray triclopyr 300g/
						picloram 120g/L @ 350
						per 100L water.
						Combination of chem
42	D	Dan ahin ah an an an	6	Ha/A	Canadana	and mecha
42	Poaceae	Brachiaria mutica	ь	Ha/A	Grazing	Herbicide Control - Fo
		(para grass)				application (Knapsac glyphosate 360g/L @
						200mL/15L water; Fol
						glyphosate 360g/L @
						9L/Ha; Handgun:
						glyphosate 360g/L@
						1.3L/100L water (ref :
43	Hydrocharitacea e	Egeria densa (egeria	2	Ha/F	hand pulling,	N/A
		waterweed)			cutting and digging	
					with machines	
					effective	
44	Pinaceae	Pinus elliottii (slash	4	T/A	Seedlings: Hand	Saplings and Trees: F
		pine)			pull; Saplings and	(G1.5) ensuring thick b
					Trees: cut close to	is penetrated (ref 1
			_		ground or ring-bark	
45	Caesalpiniaceae	Senna pendula var.	7	ST/O	Seedlings: Hand	Shrubs: CS&P or F/I (G
		glabrata (Easter			pull	Seedlings: spray G200
		cassia)				G200 + MM or MM; col
						and bag seeds (ref 1
46	Poaceae	Chloris asyons	9	H/A	Hand pulling as 4	Spray: glyphosate @
40	roaceae	Chloris gayana	9	n/A	Hand pulling and removal and	Spray: glyphosate @ 1l/100L water
		(Rhodes grass)			digging of larger	11/100F Matel
					clumps	
47	Crassulaceae	Bryophyllum	6	H/O	Hand pull and	Plantlets: spray G200
	o, assarace ac	pinnatum	"	,0	dispose	MM or MM (ref 1).
		(resurrection plant)			0.50050	3. 141141 (1011).
48	Asteraceae	Parthenium	6	H/U	hand pulling of	Spot spray 2,4-D amir
-		hysterophorus	_	'-	small areas is not	500 g/L @ 0.4 L/100
		(parthenium weed)			recommended	J. C 7 200
49	Caprifoliaceae	Lonicera japonica	3	V/0	Vines and Runners:	Vines and Runners: CS
-	,	(Japanese	_	'-	hand pull, roll up	(G1.5); Larger Stems
		honeysuckle)			and hang to dry.	Roots and Nodes: spr
						G100 + MM or MM (ref
50	Acanthaceae	Thunbergia alata	5	H/O	N/A	CS&P (G1.5); spray G20
		(black eyed susan)	1	1	l '	G200 + MM (ref 1).



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surveying town planning urban design environmental management landscape architecture

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



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Dwg No. 8051 L 05 B

AS NOTED

Weed Treatment & Removal Strategy - Sheet 2



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

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBRE GION	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 result in Oct-Nov and by using 'Pulse' as surfucant (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 600 g/L Dichlorprop @ 5 ml / 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/0	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 6.9L/Ha; diquat 20g/L @ 4L/100L water or 50- 100L/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)	5	н/о	N/A	Spray F150 (as per label) or G200 or G200 + MM; Collect and bag or roll and rake carefully. Dispose (ref 1).
59	Solanaceae	Cestrum parqui (green 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; collec 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/ (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

QUE	INSLAND HERI					H EAST QUEENSLAND
RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBRE GION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
67	Onagraceae	Oenothera drummondii subsp. drummondii (beach evening primrose)	3	Н/О	Hand pull	Spray G100 (ref 1).
68	Tiliaceae	Triumfetta rhomboidea (Chinese burr)	7	H/U	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/0	Hand Pull	CS&P (G1.5); spray G200 or G200 + MM (ref 1).
71	Asteraceae	Verbesina encelioides (crownbeard)	7	H/U	Vines: Hand pull and remove; Runners: Roll up and hang to dry.	Stems: S&P (GU); Regrowth and seedlings: spray G200 or G200 + MM (ref 1).
72	Poaceae	Paspalum mandiocanum (broad leaf paspalum)	3	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)	2	Ha/F	Hand pull or dig up	Spray G100 (ref 1).
75	Arecaceae	Syagrus romanzoffiana (queen palm)	4?	Т/О	Seedlings: Hand pull or crown; Trees: cut below growing point	Trees: F/I (G1.5); Seedlings: spray G200 + MM (ref 1).
76	Poaceae	Hymenachne amplexicaulis cv. Olive (hymenachne)	1?	Ha/A	a combined approach of different control methods including mechanical, chemical and biological with land management practices is most effective	360 g/L Glyphosate (includes Roundup Biactive & Weedmaster Duo) – 1 L/100L water or 10 L/ha delivered by boom
77	Asteraceae	Senecio tamoides (Canary creeper)	3	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 600g/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 tomentosa (velvet tree pear)	8	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).
81	Euphorbiaceae	Ricinus communis (castor oil plant)	7	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/U	Vines: Hand pull and remove; Runners: Roll up and hang to dry.	Stems: S&P (GU); Regrowth and seedlings: spray G200 or G200 + MM (ref 1).

REHABII ITATION	I METHODOLOGY -	SITE WORKS	- WEED NOTES

RANK	FAMILY	SCIENTIFIC &	SUBRE	1	NON-CHEMICAL	CHEMICAL CONTROL
		COMMON NAME	GION	& SOURCE		
83	Cyperaceae	Cyperus involucratus	6	Ha/OF	Each	Aquatic areas - Glyphosate
		(African sedge)			has to be dug out	ipa
					with a spade and	Land—commercial/indust
					the entire plant	rial, rights of way -
					turned over,	Glyphosate-ipa,
					exposing the root	glyphosate-mas, imazapy
					system while	
					making	
					sure all aerial parts	
					of the plant are	
					completely	
					covered.	
84	Asteraceae	Tithonia diversifolia	5	H/O	N/A	Stems: CS&P (G1.5) or cut
		(Mexican sunflower)				and spray regrowth and
						seedlings (G100 or MM)
						(ref 1).
85	Poaceae	Setaria sphacelata	9	H/A	Hand pull or dig up	Spray G100 (ref 1).
		(South African pigeon				
		grass)				
86	Asclepiadaceae	Gomphocarpus	10	s/ou	Slash in winter and	Spray: glyphosate @
		physocarpus (balloon			burn cuttings.	1:1000 with water, in
		cotton bush)			Wanderer Butterfly	spring before seeding (re
					can also be used as	3).
					biological control.	
87	Poaceae	Digitaria didactyla	9	H/A	Hand pull or	Spot Spray: glyphosate o
		(Queensland blue			cultivation	2,2-DPA (ref 3)
		couch)				
88	Caesalpiniaceae	Gleditsia triacanthos	7	T/O	For the control of	pastures
		(honey locust)			dense infestations	non-agricultural land
					on grazing land,	fluroxpyr1
					burning followed	(Starane 200®) @ 1.5 L -
					by spot spraying is	75ml/100 L diesel
					an economical	
					control method.	
89	Poaceae	Paspalum notatum	4	H/A	Hand pull or dig up	Spray G100 (ref 1).
		(bahia grass)				
90	Cactaceae	Opuntia monacantha	2	s/o	Biological controls	Spray; Basal Bark
		(drooping tree pear,			available:	application; Injection:
		syn. O. vulgaris)			cactoblastis	Triclopyr: .8L/60L
		' ' '			cactorum	diesel. Picloram +
					successful.	Triclopyr: 1L/60L
					Mechanical control	diesel. Amitrole: 1mL/3cn
					difficult. Fire can be	(ref 3).
					used.	(/ .
91	Poaceae	Paspalum	7	H/A	Cut below crown.	Spot Spray: glyphosate or
		conjugatum	'	""		2,2-DPA (ref 3).
		(paspalum grass)				2,2 3. 7 (101 3).
92	Malpighiaceae	Hiptage benghalensis	3	S,V/O	Hand pull small	Seedlings: Foliar spray of
	p.p.muccuc	(hiptage)		5,.,5	infestations.	dicamba, fluroxypyr, and
		(inplage)			iniestations.	triclopyr/picloram. Larger
						plants cut stump
						application of fluroxypyr
						and triclopyr/picloram
						with diesel, glyphosate
						with water and picloram
000	6.1	6.1	-	0.10	6	undiluted (ref 7).
93	Solanaceae	Solanum torvum	6	s/o	Seedlings: Hand	Shrubs: CS&P (G1.5) or F/I
		(devil's fig)			pull	(G1:1.5); Seedlings: spray
						G200 (ref 1).
94	Caesalpiniaceae	Caesalpinia	4	S,V/O	Seed-heads: Bag	Stems: CS&P (G1.5);
		decapetala (thorny			and remove.	Seedlings: spray G200 or
		poinciana)				G200 + MM or MM (ref 1).
95	Poaceae	Pennisetum	7	H/O	Hand Pull	Spot Spray: glyphosate or
		alopecuroides				2,2-DPA (ref 3)
		(swamp foxtail)				
96	Verbenaceae	Duranta erecta	6	ST/O	Shrubs: CS&P	Spray G100 (ref 1).
		(duranta)			(1:1.5)	
97	Brassicaceae	Nasturtium officinale	7	Ha/FU	Manually grub and	Spray G100 and replace
		(Qld use Rorippa			destroy.	with local species (ref 1).
		nasturtium-				
		aquaticum)				
		(watercress)	1	1		I

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

RANK	FAMILY	SCIENTIFIC &		LIFE FORM	NON-CHEMICAL	CHEMICAL CONTROL
98	Polygonaceae	Acetosa sagittata	GION 4	& SOURCE V/U	CONTROL Tubers: Dig up, bag	Tubers: Spray G200 or
70	rotygonaceae	(rambling dock)	4	V/0	and remove.	G200 + MM or MM (ref 1).
99	Poaceae	Cynodon dactylon	10	H/OA	Hand pull small	Spray: glyphosate @
		(couch, Bahama grass			infestations,	200mL/15L water. Follow
		introduced cultivars)			removing all roots or smother with	up spray (ref 3).
					mulch.	
100	Bignoniaceae	Tecoma stans (yellow	4	ST/O	N/A	Stems: CS&P (G1.5) or
		bells)				spray G200; Seeds: collect,
						bag and remove (ref 1).
101	Rosaceae	Rhaphiolepis indica	3	ST/O	Seedlings: Hand	Saplings: CS&P (G1.5);
		(Indian hawthorn)			pull	Trees: F/I (G1.5);
						Seedlings: spray G200 or
102	Minnessesses	Minage	4	C/A	N/A	G200 + MM or MM (ref 1).
102	Mimosaceae	Mimosa pudica (common sensitive	4	S/A	N/A	Pastures - Fluroxypyr/Starane 200 @
		plant)				1.5 L/ha Between
						cropping applications
						(conservation tillage) -
						Dicamba/Banvel 200 @ 0.8 1.4 L/ha
103	Commelinaceae	Callisia fragrans	3	H/O	N/A	Spray F100 or G200 or G200
		(purple succulent)	-			+ MM; Collect and bag or
						roll and rake carefully.
101	Carabal :	Davids 1		T/40	Carallia (1)	Dispose (ref 1).
104	Scrophulariaceae	Paulownia tomentosa	3	T/AO	Seedlings: Hand pull	Saplings: CS&P (G1.5); Trees: F/I (G1.5);
		(paulownia)			pan	Seedlings: spray G200 (ref
		., ,				1).
105	Commelinaceae	Tradescantia zebrina	3	H/O	N/A	Spray F100 or G200 or G200
		(zebrina)				+ MM; Collect and bag or
						roll and rake carefully. Dispose (ref 1).
106	Acanthaceae	Ruellia	5	H/O	N/A	Spray G200 + MM (ref 1).
		malacosperma				
405		(ruellia)				
107	Poaceae	Pennisetum dandestinum (kikuyu	4	H/A	Hand Pull	Spot Spray: glyphosate or 2,2-DPA (ref 3)
		grass)				2,2 51 74 (101 3)
108	Liliaceae	Lilium formosanum	5	H/O	Hand pull or crown	Spray G100 + MM or MM
100		(Taiwan lily)			and dispose	(ref 1).
109	Asteraceae	Sigesbeckia orientalis (Indian weed)	10	H/U	Hand pull or cultivation.	Spray with 2,4-D amine or sodium, pr MCPA +
		(maian weed)			Cultivation.	dicamba (ref 3).
110	Asteraceae	Bidens pilosa	10	H/U	Hand pull or	Spray with 2,4-D amine or
		(cobbler's pegs)			cultivation.	sodium, pr MCPA +
111	Castassas	Onuntic stricts	7	S/O	Biological control:	dicamba (ref 3).
111	Cactaceae	Opuntia stricta (common prickly	'	3/0	Biological controls available:	Spray; Basal Bark application; Injection:
		pear)			cactoblastis	Triclopyr: .8L/60L
					cactorum	diesel. Picloram +
					successful.	Triclopyr: 1L/60L
					Mechanical control difficult. Fire can be	diesel. Amitrole: 1mL/3cm
					used.	(ref 3).
112	Poaceae	Eleusine indica	8	H/A	Pull and chip.	Spray: glyphosate or 2,2-
		(crowsfoot grass)			Replant with native	DPA (ref 3).
440				11/1.00	couch.	
113	Poaceae	Axonopus	5	H/AO	Cut stems from	Spot spray with Glyphosate (ref 3).
		compressus (broad leaved carpet grass)			roos.	Giyphosate (ref 3).
114	Lamiaceae	Salvia coccinea (red	9	H/O	remove small areas	Aquatic areas (drains,
		salvia)			by hand or machine	channels, margins of
						streams, lakes and dams) -
						calcium dodecylbenzene
						sulphonate (AF-100) @ 1 part in 19 parts kerosene
115	Asteraceae	Ageratum	8	H/UO	N/A	Spray G100 or hand pull
		houstonianum (blue				and spray regrowth G100
		billygoat weed)				(ref 1).

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surveying of town planning of urban design of environmental management of landscape architecture

						Plan of: H	arry Ra	tnam Park	
							Veed Transport	eatment & Removal Strategy	
ame Issue	ndment	S: Details	Approved			Drawn by.	FW	Project: Woodlinks Village Estate H.R.Park	SCAL
A B	22.03.2016 17.08.2018	Preliminary Revised Tender	GC GC	Date	Feb 16	Checked by	GC / MS	Client: Canberra Estate Consortium No. 36	SOAL

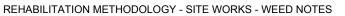


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Weed Treatment & Removal Strategy - Sheet 3 /



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

					PLANTS IN SOUT	-
RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBRE GION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
116	Myrtaceae	Psidium guajava and P. guineense (yellow guava and West Indes guava)	4	ST/AO	N/A	Shrubs: CS&P or F/I (G1.5) or spray G200 + MM or MM. Trial basal bark F100 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	Grazon DS picloram/triclopyr 1:200 parts water + wetting agent
118	Myrtaceae	Eugenia uniflora (Brazilian cherry)	4	ST/O	N/A	Stems: C&P or F/I (G1.5); Bushes: spray or cut dowr 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	Н/А	Grazing	Herbicide Control - Foliar application (Knapsack): glyphosate 360g/L @ 200ml/15L water; Foliar: glyphosate 360g/L @ 9L/Ha; Handgun: glyphosate 360g/L @ 1.31/100L 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	н/о	Small Plants: Hand pull and dispose	Small Plants: spray 6200 o 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	Phytolaccace ae	Phytolacca octandra (inkweed)	10	н/о	Hand pull or crown	CS&P (G1.5) or C&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: C&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 30 cm below the ground surface). If this is not removed, reshooting can occur.	Basal bark - triclopyr + picloram Access* @ 1L/60L diesel. Cut stump - triclopyr + picloram Access* @ 1L/60L diesel. Overall spray - triclopyr + picloram Grazon DS* @ 350ml/100L water plus a wetting agent if plant is growing actively
129	Juncaceae	Juncus articulatus (jointed rush)	1	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	Spray; Basal Bark application; Injection: Triclopyr: .8L/60L diesel. Picloram + Triclopyr: 1L/60L diesel. Amitrole: 1mL/3cn (ref 3).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

RANK	FAMILY	SCIENTIFIC &	SUBRE	LIFE FORM	NON-CHEMICAL	CHEMICAL CONTROL
121	Dannan	COMMON NAME	GION	& SOURCE	CONTROL Dhusiaal samaual of	Cantonio ar antatuma
131	Poaceae	Arundo donax (giant reed)	1	Н/О	Physical removal of small infestations.	Spot spray or cut stump and spray with Glyphosate (ref 5).
132	Cactaceae	Opuntia imbricata (rope pear)	1	н/о	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be	Spray; Basal Bark application; Injection: Triclopyr: .8L/60L diesel. Picloram + Triclopyr: 1L/60L diesel. Amitrole: 1mL/3cm (ref 3).
133	Bignoniaceae	Pyrostegia venusta	1	V/O	used. N/A	CS&P (G1.5); spray G200
134	Poaceae	(flame vine) Cortaderia selloana (pampas grass)	2	H/O	Small Plants: dig out by hand or	(ref 1). Stems: C&P (G1.5) or cut back and slash and spray
135	Solanaceae	Solanum hispidum	5	S/O	machine Hand pull	regrowth G100 (ref 1). Spray G100 (ref 1).
136	Agavaceae	(giant devil's fig) 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	Grazon DS picloram/triclopyr 1:200 parts water + wetting agent. A variety of herbicides may be used to control this species including (ref 5).
141	Brassicaceae	Cakile edentula (American sea rocket)	4	H/U	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 (re 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/OF	Hand pull small infestations.	Spray with or Diquat Glyphosate. Occurs in waterways, thus EPA should be notified before any herbicide use (ref 5).
151	Poaceae	Phyllostachys aurea (fishpole bamboo)	1	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	9	S/U	Hand pull or dig	Spray with 2,4-D amine or

REHABILITATION METHODOLOGY - SITE WORK	S - WEED NOTES

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBRE	LIFE FORM & SOURCE		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 (re 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 (re 3).
156	Bignoniaceae	Jacaranda mimosifolia (jacaranda)	4	T/O	Seedlings: Hand pull	Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 (re 1).
157	157 Acanthaceae Justicia betonica (squirreltail)		2	s/o	Hand pull smal infestations. Can be controlled by planting competitive native species.	Glyphosate known to be
158	Mimosaceae	Acacia boliviana (Bolivian wattle)	1	т/о	Mechanical or chain removal.	Basal Bark or cut stump application. Triclopyr 600g/L at 1.0L:120L diese Triclopyr + Picloram 240 g/l + 120 g/l at 1.0L:60L diesel, Picloram 45 g/kg undiluted (ref 5).
159			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	н/о	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 - Glyphosat ipa Land—commercial/indus rial, rights of way - Glyphosate-ipa, glyphosate-mas, imazapy
162	Moraceae	Morus alba (white mulberry)	3	Т/О	N/A	Trees: F/I (G1.5), stack ou branches above the ground to dry; Saplings: CS&P (G1.5); Seedlings: spray G200 (ref 1).
163	Arecaceae	Colocasia esculenta (taro)	3	H/AO	Hand pull.	Cut at base and apply glyphosate or metsulfuro methyl. Plant often occur in waterways so consult DERM prior to application (ref 6).
164	Cannaceae	Canna indica (canna lily)	3	Н/О	Dig out entire plant	Cut/Slash and spay regrowth G200 or G200 + MM; Collect and bad seeds. Resistant to herbicide (ref 1).
165	Buddlejaceae	Buddleja madagascariensis (buddleja)	5	S,V/O	N/A	Stems: CS&P (1:1.5); Vines: spray or cut dowr and spray regrowth G200 (ref 1).
166	Bignoniaceae	Tecoma capensis (Cape honeysuckle)	3	ST/O	N/A	Stems: CS&P (G1.5) or spray G200; Seeds: collect bag and remove (ref 1).

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBRE GION	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, Dichlorprop 600 g/l at 1.0L/60L water, metsulfuron methyl 600 g/l at 2.0L:100L water Re
168	Acanthaceae	Thunbergia laurifolia (laurel clock vine)	1	V/0	N/A	5). CS&P (G1.5); spray G200 (ref 1).
169	Fabaceae	Erythrina crista-galli (cockspur coral tree)	2?	Т/О	N/A	F/I (G1.5) or C&P stump: Cut and stack branches above ground to dry to prevent resprouting. F/ sprouted branches (G1.5 or spray regrowth G200 MM or MM. Trial Tordor (ref 1).
170	Sapindaceae	Koelreuteria elegans (Chinese rain tree)	1?	Т/О	Seedlings: Hand pull	Trees: F/I (G1.5) or C&P stumps (G1.5); Saplings CS&P (G1); stack cut branches above ground t dry; Seedlings: spray (G200) (ref 1).
171	Zingiberaceae	Hedychium gardnerianum (ginger lily)	1?	н/о	Small Plants: Hand pull and dispose	Small Plants: spray G200- G200 + MM; Large Plants cut and spray regrowth. rhizomes are at ground level, cut stem and goug rhizome - fill hole with G1.5 with injector kit or similar (ref 1).
172	Acanthaceae	Hypoestes phyllostachya (polka- dot plant	3	Н/О	Hand pull or crown and dispose	Spray G200 or G200 + MN (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& (G1.5); Larger Stems, Roots and Nodes: spray G100 + MM or MM (ref 1)
174	Asteraceae	Conyza sumatrensis (tall fleabane)	9	H/U	Hand or mechanical removal of small infestations	Seedlings: Altrazine or Chlorosulfuron in combination with competitive native species; Plants: Glyphosate and Tordon 7 D mix. Glyphosate ration depends on other weed present (ref 2).
175	Fabaceae	Tipuana tipu (tipuana)	2	Т/О	Seedlings: Hand pull	Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 (re 1).
176	Asteraceae	Tagetes minuta (stinking roger)	8	H/U	Hand pull and hang to dry.	Spray MM or G200 or G20 + MM if other weeds suc 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 o G200 + MM or MM; colle- and bag seeds (ref 1).
178	Poaceae	Cenchrus echinatus (Mossman river grass)	8	Н/А	Hand or mechanical removal of young plants	Herbicide Control - Glyphosate 7mL/L water Dichlobenil 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.

lote: Source for information contained on this page from Queensland Herbarium (Qld Gov't). amendments:

Date Feb 16

Plan of: Harry Ratnam Park Weed Treatment & Removal Strategy

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

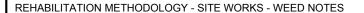


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Weed Treatment & Removal Strategy - Sheet 4



QUE	ENSLAND HERE	BARIUM INVASIVE	NATU	RALISED F	PLANTS IN SOUTI	H EAST QUEENSLAND
RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBRE GION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
179	Asteraceae	Conyza canadensis (Canadian fleabane)	10	н/∪	Hand or mechanical removal of small infestations	Seedlings: Altrazine or Chlorosulfuron in combination with competitive native species; Plants: Glyphosate and Tordon 75 D mix. Glyphosate ration depends on other weeds
						present (ref 2).
180	Euphorbiaceae	Euphorbia cyathophora (painted spuge)	8	н/о	Hand pull	Spray G100 (ref 1).
181	Poaceae	Setaria palmifolia (palm leaf setaria)	5	н/о	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	Н/А	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	н/о	Hand Pull	Spot Spray: glyphosate or 2,2-DPA (ref 3)
185	Asteraceae	Conyza bonariensis (flax-leaf fleabane)	7	н/и	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 infesttions. Slashing can be used but should be followed up by herbicide application.	Basal bark application of fluroxypyr (35mL:11 Diesel); Stem injection Glyphosate (1L:2L Water); Cut stump application of fluroxypyr (1L:55L 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)	1?	Т/О	N/A	Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 (ref 1).
191	Fabaceae	Macrotyloma axillare (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)	2	Н/О	Dig up, bag and remove	Spray G200 + MM (ref 1).
193	Passifloraceae	Passiflora edulis (passion fruit)	6	V/AO	Hand Pull	CS&P (G1.5); spray G200 or G200 + MM (ref 1).
194	Asteraceae	Zinnia peruviana (wild zinnia)	6	н/о	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

RANK	FAMILY	SCIENTIFIC &	SUBRE	LIFE FORM	NON-CHEMICAL	CHEMICAL CONTROL
NAINK	FAMILI	COMMON NAME	GION	& SOURCE	CONTROL	CHLIVIICAL CONTROL
195	Dracaenaceae	Sansevieria	2?	H/O	Hand pull or dig up	Spray G100 + MM (ref 1).
		trifasciata				
		(sansevieria)				
196	Poaceae	Digitaria eriantha	5	H/A	Hand pull or	Spot Spray: glyphosate o
		(pangola grass)			cultivation	2,2-DPA (ref 3)
197	Rosaceae	Eriobotrya japonica	3	T/O	Seedlings: Hand	Saplings: CS&P (G1.5);
		(loquat)			pull	Trees: F/I (G1.5);
						Seedlings: spray G200 or
						G200 + MM or MM (ref 1)
198	Cactaceae	Acanthocereus	1	S/O	Biological controls	Spray; Basal Bark
		tetragonus (sword			available:	application; Injection:
		pear)			cactoblastis	Triclopyr: .8L/60L
					cactorum	diesel. Picloram +
					successful.	Triclopyr: 1L/60L
					Mechanical control	diesel. Amitrole: 1mL/3ci
					difficult. Fire can be	(ref 3).
					used.	
199	Mimosaceae	Acacia nilotica subsp.	3	T/A	Mechanical or chain	Basal Bark or cut stump
		indica (prickly acacia)			removal.	application. Triclopyr
						600g/L at 1.0L:120L diesel
						Triclopyr + Picloram 240
						g/I + 120 g/I at 1.0L:60L
						diesel, Picloram 45 g/kg
						undiluted (ref 5).
200	Mimosaceae	Acacia farnesiana	6	T/A	Mechanical	Basal Bark or cut stump
		(mimosa bush)			removal of small	application of Triclopyr -
					plants.	Picloram 240 g/l + 120 g/
						at 1.0L:60L diesel. Foliar
						application of Clopyralic
						300g/L at 500mL:1L wate
						ref 5).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

Ref. 1. Big Scrub Rainforest Landcare Group (2008), 'Common Weeds of Subtropical Rainforests of Eastern Australia

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

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

Ref 6. Department of Environment and Conservation, 'Florabase', (DEC- WA)

liana, Hiptage benghalensis. Weed Biology and Management, 9 (1). pp. 54-62.

Ref 5. Depertment of Primary Industries (NSW), 'Noxious and Environmental Weed Handbook, 3rd Edition'.

A practical manual on their identification and control'

Ref. 3. Holland et al. (1996), 'Suburban Weeds', DPI QLD.
Ref 4. Port Stephens Council (NSW), 'Weed Busters'.

	SCIENTIFIC &	SUBRE	LIFE FORM	NON-CHEMICAL		Explanatory notes:
AMILY	COMMON NAME		& SOURCE	CONTROL	CHEMICAL CONTROL	Sub-region: Number of the ten sub-regions of the Southeast Queensland bioregion (Young and Dillewaard 1999)
aenaceae	Sansevieria	2?	H/O	Hand pull or dig up	Spray G100 + MM (ref 1).	within which species recorded (Queensland Herbarium data).
	trifasciata (sansevieria)					Rec no.: Total number of records for species within study area, Queensland Herbarium CORVEG and HERBRECS data.
oaceae	Digitaria eriantha (pangola grass)	5	H/A	Hand pull or cultivation	Spot Spray: glyphosate or 2,2-DPA (ref 3)	Scores: Based on panel data of invasiveness, 5 (highest) to 3 (moderate). ? indicate doubtful scores.
saceae	Eriobotrya japonica (loquat)	3	T/O	Seedlings: Hand pull	Saplings: CS&P (G1.5); Trees: F/I (G1.5);	Life forms: T-tree (woody plant >5m), ST-small tree (2-5m), S-shrub (woody <2m), H-herb (grasses & forbes), Ha- aquatic herbs.
	(,	Seedlings: spray G200 or G200 + MM or MM (ref 1).	Source: A-agriculture, O-ornamental and landscaping, F-fish aquarium, U-unintentional introduction and/or contaminant.
ctaceae	Acanthocereus tetragonus (sword	1	S/O	Biological controls available:	Spray; Basal Bark application;	QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND
	pear)			cactoblastis	Triclopyr: .8L/60L	Abbreviations: Control Methods
	pear,			cactorum	diesel. Picloram +	CS&P = cut scrape and paint
				successful.	Triclopyr: 1L/60L	S&P = scrape and paint
					diesel. Amitrole: 1mL/3cm	C&P = cut and paint
				difficult. Fire can be used.	(ref 3).	F/I = frill or inject stem
nosaceae	Acacia nilotica subsp.	3	T/A	Mechanical or chain	Basal Bark or cut stump	Abbreviations: Herbicides
iosace ae	indica (prickly acacia)		'/'	removal.	application. Triclopyr	G = Glyphosate, eg. Roundup Biactive, Weedmaster Duo
	, , , , , , , , , , , , , , , , , , , ,				600g/L at 1.0L:120L diesel,	MM = Metsulfuron methyl, eg, Brushoff
					Triclopyr + Picloram 240	F = Fluroxypyr, eg. Starane
					g/l + 120 g/l at 1.0L:60L	
					diesel, Picloram 45 g/kg	Abbreviations: Herbicide Dilution Rates for High Concentration Applications
					undiluted (ref 5).	GU = Glyphosate undiluted
nosaceae	Acacia farnesiana	6	T/A	Mechanical	Basal Bark or cut stump	G1 = 1 part water to 1 part glyhphosate
	(mimosa bush)			removal of small	application of Triclopyr +	G1.5 = 1.5 parts water to 1 part glyphosate
				plants.	Picloram 240 g/l + 120 g/l	G4 = 4 parts water to 1 part glyphosate
					at 1.0L:60L diesel. Foliar	
					application of Clopyralid	Abbreviations: Herbicide Spray Concentrations
					300g/L at 500mL:1L water	G100 = 100mL glyphosate per 10L of water + surfuctant, eg 20mL LI 700 per 10L
					ref 5).	G200 = 200mL glyphosate per 10L of water + surfuctant, eg 50mL LI 700 per 10L
			1		1015/1	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 10L water
						F100 = 100mL fluroxypyr per 10L water
						F150 = 150mL fluroxypyr per 10L water
						Other Abbreviations
						# = Locally non-indigenous native species

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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							Plan of: Harry Ratnam Park				
						Weed Treatment & Removal Strategy					
						Sheet 4					
amendments:					Drawn by.	FW	Project: Woodlinks Village Estate H.R.Park	1			
Issue						2.4		Trojout Trodumino Timago Lotato Timan ant	sc.		
Α	22.03.2016	Preliminary	GC	Date	Feb 16	Charled by	CC / MS	Cliente Canharra Fatata Canaartium Na 26			
В	17.08.2018	Revised Tender	GC	Date	רפט וט	Checked by	GC / IVIS	Client: Canberra Estate Consortium No. 36			



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Dwg No. 8051 L 08 B

Woodlinks Village Estate - Harry Ratnam Park Rehabilitation Notes

- 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"
 - 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:

When the degree of disturbance has been so great and long-standing that the

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

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

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

pre-existing native plant community cannot recover by natural means.

importation of soils, drainage works or reshaping of the landscape.

REHABII ITATION 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.

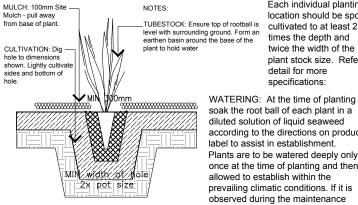
SITE PREPARATION

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

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 m³ and water crystals to maintenance

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

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

then reparations are to be made to site works.

the Landscape Plans ESTABLISHMENT Establishment is to occur at the completion of the primary and secondary weed removal phases and any rehabilitation planting. During

. 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 Plants are to be watered deeply only once at the time of planting and the allowed to establish within the prevailing climatic conditions. If it is

observed during the maintenance process that the plant is under stress then a subsequent watering is allowed 2.Weed Removal Weeds evident during the Establishment period but should be removed as

this period any failed stock are to be replaced and/ or defects identified

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 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

planting stock has not achieved a 90% success survival additional planting shall be installed. 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. saunders havill group

Dwg No. 8051 L 09 C

Throughout the establishment and maintenance periods areas where

NATURAL REGENERATION RECONSTRUCTION

- To relatively large, intact and weed-free areas of native vegetation.
- Where the native plants are healthy and capable of regenerating without human
- 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 natura

The re-establishing plant community will be similar in structure, composition and

ASSISTED NATURAL REGENERATION

diversity to the original vegetation.

- 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, so compaction, cattle grazing, mechanical slashing etc.
- When limited human intervention, such as weed removal, minor amelioration of so 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 natura

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

Where the site is highly degraded or altered.

a few remaining native trees or shrubs.

structure, composition and diversity

- 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

saunders web www.saundershavill.com havill phone (07) 325I 9444 fax (07) 325I 9455 YEARS 1975-20 address 9 Thompson St Bowen Hills Q 4006 group surveying 🛮 town planning 🗗 urban design 🗷 environmental management 🗗 landscape architecture

amendments: Date Feb 16 22.03.2016 Preliminary 09.07.2018 Phase 1 Tender

Plan of: Harry Ratnam Park Rehabilitation General Notes Sheet 1 Drawn by. FW Project: Woodlinks Village Estate H.R.Park Checked by GC / MS | Client: Canberra Estate Consortium No. 36

AS NOTED

3. Management

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 m² 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 inpundation

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 flexibility 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).

AS NOTED



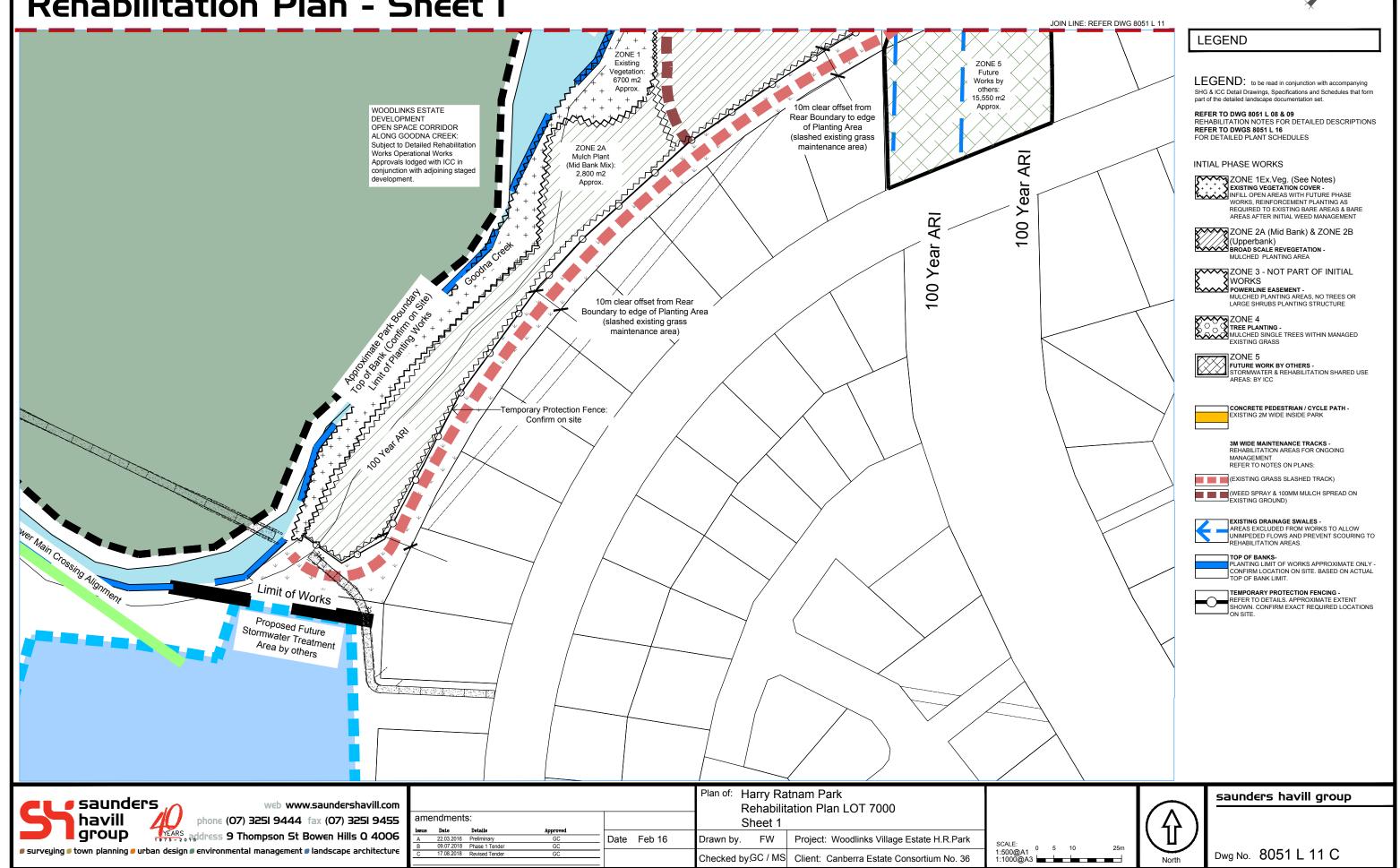
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Issue	Date	Details	Approved						-	
Α	22.03.2016	Preliminary	GC	Date	Feb 16	Drawn by.	FW	Project: Woodlinks Village Estate H.R.Park		
В	09.07.2018	Phase 1 Tender	GC						SCALE:	
С	17.08.2018	Revised Tender	GC			Observed by	CC / Me	Clients Cook and Estate Consentium No. 00		
						Checked by	GC / IVIS	Client: Canberra Estate Consortium No. 36		



Dwg No. 8051 L 10 C



Rehabilitation Plan - Sheet I

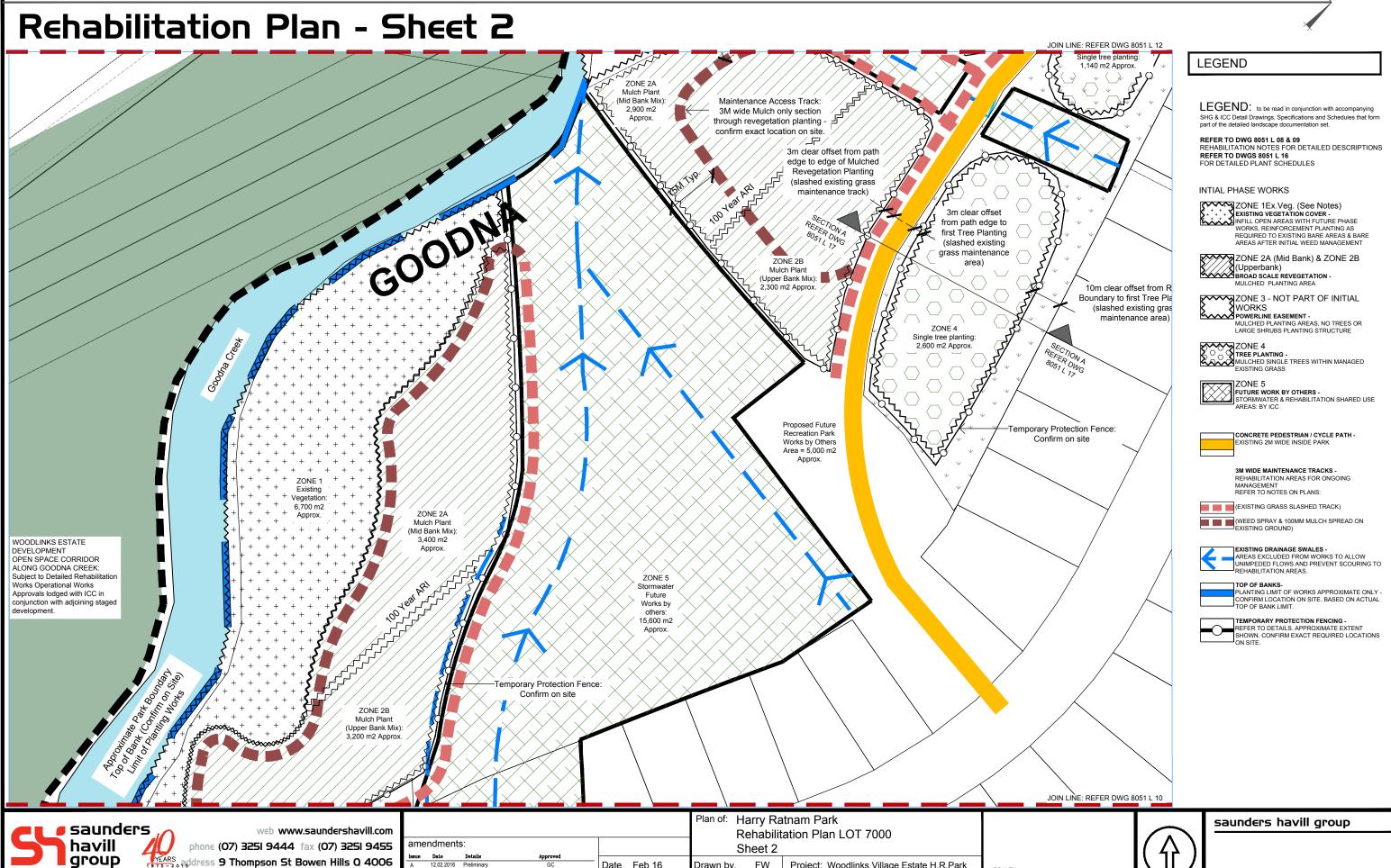


Preliminary Tender (Stage 7

group

🏿 surveying 🛭 town planning 🗗 urban design 🗗 environmental management 🗗 landscape architecture





Date Feb 16

Drawn by.

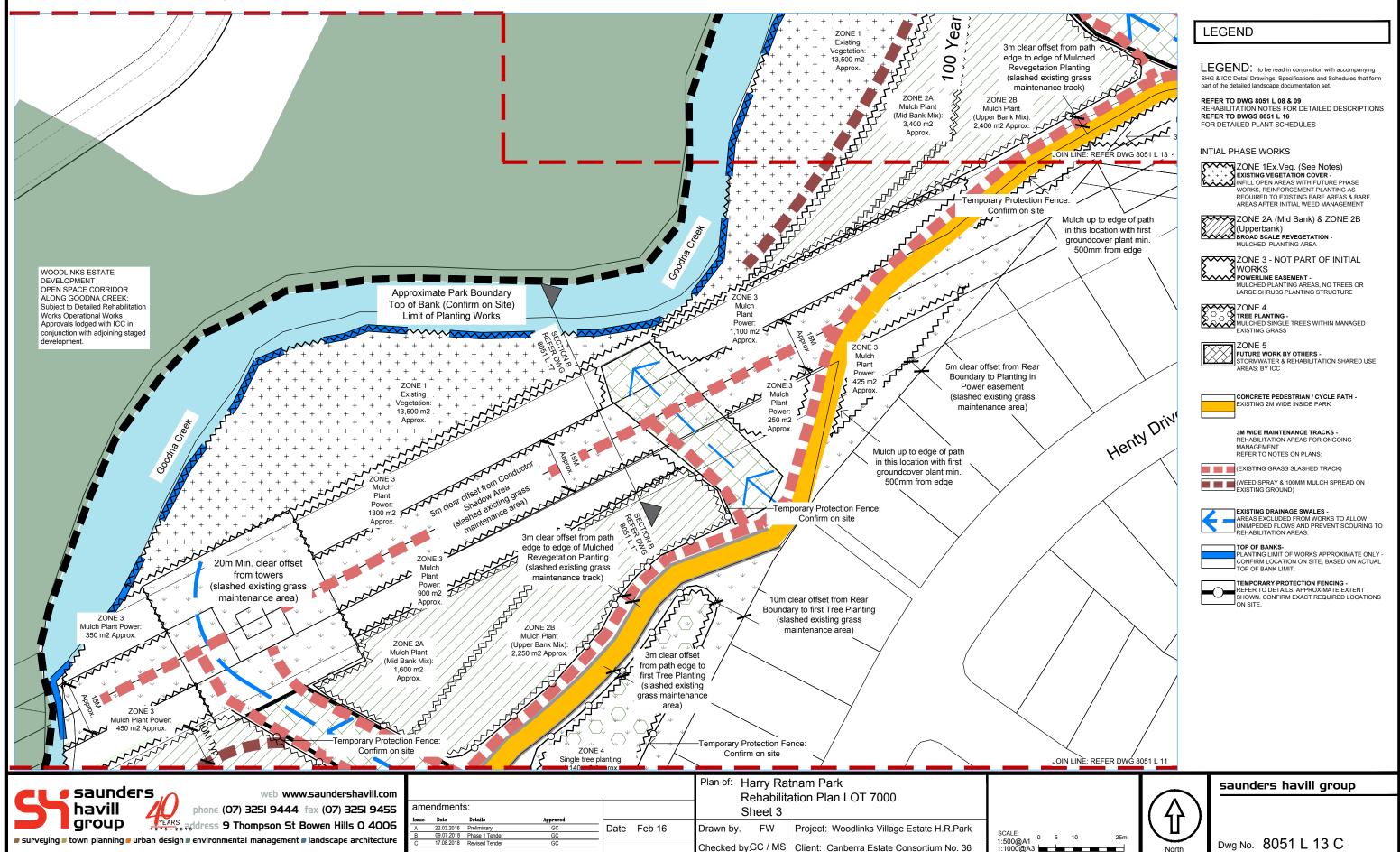
Project: Woodlinks Village Estate H.R.Park

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

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Dwg No. 8051 L 12 D

Rehabilitation Plan - Sheet 3

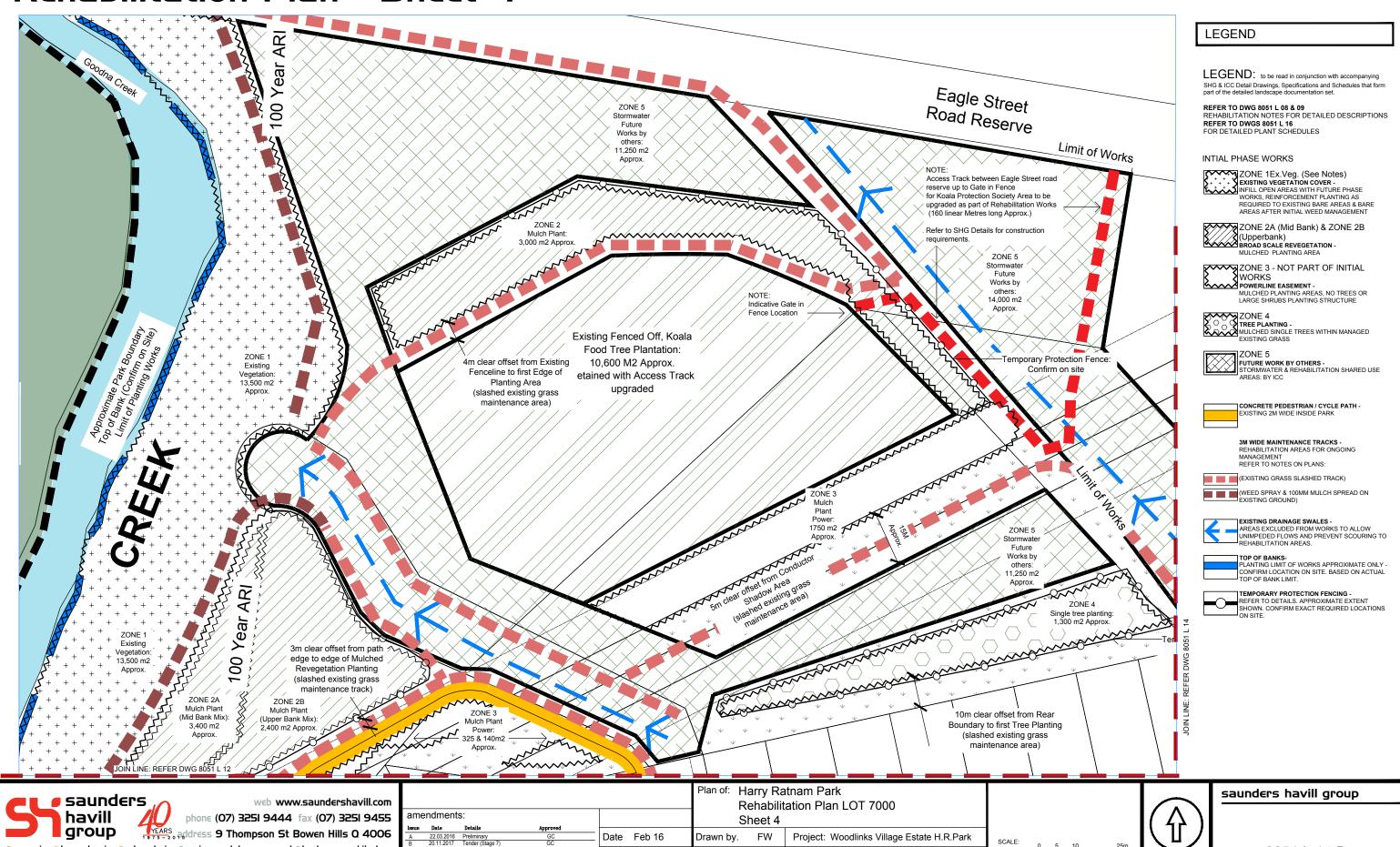


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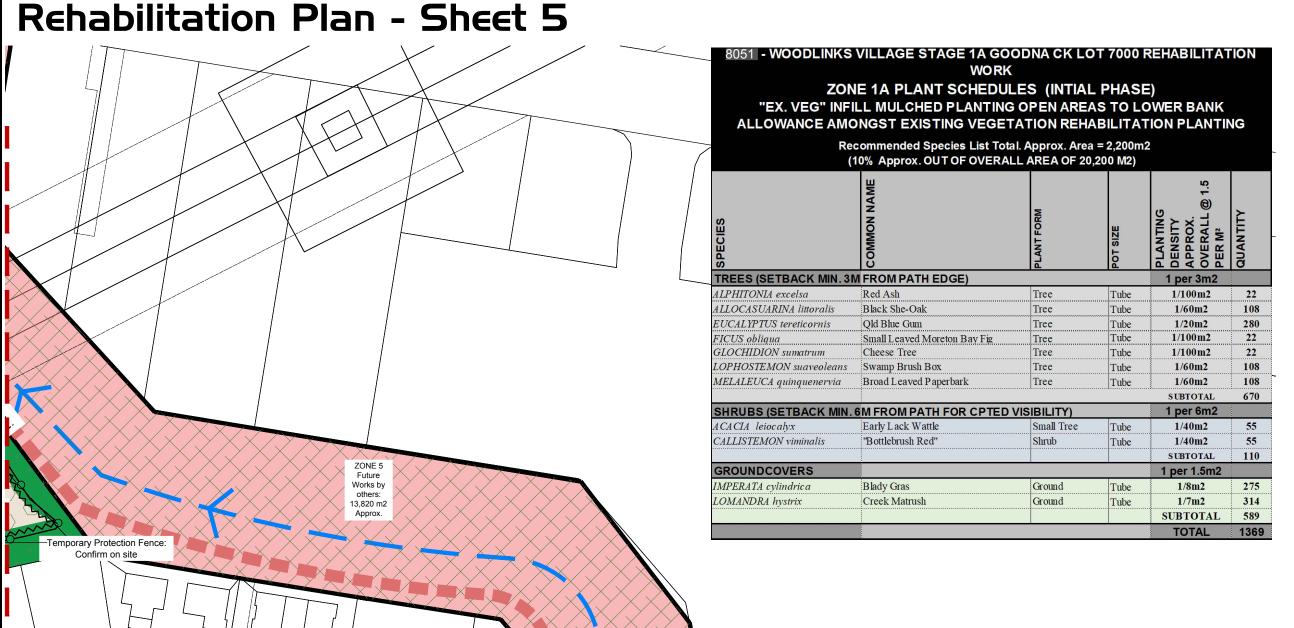
Rehabilitation Plan - Sheet 4

🏿 surveying 🛭 town planning 🗗 urban design 🗗 environmental management 🗗 landscape architecture



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







LEGEND: to be read in conjunction with accompanying SHG & ICC Detail Drawings, Specifications and Schedules that form part of the detailed landscape documentation set.

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 COVERINTEL 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



TREE PLANTING MULCHED SINGLE TREES WITHIN MANAGED
EXISTING GRASS



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



3M WIDE MAINTENANCE TRACKS -REHABILITATION AREAS FOR ONGOING MANAGEMENT

REFER TO NOTES ON PLANS:



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



AREAS EXCLUDED FROM WORKS TO ALLOW UNIMPEDED FLOWS AND PREVENT SCOURING TO REHABILITATION AREAS.



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

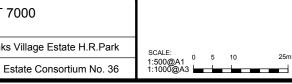


TEMPORARY PROTECTION FENCING —REFER TO DETAILS. APPROXIMATE EXTENT
SHOWN. CONFIRM EXACT REQUIRED LOCATIONS
ON SITE.



Henty Drive

							•	tnam Park ation Plan LOT 7000
amendments:						S		
A	Date 22.03.2016	Details Preliminary	Approved GC	Date	Feb 16	Drown by	FW	Project: Weedlinks Village
B	17.08.2018	Revised Tender	GC	Date	reb 10	Drawn by.	LAA	Project: Woodlinks Village
	11.00.2010	Trevised Tender				Checked by	GC / MS	Client: Canberra Estate C





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Dwg No. 8051 L 15 B

Zone 2A

ZONE 2A (MID BA	RATNAM PARK, GOO NK - BELOW Q100) .ANT" MULCHED REH	PLANT SCHE	DULES	(INTIAL PHAS	SE)
Recon	nmended Species List Tota	al. Approximate Ar	ea = 12.20	0m2	
SPECIES	COMMON NAME	PLANTFORM	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 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 1/20m2	610
GLOCHIDION sumatrum	Cheese Tree	Tree	Tube	₁ 1/100m2	122
LOPHOSTEMON confertus	"Brush B ox"	Tree	Tube	1/100m2	122
LOPHOSTEMON suaveoleans	Swamp Brush Box	Tree	Tube	1/60m2	180
MELALEUCA quinquenervia	Broad Leaved Paperbark	Tree	Tube	₁ 1/60m2	180
				SUBTOTAL	3050
SHRUBS (SETBACK MIN. 6	M FROM PATH FOR CPTE	D 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 IB

ZO "EX. VEG" INFIL	VILLAGE STAGE 1A G WOI NE 1B PLANT SCHED L MULCHED PLANTING List Total. Approx. Area = 13	RK DULES (INTIAL G OPEN AREAS	PHASE	E) CREEK BANI	Κ
SPECIES	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY APPROX. OVERALL @ 1.0	QUANTITY
TREES (SETBACK MIN. 31	M 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 SUBTOTAL	36 670
SHRUBS (SETBACK MIN.	6M FROM PATH FOR CPTE	D 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 I



						Plan of: Harry Ratnam Intial Phase Rehabilitation Plan Plants Sheet 1				
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Issue	Date	Details	Approved	<u> </u>	F 1 40		5 147	B : 1 14 111 1 1711		
_A	22.03.2016	Preliminary	GC	Date	Feb 16	Drawn by.	FW	Project: Woodlinks Village Estate H.R.Park		
_B	17.08.2018	Revised Tender	GC			-			SCALE:	
						Checked by	GC / MS	Client: Canberra Estate Consortium No. 36		



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Dwg No.	8051 L 16 B

AS NOTED

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										
Recon	Recommended Species List Total. Approximate Area = 10,150m2									
Recon		. Approximate A	- 10,15							
SPECIES	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY APPROX. OVERALL @ 2.0 PER 1M²	QUANTITY					
TREES (SETBACK MIN. 4M		:		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. 4	M FROM PATH - LOW DEN		VISIBILIT	FY 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		Shrub	Tube	1/50m2	203					
PITTOSPORUM undulatum	"Sweet Pittosporum"	Shrub	Tube	1/75m2 SUBTOTAL	135 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 TREES (BUASE 4)	COMMON NAME	PLANT FORM	POT SIZE	MATURE HEIGHT (m)	DENSITY OVERALL @ 1.0 PER 18M ²	QTY.
TREES (PHASE 1)	M 4 D 4 1	Т	т.1	25	1/3602	14
CORYMBIA tessellaris	Moreton Bay Ash	Tree	Tube	35	1/360m2	
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



AS NOTED

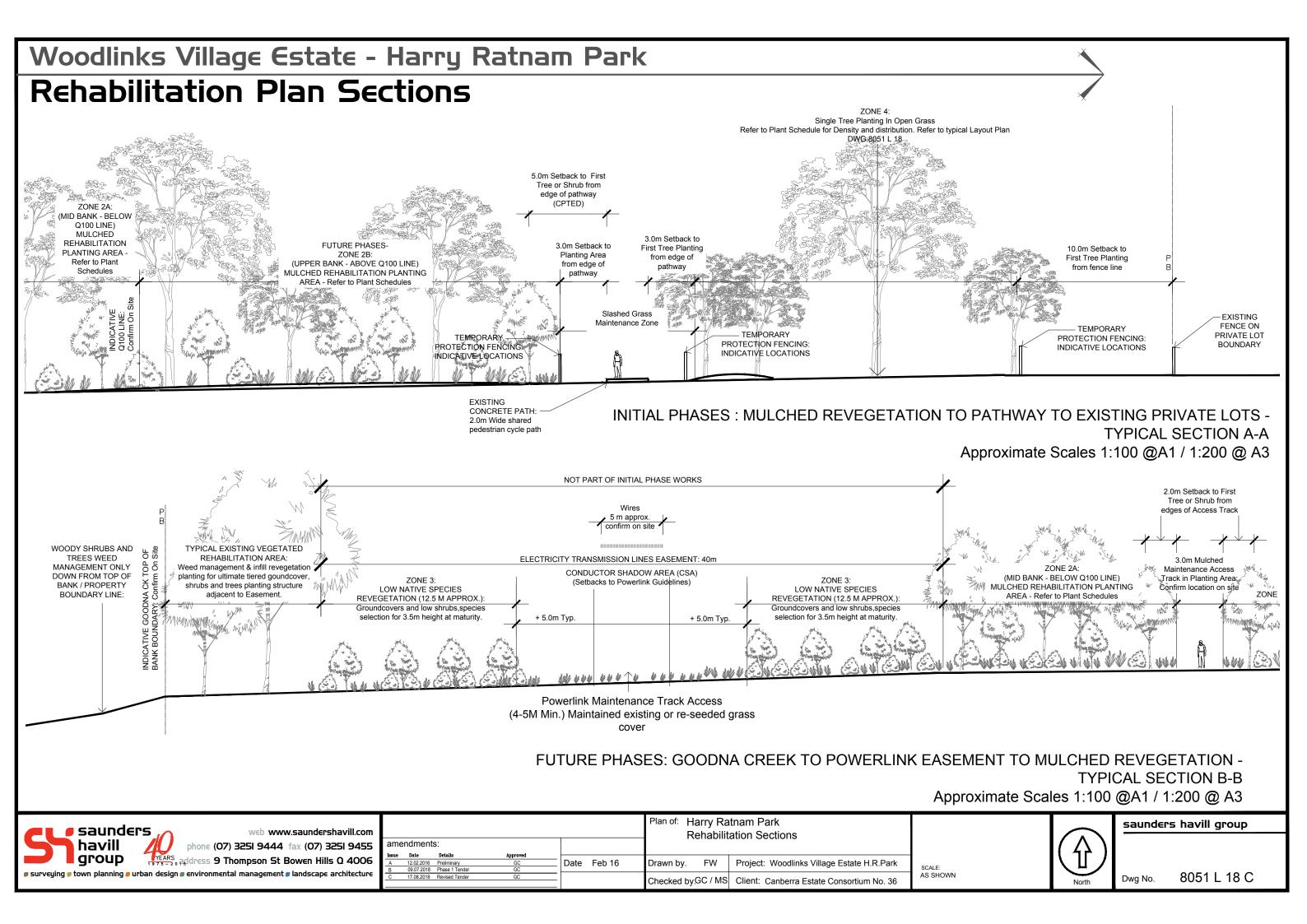


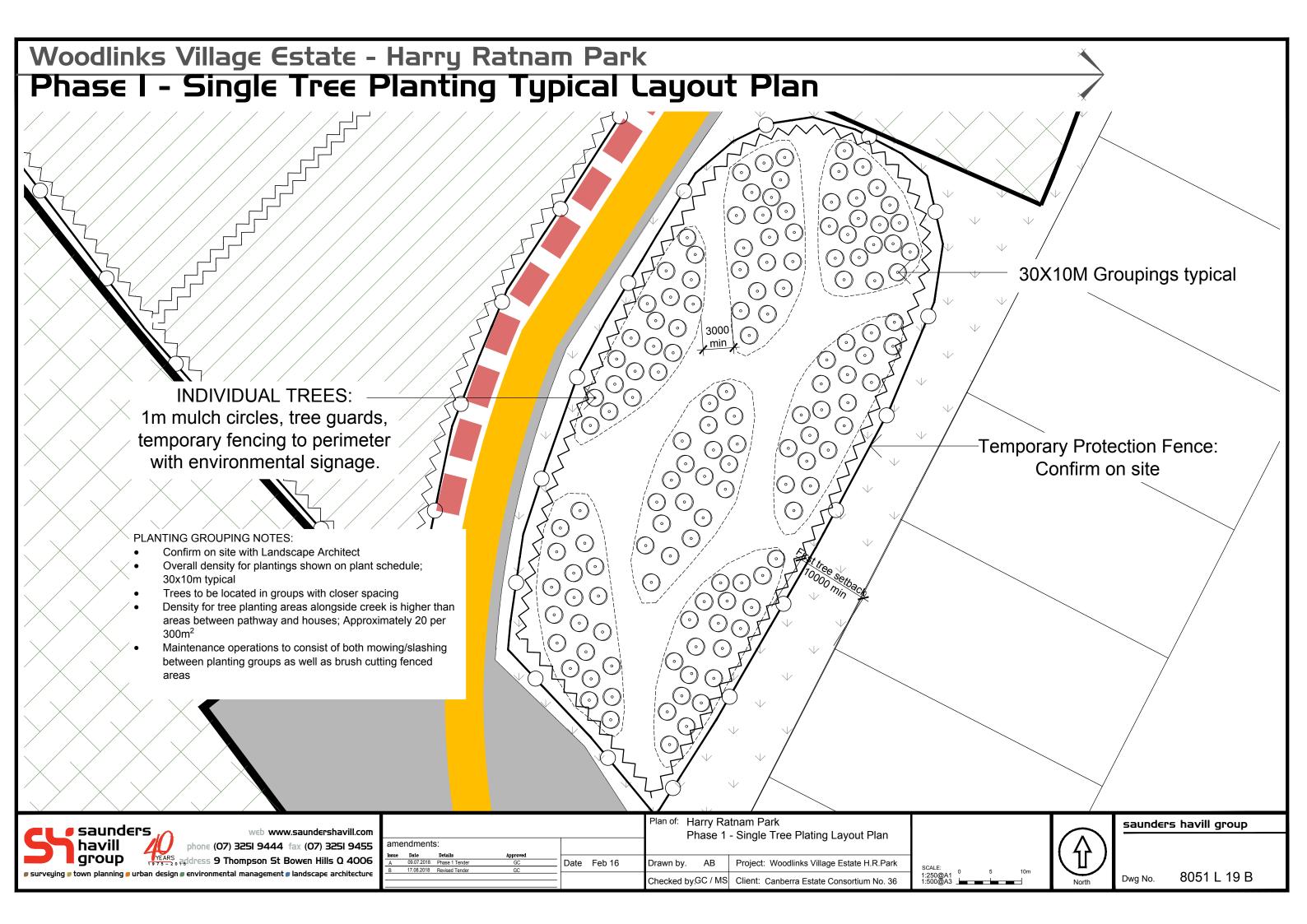
						Plan of: Harry Ratnam Intial Phase Rehabilitation Plan Plants Sheet 1				
amendments:]				
Issue	Date	Details	Approved						-	
Α	22.03.2016	Preliminary	GC	Date	Feb 16	Drawn bv.	AB	Project: Woodlinks Village Estate H.R.Park		
В	09.07.2018	Phase 1 Tender	GC						SCALE:	
С	17.08.2018	Revised Tender	GC			01	CC / MC	Clients O. I. E. I. O. II. N. OO		
						Спескеа ву	GC/ NO	Client: Canberra Estate Consortium No. 36		

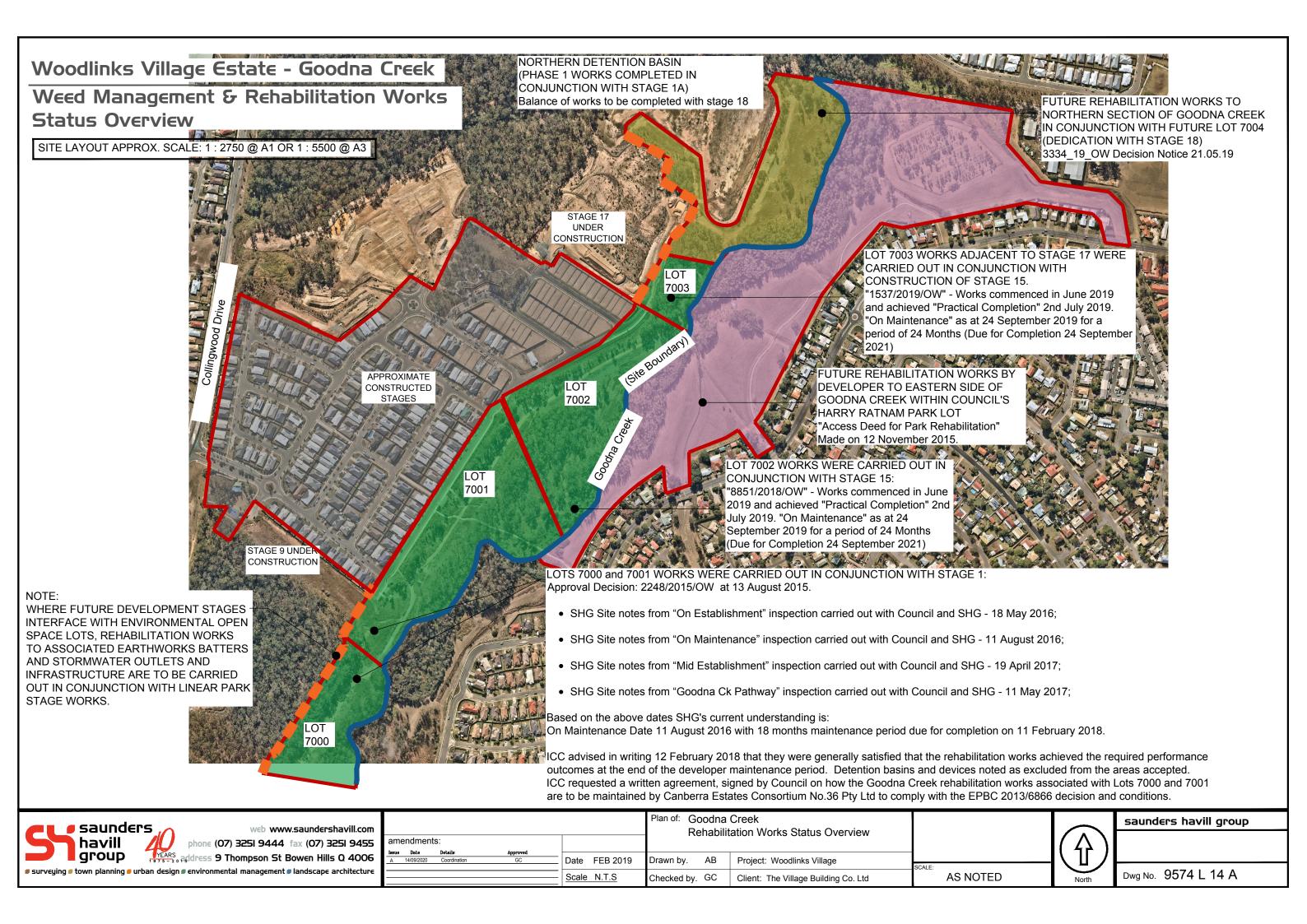


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Appendix D

Lifestyle guidelines for 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

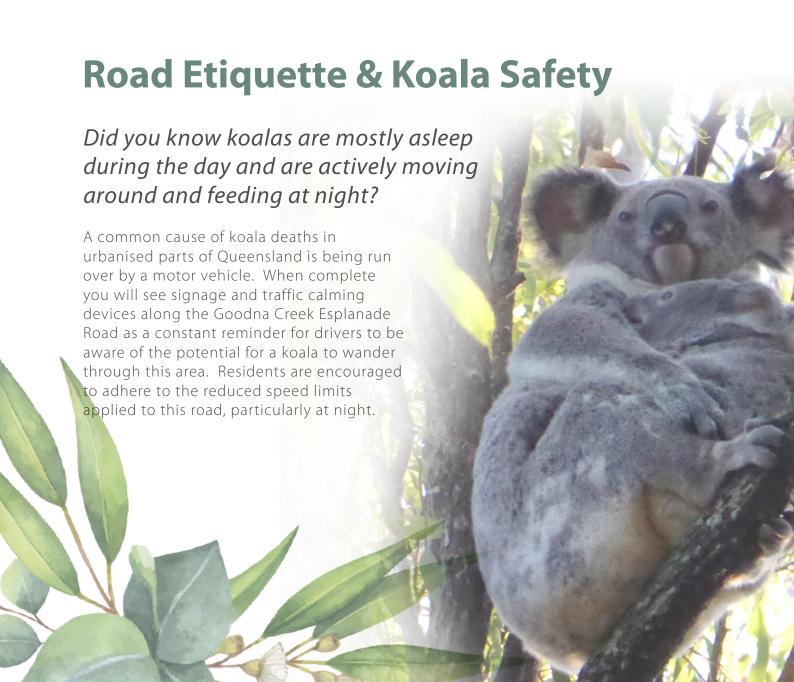
The koala is listed as a Vulnerable Fauna Species under the Commonwealth Government's Environment Protection and Biodiversity Conservation Act 1999 and the Queensland Government's Nature Conservation Act 1992. Along with specific controls put in place by Ipswich City Council all of these levels of government 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).



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:



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

