Annual Compliance Report

24 June 2023 to 23 June 2024 – EPBC 2013/6866
Woodlinks Village – Master Planned Residential Community,
Collingwood Park, Queensland
Canberra Estates Consortium No. 36 Pty Ltd
23 September 2024

Job No: 7189 E

Document control

Document: Annual Compliance Report 24 June 2023 to 23 June 2024 EPBC 2013/6866, prepared by Saunders Havill Group for Canberra Estates Consortium No. 36 Pty Ltd.

Document Issue

Issue	Date	Prepared By	Checked By
A	20.09.2024	XGJ / HC	AW
B	23.09.2024	AW	AW

Prepared by

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Acronyms and abbreviations

ACR	Annual Compliance Report
AWEC	Australia Wide Environmental Consultants
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ha	hectares
ICC	Ipswich City Council
km	kilometres
KMP	Koala Management Plan
OMP	Offset Management Plan
QFC	Queensland Fauna Consultancy
SHG	Saunders Havill Group

1. Introduction

Saunders Havill Group (SHG) were engaged by Canberra Estates Consortium No. 36 Pty Ltd to prepare an Annual Compliance Report (ACR) for the Woodlink Project – Master Planned Residential Community granted under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC ref 2013/6866). This ACR is specifically required by Condition 8 of the approval granted on 4 March 2014 (refer to **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**).

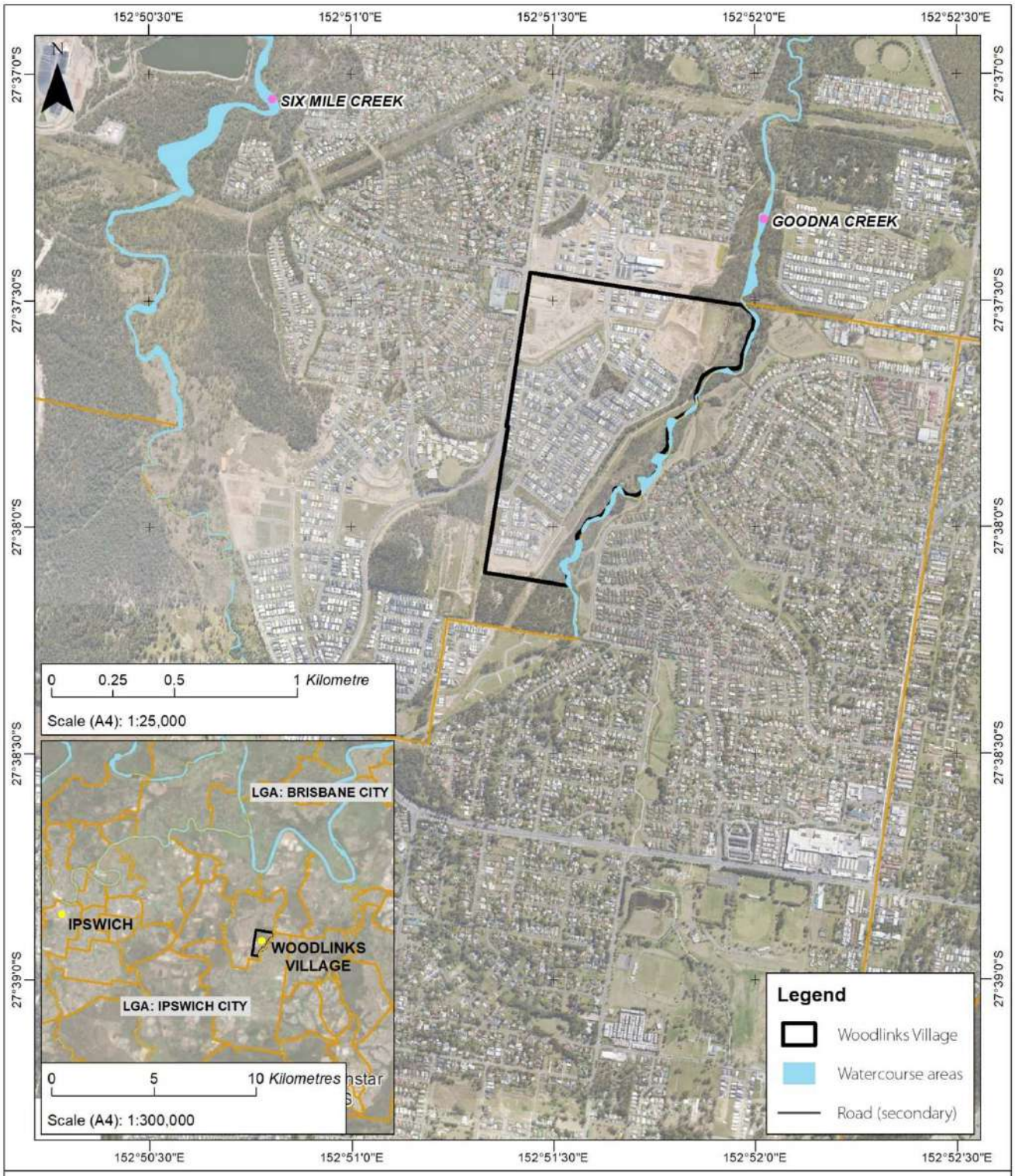
This report delivers an annual overview of the project's progression towards achieving the primary objective:

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 seventh ACR 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	23 June 2023 to 24 June 2024
Address	246-326 Collingwood Drive, Collingwood Park
Local government area	Ipswich City Council



Woodlinks Village – Master Planned Residential Community
EPBC 2013/6866
Figure 1 - Project area locality
Prepared on 12 September 2024

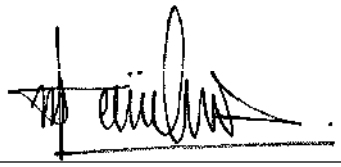
File ref: 7189 E 01 A Project area locality

Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse MercatorDatum: GDA 1994
Data sources: © State of Queensland (Department of Natural Resources and Mines) 2024. © State of Queensland (Department of Transport and Main Roads) 2017. Imagery: Metromap 2024

Prepared by saunders havill group

2. Declaration of accuracy

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

Signed	
Full name	Murray Saunders
Position	Director
Organisation	Saunders Havill Group (ABN 24 144 972 949)
Date	23 September 2024

3. Description of activities

Woodlinks Village is a residential community located in the suburb of Collingwood Park, Queensland. The development of residential land parcels and open space areas is under establishment, with approximately 580 houses constructed or undergoing construction since the commencement of the action in 2015. As residential development advances, rehabilitation efforts with a focus on enhancing koala habitat in the adjoining Goodna Creek open space area continues to occur and be managed. Other open space areas providing local park facilities and general amenities in the development area have also been established.

Since the 23 June 2023, the following impact and offset activities have been completed:

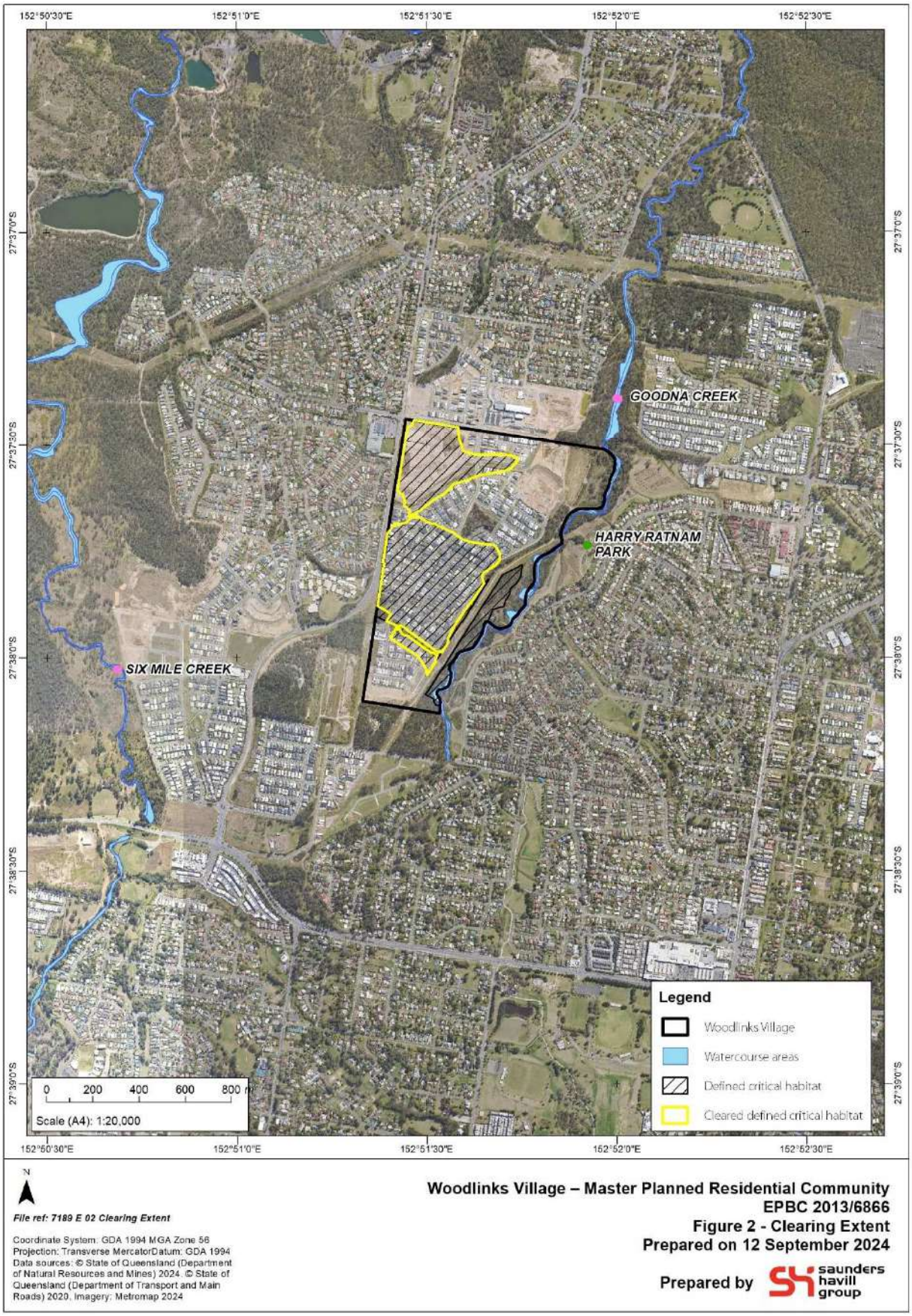
- completion of Stage 20 vegetation clearing works;
- earthworks for the establishment of residential allotments within Stage 20;
- off-maintenance inspection for Stage 18 (future Lot 7004) rehabilitation works;
- landscaping and enhancement of on-site drainage and stormwater conveyance corridor; and
- offset area improvement works including maintenance and management of plantings within Harry Ratnam Park.

The project has delivered 580 residential lots to the market since commencement. **Table 1** summarises the current status of the project. **Figure 2** illustrates the impacts to habitat critical to the survival of the koala, as defined in the EPBC approval and listed in **Table 1**, at the end of the reporting period. All vegetation clearing has been completed under the approval.

A site inspection was completed by SHG on 13 August 2024 to confirm the progress of the development and offset activities over the past year of works.

Table 1: Development details

Total dwellings (approved)	**800**
Dwellings under construction/constructed	580
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	25.9 ha
Total current clearing of non-critical habitat	30.83 ha
Total current clearing (critical and non-critical habitat)	56.73 ha


152°50'30"E
152°51'0"E
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152°52'0"E
152°52'30"E
27°37'0"S
27°37'30"S
27°38'0"S
27°38'30"S
27°39'0"S
GOODNA CREEK
HARRY RATNAM PARK
SIX MILE CREEK
0 200 400 600 800 m
Scale (A4): 1:20,000
Legend
Woodlinks Village
Watercourse areas
Defined critical habitat
Cleared defined critical habitat
N
File ref: 7189 E 02 Clearing Extent
Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse MercatorDatum: GDA 1994
Data sources: © State of Queensland (Department of Natural Resources and Mines) 2024. © State of Queensland (Department of Transport and Main Roads) 2020. Imagery: Metromap 2024
Woodlinks Village – Master Planned Residential Community
EPBC 2013/6866
Figure 2 - Clearing Extent
Prepared on 12 September 2024
Prepared by
saunders havill group

3.1. Impact area actions

3.1.1 Vegetation clearing

Additional vegetation clearing work associated with Stage 20 of the residential development located in the northern portion of the development area was undertaken in October 2023 following the completion of broad clearing works in June 2023 (refer **Photo 1**). Australia Wide Environmental Consultants (AWEC) were the engaged fauna spotter catchers for this clearing tranche and were always present during clearing activities.

Prior to vegetation clearing, fauna spotter catchers completed a pre-clearance survey and accompanying report were to identify habitat values and fauna species present within the proposed clearing area and assign mitigation strategies. This survey was completed in the month preceding the clearing. The report detailing pre and post-clearing survey results was completed and summarises daily pre-clearance fauna checks, specific methodology in the event a koala is observed, felling procedures, and identified fauna values and species located during clearing. The survey report issued in October 2023 is provided at **Appendix B**.

No koalas were observed during the vegetation clearing works.

3.1.2 Sediment control measures

It was observed during the site inspection that previous sediment fencing around earthworks has since been removed from the clearing boundaries and more permanent solutions have been implemented. Sediment-smart Garden bed designs have been retained (coir logs as well as garden bed matting) with the vegetation within this area doing well and ensuring the stability of the area which can be observed in **Photo set 1)**. Sediment trapping infrastructure is present along the drainage lines to further assist with sediment control.

Photo set 1: Current erosion and sediment control methods. Establishment of healthy garden bed and Sediment traps

3.1.3 Drainage and stormwater conveyance corridor

The establishment of a drainage and stormwater corridor located in an east-west direction within the development area was monitored. The corridor extends from west of Mullins Street to the east towards the on-site offset area. This corridor was inspected by SHG to qualitatively assess the current condition and identify whether fauna may be utilising the corridor for movement. The corridor is dominated by mature eucalypt species with an understorey comprised of regenerating eucalypts, native shrubs, forbs and grasses such as *Callistemon viminalis* (Bottlebrush Red), *Acacia leiocalyx* (Early Flowering Wattle), *Imperata cylindrica* (Blady Grass) and *Themeda triandra* (Kangaroo Grass) (refer **Photo 2**).

In previous reports field surveys identified fauna species utilising the culvert underpass at Mullins Street in the form of an array of fauna tracks. This included diggings and tracks of Northern Brown Bandicoot, macropod species tracks, several bird species, and evidence of domestic cat usage. Canopy species retained as part of works and providing ongoing fauna habitat values are shown in **Photo 3.**

Photo 2: Native flora regeneration at stormwater culvert outlet.

Photo 3: Vegetation within the drainage corridor.

3.1.4 Fauna exclusion measures

Fauna exclusion measures within the development area were inspected as part of the site inspection, focussing on areas adjoining the Goodna Creek corridor. Fencing types of the residential properties immediately adjacent to the Goodna Creek corridor were observed to be consistent with fauna exclusion, deterring native non-avian fauna from entering residential yards (refer **Photo Set 4**).

Photo Set 4: New build residence with fauna exclusion fencing adjacent to rehabilitated areas.

4. Offset area actions

As per the detailed 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 (ICC) 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 EPBC 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 offset land adjoining Goodna Creek to the west, this involves the creation of parkland allotments and the dedication of the land to ICC 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 ICC 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 ICC and once satisfactory the area is accepted as "on-maintenance".
6. After 24 months, if the completed works continue to satisfy ICC 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 ICC.

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

1. The offset allotment is created as the development allotments are reconfigured. This occurs post approval of the stage adjoining the Goodna Creek conservation corridor.
2. The improvement works must have occurred prior to ICC accepting the dedicated land (ICC 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 total offset area, is already under ICC ownership and is therefore secured and protected. As of March 2023, broad revegetation works were completed within Harry Ratnam Park under ICC endorsement.

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 allotments 7002 and 7003 (8.5 ha);
- Goodna Creek watercourse allotments (2.8 ha); and
- Harry Ratnam Park allotments (13.5 ha).

Additionally, part of lot 5007 SP317659 is an open space area in the north-east that comprises part of the offset corridor. As development progresses in the wider northern area, this open space will become an individual lot in the corridor referred to as 'future lot 7004'. Weed management and rehabilitation works were completed in this area in June 2021 and continues to be maintained across this reporting period, anticipating formal off-maintenance in the final quarter of 2024.

4.1. Offset status

At eight 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.
- Off-maintenance with ICC.

Lot 7001:

- Operational works permits achieved.
- Works tendered and complete.
- Plan parcel sealed.

Lots 7002 and 7003:

- Operational works permits achieved.
- Works tendered and complete.
- Plan parcel sealed.
- Improvement works achieved practical completion stage on 2 July 2019.
- Stages 15 / 17 rehabilitation works were confirmed off-maintenance with ICC on 13 October 2021.

Lot 7004:

- Operational works permits achieved.
- Works tendered and complete.
- Improvement works commenced June 2021.
- Improvement works were completed July 2021.
- Practical completion was formally awarded on 29 July 2021, then subject to ICC 12-week establishment period.
- Stage 18 rehabilitation works commenced on-maintenance period on 28 October 2021. Subject to successful establishment, off-maintenance is scheduled to occur 24-months after the end of the establishment period being 28 October 2023.
- Off-maintenance inspection was completed by ICC on 24 October 2023. ICC advised formal off-maintenance can be issued once the lot has been plan sealed.

Harry Ratnam Park:

- Full land access agreement in place and executed between approval holder and ICC.
- Preliminary weed management works completed by Jungle Busters in March 2023.
- Broad revegetation works carried out by Jungle Busters following weed management and awarded practical completion on 30 March 2023 by ICC.
- End of 24-week establishment period completed on 14 September 2023.
- Ongoing use and harvest of the koala harvest area.
- Monthly photo monitoring completed by SHG from March 2023 to June 2024. A sample of these reports is provided at **Appendix C**.

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

- Revised Harry Ratnam Park rehabilitation works status overview – *Goodna Creek & Harry Ratnam Park Revegetation and Rehabilitation* plan overview (refer **Appendix D**).
- Rehabilitation Plan – *Harry Ratnam Park Rehabilitation Works Plan, prepared by SHG* (refer **Appendix E**).

- In summary, all of the 32.8 ha offset area has been subject to rehabilitation works for improved koala habitat and includes Lots 7000, 7001, 7002, 7003, future lot 7004 and Harry Ratnam Park.

4.2. Offset inspection

An inspection of improvement works across all rehabilitation allotments was completed by two Ecologists from SHG on 13 August 2024. Observations of rehabilitation areas are provided in the subsections below.

4.2.1 Harry Ratnam Park Rehabilitation observations

The preliminary weed management works, and broad revegetation was completed within Harry Ratnam Park on 30 March 2023. Plantings within the revegetated area showed successful establishment after 11 weeks into the 24-week establishment period. Inspection of the revegetated area indicated a high success rate with an estimated 90% or more of planted vegetation was successfully established (refer **Photo set 5**). Areas within the Park were observed to be fully established with some plantings reaching 2 to 3 metres in height (see **Photo set 5**).

While it was observed that much of Harry Ratnam Park is successful, it is noted that some weed incursion as well as die offs of plantings was recorded in some areas (refer **Photo set 6**), however, is fairly minor with planting success averaging at least 90% Continued weed management practices are anticipated to maintain current establishment success.

It is noted that Harry Ratnam Park has been subject to monthly photo monitoring by SHG to track rehabilitation progress. Photo monitoring has been completed up to April 2024.


Photo set 5: **Progress of rehabilitation within Harry Ratnam Park.**


Photo set 6: **Minor weed incursion within Harry Ratnam Park.**

4.2.2 Lots 7002,7003 and future Lot 7004 Goodna Creek Rehabilitation Observations

The rehabilitation works along Goodna Creek within lot 7002 and 7003 were accepted as 'off-maintenance' by ICC on 13 October 2021. Weed incursion was observed at various levels within the Goodna Creek which included Lantana (*Lantana camara*) Easter Cassia (*Senna pendula*) and other weed species (refer **Photo set 7**).


Photo set 7: Goodna Creek corridor weed incursion. Lantana (left) and Easter Cassa (right).

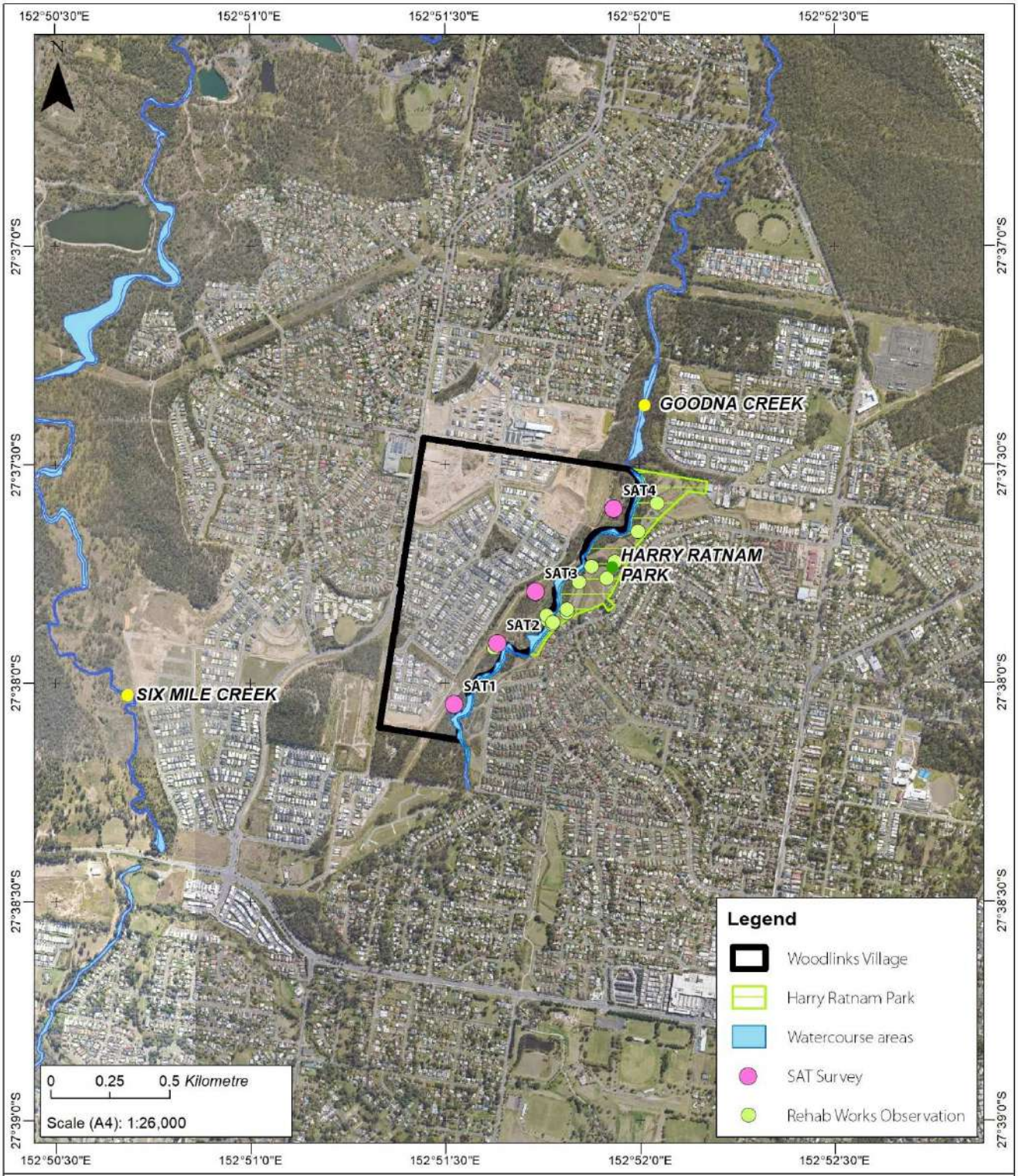
4.2.3 Fauna observations

A fauna assessment was completed across the Goodna Creek corridor site on 13 August 2024 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. 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 completed.

The following observations have been made based on field survey:

- Four (4) SAT surveys for koala evidence were carried out within the corridor (refer **Figure 3**).
- All 4 SAT surveys carried out across the site recorded 'Low use' using the Phillips and Callaghan (2011) Guide for '*The Spot Assessment Technique*' (East Coast med-high activity category). The majority of fauna observed on site were highly mobile bird species.
- Eastern Grey Kangaroos (*Macropus giganteus*) were observed within the corridor.
- Evidence in the form of tracks were recorded of multiple macropod species in the offset area.

A thermal UAV survey to detect koalas along the Goodna Creek corridor was not undertaken during this reporting period.



File ref: 7189 E 03 A Field Survey Effort

Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse MercatorDatum: GDA 1994
Data sources: © State of Queensland (Department of Natural Resources and Mines) 2024. © State of Queensland (Department of Transport and Main Roads) 2019. Imagery: Metromap 2024

Woodlinks Village – Master Planned Residential Community
EPBC 2013/6866
Figure 3 - Field Survey Effort
Prepared on 19 September 2024

Prepared by saunders havill group

5. EPBC Act approval conditions compliance table

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

Table 2: EPBC approval conditions compliance table

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
1	The approval holder must not remove or fragment more than 25.9 hectares of habitat critical to the survival of the Koala. Impacts to habitat critical to the survival of the Koala must be limited to the project area shown in Attachment 1.	Compliant	All clearing of critical koala habitat within the approved clearing area has been completed (refer **Figure 2** clearing plan). Note: at the time of assessment and approval, habitat critical to the survival of the koala was defined in accordance with the interim advice note. Under this advice, only portions of the site achieved the criteria.
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:	Compliant	On 15th October 2014 the Department approved the KMP and provided confirmation that the KMP met the requirements of condition 2. Implementation of the KMP is detailed in section 7 of this report and **Table 3**.

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

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
	3. provision of the following details, at a minimum, to be recorded if any Koalas are captured during relocation activities: • sex • age class • time and date of capture • method of capture • location of capture (Global Positioning System (GPS)) • state of health • any veterinary intervention required • time held in captivity • location of release (GPS) and date 4. provision of the following details at a minimum to be recoded for incidents if any Koalas are injured or killed: • time, location (GPS) and nature of extent • details of Koalas (including sex and age class) • measures taken to address incident		
3	To offset the residual impacts to Koala, the approval holder must implement mechanisms to provide enduring protection, over a minimum of 27 hectares, to the offset site, referred to as 'Goodna Creek Offset and Rehabilitation Area' as shown in Attachment 1. 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	Compliant	As described in *Section 4 Offset Actions*, dedication and enduring protection of the offset area is a sequential process and 19.3 ha of rehabilitated land which includes Lots 7000, 7001, 7002, 7003 and future Lot 7004. As detailed in Section 4.2, rehabilitation works were completed within ICC's open space area referred to as Harry Ratnam Park in the last quarter of 2022 and first quarter of 2023 (refer evidence provided in ACR 7). Following the completion of the 24-week establishment period on 14

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
	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.		September 2023, subject to successful establishment, the proposed off-maintenance date is 24-months after the end of the establishment period being 14 September 2025, to be accepted at ICC's discretion. In total, 32.8 ha is currently protected (including Goodna Creek) and subject to rehabilitation. It is noted that project commencement occurred twelve months after the issuing of the approval. The Preliminary Approval overriding the planning scheme provides protection over the land.
4	The approval holder must prepare an Offset Management Plan to address significant residual impacts to Koalas as a result of the action: a. impacts to Koalas that must be offset include: i. the loss of 25.9 hectares of habitat critical to the survival of the Koala, and ii. injury and mortality of Koalas. b. the Offset Management Plan must include, but not be limited to: i. a detailed description of all affected values and the extent and likely timing of the impact/s on each, ii. the offset delivery mechanism(s) comprising land offsets and management, and maintenance of Koala population offset within the 'Goodna Creek Corridor' as shown in Attachment 1,	Compliant	The Woodlinks Village OMP was approved by the Department on 15th October 2014 and the approval confirmed the OMP met the requirements of condition 4. Implementation of the OMP is described in Section 7 of this report and **Table 4**.

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
	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 viii. corrective actions and contingency measures to be implemented (including the timing of implementation of these) where monitoring of the offset area/s under the offset plan shows that offset strategies are not effectivity achieving a net benefit or key milestones are not being or unlikely to be met, and ix. include textual descriptions and maps clearly defining the locations and boundaries of offset areas. These must be accompanied by a shapefile. c. The Offset Management Plan must be developed in consultation with the Department and other relevant stakeholders, including but not limited to, the Ipswich City Council and Ipswich Koala Protection Society. d. The approval holder must give consideration to how offsets will contribute to programs or incentives that align with the broader strategies and programs for the conservation and protection of Koalas.		

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
	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. The Offset Management Plan must be implemented prior to the commencement of the action, or as otherwise directed in writing by the Minister.		
5	The most recent approved version of the Koala Management Plan and Offset Management Plan must remain accessible to the public on the website of the approval holder for the duration of the action.	Compliant	The approved versions of the KMP and OMP are accessible to the public via the Woodlinks Village web page: https://woodlinksvillage.com.au/builders-resources/
6	Within ten days after the commencement of the action, the approval holder must advise the Department in writing of the actual date of commencement.	Compliant	The date of the commencement of the action was 24th June 2015 and the Department was notified on 25th June 2015.
7	The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the plans required by this approval, and make them available upon request to the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	Compliant	The SHG records and holds all relevant information for this EPBC Act approval on behalf of the approval holder. Electronic records of all material are held collectively by the SHG 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	Compliant	The anniversary of the commencement of the action is 24th June. The annual deadline for publishing the report addressing compliance with each of the conditions of the approval (*i.e.,* this ACR) is 23rd September. Documentary evidence providing proof of the date of publication will be provided to the Department

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence/comments
	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.		when the report is published. Where the annual deadline is not a business day in Brisbane, the following business day is taken to be the due date. The 2024 ACR due date is Monday 23rd September 2024 and notification to the Department will be provided prior to this date. The approval holder and SHG are not aware of any potential or suspected non-compliance with the conditions during the reporting period.
9	Upon the direction of the Minister, the approval holder must ensure that an independent audit of compliance with conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	Not applicable	The Minister has not directed the approval holder to conduct an independent audit of compliance with the conditions of the approval.
10	If the approval holder wishes to carry out any activity otherwise than in accordance with a plan as specified in the conditions, the approval holder must submit to the Department for the Minister's written approval a revised version of that plan. The varied activity shall not commence until the Minister has approved the revised plan, that plan must be implemented in place of the plan originally approved.	Not applicable	The approval holder has not wished to carry out any activity that is not in accordance with the approved KMP and OMP.
11	If the Minister believes that it is necessary or convenient for the better protection of Koala to do so, the Minister may request that the approval holder make specified revisions to a plan specified in the conditions and submit the revised plan for the Minister's written approval. The approval holder must comply with any such request. The revised approved plan must be implemented. Unless the Minister has approved the revised plan, then the approval holder must	Not applicable	The Minister has not provided a direction to revise a plan specified in the conditions.

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

6. Koala Management Plan

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

Table 3: Koala Management Plan implementation

No.	Commitment	Evidence/comments/status
KMP-1	**Awareness** To achieve the objectives of the KMP, it is important that site personnel (e.g. contractors and sub-contractors) are aware of the plan and the requirements pertaining to the protection of the Koala. As part of working on-site, the civil contractor is responsible for ensuring civil works personnel are aware of the KMP and impacts to the Koala are reported to the approval holder.	Throughout the clearing activities, site personnel (e.g. contractors and sub-contractors) were made aware of the KMP requirements and could readily access a copy via the Woodlinks Village website at all times. While on-site, the temporary site office displayed a copy of the KMP. Induction material, daily meetings and reporting captured information pertaining to fauna management while the civil contractor's undertook work at Woodlinks Village.
KMP-2	**Construction management - fauna** Engage a registered fauna spotter/catcher to protect wildlife from the impacts of clearing. This includes the preparation of management plans (e.g. Wildlife Protection and Management Plan (WPMP) and Wildlife and Habitat Impact Mitigation Plan (WHIMP)), attendance at key project milestones such as the pre-start meeting, pre-clearance reporting and post-works reporting. The fauna spotter/catcher management plans incorporate methods for relocating fauna during clearing activities.	Throughout clearing activities (including pre-clearance and post-clearance), QFC was engaged to provide fauna spotter/catcher services at Woodlinks Village. QFC reports include data on fauna encountered during clearing and are available at request. Reporting to the Department on clearing activities is undertaken in accordance with the approval conditions.
KMP-3	**Construction management - vegetation clearing** Clearing, rehabilitation and revegetation will occur in stages over the life of the project and pre-starts will be held with stakeholders. Vegetation clearing activities are supervised by suitably qualified person/s that adhere to current industry practices that protect the welfare of animals. These activities require demarcating the vegetation clearing limit prior to commencing clearing work. Subsequent reporting is made available to stakeholders and the public.	Ancillary clearing works associated with Stage 20 were completed within the reporting period Prior to clearing, the works area was demarcated, and an on-site pre-start was held with ICC. AWEC as the engaged fauna spotter catchers for the works supervised all vegetation clearing activities which included inspecting the demarcated boundary of the works area and ensuring clear paths for fauna to reach refuge locations were provided. AWEC's Standard Operating Procedure detailed the processes employed to safely and effectively minimise the potential harm caused to fauna during

No.	Commitment	Evidence/comments/status
		vegetation clearance. QFC and AWEC supervised all clearing work and their service reports are available at request.
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.	Clearing and civil works associated with Stage 10, Stage 11, Stage 12, Stage 13, stage 20, Stage 21, Stage 25, Stage 26, Stage 27 and Stage 28 during this reporting period and aligned with the development of residential land. Prior to clearing, the works area was demarcated, and the fencing was signed-off by ICC at the pre-start meeting. The fencing installed excluded fauna from entering the works area where required. Additionally, daily inspections of the fencing were completed by the contractor. A mix of fauna friendly and erosion and sediment control fencing was installed around the works area.
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 continue to be undertaken within the Goodna Creek open space area adjacent to the residential development area during this reporting period, with these works approved by ICC and currently under active management. Works in Harry Ratnam Park and rehabilitation activities (refer **Appendix D**) were completed in the last quarter of 2022 and first quarter of 2023. 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

No.	Commitment	Evidence/comments/status
		provide current information on the commitments to protecting and improving the Goodna Creek open space area and how residents can contribute to protecting koalas.
KMP-7	**Operational management – fencing and planting** Neighbourhood design will include road frontage between residential allotments and the Goodna Creek open space area. Additionally, landscape design will avoid planting known Koala food or shelter trees in areas outside of the Goodna Creek open space area to discourage Koalas from entering residential areas. Residents will be informed of the preference for planting non-Koala food and habitat trees on private land.	The residential layout constructed has provided road frontage to the open space area as an interface between the residential and open space land uses. Approved landscape works do not include koala trees in the species mix. Community awareness of the Goodna Creek corridor and function is an ongoing campaign and the fencing requirements required are strongly emphasised. Residential buyers are informed of the Koala management measures as part of the land purchasing process. Additional information and guidelines are provided on the Woodlinks Village website and letterbox pamphlets (refer to the lifestyle guidelines for Woodlinks Village in **Appendix F**). 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 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. This includes fauna awareness signage targeted at Koala. The street is not a thoroughfare and traffic calming measures have not been implemented at this 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, ICC and the approval holder with guidance and reference to the approved OMP and KMP.
OMP-2	Engage a registered fauna spotter/catcher to protect wildlife from the impacts of clearing. Adhere to industry standards whereby construction activities work alongside, and under instruction from, fauna spotter/catcher personnel in order to avoid impacting wildlife.	Throughout 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 reporting includes data on fauna encountered during clearing and are available at request. Reporting to the Department on clearing activities is undertaken in accordance with the approval conditions.
OMP-3	Rehabilitate (i.e. weed removal and revegetation) the Goodna Creek corridor offset area.	As described in *Section 4 Offset Actions*, dedication and enduring protection of the offset area is a sequential process and thus far Lot 7000 on SP266998, Lot 7002 on SP307776 and Lot 7003 on SP317646 have been rehabilitated and dedicated to ICC. Future Lot 7004 is on-maintenance, with rehabilitation activities completed in 2021 and off-maintenance anticipated to be achieved in the final quarter of 2024 Improvement works in Harry Ratnam Park were completed in the last quarter of 2022 and completed in March 2023. In total, 32.8 ha is currently protected and rehabilitated within the Goodna Creek corridor.
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.

No.	Commitment	Evidence/comments/status
OMP-5	Commence offset area rehabilitation during stage 1 of the development with an on-maintenance period of 18 months. Each stage of rehabilitation is scheduled for completion within three years of stage commencement. After the completion of works, the proponent will maintain the offset area until is it ready for hand over and dedicated to Ipswich City Council.	Rehabilitation allotment 7000 and 7001 met scheduling targets during the 2017-2018 reporting period and were handed over to ICC for off-maintenance. Lot 7002 and 7003 (*i.e.,* Stages 15 / 17) were completed as one scope of works during the 2018-2019 reporting period and achieved practical completion on 2 July 2019. On-maintenance began on 24 September 2019 and rehabilitation works were confirmed off-maintenance with ICC on 13th October 2021. Further, Stage 18 (Lot 7004) rehabilitation works were confirmed to commence on-maintenance on 28th October 2021. Subject to successful establishment, off-maintenance is scheduled to occur in the final quarter of 2024. In total, 32.8 ha is currently protected and rehabilitated within the Goodna Creek corridor. SHG Ecologists inspected the revegetation areas within the corridor during the 2023-2024 reporting year, confirming the successful establishment and ongoing survival of the plantings.
OMP-6	Publish the current OMP online.	The OMP was made available via the Woodlinks Village website at the below link: https://woodlinksvillage.com.au/builders-resources/
OMP-7	Monitor landscape works until the relevant area is handed over to Ipswich City Council. Monitoring will include the identification of corrective actions required to progress the works towards the objective of handing over to Ipswich City Council.	The approval holder engaged a landscaping contractor to undertake rehabilitation and regeneration works across Lots 7000, 7001, 7002, 7003 and 7004. These works were under active management by the contractor with periodic inspections by a registered landscape architect and ICC 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 newly created allotments, the Goodna Creek waterway and the existing Harry Ratnam Park (13.5 ha) managed by ICC. At this stage, Lots 7000, 7001, 7002, 7003 are now ICC

No.	Commitment	Evidence/comments/status
		assets, future Lot 7004 will become an ICC asset subject to ICC acceptance as off-maintenance. SHG Ecologists inspected the revegetation areas within the corridor during the 2023-2024 reporting year, confirming the successful establishment and ongoing survival of the plantings.
OMP-10	Ongoing monitoring and reporting of works to assess the success of weed removal and control, natural regeneration and new threats that may arise. Progress the landscape works through the on-maintenance and off-maintenance periods in order to transfer ownership to Ipswich City Council.	The protected Goodna Creek open space area where revegetation works are complete was regularly inspected by a registered landscape architect and ICC to review the success of works completed (refer to photo monitoring reports located at **Appendix C**). As part of this process, both parties provided advice and directions to the contractor on additional works required to achieve the off-maintenance objective. The success of new plantings, weed removal and control is an ongoing task for future Lot 7004. Improvement works in this area regularly inspected by a registered landscape architect and ICC to review the success of works completed. In addition, SHG Ecologists inspected the revegetation areas within the corridor in August of the 2023-2024 reporting year, confirming the successful ongoing establishment and survival of the plantings.
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 ACR 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 at the below link: https://woodlinksvillage.com.au/builders-resources/

8. Appendices

Appendix A

EPBC approval and conditions granted 30 October 2014

Appendix B

AWEC Fauna Spotter Catcher Report October 2023

Appendix C

Harry Ratnam Park monthly photo monitoring reports

Appendix D

Goodna Creek & Harry Ratnam Park revegetation and rehabilitation works status overview Harry Ratnam Park Rehabilitation Works

Appendix E

Harry Ratnam Park Rehabilitation Works Plan, prepared by SHG

Appendix F

Lifestyle guidelines for Woodlinks Village

Appendix A

EPBC approval and conditions granted

30 October 2014

Australian Government
Department of the Environment

Approval

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

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

Proposed action

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

Approval decision

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

conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 31 January 2034.

Decision-maker

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

Conditions attached to the approval

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

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

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

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

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

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

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

4. The **approval holder** must prepare an Offset Management Plan to address significant residual impacts to Koalas as a result of the action.

a. Impacts to Koalas that must be offset include:
   i. the loss of 25.9 hectares of **habitat critical to the survival of the Koala**, and
   ii. injury and mortality of Koalas.

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

outcomes, including timing and frequency of monitoring and reporting;

viii. corrective actions and contingency measures to be implemented (including the timing of implementation of these) where monitoring of the offset area/s under the offset plan shows that offset strategies are not effectively achieving a net benefit or key milestones are not being or are unlikely to be met; and

ix. include textual descriptions and maps clearly defining the locations and boundaries of offset areas. These must be accompanied by a **Shapefile**.

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

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

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

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

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

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

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

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

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

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

Definitions:

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

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

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

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

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

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

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

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

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

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

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

Suitable recipient Koala habitat: means an area that:

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

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

Attachment 1:

Legend

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

Figure 1 *Development and Offset / Rehabilitation Areas*

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

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

N

saunders havill group

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

Appendix B

AWEC Fauna Spotter Catcher Report October 2023

485-SCC2310-D

POST CLEARANCE REPORT

WOODLINKS ESTATE
COLLINGWOOD DRIVE & EAGLE STREET
ROADSIDE CLEARING
QUEENSLAND

Prepared for client:

SHADFORTH CIVIL CONTRACTORS

Dates on site:
October 2023

AWEC
ENVIRONMENTAL CONSULTANTS

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DOCUMENT CONTROL

APPROVALS

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Kirra Hatfield	Junior Ecologist	

REVISION REGISTER

Rev	Date	Details	Completed by	Approved by
0	17/10/23	Initial draft for review	KH	YV
1		Final for submission		
2		Revision updates due to additional pre- clear survey		

AWEC ENVIRONMENTAL CONSULTANTS

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1 INTRODUCTION

1.1 Background

Australia Wide Environmental Consultants (AWEC) were commissioned by Shadforth Civil Contractors to manage fauna and provide a post-clearance survey report for the vegetation removal related to the development works at Woodlinks Estate, Collingwood Park, Queensland (FIGURE 1).

The site area is located within the Ipswich City Council (ICC) and is for the roadside clearing along Collingwood Drive and Eagle Street of stage 20 of the development (FIGURE 2). Total clearing area is approximately 6.8 Ha.

1.2 Qualifications, permits and statutory guidelines

The AWEC nominated Ecologist is Yolande Venter who is a degree qualified ecologist/environmental scientist with over 15 years of field experience within the ecology and environmental sectors.

Australia Wide Environmental Consultants (AWEC) holds a current DES rehabilitation permit (Permit #WA0027769), with an extended authority issued by the Department of Environment and Science specifying that the holder may take, keep, or use an animal whose habitat is about to be destroyed by human activity.

Refer to APPENDIX 6.1 for a full list of relevant statutory requirements and guidelines that this project, works and report complies with.

1.3 Scope

AWEC were commissioned to undertake a survey prior to any works commencing, which included ground truthing the desktop findings. AWEC were onsite during all clear and grub earth works (topsoil stripping & tree felling) to manage fauna spotter operations during any ground disturbance works as needed. This report details those findings and any outcomes related to fauna spotter operations and management measures used to control the risk to native fauna during these works onsite (APPENDIX 6.2).

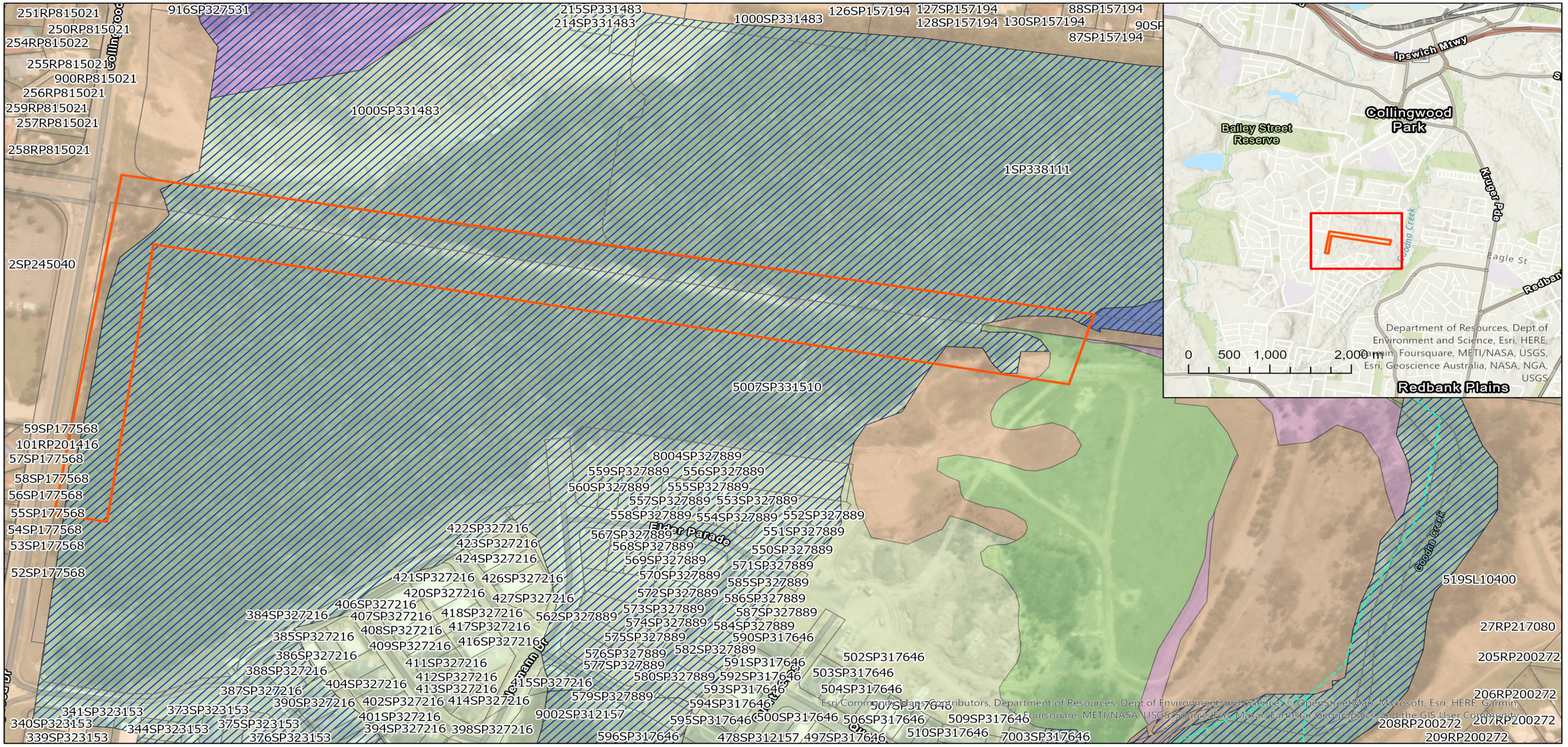
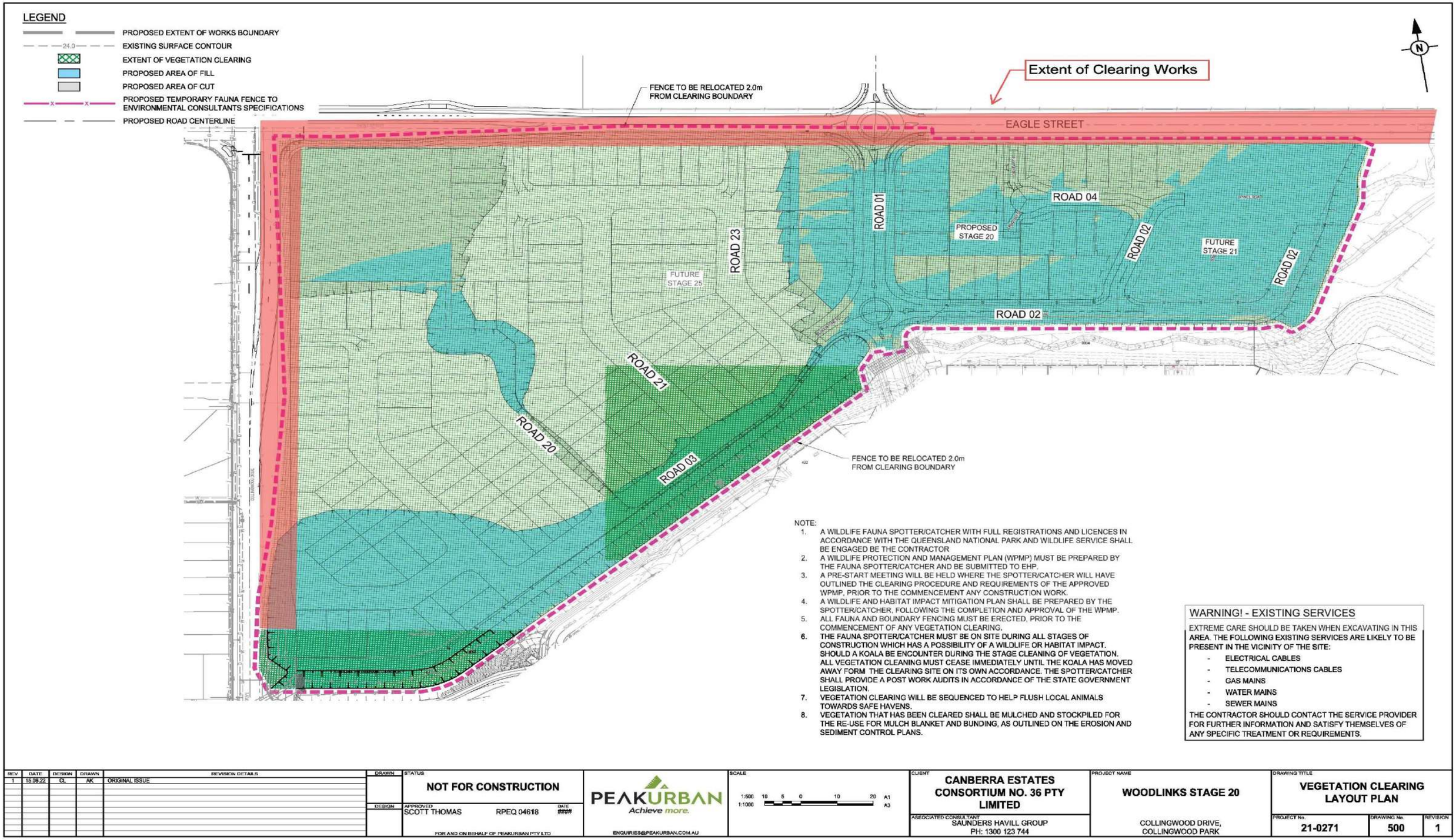


FIGURE 1- SITE CONTEXT



NOTE:

1. A WILDLIFE FAUNA SPOTTER/CATCHER WITH FULL REGISTRATIONS AND LICENCES IN ACCORDANCE WITH THE QUEENSLAND NATIONAL PARK AND WILDLIFE SERVICE SHALL BE ENGAGED BE THE CONTRACTOR
2. A WILDLIFE PROTECTION AND MANAGEMENT PLAN (WPMP) MUST BE PREPARED BY THE FAUNA SPOTTER/CATCHER AND BE SUBMITTED TO EHP.
3. A PRE-START MEETING WILL BE HELD WHERE THE SPOTTER/CATCHER WILL HAVE OUTLINED THE CLEARING PROCEDURE AND REQUIREMENTS OF THE APPROVED WPMP, PRIOR TO THE COMMENCEMENT ANY CONSTRUCTION WORK.
4. A WILDLIFE AND HABITAT IMPACT MITIGATION PLAN SHALL BE PREPARED BY THE SPOTTER/CATCHER, FOLLOWING THE COMPLETION AND APPROVAL OF THE WPMP.
5. ALL FAUNA AND BOUNDARY FENCING MUST BE ERECTED, PRIOR TO THE COMMENCEMENT OF ANY VEGETATION CLEARING.
6. **THE FAUNA SPOTTER/CATCHER MUST BE ON SITE DURING ALL STAGES OF CONSTRUCTION WHICH HAS A POSSIBILITY OF A WILDLIFE OR HABITAT IMPACT. SHOULD A KOALA BE ENCOUNTER DURING THE STAGE CLEANING OF VEGETATION, ALL VEGETATION CLEANING MUST CEASE IMMEDIATELY UNTIL THE KOALA HAS MOVED AWAY FORM THE CLEARING SITE ON ITS OWN ACCORDANCE. THE SPOTTER/CATCHER SHALL PROVIDE A POST WORK AUDITS IN ACCORDANCE OF THE STATE GOVERNMENT LEGISLATION.**
7. VEGETATION CLEARING WILL BE SEQUENCED TO HELP FLUSH LOCAL ANIMALS TOWARDS SAFE HAVENS.
8. VEGETATION THAT HAS BEEN CLEARED SHALL BE MULCHED AND STOCKPILED FOR THE RE-USE FOR MULCH BLANKET AND BUNDING, AS OUTLINED ON THE EROSION AND SEDIMENT CONTROL PLANS.

WARNING! - EXISTING SERVICES

EXTREME CARE SHOULD BE TAKEN WHEN EXCAVATING IN THIS AREA. THE FOLLOWING EXISTING SERVICES ARE LIKELY TO BE PRESENT IN THE VICINITY OF THE SITE:

- ELECTRICAL CABLES
- TELECOMMUNICATIONS CABLES
- GAS MAINS
- WATER MAINS
- SEWER MAINS

THE CONTRACTOR SHOULD CONTACT THE SERVICE PROVIDER FOR FURTHER INFORMATION AND SATISFY THEMSELVES OF ANY SPECIFIC TREATMENT OR REQUIREMENTS.

REV	DATE	DESIGN	DRAWN	REVISION DETAILS
1	15.08.22	CL	AK	ORIGINAL ISSUE

DRAWN

DESIGN

STATUS: **NOT FOR CONSTRUCTION**

APPROVED: SCOTT THOMAS RPEQ 04618 DATE #####

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CLIENT: **CANBERRA ESTATES CONSORTIUM NO. 36 PTY LIMITED**

ASSOCIATED CONSULTANT: SAUNDERS HAVILL GROUP PH: 1300 123 744

PROJECT NAME: **WOODLINKS STAGE 20**

COLLINGWOOD DRIVE, COLLINGWOOD PARK

DRAWING TITLE: **VEGETATION CLEARING LAYOUT PLAN**

PROJECT No.	DRAWING No.	REVISION
21-0271	500	1

FIGURE 2– DEVELOPMENT LAYOUT

2 METHODOLOGY

A suitably qualified and licenced fauna spotter catcher (FSC) was on site 4th October 2023. The Fauna spotter catchers' primary role was to manage the fauna operations during clearing works, clearing and grub and dewatering activities associated with bulk earth works. To minimise impacts upon local fauna the following methods were adhered to:

2.1 Managing Disturbance Activities

Prior to Work Commencing

The FSC conducted a ground truth inspection of the site every morning prior to any disturbance activities occurring. All habitat features and nesting sites were clearly marked with flagging tape and their planned mitigation measures were discussed with the clearing crew to avoid any unauthorised clearing.

During Disturbance Works

During clearing works a FSC was present to manage the risk to native fauna on site. The FSC ensured that significant habitat features, and breeding sites were cleared in a manner that best mitigated the risk to any fauna potentially in-habiting them.

The FSC managed the direction of clearing to ensure that fauna was directed to a suitable location away from clearing with habitat connectivity to ensure safe self-relocation opportunities for any animals impacted by the clearing works.

2.2 Fauna Capture

The primary role of the FSC on site was to remove any fauna within the disturbance site. Where practical animals were moved out of the proposed disturbance area before clearing/stripping works commenced during the pre-works ground truth inspection.

Where there was a risk to native fauna a FSC was present during clearing works to observe for any potential displaced fauna, fauna signs or significant habitat features. When an animal was sighted and deemed safe to approach the animal and enter the clearing boundary, the capture procedure listed below was adhered to.

The following does not apply to the Endangered Koala which cannot be captured, handled, stored or removed from site and must be managed in accordance with the *Nature Conservation and Other Legislation (Koala Protection) Amendment Regulation 2020.*

During clearing works if an animal was observed by the FSC that needed capture, relocation or medical treatment the FSC undertook the following measures;

- Establish positive radio and visual contact with machine operator to alert them to animal sighting and ask them to cease works immediately and place machine buckets or grabs on the ground.
- When positive comms has been established with operator and works ceased enter clearing limits and capture animal.
- Once animal was safely captured, exit the worksite and re-establish pos coms with operator prior to exiting the clearing limits.

- where possible animal was released into suitable adjacent habitat immediately.
- Animal is secure in bag and was relocated to adjacent habitat where possible or relocated to suitable habitat offsite.
- Machine operator cannot recommence until FSC is back onsite and supervising works.
  No clearing works were undertaken without a FSC present.

2.3 Storing Captured Fauna

Captured fauna was secured in a calico bag, snake bag or pet carrier after being captured. all animals placed into a bag had the end securely knotted closed and then tied using a bag tie or zip-tie.

These bags were placed in a quiet dark location with appropriate temperature control for the species that has been captured. Captured fauna were released into suitable adjacent habitat as soon as possible. Any encountered nocturnal species were relocated later at dusk.

Any animal found injured or orphaned, was safely secured in a manner that prevented unnecessary further stress or increased the severity of its injuries. Any injured animals requiring medical treatment were transported to a wildlife carer or vet clinic.

2.4 Fauna Identification

All fauna observed, relocated, euthanised or taken to a carer was identified onsite by the FSC. If a sighted or captured/collected flora or fauna specimen cannot be identified on site an ecologist was consulted who assisted the FSC with correct identification of the species. (All species must be correctly identified for reporting purposes also).

2.5 Releasing Captured Fauna

See FIGURE 3 for release locations for any fauna found during clearing works. These sites were inspected prior and contained a wide range of vegetation types and suitable habitat for the fauna species which required relocation. The locations adhered to the DES guidelines below:

When releasing animals away from disturbed habitat, attention must be paid to several factors, including weather conditions, seasonal conditions and the animal's ecology. Native Fauna should be released:

- Into suitable habitat with an adequate food supply
- In appropriate weather, season, and time of day. This is particularly important for migratory species.
- Under circumstances which will not cause additional stress, such as extreme weather conditions, the wrong time of day (i.e., nocturnal species)
- In the appropriate social group. Some animals fare better if released into social groups.
- Within 1km of the site as per DES guidelines.

Fauna should be released at a suitable time of day, in a protected location close to the site. Data should be recorded and kept on all fauna species trapped and relocated in accordance with DES guidelines under the Rehabilitation Permit issued to AWEC.

If situations occur where animals can be re-released on the clearing site once clearing is complete the following criteria must be followed:

- Sufficient habitat is retained on site to support the animal's required niche, considering factors such as: vulnerability to predation; availability of nesting sites, hollows or microhabitats and the availability of water and sufficient food sources.
- Habitat corridors retained are of a suitable size, topography, and vegetation cover to provide effective routes for normal ecological processes such as immigration, emigration, recruitment and dispersal.
- Habitat blocks and corridors are of sufficient size to maintain ecological integrity and effectiveness, considering likely edge effects.
  Long term risk factors to individual and population survival associated with the development have been (or will be) adequately managed or mitigated. For example: domestic animal control, motor vehicle/road impacts, swimming pool risk.

2.6 Injuries & Euthanasia

Due to the nature of the works with heavy machinery some animal species are injured during clear and grub or tree felling operations. FSC assesses the animal health and suitability for making a recovery and being released back into its natural habitat before deciding on Euthanasia as an option.

Any injured animals that have a reasonable chance of being rehabilitated and released back into their natural habitat were immediately taken to a suitable animal medical facility. Any orphaned young or fauna with minor injuries (e.g., concussion) were taken to the closest carer. Some animals, such as Koala's require specialist care and the closest suitable care facility was contacted.

Any euthanasia required was done promptly and, in a manner, most humane to that species.

Recommended Wildlife Surgery-

i. RSPCA Wildlife Hospital, Wacol 1300 ANIMAL
ii. Wildcare Australia Inc (07) 5527 2444
iii. Australia Zoo Wildlife Hospital (07) 5436 2097

2.7 Process of Clearing (Two stage clearing process)

The first stage of clearing was removing all the non-habitat trees. Non-habitat trees (i.e., trees other than those identified as habitat trees) were cleared and stockpiled for mulching. Clearing of non-habitat trees only occurred where their removal did not impact on identified habitat trees (e.g., canopies did not interconnect with habitat trees).

The second stage of clearing was removing the habitat trees (a minimum of 24 hours after the first stage of clearing and where conditions allowed habitat trees to be cleared in the afternoon). Once the vegetation surrounding each habitat tree was removed allowing better access, the site and the habitat tree were assessed to determine whether the tree was actively in-habited. This

was done by one of the following methods: drones, cameras, climbers, or an elevated work platform. Trees found not to be actively inhabited were soft felled to avoid damage to any of the habitat features which were retained. Actively in-habited trees were pieced down using an elevated work platform (EWP) or climbers to minimise the risk of injury to any potential animals inhabiting them.

2.8 Nest box requirements

The aim of nest boxes is to compensate for the loss of habitat features through the development of the site. The types of nest boxes to be installed will be influenced by the desktop research results, Fauna Pre-clearance Survey, fauna sighted or relocated during clearing works and if there is a nest box management plan available. Detailed nest box management measures can be found in APPENDIX 6.3.

This site is located within the Ipswich City Council (ICC), where there are no outlined details regarding nest box installation, so the following standard conditions are recommended to be followed:

- When a hollow is removed and it is occupied, a nest box must be installed at a 1:1 ratio, when a hollow is not occupied, nest boxes must be installed at a 3:1 ratio (three unoccupied hollows to one nest box; round up where number is not a factor of 3).

3 RESULTS

3.1 Survey Results

3.1.1 Site overview

The clearing extent consists of two sections of approximately 80m by 15m as the surrounding areas have previously been cleared and is already heavily disturbed. Canopy consists predominantly of Eucalypt species including *Eucalyptus intermedia, E. microcorys* and *E. tereticornis*. Midstory contains predominately Acacia species. Groundcover consists of shin-high native and non-native grasses with leaf litter cover (FIGURE 3 and FIGURE 4).

FIGURE 3 – EUCALYPTUS SPECIES DOMINATED SITE CANOPY

FIGURE 4 – ROADSIDE CLEARING SECTION OF VEGETATION

3.1.2 Habitat features and fauna signs

A low abundance of habitat features was recorded including three (3) hollow bearing tree sites containing a combined total of eight (8) hollows all of which were unoccupied. One (1) active stick nest was recorded (TABLE 1 and FIGURE 5).

FIGURE 5 displays the location of the signs and features in Table 1 with ID numbers (#) in the table corresponding with those in the figure.

TABLE 1 – HABITAT FEATURES & FAUNA SIGNS

#	Description	Location	
Habitat feature			
1	Crown hollow – 1 large hollow 	-27.625069	152.857409
2	Trunk hollow and Branch hollow – 3 medium, 2 large hollows 	-27.625091	152.857405
3	Branch hollow – 2 medium hollows 	-27.624577	152.863010
5	Arboreal termite mound contains a hollow 	-27.624633	152.863862
Fauna signs			
4	Stick nest - inactive 	-27.624662	152.863864

Habitat Features, Fauna signs & Relocations

Woodlinks Estate
Collingwood Drive & Eagle Street QLD
Roadside Clearing
Date: 17/10/2023

Scale: 1:2,200

0 35 70 140 m

N

Legend

- Clearing Extent
- Cadastral Parcels
- Arboreal termite mound
- Branch hollow
- Crown hollow
- Trunk hollow,Branch hollow
- Stick nest

FIGURE 5- HABITAT FEATURES & FAUNA RELOCATION

3.1.3 Fauna assemblage

A low diversity of species was recorded during clearing. The fauna assemblage observed or heard onsite was dominated by avian species of Least Concern conservation status (**TABLE 2**).

TABLE 2 – SIGHTED FAUNA BIODIVERSITY

Common name	Scientific name	Conservation Status
Avian species		
masked lapwing	*Vanellus miles*	Least Concern
Australian magpie	*Gymnorhina tibicen*	Least Concern
Torresian crow	*Corvus orru*	Least Concern
variegated fairy-wren	*Malurus lamberti*	Least Concern
willie wagtail	*Rhipidura leucophrys*	Least Concern

3.1.4 Fauna Capture & Relocation

Zero fauna were captured during clearing works at this site.

3.2 Nest box calculations

During clearing eight (8) hollows were recorded. In line with section 2.8 of this report, AWEC recommend the installation of **three (3) nest boxes** at this site (**TABLE 3**).

TABLE 3 – NEST BOX CALCULATIONS

	Count	Calculations	Required nestboxes
Hollows within non-habitat trees	8	8/3	3
Occupied hollows	8		
		Total	**3**

4 CONCLUSION

Australia Wide Environmental Consultants (AWEC) were commissioned by Shadforth Civil Contractors to provide a post clearance report to summarise management of flora and fauna during clear and grub works at Woodlinks Estate, Collingwood Road and Eagle Street, Collingwood Park, Queensland.

A suitably qualified and licenced FSC was on site for the duration of clearing works to ensure all fauna management measure were adhered to.

An AWEC FSC was onsite for a total of one (1) day during clearing works and no fauna required to be relocated out of the site. No significant species were observed.

No active nests, breeding sites or species with significant conservation status were encountered on site during clearing works. No fauna injuries or fatalities occurred during clearing works.

AWEC can confirm the site clearing works were conducted in a manner that complied with the statutory requirements and guidelines in relation to flora and fauna management, including aquatic animals.

5 RECOMMENDATIONS

Based on the calculations set out in the nest box requirements **section 2.8** of this report, AWEC recommends the installation of **three nest boxes** to offset the loss of hollows at this site.

Street planting of native tree species is also recommended to offset the loss of habitat and foraging grounds for local wildlife.

6 APPENDICES

6.1 Statutory requirements and guidelines

TABLE 6.1 - STATUTORY REQUIREMENTS AND GUIDELINES

Legislation	Purpose of Legislation	Impact on project personnel
Environmental Protection Regulation 2019	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 the DES.
Environmental Protection and Biodiversity Conservation Act 1999	The EPBC Act 1999 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 and Other Legislation Amendment Act 2016	The Act provides for the legislative 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 DES.
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 and Other Legislation (Koala Protection) Amendment Regulation 2020	Guideline for identifying and managing Koala habitat	Provides guidance on where Koala spotter's and Endorsed FSC 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	Ethical framwork for animals used for scientific purposes	Governing principles set out in the Code provide guidance for

Legislation	Purpose of Legislation	Impact on project personnel
animals for scientific purposes 8th edition (2013)		investigators, teachers, institiutions, 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 (2018)	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(2013)	Provides guidelines on the rehabilitation and care of wildlife	Detailed guidelines, in regards to hygiene, housing, capture and release, euthanasia and relevant legistation
Seqwater-Guideline-Fish Stranding and Salvage	The purpose of this guidance document is to ensure native fish recovery operations are conducted in a timely and safe manner to minimise or eliminate loss of fish from stranding.	Guideline on managing aquatic fauna during dewatering works.
Fisheries Act 1994	The main purpose of the *Fisheries* Act 1994 is to provide for the use, conservation and enhancement of the community's fisheries resources and fish habitats in a way that seeks to apply the principles of ecologically sustainable development.	Outlines fish habitats and fish movement and migration (regulation of waterway barriers). Guidelines on commercial, recreational and indigenous fishing.
Biosecurity Act 2014	The *Biosecurity Act 2014* provides a framework for an effective biosecurity system for Queensland, to ensure the safety and quality of agricultural inputs, and to align responses to biosecurity risks in the state with national and international obligations.	Under the *Biosecurity Act 2014*, pest species must not be kept, fed, given away, sold, or released into the environment without a permit. Under the *Biosecurity Act 2014*, everyone has a general biosecurity obligation (GBO) to take reasonable and practical steps to minimise the risks associated with restricted plants and animals.
DAF Guidelines for Fish Salvage, 2018	Purpose of these guidelines is to minimise the risk to aquatic fauna during dewatering works.	These guidelines provide detailed instructions for dewatering waterbodies and slavaging aquatic fauna.

6.2 Fauna Clearing Management Measures

Pre-Clearing

Objective:	Mitigate the risk to native fauna
Responsibility:	FSC
Timing:	Pre-construction

1. At the pre-start meeting, the FSC is to outline the clearing process and the requirements of the approved Fauna Management Plan.
2. A quick active fauna inspection is to be conducted the morning prior to clearing works commencing, active search over micro-habitats for any fauna, locate any potential nesting sites, ensure all habitat trees are marked and tree fellers are informed of these.
3. A specific inspection of trees for the presence of Koala's must be conducted the night before and morning of clearing.
4. Any fauna sighted should be relocated to a nearby suitable habitat.

Clearing and Grubbing

Objective:	Reduce risk to native fauna during disturbance activities
Responsibility:	FSC, Construction/Clearing crew
Timing:	Earthworks

1. Immediately prior to the commencement of clearing of native vegetation a daily visual inspection of the area must be carried out by the FSC. Furthermore, the FSC is to be present on site during all clearing operations to supervise and direct clearing works, and to respond to any situations that may arise in relation to fauna.
2. Suitably qualified FSC are to be present for all clearing and grubbing activities where there is a risk to native fauna. FSC are to implement and check that all practical measures to minimise the risk to fauna during construction are adhered to. FSC must hold or be approved to work under DES a Rehabilitation FSC endorsed permit and damage mitigation permit.
3. Clearing direction will occur towards the vegetated areas of the site and be managed by the project FSC to allow all fauna unimpeded movement towards remaining vegetated areas that have been designated during the staged clearing process.
4. Vegetation must be cleared sequentially to direct wildlife into surrounding retained vegetation and prevents isolates patches of vegetation where wildlife may seek refuge
5. All habitat trees and hollow bearing trees will be inspected using a thermal drone when conditions allow. Any occupied trees will be blocked off and relocated using an EWP or tree climber where practical and site conditions allow.
6. Any habitat or hollow bearing trees with un-confirmed occupancy are to be soft-felled in order to reduce the risk of injury to any fauna in-habiting the tree and to reduce the risk of damaging the hollows.

7. Any injured wildlife will be taken to receive veterinary attention within 24 hours if required. If veterinary attention is not required any injured or orphaned wildlife is to be transferred to a suitably qualified Wildlife Carer.

Koala Management

Objective:	To protect the local population of Koala's
Responsibility:	Koala Spotter, Endorsed FSC, Clearing crew
Timing:	Earthworks

1. If a Koala is sighted within the site a Koala spotter will be on site to manage and monitor the animal until it has self-relocated out of the site. A Koala spotter is to be present on the first day of clearing works with the sole responsibility to inspect all the vegetation proposed for disturbance for the presence of Koala's.
2. *Nature Conservation and Other Legislation (Koala protection) Amendment Regulation 2020*, the following measures will be undertaken to minimise, reduce or mitigate impacts to Koala's in potential Koala habitat areas:
    i) Sequential clearing will be utilised to assist fauna in relocating to nearby habitat on their own accord.
    ii) No tree in which a Koala is present and no tree with a crown overlapping a tree with a Koala present will be disturbed. A 50m buffer around any tree containing a Koala is to be established and works to seize within this buffer until the has moved off on its own accord.
    iii) A vegetation corridor is to be left where practical to allow the Koala to self-relocate to a suitable area that is not a proposed disturbance site.
    iv) In areas containing a dominance of Koala food trees and positively identified Koala sightings and/or identified scat or scratch marks a Koala spotter is to be present during clearing activities.
    v) If a Koala is not injured but refuses to move from the clearance area on its own accord after two days, the Koala spotter will liaise with DES and negotiate appropriate methods for removal and relocation.
3. A DES approved Koala spotter is a person who holds a tertiary qualification in Biology or Zoology, or who is demonstrably experienced (Endorsed FSC) in the identification and location of Koala's in their natural habitat and has authorisation from DES to conduct such activities.
    i) Be present at the site of felling operations
    ii) Identify any tree at the site within which a Koala is present, as well as any tree that has a crown which is intermeshed or overlapping with such a tree; and
    iii) Advise the person who is authorised to conduct the felling operation, or that person's representative, of the precise location of each such tree.

Releasing Fauna

Objective:	To reduce the project impact on native fauna
Responsibility:	FSC
Timing:	Project Duration

1. The animal must be released as near as practical to the point of capture.
2. Where practical animals should be relocated with the hollow in which they were found or a suitable nest box.
3. When releasing wildlife attention must be paid to several factors, including weather conditions, seasonal conditions, and the animal's ecology.
4. Fauna should be released at a suitable time of day in a suitable location.

Mulching Works

Objective:	To reduce the project impact on native fauna
Responsibility:	FSC, Construction/Clearing crew
Timing:	Clearing Works

1. Trees identified by the project FSC with hollows should have the hollow section salvaged and preserved.
2. Stockpiled vegetation, topsoil and other materials can quickly become temporary habitat for animals displaced during the actual clearing and earthworks. Prior to removal of any stockpiled vegetation, the FSC must inspect for any fauna using the stockpile as temporary shelter.

Reporting

Objective:	To reduce the project impact on native fauna
Responsibility:	FSC
Timing:	Post-Clearing Works

1. Post-clearance – Should contain the following details for each captured animal:
    a) Species
    b) Identification name or number
    c) Sex (M, F or unknown)
    d) Approximate Age or Age Class (neonate, juvenile, sub-adult, adult)
    e) Time and date of capture
    f) Method of capture
    g) Exact point of capture (GPS coordinates)
    h) State of health
    i) Incidents associated with capture likely to affect health
    j) Veterinary intervention or treatments
    k) Time held in captivity
    l) Disposal method (euthanasia, translocation, re-release)
    m) Date and time of disposal
    n) Detailed of disposal (GPS points of release)
    o) For released animals, location relative to point of capture

Earthworks and Construction Phase

Objective:	To reduce the project impact on native fauna
Responsibility:	Construction crew
Timing:	Clearing Works

1. The Contractor shall ensure that to the extent possible project infrastructure and auxiliary works (laydown areas, stockpile sites, site office) are constructed in a manner that does not create additional hazards for wildlife.
2. To minimise impacts and conflicts between native animals, vehicular movement and access during construction, site access should be controlled via a single entry and exit point.
3. Inspect open trenches, culverts and other structures prior to works being undertaken within an area to determine whether there are any trapped or injured native fauna species present and act as appropriate.
4. Trenches, manholes, excavations for footings, etc. while open pose threats to native animal entrapment and should be backfilled as soon as possible. In some location's barriers may be required overnight to eliminate the accidental capture of animals moving through the site.
5. Educate staff, including sub-contractors, in relation to the risk of fauna injury and deaths and how to manage animals which are displaced, including threatened species.
6. All native wildlife is protected (including snakes) and shall not be intentionally harmed as a result of work or workers actions.
7. All native animal fatalities must be reported immediately to the Environmental Coordinator.
8. Where any site staff (contractors or subcontractors) witness or locates distressed, injured, or orphaned animals they should immediately contact the FSC and Environmental Coordinator. Works within the area of the animal must cease until further instruction is provided by one of the above authorities.

6.3 Nest box management measures

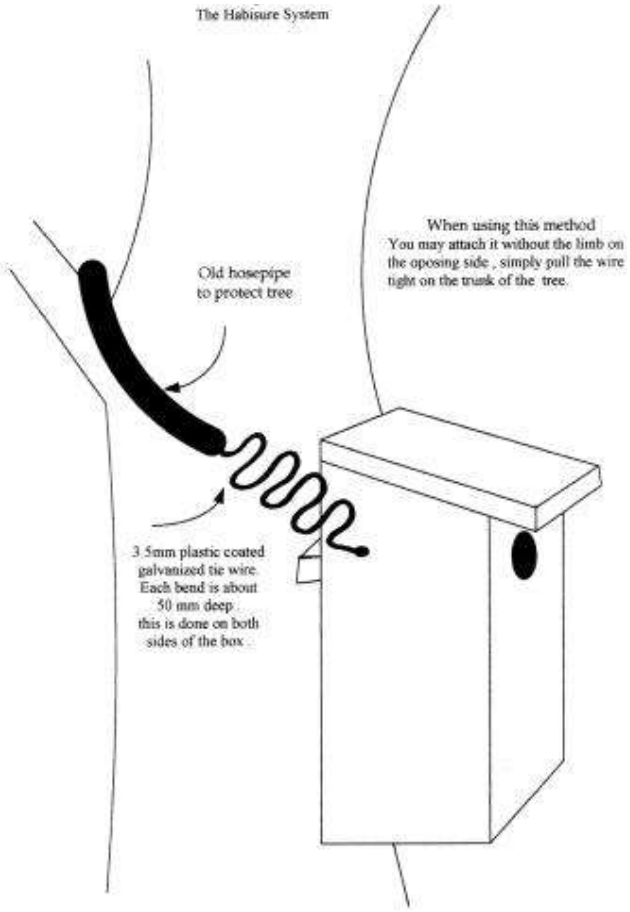
Nest boxes will be sourced from Hollow log homes and hollows suitable to the species sighted/signs of species sighted will be ordered.

Recommended dimensions should be guided by *Nestboxes for Wildlife A Practical Guide* (Franks A & Franks S), however these may slightly differ according to producer.

At least half of the required nest boxes are recommended to be installed either prior to commencement of clearing or within 7 days of the clearing having taken place. Remaining nest-boxes to be installed within 30 days of completing clearing works.

Types and sizes of nest boxes should reflect fauna on site, and/or a nest box management plan if available. The exact location awaits council approval, and a tree climber will select the safest, most appropriate trees on the day of installation. Exact types of next boxes appropriate for each tree will also be confirmed on the day of installation, and GPS coordinates will be updated for monitoring.

Nest boxes will be fixed to the tree using a method designed to ensure no damage is done to the tree as it matures (See DIAGRAM RIGHT). Possum and glider boxes will be placed in the foliage to protect them from hot afternoon sun and can be positioned facing any direction except for west. The nest boxes should be placed in an area that gives protection from direct sunlight and the entrance should face away from prevailing winds and rain. Nest boxes for possums should be attached approximately 2-4m off the ground and 3- 6m high for glider, microbat, and bird boxes. Nest boxes for significant species, the powerful owl, need to be installed 15 m above the ground. The nest boxes should be placed within an area that contains suitable species and quantities of food trees that are favoured by the species that the nest box was designed for.



Nest boxes to be maintained for a minimum of 12 months post installation. An annual survey is proposed to inspect all installed nest boxes. Each nest box, when installed is mapped using the most accurate and up to date technology. Data base information is collected such as tree species, DBH, height of tree, box height, species usage. A safe and nonintrusive form of auditing will be used using tailor made poles to check inside the boxes from the ground via a Wi-Fi enabled digital camera or climbers for the higher boxes. We record the interior of the box and analyse species present and/or recent species use. These findings are then entered into a comprehensive report. Any severely damaged boxes found during the annual survey will be replaced.

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Appendix C

Harry Ratnam Park monthly photo monitoring reports

saunders havill group

Saunders Havill Group Pty Ltd ABN 24 144 972 949
address 9 Thompson St Bowen Hills Q 4006
phone (07) 3251 9444 email mail@saundershavill.com
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surveying town planning urban design environmental management landscape architecture

Our Reference: 8051 Harry Ratnam photo monitoring points 6 20230824.docx
Date: 24th August 2023
Project No: 8051
Project Title: Harry Ratnam Park rehabilitation works

CIRCULATION:
VILLAGE BUILDING COMPANY – Bec Ashby
JUNGLE BUSTERS – Rick Hartman

RE: HARRY RATNAM PARK PHOTO MONITORING INSPECTION #6 POINTS 24.08.2023

1. 

2. 

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Our Reference: 8051 Harry Ratnam photo monitoring points 7 20240131.docx
Date: 31st January 2024
Project No: 8051
Project Title: Harry Ratnam Park rehabilitation works

CIRCULATION:
VILLAGE BUILDING COMPANY – Bec Ashby
JUNGLE BUSTERS – Rick Hartman

RE: HARRY RATNAM PARK PHOTO MONITORING INSPECTION #7 POINTS 31.01.2024

Noting several areas inaccessible at time of inspection due to overgrowth in areas under Council's responsibility. Photo points 3-5, 8 & 11-26 were not able to be documented.

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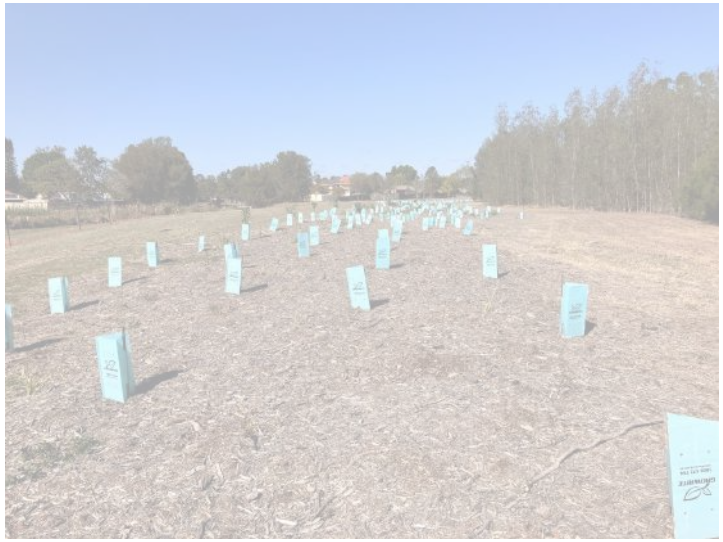

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Our Reference: 8051 Harry Ratnam photo monitoring points 9 20240402.docx
Date: 2nd April 2024
Project No: 8051
Project Title: Harry Ratnam Park rehabilitation works

CIRCULATION:
VILLAGE BUILDING COMPANY – Bec Ashby
JUNGLE BUSTERS – Rick Hartman

RE: HARRY RATNAM PARK PHOTO MONITORING INSPECTION #9 POINTS 02.04.2024

Noting photo points 18-25 were unable to be documented at time of inspection as they were inaccessible due to overgrowth.

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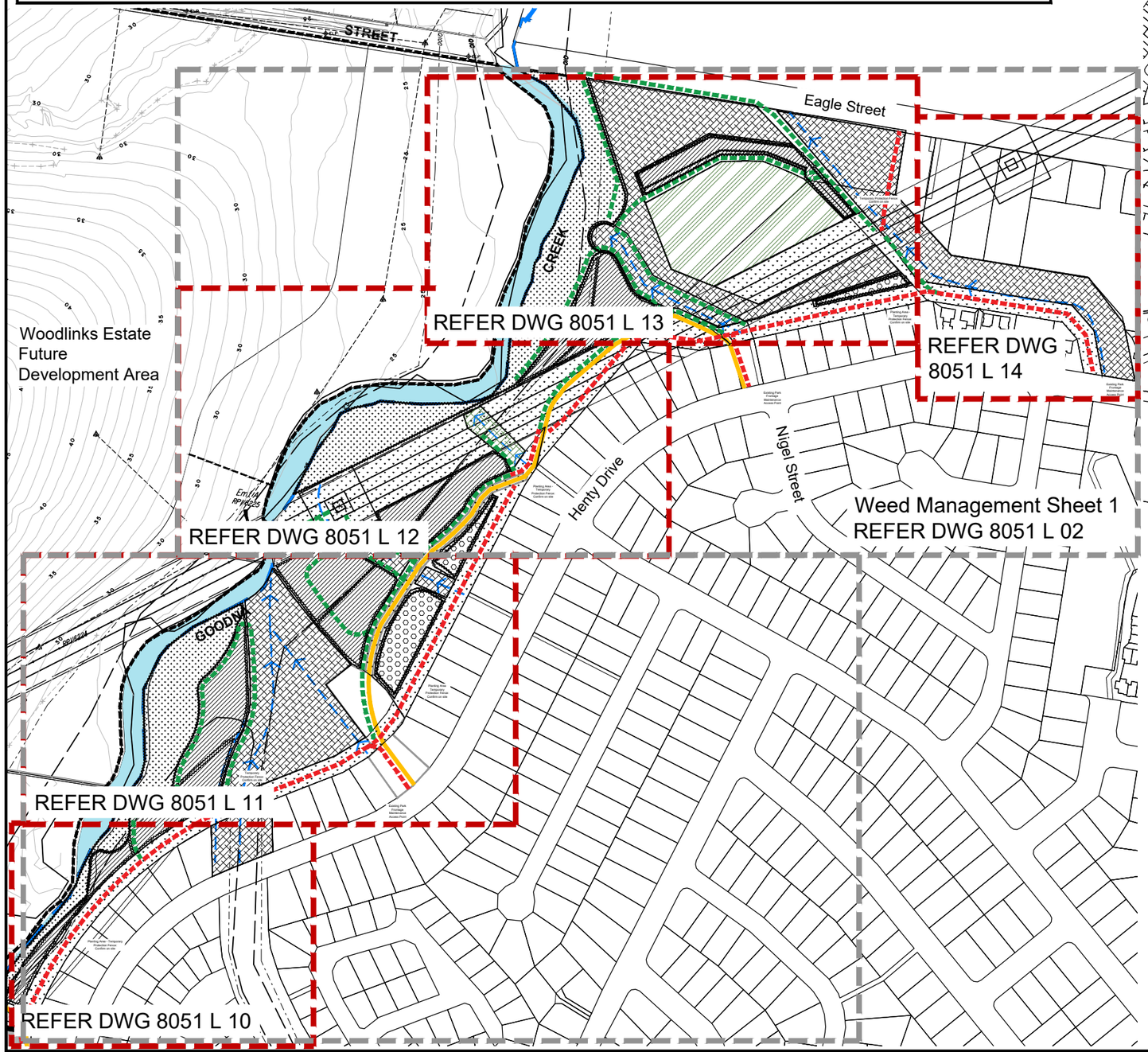
Appendix D

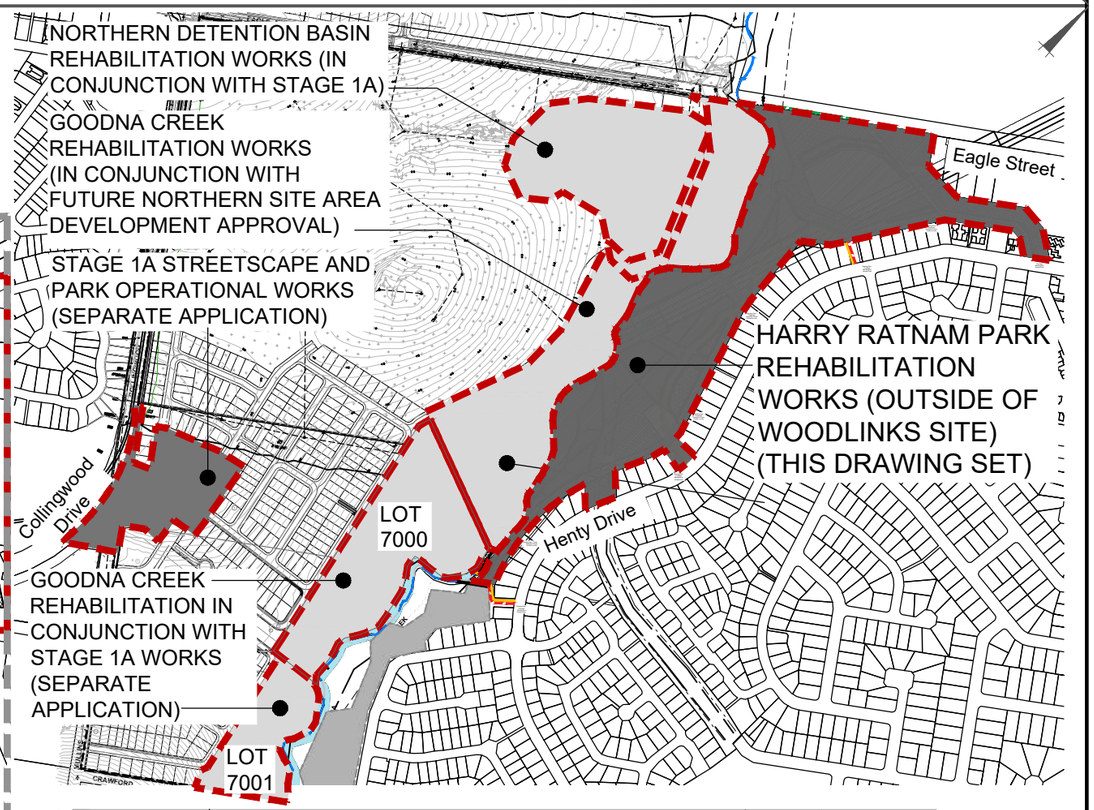
Goodna Creek & Harry Ratnam Park revegetation and rehabilitation works status overview Harry Ratnam Park Rehabilitation Works

Woodlinks Village Estate - Harry Ratnam Park

Weed Management & Rehabilitation Works

SITE LAYOUT: 1:2000 @ A1





DRAWING SCHEDULE

Dwg No.	Drawing Title	Issue	Date
8051 L 01	Cover Sheet	E	24.01.22
8051 L 02	Weed Management Plan - Sheet 1	E	24.01.22
8051 L 03	Weed Management Plan - Sheet 2	E	24.01.22
8051 L 04	Weed Management Notes	E	24.01.22
8051 L 05	Weed Treatment & Removal Strategy - Sheet 1	E	24.01.22
8051 L 06	Weed Treatment & Removal Strategy - Sheet 2	E	24.01.22
8051 L 07	Weed Treatment & Removal Strategy - Sheet 3	E	24.01.22
8051 L 08	Weed Treatment & Removal Strategy - Sheet 4	E	24.01.22
8051 L 09	Rehabilitation General Notes - Sheet 1	E	24.01.22
8051 L 10	Rehabilitation Zone Notes - Sheet 2	E	24.01.22
8051 L 11	Rehabilitation Plan - Sheet 1	E	24.01.22
8051 L 12	Rehabilitation Plan - Sheet 2	E	24.01.22
8051 L 13	Rehabilitation Plan - Sheet 3	E	24.01.22
8051 L 14	Rehabilitation Plan - Sheet 4	E	24.01.22
8051 L 15	Rehabilitation Plan - Sheet 5 & Plant Schedules	E	24.01.22
8051 L 16	Rehabilitation Plan Plant Schedules - Sheet 1	E	24.01.22
8051 L 17	Rehabilitation Plan Plant Schedules - Sheet 2	E	24.01.22
8051 L 18	Rehabilitation Sections	E	24.01.22
8051 L 19	Single Tree Planting - Typical Layout Plan	E	24.01.22
~~8051 L 20~~	~~Indicative Phasing Plan~~	~~E~~	~~15.06.21~~

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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	09.07.2018	Phase 1 Tender	GC
C	17.08.2018	Revised Tender	GC
E	24.01.22	Revised Tender	GC

Date Jun 15

Scale N.T.S

Plan of: Harry Ratnam Park
Rehabilitation Works - Cover Sheet

Drawn by. FW

Checked by GC / MS

Project: Woodlinks Village Estate H.R.Park

Client: Canberra Estate Consortium No. 36

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

North

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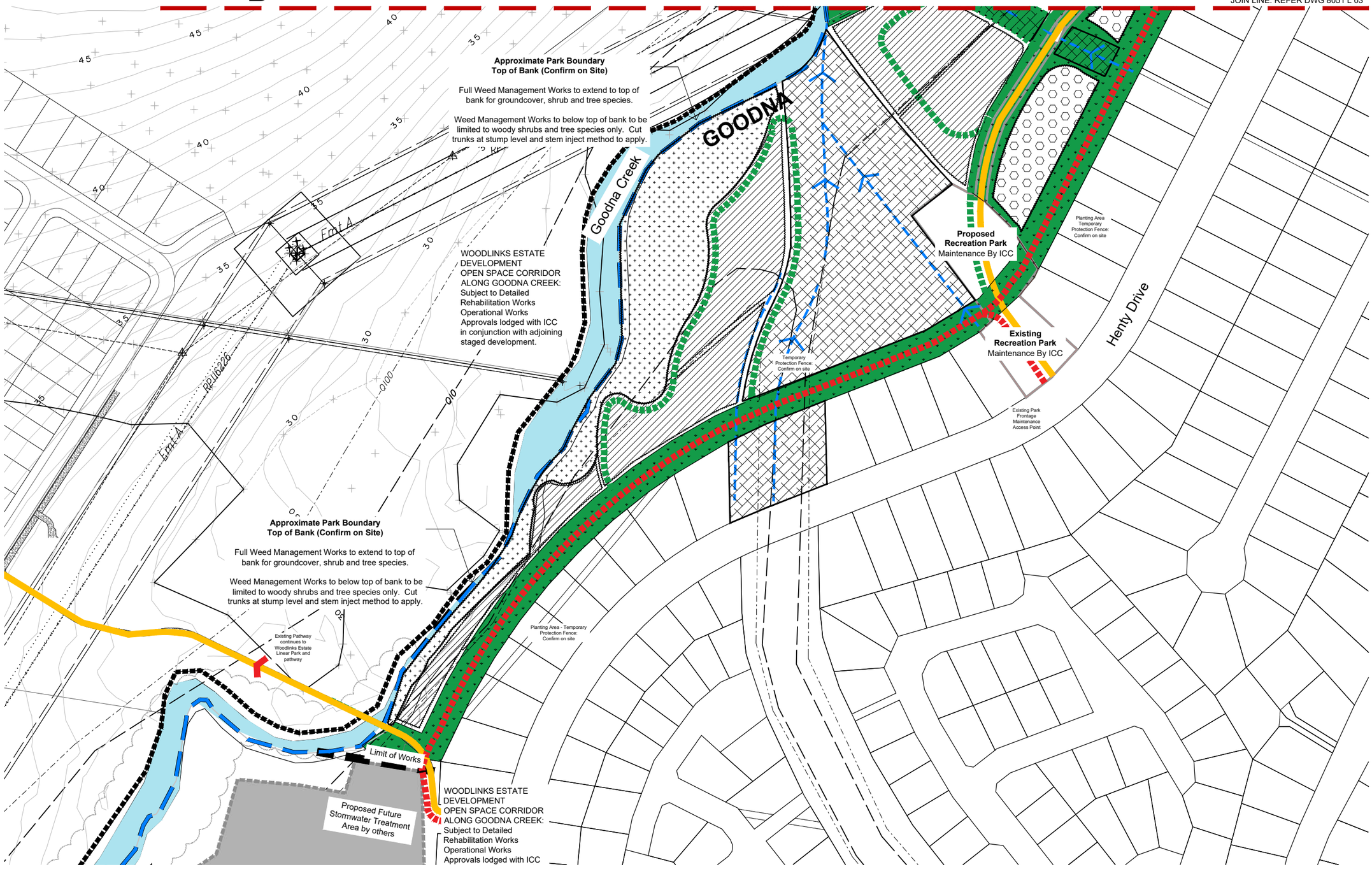
Dwg No. 8051 L 01 E

Woodlinks Village Estate - Harry Ratnam Park

Weed Management Plan - Sheet 1

JOIN LINE: REFER DWG 8051 L 03



LEGEND

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

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

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

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

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

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

ELECTRICAL EASEMENT: No works - Ongoing Slashing By Council.

NOTES

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

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

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

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

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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	17.08.2018	Revised Tender	GC
E	24.01.2022	Revised Tender	GC

Date Jun 15

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

Drawn by. FW

Checked by GC / MS

Project: Woodlinks Village Estate H.R.Park

Client: Canberra Estate Consortium No. 36

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

North

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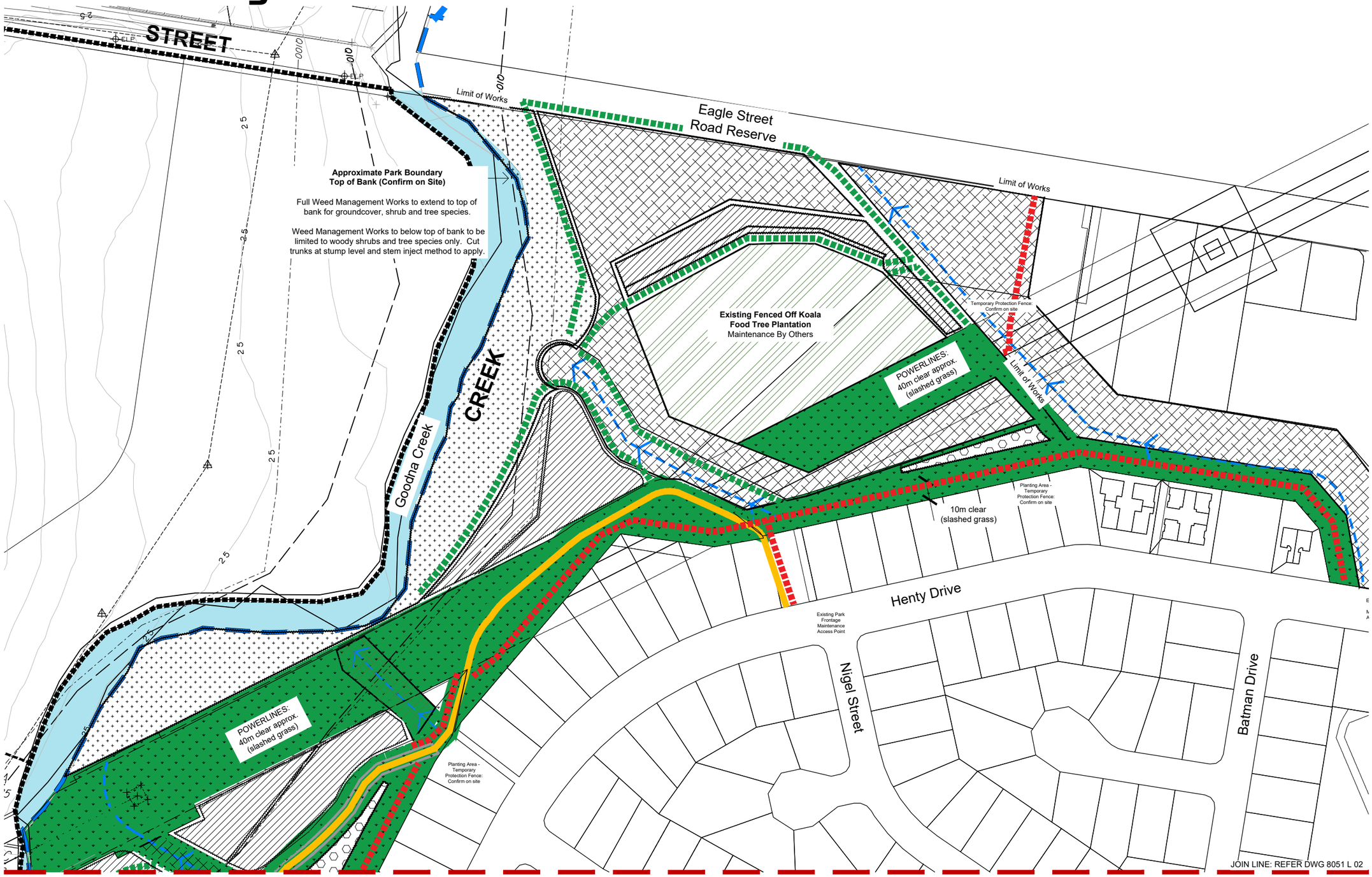
Dwg No. 8051 L 02 E

Woodlinks Village Estate - Harry Ratnam Park

Weed Management Plan - Sheet 2



LEGEND

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

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

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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	17.08.2018	Revised Tender	GC
E	24.01.2022	Revised Tender	GC

Date Jun 15

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

Drawn by. FW

Checked by GC / MS

Project: Woodlinks Village Estate H.R.Park

Client: Canberra Estate Consortium No. 36

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

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Dwg No. 8051 L 03 E

Woodlinks Village Estate - Harry Ratnam Park

Weed Management Notes

NOTES

1. INTRODUCTION

The Saunders Havill Group was engaged by Canberra Estate Consortium No.36 Pty Ltd to prepare this **Rehabilitation and Weed Management Plan** covering the proposed Rehabilitation Works within **Harry Ratnam Park** adjacent to "Woodlinks Village" residential estate.

This Rehabilitation Plan comprises of two main components:

- Weed Management
- Revegetation

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

2. WEED MANAGEMENT

Weed management will comprise a major part of the site works within the park areas. Weed management will provide the basis of aiding natural regeneration within the riparian corridor. Where significant disturbance occurs, infill tubestock planting will be utilized to aid stabilization and native vegetation succession. **All weed control works shall be undertaken by an experienced and qualified ecological restoration and management contractor.**

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

WEED CONTROL PROGRAM TIMING

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

Primary Weed Removal Stage - Consists of the initial weed removal / treatment of site weeds via the methods detailed in this Drawing Set. It essentially involves the manual removal, stock piling and disposal and initial usage of prescribed herbicides staged over a 2 month period- minimizing possible erosion issues. Additional notes below include:

- Implemented weed control method according to this Rehabilitation Plan.
- **All Herbicides are to be applied by an appropriately qualified / supervised person in accordance with the Agricultural Chemicals and Distribution Control Act 1966** at rates as identified on registered product labels or an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to SEQ Ecological Restoration Framework for additional guidance.
- Program timing; primary weed removal phase is considered to be completed when all existing weeds within the designated Park have been removed initially. Both the secondary phase and the primary phase of weed removal can occur concurrently in different work areas over time. Primary weeding methods to minimize mass clearing and cause erosion issues.
- A key map is to be provided logging the progress of areas from primary to secondary phases of weed removal and areas of rehabilitation as part of the reporting progress.

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

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

NOTE

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

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

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

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

NOTES

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

CLASS 2 PESTS

- Class 2 pests are established in Queensland and have, or could have, an adverse economic, environmental or social impact.
- The management of these pests requires coordination and they are subject to programs led by local government, community or landowners.
- Landowners must take reasonable steps to keep land free of Class 2 pests.

CLASS 3 PESTS

- Class 3 pests are established in Queensland and have, or could have, an adverse economic, environmental or social impact.
- The primary objective of Class 3 listing is to prevent sale, therefore preventing the spread of these pests into new areas.
- Landholders are not required to control Class 3 plants unless their land is adjacent to an environmentally significant area. *(Extract from Department of Environment and Resource Management website).*

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

3. MONITORING AND REPORTING PROCEDURES

Monitoring of the park weed management and revegetation works allows for:

- Review of the pre-established performance indicators for measuring the success of the weed removal and control.

NOTES

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

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

MONITORING MILESTONES

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

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

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

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

4. BENCHMARKS

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

EXISTING VEGETATION AREAS:

- On Maintenance requirements;
  - Primary weed removal completed;
  - Secondary weed removal completed
- Off Maintenance requirements;
  - 10% or less weeds present on site
  - Any additional revegetation required has 80% success rate

REVEGETATION AREAS:

- On Maintenance requirements;
  - All required planting completed;
  - evidence of ongoing weed management;
  - Max. 10% plant failures at time of inspection
- Off Maintenance requirements;
  - Max 20% plant failures
  - Plants established and generally free of weeds

NOTES

5. RESOURCES / ROLES & RESPONSIBILITIES

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

PROPONENT

- Ensure all consultants, contractors, sub contractors or others utilizing the parkland area are aware of the Rehabilitation Plan.
- Appoint appropriate consultants and contractors to undertake works as prescribed on the drawings and conditioned by **Ipswich City Council**.
- Provide security via an uncompleted works bond and maintenance bond for the cost of works if required.
- Cover the costs of all necessary resources to ensure works are completed as per the approved documents.

CONSULTANTS

- Brief proponent on their requirements in implementing and maintaining works as per the Rehabilitation Plan.
- Attend pre start, on maintenance and off maintenance meetings.
- Undertake monitoring and reporting to **Ipswich City Council** as set up by this document.
- Be available to respond to technical queries to the approved documentation when on-site conditions require changes.
- Liaise with Council throughout all stages of approval, initial works and maintenance of works.

COUNCIL

- Provide technical expertise via commentary on the approval of documentation.
- Attend pre-start, on and off maintenance inspections.
- Undertake random inspections through the Secondary weed management and Maintenance phases.
- Reduce and release securities held against works at the completion of successful milestone inspections.
- Accept and review quarterly reports as dictated in this document.

CONTRACTOR

- Complete works in strict accordance with the documentation.
- Recommend changes to the documentation when specific experience or on-site conditions require so.
- Attend pre-start, on and off maintenance inspections.

PROJECT 8051 HARRY RATNAM PARK

REVEGETATION AND REHABILITATION WORKS - INDICATIVE SCHEDULE OF WORK ITEMS AND MAINTENANCE SEQUENCING

NOTE: Assumes planting at end of Winter to allow for establishment and maintenance over two growing seasons

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

	WINTER			SPRING			SUMMER			AUTUMN			WINTER			SPRING		
	CONSTRUCTION PERIOD (3 months)			ESTABLISHMENT PERIOD (3 months)			ONGOING MAINTENANCE			ONGOING MAINTENANCE			ONGOING MAINTENANCE			ONGOING MAINTENANCE		
	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3
WEEK 1	Pre-start meeting Council, Contractor and Superintendant	Weed management - "knockdown spray"	Mulch spreading and Jute-mat installation	Watering and Monitoring and reporting (throughout establishment)	Watering and Monitoring and reporting (throughout establishment)	Watering and Monitoring and reporting (throughout establishment)	Monitoring and reporting (watering to replacement plants only)	Monitoring and reporting	Monitoring and reporting	Monitoring (watering to replacement plants only)		Monitoring and reporting			Monitoring and reporting	Mulch - top up depths to 100mm and replace / repair Jutematting as required	Monitoring (watering to replacement plants only)	Monitoring (watering to replacement plants only)
WEEK 2	Initial weed management works - wood weed removal /"knockdown" spray	Soil Preparation and cultivation	Natural regeneration plants staking for identification	Weed management - "knockdown spray" in mulched areas	Weed management - "knockdown spray" re-apply woody weeds	Weed management - "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas		Weed management - rotation "knockdown spray" in mulched areas			Weed management - rotation "knockdown spray" in mulched areas	Natural regeneration plants - weed management	Weed management - "knockdown spray" re-apply woody weeds	Weed management - "knockdown spray" in mulched areas
WEEK 3	Weed management works - removal by hand	Soil Preparation and modification	Planting and Watering	Natural regeneration plants - weed management	Replacement of Failed Plants	Replacement of Failed Plants	Natural regeneration plants - weed management	Natural regeneration plants - weed management	Replacement of Failed Plants	Natural regeneration plants - weed management		Trees formative pruning				Replacement of Failed Plants	Replacement of Failed Plants	Natural regeneration plants - weed management
WEEK 4	Weed Management - slashing of maintenance access paths	Mulch - stockpiled on site	Planting and Watering	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths		Weed Management - slashing of maintenance access paths			Weed Management - slashing of maintenance access paths	Replacement of Failed Plants	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths

MILESTONE: PRACTICAL COMPLETION

MILESTONE: COUNCIL "ON MAINTENANCE"

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

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address 9 Thompson St Bowen Hills Q 4006

amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	17.08.2018	Revised Tender	GC
E	24.01.2022	Revised Tender	GC

Date Jun 15

Plan of: Harry Ratnam Park
Weed Management Notes

Drawn by. FW

Checked by GC / MS

Project: Woodlinks Village Estate H.R.Park

Client: Canberra Estate Consortium No. 36

saunders havill group

Dwg No. 8051 L 04 E

Woodlinks Village Estate - Harry Ratnam Park

Weed Treatment & Removal Strategy - Sheet 1

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

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

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUB-REGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
1	Verbenaceae	Lantana camara var. camara (lantana)	10	S/O	Seedlings: Hand pull	Seedlings: CS&P (G1.5); Shrubs: blanket spray G100 or cut down and spray regrowth G100 or splatter gun using 1 part G to 9 parts water - apply only when plant is growing, not dormant (ref 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) or spray G200 (ref 1).
3	Crassulaceae	Bryophyllum delagoense (mother of millions)	8	H/O	Hand pull and dispose	Plantlets: spray G200 + MM or MM (ref 1).
4	Bignoniaceae	Macfadyena unguis-cati (cat's claw creeper)	5	V/O	Tubers: crown or dig up, bag and remove.	Regrowth and tuberlings: spray G100 + MM or F100 (ref 1).
5	Basellaceae	Anredera cordifolia (madeira vine)	8	V/O	Small Vines & Tubers: Hand pull. Bag and dispose.	Ascending Stems: S&P (GU); Tubers: gouge, scrape and paint (GU); Ground infestations: spray G200 or G200 + MM (ref 1).
6	Asparagaceae	Asparagus africanus (ornamental asparagus, asparagus fern)	7	V/O	dig out roots and dispose of at local council landfill site. remove entire crown and underground stem to prevent regrowth	fluroxypyr (200 g/L) @ 35 mL per 1 L diesel/kerosene
7	Ulmaceae	Celtis sinensis (Chinese celtis)	8	T/O	remove when small .hand pull or dig out small seedlings. combine dozing, burning and controlled grazing for large infestations	Stem injection, glyphosate (360 g/L) @ Undiluted at 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) or C&P (G1.5 or GU for stems up to 8 diameter); Seedlings: spray G200 or G200 + MM (ref 1).
9	Anacardiaceae	Schinus terebinthifolius (broad-leaf pepper tree)	6	T/O	Seedlings: Hand pull	Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 (ref 1).
10	Salviniaceae	Salvinia molesta (salvinia)	8	Ha/F	Mechanical removal of small infestations; Salvinia weevil (Biological control)	Aquatic areas: calcium dodecylbenzene sulphanate (AF-100) @ 1 part to 19 parts kerosene; diquat (vegetrol) 50-100L/ha or 4L/100L water; diquat (watrol) 50-100L/Ha or 4L/100L water; diquat (reglone) 5-10L/Ha or 400mL + 150mL Agral / 100L water (see ref 2.
11	Cabombaceae	Cabomba caroliniana (cabomba, fanwort)	4	Ha/F	Mechanical removal of small infestations	2, 4-D N-Butyl Ester (Rubber Vine Spray) @ 12.5L/ML water (see ref 2. 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 down and spray regrowth G100 or MM (ref 1).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
13	Pontederiaceae	Eichhornia crassipes (water hyacinth)	4	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	T/O	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 8cm diameter; Seedlings: spray MM or G200 + MM if other weeds such as Lantana or Camphor Laurel are present (ref 1).
16	Asteraceae	Sphagneticola trilobata (Singapore daisy)	6	H/O	Hand pull	Hand pull and/or spray G200 + MM (ref 1).
17	Asteraceae	Ageratina adenophora (crofton weed)	6	H/O	Hand pull and 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): triclopyr 1L/60L Diesel, picloram + triclopyr @ 1L/60L Diesel, 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	T/O	Seedlings: Hand pull	Saplings: CS&P or C&P (G1.5); Trees: F/I (G1.5); Seedlings: spray MM or G200 + MM if other weeds such as Lantana or Camphor Laurel are present (ref 1).
22	Ochnaceae	Ochna serrulata (ochna)	7	S/O	N/A	Stems: CS&P or S&P or F/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	H/O	dig out unwanted plants and dispose of at the appropriate council landfill. remove the entire crown of underground stem of plant to prevent regrowth	Spot spray - 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

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
24	Poaceae	Sporobolus pyramidalis and S. natalensis (giant rat's tail grasses)	8	H/U?	Hand or mechanical removal of small infestations	Small infestations: spray glyphosate @ 15mL/L water, flupropanate @ 2mL/L water + ionic wetter @ 1mL/Lwater; Dense Infestations: blanket spraying glyphosate 3L/ha, flupropanate 2L/ha (ref 2).
25	Asteraceae	Ageratina riparia (mistflower)	5	H/O	Hand pull and hang to dry.	Spray G100 or MM (ref 1).
26	Asclepiadaceae	Araujia sericifera (mothvine)	9	V/O	Seedlings & Vines: Hand pull. Bag and remove fruit.	Vines: CS&P (G1.5); Seedlings: spray G200 or G200 + MM or MM (ref 1).
27	Crassulaceae	Bryophyllum daigremontianum x B. delagoense (hybrid mother-of millions)	6	H/O	Hand pull and dispose	Plantlets: spray G200 + MM or MM (ref 1).
28	Convolvulaceae	Ipomoea cairica (mile-a-minute)	7	V/O	Vines & Runners: hand pull, roll up and hand up to dry.	Vines and Runners: CS&P (G1.5); Larger Stems, Roots and Nodes: spray G100 + MM (ref 1).
29	Sapindaceae	Cardiospermum grandiflorum (balloon vine)	7	V/O	Seedlings & Small Vines: Hand Pull	Sterns: CS&P (G1.5); Seedlings or Small vines: spray G200 or G200 + MM (ref 1).
30	Asclepiadaceae	Cryptostegia grandiflora (rubber vine)	6	V/O	Scattereded or medium-density infestations: Where possible, repeated slashing close to ground level is recommended.	Foliar spray - Follow-up basal bark/cut stump/foliar spray as necessary with Triclopyr + picloram (Grazon DS, Grass-up, etc.) @ 0.35–0.5 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	H/U	Hand or mechanical removal of small infestations	Small infestations: spray glyphosate @ 15mL/L water, flupropanate @ 2mL/L water + ionic wetter @ 1mL/Lwater; Dense Infestations: blanket spraying glyphosate 3L/ha, flupropanate 2L/ha (ref 2).
33	Poaceae	Sporobolus fertilis (giant Parramatta grass)	9	H/U	Hand or mechanical removal of small infestations	Small infestations: spray glyphosate @ 15mL/L water, flupropanate @ 2mL/L water + ionic wetter @ 1mL/Lwater; Dense Infestations: blanket spraying glyphosate 3L/ha, flupropanate 2L/ha (ref 2).
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.	Glyphosate (360 g/L) (e.g. Weedmaster® Duo) @ 10 ml/1 L water
35	Asteraceae	Gymnocoronis spilanthoides (Senegal tea)	3	Ha/F	place plant material in a sealed plastic bag, leave in sunlight to rot then burn or dispose of at a council-approved land fill tip	Glyphosate and metsulfuron-methyl @ 15mL/L water

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
36	Amaranthaceae	Alternanthera philoxeroides (alligator weed)	1?	Ha/U	physical removal of plant should not be attempted	Terrerstrial plants use Metsulfuron methyl (Brushoff®) + 1mL/L non-ionic wetter @ 80g/ha + 1mL/L non-ionic wetter or 10g/100L water + 1mL/L non-ionic wetter. Free floating plants Glyphosate (Roundup Biactive®) 10 mL/L
37	Passifloraceae	Passiflora suberosa (cork passionflower)	8	V/O	N/A	Stems: CS&P; Seedlings & Regrowth: spray G200 or G200 + MM (ref 1).
38	Poaceae	Melinis minutiflora (molasses grass)	5	H/A	Grazing or mowing	Spray: Fluazifop-P 212g/L @ 2L/Ha, Glyphosate 360g/L @ 1L/100L water (ref 2).
39	Aristolochiaceae	Aristolochia elegans (Dutchman's pipe)	8	V/O	Stems: Hand pull; Fruit: Bag and remove.	Sterns: CS&P (G1.5); Seedlings: spray G200 or G200 + MM or MM (ref 1).
40	Convolvulaceae	Ipomoea indica (blue morning glory)	5	V/O	Vines and Runners: hand pull, roll up and hang to dry.	Vines and Runners: CS&P (G1.5); Larger Stems, Roots and Nodes: spray G100 + MM or F150 (ref 1).
41	Mimosaceae	Leucaena leucocephala (leucaena)	6	ST/A	Small plants: Hand pull or mechanical removal	Herbicide Control - Basal Bark application: triclopyr 240g/L + picloram 120g/L @ 1L/60L diesel; C&P: triclopyr 240g/L + picloram 120g/L @ 1L per 60L diesel; spray triclopyr 300g/l + picloram 120g/L @ 350mL per 100L water. Combination of chemical and mecha
42	Poaceae	Brachiaria mutica (para grass)	6	Ha/A	Grazing	Herbicide Control - Foliar application (Knapsack): glyphosate 360g/L @ 200mL/15L water; Foliar: glyphosate 360g/L @ 9L/Ha; Handgun: glyphosate 360g/L @ 1.3L/100L water (ref 2).
43	Hydrocharitacea e	Egeria densa (egeria waterweed)	2	Ha/F	hand pulling, cutting and digging with machines effective	N/A
44	Pinaceae	Pinus elliottii (slash pine)	4	T/A	Seedlings: Hand pull; Saplings and Trees: cut close to ground or ring-bark	Saplings and Trees: F/I (G1.5) ensuring thick bark is penetrated (ref 1).
45	Caesalpiniaceae	Senna pendula var. glabrata (Easter cassia)	7	ST/O	Seedlings: Hand pull	Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 or G200 + MM or MM; collect and bag seeds (ref 1).
46	Poaceae	Chloris gayana (Rhodes grass)	9	H/A	Hand pulling and removal and digging of larger clumps	Spray: glyphosate @ 1l/100L water
47	Crassulaceae	Bryophyllum pinnatum (resurrection plant)	6	H/O	Hand pull and dispose	Plantlets: spray G200 + MM or MM (ref 1).
48	Asteraceae	Parthenium hysterophorus (parthenium weed)	6	H/U	hand pulling of small areas is not recommended	Spot spray 2,4-D amine 500 g/L @ 0.4 L/100 L
49	Caprifoliaceae	Lonicera japonica (Japanese honeysuckle)	3	V/O	Vines and Runners: hand pull, roll up and hang to dry.	Vines and Runners: CS&P (G1.5); Larger Stems, Roots and Nodes: spray G100 + MM or MM (ref 1).
50	Acanthaceae	Thunbergia alata (black eyed susan)	5	H/O	N/A	CS&P (G1.5); spray G200 or G200 + MM (ref 1).

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amendments:

Issue	Date	Details	Approved
B	17.08.2018	Revised Tender	GC
E	15.06.2021	Revised Tender	GC

Date Jun 15

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

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

SCALE: AS NOTED

North

saunders havill group

Dwg No. 8051 L 05 E

Woodlinks Village Estate - Harry Ratnam Park

Weed Treatment & Removal Strategy - Sheet 2

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

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

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
51	Fabaceae	Macroptilium atropurpureum (siratro)	8	V/A	N/A	Vines: CS&P (1:1.5) or spray G100 + MM or MM (ref 1).
52	Rosaceae	Rubus ellipticus (yellowberry)	4	S/O	slashing hinders growth, giving some control if plants are slashed before they seed	Grazon DS picloram/triclopyr 1:200 parts water + wetting agent
53	Colchicaceae	Gloriosa superba (glory lily)	3	V/O	N/A	Young Shoots: spray G200 or G200 + MM. Best results in Oct-Nov and by using 'Pulse' as 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 /1 L water or 2,4-D amine (500 g/L) + 1% crop oil @ 2-4 L/ha + 1% crop oil
55	Solanaceae	Solanum seaforthianum (Brazilian nightshade)	8	V/O	Hand pull	Spray G100 (ref 1).
56	Araceae	Pistia stratiotes (water lettuce)	3	Ha/OF	Mechanical removal of small infestations	Glyphosate 360g/L @ 1-1.3L/100L water or 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	H/O	N/A	Spray F150 (as per label) or G200 or G200 + MM; Collect and bag or roll and rake carefully. Dispose (ref 1).
59	Solanaceae	Cestrum parqui (green cestrum)	6	S/O	Seedlings: Hand pull	Stems: CS&P (G1.5) or spray G100 (ref 1).
60	Caesalpiniaceae	Senna septemtrionalis (arsenic bush, was S. floribunda)	6	S/O	Seedlings: Hand pull	Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 or G200 + MM or MM; collect and bag seeds (ref 1).
61	Solanaceae	Solanum mauritianum (wild tobacco tree)	8	S/O	Seedlings: Hand pull	Shrubs: CS&P (G1.5) or F/I (G1:1.5); Seedlings: spray G200 (ref 1).
62	Apocynaceae	Catharanthus roseus (pink periwinkle)	5	S/O	Hand pull	Spray G100 (ref 1).
63	Passifloraceae	Passiflora subpeltata (white passion flower)	10	V/O	Stems: Hand pull	Stems: CS&P; Seedlings & Regrowth: spray G200 or G200 + MM (ref 1).
64	Fabaceae	Desmodium uncinatum (silverleaf desmodium)	5	H/A	Hand pull or crown and dispose	CS&P tuberous roots (G1.5); spray G200 or G200 + MM or MM; collect and bag seeds (ref 1).
65	Poaceae	Melinis repens (red Natal grass)	10	H/A	Grazing or mowing	Spray: Fluazifop-P 212g/L @ 2L/Ha, Glyphosate 360g/L @ 1L/100L water (ref 2).
66	Nymphaeaceae	Nymphaea caerulea subsp. zanzibarensis (blue lotus)	4	Ha/OF	Hand pull small infestations.	Spray with or Diquat Glyphosate. Occurs in waterways, thus EPA should be notified before any herbicide use (ref 5).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
67	Onagraceae	Oenothera drummondii subsp. drummondii (beach evening primrose)	3	H/O	Hand pull	Spray G100 (ref 1).
68	Tiliaceae	Triumfetta rhomboidea (Chinese burr)	7	H/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/O	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?	T/O	Seedlings: Hand pull or crown; Trees: cut below growing point	Trees: F/I (G1.5); Seedlings: spray G200 + MM (ref 1).
76	Poaceae	Hymenachne amplexicaulis cv. Olive (hymenachne)	1?	Ha/A	a combined approach of different control methods including mechanical, chemical and biological with land management practices is most effective	360 g/L Glyphosate (includes Roundup 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).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

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

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

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

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amendments:

Issue	Date	Details	Approved
B	17.08.2018	Revised Tender	GC
E	15.06.2021	Revised Tender	GC

Date Jun 15

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

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

SCALE: AS NOTED

North

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Dwg No. 8051 L 06 E

Woodlinks Village Estate - Harry Ratnam Park

Weed Treatment & Removal Strategy - Sheet 3

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

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

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
116	Myrtaceae	Psidium guajava and P. guineense (yellow guava and West 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 down and spray regrowth G100 or MM (ref 1).
119	Oleaceae	Olea europaea (olive)	2	T/A	Seedlings: Hand pull	Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 or G200 + MM (ref 1).
120	Poaceae	Brachiaria decumbens (signal grass)	4	H/A	Grazing	Herbicide Control - Foliar application (Knapsack): glyphosate 360g/L @ 200mL/15L water; Foliar: glyphosate 360g/L @ 9L/Ha; Handgun: glyphosate 360g/L @ 1.3L/100L water (ref 2).
121	Fabaceae	Stylosanthes scabra (shrubby stylo)	4	H/A	N/A	Vines: CS&P (1:1.5) or spray G100 + MM or MM (ref 1).
122	Commelinaceae	Commelina benghalensis (hairy wandering jew)	4	H/O	Collect and Bag	Spray G200 or G200 + MM (ref 1).
123	Poaceae	Pennisetum purpureum (elephant grass)	2	H/O	Grazing or mechanical removal	N/A (ref 2).
124	Zingiberaceae	Hedychium coronarium (wild ginger)	2	H/O	Small Plants: Hand pull and dispose	Small Plants: spray G200 or G200 + MM; Large Plants: cut and spray regrowth. If rhizomes are at ground level, cut stem and gouge rhizome - fill hole with G1.5 with injector kit or similar (ref 1).
125	Phytolaccaceae	Phytolacca octandra (inkweed)	10	H/O	Hand pull or crown	CS&P (G1.5) or 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, re-shooting 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 used.	Spray; Basal Bark application; Injection: Triclopyr: .8L/60L diesel. Picloram + Triclopyr: 1L/60L diesel. Amitrole: 1mL/3cm (ref 3).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
131	Poaceae	Arundo donax (giant reed)	1	H/O	Physical removal of small infestations.	Spot spray or cut stump and spray with Glyphosate (ref 5).
132	Cactaceae	Opuntia imbricata (rope pear)	1	H/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	Spray; Basal Bark application; Injection: Triclopyr: .8L/60L diesel. Picloram + Triclopyr: 1L/60L diesel. Amitrole: 1mL/3cm (ref 3).
133	Bignoniaceae	Pyrostegia venusta (flame vine)	1	V/O	N/A	CS&P (G1.5); spray G200 (ref 1).
134	Poaceae	Cortaderia selloana (pampas grass)	2	H/O	Small Plants: dig out by hand or machine	Stems: C&P (G1.5) or cut back and slash and spray regrowth G100 (ref 1).
135	Solanaceae	Solanum hispidum (giant devil's fig)	5	S/O	Hand pull	Spray G100 (ref 1).
136	Agavaceae	Furcraea foetida (Cuban hemp)	3	S/OA	Dig out by hand or machine	CS& P near ground or spray MM (ref 1).
137	Agavaceae	Furcraea selloa (hemp)	1	S/OA	Dig out by hand or machine	CS& P near ground or spray MM (ref 1).
138	Agavaceae	Agave americana (century plant)	4	S/OA	Dig out by hand or machine	CS& P near ground or spray MM (ref 1).
139	Rutaceae	Murraya paniculata cv. Exotica (murraya)	6	S/O	Seedlings: Hand pull	Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 (ref 1).
140	Rosaceae	Rubus discolor (R. fruticosus complex, a blakberry)	4	S/OA	slashing hinders growth, giving some control if plants are slashed before they seed	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 (ref 3).
147	Asteraceae	Solidago canadensis var. scabra (Canadian goldenrod)	7	H/O	Hand pull and hang to dry.	Spray MM or G200 or G200 + MM if other weeds such as Lantana or Camphor Laurel are present (ref 1).
148	Fabaceae	Pueraria lobata (kudzu)	3	V,S/O	Slash; Diminish by shading site	CS&P (G1.5); spray G200 or MM (ref 1).
149	Alismataceae	Sagittaria graminea var. platyphylla (sagittaria arrowhead)	3	Ha/FO	Physical removal of small infestations.	Spot Spray with Glyphosate at 1.0L:100L water (ref 5).
150	Nymphaeaceae	Nymphaea mexicana (yellow waterlily)	2	Ha/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 (Paddy`s lucerne)	9	S/U	Hand pull or dig out.	Spray with 2,4-D amine or fluoxypyr (ref 3).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
154	Poaceae	Themeda quadrivalvis (grader grass)	8	H/A	Hand pull or dig out small infestations.	Spot spraying with Glyphosate or 2,2-DPA (ref 3).
155	Poaceae	Andropogon virginicus (whisky grass)	6	H/A	Hand pull or dig out small infestations.	Spot spraying with Glyphosate or 2,2-DPA (ref 3).
156	Bignoniaceae	Jacaranda mimosifolia (jacaranda)	4	T/O	Seedlings: Hand pull	Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 (ref 1).
157	Acanthaceae	Justicia betonica (squirreltail)	2	S/O	Hand pull smal infestations. Can be controlled by planting competitive native species.	Glyphosate known to be effective.Species known to occur in waterways, DERM should be contacted before spraying in waterways (ref 4).
158	Mimosaceae	Acacia boliviana (Bolivian wattle)	1	T/O	Mechanical or chain removal.	Basal Bark or cut stump application. Triclopyr 600g/L at 1.0L:120L diesel, Triclopyr + Picloram 240 g/l + 120 g/l at 1.0L:60L diesel, Picloram 45 g/kg undiluted (ref 5).
159	Simaroubaceae	Ailanthus altissima (tree of heaven)	1?	T/O	Seedlings: Hand pull	Seedlings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 or MM (ref 1).
160	Poaceae	Echinochloa colona (awnless barnyard grass)	9	H/A	Hand or mechanical removal of small infestations	Spray: glyphosate @ 13mL/1L water (ref 2.)
161	Cyperaceae	Cyperus brevifolius (Mullumbimby couch)	8	H/O	Each has to be dug out with a spade and the entire plant turned over, exposing the root system while making sure all aerial parts of the plant are completely covered.	Aquatic areas - Glyphosate ipa Land—commercial/industrial, rights of way - Glyphosate-ipa, glyphosate-mas, imazapyr
162	Moraceae	Morus alba (white mulberry)	3	T/O	N/A	Trees: F/I (G1.5), stack cut branches above the ground to dry; Saplings: CS&P (G1.5); Seedlings: spray G200 (ref 1).
163	Arecaceae	Colocasia esculenta (taro)	3	H/AO	Hand pull.	Cut at base and apply glyphosate or metsulfuron methyl. Plant often occurs in waterways so consult DERM prior to application (ref 6).
164	Cannaceae	Canna indica (canna lily)	3	H/O	Dig out entire plant	Cut/Slash and spay regrowth G200 or G200 + MM; Collect and bad seeds. Resistant to herbicide (ref 1).
165	Buddlejaceae	Buddleja madagascariensis (buddleja)	5	S,V/O	N/A	Stems: CS&P (1:1.5); Vines: spray or cut down and spray regrowth G200 (ref 1).
166	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).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
167	Cactaceae	Harrisia martinii (harrisia cactus)	2?	S/O	The use of the biological mealy-bug agent is recommended	Triclopyr + picloram at 1.0L:60L diesel, Dichlorprop 600 g/l at 1.0L/60L water, metsulfuron methyl 600 g/l at 2.0L:100L water Ref 5).
168	Acanthaceae	Thunbergia laurifolia (laurel clock vine)	1	V/O	N/A	CS&P (G1.5); spray G200 (ref 1).
169	Fabaceae	Erythrina crista-galli (cockspur coral tree)	2?	T/O	N/A	F/I (G1.5) or C&P stumps. Cut and stack branches above ground to dry to prevent resprouting. F/I sprouted branches (G1.5) or spray regrowth G200 + MM or MM. Trial Tordon (ref 1).
170	Sapindaceae	Koelreuteria elegans (Chinese rain tree)	1?	T/O	Seedlings: Hand pull	Trees: F/I (G1.5) or C&P stumps (G1.5); Saplings: CS&P (G1); stack cut branches above ground to dry; Seedlings: spray (G200) (ref 1).
171	Zingiberaceae	Hedychium gardnerianum (ginger lily)	1?	H/O	Small Plants: Hand pull and dispose	Small Plants: spray G200 or G200 + MM; Large Plants: cut and spray regrowth. If rhizomes are at ground level, cut stem and gouge rhizome - fill hole with G1.5 with injector kit or similar (ref 1).
172	Acanthaceae	Hypoestes phyllostachya (polka-dot plant	3	H/O	Hand pull or crown and dispose	Spray G200 or G200 + MM (ref 1).
173	Caprifoliaceae	Sambucus canadensis (American elder)	3	ST/O	Vines and Runners: hand pull, roll up and hang to dry.	Vines and Runners: CS&P (G1.5); Larger Stems, Roots and Nodes: spray G100 + MM or MM (ref 1).
174	Asteraceae	Conyza sumatrensis (tall fleabane)	9	H/U	Hand or mechanical removal of small infestations	Seedlings: Altrazine or Chlorosulfuron in combination with competitive native species; Plants: Glyphosate and Tordon 75-D mix. Glyphosate ration depends on other weeds present (ref 2).
175	Fabaceae	Tipuana tipu (tipuana)	2	T/O	Seedlings: Hand pull	Saplings: CS&P (G1.5); Trees: F/I (G1.5); Seedlings: spray G200 (ref 1).
176	Asteraceae	Tagetes minuta (stinking roger)	8	H/U	Hand pull and hang to dry.	Spray MM or G200 or G200 + MM if other weeds such as Lantana or Camphor Laurel are present (ref 1).
177	Caesalpiniaceae	Chamaecrista rotundifolia (round-leaf cassia)	6	ST/A	Seedlings: Hand pull	Shrubs: CS&P or F/I (G1.5); Seedlings: spray G200 or G200 + MM or MM; collect and bag seeds (ref 1).
178	Poaceae	Cenchrus echinatus (Mossman river grass)	8	H/A	Hand or mechanical removal of young plants	Herbicide Control - Glyphosate 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.
Note: Source for information contained on this page from Queensland Herbarium (Qld Gov't).

amendments:

Issue	Date	Details	Approved
B	17.08.2018	Revised Tender	GC
E	15.06.2021	Revised Tender	GC

Date Jun15

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

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

SCALE: AS NOTED

North

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Dwg No. 8051 L 07 E

Woodlinks Village Estate - Harry Ratnam Park

Weed Treatment & Removal Strategy - Sheet 4

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

RANK	FAMILY	SCIENTIFIC & COMMON NAME	SUBREGION	LIFE FORM & SOURCE	NON-CHEMICAL CONTROL	CHEMICAL CONTROL
179	Asteraceae	Conyza canadensis (Canadian fleabane)	10	H/U	Hand or mechanical removal of small infestations	Seedlings: Altrazine or Chlorosulfuron in combination with competitive native species; Plants: Glyphosate and Tordon 75-D mix. Glyphosate ration depends on other weeds present (ref 2).
180	Euphorbiaceae	Euphorbia cyathophora (painted spuge)	8	H/O	Hand pull	Spray G100 (ref 1).
181	Poaceae	Setaria palmifolia (palm leaf setaria)	5	H/O	Hand pull or dig up	Spray G100 (ref 1).
182	Euphorbiaceae	Euphorbia heterophylla (milk weed)	5	H/O?	Hand pull	Spray G100 (ref 1).
183	Fabaceae	Desmodium intortum (greenleaf desmodium)	4	H/A	Hand pull or crown and dispose	CS&P tuberous roots (G1.5); spray G200 or G200 + MM or MM; collect and bag seeds. Monitor regrowth over 2 - 3 years (ref 1).
184	Poaceae	Pennisetum setaceum (fountain grass)	3	H/O	Hand Pull	Spot Spray: glyphosate or 2,2-DPA (ref 3)
185	Asteraceae	Conyza bonariensis (flax-leaf fleabane)	7	H/U	Hand or mechanical removal of small infestations	Seedlings: Altrazine or Chlorosulfuron in combination with competitive native species; Plants: Glyphosate and Tordon 75-D mix. Glyphosate ration depends on other weeds present (ref 2).
186	Solanaceae	Solanum erianthum (a 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:1L 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?	T/O	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	H/O	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	H/O	Seedlings: Hand pull	Shrubs: CS&P or F/I (G1); Seedlings: CS&P (G1.5) or spray G200 (ref 1).

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

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

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

Explanatory notes:

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

Rec no.: Total number of records for species within study area, Queensland Herbarium CORVEG and HERBRECS data.

Scores: Based on panel data of invasiveness, 5 (highest) to 3 (moderate). ? indicate doubtful scores.

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

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

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND

Abbreviations: Control Methods

CS&P = cut scrape and paint
S&P = scrape and paint
C&P = cut and paint
F/I = frill or inject stem

Abbreviations: Herbicides

G = Glyphosate, eg. Roundup Biactive, Weedmaster Duo
MM = Metsulfuron methyl, eg, Brushoff
F = Fluroxypyr, eg. Starane

Abbreviations: Herbicide Dilution Rates for High Concentration Applications

GU = Glyphosate undiluted
G1 = 1 part water to 1 part glyhphosate
G1.5 = 1.5 parts water to 1 part glyphosate
G4 = 4 parts water to 1 part glyphosate

Abbreviations: Herbicide Spray Concentrations

G100 = 100mL glyphosate per 10L of water + surfuctant, eg 20mL LI 700 per 10L
G200 = 200mL glyphosate per 10L of water + surfuctant, eg 50mL LI 700 per 10L
G100 + MM = 100mL glyphosate + 1.5g metsulfuron methyl per 10L of water + wetting agent, eg. 2mL Agral per 10L water
G200 + MM = 200mL glyphosate + 1.5g metsulfuron methyl per 10L of water + wetting agent, eg. 2mL Agral per 10L water
MM = 1.5g metsulfuron methyl per 10L water + wetting agent, eg. 2mL Agral per 10L water
F100 = 100mL fluroxypyr per 10L water
F150 = 150mL fluroxypyr per 10L water

Other Abbreviations

= Locally non-indigenous native species

Ref. 1. Big Scrub Rainforest Landcare Group (2008), 'Common Weeds of Subtropical Rainforests of Eastern Australia: A practical manual on their identification and control'
Ref. 2. Department of Primary Industries and Fisheries (QLD), 'Weeds and pest animals and ants'.
Ref. 3. Holland et al. (1996), 'Suburban Weeds', DPI QLD.
Ref 4. Port Stephens Council (NSW), 'Weed Busters'.
Ref 5. Department of Primary Industries (NSW), 'Noxious and Environmental Weed Handbook, 3rd Edition'.
Ref 6. Department of Environment and Conservation, 'Florabase', (DEC- WA)
Ref 7. Vitelli, J.S. and Madigan, B.A. and Van Haaren, P.E. and Setter, S. and Logan, P. (2009) Control of the invasive liana, Hiptage benghalensis. Weed Biology and Management, 9 (1). pp. 54-62.

REHABILITATION METHODOLOGY - SITE WORKS - WEED NOTES

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

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amendments:

Issue	Date	Details	Approved
B	17.08.2018	Revised Tender	GC
E	15.06.2021	Revised Tender	GC

Date Jun 15

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

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

SCALE: AS NOTED

North

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Dwg No. 8051 L 08 E

Woodlinks Village Estate - Harry Ratnam Park — Rehabilitation Notes

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

REHABILITATION DESIGN & LAYOUT

This Site Based Rehabilitation Plan has been prepared for Canberra Estate Consortium No. 36 Pty Ltd and is designed to enhance and expand the Goodna Creek existing native vegetation areas within the existing Harry Ratnam Park adjacent to the Woodlinks Village Estate.

This plan set has been produced by overlaying existing site data with proposed works to determine impacts and disturbance.

This Site Based Rehabilitation Plan is to identify and control necessary site disturbance as provided for the site plan layout. Where existing native vegetation is already established, low impact weed removal and rehabilitation techniques are required.

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

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

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

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

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

NATURAL REGENERATION

Applies:
- To relatively large, intact and weed-free areas of native vegetation.
- Where the native plants are healthy and capable of regenerating without human intervention.
- When native plant seed is stored in the soil or will be able to reach the site from nearby natural areas, by birds or other animals, wind or water.
- Where the plant community has a high potential for recovery after any short-lived disturbance, such as a fire or cyclonic winds.
- When preventative action is all that is required to avert on-going disturbance, e.g. erection of fencing to prevent intrusion from cattle.

Planting in such sites can work against the aims of restoration by interfering with natural regeneration.

The re-establishing plant community will be similar in structure, composition and diversity to the original vegetation.

RECONSTRUCTION

Applies:
- Where the site is highly degraded or altered.
- When the degree of disturbance has been so great and long-standing that the pre-existing native plant community cannot recover by natural means.
- To sites such as areas of fill, sites affected by stormwater flow, and areas that have been drastically cleared, either mechanically or by stock even though there may be a few remaining native trees or shrubs.
- When a greater degree of human intervention is required, such as weed removal, cessation of grazing and/or slashing, amelioration of soil conditions such as importation of soils, drainage works or reshaping of the landscape.
- When a major component is the importation of native species through planting.

The re-establishing planted community should be similar to the original vegetation in structure, composition and diversity.

ASSISTED NATURAL REGENERATION

Applies:
- To natural areas where the native plant community is largely healthy and functioning.
- When native plant seed is still stored in the soil or will be able to reach the site from nearby natural areas, by birds or other animals, wind or water.
- Where the natural regeneration processes (seedling germination, root suckering etc.) are being inhibited by external factors, such as weed invasion, soil compaction, cattle grazing, mechanical slashing etc.
- When limited human intervention, such as weed removal, minor amelioration of soil conditions, erection of fencing, cessation of slashing, etc. will be enough to trigger the recovery processes through natural regeneration.
- When major component is weed control.

Planting in such sites can work against the aims of restoration by interfering with natural regeneration.

The re-establishing plant community will be similar in structure, composition and diversity to the original vegetation.

FABRICATION (Type Conversion)

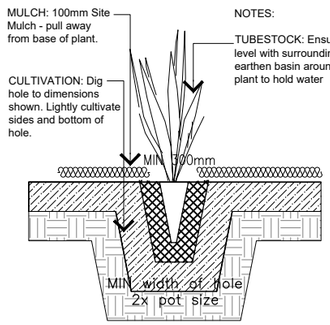
Applies:
- Where site conditions have been irreversibly changed.
- When it is not possible to restore the original native plant community.
- Where a better-adapted local plant community can be planted that will function within the changed conditions.
- In situations such as the construction of a wetland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

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

SITE PREPARATION

Areas designated for revegetation have undergone various stages of disturbance whether it be affected by introduced species of through the necessary development process.
Once planting locations have been determined each planting location is to be spot sprayed (1 square metre) prior to soil cultivation. (knockdown, non residual hebercide = Glyphosate or equivalent used at minimum rate of 2 litres per ha of spot spraying) Several herbicide applications maybe required to ensure appropriate kill rates where long grass exists. Note: Weed spray to single plantings only at top of bank.
However, if individual weeds have been identified throughout the existing established native vegetation, then manual removal should be applied and replaced with a native revegetation species as identified on this drawing sheet.

CULTIVATION AND PLANTING



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

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

WATERING: At the time of planting soak the root ball of each plant in a diluted solution of liquid seaweed according to the directions on product label to assist in establishment. Plants are to be watered deeply only once at the time of planting and then allowed to establish within the prevailing climatic conditions. If it is observed during the maintenance process that the plant is under stress then a subsequent watering is allowed to assist in establishment.

MULCHING & MATTING

Areas to be blanket mulched to a minimum depth of 100mm leaving a 50mm gap surrounding the trunk of planted stock. Areas which are deemed as too steep or not suitable for mulching due to frequent overland flows may utilise a combination of mulch and Jute mat and / or suitably anchored natural fibre weed mat installed to manufacturer's specifications have been specified.

PLANTING STOCK

All planting species to be selected in accordance with the species sizes and numbers setout on the species schedules. Refer to individual schedules for proposed proportions of groundcovers, shrubs and trees within planting areas. Revegetation planting locations shall be generally setout in accordance with a random grid pattern.

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

INSTALLATION METHODOLOGY

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

- Revegetation works shall be either undertaken or directly supervised by an experienced and qualified contractor.
- All works shall be in accordance with the provisions of this Site Based Rehabilitation Plan & local government policies.
- Plants are to be vigorous, well established, hardened off, consistent with species or variety, free from disease and insect pests, with large root systems and no evidence of damage.
- Plants are to be planted immediately after delivery to the planting site. Otherwise, they shall be stored in shade and watered sufficiently.
- Excavate planting medium to a depth suitable for the installation of tube or pot specimens. In areas where planting substrate is deemed to be very poor (compacted, nutrient depauperate, hydrophobic etc.) and above areas of potential frequent inundation and water flow, topsoil may be used or the ground mechanically ripped where access is feasible.
- Pre-water plant hole to decrease root stress and assess infiltration through soil.
- Incorporate into plant hole, water crystals / hydrating product to manufacturer's recommendations (Hortex 'Rainsaver' / 'Moisturaid' or similar approved).
- Place plant into hole and backfill ensuring that the plant is upright and the stem is not covered in less than 10mm or any more than 20mm of planting medium.
- Plants are to be watered thoroughly immediately after planting (deep irrigation) and thereafter as required during establishment depending on climatic conditions. Creation of a concave hollow around the base of each plant will aid water infiltration to the plant roots.
- A complete, slow release fertiliser is to be applied during planting to manufacturer's recommendations (Nutricote or similar approved) .
- To ensure successful establishment, all planting surfaces must be covered in:
  - a 100mm layer of high quality weed-free composted mulch (site mulch) - Note: avoid possible stem rot ensure mulch is 'dished' and not covering plant stem by more than 20mm.
  - suitable individual anchored natural fibre weed mat; or
- Seedlings and saplings to be encouraged and maintained throughout the establishment period.

MAINTENANCE SCHEDULE

MAINTENANCE SCHEDULE

Maintenance schedule for revegetation areas of the proposed development as specified on the Landscape Plans

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

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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	09.07.2018	Phase 1 Tender	GC
C	17.08.2018	Revised Tender	GC
E	24.01.2022	Revised Tender	GC

Date Jun15

Plan of: Harry Ratnam Park
Rehabilitation General Notes
Sheet 1

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

SCALE: AS NOTED

North

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Dwg No. 8051 L 09 E

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Zones Notes Sheet 2

ZONES DESCRIPTION

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

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

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

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

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

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

Minor disturbances within Zone 1 will occur as a result of removal of larger areas of weed infestation. Weed treatment will be hand removal and follow up spot spraying. Where significant areas of weed removal occurs such as bare ground areas greater than approximately 25 m2, Blanket mulching (or Coir matting in overland flow areas) and tubestock is to be installed.

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

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

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

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

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

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

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

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

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

ZONES DESCRIPTION CONTINUED

ZONES 2 to 5 Revegetation Planting

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

ZONE 2 Mulch Planting Areas

EXISTING CLEARED AREAS TO BE CONVERTED FROM GRASS TO TIERED PLANTING

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

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

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

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

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

ZONE 3 - Not Applicable

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 (By Council) 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).

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amendments:

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A	22.03.2016	Preliminary	GC
B	09.07.2018	Phase 1 Tender	GC
C	17.08.2018	Revised Tender	GC
E	24.01.2022	Revised Tender	GC

Date Jun 15

Plan of: Harry Ratnam Park
Rehabilitation Zone Notes Sheet 2

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

SCALE: AS NOTED

North

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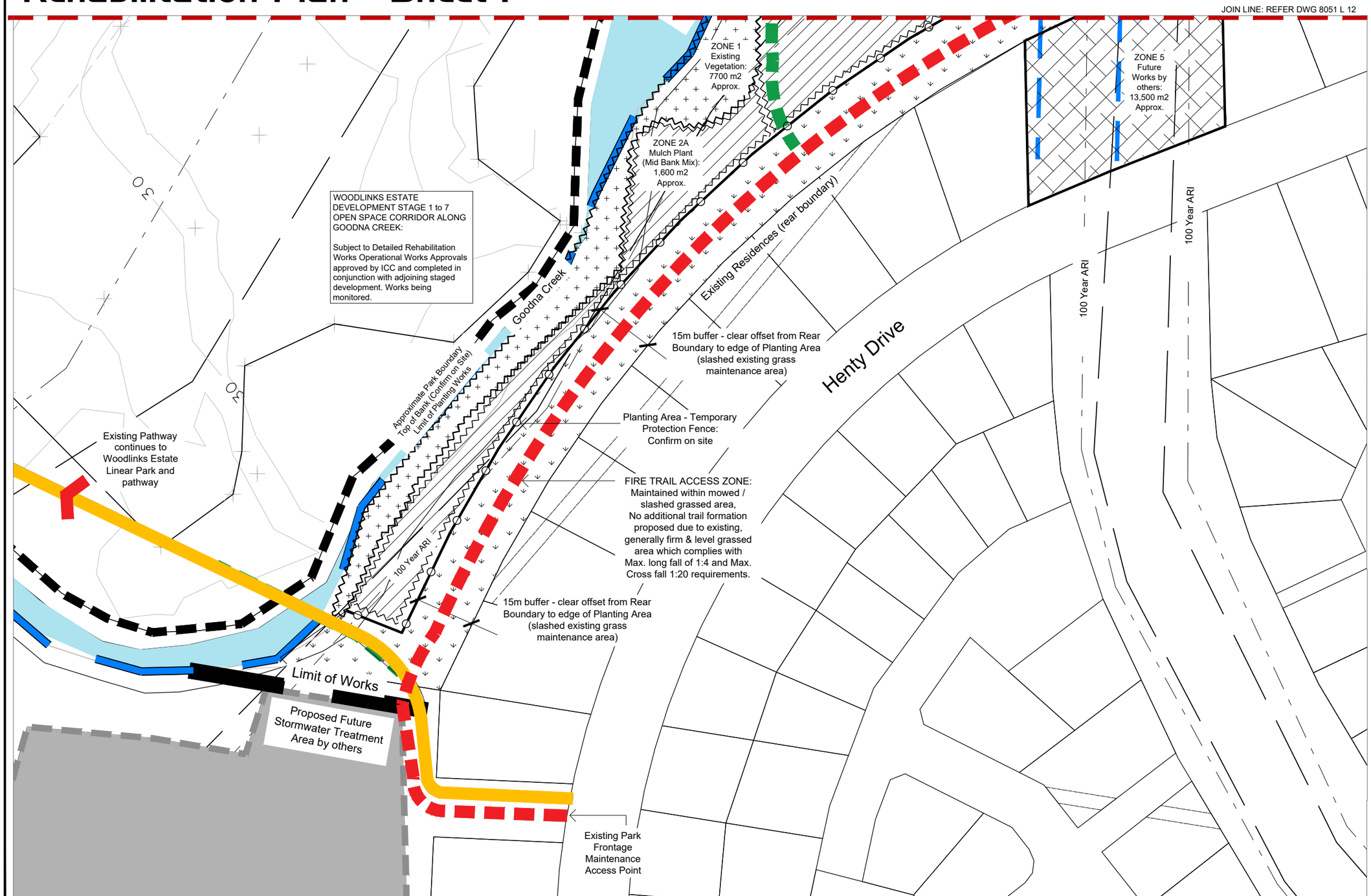
Dwg No. 8051 L 10 E

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plan - Sheet 1



LEGEND

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 09 & 10
REHABILITATION NOTES FOR DETAILED DESCRIPTIONS
REFER TO DWGS 8051 L 15 to 17
FOR DETAILED PLANT SCHEDULES

INTIAL PHASE WORKS

ZONE 1Ex.Veg. (See Notes)
EXISTING VEGETATION COVER -
INFILL OPEN AREAS WITH 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 - NA

ZONE 4
TREE PLANTING -
MULCHED SINGLE TREES WITHIN MANAGED EXISTING GRASS (NON-FIBROUS BARK TREES)

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

EXISTING GRASSED AREAS TO BE RETAINED-
CONTINUED TO BE MAINTAINED (BY COUNCIL UNLESS OTHERWISE NOTED) AS MOWN GRASS BUFFERS AND CIRCULATION AREAS WHERE SHOWN WITHIN OPEN SPACE.

CONCRETE PEDESTRIAN / CYCLE PATH -
EXISTING 2M / 2.2M WIDE PATHS WITHIN PARKS

FIRE TRAIL ACCESS -
ACCESS TO BUSHLAND / REVEGETATION FOR FIRE-FIGHTING OPERATIONS - REFER NOTES ON PLANS. CONNECTIONS BACK TO HENTY DRIVE AT PARK FRONTAGE LOCATIONS SHOWN.

2.5 TO 3M WIDE MAINTENANCE TRACKS -
THROUGH REHABILITATION AND GRASSED AREAS FOR ONGOING MANAGEMENT
FINISHES DEPEND ON LOCATIONS: I.E.
- EXISTING GRASS SLASHED TRACKS OR
- MULCH SPREAD ON EXISTING GROUND (WEED SPRAY & 100MM)

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

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

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

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amendments:

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A	22.03.2016	Preliminary	GC
B	20.11.2017	Tender (Stage 7)	GC
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D	17.08.2018	Revised Tender	GC
E	24.01.2022	Revised Tender	GC

Date Jun 15

Plan of: Harry Ratnam Park
Rehabilitation Plan Sheet 1

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

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

North

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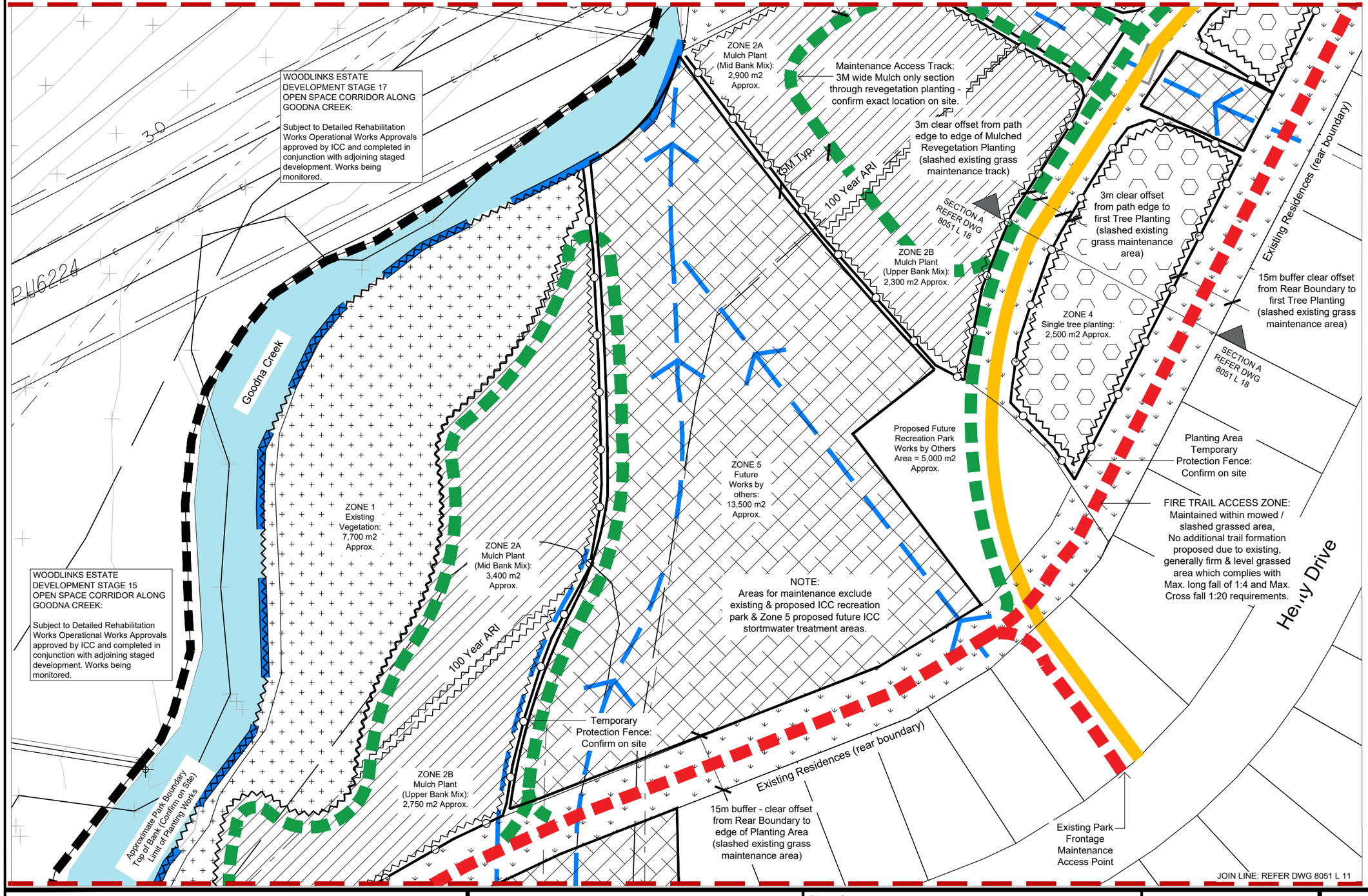
Dwg No. 8051 L 11 E

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plan - Sheet 2



LEGEND

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FINISHES DEPEND ON LOCATIONS: I.E.
- EXISTING GRASS SLASHED TRACKS OR
- MULCH SPREAD ON EXISTING GROUND (WEED SPRAY & 100MM)

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

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

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

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amendments:

Issue	Date	Details	Approved
A	12.02.2016	Preliminary	GC
B	20.11.2017	Tender (Stage 7)	GC
C	09.07.2018	Phase 1 Tender	GC
D	17.08.2018	Revised Tender	GC
E	24.01.2022	Revised Tender	GC

Date Jun 15

Plan of: Harry Ratnam Park
Rehabilitation Plan Sheet 2

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

SCALE:
1:500@A1
1:1000@A3
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North

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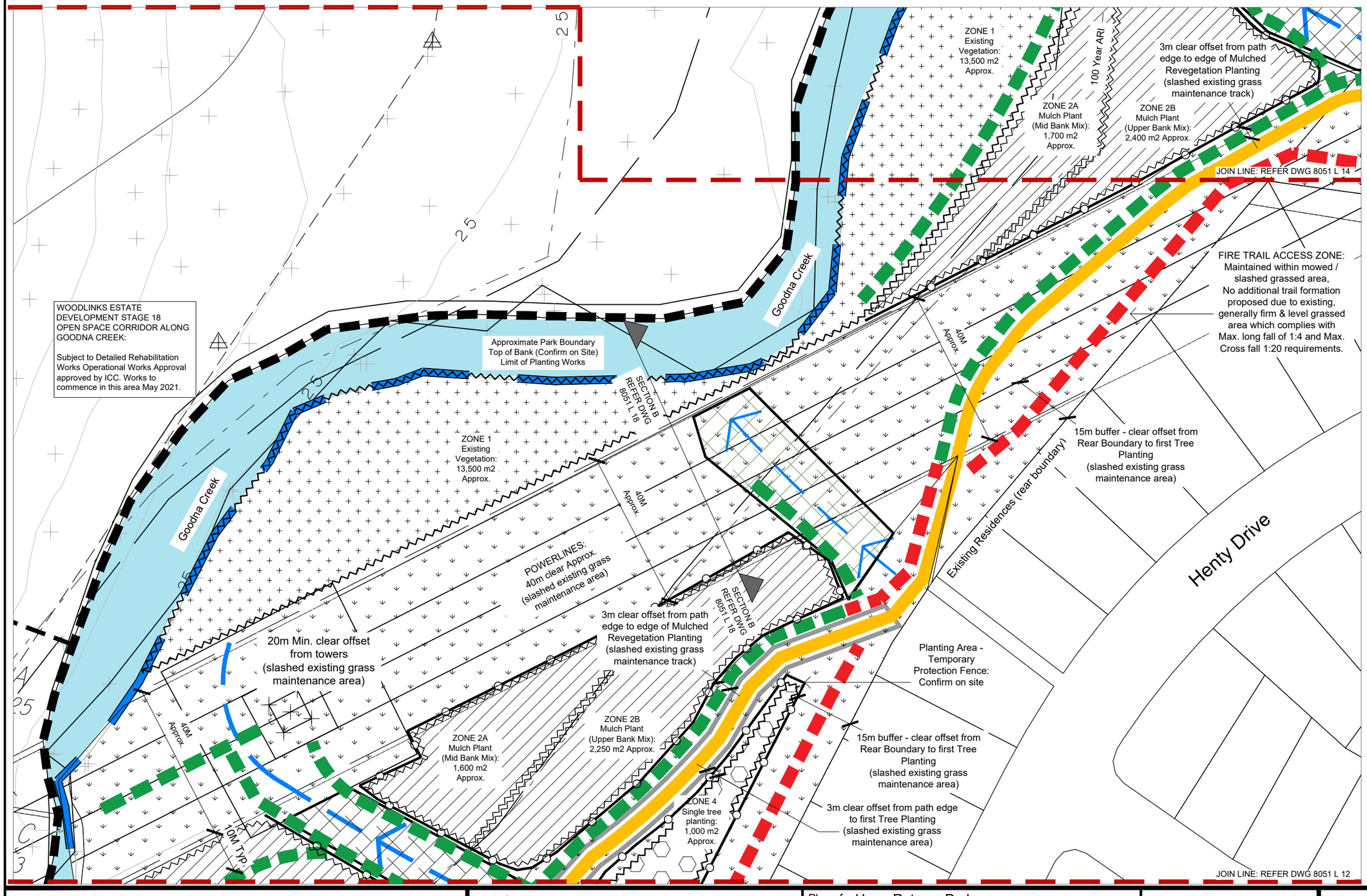
Dwg No. 8051 L 12 E

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plan - Sheet 3



LEGEND

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 09 & 10
REHABILITATION NOTES FOR DETAILED DESCRIPTIONS
REFER TO DWGS 8051 L 15 to 17
FOR DETAILED PLANT SCHEDULES

INTIAL PHASE WORKS

ZONE 1Ex.Veg. (See Notes)
EXISTING VEGETATION COVER -
INFILL OPEN AREAS WITH 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 - NA

ZONE 4
TREE PLANTING -
MULCHED SINGLE TREES WITHIN MANAGED EXISTING GRASS (NON-FIBROUS BARK TREES)

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

EXISTING GRASSED AREAS TO BE RETAINED-
CONTINUED TO BE MAINTAINED (BY COUNCIL UNLESS OTHERWISE NOTED) AS MOWN GRASS BUFFERS AND CIRCULATION AREAS WHERE SHOWN WITHIN OPEN SPACE.

CONCRETE PEDESTRIAN / CYCLE PATH -
EXISTING 2M / 2.2M WIDE PATHS WITHIN PARKS

FIRE TRAIL ACCESS -
ACCESS TO BUSHLAND / REVEGETATION FOR FIRE-FIGHTING OPERATIONS - REFER NOTES ON PLANS. CONNECTIONS BACK TO HENTY DRIVE AT PARK FRONTAGE LOCATIONS SHOWN.

2.5 TO 3M WIDE MAINTENANCE TRACKS -
THROUGH REHABILITATION AND GRASSED AREAS FOR ONGOING MANAGEMENT
FINISHES DEPEND ON LOCATIONS: I.E.
- EXISTING GRASS SLASHED TRACKS OR
- MULCH SPREAD ON EXISTING GROUND (WEED SPRAY & 100MM)

EXISTING DRAINAGE SWALES -
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amendments:

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A	22.03.2016	Preliminary	GC
B	20.11.2017	Tender (Stage 7)	GC
C	09.07.2018	Phase 1 Tender	GC
D	17.08.2018	Revised Tender	GC
E	24.01.2022	Revised Tender	GC

Date Jun 15

Plan of: Harry Ratnam Park
Rehabilitation Plan Sheet 3

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

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

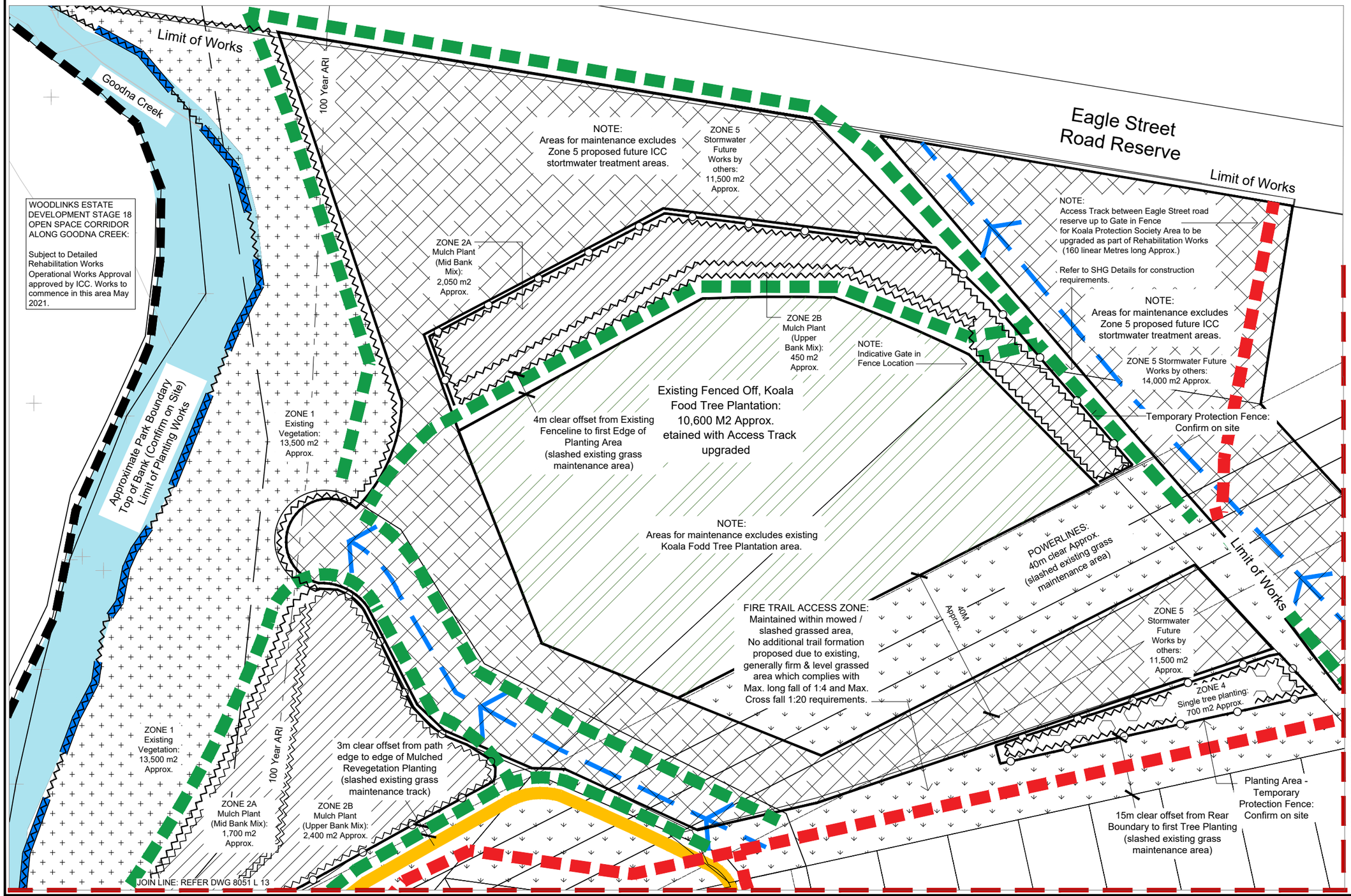
North

saunders havill group

Dwg No. 8051 L 13 E

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plan - Sheet 4



LEGEND

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REFER TO DWG 8051 L 09 & 10
REHABILITATION NOTES FOR DETAILED DESCRIPTIONS
REFER TO DWGS 8051 L 15 to 17
FOR DETAILED PLANT SCHEDULES

INTIAL PHASE WORKS

ZONE 1Ex.Veg. (See Notes)
EXISTING VEGETATION COVER -
INFILL OPEN AREAS WITH 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 - NA

ZONE 4
TREE PLANTING -
MULCHED SINGLE TREES WITHIN MANAGED EXISTING GRASS (NON-FIBROUS BARK TREES)

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

EXISTING GRASSED AREAS TO BE RETAINED-
CONTINUED TO BE MAINTAINED (BY COUNCIL UNLESS OTHERWISE NOTED) AS MOWN GRASS BUFFERS AND CIRCULATION AREAS WHERE SHOWN WITHIN OPEN SPACE.

CONCRETE PEDESTRIAN / CYCLE PATH -
EXISTING 2M / 2.2M WIDE PATHS WITHIN PARKS

FIRE TRAIL ACCESS -
ACCESS TO BUSHLAND / REVEGETATION FOR FIRE-FIGHTING OPERATIONS - REFER NOTES ON PLANS. CONNECTIONS BACK TO HENTY DRIVE AT PARK FRONTAGE LOCATIONS SHOWN.

2.5 TO 3M WIDE MAINTENANCE TRACKS -
THROUGH REHABILITATION AND GRASSED AREAS FOR ONGOING MANAGEMENT
FINISHES DEPEND ON LOCATIONS: I.E.
- EXISTING GRASS SLASHED TRACKS OR
- MULCH SPREAD ON EXISTING GROUND (WEED SPRAY & 100MM)

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

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amendments:

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A	22.03.2016	Preliminary	GC
B	20.11.2017	Tender (Stage 7)	GC
C	09.07.2018	Phase 1 Tender	GC
D	17.08.2018	Revised Tender	GC
E	24.01.2022	Tender	GC

Date Jun 15

Plan of: Harry Ratnam Park
Rehabilitation Plan Sheet 4

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

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

North

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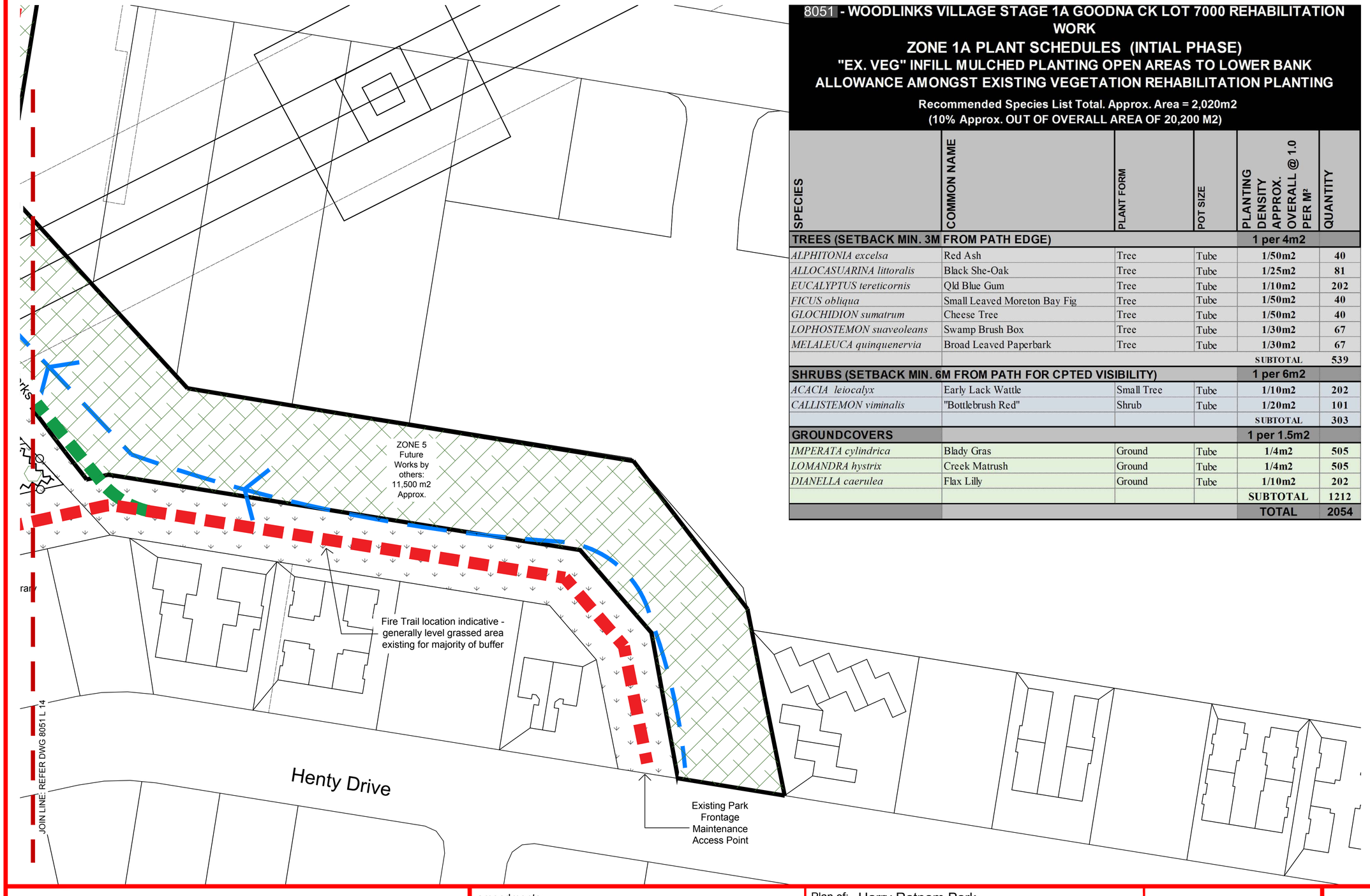
Dwg No. 8051 L 14 E

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plan - Sheet 5



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

ZONE 1A PLANT SCHEDULES (INTIAL PHASE)

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

Recommended Species List Total. Approx. Area = 2,020m2
(10% Approx. OUT OF OVERALL AREA OF 20,200 M2)

SPECIES	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY APPROX. OVERALL @ 1.0 PER M²	QUANTITY
TREES (SETBACK MIN. 3M FROM PATH EDGE)				**1 per 4m2**	
ALPHITONIA excelsa	Red Ash	Tree	Tube	1/50m2	40
ALLOCASUARINA littoralis	Black She-Oak	Tree	Tube	1/25m2	81
EUCALYPTUS tereticornis	Qld Blue Gum	Tree	Tube	1/10m2	202
FICUS obliqua	Small Leaved Moreton Bay Fig	Tree	Tube	1/50m2	40
GLOCHIDION sumatrum	Cheese Tree	Tree	Tube	1/50m2	40
LOPHOSTEMON suaveoleans	Swamp Brush Box	Tree	Tube	1/30m2	67
MELALEUCA quinquenervia	Broad Leaved Paperbark	Tree	Tube	1/30m2	67
				SUBTOTAL	539
SHRUBS (SETBACK MIN. 6M FROM PATH FOR CPTED VISIBILITY)				**1 per 6m2**	
ACACIA leiocalyx	Early Lack Wattle	Small Tree	Tube	1/10m2	202
CALLISTEMON viminalis	"Bottlebrush Red"	Shrub	Tube	1/20m2	101
				SUBTOTAL	303
GROUNDCOVERS				**1 per 1.5m2**	
IMPERATA cylindrica	Blady Gras	Ground	Tube	1/4m2	505
LOMANDRA hystrix	Creek Matrush	Ground	Tube	1/4m2	505
DIANELLA caerulea	Flax Lilly	Ground	Tube	1/10m2	202
				SUBTOTAL	1212
				TOTAL	2054

LEGEND

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REFER TO DWG 8051 L 09 & 10
REHABILITATION NOTES FOR DETAILED DESCRIPTIONS
REFER TO DWGS 8051 L 15 to 17
FOR DETAILED PLANT SCHEDULES

INTIAL PHASE WORKS

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

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

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

ZONE 4
TREE PLANTING -
MULCHED SINGLE TREES WITHIN MANAGED EXISTING GRASS (NON-FIBROUS BARK TREES)

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

EXISTING GRASSED AREAS TO BE RETAINED-
MAINTAIN AS MOWN GRASS BUFFERS AND CIRCULATION AREAS WHERE SHOWN WITHIN PARKS

CONCRETE PEDESTRIAN / CYCLE PATH -
EXISTING 2M / 2.2M WIDE PATHS WITHIN PARKS

FIRE TRAIL ACCESS - 6M CLEARED WIDTH AND 4M MIN. FORMED WIDTH -
ACCESS TO BUSHLAND / REVEGETATION FOR FIRE-FIGHTING OPERATIONS. CONNECTIONS BACK TO HENTY DRIVE AT PARK FRONTAGE LOCATIONS SHOWN.

2.5 TO 3M WIDE MAINTENANCE TRACKS -
THROUGH REHABILITATION AND GRASSED AREAS FOR ONGOING MANAGEMENT
FINISHES DEPEND ON LOCATIONS: I.E.
- EXISTING GRASS SLASHED TRACKS OR
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TEMPORARY PROTECTION FENCING -
REFER TO DETAILS. APPROXIMATE EXTENT SHOWN. CONFIRM EXACT REQUIRED LOCATIONS ON SITE.

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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	20.11.2017	Tender (Stage 7)	GC
C	09.07.2018	Phase 1 Tender	GC
D	17.08.2018	Revised Tender	GC
E	15.06.2021	Bushfire Tender	GC

Date Jun 15

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

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

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

North

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Dwg No. 8051 L 15 E

Zone 2A

8051 - HARRY RATNAM PARK, GOODNA CK REHABILITATION WORK
ZONE 2A (MID BANK - BELOW Q100) PLANT SCHEDULES (INTIAL PHASE)
"MULCH PLANT" MULCHED REHABILITATION PLANTING AREAS
Recommended Species List Total. Approximate Area = 13,250m2

SPECIES	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY APPROX. OVERALL @ 1.0 PER 1.25M² (OR 4 PER 5M2)	QUANTITY
TREES (SETBACK MIN. 3M FROM PATH EDGE)				**1 per 6m2**	
ALPHITONIA excelsa	Red Ash	Tree	Tube	1/120m2	110
ALLOCASUARINA littoralis	Black She-Oak	Tree	Tube	1/80m2	166
CORYMBIA intermedia	Pink Bloodwood	Tree	Tube	1/80m2	166
CORYMBIA tessellaris	Moreton Bay Ash	Tree	Tube	1/80m2	166
EUCALYPTUS crebra	Narrow Leaved Ironbark	Tree	Tube	1/80m2	166
EUCALYPTUS moluccana	Grey Box	Tree	Tube	1/80m2	166
EUCALYPTUS propinqua	Grey Gum	Tree	Tube	1/120m2	110
EUCALYPTUS siderophloia	Northern Grey Ironbark	Tree	Tube	1/80m2	166
EUCALYPTUS tereticornis	Qld Blue Gum	Tree	Tube	1/30m2	442
GLOCHIDION sumatrum	Cheese Tree	Tree	Tube	1/120m2	110
LOPHOSTEMON confertus	"Brush Box"	Tree	Tube	1/120m2	110
LOPHOSTEMON suaveoleans	Swamp Brush Box	Tree	Tube	1/80m2	166
MELALEUCA quinquenervia	Broad Leaved Paperbark	Tree	Tube	1/80m2	166
				SUBTOTAL	2208
SHRUBS (SETBACK MIN. 6M FROM PATH FOR CPTED VISIBILITY)				**1 per 6m2**	
ACACIA leiocalyx	Early Lack Wattle	Small Tree	Tube	1/40m2	331
BANKSIA integrifolia	Coastal Banksia	Small Tree	Tube	1/75m2	177
CALLISTEMON viminalis	"Bottlebrush Red"	Shrub	Tube	1/40m2	331
DAVIESIA villifera	Prickly Pea	Shrub	Tube	1/75m2	177
DODONAEA triquetra	Forest Hop Bush	Shrub	Tube	1/75m2	177
HOVEA acutifolia	Purple Pea Bush	Shrub	Tube	1/40m2	331
JACKSONIA scoparia	Dogwood	Shrub	Tube	1/75m2	177
LEPTOSPERMUM polygafolium	Wid May	Shrub	Tube	1/40m2	331
PITTOSPORUM undulatum	"Sweet Pittosporum"	Shrub	Tube	1/75m2	177
				SUBTOTAL	2208
GROUNDCOVERS				**1 per 2m2 approx.**	
BOTHRIOCHLOA sp.	"Beardgrass"	Ground	Tube	1/85m2	155
DIANELLA caerulea	Flax Lilly	Ground	Tube	1/50m2	265
GOODENIA rotundifolia	Star Goodenia	Ground	Tube	1/100m2	133
IMPERATA cylindrica	Blady Gras	Ground	Tube	1/8m2	1656
LOMANDRA hystrix	Creek Matrush	Ground	Tube	1/8m2	1656
LOMANDRA longifolia	Matrush	Ground	Tube	1/25m2	663
MYOPORUM ellipticum	Boobiala	Ground	Tube	1/10m2	1325
THEMEDA triandra	Kangaroo Grass	Ground	Tube	1/40m2	331
				SUBTOTAL	6184
				TOTAL	10600

Zone 1B

8051 - WOODLINKS VILLAGE STAGE 1A GOODNA CK LOT 7000 REHABILITATION WORK
ZONE 1B PLANT SCHEDULES (INITIAL PHASE)
"EX. VEG" INFILL MULCHED PLANTING OPEN AREAS TO MID CREEK BANK ALLOWANCE AMONGST EXISTING VEGETATION REHABILITATION PLANTING AREAS
Recommended Species List Total. Approx. Area = 1,010m2 (5% OUT OF OVERALL AREA OF 20,200 M2)

SPECIES	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY APPROX. OVERALL @ 1.0 PER 1M²	QUANTITY
TREES (SETBACK MIN. 3M FROM PATH EDGE)				**1 per 3m2**	
ALPHITONIA excelsa	Red Ash	Tree	Tube	1/100m2	10
ALLOCASUARINA littoralis	Black She-Oak	Tree	Tube	1/60m2	17
CORYMBIA intermedia	Pink Bloodwood	Tree	Tube	1/60m2	17
CORYMBIA tessellaris	Moreton Bay Ash	Tree	Tube	1/80m2	13
EUCALYPTUS crebra	Narrow Leaved Ironbark	Tree	Tube	1/80m2	13
EUCALYPTUS moluccana	Grey Box	Tree	Tube	1/80m2	13
EUCALYPTUS propinqua	Grey Gum	Tree	Tube	1/100m2	10
EUCALYPTUS siderophloia	Northern Grey Ironbark	Tree	Tube	1/80m2	13
EUCALYPTUS tereticornis	Qld Blue Gum	Tree	Tube	1/40m2	25
GLOCHIDION sumatrum	Cheese Tree	Tree	Tube	1/100m2	10
LOPHOSTEMON suaveoleans	Swamp Brush Box	Tree	Tube	1/60m2	17
MELALEUCA quinquenervia	Broad Leaved Paperbark	Tree	Tube	1/60m2	17
				SUBTOTAL	173
SHRUBS (SETBACK MIN. 6M FROM PATH FOR CPTED VISIBILITY)				**1 per 12m2**	
ACACIA leiocalyx	Early Lack Wattle	Small Tree	Tube	1/35m2	29
CALLISTEMON viminalis	"Bottlebrush Red"	Shrub	Tube	1/20m2	51
				SUBTOTAL	79
GROUNDCOVERS				**1 per 2m2**	
IMPERATA cylindrica	Blady Gras	Ground	Tube	1/4m2	253
LOMANDRA hystrix	Creek Matrush	Ground	Tube	1/4m2	253
LOMANDRA longifolia	Matrush	Ground	Tube	1/4m2	253
				SUBTOTAL	758
				TOTAL	1010

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plants Sheet 1

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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	17.08.2018	Revised Tender	GC
E	24.01.2022	Tender	GC

Date Jun 15

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

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

SCALE: AS NOTED

North

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Dwg No. 8051 L 16 E

Zone 2B

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

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

SPECIES	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY APPROX. OVERALL @ 1.0 PER 1.25M² (OR 4 PER 5M2)	QUANTITY
TREES (SETBACK MIN. 4M	**FROM PATH EDGE)**			**1 per 7.5m2**	
ALPHITONIA excelsa	Red Ash	Tree	Tube	**1/60m2**	**169**
CORYMBIA intermedia	Pink Bloodwood	Tree	Tube	**1/50m2**	**203**
CORYMBIA tessellaris	Moreton Bay Ash	Tree	Tube	**1/50m2**	**203**
EUCALYPTUS crebra	Narrow Leaved Ironbark	Tree	Tube	**1/80m2**	**127**
EUCALYPTUS moluccana	Grey Box	Tree	Tube	**1/60m2**	**169**
EUCALYPTUS propinqua	Grey Gum	Tree	Tube	**1/80m2**	**127**
EUCALYPTUS siderophloia	Northern Grey Ironbark	Tree	Tube	**1/80m2**	**127**
EUCALYPTUS tereticornis	Qld Blue Gum	Tree	Tube	**1/30m2**	**338**
LOPHOSTEMON confertus	Brush Box	Tree	Tube	**1/75m2**	**135**
				SUBTOTAL	**1599**
SHRUBS (SETBACK MIN. 4M FROM PATH - LOW DENSITY FOR CPTE				**1 per 6m2**	
ACACIA leiocalyx	Early Lack Wattle	Small Tree	Tube	**1/40m2**	**254**
BANKSIA integrifolia	Coastal Banksia	Small Tree	Tube	**1/75m2**	**135**
CALLISTEMON viminalis	"Bottlebrush Red"	Shrub	Tube	**1/40m2**	**254**
CRYPTOCARYA triplinervis	"Three-veined Cryptocarya"	Shrub	Tube	**1/75m2**	**135**
DAVIESIA villifera	Prickly Pea	Shrub	Tube	**1/75m2**	**135**
DODONAEA triquetra	Forest Hop Bush	Shrub	Tube	**1/75m2**	**135**
HOVEA acutifolia	Purple Pea Bush	Shrub	Tube	**1/50m2**	**203**
JACKSONIA scoparia	Dogwood	Shrub	Tube	**1/75m2**	**135**
LEPTOSPERMUM polygafolium	Wid May	Shrub	Tube	**1/50m2**	**203**
PITTOSPORUM undulatum	"Sweet Pittosporum"	Shrub	Tube	**1/75m2**	**135**
				SUBTOTAL	**1726**
GROUNDCOVERS				**1 per 2.0m2 Approx.**	
BOTHRIOCHLOA sp.	"Beardgrass"	Ground	Tube	**1/30m2**	**338**
CYMOBOPOGON refractus	Barb-wire Grass	Ground	Tube	**1/30m2**	**338**
IMPERATA cylindrica	Blady Gras	Ground	Tube	**1/7m2**	**1450**
LOMANDRA longifolia	Matrush	Ground	Tube	**1/8.5m2**	**1194**
THEMEDA triandra	Kangaroo Grass	Ground	Tube	**1/7m2**	**1475**
				SUBTOTAL	**4796**
				TOTAL	**8120**

Single Tree Planting

8051 - HARRY RATNAM PARK, GOODNA CK REHABILITATION WORK
ZONE 4 PLANT SCHEDULES
SINGLE TREE PLANTING IN OPEN GRASSED AREAS BETWEEN PATH & HOUSE LOTS

Recommended Species List Total. Approximate Area = 4,200m2

SPECIES	COMMON NAME	PLANT FORM	POT SIZE	DENSITY OVERALL @ 1.0 PER 18M²	QTY.
TREES (PHASE 1)					
CORYMBIA intermedia	Pink Bloodwood	Tree	Tube	**1/100m2**	**42**
CORYMBIA tessellaris	Moreton Bay Ash	Tree	Tube	**1/100m2**	**42**
EUCALYPTUS crebra	Narrow Leaved Ironbark	Tree	Tube	**1/200m2**	**21**
EUCALYPTUS moluccana	Grey Box	Tree	Tube	**1/200m2**	**21**
EUCALYPTUS siderophloia	Northern Grey Ironbark	Tree	Tube	**1/200m2**	**21**
EUCALYPTUS tereticornis	Qld Blue Gum	Tree	Tube	**1/100m2**	**42**
LOPHOSTEMON confertus	Brush Box	Tree	Tube	**1/100m2**	**42**
				TOTAL	**231**

Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plants Sheet 2

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amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	09.07.2018	Phase 1 Tender	GC
C	17.08.2018	Revised Tender	GC
E	24.01.2022	Tender	GC

Date Jun 15

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

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

SCALE: AS NOTED

North

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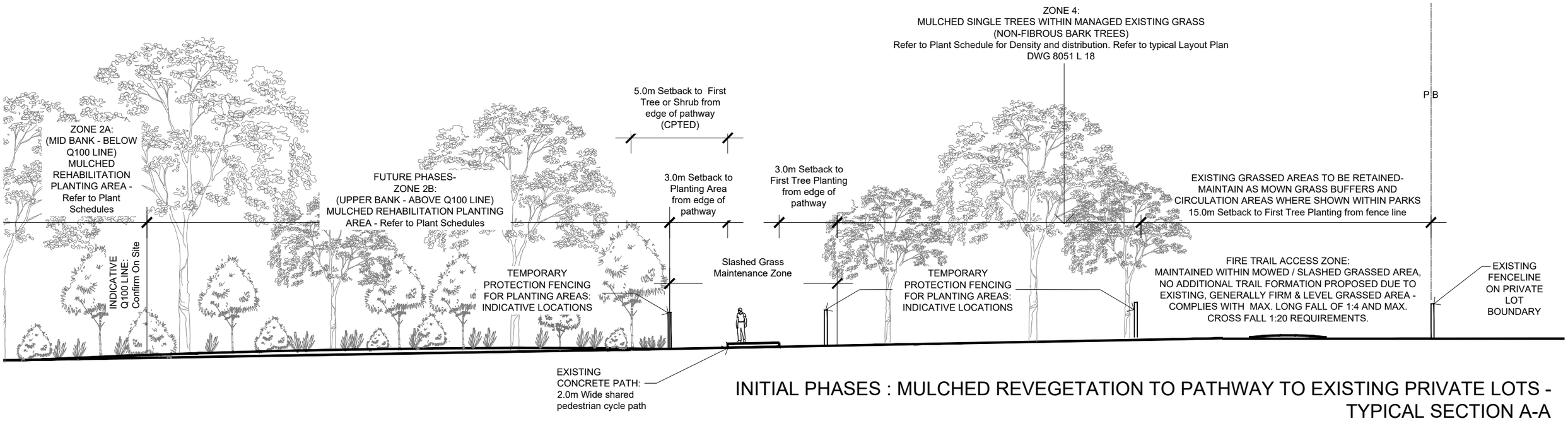
Dwg No. 8051 L 17 E

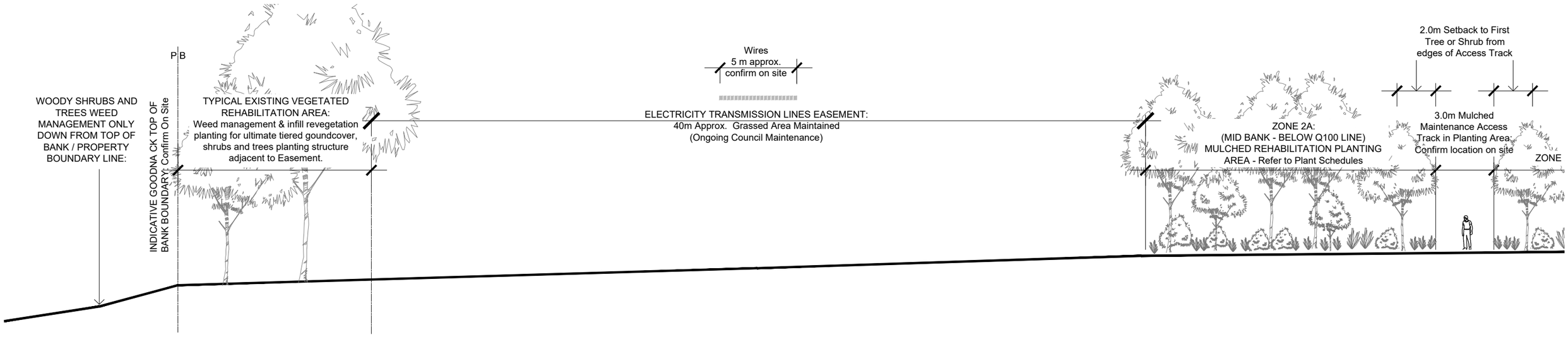
Woodlinks Village Estate - Harry Ratnam Park

Rehabilitation Plan Sections



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

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



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

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

saunders havill group
40 YEARS 1975-2015
surveying · town planning · urban design · environmental management · landscape architecture
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phone (07) 3251 9444 fax (07) 3251 9455
address 9 Thompson St Bowen Hills Q 4006

amendments:

Issue	Date	Details	Approved
A	22.03.2016	Preliminary	GC
B	20.11.2017	Tender (Stage 7)	GC
C	09.07.2018	Phase 1 Tender	GC
D	17.08.2018	Revised Tender	GC
E	24.01.2022	Revised Tender	GC

Date Jun 15

Plan of: Harry Ratnam Park
Rehabilitation Sections

Drawn by. FW

Checked by. GC / MS

Project: Woodlinks Village Estate H.R.Park

Client: Canberra Estate Consortium No. 36

SCALE: AS SHOWN

North

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Dwg No. 8051 L 18 E

Woodlinks Village Estate - Harry Ratnam Park

Phase I - Single Tree Planting Typical Layout Plan

PLANTING GROUPING NOTES:

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

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Date Jun 15

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

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

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

North

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Dwg No. 8051 L 19 E

Appendix E

Harry Ratnam Park Rehabilitation Works Plan, prepared by SHG

GOODNA CREEK & HARRY RATNAM PARK REVEGETATION & REHABILITATION

100m

HILLTOP ADVENTURE PARK

COMPLETED REHABILITATION & REVEGETATION

GOODNA CREEK

KOALA RESERVE

EAGLE ST

EXISTING PEDESTRIAN LINK

ELDER PDE

EXISTING POWERLINK EASEMENT

HENTY DR

PALASZCZUK AVE

COMPLETED REHABILITATION & REVEGETATION

DR HARRY RATNAM PARK

EXISTING DRAINAGE CORRIDOR

EXISTING PEDESTRIAN LINK TO WOODLINKS VILLAGE

LEGEND

1 Existing vegetation cover
Weed Removal and Management and Natural Regeneration of Native Species

2 Proposed broad scale re-vegetation
Native Species planting into open grassed areas away from houses, powerlines and drainage areas

3 Proposed individual tree planting
Koala Tree Species planting at wider spacings into open grassed areas between pedestrian pathway

4 Existing open grassed areas
Grass areas under power lines and alongside pathways

5 Existing drainage areas
No new works proposed

6 Existing recreation park
No new works proposed

7 Existing koala food plantings
No new works proposed

Appendix F

Lifestyle guidelines for Woodlinks Village

Protecting and supporting

the local koala population at Woodlinks Village

WOODLINKS

Did you know...

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

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

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

Legislation

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

Koala Trees in Landscaping

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

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

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

Road Etiquette & Koala Safety

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

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

Responsible Pet Ownership

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

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

If You Find a Sick, Injured or Orphaned Koala

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

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

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

Prepared by: saunders havill group