

Annual Compliance Report

9 July 2023 to 8 July 2024 (Year 6) EPBC 2014/7306

Springview Village One, Springfield, Ipswich City, Queensland
Stockland Development Pty Ltd

4 October 2024

Job No: 8473 E



Stockland : kalina
— Springfield —

Document control

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1. Introduction

Saunders Havill Group (SHG) have prepared this Annual Compliance Report (ACR) for the Springview Village One project at Springfield, Queensland on behalf of Stockland Development Pty Limited (Stockland). In 2018, the Springview Village One project was rebranded Kalina Springfield and all project references use the latter name herein.

This report provides an assessment of the project’s compliance with the approval granted under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (ref EPBC 2014/7306) and is specifically required by condition 10 of the approval granted on 14 September 2016 (refer **Appendix A**). The reporting period for this ACR is the twelve months ending on 8 July 2024.

Kalina Springfield is located approximately 2.5 kilometres (km) north of Springfield Central and is adjacent to existing urban development comprising residential housing and Springfield Anglican College in the Ipswich City local government area (refer Error! Reference source not found.). Within the project area, an impact to no more than 39.75 ha of Matters of National Environmental Significance (MNES) habitat being Koala habitat was permitted under the approval conditions. A land-based offset accompanied this clearing to counterbalance the impacts and is located in the locality of Calvert, approximately 40 km west of the project.

1.1. Approval summary

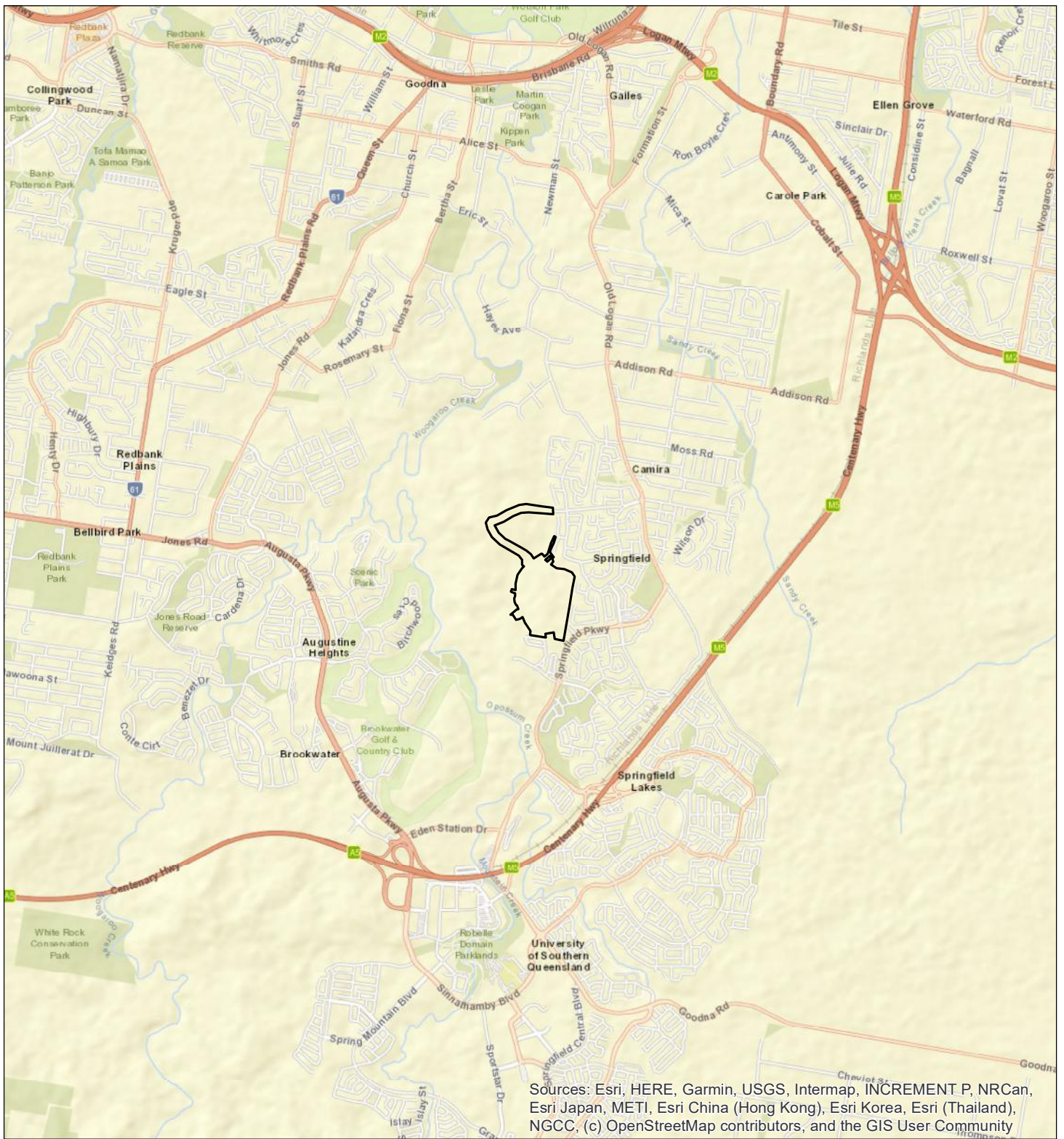
There are three approval documents issued under the EPBC Act relevant to the project:

1. *Approval* dated 12 June, 2016.
2. *Notice of Transfer of Approval* dated 16 June, 2017.
3. *Variation to Conditions Attached to Approval* dated 12 June, 2018.

Table 1 summarises the approval details under the EPBC Act relevant to Kalina Springfield. The approval was granted by the Australian Government Department of Agriculture, Water, and the Environment. The approval is currently administered by the Department of Climate Change, Energy, the Environment and Water (the Department).

Table 1: EPBC Act approval summary

Department reference	EPBC 2014/7306
Approval holder, ACN	Stockland Development Pty Limited, 000 064 835
Approval date	14 September 2016
Expiry date of approval	30 September 2041
Approved action	To develop Springview Village One residential development at Lot 43 on SP2442290 at the junction of Mur Boulevard and Panorama Drive, Springfield, Queensland as described in the referral received by the Department on 15 August 2014.
Controlling provision	Approved - listed threatened species and communities (sections 18 & 18A)
Address	Mur Boulevard, Springfield Queensland 4300



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Legend


 EPBC Act approved Clearance Area

Figure 1
Site Context

EPBC 2014/7306
Kalina Springfield -
Residential
Development



File ref. 8473 E Figure 1 ACR6 Site Context A
Date 5/09/2024
Project Kalina Annual Compliance Report #5



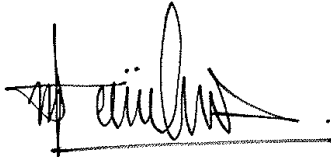
0 0.5 1 2 km
Scale (A4): 1:50,000 [GDA 1994 MGA Z56]



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1.2. 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	4/10/2024

2. Description of activities – impact area

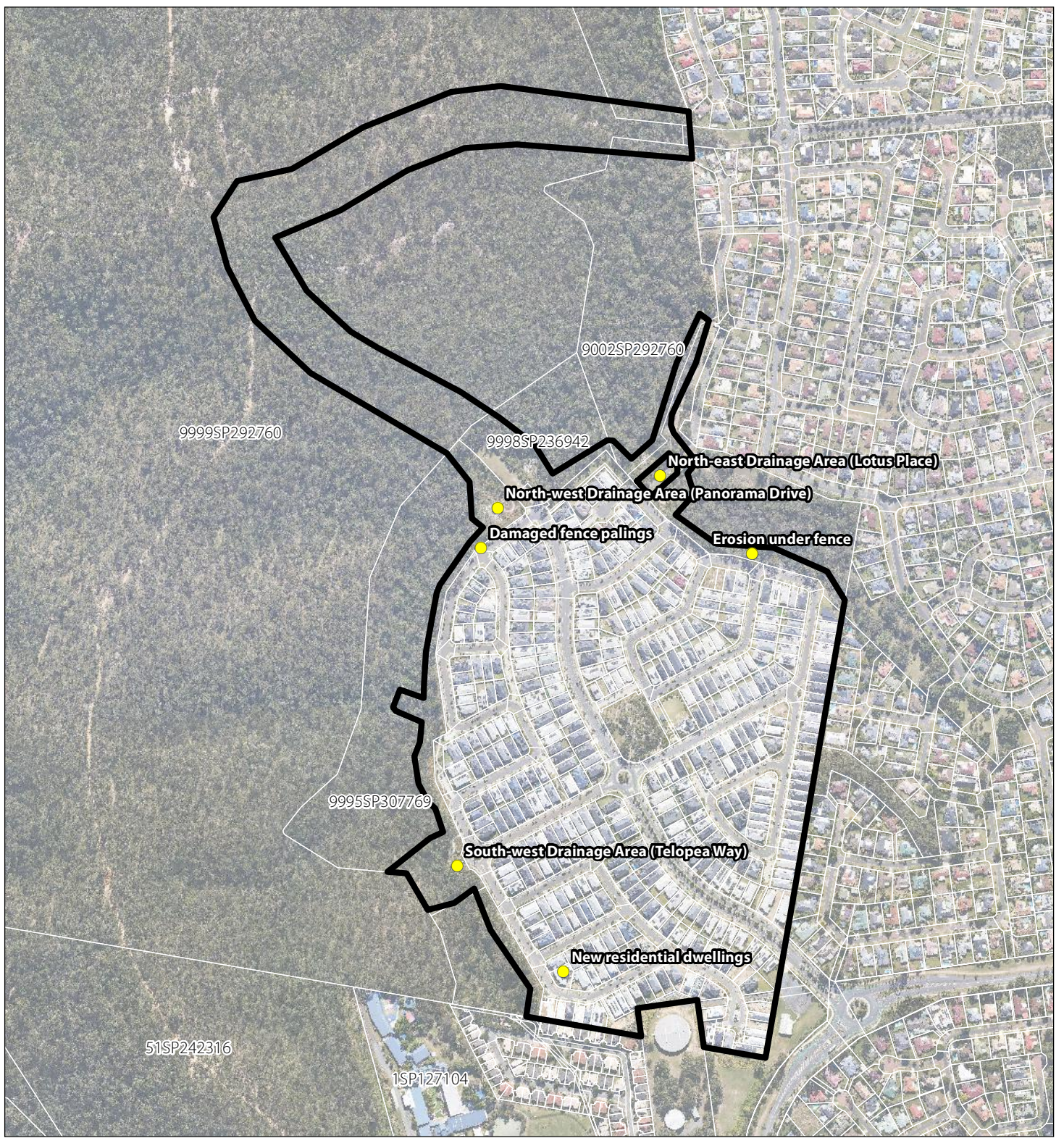
The Kalina Springfield project is a residential development situated in Springfield, a suburb of Ipswich City. The development encompasses the establishment of residential land parcels and open space areas. On-site works commenced on 9 July 2018, where clearing activities were undertaken with a high level of diligence by Stockland. During clearing activities, a Fauna Spotter Catcher was in attendance at all times to minimise possible harm to Koala and other fauna potentially residing on-site. As construction is still on-going continued minimisation of disturbance to neighbours is also a priority. During the 2023-2024 compliance period, the construction of dwellings within the project area continued along Carbeen Circuit (refer **Photo set 1**).

Due to the ongoing nature of the development during the 2023-2024 monitoring period, a site inspection was conducted by SHG ecologists on 21 August 2024. This was to assess the developments compliance with administering authorities and conditions in relation to vegetation clearing, soil stability control, rehabilitation efforts, weeds, Koala presence and fencing. No new vegetation clearing was conducted during this reporting period. Evidence remains from the clearing that occurred during the 2021-2022 reporting period (refer **Photo set 2**). All clearing was completed in accordance with approvals from state and/or local administering authorities in place, where applicable.

Ongoing stability and rehabilitation efforts within landscaping and drainage areas to mitigate potential impacts on the surrounding environment were inspected during the site inspection on 21 August 2024. The stability and rehabilitation activities were completed with approvals from state and / or local administering authorities in place, where applicable. The three (3) drainage areas inspected are located on the periphery of the Kalina development including Lotus Place in the north-east, Panorama Drive in the north-west and Teleopea Way in the south-west of the site (refer **Figure 2, Photo set 3, Photo set 4 and Photo set 5**, respectively). Drainage areas were found to be in satisfactory condition, with the only minor defect being litter and minor weeds.

Ongoing sediment and erosion control measures were observed within the development extent to mitigate potential impacts on the surrounding environment. These efforts were concentrated along the interface between the retained bushland area and works extent, and in association with utility infrastructure e.g. drainage culverts and stormwater basins (refer **Photo set 6 and Photo set 7**).

The installation of fauna fencing along the boundary of the Kalina development was installed during the previous reporting periods. The fencing was in good condition with some minor damage noted, which has been actioned by the approval holder to rectify.



Legend

- Qld DCDB
- EPBC Act approved Clearance Area
- Field Observation

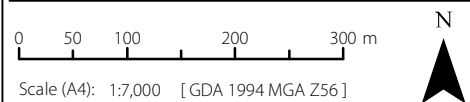
Figure 2

Site Aerial and Field Survey Effort

EPBC 2014/7306
Kalina Springfield -
Residential
Development



File ref. 8473 E Figure 2 ACR6 Site Aerial A
Date 5/09/2024
Project Kalina Annual Compliance Report #5



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Photo set 1: New builds along Carbeen Circuit during the reporting period.



Photo set 2: 2021-2022 maintained cleared area



Photo set 3: Rehabilitation Progress of Drainage Area – North-east (Lotus Place)



Photo set 4: Rehabilitation Progress of Drainage Area – North-west (Panorama Drive)



Photo set 5: Rehabilitation Progress of Drainage Area – South-west (Telopea Way)

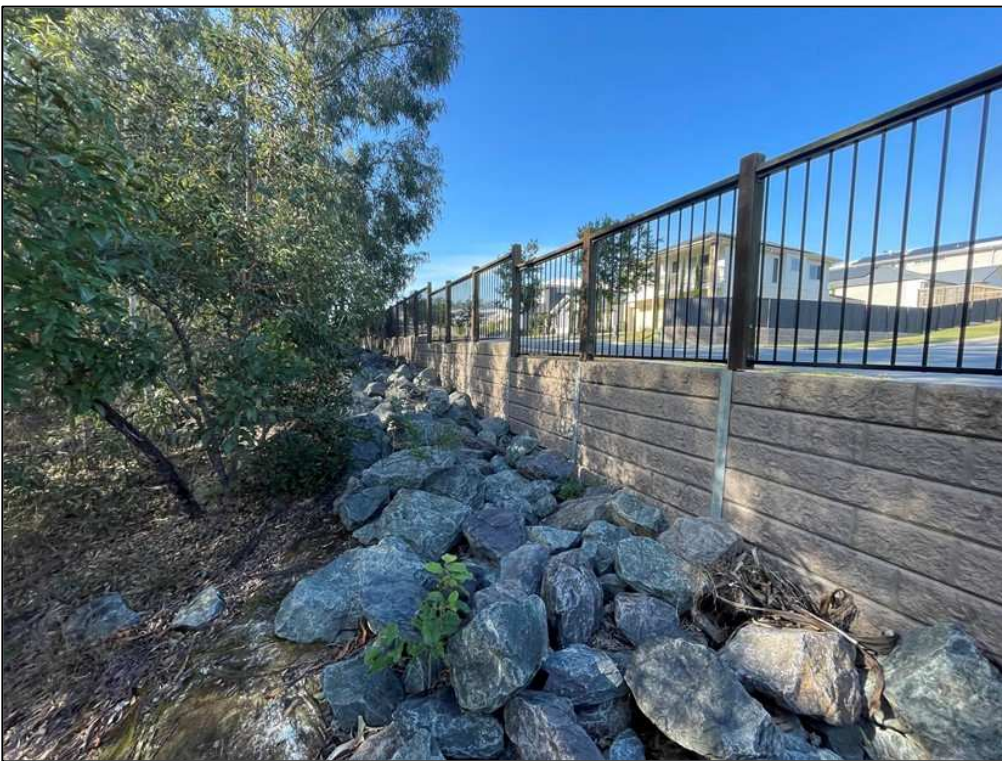


Photo set 6: Sediment and Erosion Control Measures



Photo set 7: Sediment and Erosion Control Measures

2.1. Koala habitat

The Kalina Springfield project was deemed a controlled action based on impacts to the vulnerable-listed Koala species. Field survey effort conducted across the site during the referral process determined that Koalas occur on-site infrequently and at an implied low usage. This finding has been supported by subsequent Fauna Spotter Catcher reports undertaken for clearing works in 2018 and 2019 which showed Koalas were not observed during pre-clearance surveys. These documents are provided in the first and second annual compliance reports (available on the Kalina Stockland website).

During the 2021-2022 reporting period, Fauna Spotter Catcher inspections were undertaken for clearing in February and April 2022. These surveys failed to locate any Koalas in the survey location during the pre-clearance survey or while clearing works were underway. In this reporting period (2023-2024), no Fauna Spotter Catcher inspections were undertaken as no vegetation clearing occurred.

Surveys to ascertain Koala usage and presence continue to be undertaken as part of annual surveys which have been completed on the development area periphery. The results are discussed in **Sections 2.1.1** and **2.1.2**.

2.1.1 Unmanned aerial vehicle thermal imagery survey

During the 2018 to 2019 reporting period (ACR Year 1), after the commencement of on-site clearing works, an aerial survey using a mounted thermal camera was deployed to identify the presence of *Phascolarctos cinereus* (Koala). A CASA qualified pilot operated the unmanned aerial vehicle (UAV) (*i.e.*, drone) and completed pre- and post-flight procedures as required by their licence. The UAV survey was completed on 2 November 2018. The survey identified no Koalas on-site or in the immediate vicinity.

The UAV survey has not been completed since as it was deemed unnecessary in assisting the understanding of Koala presence/absence at this stage. Alternate surveys, specifically Spot Assessment Technique (SAT) surveys and opportunistic sightings, were considered to provide sufficient information in understanding presence/absence where usage is low and detectable through implementing this survey method.

2.1.2 SAT survey

Surveys were undertaken across the site and surrounding vegetation to measure Koala activity using the SAT, originally developed by the Australian Koala Foundation. The SAT method involves identifying a non-juvenile tree of any species within the site that is either observed to have a Koala or scats or is known to be a food tree or otherwise important for Koalas and recording any evidence of Koala usage of that tree including presence, identifiable scratches, or scats. The nearest non-juvenile tree is then identified, and the same data recorded and so on until 30 trees have been surveyed. The number of trees showing evidence of Koala activity is expressed as a percentage of the total number of trees sampled to indicate the frequency of Koala usage.

Assessment of each tree involves a systematic search for Koala scats beneath the tree within a 1 m radius of the trunk. After approximately 2 minutes of searching for scats, the base of the trunk is observed for scratches and the crown for Koala.

During the current compliance period a total of four (4) SAT surveys were completed within retained vegetation areas to the west, north and north-east of the project area on 21 August 2024 (refer **Plan 1**). It is not a compliance requirement for the SAT locations to remain constant over the approved timeframe, therefore SHG ecologists have chosen different locations to perform SAT surveys to gain coverage. SAT survey results for the 2019 to 2024 compliance monitoring period are displayed in **Table 2**.

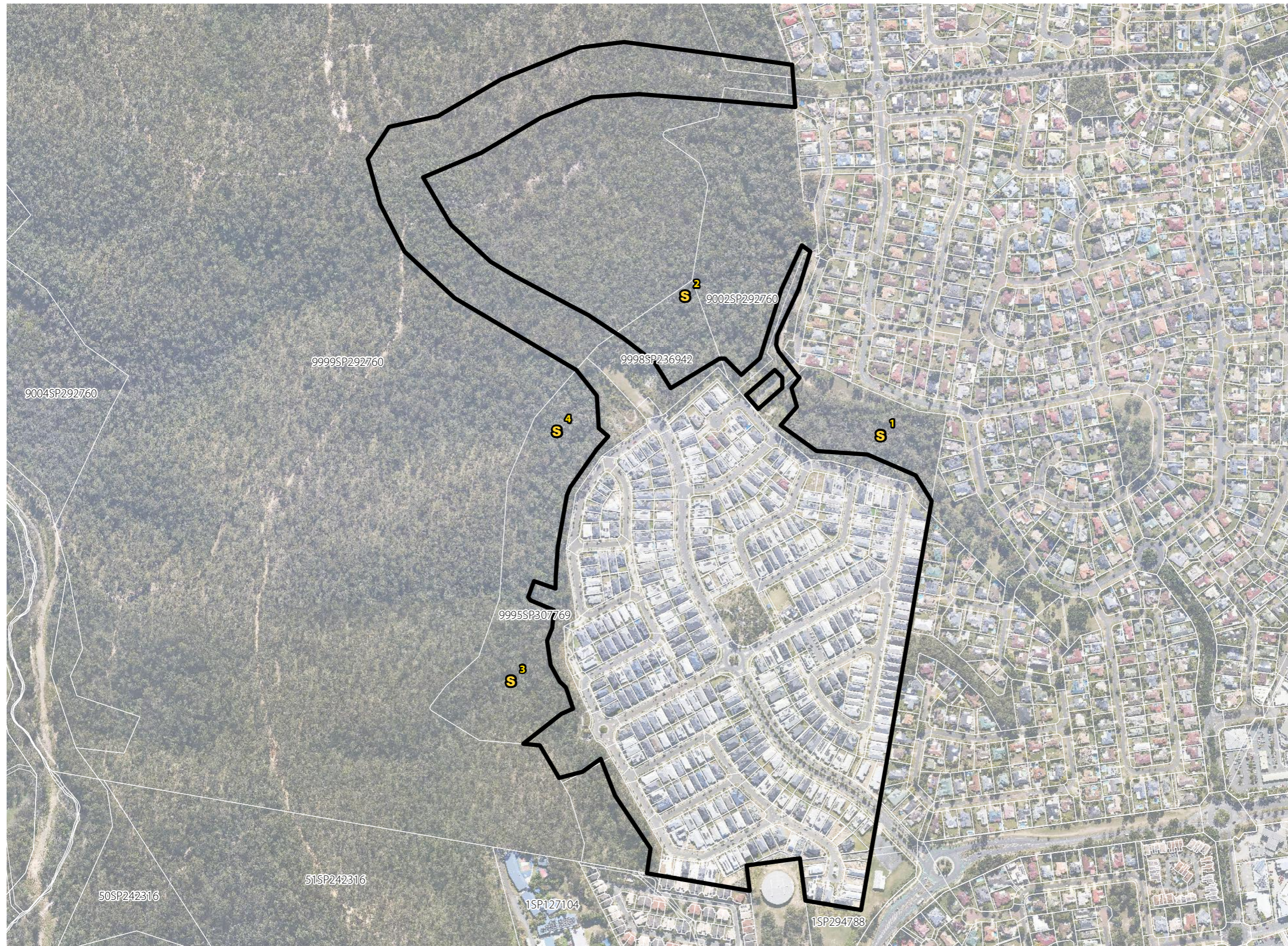
All surveys produced low Koala activity results as defined within the Australian Koala Foundation Koala activity classification table using the East Coast (med-high) benchmark assessment category¹. Detailed SAT survey results for the current reporting period are provided in **Appendix B**. Zero Koala scats were identified during the 2023-2024 compliance period. Vegetation characteristics associated with the four (4) SAT survey locations are shown in Error! Reference source not found., **Photo set 9**, **Photo set 10** and **Photo set 11** respectively.

Table 2: SAT survey results summary

SAT ID	2023-2024		2022-2023		2021-2022		2020-2021		2019-2020		2018-2019	
	Evidence of Koala activity (%)	Koala use (east coast med-high)	Evidence of Koala activity (%)	Koala use (east coast med-high)	Evidence of Koala activity (%)	Koala use (east coast med-high)	Evidence of Koala activity (%)	Koala use (east coast med-high)	Evidence of Koala activity (%)	Koala use (east coast med-high)	Evidence of Koala Activity (%)	Koala use (east coast med-high)
1	0.00	Low	6.67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	Low
2	0.00	Low	0.00	Low	0.00	Low	0.00	Low	0.00	Low	6.67	Low
3	0.00	Low	3.33	Low	0.00	Low	0.00	Low	10.00	Low	6.67	Low
4	0.00	Low	0.00	Low	0.00	Low	0.00	Low	3.33	Low	0.00	Low
5	-	-	0.00	Low	0.00	Low	3.33	Low	0.00	Low	0.00	Low
6	-	-	3.33	Low	0.00	Low	6.67	Low	0.00	Low	3.33	Low
7	-	-	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.33	Low
8	-	-	N/A	Low	0.00	Low	6.67	Low	13.33	Low	0.00	Low




¹ Phillips, S & Callaghan, J 2011, 'The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas *Phascolarctos cinereus*', *Australian Zoologist*, 35(3), pg. 774-780.

01. 2024 SAT Survey Locations

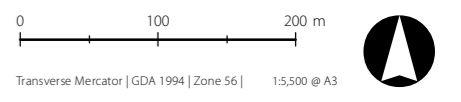


Notes:
 This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

Layer Sources
 © State of Queensland (Department of Resources) 2024.
 Updated data available at
<http://qldspatialinformation.qld.gov.au/catalogue/>
 * This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

- Legend
-  Site DCDB
 -  Qld DCDB
 -  SAT Survey

Issue	Date	Description	Drawn	Checked
A	5/09/2024	Preliminary	TF	AW



Rosewood Laidley Rd, Calvert

Address / RPD Lot 230 on CH311791 & Lot 1 on CC2262

5/09/2024 | 8473 E 01 SAT A



Photo set 8: Vegetation within SAT 1 Location – no scats found



Photo set 9: Vegetation within SAT 2 Location – no scats found



Photo set 10: Vegetation within SAT 3 Location – no scats found



Photo set 11: Vegetation within SAT 4 Location – no scats found

3. Description of activities – offset area

3.1. Offset area description

The 65 ha offset area in accordance with Condition 2 of the EPBC Act approval occurs across one land parcel that comprises confirmed Koala habitat. The offset parcel (described as 230/CH311791) is situated within Ipswich City local government area (refer **Figure 3**). Under Ipswich City Council's (ICC) Nature Conservation Strategy, the site is mapped as Core Habitat, and is within a large contiguous vegetation area of predominantly eucalypt forest. The offset area was legally secured on 6 June 2018 using the Voluntary Declaration (VDec) process administered under the *Vegetation Management Act 1999*. The securing of the offset occurred after the action was referred to the Department. As part of the VDec application, an Offset Management Plan (OMP) was prepared and implemented across the offset area. The VDec and OMP can be accessed online: <https://www.stockland.com.au/residential/qld/kalina/news-and-events/offset-management-plan>.

3.2. Key milestones and outcomes

The primary outcomes and milestone for the offset area outlined in Condition 3a and 3b of the approval are as follows:

Outcome #1: *By 20 years after the commencement of construction, there must be a gain in Koala habitat quality to nine across the whole offset area.*

Outcome #2: *For the life of the approval, the approval holder must ensure no net loss in the extent of Koala habitat in the offset area.*

Milestone #1: *By five years after the commencement of construction, a gain in Koala habitat quality to nine must be achieved in more than 50% of the offset area through rehabilitation.*

Five years after commencement of the action was 8 July 2023, which was encompassed as part of last years reporting period (2023-2024). A separate Year Five Milestone Report was prepared which discusses the outcomes of management actions and compliance with Milestone #1, and is available at **Appendix C**.

3.3. Offset area actions

To meet the primary outcomes and milestone, existing threats to the offset area were identified and management actions designed to improve Koala habitat quality to a nine out of ten were implemented across the entirety of the offset area. Existing key threats to Koalas and Koala habitat within the offset area identified in the OMP include:

- wild dog attacks;
- habitat degradation through weed invasion, of particular concern *Lantana camara* (Lantana) and *Opuntia stricta* (Common Prickly Pear);
- unauthorised public access;
- erosion caused by vehicular access and loss of vegetation cover; and
- habitat loss from fire.

The assessment of habitat improvement works also includes interim site condition assessments to determine variation in site condition since the baseline assessments in 2018. These data were used in the Year Five Milestone Report. The quality of vegetation will be measured across future years through continued habitat improvement monitoring assessments to measure the success of vegetation management efforts.

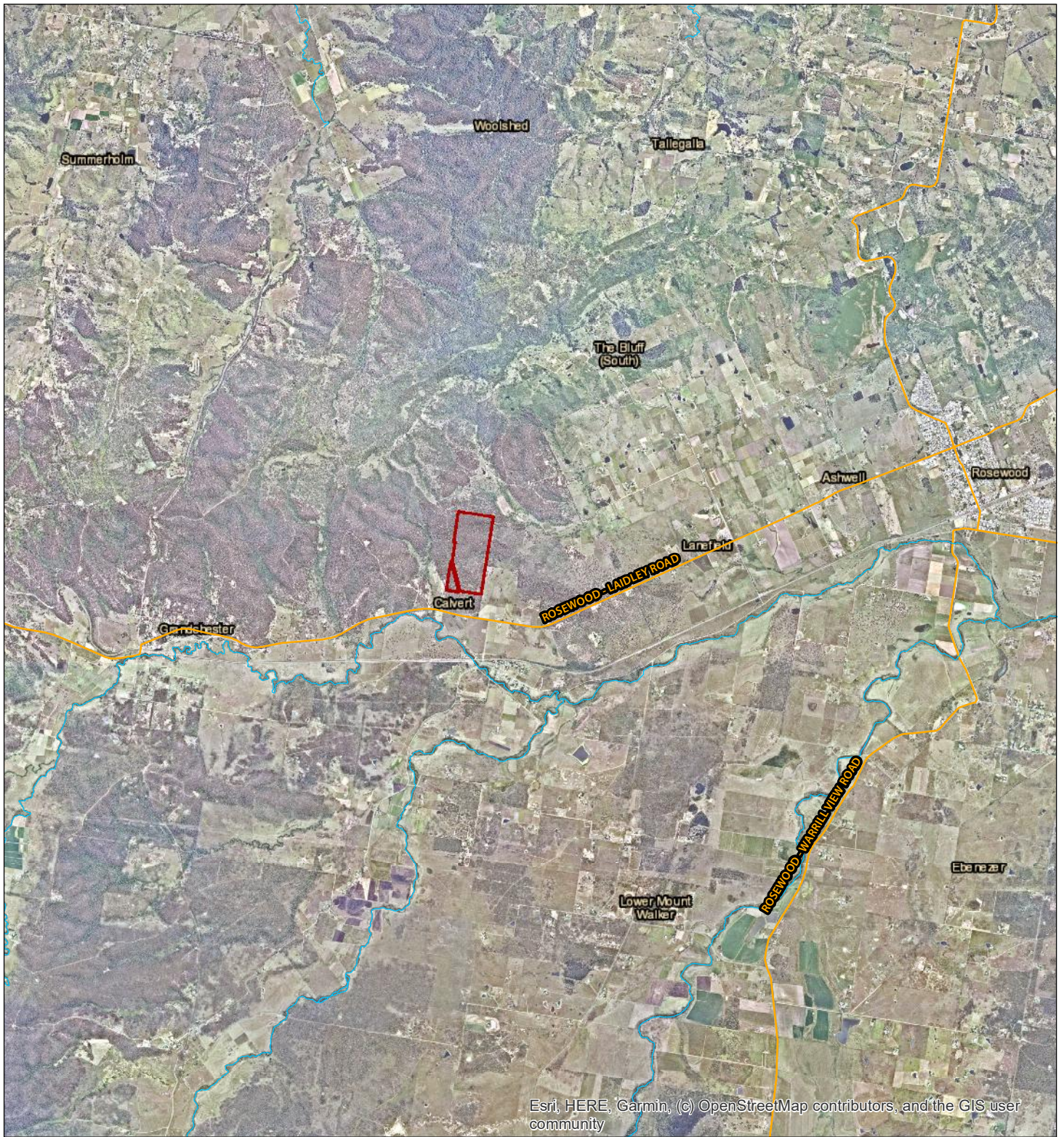
The current quality and extent of vegetation are influenced by several factors, including the presence and intensity of invasive flora and fauna, and vegetation community characteristics e.g. species diversity, canopy cover, ecologically dominant layer. The OMP identifies several management actions to be undertaken to improve Koala habitat quality across the offset area and meet the primary outcomes for the offset area, as follows:

1. Weed management.
2. Infill planting.
3. Erosion mitigation.
4. Access infrastructure.
5. Fire management.
6. Fencing.
7. Wild dog management.

Details on the progress of these actions is provided in **Table 3**. This table is reviewed annually as part of the Annual Compliance Report in accordance with condition 10 of the approval and the resultant status of actions discussed accordingly. The table will be reviewed in conjunction with the Offset Management Plan Annual Report – September 2024 prepared by Cherish the Environment Foundation Limited (refer **Appendix D**).

Five (5) photo reference points were established during the 2019 ACR reporting period to assist in assessing the ongoing monitoring of site condition. A map of the reference sites and geo-referenced photo points is contained in the Offset Management Plan Annual Report – September 2024 located at **Appendix D**.

It is noted that during this reporting period, the site and wider South East Queensland region experienced higher than average rainfall over the 2023/2024 monitoring period. Rainfall affects vegetation growth, soil erosion and weed regrowth. These effects have been managed during the reporting period, as detailed within **Table 3**.



Legend

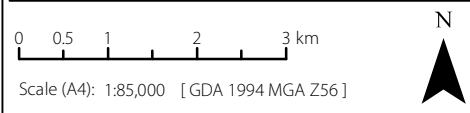
- Calvert offset site
- Major road
- Watercourse

Figure 3
Legally Secured Offset Area

EPBC 2014/7306
Kalina Springfield -
Residential
Development



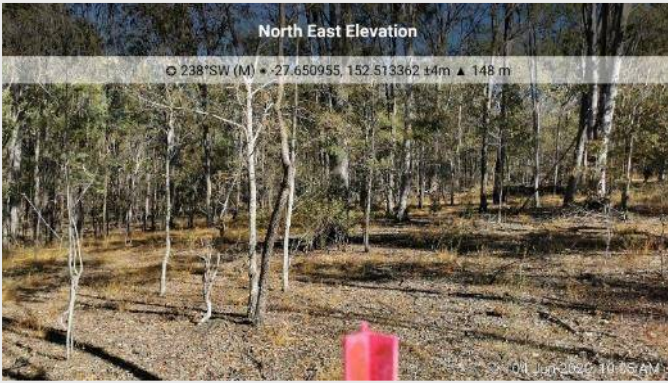


File ref. 8473 E Figure 3 ACR6 Legally Secured Offset Area A
Date 5/09/2024
Project Kalina Annual Compliance Report #5








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Table 3: Summary of offset area actions during reporting period.

Management action	Monitoring action	Improvement proposed	Timeframe		Progress to June 2024	Evidence of progress
			Trigger-based	Progress to 2024		
Erosion mitigation	Inspect completed mitigation measures.	<ul style="list-style-type: none"> Repair significant erosion points where possible and feasible. Repair work involves re-profiling and re-directing overland water flow away from erosion path using cross drainage. Cross-drainage to be located along all permanent access tracks at appropriate intervals. Allow for future maintenance of cross-drainage throughout the site. 	<ul style="list-style-type: none"> approximately one month post completion; and approximately two weeks post first minor rainfall event; and approximately two weeks post first major rainfall event. 	<ul style="list-style-type: none"> Assessment and mitigation actions complete. Inspections post severe rain events completed. No erosion issues identified 	<p>The previous diversions and increases in ground cover due to stock removal and climate conditions have resulted in no evidence of significant erosion resulting from ongoing rainfall conditions rain events.</p> <p>Rainfall recorded at Amberley BoM site (19 km from site) shows that monthly rainfall fluctuated between June – Dec 2023; rain was lower than average from June to August and October, higher in September, November and December 2023.</p> <p>Rainfall continued to fluctuate over the first half of 2024 with monthly totals in January, April and March lower than average and January and March higher than average.</p> <p>Monthly rainfall was higher than 80mm six times during this reporting period, with a total of 912 mm.</p>	-
Access infrastructure	Inspect existing and new access infrastructure.	<ul style="list-style-type: none"> Construction and/or re-opening of tracks to facilitate weed management, infill planting establishment and maintenance, fence line construction and maintenance, pest management and fire protection activities 	<p>Existing access infrastructure:</p> <ul style="list-style-type: none"> approximately two weeks post major rainfall event. <p>New access infrastructure:</p> <ul style="list-style-type: none"> approximately one month post completion; and approximately two weeks post first minor rainfall event; and approximately two weeks post first major rainfall event. 	<ul style="list-style-type: none"> Maintenance tracks and cross drainage maintained x 2. Inspections post severe rain events completed. Downed vegetation removed, access maintained. 	<p>Inspections immediately following severe rain events were conducted to assess and ensure any erosion could be repaired.</p> <p>No repairs were required.</p> <p>Scheduled maintenance planned for Spring 2024</p>	-
Weed management	Assess weed infestations and success of weed reduction measures.	<ul style="list-style-type: none"> An intensive, 5-year weed management program is proposed for remnant and regrowth parts of the offset area Primary weed treatment process to commence as soon as practical, with follow-up weed treatment undertaken annually 	<p>Weed reduction measures:</p> <ul style="list-style-type: none"> approximately six months post completion. 	<ul style="list-style-type: none"> Inspections to assess regrowth conducted. Increase in overall ground vegetation, including weeds consequent to ongoing rainfall conditions. Weed treatment has been increase with an 	<p>The wetter than average 2023/24 summer period has resulted in increased emergence of lantana on site.</p> <p>An intensive lantana program was commenced in August/September 2024 to ensure control.</p>	<u>4 June 2020:</u>

Management action	Monitoring action	Improvement proposed	Timeframe	Progress to 2024	Progress to June 2024	Evidence of progress
		<ul style="list-style-type: none"> • After first 3-years, required management intensity should reduce significantly • Weed management will occur in two phases throughout the approval period: <ul style="list-style-type: none"> ○ Intensive weed management until year 6; and ○ Ad-hoc weed management from year 6 until the end of the approval period. 	Trigger-based	intensive round planned for Spring 2024.		<p>RE12.9-10.7 Regrowth – Dry conditions, weed free</p>  <p>North East Elevation 238°SW (M) • 27.650955, 152.513362 14m ▲ 148 m</p> <p><u>29 May 2021:</u> Increase in leaf and ground cover</p>  <p>-27.65093, 152.51337, 147.4m, 248°</p> <p><u>30 June 2022</u> Increase in leaf and ground cover.</p>  <p><u>2023/2024:</u> Increase in ground cover</p>

Management action	Monitoring action	Improvement proposed	Timeframe Trigger-based	Timeframe Progress to 2024	Progress to June 2024	Evidence of progress
						
Fire management	Assess suitability of fire breaks and access tracks.	<ul style="list-style-type: none"> At this stage in the project, fire management activities have been limited to fire exclusion and asset protection. Prescribed burning is restricted within the V-Dec area until a Fire Management Plan is developed (to be reviewed/endorsed or similar by the rural fire brigade or other relevant stakeholder prior to implementation) 	<ul style="list-style-type: none"> approximately one month post fire event 	<ul style="list-style-type: none"> Boundary firebreaks slashed x 2 along with access tracks and inter-rows in the in-fill plantings. Cool Burn planned for Autumn 2024. 	<p>Slashing of all boundary and maintenance tracks as well as inter-rows of the in-fill plantings has continued to be maintained to reduce fuel loads.</p> <p>There have been no fires in or near the site. A cool burn was not conducted in the autumn of 2024 due to unsuitable weather conditions and is now planned for Autumn 2025</p>	-
Infill planting	Assess success of infill planting.	<ul style="list-style-type: none"> A small, one hectare patch of open, grassy area in south-east corner of 230CH311971 will require infill planting Approximately 400 trees typical of regional ecosystems 12.9-10.2 and 12.9-10.3 will be planted in the area 	<ul style="list-style-type: none"> approximately six months post completion 	<ul style="list-style-type: none"> Completed and maintained weed free. 	<p>As the plantings have reached establishment, maintenance activities include spot spraying for weeds as required.</p>	<p><u>4 June 2020:</u> RE12.9-10.2 Regrowth – Infill area, dry conditions</p>  <p><u>29 May 2021:</u> Increase in tree growth and ground cover</p> 

Management action	Monitoring action	Improvement proposed	Timeframe Trigger-based	Progress to 2024	Progress to June 2024	Evidence of progress
						<p data-bbox="2199 289 2525 317"><u>30 June 2022:</u></p> <p data-bbox="2199 323 2525 350">Steady increase in tree growth</p>  <p data-bbox="2199 804 2525 831"><u>2023/2024:</u></p> <p data-bbox="2199 837 2525 865">Continued increase in tree growth</p> 
Pest and animal management	<p data-bbox="329 1289 498 1457">Assess presence of pests and suitability of boundary fencing.</p> <p data-bbox="329 1495 498 1558">Undertake pest management.</p>	<ul data-bbox="507 1289 1003 1799" style="list-style-type: none"> • There is no internal fencing on the property – boundary fencing will be constructed, repaired and maintained to exclude domestic stock and pests • Pest animals such as wild dogs will be addressed via a control program that will be implemented at the discretion of the landholder • The fencing is scheduled to be established / constructed within 12-months of the V-Dec being certified and must be in place for the duration of the approval • A wild dog control program will occur ad hoc during the approval period 	<ul data-bbox="1012 1289 1359 1799" style="list-style-type: none"> • ad hoc as part of property management 	<ul data-bbox="1368 1289 1685 1799" style="list-style-type: none"> • Boundary fencing erected so the entire site excludes stock. • Wildlife cameras indicate no pest fauna on site. Locations to be altered for 2024 to assess different locations 	<p data-bbox="1694 1289 2190 1352">There continues to be no evidence of wild dogs or pigs presence across the site.</p>	

4. EPBC approval conditions compliance table

The EPBC approval conditions for the Kalina Springfield, Springfield are replicated in **Table 4** with a designation on compliance or non-compliance if the condition was applicable during the reporting period, and evidence and comments as necessary. A copy of the EPBC approval and conditions is provided in **Appendix A**.

Table 4: EPBC approval conditions compliance table

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence / comments
1	The approval holder must not clear more than 39.75 hectares of Koala habitat. Clearing must not occur outside of the clearance area.	Compliant	The approval holder has not cleared more than 39.75 ha of Koala habitat since the commencement of the action. Clearing has not occurred outside of the clearance area.
2	To compensate for the loss of Koala habitat, the approval holder must: <ul style="list-style-type: none"> a) secure, prior to the commencement of construction, a minimum of 65 hectares of Koala habitat within the offset area; and b) provide the Department with relevant evidence on securing the offset area and the offset attributes clearly defining the location and boundary of the offset within 10 business days of lodgement of the offset with the Titles Office. 	Compliant	<ul style="list-style-type: none"> a) An offset site, accounting for 65 ha (located at 40-160 Harrison Road, Calvert QLD 4340 (230/CH311791)), was secured prior to the commencement of construction. Clearing works began on 9 July 2018 and the offset site was secured on 6 June 2018. b) The Department was notified of the offset securement and provided with relevant evidence on 7 June 2018. The Queensland Government Department of Natural Resources, Mines and Energy administers the VDec process and land titles, and therefore notification to the Titles Office would have occurred on 7 June 2018 at the latest.

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence / comments
3	<p>To compensate for the impacts to Koala habitat, the approval holder must achieve the following outcomes and milestones as compared to baseline values for Koala habitat quality and extent:</p> <p>a) Outcomes</p> <ul style="list-style-type: none"> • By 20 years after the commencement of construction, there must be a gain in Koala habitat quality to nine across the whole offset area; and • For the life of the approval, the approval holder must ensure no net loss in the extent of Koala habitat in the offset area. <p>b) Milestones</p> <ul style="list-style-type: none"> • By five years after the commencement of construction, a gain in Koala habitat quality to nine must be achieved in more than 50% of the offset area through rehabilitation. 	Not applicable/compliant	<p>a) The 20-year outcome has not surpassed and is due to occur in 2038. No net loss of Koala habitat in the offset area has occurred to date.</p> <p>b) The 5-year milestone anniversary date occurred on 8 July 2023. A Year Five Milestone Report was prepared addressing the project's compliance with Condition 3b of the approval and is located at Appendix C. The assessment and report demonstrate that the offset area has achieved a koala habitat quality score of 9 / 10 over at least 50% of the offset rea.</p> <p>Habitat quality monitoring and habitat improvement works are continually being undertaken across the offset area in accordance with the prescribed management activities under the OMP. Site condition assessments were completed in July and August 2018 to record baseline site condition with the year five surveys completed in April 2023 at the pre-established assessment locations to track the progress in site condition. The OMP describes baseline site condition (refer to the Stockland Kalina development website) and is also provided in the Year Five Milestone Report.</p>
4	<p>The approval holder must have an Offset Management Plan in place. The Offset Management Plan must:</p> <p>a) include monitoring and be designed so that the results are adequate to inform adaptive management and demonstrate whether the outcomes and milestones required by these conditions are on track to be achieved</p>	Compliant	<p>An OMP is in place and has applied to the offset area since 6 June 2018. The OMP was developed to respond to condition 4.</p> <p>a) Monitoring timeframes have been scheduled to occur both trigger-based and recurring. An inspection is completed annually to support the progress towards outcomes and milestones, as dictated in condition 3, and ensure they are achieved.</p>

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence / comments
	<p>(before they are due) and have been achieved (at the time they are due);</p> <p>b) include contingency measures to mitigate the risks of not achieving the outcomes and milestones required by these conditions;</p> <p>c) be prepared in consultation with a suitably qualified person, and include written evidence of how the suitably qualified person's advice has been considered;</p> <p>d) be in accordance with the Koala Habitat Offset Report; and</p> <p>e) demonstrate how the plan is consistent with the Koala Conservation Advice.</p>		<p>b) Contingency measures to mitigate the risk of not achieving the outcomes and milestones in condition 3 are included within Sections 5, 7 and 9 of the OMP (refer to Stockland Kalina development website).</p> <p>c) Cherish the Environment Foundation Limited prepared the OMP in consultation with Saunders Havill Group who have experience in coordinating offset management plans seeking to deliver an improvement of Koala habitat.</p> <p>d) The Koala Habitat Offset Report and OMP propose consistent management actions and the latter expands upon key parameters (e.g. timing of events, monitoring, and reporting) relating to demonstrating compliance.</p> <p>e) The Koala Conservation Advice was reviewed as part of preparing the OMP. The Koala Conservation Advice identifies the main threats to the Koala as loss and fragmentation of habitat, vehicle strike, disease, and predation by dogs. The OMP and VDec support the protection of Koala habitat from fragmentation and loss. Pest and animal management measures have also been incorporated into the OMP and progress on these management measures is reviewed annually. Further, no formed roads intersect the offset site.</p>

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence / comments
5	The Offset Management Plan must be implemented. Unless otherwise agreed to in writing by the Minister, the approval holder must publish the Offset Management Plan on their website prior to the commencement of construction and the Offset Management Plan must remain on the website for the life of the approval. The results of the Offset Management Plan must be included in the annual compliance report required under condition 10.	Compliant	<p>The OMP was implemented in 2018 and has continued to be implemented across all reporting periods to the date of this annual compliance report.</p> <p>An OMP Annual Report presenting the results of management and monitoring actions over the offset site in accordance with the OMP during each reporting period has been completed. The 2019, 2020, 2021, and 2022, 2023 OMP Annual Reports were provided in the respective Annual Compliance Reports. The OMP Annual Report – September 2024 is provided at Appendix D.</p> <p>The OMP was published on the approval holders’ website prior to the commencement of construction and remains published on the approval holders’ website to date (located at https://www.stockland.com.au/residential/qld/kalina/news-and-events/offset-management-plan).</p>
6	If, at any time during the life of the approval, the approval holder identifies that the outcomes or milestones required under these conditions are not on track to be achieved, the approval holder must report to the Department in writing within 20 business days of becoming aware. The report must state the cause, the response measures (including timeframes for reporting the success of those measures to the Department) and the actions to prevent further occurrences.	Compliant	<p>The approval holder did not identify that the outcomes or milestones required under these conditions were not on track to being achieved. Therefore, no report notifying the Department was completed during the reporting period.</p>

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence / comments
7A	If the Minister is not satisfied that the outcomes or milestones required by these conditions are likely to be achieved, or is not satisfied that there is sufficient evidence that the outcomes or milestones required by these conditions are likely to be achieved, the Minister may (in writing) request the approval holder to submit a plan for the Minister's approval, to monitor, manage, avoid, mitigate, offset, record or report on, impacts to Koala habitat.	Not applicable	The approval holder has not received a request from the Minister to submit a plan to monitor, manage, avoid, mitigate, offset, record or report on, impacts to Koala habitat.
7B	The Minister may set a timeframe in which the plan must be submitted, and may designate that the plan must be prepared or reviewed by a suitably qualified person.	Not applicable	The approval holder has not received a request from the Minister to submit a plan specified in condition 7A, therefore a timeframe was not set by the Minister to submit the plan.
7C	If the Minister approves the plan in writing then the approval holder must implement that plan (or a revised version if approved in writing by the Minister or otherwise allowed under these conditions). Note: Cost recovery does not apply to a plan required under this condition.	Not applicable	The approval holder has not received a request from the Minister to submit a plan specified in condition 7A. This condition is not applicable.
8	Within 20 business days after the commencement of construction, the approval holder must advise the Department in writing of the actual date of the commencement of construction.	Compliant	The actual date of the commencement of construction was 9 July 2018. The Department was notified of the commencement of construction on 19 July 2018.
9	The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement	Compliant	The Saunders Havill Group records and holds all relevant information for this EPBC approval on behalf of the approval holder. Electronic records of all material are held collectively by the Saunders Havill Group and

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence / comments
	the Offset Management Plan 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.		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.
10	Within three months of every 12 month anniversary of the commencement of construction, the approval holder must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of the Offset Management Plan as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published. Reports must remain on the website for the period this approval has effect. The approval holder may cease preparing and publishing compliance reports required by this condition with written agreement of the Minister to do so.	Compliant	<p>The anniversary of the commencement of the action is 9 July, annually. The annual deadline for publishing the report addressing compliance with each of the conditions of the approval (<i>i.e.</i>, this Annual Compliance Report) is 8 October. When this deadline is a non-business day in Brisbane, the next business day is taken to be the deadline. Documentary evidence providing proof of the date of publication will be provided to the Department when the report is published.</p> <p>The Annual Compliance Report for the 12-month period ending 8 July 2024 (<i>i.e.</i>, Year 6) is to be published on the Stockland Kalina development website by 8 October 2024. The Department will be notified of the report publication and provided with evidence on the day of its publication.</p> <p>The approval holder and Saunders Havill Group have not become aware of a potential or suspected non-compliance with the conditions during the reporting period.</p>

Condition number / reference	Condition	Is the project compliant with this condition?	Evidence / comments
11	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.	Not applicable	The Minister has not provided a direction to complete an independent audit of compliance.
12	If, at any time after five years from the date of this approval, the approval holder has not substantially commenced the action, then the approval holder must not substantially commence the action without the written agreement of the Minister.	Not applicable	The action commenced on 9 July 2018.

5. Appendices

Appendix A

EPBC approval and conditions granted 14 September 2016

Appendix B

SAT survey results 2024 – raw data

Appendix C

Year Five Milestone Offset Report

Appendix D

Offset Management Plan – Annual Report September 2024

Appendix A

EPBC approval and conditions granted
14 September 2016



Ref: EPBC 2014/7306

Ms Jordan Bachmann
Senior Environmental Planner, Saunders Havill Group
Stockland Development Pty Limited
Mur Boulevard, Springfield
Ipswich City, QLD

**Springview Village One, Springfield, Ipswich City, Qld -
Variation of conditions attached to the approval (EPBC 2014/7306)**

Dear Ms Bachmann

Thank you for your email dated 20 February 2018 on behalf of Stockland Development Pty Limited and subsequent correspondence to the Department, requesting the variation of the conditions attached to the approval dated 14 September 2016.

Officers of this Department have reviewed the variation request. As delegate of the Minister, I have varied the conditions by replacing Map 1 and rewording the definition of 'clearance area' in the conditions attached to EPBC Approval 2014/7306 under section 143(1)(c) of the *Environment Protection and Biodiversity Conservation Act 1999*. This action must now be implemented in accordance with the variation specified in the variation instrument which is attached for your information.

As you are aware, the Department has an active monitoring program which includes monitoring inspections, desk top document reviews and audits. Please ensure that you maintain accurate records of all activities associated with, or relevant to, the conditions of approval so that they can be made available to the Department on request.

Should you require any further information please contact Peter Blackwell, Assistant Director, Post Approvals Section, on 03 6208 2927 or by email: post.approvals@environment.gov.au.

Yours sincerely

Greg Manning
Assistant Secretary
Assessments (WA, SA, NT) and Post Approval Branch
Environment Standards Division

12 June 2018

Att.



VARIATION TO CONDITIONS ATTACHED TO APPROVAL

Springview Village One, Springfield, Ipswich City, Qld (EPBC 2014/7306)

This decision to vary conditions of approval is made under section 143 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Approved action

Person to whom the approval is granted

Stockland Development Pty Limited

ACN: 052 055 811

Approved action

To develop Springview Village One residential development at Lot 43 on SP2442290 at the junction of Mur Boulevard and Panorama Drive, Springfield, Queensland as described in the referral received by the Department on 15 August 2014 [See EPBC Act referral 2014/7306].

Variation

Variation of conditions of approval

The variation is:
Delete Map 1 and definition of 'Clearance area' attached to the approval and substitute with Map 1 and definition of 'Clearance area' specified below.

Date of effect

This variation has effect on the date the instrument is signed

Person authorised to make decision

Name and position

Greg Manning
Assistant Secretary
Assessments (WA, SA, NT) and Post Approvals Branch

Signature

Date of decision

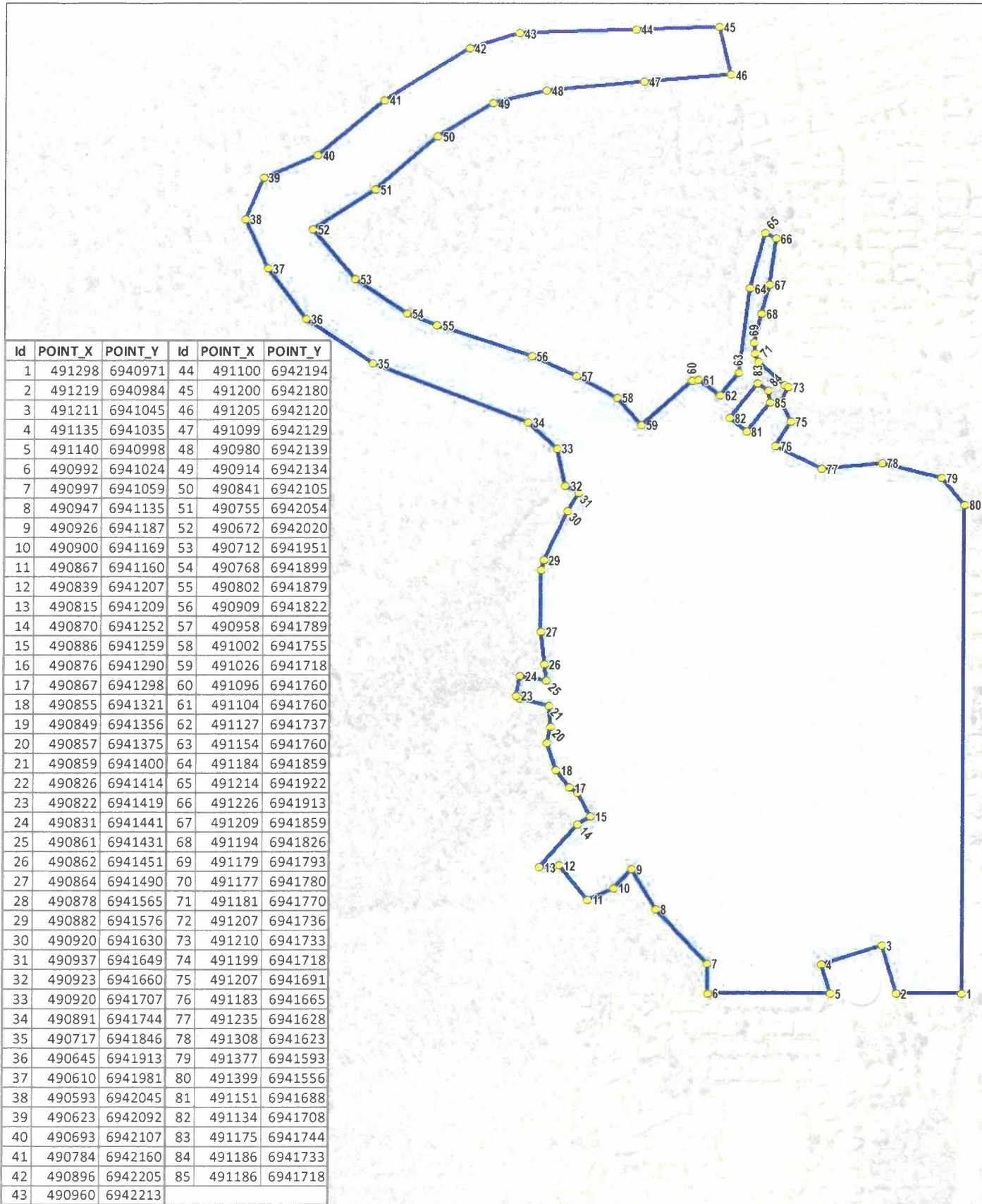
12 June 2018

Definition

Clearance area: the area labelled as 'Clearance area' in Map 1.




Map 1 attached to the approval

See over.



Id	POINT_X	POINT_Y	Id	POINT_X	POINT_Y
1	491298	6940971	44	491100	6942194
2	491219	6940984	45	491200	6942180
3	491211	6941045	46	491205	6942120
4	491135	6941035	47	491099	6942129
5	491140	6940998	48	490980	6942139
6	490992	6941024	49	490914	6942134
7	490997	6941059	50	490841	6942105
8	490947	6941135	51	490755	6942054
9	490926	6941187	52	490672	6942020
10	490900	6941169	53	490712	6941951
11	490867	6941160	54	490768	6941899
12	490839	6941207	55	490802	6941879
13	490815	6941209	56	490909	6941822
14	490870	6941252	57	490958	6941789
15	490886	6941259	58	491002	6941755
16	490876	6941290	59	491026	6941718
17	490867	6941298	60	491096	6941760
18	490855	6941321	61	491104	6941760
19	490849	6941356	62	491127	6941737
20	490857	6941375	63	491154	6941760
21	490859	6941400	64	491184	6941859
22	490826	6941414	65	491214	6941922
23	490822	6941419	66	491226	6941913
24	490831	6941441	67	491209	6941859
25	490861	6941431	68	491194	6941826
26	490862	6941451	69	491179	6941793
27	490864	6941490	70	491177	6941780
28	490878	6941565	71	491181	6941770
29	490882	6941576	72	491207	6941736
30	490920	6941630	73	491210	6941733
31	490937	6941649	74	491199	6941718
32	490923	6941660	75	491207	6941691
33	490920	6941707	76	491183	6941665
34	490891	6941744	77	491235	6941628
35	490717	6941846	78	491308	6941623
36	490645	6941913	79	491377	6941593
37	490610	6941981	80	491399	6941556
38	490593	6942045	81	491151	6941688
39	490623	6942092	82	491134	6941708
40	490693	6942107	83	491175	6941744
41	490784	6942160	84	491186	6941733
42	490896	6942205	85	491186	6941718
43	490960	6942213			

Legend

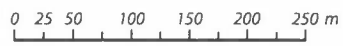
-  Background land parcels
 -  Clearance Area coordinate points
 -  Clearance Area
- The approval holder must not clear more than 39.75 hectares of Koala habitat. Clearing must not occur outside of the Clearance Area with the exception of works for rehabilitation or landscape activities approved by Ipswich City Council that will ultimately improve Koala habitat.

Map 1

File ref. 8473 E F08_05 Map 1

Date 17/05/2018

Project 8473 E



Scale (A4): 1:6,500 [GDA 1994 MGA Z56]



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NOTICE OF TRANSFER OF APPROVAL

Springview Village One, Springfield, Ipswich City, Queensland (EPBC 2014/7306)

This decision is made under (Section 145B) of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Proposed transfer of approval

Transferor (holder of approval)	Cherish Enterprises Pty Ltd ACN: 052 055 811
Transferee (person proposing to accept the transfer of approval)	Stockland Development Pty Limited ACN: 000 664 835
proposed action	To develop Springview Village One residential development at Lot 43 on SP2442290 at the junction of Mur Boulevard and Panorama Drive, Springfield, Queensland, as described in the referral received by the Department on 15 August 2014 [See EPBC Act referral 2014/7306]

Transfer Decision

Person to whom the approval is transferred	Stockland Development Pty Limited ACN: 000 664 835
Proposed action	To develop Springview Village One residential development at Lot 43 on SP2442290 at the junction of Mur Boulevard and Panorama Drive, Springfield, Queensland, as described in the referral received by the Department on 15 August 2014 [See EPBC Act referral 2014/7306]

Person authorised to make decision

Name and position

Rod Whyte
Director
Post Approvals Section
Compliance and Enforcement Branch

Signature

Date of decision

16 June 2017



Approval

Springview Village One, Springfield, Ipswich City, Queensland (EPBC 2014/7306)

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 Cherish Enterprises Pty Ltd
ACN: 052 055 811

proposed action To develop Springview Village One residential development at Lot 43 on SP2442290 at the junction of Mur Boulevard and Panorama Drive, Springfield, Queensland as described in the referral received by the Department on 15 August 2014 [See EPBC Act referral 2014/7306].

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 30 September 2041.

Decision-maker

name and position James Barker
Assistant Secretary
Assessments (QLD, Vic, Tas) and Sea Dumping Branch

signature

date of decision

14 / 9 / 2016

Conditions attached to the approval

1. The **approval holder** must not clear more than 39.75 hectares of **Koala habitat**. Clearing must not occur outside of the **clearance area**.
2. To compensate for the loss of **Koala habitat**, the **approval holder** must:
 - a) **secure**, prior to the **commencement of construction**, a minimum of 65 hectares of **Koala habitat** within the **offset area**; and
 - b) provide the **Department** with relevant evidence on securing the **offset area** and the **offset attributes** clearly defining the location and boundary of the offset within 10 **business days** of lodgement of the offset with the **Titles Office**.
3. To compensate for the impacts to **Koala habitat**, the **approval holder** must achieve the following outcomes and milestones as compared to **baseline values** for **Koala habitat quality** and **extent**:
 - a) Outcomes
 - By 20 years after the **commencement of construction**, there must be a gain in **Koala habitat quality** to nine across the whole **offset area**; and
 - For the life of the approval, the **approval holder** must ensure no net loss in the **extent** of **Koala habitat** in the **offset area**.
 - b) Milestones
 - By five years after the **commencement of construction**, a gain in **Koala habitat quality** to nine must be achieved in more than 50% of the **offset area** through rehabilitation.
4. The **approval holder** must have an Offset Management Plan in place. The Offset Management Plan must:
 - a) include monitoring and be designed so that the results are adequate to inform adaptive management and demonstrate whether the outcomes and milestones required by these conditions are on track to be achieved (before they are due) and have been achieved (at the time they are due);
 - b) include contingency measures to mitigate the risks of not achieving the outcomes and milestones required by these conditions;
 - c) be prepared in consultation with a **suitably qualified person**, and include written evidence of how the **suitably qualified person's** advice has been considered;
 - d) be in accordance with the **Koala Habitat Offset Report**; and
 - e) demonstrate how the plan is consistent with the **Koala Conservation Advice**.
5. The Offset Management Plan must be implemented. Unless otherwise agreed to in writing by the **Minister**, the **approval holder** must publish the Offset Management Plan on their website prior to the **commencement of construction** and the Offset Management Plan must remain on the website for the life of the approval. The results of the Offset Management Plan must be included in the annual compliance report required under condition 10.

6. If, at any time during the life of the approval, the **approval holder** identifies that the outcomes or milestones required under these conditions are not on track to be achieved, the **approval holder** must report to the **Department** in writing within 20 **business days** of becoming aware. The report must state the cause, the response measures (including timeframes for reporting the success of those measures to the **Department**) and the actions to prevent further occurrences.
- 7A. If the **Minister** is not satisfied that the outcomes or milestones required by these conditions are likely to be achieved, or is not satisfied that there is sufficient evidence that the outcomes or milestones required by these conditions are likely to be achieved, the **Minister** may (in writing) request the **approval holder** to submit a plan for the **Minister's** approval, to monitor, manage, avoid, mitigate, offset, record or report on, impacts to **Koala habitat**.
- 7B. The **Minister** may set a timeframe in which the plan must be submitted, and may designate that the plan must be prepared or reviewed by a **suitably qualified person**.
- 7C. If the **Minister** approves the plan in writing then the **approval holder** must implement that plan (or a revised version if approved in writing by the **Minister** or otherwise allowed under these conditions).

Note: Cost recovery does not apply to a plan required under this condition.
8. Within 20 **business days** after the **commencement of construction**, the **approval holder** must advise the **Department** in writing of the actual date of the **commencement of construction**.
9. 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 Offset Management Plan 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.
10. Within three months of every 12 month anniversary of the **commencement of construction**, the **approval holder** must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of the Offset Management Plan as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the **Department** at the same time as the compliance report is published. Reports must remain on the website for the period this approval has effect. The **approval holder** may cease preparing and publishing compliance reports required by this condition with written agreement of the **Minister** to do so.
11. 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**.
12. If, at any time after five years from the date of this approval, the **approval holder** has not **substantially commenced** the action, then the **approval holder** must not **substantially commence** the action without the written agreement of the **Minister**.

Definitions

Approval holder: means the person to whom the approval is granted, or any person acting on their behalf, or to whom approval is transferred under section 145B of the **EPBC Act**.

Baseline values: baseline **extent** is 65 hectares and baseline **Koala habitat quality** is seven, as described in the **Koala Habitat Offset Report**.

Business days: measured in relation to the doing of any action, any day other than a Saturday, a Sunday, or a public holiday that occurs in Queensland.

Clearance area: the area labelled as 'Referral Area' in Map 1.

Commencement of construction: any preparatory works required to be undertaken including clearing vegetation, the erection of any onsite temporary structures and the use of heavy equipment for the purposes of breaking the ground for road construction, buildings or infrastructure.

Department: the Australian Government Department administering the **EPBC Act**.

EPBC Act: the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

EPBC Act Environmental Offsets Policy: Department of Sustainability, Environment, Water, Population and Communities (2012). *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (October 2012)*. Commonwealth of Australia, Canberra.

EPBC Act offsets assessment guide: the *offsets assessment guide* tool and *how to use the offsets assessment guide* document that accompany the **EPBC Act Environmental Offsets Policy**.

Extent: the coverage of **Koala habitat** measured in hectares.

Koala: *Phascolarctos cinereus* (combined populations of Queensland, New South Wales and the Australian Capital Territory) listed as a threatened species under the **EPBC Act**.

Koala Conservation Advice: Threatened Species Scientific Committee (2012). *Approved Conservation Advice for Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory)*. Commonwealth of Australia, Canberra.

Koala habitat: habitat containing tree species whose leaves are consumed by the **Koala**, including *Eucalyptus moluccana*, *Eucalyptus propinqua*, *Eucalyptus tereticornis*, *Corymbia citriodora*, and *Lophostemon confertus*.

Koala habitat Quality: means the **Koala habitat** quality score comprised of site condition, site context and species stocking rate calculated in accordance with the requirements of the **EPBC Act offsets assessment guide**.

Koala Habitat Offset Report: the document provided to the **Department** named '*Koala Habitat Offset Report - 40-100 Harrison Road, Calvert*'. Prepared by Cherish the Environment Foundation (Appendix J to '*Response to Request for Additional Information - Springview Village One, Springfield, QLD (EPBC 2014/7306)*', dated 6 June 2016).

Minister: the Australian Government Minister administering the **EPBC Act** and includes a delegate of the **Minister**.

Offset area: the area labelled as 'Offset Area' in Map 2.

Offset attributes: means electronic files including '.xls' files and ESRI shapefiles containing '.shp', '.shx' and '.dbf' files capturing the relevant attributes of the offset area/s, including the **EPBC Act** reference number, the physical address of the offset area/s, coordinates of the boundary points in decimal degrees, the **EPBC Act** protected matters that the offset area/s compensates for, any additional **EPBC Act** protected matters benefiting from the offset/s and the size of the offset area/s (in hectares).

Secure: means long-term protection under a legal mechanism that is establishing a covenant on the title as a voluntary declaration under the *Vegetation Management Act 1999* (Qld).

Substantially commence/d: means creation of residential allotments, roadways and infrastructure services (sewerage, electricity, water, stormwater) associated with the action. This does not include preparatory works.

Suitably qualified person: A person who has professional qualifications, training, skills and/or experience related to the **Koala** and can give authoritative independent assessment, advice and analysis on performance relative to the subject matter using the relevant protocols, standards, methods and/or literature.

Titles Office: means the relevant authority responsible for registering the land title transaction.

Map 1: Clearance Area labelled as 'Referral Area'



Map 2: Offset Area



OFFSET MAP

40-160 Harrison Road, Calvert, Queensland
Lot 230 CH311791 & Lot 1 CC2262

Filed 04 August 2016 | Imagery: 2014 | Job 43797

LEGEND

-  Offset Area (Lot 230 CH311791)
-  Property Boundary

Appendix B

SAT survey results 2024 – raw data

Site: SAT 1

Tree ID	Scientific name	Common name	DBH (mm)	Scat
1	<i>Lophostemon suaveolens</i>	Swamp Box	130	Nil
2	<i>Lophostemon suaveolens</i>	Swamp Box	160	Nil
3	<i>Lophostemon suaveolens</i>	Swamp Box	210	Nil
4	<i>Eucalyptus tereticornis</i>	Forest Red Gum	290	Nil
5	<i>Lophostemon suaveolens</i>	Swamp Box	160	Nil
6	<i>Lophostemon suaveolens</i>	Swamp Box	220	Nil
7	<i>Eucalyptus tereticornis</i>	Forest Red Gum	170	Nil
8	<i>Lophostemon suaveolens</i>	Swamp Box	230	Nil
9	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	290	Nil
10	<i>Eucalyptus tereticornis</i>	Forest Red Gum	320	Nil
11	<i>Lophostemon suaveolens</i>	Swamp Box	160	Nil
12	<i>Eucalyptus tereticornis</i>	Forest Red Gum	270	Nil
13	<i>Eucalyptus tereticornis</i>	Forest Red Gum	330	Nil
14	<i>Lophostemon suaveolens</i>	Swamp Box	150	Nil
15	<i>Lophostemon suaveolens</i>	Swamp Box	220	Nil
16	<i>Lophostemon suaveolens</i>	Swamp Box	110	Nil
17	<i>Eucalyptus tereticornis</i>	Forest Red Gum	210	Nil
18	<i>Eucalyptus tereticornis</i>	Forest Red Gum	690	Nil
19	<i>Lophostemon suaveolens</i>	Swamp Box	160	Nil
20	<i>Lophostemon suaveolens</i>	Swamp Box	130	Nil
21	<i>Lophostemon suaveolens</i>	Swamp Box	140	Nil
22	<i>Lophostemon suaveolens</i>	Swamp Box	120, 90	Nil
23	<i>Lophostemon suaveolens</i>	Swamp Box	210, 170	Nil
24	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	360	Nil
25	<i>Lophostemon suaveolens</i>	Swamp Box	180	Nil
26	<i>Lophostemon suaveolens</i>	Swamp Box	200	Nil
27	<i>Eucalyptus propinqua</i>	Small-fruited Grey Gum	230	Nil
28	<i>Lophostemon suaveolens</i>	Swamp Box	180	Nil
29	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	370	Nil
30	<i>Eucalyptus tereticornis</i>	Forest Red Gum	270	Nil

Total scats recorded and percentage **0 (0.00%)**

Level of Koala usage (based on East Coast Med-High Activity Category) **Low**

Site: SAT 2

Tree ID	Scientific name	Common name	DBH (mm)	Scat
1	<i>Eucalyptus siderophloia</i>	Grey Ironbark	200	Nil
2	<i>Eucalyptus siderophloia</i>	Grey Ironbark	340	Nil
3	<i>Eucalyptus fibrosa</i>	Broad-leaved Red Ironbark	240	Nil
4	<i>Eucalyptus propinqua</i>	Small-fruited Grey Gum	190	Nil
5	<i>Lophostemon suaveolens</i>	Swamp Box	100	Nil
6	<i>Lophostemon suaveolens</i>	Swamp Box	120	Nil
7	<i>Lophostemon suaveolens</i>	Swamp Box	180	Nil
8	<i>Lophostemon suaveolens</i>	Swamp Box	150	Nil
9	<i>Eucalyptus propinqua</i>	Small-fruited Grey Gum	180	Nil
10	<i>Eucalyptus siderophloia</i>	Grey Ironbark	270	Nil
11	<i>Eucalyptus siderophloia</i>	Grey Ironbark	390	Nil
12	<i>Eucalyptus propinqua</i>	Small-fruited Grey Gum	200	Nil
13	<i>Corymbia intermedia</i>	Pink Bloodwood	160, 140	Nil
14	<i>Eucalyptus propinqua</i>	Small-fruited Grey Gum	150	Nil
15	<i>Eucalyptus siderophloia</i>	Grey Ironbark	390	Nil
16	<i>Eucalyptus siderophloia</i>	Grey Ironbark	330	Nil
17	<i>Corymbia citriodora</i>	Spotted Gum	140	Nil
18	<i>Eucalyptus propinqua</i>	Small-fruited Grey Gum	120	Nil
19	<i>Eucalyptus fibrosa</i>	Broad-leaved Red Ironbark	320	Nil
20	<i>Eucalyptus propinqua</i>	Small-fruited Grey Gum	230	Nil
21	<i>Corymbia intermedia</i>	Pink Bloodwood	310	Nil
22	<i>Lophostemon suaveolens</i>	Swamp Box	180	Nil
23	<i>Corymbia intermedia</i>	Pink Bloodwood	140	Nil
24	<i>Eucalyptus siderophloia</i>	Grey Ironbark	370	Nil
25	<i>Lophostemon suaveolens</i>	Swamp Box	160	Nil
26	<i>Eucalyptus siderophloia</i>	Grey Ironbark	310	Nil
27	<i>Corymbia intermedia</i>	Pink Bloodwood	210, 120	Nil
28	<i>Eucalyptus siderophloia</i>	Grey Ironbark	220	Nil
29	<i>Eucalyptus fibrosa</i>	Broad-leaved Red Ironbark	230	Nil
30	<i>Eucalyptus propinqua</i>	Small-fruited Grey Gum	200	Nil

Total scats recorded and percentage **0 (0.00%)**

Level of Koala usage (based on East Coast Med-High Activity Category) **Low**

Site: SAT 3

Tree ID	Scientific name	Common name	DBH (mm)	Scat
1	<i>Lophostemon suaveolens</i>	Swamp Box	120	Nil
2	<i>Lophostemon suaveolens</i>	Swamp Box	150	Nil
3	<i>Lophostemon suaveolens</i>	Swamp Box	160	Nil
4	<i>Lophostemon confertus</i>	Brush Box	160	Nil
5	<i>Eucalyptus tereticornis</i>	Forest Red Gum	220	Nil
6	<i>Lophostemon confertus</i>	Brush Box	180	Nil
7	<i>Lophostemon suaveolens</i>	Swamp Box	170	Nil
8	<i>Lophostemon suaveolens</i>	Swamp Box	210	Nil
9	<i>Lophostemon suaveolens</i>	Swamp Box	220, 200	Nil
10	<i>Lophostemon suaveolens</i>	Swamp Box	110	Nil
11	<i>Lophostemon suaveolens</i>	Swamp Box	120	Nil
12	<i>Lophostemon suaveolens</i>	Swamp Box	170	Nil
13	<i>Eucalyptus siderophloia</i>	Grey Ironbark	290	Nil
14	<i>Corymbia intermedia</i>	Pink Bloodwood	170	Nil
15	<i>Corymbia citriodora</i>	Spotted Gum	110	Nil
16	<i>Lophostemon suaveolens</i>	Swamp Box	190	Nil
17	<i>Lophostemon suaveolens</i>	Swamp Box	100	Nil
18	<i>Lophostemon suaveolens</i>	Swamp Box	140	Nil
19	<i>Lophostemon suaveolens</i>	Swamp Box	140	Nil
20	<i>Lophostemon suaveolens</i>	Swamp Box	140, 120	Nil
21	<i>Lophostemon suaveolens</i>	Swamp Box	210	Nil
22	<i>Eucalyptus siderophloia</i>	Grey Ironbark	360	Nil
23	<i>Lophostemon confertus</i>	Brush Box	140	Nil
24	<i>Lophostemon suaveolens</i>	Swamp Box	190	Nil
25	<i>Eucalyptus siderophloia</i>	Grey Ironbark	350	Nil
26	<i>Corymbia citriodora</i>	Spotted Gum	250	Nil
27	<i>Lophostemon suaveolens</i>	Swamp Box	160, 150	Nil
28	<i>Eucalyptus moluccana</i>	Gum-topped Box	260	Nil
29	<i>Corymbia intermedia</i>	Pink Bloodwood	180	Nil
30	<i>Eucalyptus siderophloia</i>	Grey Ironbark	340	Nil

Total scats recorded and percentage **0 (0.00%)**

Level of Koala usage (based on East Coast Med-High Activity Category) **Low**

Site: SAT 4

Tree ID	Scientific name	Common name	DBH (mm)	Scat
1	<i>Lophostemon suaveolens</i>	Swamp Box	180	Nil
2	<i>Lophostemon confertus</i>	Brush Box	150	Nil
3	<i>Eucalyptus siderophloia</i>	Grey Ironbark	370	Nil
4	<i>Lophostemon confertus</i>	Brush Box	230	Nil
5	<i>Lophostemon suaveolens</i>	Swamp Box	210, 160	Nil
6	<i>Lophostemon suaveolens</i>	Swamp Box	280	Nil
7	<i>Lophostemon suaveolens</i>	Swamp Box	240	Nil
8	<i>Lophostemon suaveolens</i>	Swamp Box	270	Nil
9	<i>Lophostemon suaveolens</i>	Swamp Box	260, 170	Nil
10	<i>Lophostemon suaveolens</i>	Swamp Box	290	Nil
11	<i>Lophostemon suaveolens</i>	Swamp Box	210	Nil
12	<i>Lophostemon confertus</i>	Brush Box	170	Nil
13	<i>Lophostemon suaveolens</i>	Swamp Box	160	Nil
14	<i>Eucalyptus siderophloia</i>	Grey Ironbark	440	Nil
15	<i>Lophostemon suaveolens</i>	Swamp Box	170	Nil
16	<i>Eucalyptus siderophloia</i>	Grey Ironbark	360	Nil
17	<i>Eucalyptus siderophloia</i>	Grey Ironbark	440	Nil
18	<i>Eucalyptus siderophloia</i>	Grey Ironbark	270	Nil
19	<i>Lophostemon suaveolens</i>	Swamp Box	160	Nil
20	<i>Lophostemon suaveolens</i>	Swamp Box	200	Nil
21	<i>Lophostemon suaveolens</i>	Swamp Box	210	Nil
22	<i>Lophostemon suaveolens</i>	Swamp Box	190	Nil
23	<i>Lophostemon suaveolens</i>	Swamp Box	100	Nil
24	<i>Lophostemon suaveolens</i>	Swamp Box	170	Nil
25	<i>Eucalyptus siderophloia</i>	Grey Ironbark	340	Nil
26	<i>Lophostemon suaveolens</i>	Swamp Box	190	Nil
27	<i>Lophostemon suaveolens</i>	Swamp Box	200	Nil
28	<i>Lophostemon suaveolens</i>	Swamp Box	140	Nil
29	<i>Lophostemon suaveolens</i>	Swamp Box	170	Nil
30	<i>Lophostemon suaveolens</i>	Swamp Box	130	Nil

Total scats recorded **0 (0.00%)**

Level of Koala usage (based on East Coast Med-High Activity Category) **Low**

Appendix C

Year Five Milestone Offset Report

Year Five Milestone Offset Report

9 July 2018 to 8 July 2023 EPBC 2014/7306

Springview Village One, Springfield, Ipswich City, Queensland
Stockland Development Pty Ltd

6 October 2023

Job No: 11746 E



Stockland



kalina

— Springfield —

Document control

Document: Year Five Milestone Offset Report 9 July 2018 to 8 July 2023 EPBC 2014/7306, prepared by Saunders Havill Group for Cherish the Environment Foundation Limited on behalf of Stockland Development Pty Ltd.

Document Issue

Issue	Date	Prepared By	Checked By
A	06.10.2023	TM	AW

Prepared by

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Acronyms and abbreviations

ACR	Annual Compliance Report
AU	Assessment Unit
CTEF	Cherish the Environment Foundation Limited
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
ha	hectares
ICC	Ipswich City Council
km	kilometres
KHA	Koala Habitat Area
KHAT	Koala Habitat Assessment Tool
KPA	Koala Priority Area
m	metres
MNES	Matters of National Environmental Significance
RE	regional ecosystem
SAT	Spot Assessment Technique
SEQ	South East Queensland
SHG	Saunders Havill Group
VDec	Voluntary Declaration
VMA	<i>Vegetation Management Act 1999</i> (Queensland)

Reference documents:

KHOR *Koala Habitat Offset Report, 40-100 Harrison Road, Calvert prepared by Cherish the Environment Foundation Limited*

OMP *Offset Management Plan, Koala Habitat Offset 40-100 Harrison Road Calvert EPBC 2014/7306, prepared by Cherish the Environment Foundation Limited*

Baseline data *Site Condition Assessment, Calvert 1 – Vegetation Offset September 2018, prepared by Private Forestry Service Queensland INC*

Year five data *Site Condition Assessment, Calvert 1 – Vegetation Offset April 2023, prepared by Forest Land Management Pty Ltd*

1. Introduction

Saunders Havill Group (SHG) were engaged by Cherish the Environment Foundation Limited (CTEF) to prepare this Year Five Milestone Offset Report on behalf of Stockland Development Pty Ltd as the approval holder for *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval (ref: EPBC 2014/7306). This report specifically addresses Condition 3b of the approval. Condition 3b of the approval states:

b) Milestones

- By **five years** after the commencement of construction, a gain in Koala habitat quality to nine must be achieved in more than 50% of the offset area through rehabilitation.

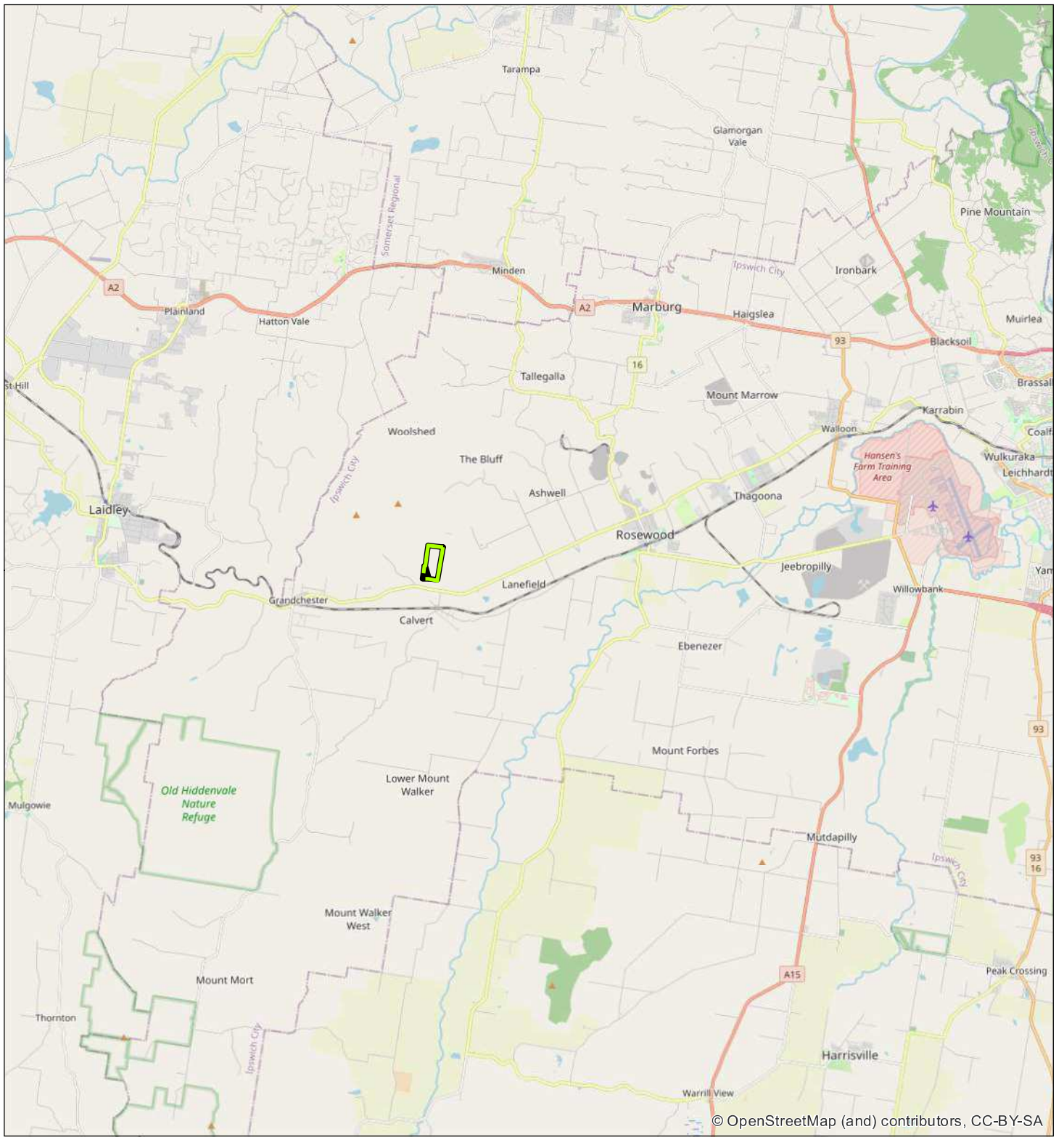
Five years after commencement was 8 July 2023. This report will describe the results of the management actions taken in accordance with the '*Offset Management Plan, Koala Habitat Offset 40-100 Harrison Road Calvert EPBC 2014/7306, prepared by Cherish the Environment Foundation Limited*' (OMP) to reduce existing threats and preserve and increase habitat connectivity and quality since the baseline assessment. .

The other primary outcomes and milestones required to be met for the offset area under Condition 3a are:

- Outcome #1: By **20 years** after the commencement of construction, there must be a gain in Koala habitat quality to nine across the whole offset area.
- Outcome #2: For **the life of the approval**, the approval holder must ensure no net loss in the extent of Koala habitat in the offset area.

The impact site located at Mur Boulevard, Springfield and is referred to as 'Kalina Springfield'. It is located approximately 2.5 kilometres (km) north of Springfield Central and is adjacent to existing urban development comprising residential housing and Springfield Anglican College in the Ipswich City local government area. Within the project area, an impact to no more than 39.75 ha of Matters of National Environmental Significance (MNES) habitat being Koala habitat was permitted under the approval conditions.

A land-based offset accompanied this clearing to counterbalance the impacts and is located in the locality of Calvert in the Ipswich region, located approximately 40 km west of the project. The 65 ha offset area in accordance with Condition 2 of the EPBC Act approval occurs across two land parcels that comprise confirmed Koala habitat (refer **Figure 1**). The offset area (described as 230/CH311791 and 1/CC2262) is situated within Ipswich City local government area (refer **Figure 2**). Under Ipswich City Council's (ICC) Nature Conservation Strategy 2023, the site is mapped as 'Core Habitat', and is within a large contiguous vegetation area of predominantly eucalypt forest. The offset area was legally secured on 6 June 2018 via a Voluntary Declaration (VDec) process administered under the Queensland *Vegetation Management Act 1999* (VMA).



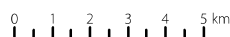
Legend

-  Site DCDB
-  Offset Area

Figure 1
Site Context



File ref. 8473 E Figure 1 Site Context A
Date 29/09/2023
Project Rosewood Laidley Rd, Calvert



Scale (A4): 1:200,000 [GDA 1994 MGA Z56]

THESE PLANS HAVE BEEN PREPARED FOR THE EXCLUSIVE USE OF THE CLIENT. SAUNDERS HAVILL GROUP CANNOT ACCEPT RESPONSIBILITY FOR ANY USE OF OR RELIANCE UPON THE CONTENTS OF THESE DRAWINGS BY ANY THIRD PARTY.



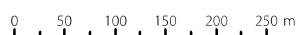
Legend

-  Qld DCDB
-  Site DCDB
-  Offset Area

Figure 2
Site Aerial



File ref. 8473 E Figure 2 Site Aerial A
Date 29/09/2023
Project Rosewood Laidley Rd, Calvert



Scale (A4): 1:7,500 [GDA 1994 MGA Z56]

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1.1. Methodology

1.1.1 Assessment Units

The offset area was delineated into assessment units (AUs) as part of the baseline assessment to assess the variance in quality of habitat. The offset area was delineated into the following AUs:

- AU1: Remnant (RE12.9-10.2) [63.2 ha];
- AU2: High-value Regrowth (RE12.9-10.2) [2.4 ha];
- AU3: Remnant (RE12.9-10.7) [6.0 ha]; and
- AU4: High-value Regrowth (RE12.9-10.7) [4.7 ha].

The offset area AUs are shown on **Figure 3**.

1.1.2 Site Condition

To gain an understanding of how the quality of the offset area has progressed since baseline surveys, yearly site condition assessments have been completed at permanent assessment locations by the engaged contractor. The year five offset site condition surveys were conducted in April 2023 in accordance with the 'Guide to Determining Terrestrial Habitat Quality v1.2 2017' (the 'Guideline') as per the baseline assessment methodology. The offset area contains seven permanent plots across all four assessment units that were all scored in accordance with the Guideline and have been compared against the results from the baseline surveys conducted using the same methodology in 2018.

The site condition is assessed using 13 condition characteristics being:

1. recruitment of woody perennial species in Ecologically Dominant Layer;
2. native plant species richness – trees;
3. native plant species richness – shrubs;
4. native plant species richness – grasses;
5. native plant species richness – forbs;
6. tree canopy height (average of canopy and sub-canopy values);
7. sub-canopy cover;
8. tree canopy cover (average of canopy and sub-canopy values);
9. native grass cover;
10. organic litter;
11. large trees;
12. coarse woody debris;
13. non-native plant cover;

The site condition of each assessment unit was determined using the data collected during surveys. Each attribute is compared against the benchmark for the Regional Ecosystem of the assessment unit, and given a

score based on how well it aligns with the benchmark. These scores are summed and scored out of a possible maximum score of 80.

1.1.3 Koala Habitat Assessment Tool

An assessment of the value of habitat for koala is demonstrated through the utilisation of the Koala Habitat Assessment Tool (KHAT) contained within Section 6 of the Koala referral guidelines. This method was applied for the baseline assessment of koala habitat quality within the offset area, the score of which underpins condition 3 of the EPBC approval. This habitat assessment tool uses five primary koala habitat attributes to measure the value of the site to koala.

- 1) Koala occurrence;
- 2) vegetation composition;
- 3) habitat connectivity;
- 4) key existing threats; and
- 5) recovery value.

Each of these koala habitat attributes are scored between 0 and 2 and the sum of the scores give a total out of 10 which is used to determine the overall quality of koala habitat.

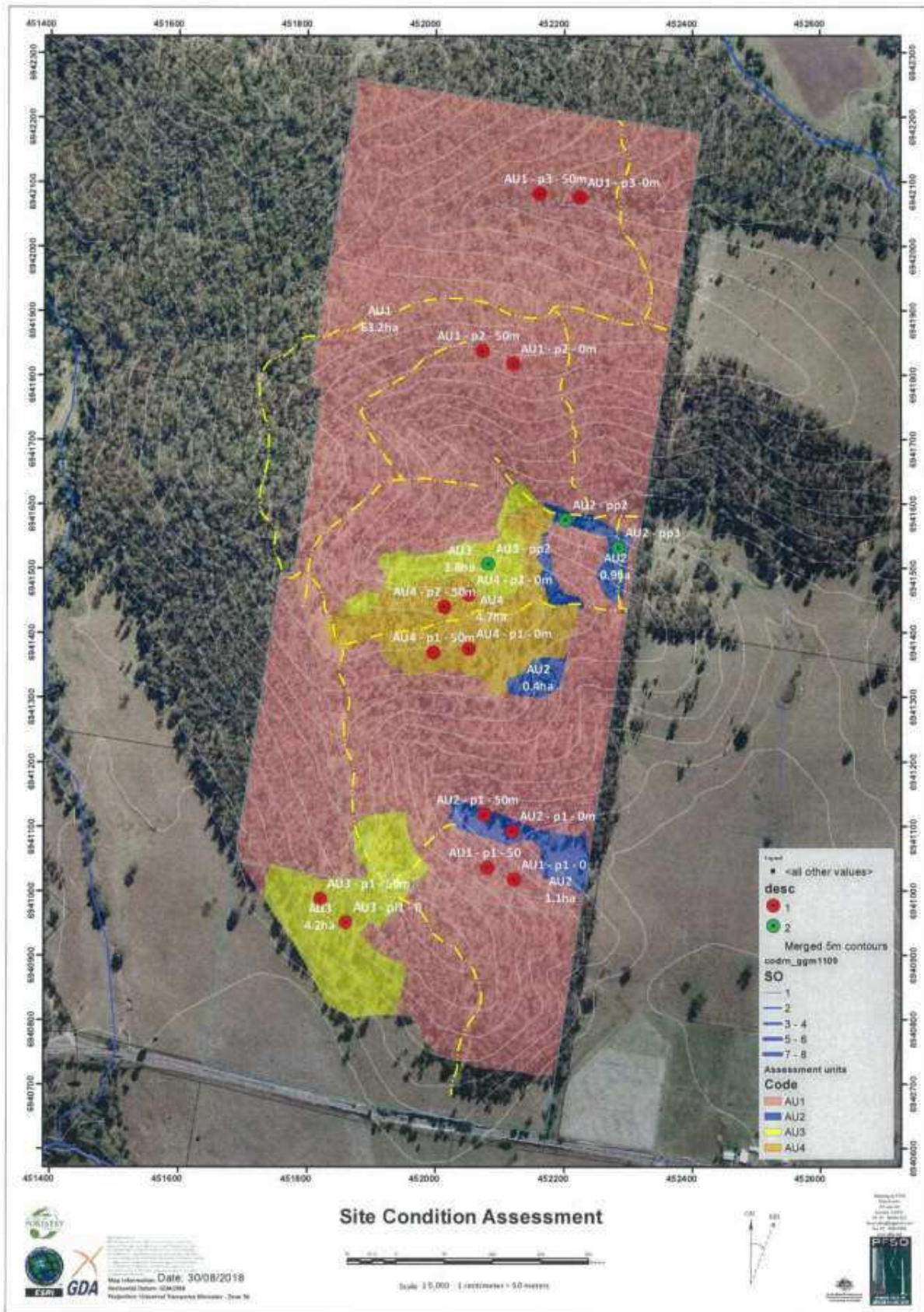


Figure 3: Offset Area Assessment Units (extract from Baseline Site Condition Assessment Report).

2. Year Five Milestone Assessment

2.1. Offset Area Site Condition

Between the data provided from the baseline and year five habitat quality surveys, a general increase in site condition characteristics across all assessment units was observed, as detailed in **Table 1** and summarised in **Table 2**. Habitat quality improved the most within AU1 and AU4, and the least within AU2. Site condition attributes that were shown to demonstrate improvements were typically species richness (of grasses, shrubs, and forbs), tree canopy cover, and native perennial grass cover. Improvement of habitat quality across the site may be attributed to a range of land management factors and weather conditions including increased rainfall, removal of cattle, management of weeds, and strategic fire regime implementation – all of which would allow create conditions for native vegetation to establish and grow. The site condition data for the assessment plots for each AU are provided in the following subsections in **Tables 3 to 6**. The baseline site condition data is also presented in the ‘*Site Condition Assessment, Calvert 1 – Vegetation Offset September 2018*’ located at **Appendix A** and the year five site condition data is presented in the report titled ‘*Site Condition Assessment – Calvert 1, Vegetated Offset April 2023*’ located at **Appendix B**.

Table 1: Offset area condition score changes between baseline and year five surveys

Site Condition Attribute	AU1 Baseline	AU1 Year 5	AU2 Baseline	AU2 Year 5	AU3 Baseline	AU3 Year 5	AU4 Baseline	AU4 Year 5
Recruitment of woody perennial species	5	5	5	5	5	5	5	5
Tree species richness	2.5	2.5	2.5	5	5	5	5	5
Shrub species richness	2.5	5	2.5	2.5	2.5	2.5	2.5	5
Grass species richness	5	5	2.5	5	2.5	5	2.5	5
Forb species richness	2.5	2.5	5	5	2.5	2.5	0	2.5
Average tree canopy height	5	5	5	5	5	5	5	5
Average tree canopy cover	4	5	1	3.5	5	5	5	4
Shrub Canopy Cover	3	3	5	3	3	3	3	3
Native Perennial Grass Cover	1	5	5	5	3	5	1	3
Organic Litter	5	5	3	5	5	5	3	3

Site Condition Attribute	AU1 Baseline	AU1 Year 5	AU2 Baseline	AU2 Year 5	AU3 Baseline	AU3 Year 5	AU4 Baseline	AU4 Year 5
Large Trees	5	10	5	5	15	15	10	10
Coarse Woody Debris	5	5	0	0	5	5	5	5
Non-native Plant Cover	5	5	10	3	5	10	5	10
Total (/80)	50.5	63	51.5	52	63.5	73	52	65.5

Table 2: Offset area condition score change summary

Assessment Unit	RE/VMA Category	Baseline Score (out of 80)	Year 5 Score (out of 80)	Assessment Unit Score Change
1	12.9-10.2 Remnant	50.5	63	+12.5
2	12.9-10.2 Regrowth	51.5	52	+0.5
3	12.9-10.7 Remnant	63.5	73	+10.5
4	12.9-10.7 Regrowth	52	65.5	+13.5

2.1.1 Assessment Unit 1

AU1 is the largest assessment unit, comprising 63.2 ha of the offset area and is described as Category B (remnant) RE12.9-10.2 which is dominated by *Corymbia citriodora* (Spotted Gum). Habitat quality improvement in AU1 was very high, and relatively equal across the three assessment plots that comprise it. All assessment plots had increases in the number of large trees, as well as general improvement in the species richness of trees, shrubs, grasses, and forbs. Grass cover improved across plot 1 and plot 3 but continued to score very low in plot 2, which is dominated by organic litter. Overall habitat quality scores improved by at least 9 across all assessment plots. Woody debris and non-native plant cover did not change. Non-native plant cover remained very low in plot 1 and plot 2, reducing further from 2.4% and 0.2% in 2018, to 1.95% and 0% in 2023. However, plot 3 was 46.7% in 2018 and increased to 48% in 2023. To ensure the habitat quality score of this assessment unit does not decrease in the future, weed levels should continue to be monitored and managed.

Table 3: Assessment Unit 1 baseline and year five offset area site condition data

Site Condition Attributes	RE12.9-10.2 Benchmark	Baseline Plot 1	Year 5 Plot 1	Baseline Plot 2	Year 5 Plot 2	Baseline Plot 3	Year 5 Plot 3
Recruitment of woody perennial species	100	100	100	50	80	80	100
Tree species richness	6	4	4	4	5	6	6
Shrub species richness	7	6	7	6	9	5	7
Grass species richness	7	9	13	5	9	5	11
Forb species richness	13	6	11	5	6	7	14
Tree canopy height (canopy)	21	24	23.7	24.6	24.6	27.2	27.8
Tree canopy height (sub-canopy)	12	9.2	9	17	17	18.2	19.1
Tree canopy cover (canopy)	64	76.3	74	31.5	69	60.3	50
Tree canopy cover (sub-canopy)	20	21.3	33	36.5	13	66	52
Shrub Canopy Cover	6	21.3	15.7	20.5	14.3	20.5	14.3
Native Perennial Grass Cover	21	11	39	1	2	10	19
Organic Litter	48	73	64	95	97	46	57
Large Trees	44	20	26	18	24	20	22
Coarse Woody Debris	506	305	292	462	370	337	338
Non-native Plant Cover	0	2.4	1.95	0.2	0	46.7	48

2.1.2 Assessment Unit 2

AU2 is 2.4 ha in size and is described as Category C (high-value regrowth) which is dominated by *Corymbia citriodora* (Spotted Gum). The low level of improvement in AU2 was not because there was little to no improvement, but because there was also a decrease in some attributes, which meant net change was only just positive. The largest decrease in habitat quality was within the non-native plant cover, which dropped from a score of 10 to 3, following a 35.1% increase in weeds, likely attributed to La Nina conditions favouring weed growth. This thought is corroborated by a noted increase in tree species. AU2 showed an increase in tree species richness, grass species richness and organic litter cover relative to the benchmark. Similar to AU1, weed management should be prioritised within this AU to ensure a steady future improvement of habitat quality.

Table 4: Assessment Unit 2 baseline and year five offset area site condition data

Site Condition Attributes	RE12.9-10.2 Benchmark	Baseline Plot 1	Year 5 Plot 1
Recruitment of woody perennial species	100	100	100
Tree species richness	6	4	6
Shrub species richness	7	2	3
Grass species richness	7	6	11
Forb species richness	13	12	13
Tree canopy height (canopy)	21	22.4	24
Tree canopy height (sub-canopy)	12	14.2	11
Tree canopy cover (canopy)	64	6	12
Tree canopy cover (sub-canopy)	20	3	26.5
Shrub Canopy Cover	6	5	1.9
Native Perennial Grass Cover	21	49	45
Organic Litter	48	23	58
Large Trees	44	2	4
Coarse Woody Debris	506	45	35
Non-native Plant Cover	0	4	39.1

2.1.3 Assessment Unit 3

AU3 is 6 ha in size and is described as Category B (remnant) RE12.9-10.7 which is dominated by *Eucalyptus crebra* (Narrow-leaved Ironbark). This AU has the highest year five habitat quality score of all the assessment units, with 73 out of a possible 80. It also has very low native plant cover, at 3.85%, reduced from 8% recorded at baseline surveys. Habitat quality was largely consistent across most attributes, with improvement only within the ground cover. Grass species richness and native perennial grass cover both improved well between the baseline and year five surveys. This increase could be a result of improved rainfall throughout recent years. Overall, this assessment unit has shown good improvement and high habitat quality, and with time and regular management should see further recruitment of shrub and forb species richness and shrub canopy cover.

Table 5: Assessment Unit 3 baseline and year five offset area site condition data

Site Condition Attributes	RE12.9-10.7 Benchmark	Baseline Plot 1	Year 5 Plot 1
Recruitment of woody perennial species	100	83	100
Tree species richness	3	6	7
Shrub species richness	5	3	3
Grass species richness	8	7	13

Site Condition Attributes	RE12.9-10.7 Benchmark	Baseline Plot 1	Year 5 Plot 1
Forb species richness	26	10	14
Tree canopy height (canopy)	21	23.1	23.7
Tree canopy height (sub-canopy)	10	14.8	14.9
Tree canopy cover (canopy)	40	64	64
Tree canopy cover (sub-canopy)	8	5	11.5
Shrub Canopy Cover	3	14.6	8.1
Native Perennial Grass Cover	61	46	65
Organic Litter	20	37	24
Large Trees	18	22	26
Coarse Woody Debris	272	494	405
Non-native Plant Cover	0	8	3.85

2.1.4 Assessment Unit 4

AU4 is 4.7 ha in size and is described as Category C (high-value regrowth) RE12.9-10.7 which is dominated by *Eucalyptus crebra* (Narrow-leaved Ironbark). Overall improvement was highest in AU4, though less evenly distributed among assessment plots than the second-highest improved, AU1. Plot 2 improved massively, with positive change across several site condition attributes. Plot 1 showed more regular improvement, with increases in grass and forb species richness and tree canopy cover and a slight decrease in the recruitment of woody perennial species. Overall, this AU showed great improvement, contains very low non-native plant cover, and with time and regular management should continue to improve in the forb species richness, shrub canopy cover, perennial native grass cover and organic litter cover.

Table 6: Assessment Unit 4 baseline and year five offset area site condition data

Site Condition Attributes	RE12.9-10.7 Benchmark	Baseline Plot 1	Year 5 Plot 1	Baseline Plot 2	Year 5 Plot 2
Recruitment of woody perennial species	100	100	75	67	80
Tree species richness	3	4	4	5	5
Shrub species richness	5	6	6	3	5
Grass species richness	8	4	10	6	10
Forb species richness	26	2	8	8	11
Tree canopy height (canopy)	21	24	26	18.3	17.1
Tree canopy height (sub-canopy)	10	13.6	13.5	10.8	11.2
Tree canopy cover (canopy)	40	52.5	44	37	27.5

Site Condition Attributes	RE12.9-10.7 Benchmark	Baseline Plot 1	Year 5 Plot 1	Baseline Plot 2	Year 5 Plot 2
Tree canopy cover (sub-canopy)	8	22.7	33.5	5.3	82
Shrub Canopy Cover	3	22.7	0.6	5.3	1.9
Native Perennial Grass Cover	61	11	24	6	64
Organic Litter	20	79	78	65	34
Large Trees	18	24	26	4	6
Coarse Woody Debris	272	225	269	307	398
Non-native Plant Cover	0	2.9	1.18	25.6	4.9

2.2. Koala Habitat Assessment Tool

The offset area achieved a score of seven (7) out of ten (10) at the baseline assessment utilising the Koala Habitat Assessment Tool. This assessment is provided in Table 1 of the *'Koala Habitat Offset Report, prepared by Cherish the Environment Foundation.'* The baseline score laid the basis for the milestone listed under Condition 3b that after the commencement of construction, a gain in koala habitat quality to nine (9) must be achieved in more than 50% of the offset area through rehabilitation.

This milestone would be achieved through habitat improvement works via management activities prescribed under the OMP, through increasing connection of the offset area to the neighbouring conservation estate and managing key threats to koala such as erosion and pest presence.

These management actions have improved the koala habitat quality across the offset area to a level that satisfies the score of nine requirement of the year five milestone. These improvements in koala habitat quality are detailed in the KHAT table provided in **Table 7**.

Table 7: Year five milestone Koala Habitat Assessment Tool using coastal criteria

Attribute	Baseline Score	Year 5 Score	Analysis
Koala occurrence	+2	+2	<p>Evidence of koala in the form of direct observation and indirect evidence (scats) has historically been detected within and surrounding the offset area including as part of baseline surveys.</p> <p>Evidence of koala in the form of scats was detected within the offset area during 2023 surveys by Wolter Consulting Group. A total of nine (9) Spot Assessment Technique surveys were completed within the offset area targeting evidence of koala. The results detected 56 scats with koala usage ranging from 'low' to 'high' use under the East Coast (med-high) population activity category defined by Phillips and Callaghan (2011)¹. The Koala Assessment Survey Report is provided at Appendix D.</p> <p>As there is evidence of one or more koalas on-site within the last 2 years, this attribute has been given a score of +2 (high). This attribute score has remained consistent with the baseline assessment.</p>

On-ground surveys indicate the site is comprised of eucalypt dominated regional ecosystems containing several koala foraging species.

In addition, efforts have been made by the offset provider to improve the quality of the habitat present within the offset area in accordance with management activities prescribed under the OMP. A five-year weed management program was implemented to improve vegetation structure and condition and promote native regrowth. This program was initially very successful, with weed presence low enough in February 2021 and requiring minimal intervention. Following the wet conditions associated with the 2021/2022 La Nina event, weed presence of Lantana and Fleabane was observed to increase in patches. The initial strong decrease in weed presence provided opportunities

Vegetation structure and composition

+2

+2

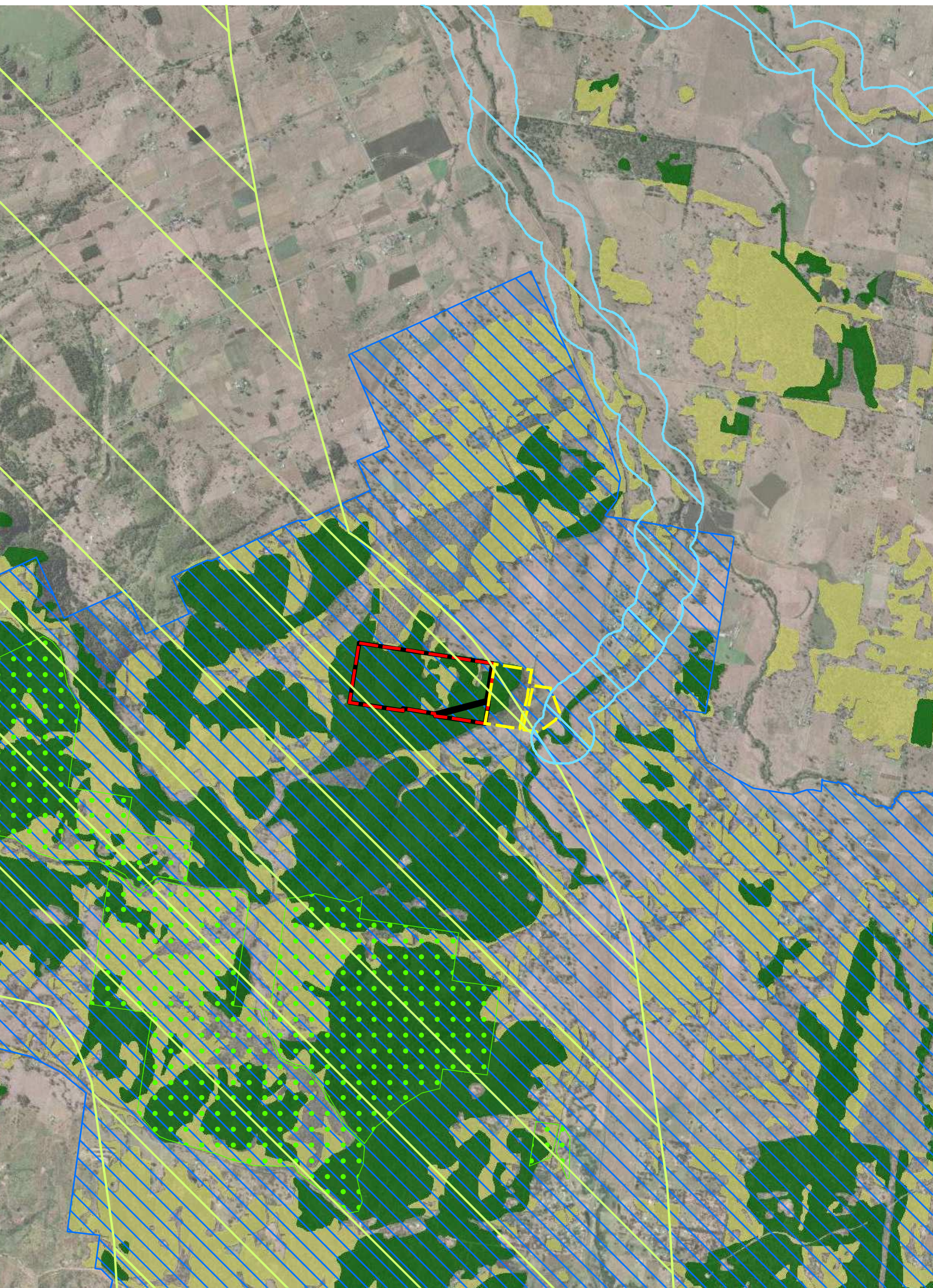
¹ Phillips, S & Callaghan, J 2011, "The Spot Assessment Technique: a tools for determining localised levels of habitat use by Koala *Phascolarctos cinereus*", *Australian Zoologist*, 35:3.

Attribute	Baseline Score	Year 5 Score	Analysis
			<p>for natural regrowth with an observed increase in native species richness site-wide, as discussed in Section 2.1. The wetter conditions have also allowed for enhanced growing conditions for newly recruited native species.</p>
			<p>Cut-off diversion drains were constructed to mitigate erosion, and subsequently vegetation loss. In conjunction with the removal of stock, which resulted in increased ground cover, there has been no evidence of significant erosion despite the rain events through 2021–2022 and early 2023.</p>
			<p>Two or more koala food trees were identified within the canopy of the woodland areas, resulting in an attribute score of +2 (high). This attribute score has remained consistent with the baseline assessment.</p>
Habitat connectivity	+1	+2	<p>There are a number of landscape factors that contribute to the offset area's location as highly connected within the landscape. On 7 February 2020, planning reforms to protect Koala habitat areas in South East Queensland came into effect through the Nature Conservation and Other Legislation (Koala Protection) Amendment Regulation 2020, introducing the Koala Habitat Area (KHA) and Koala Priority Area (KPA). One of the provisions under Schedule 11 of the Planning Regulation is that where a KHA occurs within a KPA, it is prohibited to clear. A large area of land surrounding the offset site which contains mapped core KHA has since been categorised as KPA and as such is now highly protected.</p> <p>The offset area is part of a contiguous landscape >500 ha land mapped as State KHA as shown by the Habitat Connectivity plan provided in Plan 1. The habitat is part of a larger contiguous patch which extends to the west and north of the site and traverses the broader region. Highly connected to this area is another large, mapped Koala Priority and Habitat Area that continues south-west for another 8 km. The southern and south-eastern site borders are adjoined by large, cleared paddock areas. To further improve the habitat connectivity of the site, revegetation has been undertaken on the land parcel directly</p>

Attribute	Baseline Score	Year 5 Score	Analysis
			south of the offset area by CTEF, the area of which will be subject to a Voluntary Declaration under the VMA to formally protect the land.
			The site is also located within a Regional Corridor under the South East Queensland Regional Plan ('ShapingSEQ') and categorised a Priority Conservation Area by the Ipswich LGA Conservation Strategy.
			The site is well situated within a Regional Biodiversity Corridor, is categorised a Priority Conservation Area by the Ipswich Natural Environment Strategy 2023 and connected by this large contiguous area of State mapped KHA within a KPA to Main Range National Park. As such, this offset site has a high level of connectivity which has now been protected long-term.
			The offset area is part of a contiguous landscape (≥ 500 ha) and is located within a corridor that is highly protected under State legislation, therefore has been given an attribute score of +2 (high). This attribute has increased since baseline.
			Under the implementation of the OMP, pest management activities have been undertaken across the offset area. A wild dog monitoring and control program has been implemented over the offset area since the offset area was legally secured.
Key existing threats	+1	+2	Baseline surveys found wild dog scats indicating their presence on site. Wild dogs can predate upon koala, and domestic stock and wild pigs are known to cause death and injury. To combat these key threats a number of measures were completed including the installation of boundary fencing and exclusion of stock with fencing repaired as necessary. A wild dog control program including yearly camera monitoring has been implemented by the offset provider. Despite the implementation of targeted monitoring, there has been no evidence of wild dogs or other pest species such as pigs detected within the offset area since baseline surveys in 2018.
			Additionally, no evidence of koala mortality has been recorded within the offset area.

Attribute	Baseline Score	Year 5 Score	Analysis
<p>There is no evidence of koala mortality from dog attack or vehicle strike and threats are considered to be reduced as a result of the implementation of the wild dog control program. This attribute has been assigned a score of +2 (high).</p>	+1	+1	<p>The habitat within the offset area is considered important for achieving the interim recovery objectives. The interim recovery objectives for coastal areas are:</p> <ul style="list-style-type: none"> • <i>Protect and conserve large, connected areas of koala habitat, particularly large, connected areas that support koalas that are:</i> <ul style="list-style-type: none"> - <i>Of sufficient size to be genetically robust / operate as a viable sub-population OR</i> - <i>free of disease or have a very low incidence of disease OR</i> - <i>breeding.</i> • <i>Maintain corridors and connective habitat that allow movement of koalas between large areas of habitat.</i> <p>It was unforeseen at the time of the baseline assessment that the State legislation and mapping changes would result in the offset area and surrounding landscape to become mapped as a KPA with considerable area of land mapped as KHA. KPAs are large, connected areas that focus habitat protection, habitat restoration and threat mitigation to areas that have the highest likelihood of safeguarding koala populations in SEQ.</p> <p>The offset area, being wholly mapped as State KHA and wholly located within a KPA and connected to a large contiguous patch which is considered to provide the resources for koala to allow for breeding and unimpeded connectivity. The vegetation forms part of a corridor which provides connectivity to conservation areas including Mount Grandchester Conservation Estate to the west and Main Range National Park. Noting the offset area is mostly KPA, the value from a recovery perspective is diminished where compared to an area that is reinstated with habitat.</p>

Attribute	Baseline Score	Year 5 Score	Analysis
<p>It is considered that the offset area, located within a SEQ Regional Corridor and KPA corridor aligns with the interim recovery objectives for koalas within coastal areas, therefore this attribute has been scored a +1 (medium).</p>			
<p>The offset area as of year 5 achieves a milestone score of 9 / 10 which is attributed to the following attribute increases:</p>			
			<ul style="list-style-type: none"> the broad reduction in threats in the form of wild dogs with the implementation of the wild dog control program; and increased connectivity value of the offset area due to the placement of the offset area within the SEQ Regional Corridor and KPA corridor and offset area directly south affording additional protection and focus for koala rehabilitation efforts within the broader locality.
Total	7	9	



3. Conclusion

Saunders Havill Group were engaged by Cherish the Environment Foundation Limited to complete this Year Five Milestone Offset Report on behalf of the approval holder, Stockland Development Pty Ltd. The report specifically addresses Condition 3b of the approval (EPBC ref: 2014/7306), stated below:

b) Milestones

- *By **five years** after the commencement of construction, a gain in Koala habitat quality to nine must be achieved in more than 50% of the offset area through rehabilitation.*

An assessment of the offset area koala habitat quality as of the year five milestone date (8 July 2023) was completed utilising the KHAT which was the method used to determine the offset area koala habitat quality as part of the baseline assessment.

The KHAT assessment indicates that at least 50% of the offset area has shown an increase in score to a 9 / 10 and is therefore **compliant with the year five milestone requirement contained in Condition 3b of the approval**. The intensive weed, pest, and erosion management regimes have reduced key threats to koala and improved flora values site-wide. The positive changes observed in habitat quality across the offset area assessment units including notable reductions in weed coverage and increased native species recruitment is not reflected as a score improvement. This is because the KHAT attribute 'vegetation structure and composition' attribute was maxed out to a score of 2 as part of the baseline survey. However, it does show the improvements in habitat quality that have been achieved as a result of rehabilitation efforts.

Attributes that received a boost in score include 'habitat connectivity' and 'key existing threats.' This is attributed to the following changes:

- the broad reduction in threats in the form of wild dogs with the implementation of the wild dog control program – no evidence of wild dog detected within the offset area; and
- increased connectivity value of the offset area due to the placement of the offset area within the SEQ Regional Corridor and KPA corridor and offset area directly south affording additional protection and focus for koala rehabilitation efforts within the broader locality.

4. Appendices

Appendix A

Site Condition Assessment, Calvert 1 – Vegetation Offset September 2018

Appendix B

Site Condition Assessment, Calvert 1 – Vegetation Offset April 2023

Appendix C

Baseline KHAT (extract from Koala Habitat Offset Report)

Appendix D

Koala Assessment Survey – Calvert 1

Appendix A

Site Condition Assessment, Calvert 1 –
Vegetation Offset September 2018

Site Condition Assessment
Calvert 1 – Vegetated Offset
September 2018

Located on:
40-60 Harrison Rd, Calvert
230 CH311791
795-851 Rosewood-Laidley Rd, Calvert
1 CC2262

Prepared for:
Cherish the Environment Foundation

Private Forestry Service Queensland INC

Australian Forestry Standard (AFS) Certified • Not For Profit



Document control

Version	Date	Written by:	Reviewed by:	Review Date:
1.0	27/08/2018	Kaara Shaw	Gary Clarke	20/09/2018

Executive summary

This report details the method and results of a site condition assessment carried out on the vegetated offset component of lot on plan 230 CH311791 and part of 1 CC2262 (Calvert 1). The site condition assessment is one component of a broader Habitat Quality Assessment, as detailed in the *Guide to determining terrestrial habitat quality Version 1.2 April 2017* (referred to throughout this report as the Guidelines).

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Introduction

The site condition assessment, as detailed in the *Guide to determining terrestrial habitat quality* (April 2017) is a method of assessing general vegetation condition against a set of benchmark vegetation attributes for a given regional ecosystem.

A site condition assessment of Calvert 1 was carried out in July and August of 2018, to benchmark current vegetation condition and thus provide a point of reference for future verification of management intervention.

A follow-up assessment will be carried out in winter 2023.

Method

The site condition assessment was carried out as per the methodology outlined in the *Guide to determining terrestrial habitat quality* (April 2017). There were three main components of the assessment, namely:

1. Stratification of the offset site into Assessment Units (AU), based on Regional Ecosystem (RE) type and Vegetation Management Act 1999 (VMA) status,
2. Surveying AUs to determine condition of vegetation attributes, and
3. Comparing surveyed vegetation attributes with regional ecosystem benchmarks to determine an overall Site Condition Score for each AU.

Stratification

A desktop search was carried out to determine the status of the vegetation under the Queensland Vegetation Management Act (1999), and to identify the regional ecosystems occurring on the property.

An ocular assessment of the offset site was then carried out in July 2018, to ground-truth the desktop information. A forest officer traversed the site, taking waypoints and recording the tree species present at each waypoint. Discrete regional ecosystems were then mapped on-ground using a GPS track log.

The track log and waypoint data was overlaid onto a Regulated Vegetation Map using Arc GIS. The two layers were used to define Assessment Units based on their VMA status, i.e. remnant (Category B), regrowth (Category C) or non-remnant (Category X), and their ground-truthed RE type.

Site condition survey

Potential plots were located randomly within the AUs using Arc GIS.

The site condition surveys were carried out by two assessors in accordance with Section 5 of the *Guide to determining terrestrial habitat quality* (April 2017) available from:

<https://www.ehp.qld.gov.au/assets/documents/pollution/management/offsets/habitat-quality-assessment-guide.pdf>.

Site condition score

Survey data was collated in an excel spreadsheet and scores were allocated to each attribute based on a benchmark comparison as per the Guideline.

A brief analysis of each AU has been carried out, to identify the attributes with the highest potential for improvement.

Results

Stratification

The *Vegetation Management Report, July 2018* (Appendix 1) identified five different regional ecosystems on the property; 12.9-10.19, 12.9-10.2, 12.9-10.3, 12.9-10.5 and 12.9-10.7.

The on-ground survey identified only two distinct regional ecosystems; 12.9-10.2 and 12.9-10.7. The majority of the property is dominated by RE 12.9-10.2 (spotted gum), with two small patches of 12.9-10.7 (narrow-leaved red ironbark).

The Vegetation Management Report identified three categories of vegetation on the property, namely Category B, C and X.

The final stratification of the forest resulted in four Assessment Units (see Table 1, below and Assessment Unit Map in Appendix 2).

Table 1. Assessment Units

Assessment Unit Label	Regional Ecosystem	Vegetation Management Category	Area (ha)
AU1	12.9-10.2	B - Remnant	63.2
AU2	12.9-10.2	C - Regrowth	2.4
AU3	12.9-10.7	B - Remnant	6.0
AU4	12.9-10.7	C - Regrowth	4.7

Survey results

The survey results for each plot are given in Table 2 below. Due to the shape of AU2 and AU3 sub-units (see Appendix 2), we were only able to locate a single plot in each (sub-units were narrower than the plot boundaries). To compensate, we established a photo point, within the relevant sub-units, to verify that they are the same forest type and condition (as described on page 10 of the Guidelines).

Table 2 Site Condition Assessment results per plot

Site condition attributes	AU1-P1	AU1-P2	AU1-P3	AU2	AU3	AU4-P1	AU4-P2
Recruitment of woody perennial species (%)	100%	50%	80%	100%	83%	100%	67%
Trees - species richness	4	4	6	4	6	4	5
Shrubs - species richness	6	6	5	2	3	6	3
Grasses - species richness	9	5	5	6	7	4	6
Forbs - species richness	6	5	7	12	10	2	8
Canopy height (m)	24	24.6	27.2	22.4	23.1	24	18.3
Sub-canopy height (m)	9.2	17	18.2	14.2	14.8	13.6	10.8
Tree canopy cover (%)	76.30%	31.50%	60.30%	6.00%	64.00%	52.50%	37.00%
Sub-canopy cover (%)	21.30%	36.50%	66.00%	3.00%	5.00%	27.90%	83.50%
Shrub canopy cover (%)	21.30%	20.50%	20.50%	5.00%	14.60%	22.70%	5.30%
Native perennial grass cover (%)	11%	1%	10%	49%	46%	11%	6%
Organic litter (%)	73%	95%	46%	23%	37%	79%	65%
Large trees (per ha)	20	18	20	2	22	24	4
Coarse woody debris (total length m)	305	462	337	45	494	225	307
Non-native plant cover (%)	2.40%	0.20%	46.70%	4.00%	8.00%	2.90%	25.60%
Stand Basal Area (not included in site assessment) m ² /ha	17	24	20.5	5	11	13.5	11

Site condition scores

The Assessment Unit site condition scores are given below in Table 3. The site condition score cards, with further detail on benchmarks and individual attribute scores are provided in Appendix 3. Appendix 4 shows the photo points and ground cover sub-plot photos for each AU.

Table 3. Site condition scores

Assessment Unit	RE/VMA Category	Plot No.	Plot scores	Assessment Unit scores
AU1	12.9-10.2 Remnant	1	65	57
		2	51.5	
		3	55	
AU2	12.9-10.2 Regrowth	1	51	51
AU3	12.9-10.7 Remnant	1	65	65
AU4	12.9-10.7 Regrowth	1	66.5	57
		2	47	

Discussion

A basic analysis of attribute scores across the seven plots was carried out to identify the site condition attributes with the largest variance from the benchmarks. In doing so, we are able to make some assumptions about overall vegetation condition and prioritise management intervention accordingly. Table 4 shows the variation of individual attribute scores from the highest possible score per plot and the total variation per attribute. The attributes highlighted in yellow have the highest total variance and are discussed below.

Table 4. Attribute score variation per plot

Site condition attributes	Variation of actual attribute scores from the highest possible score per plot (zero represents a perfect score)							Total variation per attribute
	AU1-P1	AU1-P2	AU1-P3	AU2	AU3	AU4-P1	AU4-P2	
Recruitment of woody perennial species	0	-2	0	0	0	0	-2	-4
Trees - species richness	-2	-2	0	-2	0	0	0	-6
Shrubs - species richness	-2	-2	-2	-2	-2	0	-2	-12
Grasses - species richness	0	-2	-2	-2	-2	-2	-2	-12
Forbs - species richness	-2	-2	-2	0	-2	-2.5	-2	-12.5
Tree canopy height average score	0	0	0	0	0	0	0	0
Canopy cover average score	0	-1.5	-1	-4	0	-1	-1	-8.5
Shrub canopy cover	-2	-2	-2	-2	-2	-2	0	-12
Native perennial grass cover	-2	-5	-4	0	-2	-4	-5	-22
Organic litter	0	0	0	-2	0	-2	-2	-6
Large trees (per ha)	-5	-10	-5	-10	0	0	-10	-40
Coarse woody debris (total length m)	0	0	0	-5	0	0	0	-5
Non-native plant cover	0	0	-7	0	-5	0	-7	-19
Total variation per plot	-15	-28.5	-25	-29	-15	-13.5	-33	
*Basal Area (m ² /ha)	17	24	20.5	5	11	13.5	11	

*Stand Basal area included as a reference for causality in some attributes.

Species richness – forbs, native grasses and shrubs

Species richness of native grasses, forbs and shrubs has scored below the benchmark across the majority of plots. This attribute is heavily influenced by the season during which the survey is undertaken. This survey was carried out in mid-winter when the site was very dry and most of the native grasses and forbs had died back or become dormant. It is expected that this score would have been improved (across most of the plots) if the survey was carried out during summer or autumn. Given that the follow-up survey must be carried out at the same time of year as the original survey, it is expected that the score for these attributes will not improve significantly.

Many species of grasses, forbs and shrubs are dependent on fire for regeneration. A carefully timed and executed fire management regime could also improve the species richness score.

Species richness within plots AU1-P2 and AU1-P3 will also be limited, regardless of season, due to the density of the canopy (see Perennial Native Grass Cover, below).

Shrub canopy cover

In five out of seven plots, the percentage shrub canopy cover is significantly higher than the benchmark. This has resulted in a reduced score for this attribute. The definition of shrub was taken from the benchmark document, as per the guideline instructions. As such, small trees such as *Allocasuarina littoralis*, *Alphitonia excelsa*, various *Acacia* species and *Petalostigma pubescens* are classified as shrubs in the canopy coverage attribute. These species make up a significant portion of the shrub canopy, the sub-canopy and, in some of the regrowth plots, the canopy.

The high frequency of these shrub species can usually be attributed to the lack of fire in a forest management system. Regular fuel reduction burning (at ecologically appropriate intervals) will prevent an over-abundance of certain shrub species (thickening).

The recent success of species such as *Alphitonia excelsa* can also be attributed to the removal of cattle from the system. Cattle feed on shrub species such as *A.excelsa* during times of limited grass availability. Cattle grazing on the property would have suppressed the development of many shrub species over a long period of time. The removal of cattle, combined with an infrequent fire regime, has resulted in a thickened 'shrub' layer throughout the property.

Native perennial grass cover

The 'Native perennial grass cover' attribute is the second lowest scoring attribute in the site condition surveys. Other than AU2 (the regrowth/infill unit), all AUs scored significantly lower than the benchmark value.

There is a direct and proven correlation between stand density and native perennial grass cover in dry sclerophyll and woodland forest types. Figure 1, below shows the inverse relationship between basal area (a measure of stand density) and pasture growth in spotted gum forest near Gayndah in Queensland. As basal area increases (following a thinning operation and in response to recruitment and tree growth), pasture growth decreases. This is attributed to reduced sunlight reaching the forest floor, and increased competition, from trees for water and nutrients.

Whilst the Site Condition Survey does not include a measure of stand density, a simple basal area calculation was carried out at each waypoint (0m and 50m plot points), using a Basal Area dendrometer, and then averaged for each plot. The results are given in Table 2 and again in Table 4. Plots 1-3, within AU1 had the highest basal areas with 17 m², 24 m² and 20.5 m² respectively.

Without a reduction in stand density, the 'native perennial grass cover' score for these plots will not improve significantly.

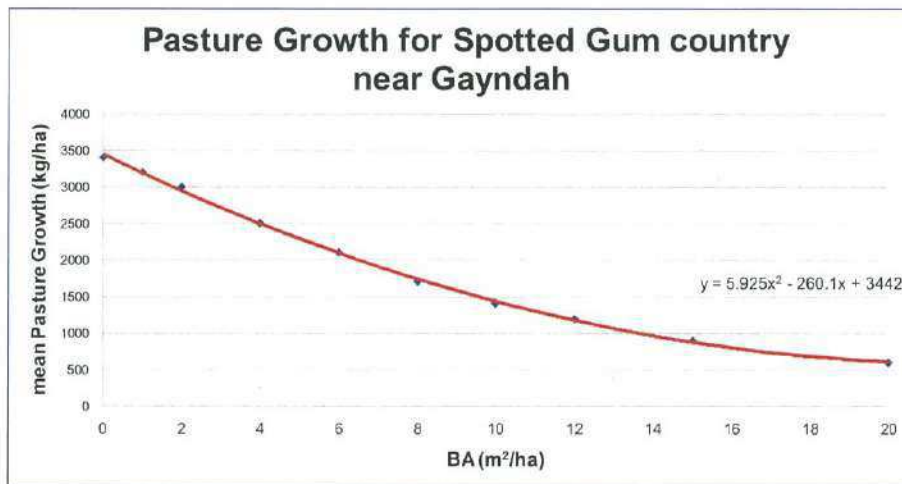


Figure 1. Impact of basal area on mean annual pasture growth. Source: Schulke 2017, *Grazing and timber production, Australian Government Caring for Our Country*.

Large trees

The 'large trees' attribute has the highest possible score (15 points) of all the site condition attributes. To score 15 points for 'large trees' you have to exceed the number of large trees in the Biocondition benchmark. For example, regional ecosystem 12.9-10.2 (AU1 and AU2) requires greater than 38 trees per hectare that are above 38 cm diameter at breast height (DBH). For 12.9-10.7 (AU3 and AU4) the threshold is 18 trees per hectare that are greater than 39 cm DBH. Plots 1 and 3 in AU1, will need another 19 trees per hectare to grow over the 38 cm DBH threshold within 5 years time, in order to optimise the 'large tree' score at the next survey.

As trees get larger, more space is required for them to maintain health and vigour. Unless the number of trees in a given area is reduced, then the increased competition between trees for moisture, nutrients and sunlight will eventually reduce growth rates and, in some cases will result in die-back. The threshold, at which trees start to die is dependent on species type, rainfall and soil quality. This threshold can be quantified using a Stand Basal Area measurement; the sum of the area of a cross section of all trees per hectare, measured at 1.3 m from the ground. In a dry sclerophyll forest in SEQ on moderately fertile soils, the average basal area threshold is in the vicinity of 25 m²/ha. The threshold for wet sclerophyll forest is approximately 50 m²/ha.

Published growth data for spotted gum and ironbark forests in South East Queensland, show an average mean annual diameter increment (MADI) of 0.25 cm/yr where the Stand Basal Area is 10.1 m²/ha, and 0.56 cm/yr following treatment (tree injection thinning) of the forests down to an average of 7.7 m²/ha (Grimes and Pegg 1979). AU1-P2 recorded a Stand Basal Area of 24 m²/ha. Thus it is reasonable to assume that trees in this plot will be growing at less than 0.25 cm per year. At such a low growth rate, it will be difficult to significantly increase the number of large trees in a 5 year period.

The very high density of trees within sections of the forest is due to historical forest harvesting that favoured small diameter logs for mine props. Mine prop production involved the management of

coppice; cutting the main stem and allowing multiple stems to re-grow, that could then be opportunistically cut over time. The southern section of the forest has been subsequently harvested for fencing timber and sawlogs, a practice that has resulted in a lower tree density and, thus better grass cover and groundcover development. The northern sections have been largely left untouched since mine prop harvesting and are very highly stocked, with minimal understorey/groundcover development (see Figures 2-4 below). In these areas, a process of ecological thinning, to reduce stand basal area, would increase diameter growth rates, increase native perennial grass cover and improve the overall structure, resilience and health of the forest.



Figure 3 Spotted gum coppice that has been harvested in the past.



Figure 2. Coppice harvested for mine props.



Figure 4. Northern Calvert 1 where historical mine prop harvesting, with no follow-up management has resulted in an over-stocked forest with little to no groundcovers.

Non-native plant cover

The 'non-native plant' cover attribute will be the easiest attribute to improve over the 5-year period due to the intensive weed management regime to be carried out. The removal of all non-native species will increase the site condition scores of three plots.

Conclusions

The worst performing attributes across most plots are native perennial grass cover, large trees and non-native plant cover. The first two attributes are unlikely to improve significantly in Assessment Unit 1 over a 5-year period due to (a) the season during which the survey has been carried out and (b) the high density of canopy trees (high stand basal area). A strategic reduction in stand basal area would improve growth rates of the retained trees and increase the coverage of native perennial grasses.

Further, a fire management regime would help improve the results of the remaining low-scoring attributes, including shrub canopy cover and shrub, grass and forb species richness.

References

Grimes, R.F. and Pegg, R.E. 1979, Technical Paper No.17: *Growth data for a spotted gum – ironbark forest in south-east Queensland*, Department of Forestry, Brisbane, Queensland.

Schulke, W. 2017, *Native Forest Management Guide: Grazing and Forestry*, Private Forestry Service Queensland, Gympie, Queensland.

Appendix

Appendix 1 – Vegetation Management Property Report

Appendix 2 – Site Condition Assessment Unit Map

Appendix 3 – Site Condition Score Cards

Appendix 4 – Plot photo points



Vegetation management report

For Lot: 230 Plan: CH311791

Current as at 09/07/2018

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Recent changes

New vegetation clearing laws

New vegetation management laws were passed by the Queensland Parliament on 3 May 2018 and may affect the clearing you can undertake on your property.

For more information, read about the new vegetation management laws

(<https://www.dnrme.qld.gov.au/land-water/initiatives/vegetation-management-laws/>) or call 135VEG (13 58 34) between 8.30am and 4.30pm Monday to Friday.

Updated mapping

The Regulated Vegetation Management Map and Supporting Map was updated in March 2018 to reflect the most up to date information available in relation to regional ecosystems, essential habitat and wetland mapping (Version 10).

Overview

Based on the lot on plan details you have supplied, this report provides the following detailed information:

- *Vegetation management framework* - an explanation of the application of the framework.
- *Property details* - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s), catchment(s), coastal or non coastal status, and any applicable area management plans associated with your property.
- *Vegetation management details for the specified Lot on Plan* - specific information about your property including vegetation categories, regional ecosystems, watercourses, wetlands, essential habitat, and protected plants.
- *Contact information.*
- *Maps* - a series of colour maps to assist in identifying regulated vegetation on your property.
- *Other legislation contact information.*

This information will assist you to determine your options for managing vegetation, which may include:

- exempt clearing work
- accepted development vegetation clearing code
- an area management plan
- a development approval.

Other laws

The clearing of native vegetation is regulated by both Queensland and Australian legislation, and some local governments also regulate native vegetation clearing. You may need to obtain an approval or permit under another Act, such as Queensland's Protected Plants framework or the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Section 6 of this guide provides contact details of other agencies you should confirm requirements with, before commencing vegetation clearing.

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1. Vegetation management framework

The *Vegetation Management Act 1999* (VMA), the *Vegetation Management Regulation 2012*, the *Planning Act 2016* and the *Planning Regulation 2017*, in conjunction with associated policies and codes, form the Vegetation Management Framework.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenures under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing or clearing vegetation on these tenures may require approvals under these laws.

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem prescribed under Schedule 5 of the *Vegetation Management Regulation 2012*; and
- a mangrove.

1.1 Exempt clearing work

Exempt clearing work is an activity for which you do not need to notify DNRME or obtain an approval. Exempt clearing work was previously known as exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 5.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work and does not require notification or development approval. For all other land tenures, contact DNRME before commencing clearing to ensure that the proposed activity is exempt clearing work.

A range of routine property management activities are considered exempt clearing work. A list of exempt clearing work is available at

<https://www.qld.gov.au/environment/land/vegetation/exemptions/>.

Exempt clearing work may be affected if the proposed clearing area is subject to development approval conditions, a covenant, an environmental offset, an exchange area, a restoration notice, or an area mapped as Category A. Contact DNRME prior to clearing in any of these areas.

1.2 Accepted development vegetation clearing codes

Some clearing activities can be undertaken under an accepted development vegetation clearing code. The codes can be downloaded at

<https://www.qld.gov.au/environment/land/vegetation/codes/>

If you intend to clear vegetation under an accepted development vegetation clearing code, you must notify DNRME before commencing. The information in this report will assist you to complete the online notification form.

You can complete the online form at

<https://apps.dnrm.qld.gov.au/vegetation/>

1.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

As a result of the new laws, AMPs for fodder harvesting, managing thickened vegetation and managing encroachment will continue for 2 years. New notifications cannot be made for these AMPs.

New notifications can be made for all other AMPs. These will continue to apply until their nominated end date.

If an area management plan applies to your property for which you can make a new notification, it will be listed in Section 2.2 of this report. Before clearing under one of these AMPs, you must first notify the DNRME and then follow the conditions and requirements listed in the AMP.

<https://www.qld.gov.au/environment/land/vegetation/area-plans/>

1.4 Development approvals

If your proposed clearing is not exempt clearing work, or is not permitted under an accepted development vegetation clearing code, or an AMP, you may be able to apply for a development approval. Information on how to apply for a development approval is available at

<https://www.qld.gov.au/environment/land/vegetation/applying/>

2. Property details

2.1 Tenure

All of the lot, plan and tenure information associated with property Lot: 230 Plan: CH311791, including links to relevant Smart Maps, are listed in Table 1. The tenure of the property (whether it is freehold, leasehold, or other) may be viewed by clicking on the Smart Map link(s) provided.

Table 1: Lot, plan and tenure information for the property

Lot	Plan	Tenure	Link to property on SmartMap
230	CH311791	Freehold	http://globe.information.qld.gov.au/cgi-bin/SmartMapgen.py?q=230\CH311791

The tenure of the land may affect whether clearing is considered exempt clearing work or may be carried out under an accepted development vegetation clearing code.

2.2 Property location

Table 2 provides a summary of the locations for property Lot: 230 Plan: CH311791, in relation to natural and administrative boundaries.

Table 2: Property location details

Local Government(s)
Ipswich City

Bioregion(s)	Subregion(s)
Southeast Queensland	Moreton Basin

Catchment(s)
Brisbane

For the purposes of the accepted development vegetation clearing codes and the State Development Assessment Provisions (SDAP), this property is regarded as*
Coastal

*See also Map 5.4

Area Management Plan(s): Nil

3. Vegetation management details for Lot: 230 Plan: CH311791

3.1 Vegetation categories

Vegetation categories are shown on the regulated vegetation management map in section 5.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property. Total area: 64.75ha

Vegetation category	Area (ha)
Category B	57.77
Category C	6.6
Category X	0.38

Table 4

Category	Colour on Map	Description	Requirements / options
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Special conditions apply to Category A areas. Before clearing, contact DNRME to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Exempt clearing work, or notification and compliance with accepted development vegetation clearing codes, area management plans or development approval.
C	light blue	High-value regrowth areas	Exempt clearing work, or notification and compliance with managing Category C regrowth vegetation accepted development vegetation clearing code.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the Great Barrier Reef catchment areas	Exempt clearing work, or notification and compliance with managing Category R regrowth accepted development vegetation clearing code or area management plans.
X	white	Clearing is considered accepted development on freehold land, indigenous land and leasehold land for agriculture and grazing purposes. Contact DNRME to clarify whether a development approval is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A development approval may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

This report does not confirm if a Property Map of Assessable Vegetation (PMAV) exists on a lot. To confirm whether or not a PMAV exists on a lot, please check the PMAV layer on the Queensland Globe², or contact DNRME on 135VEG (135 834).

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 5.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at <https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/>

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
12.9-10.19	Least concern	B	0.24	Eucalyptus fibrosa subsp. fibrosa woodland on sedimentary rocks	Sparse
12.9-10.19	Least concern	C	0.66	Eucalyptus fibrosa subsp. fibrosa woodland on sedimentary rocks	Sparse
12.9-10.2	Least concern	B	34.42	Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks	Mid-dense
12.9-10.2	Least concern	C	3.30	Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks	Mid-dense
12.9-10.3	Of concern	B	22.38	Eucalyptus moluccana open forest on sedimentary rocks	Mid-dense
12.9-10.3	Of concern	C	0.66	Eucalyptus moluccana open forest on sedimentary rocks	Mid-dense
12.9-10.5	Least concern	B	0.24	Woodland complex often with Corymbia trachyphloia subsp. trachyphloia, C. citriodora subsp. variegata, Eucalyptus crebra, E. fibrosa subsp. fibrosa on quartzose sandstone	Sparse
12.9-10.5	Least concern	C	0.66	Woodland complex often with Corymbia trachyphloia subsp. trachyphloia, C. citriodora subsp. variegata, Eucalyptus crebra, E. fibrosa subsp. fibrosa on quartzose sandstone	Sparse
12.9-10.7	Of concern	B	0.49	Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora spp., E. melanophloia woodland on sedimentary rocks	Sparse
12.9-10.7	Of concern	C	1.32	Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora spp., E. melanophloia woodland on sedimentary rocks	Sparse
non-rem	None	X	0.38	None	None

Please note:

1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.
2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work
- accepted development vegetation clearing codes
- performance outcomes in State Development Assessment Provisions (SDAP).

3.3 Watercourses

Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 5.2.

3.4 Wetlands

There are no vegetation management wetlands present on this property.

3.5 Essential habitat

Protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA), and includes endangered, vulnerable or near-threatened wildlife.

Essential habitat for protected wildlife includes suitable habitat on the lot, or where a species has been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 5.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map as assessable vegetation -

- 1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or
- 2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

Category A and/or Category B and/or Category C

Table 6: Essential habitat in Category A and/or Category B and/or Category C

No records

3.6 Protected plants (administered by the Department of Environment and Science (DES))

In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992* (NCA), with clearing of protected plants in the wild regulated by the [Nature Conservation \(Wildlife Management\) Regulation 2006](#). These requirements apply irrespective of the classification of the vegetation under the *Vegetation Management Act 1999*.

Prior to clearing, if the plants proposed to be cleared are in the wild (see [Operational policy: When a protected plant in Queensland is considered to be 'in the wild'](#)) and the exemptions under the [Nature Conservation \(Wildlife Management\) Regulation 2006](#) are not applicable to the proposed clearing, you must check the flora survey trigger map to determine if any part of the area to be cleared is within a high risk area. The trigger map for this property is provided in section 5.5. The exemptions relate to:

- imminent risk of death or serious injury (refer s261A)
- imminent risk of serious damage to a building or other structure on land, or to personal property (refer s261B)
- *Fire and Emergency Service Act 1990* (refer 261C)
- previously cleared areas (refer s261ZB)
- maintenance activities (refer s261ZC)
- firebreak or fire management line (refer s261ZD)
- accepted development vegetation clearing code (refer s261ZE)
- conservation purposes (refer s261ZG)
- authorised in particular circumstances (refer s385).

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) from the *Vegetation Management Act 1999* (i.e. listed in the Planning Regulations 2017) while some are different.

If the proposed area to be cleared is shown as blue (i.e. high risk) on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken in accordance with the flora survey guidelines. The main objective of a flora survey is to locate any endangered, vulnerable or near threatened plants (EVNT plants) that may be present in the clearing impact area.

If a flora survey identifies that EVNT plants are not present within the clearing impact area or clearing within 100m of EVNT plants can be avoided, the clearing activity is exempt from a permit. An [exempt clearing notification form](#) must be submitted to the Department of Environment and Science, with a copy of the flora survey report, at least one week prior to clearing. The clearing must be conducted within two years after the flora survey report was submitted.

If a flora survey identifies that EVNT plants are present in, or within 100m of, the area to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the [application form clearing permit](#).

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that EVNT plants are present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

Further information on protected plants is available at <http://www.ehp.qld.gov.au/licences-permits/plants-animals/protected-plants/>

For assistance on the protected plants flora survey trigger map for this property, please contact the Department of Environment and Science at palm@des.qld.gov.au.

3.7 Emissions Reduction Fund (ERF)

The ERF is an Australian Government scheme which offers incentives for businesses and communities across the economy to reduce emissions.

Under the ERF, landholders can earn money from activities such as planting (and keeping) trees, managing regrowth vegetation and adopting more sustainable agricultural practices.

The purpose of a project is to remove greenhouse gases from the atmosphere. Each project will provide new economic opportunities for farmers, forest growers and land managers.

Further information on ERF is available at <https://www.qld.gov.au/environment/land/state/use/carbon-rights/>.

4. Contact information for DNRME

For further information on vegetation management:

Phone 135VEG (135 834)

Email vegetation@dnrme.qld.gov.au

Visit www.dnrme.qld.gov.au/our-department/contact-us/vegetation-contacts to submit an online enquiry.

For contact details for other State and Commonwealth agencies, please see Section 6.

5. Maps

The maps included in this report may also be requested individually at:

<https://www.dnrme.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form>

and

<http://www.ehp.qld.gov.au/licences-permits/plants-animals/protected-plants/map-request.php>

Regulated vegetation management map

The regulated vegetation management map shows vegetation categories needed to determine clearing requirements. These maps are updated monthly to show new [property maps of assessable vegetation \(PMAV\)](#).

Vegetation management supporting map

The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

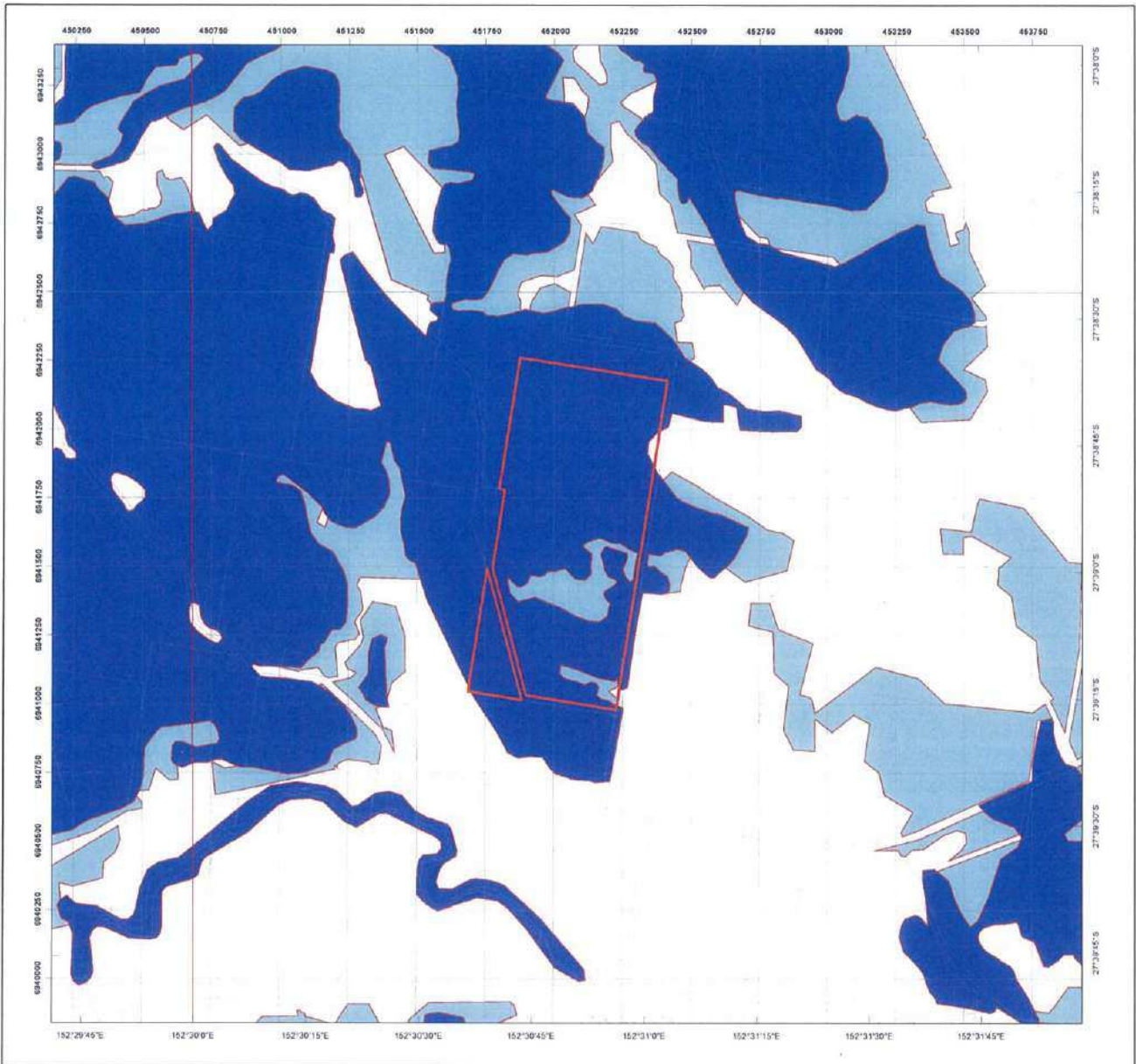
Coastal/non coastal map

The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the accepted development vegetation clearing codes and the State Development Assessment Provisions (SDAP).

Protected plants map



The protected plants map shows areas where particular provisions of the *Nature Conservation Act 1992* apply to the clearing of protected plants.

5.1 Regulated vegetation management map



Regulated Vegetation Management Map

Legend

-  Lot and Plan
-  Category A area (Vegetation offsets/compliance notices/VDccs)
-  Category B area (Remnant vegetation)
-  Category C area (High-value regrowth vegetation)
-  Category R area (Reef regrowth watercourse vegetation)
-  Category X area (Exempt clearing work on Freehold, Indigenous and Leasehold land)
-  Water
-  Area not categorised
-  Cadastral line
-  Property boundaries shown are provided as a locational aid only



This product is projected into:
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Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.dnrme.qld.gov.au or contact the Department of Natural Resources, Mines and Energy.

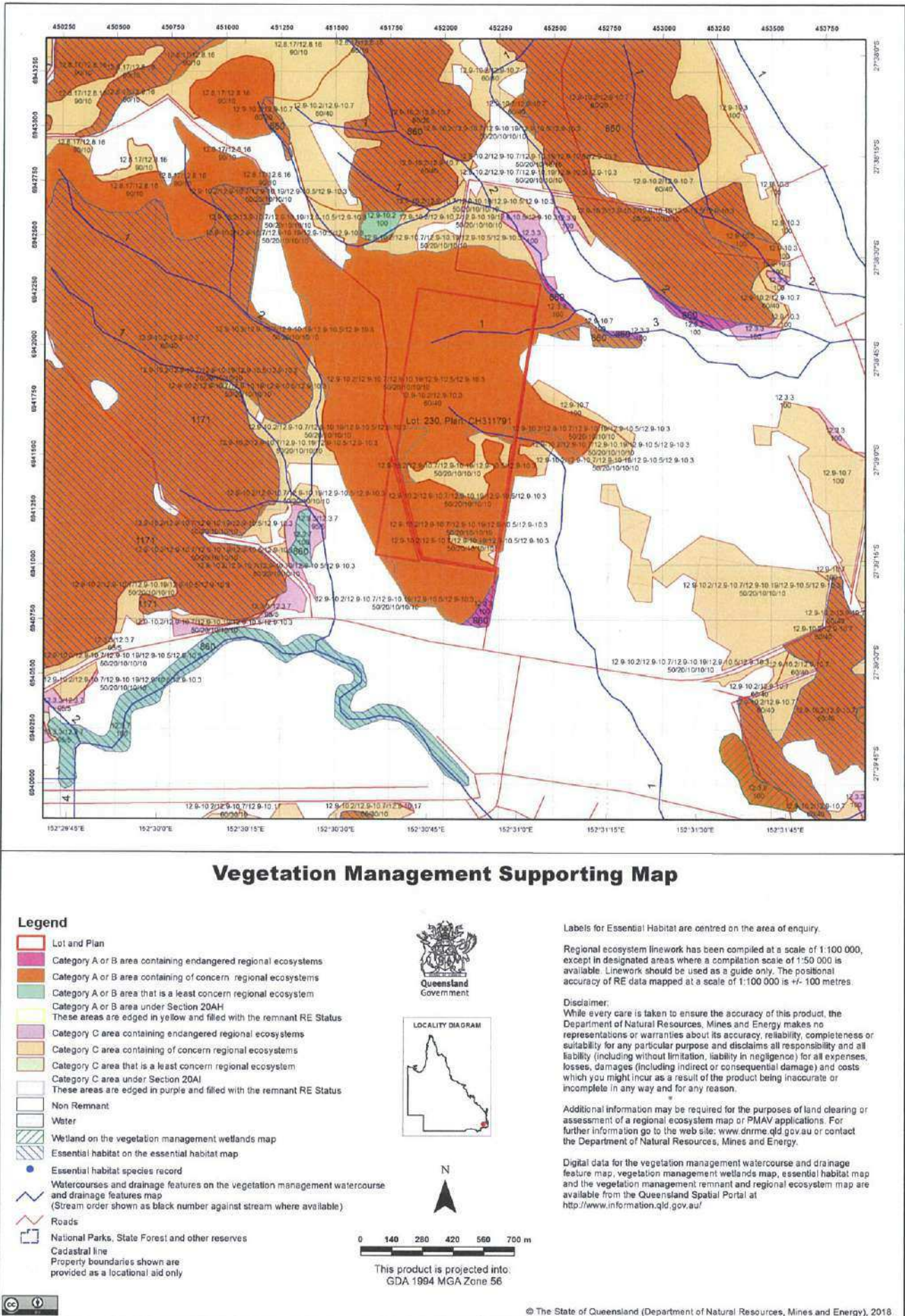
Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at <http://www.information.qld.gov.au/>

This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.

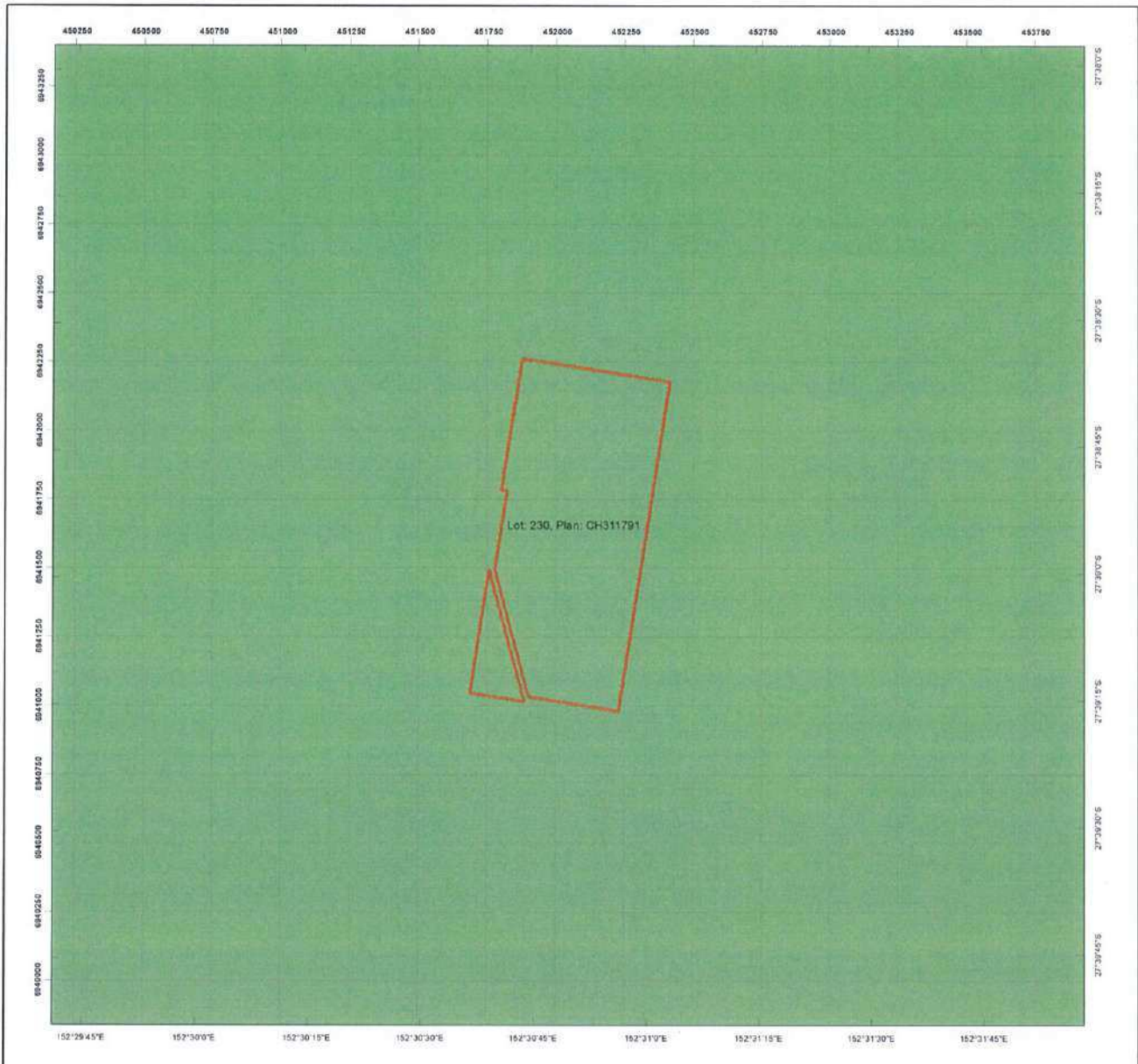


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5.2 Vegetation management supporting map







5.3 Coastal/non coastal map



Coastal/Non Coastal Map

Legend

-  Lot and Plan
 -  Coastal
 -  Non Coastal
 -  Cadastral line
- Property boundaries shown are provided as a locational aid only



This product is projected into:
GDA 1994 MGA Zone 56

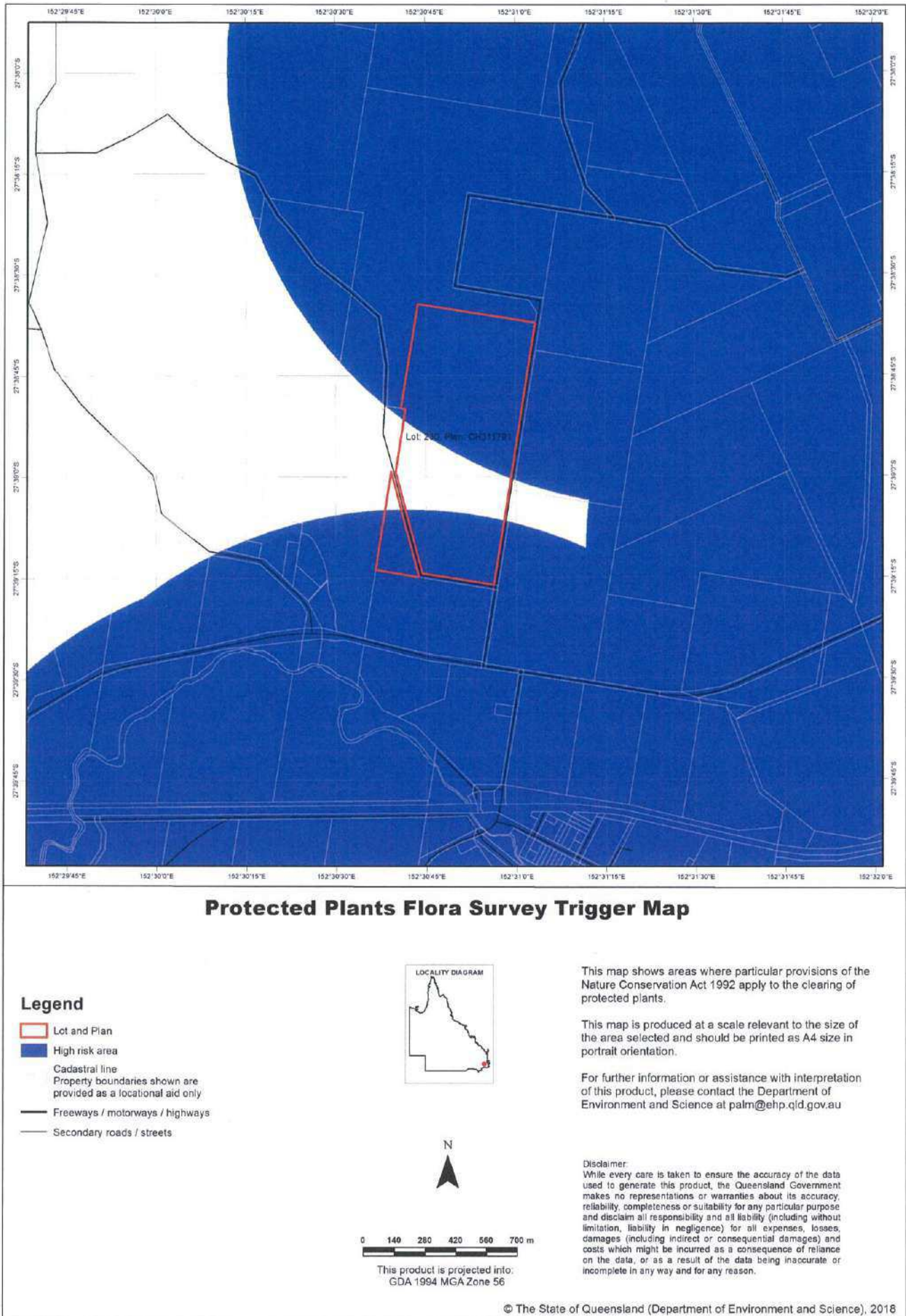
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5.4 Protected plants map administered by DES



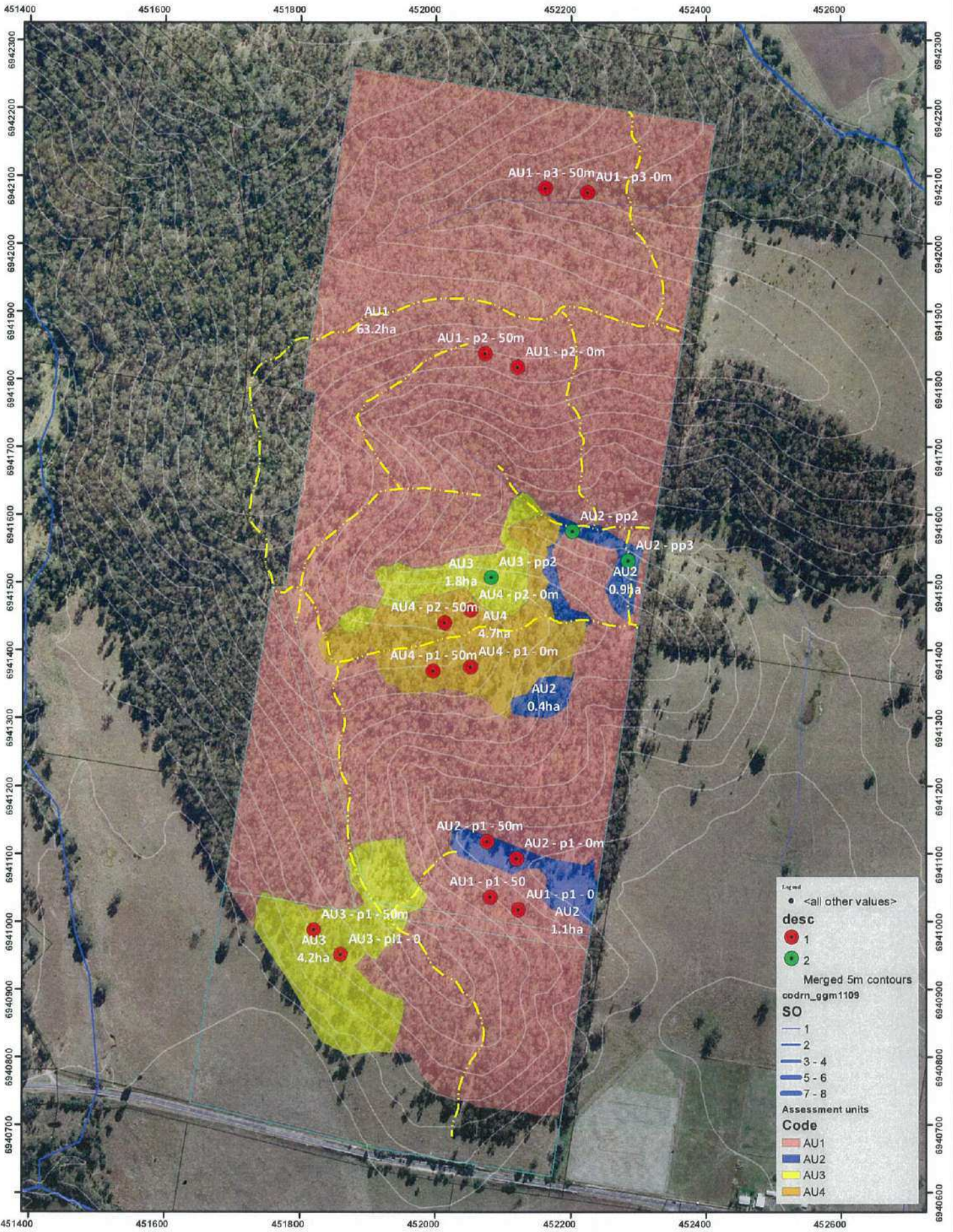
6. Other relevant legislation contacts list

Activity	Legislation	Agency	Contact details
Interference with overland flow Earthworks, significant disturbance	<i>Water Act 2000</i> <i>Soil Conservation Act 1986</i>	Department of Natural Resources, Mines and Energy (Queensland Government)	Ph: 13 QGOV (13 74 68) www.dnrme.qld.gov.au
Indigenous Cultural Heritage	<i>Aboriginal Cultural Heritage Act 2003</i> <i>Torres Strait Islander Cultural Heritage Act 2003</i>	Department of Aboriginal and Torres Strait Islander Partnerships (Queensland Government)	Ph: 13 QGOV (13 74 68) www.datsip.qld.gov.au
Mining and environmentally relevant activities Infrastructure development (coastal) Heritage issues Protected plants and protected areas ¹	<i>Environmental Protection Act 1994</i> <i>Coastal Protection and Management Act 1995</i> <i>Queensland Heritage Act 1992</i> <i>Nature Conservation Act 1992</i>	Department of Environment and Science (Queensland Government)	Ph: 13 QGOV (13 74 68) www.des.qld.gov.au
Interference with fish passage in a watercourse, mangroves Forestry activities ²	<i>Fisheries Act 1994</i> <i>Forestry Act 1959</i>	Department of Agriculture and Fisheries (Queensland Government)	Ph: 13 QGOV (13 74 68) www.daf.qld.gov.au
Matters of National Environmental Significance including listed threatened species and ecological communities	<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Department of the Environment (Australian Government)	Ph: 1800 803 772 www.environment.gov.au
Development and planning processes	<i>Planning Act 2016</i> <i>State Development and Public Works Organisation Act 1971</i>	Department of State Development, Manufacturing, Infrastructure and Planning (Queensland Government)	Ph: 13 QGOV (13 74 68) www.dsdmip.qld.gov.au
Local government requirements	<i>Local Government Act 2009</i>	Department of Local Government, Racing and Multicultural Affairs (Queensland Government)	Ph: 13 QGOV (13 74 68) Your relevant local government office

1. In Queensland, all plants that are native to Australia are protected plants under the [Nature Conservation Act 1992](#), which endeavours to ensure that protected plants (whether whole plants or protected plants parts) are not illegally removed from the wild, or illegally traded. Prior to clearing, you should check the flora survey trigger map to determine if the clearing is within a high-risk area by visiting www.des.qld.gov.au. For further information or assistance on the protected plants flora survey trigger map for your property, please contact the Department of Environment and Science on 13QGOV (13 74 68) or email palm@des.qld.gov.au.

2. Contact the Department of Agriculture and Fisheries before clearing:

- Any sandalwood on state-owned land (including leasehold land)
- On freehold land in a 'forest consent area'
- More than five hectares on state-owned land (including leasehold land) containing commercial timber species listed in parts 2 or 3 of Schedule 6 of the Vegetation Management Regulation 2012 and located within any of the following local government management areas-Banana, Bundaberg Regional, Fraser Coast Regional, Gladstone Regional, Isaac Regional, North Burnett Regional, Somerset Regional, South Burnett Regional, Southern Downs Regional, Tablelands Regional, Toowoomba Regional, Western Downs Regional.



Legend

- <all other values>
- desc
 - 1 (Red dot)
 - 2 (Green dot)
- Merged 5m contours
- codrn_ggm1109
- SO
 - 1 (Thin blue line)
 - 2 (Medium blue line)
 - 3-4 (Thick blue line)
 - 5-6 (Dark blue line)
 - 7-8 (Darkest blue line)
- Assessment units
- Code
 - AU1 (Red)
 - AU2 (Blue)
 - AU3 (Yellow)
 - AU4 (Orange)

Site Condition Assessment

Map Information: Date: 30/08/2018
 Horizontal Datum: GDA1994
 Projection: Universal Transverse Mercator - Zone 56



Prepared by PFSQ
 Environment
 25/08/2018
 10/20/2018
 10/20/2018
 10/20/2018

Plot score sheet

Assessment Unit AU1
 Plot number AU1 - 01
 Plot location (0 m) Latitude 27°39'14.8"S
 Plot location (0 m) Longitude 152°30'52.5"E
 Regional Ecosystem 12.9-10.2
 Vegetation Management Act Status Remnant
 Survey date 10/08/2018
 Transect bearing 290°

Canopy species Corymbia citriodora subsp. variegata
 Eucalyptus tessellaris
 E. crebra
 E. melenaphloia

Site condition attributes	Survey results	Benchmark	Percentage of benchmark	Sub-scores	Attribute scores	Highest possible score	Variation	
Recruitment of woody perennial species	100%	100%	100%		5	5	0	
Trees - species richness	4	6	67%		3	5	-2	
Shrubs - species richness	6	7	86%		3	5	-2	
Grasses - species richness	9	7	129%		5	5	0	
Forbs - species richness	6	13	46%		3	5	-2	
Canopy height (m)	24	21	114%	5				
Sub-canopy height (m)	9.2	12	77%	5				
Tree canopy height average score					5	5	0	
Tree canopy cover	76.30%	64%	119%	5				
Sub-canopy cover	21.30%	20%	107%	5				
Canopy cover average score					5	5	0	
Shrub canopy cover	21.30%	6%	355%		3	5	-2	
Native perennial grass cover	11%	21%	52%		3	5	-2	
Organic litter	73%	48%	152%		5	5	0	
Large trees (per ha)	20	38	53%		10	15	-5	
Coarse woody debris (total length m)	305	506	60%		5	5	0	
Non-native plant cover	2.40%	0%	2%		10	10	0	
					Total site condition score	65	80	-15

Plot score sheet

Assessment Unit AU1
 Plot number AU1 - 02
 Plot location (0m) latitude 27°38'48.8"S
 Plot location (0m) longitude 152°30'52.6"E
 Regional Ecosystem 12.9-10.2
 Vegetation Management Act Status Remnant
 Survey date 2/08/2018
 Transect bearing 277°

Canopy species Corymbia citriodora subsp. variegata
 Angophera leiocarpa
 E. crebra
 Corymbia intermedia

Site condition attributes	Survey results	Benchmark	Percentage of benchmark	Sub-scores	Attribute scores	Highest possible score	Variation	
Recruitment of woody perennial species	50%	100%	50%		3	5	-2	
Trees - species richness	4	6	67%		3	5	-2	
Shrubs - species richness	6	7	86%		3	5	-2	
Grasses - species richness	5	7	71%		3	5	-2	
Forbs - species richness	5	13	38%		3	5	-2	
Canopy height (m)	24.6	21	117%	5				
Sub-canopy height (m)	17	12	142%	5				
Tree canopy height average score					5	5	0	
Tree canopy cover	31.50%	64%	49%	2				
Sub-canopy cover	36.50%	20%	183%	5				
Canopy cover average score					3.5	5	-1.5	
Shrub canopy cover	20.50%	6%	342%		3	5	-2	
Native perennial grass cover	1%	21%	3%		0	5	-5	
Organic litter	95%	48%	198%		5	5	0	
Large trees	18	38	47%		5	15	-10	
Coarse woody debris (total length m)	462	506	91%		5	5	0	
Non-native plant cover	0.20%	0%	0%		10	10	0	
					Total site condition score	51.5	80	-28.5

Plot score sheet

Assessment Unit AU1
 Plot number AU1 - 03
 Plot location (0m) latitude 27°38'40.5"S
 Plot location (0m) longitude 152°30'56.4"E
 Regional Ecosystem 12.9-10.2
 Vegetation Management Act Status Remnant
 Survey date 10/08/2018
 Transect bearing 272°

Canopy species
Corymbia citriodora subsp. *variegata*
Angophera leiocarpa
Lophostemon suaveolens
C. intermedia
Eucalyptus tereticornis
E.crebra

Site condition attributes	Survey results	Benchmark	Percentage of benchmark	Sub-scores	Attribute scores	Highest possible score	Variation
Recruitment of woody perennial species	80%	100%	80%		5	5	0
Trees - species richness	6	6	100%		5	5	0
Shrubs - species richness	5	7	71%		3	5	-2
Grasses - species richness	5	7	71%		3	5	-2
Forbs - species richness	7	13	54%		3	5	-2
Canopy height (m)	27.2	21	130%	5			
Sub-canopy height (m)	18.2	12	152%	5			
Tree canopy height average score					5	5	0
Tree canopy cover	60.30%	64%	94%	5			
Sub-canopy cover	66.00%	20%	330%	3			
Canopy cover average score					4	5	-1
Shrub canopy cover	20.50%	6%	342%		3	5	-2
Native perennial grass cover	10%	21%	45%		1	5	-4
Organic litter	46%	48%	96%		5	5	0
Large trees	20	38	53%		10	15	-5
Coarse woody debris (total length m)	337	506	67%		5	5	0
Non-native plant cover	46.70%	0%	47%		3	10	-7
			Total site condition score		55	80	-25

Plot score sheet

Assessment Unit AU2
 Plot number AU2 - 01
 Plot location (0 m) longitude 27°39'14.8"S
 Plot location (0 m) latitude 152°30'52.5"E
 Regional Ecosystem 12.9-10.2
 Vegetation Management Act Status Regrowth
 Survey date 1/08/2018
 Transect bearing 282°

Canopy species *Corymbia citriodora* subsp. *variegata*
Eucalyptus tessellaris
E. crebra
Lophostemon suaveolens

Site condition attributes	Survey results	Benchmark	Percentage of benchmark	Sub-scores	Attribute scores	Highest possible score	Variation
Recruitment of woody perennial species	100%	100%	100%		5	5	0
Trees - species richness	4	6	67%		3	5	-2
Shrubs - species richness	2	7	29%		3	5	-2
Grasses - species richness	6	7	86%		3	5	-2
Forbs - species richness	12	13	92%		5	5	0
Canopy height (m)	22.4	21	107%	5			
Sub-canopy height (m)	14.2	12	118%	5			
Tree canopy height average score					5	5	0
Tree canopy cover	6.00%	64%	9%	0			
Sub-canopy cover	3.00%	20%	15%	2			
Canopy cover average score					1	5	-4
Shrub canopy cover	5.00%	6%	83%		3	5	-2
Native perennial grass cover	49%	21%	233%		5	5	0
Organic litter	23%	48%	48%		3	5	-2
Large trees (per ha)	2	38	5%		5	15	-10
Coarse woody debris (total length m)	45	506	9%		0	5	-5
Non-native plant cover	4.00%	0%	4%		10	10	0
					51	80	-29

Plot score sheet

Assessment Unit AU3
 Plot number AU3 - 01
 Plot location (0 m) latitude 27°39'17.0"S
 Plot location (0 m) longitude 152°30'43.0"E
 Regional Ecosystem 12.9-10.7
 Vegetation Management Act Status Remnant
 Survey date 31/07/2018
 Transect bearing 305°

Canopy Species
Eucalyptus tessellaris
E. crebra
Corymbia intermedia
E.moluccana
E.tereticornis

Site condition attributes	Survey results	Benchmark	Percentage of benchmark	Sub-scores	Attribute scores	Highest possible score	Variation
Recruitment of woody perennial species	83%	100%	83%		5	5	0
Trees - species richness	6	3	200%		5	5	0
Shrubs - species richness	3	5	60%		3	5	-2
Grasses - species richness	7	8	88%		3	5	-2
Forbs - species richness	10	26	38%		3	5	-2
Canopy height (m)	23.1	21	110%	5			
Sub-canopy height (m)	14.8	10	148%	5			
Tree canopy height average score					5	5	0
Tree canopy cover	64.00%	40%	160%	5			
Sub-canopy cover	5.00%	8%	63%	5			
Canopy cover average score					5	5	0
Shrub canopy cover	14.60%	3%	487%		3	5	-2
Native perennial grass cover	46%	61%	75%		3	5	-2
Organic litter	37%	20%	185%		5	5	0
Large trees (per ha)	22	18	122%		15	15	0
Coarse woody debris (total length m)	494	272	182%		5	5	0
Non-native plant cover	8.00%	0%	8%		5	10	-5
			Total site condition score		65	80	-15

Plot score sheet

Assessment Unit AU4
 Plot number AU4 - 01
 Plot location (0m) latitude 27° 39'03.2"S
 Plot location (0m) longitude 152° 30'50.0"E
 Regional Ecosystem 12.9-10.7
 Vegetation Management Act Status Regrowth
 Survey date 1/08/2018
 Transect bearing 253°

Canopy species *Corymbia citriodora subsp. variegata*
Eucalyptus tessellaris
E. crebra
E.tereticornis







Site condition attributes	Survey results	Benchmark	Percentage of benchmark	Sub-scores	Attribute scores	Highest possible score	Variation
Recruitment of woody perennial species	100%	100%	100%		5	5	0
Trees - species richness	4	3	133%		5	5	0
Shrubs - species richness	6	5	120%		5	5	0
Grasses - species richness	4	8	50%		3	5	-2
Forbs - species richness	2	26	8%		2.5	5	-2.5
Canopy height (m)	24	21	114%	5			
Sub-canopy height (m)	13.6	10	136%	5			
Tree canopy height average score					5	5	0
Tree canopy cover	52.50%	40%	131%	5			
Sub-canopy cover	27.90%	8%	349%	3			
Canopy cover average score					4	5	-1
Shrub canopy cover	22.70%	3%	757%		3	5	-2
Native perennial grass cover	11%	61%	18%		1	5	-4
Organic litter	79%	20%	395%		3	5	-2
Large trees (per ha)	24	18	133%		15	15	0
Coarse woody debris (total length m)	225	272	83%		5	5	0
Non-native plant cover	2.90%	0%	3%		10	10	0
					66.5	80	-13.5

Plot score sheet

Assessment Unit AU4
 Plot number AU4 - 02
 Plot location (0m) latitude 27°39'00.5"S
 Plot location (0m) longitude 152°30'50.0"E
 Regional Ecosystem 12.9-10.7
 Vegetation Management Act Status Regrowth
 Survey date 1/08/2018
 Transect bearing 241°

Canopy species
Eucalyptus tessellaris
E. crebra
E. tereticornis
E. melanaphloia
Corymbia citriodora subsp. variegata

Site condition attributes	Survey results	Benchmark	Percentage of benchmark	Sub-scores	Attribute scores	Highest possible score	Variation	
Recruitment of woody perennial species	67%	100%	67%		3	5	-2	
Trees - species richness	5	3	167%		5	5	0	
Shrubs - species richness	3	5	60%		3	5	-2	
Grasses - species richness	6	8	75%		3	5	-2	
Forbs - species richness	8	26	31%		3	5	-2	
Canopy height (m)	18.3	21	87%	5				
Sub-canopy height (m)	10.8	10	108%	5				
Tree canopy height average score					5	5	0	
Tree canopy cover	37.00%	40%	93%	5				
Sub-canopy cover	83.50%	8%	1044%	3				
Canopy cover average score					4	5	-1	
Shrub canopy cover	5.30%	3%	177%		5	5	0	
Native perennial grass cover	6%	61%	10%		0	5	-5	
Organic litter	65%	20%	325%		3	5	-2	
Large trees (per ha)	4	18	22%		5	15	-10	
Coarse woody debris (total length m)	307	272	113%		5	5	0	
Non-native plant cover	25.60%	0%	26%		3	10	-7	
					Total site condition score	47	80	-33

AU1 – Plot 1.	
Plot location (0 m):	27°39'14.8"S, 152°30'52.5"E
Transect Bearing:	290°
Survey date:	31/07/2018
Site condition score:	65/80
50 m photo point:	
	
110°	290°
	
20°	200°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



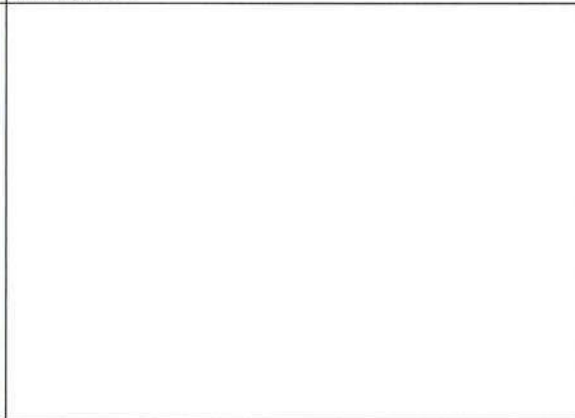
Sub-plot 3







Sub-plot 4



Sub-plot 5



AU1 – Plot 2.	
Plot location (0 m):	27°38'48.8"S, 152°30'52.6"E
Transect Bearing:	277°
Survey date:	02/08/2018
Site condition score:	51.5/80
50 m photo point:	
	
97°	277°
	
07°	187°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



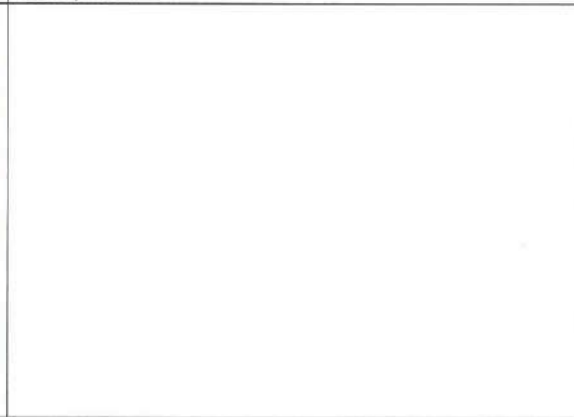
Sub-plot 3









Sub-plot 4



Sub-plot 5



AU1 – Plot 3.	
Plot location (0 m):	27°38'40.5"S, 152°30'56.4"E
Transect Bearing:	272°
Survey date:	10/08/2018
Site condition score:	55/80
50 m photo point:	
	
92°	272°
	
02°	182°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



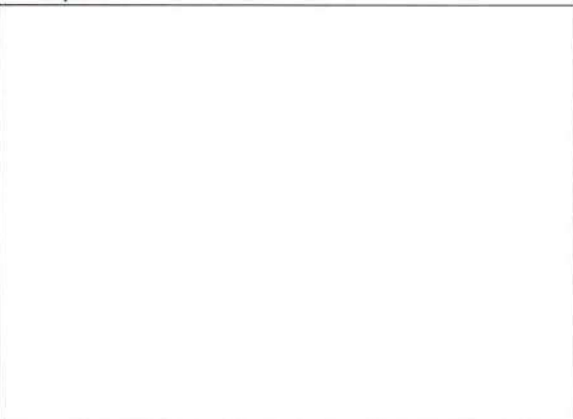
Sub-plot 3






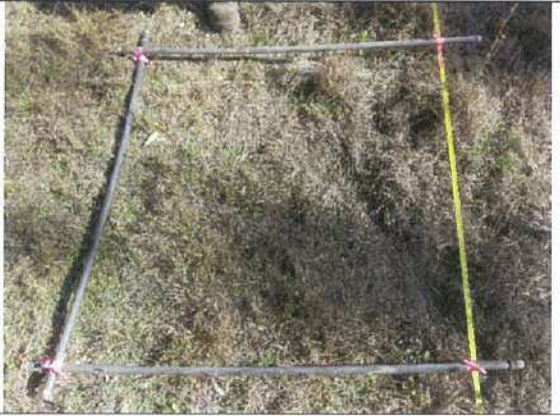


Sub-plot 4



Sub-plot 5



AU2 – Plot 1.	
Plot location (0 m):	27° 39' 14.8" S, 152° 30' 52.5"
Transect Bearing:	282°
Survey date:	01/08/2018
Site condition score:	51/80
50 m photo point:	
	
102°	282°
	
12°	192°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



Sub-plot 3








Sub-plot 4









Sub-plot 5



AU2 – Photo Point 2	
Photo Point location:	27°38'58.1"S, 152°30'58.5"
Date:	08/08/2018
	
360°	180°
	
90°	270°

AU2 – Photo Point 3	
Photo Point location:	27°38'56.7"S, 152°30'55.5"
Date:	08/08/2018
	
360°	180°
	
90°	270°

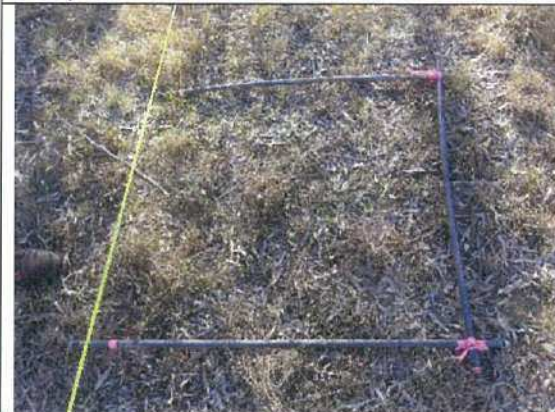
AU3 – Plot 1.	
Plot location (0 m):	27°39'17.0"S, 152°30'43.0"
Transect Bearing:	305°
Survey date:	31/07/2018
Site condition score:	65/80
50 m photo point:	
	
125°	305°
	
25°	215°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



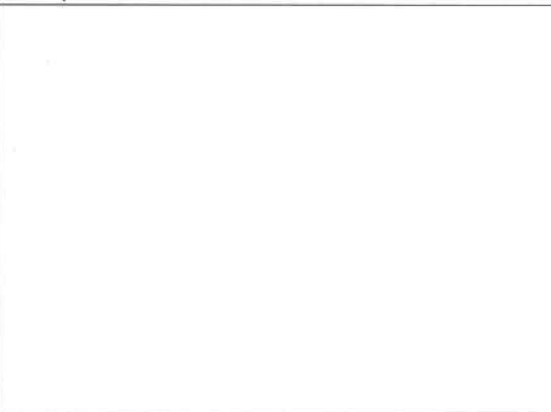
Sub-plot 3







Sub-plot 4



Sub-plot 5



AU3 – Photo Point 2	
RE:	12.9-10.7
Photo Point location:	27°38'58.8"S, 152°30'51.1"
Date:	05/09/2018
	
354°	84°
	
174°	264°

AU4 – Plot 1.	
Plot location (0 m):	27°39'03.2"S, 152°30'50.0"E
Transect Bearing:	253°
Survey date:	01/08/2018
Site condition score:	66.5/80
50 m photo point:	
	
173°	253°
	
343°	163°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



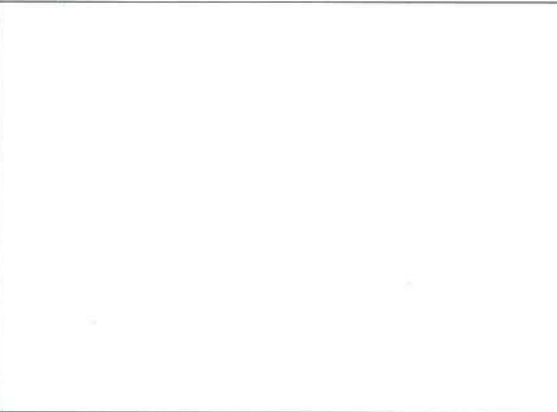
Sub-plot 3









Sub-plot 4



Sub-plot 5



AU4 – Plot 2.	
Plot location (0 m):	27°39'00.5"S, 152°30'50.0"E
Transect Bearing:	241°
Survey date:	01/08/2018 and 02/08/2018
Site condition score:	47/80
50 m photo point:	
	
72°	241°
	
331°	151°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



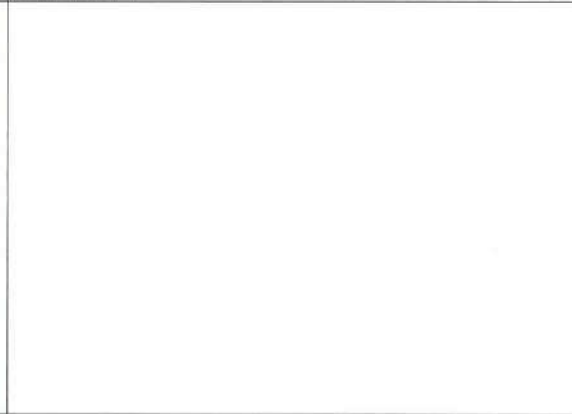
Sub-plot 3



Sub-plot 4



Sub-plot 5



Appendix B

Site Condition Assessment, Calvert 1 –
Vegetation Offset April 2023

Document type:

Site Condition Assessment

Project name:

Calvert 1 – Vegetated Offset

Date:

April 2023

Client:

Cherish the Environment Foundation

**Forest Land
Management** Pty Ltd

contactus@forestlandmanagement.com.au www.forestlandmanagement.com.au

672 Beenham Valley Road, Beenaam Valley, QLD 4570

Gary Clarke: 0447 063 676 Kaara Shaw: 0447 059 265

Document control

Version	Date	Written by:	Reviewed by:	Review Date:
1.0	26/04/2023	Kaara Shaw	Gary Clarke	28/04/2023

Property location:

40-60 Harrison Rd, Calvert

230 CH311791

795-851 Rosewood-Laidley Rd, Calvert

1 CC2262

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Executive summary

This report details the methods and results of a Site Condition Assessment carried out on the vegetated offset component of lot 230 on plan CH311791 and part of lot 1 on plan CC2262 (Calvert 1). The site condition assessment is one component of a broader Habitat Quality Assessment, as detailed in the *Guide to determining terrestrial habitat quality Version 1.2 April 2017* (referred to throughout this report as the Guidelines).

Introduction

The site condition assessment is a method of assessing general vegetation condition against a set of benchmark vegetation attributes for a given regional ecosystem.

A site condition assessment of Calvert 1 was carried out in April 2023, to assess vegetation condition following five years of management intervention.

Site Condition Assessment, Calvert 1 – Vegetated Offset, September 2018 provides benchmark site condition scores for the property Assessment Units prior to management intervention. The report also provides methodology for Assessment Unit stratification and plot layout.

Method

The 2023 site condition assessment was carried out as per the methodology outlined in the *Guide to determining terrestrial habitat quality* (April 2017).

The seven permanent plots were located and all relevant site attributes were measured as per the guidelines. Canopy height was measured using a hypsometer and plot photos were taken with a Canon G3X.

The measured data was then compared to benchmark values for the on-ground Regional Ecosystem and scores were assigned to each attribute. Attribute scores are then totalled for each plot and an overall plot score is determined. Assessment Unit scores are determined by averaging the relevant plot scores.

In addition to the plots, three photo points were located and four updated photos were taken at each point.

It was noted that the September 2018 report, *Site Condition Assessment, Calvert 1 – Vegetated Offset*, incorrectly labelled AU2 – Photo Point 2 as AU2 – Photo Point 3, and vice versa. Also, the compass bearing of the photos in AU2 – Photo Point 2 (Page 42, *Site Condition Assessment, Calvert 1 – Vegetated Offset, September 2018*) is mislabelled. Appendix ## contains a correctly labelled copy of the 2018 plot photos for AU2 – PP2 and AU2 – PP3.

Results

Table 1. 2023 Site Condition Assessment values per attribute per plot

Site condition attributes	AU1-P1	AU1-P2	AU1-P3	AU2	AU3	AU4-P1	AU4-P2
Recruitment of woody perennial species (%)	100%	80%	100%	100%	100%	75%	80%
Trees - species richness	4	5	6	6	7	4	5
Shrubs - species richness	7	9	7	3	3	6	5
Grasses - species richness	13	9	11	11	13	10	10
Forbs - species richness	11	6	14	13	14	8	11
Canopy height (m)	23.7	24.6	27.8	24	23.7	26	17.1
Sub-canopy height (m)	9	17	19.1	11	14.9	13.5	11.2
Tree canopy cover (%)	74.00%	69.00%	50.00%	12.00%	64.00%	44.00%	27.50%
Sub-canopy cover (%)	33.00%	13.00%	52.00%	26.50%	11.50%	33.50%	82.00%
Shrub canopy cover (%)	15.70%	14.30%	14.30%	1.90%	8.10%	0.60%	1.90%
Native perennial grass cover (%)	39%	2%	19%	45%	65%	24%	64%
Organic litter (%)	64%	97%	57%	58%	24%	78%	34%
Large trees (per ha)	26	24	22	4	26	26	6
Coarse woody debris (total length m)	292	370	338	35	405	269	398
Non-native plant cover (%)	1.95%	0.00%	48.00%	39.10%	3.85%	1.18%	4.90%

Table 2. 2023 Site Condition Assessment scores per attribute per plot

Site condition attributes	Highest possible score per attribute	AU1-P1	AU1-P2	AU1-P3	AU2-P1	AU3-P1	AU4-P1	AU4-P2
Recruitment of woody perennial species	5	5	5	5	5	5	3	5
Trees - species richness	5	3	3	5	5	5	5	5
Shrubs - species richness	5	5	5	5	3	3	5	5
Grasses - species richness	5	5	5	5	5	5	5	5
Forbs - species richness	5	3	3	5	5	3	3	3
Tree canopy height average score	5	5	5	5	5	5	5	5
Canopy cover average score	5	5	5	4	5	5	4	4
Shrub canopy cover	5	3	3	3	3	3	3	5
Native perennial grass cover	5	5	0	5	5	5	1	5
Organic litter	5	5	3	5	5	5	3	5
Large trees	15	10	10	10	5	15	15	5
Coarse woody debris	5	5	5	5	0	5	5	5
Non-native plant cover	10	10	10	3	3	10	10	10
Total site condition score per plot	80	69	62	65	54	74	67	67

Site condition scores

The Assessment Unit site condition scores are given below in Table 3. Appendix 02 shows the photo points and ground cover sub-plot photos for each plot.

Table 3. Site condition scores

Assessment Unit	RE/VMA Category	Plot No.	Plot scores (Out of 80)	Assessment Unit scores (Out of 80)
AU1	12.9-10.2 Remnant	1	69	65.3
		2	62	
		3	65	
AU2	12.9-10.2 Regrowth	1	54	54.0
AU3	12.9-10.7 Remnant	1	74	74.0
AU4	12.9-10.7 Regrowth	1	67	67.0
		2	67	

Interpretation

All plots showed an improvement in overall site condition.

The most significant attribute improvements are weed occurrence, species richness in the understorey strata, and native perennial grass cover. A significant improvement in native perennial grass cover was observed across most plots. The species richness of grasses, forbes and shrubs was also vastly improved. These improvements may be explained by the treatment and removal of weed species and by the improved rainfall experienced over the last few years.

Shrub canopy cover was significantly higher than benchmark values across all plots. This resulted in a reduced score for shrub coverage. The shrub coverage increase may be explained by the removal of cattle from the site and improved seasonal conditions (rainfall). A healthy fire regime would help to reduce shrub coverage and would also improve forbe and grass diversity.

The Regrowth plot, AU2-P1, has developed a native sub-canopy layer over the five-year management period. The overall score for AU2-P1 could be improved by 5 points if Assessment Unit 2 had additional coarse woody debris deposited.

Conclusions

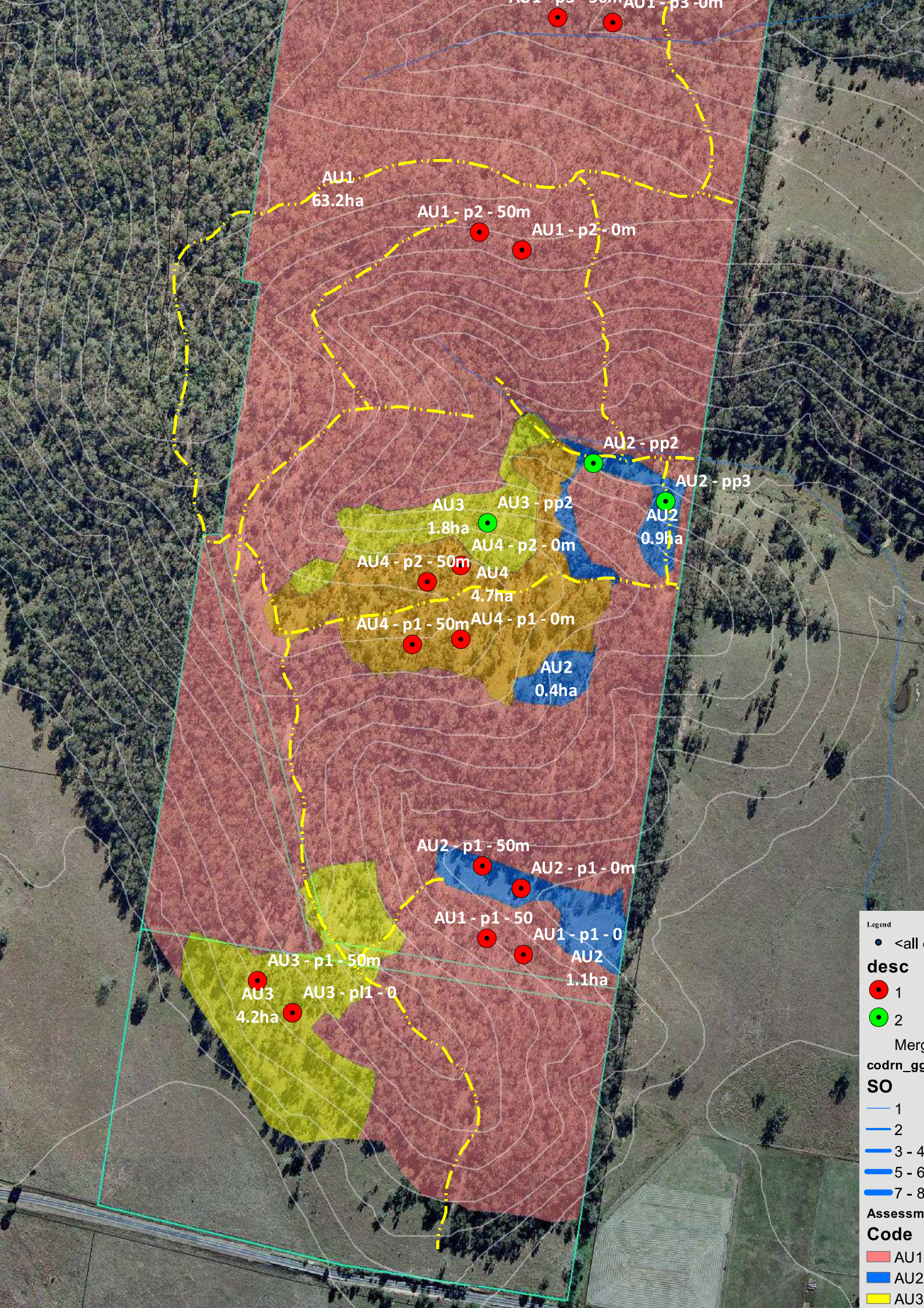
An overall improvement in site condition was measured in all plots. Attributes that showed the largest measured improvement include weed species occurrence, forbes, grasses and shrub species' richness, and native perennial grass cover.

Appendix

[Appendix 1 – Site Condition Assessment Unit Map](#)







[Appendix 2 – Plot photo points](#)

[Appendix 3 - Re-labelled 2018 photo points](#)



Legend

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- 7 - 8
- Assessm**
- Code**
- AU1
- AU2
- AU3

AU1 – Plot 1.	
Plot location (0 m):	27°39'14.8"S, 152°30'52.5"E
Transect Bearing:	290°
Survey date:	19/04/2023
Site condition score:	69/80
50 m photo point:	
	
110°	290°
	
20°	200°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



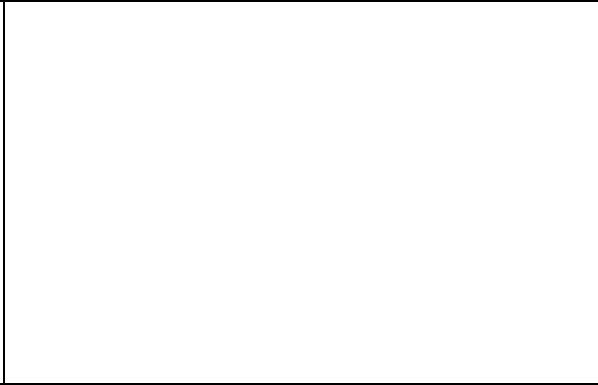
Sub-plot 3









Sub-plot 4



Sub-plot 5



AU1 – Plot 2.	
Plot location (0 m):	27° 38' 48.8"S, 152° 30' 52.6"E
Transect Bearing:	277°
Survey date:	20/04/2023
Site condition score:	62/80
50 m photo point:	
	
97°	277°
	
07°	187°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



Sub-plot 3








Sub-plot 4



Sub-plot 5



AU1 – Plot 3.	
Plot location (0 m):	27° 38' 40.5"S, 152° 30' 56.4"E
Transect Bearing:	272°
Survey date:	20/04/2023
Site condition score:	65/80
50 m photo point:	
	
92°	272°
	
02°	182°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



Sub-plot 3









Sub-plot 4



Sub-plot 5



AU2 – Plot 1.	
Plot location (0 m):	27° 39' 14.8" S, 152° 30' 52.5"
Transect Bearing:	282°
Survey date:	19/04/2023
Site condition score:	54/80
50 m photo point:	
	
102°	282°
	
12°	192°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



Sub-plot 3







Sub-plot 4









Sub-plot 5













AU2 – Photo Point 3	
Photo Point location:	27° 38' 58.1" S, 152° 30' 58.5" E
Date:	20/04/2023
	
360°	180°
	
90°	270°

AU2 – Photo Point 2	
Photo Point location:	27°38'56.7"S, 152°30'55.5"
Date:	20/04/2023
	
360°	180°
	
90°	270°

AU3 – Plot 1.	
Plot location (0 m):	27° 39' 17.0" S, 152° 30' 43.0" W
Transect Bearing:	305°
Survey date:	19/04/2023
Site condition score:	74/80
50 m photo point:	
	
125°	305°
	
25°	215°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2

	
Sub-plot 3	Sub-plot 4
	
Sub-plot 5	

AU3 – Photo Point 2	
RE:	12.9-10.7
Photo Point location:	27° 38'58.8"S, 152° 30'51.1"
Date:	19/04/2023
	
354°	84°
	
174°	264°

AU4 – Plot 1.	
Plot location (0 m):	27° 39' 03.2" S, 152° 30' 50.0" E
Transect Bearing:	253°
Survey date:	19/04/2023
Site condition score:	67/80
50 m photo point:	
	
173°	253°
	
343°	163°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



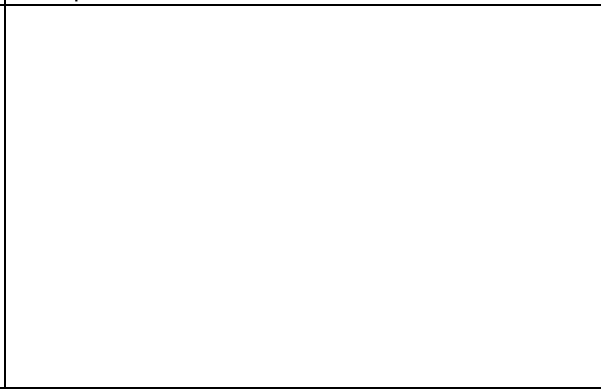
Sub-plot 3









Sub-plot 4



Sub-plot 5



AU4 – Plot 2.	
Plot location (0 m):	27° 39'00.5"S, 152° 30'50.0"E
Transect Bearing:	241°
Survey date:	19/04/2023
Site condition score:	67/80
50 m photo point:	
	
72°	241°
	
331°	151°
Organic litter sub-plot photos:	
	
Sub-plot 1	Sub-plot 2



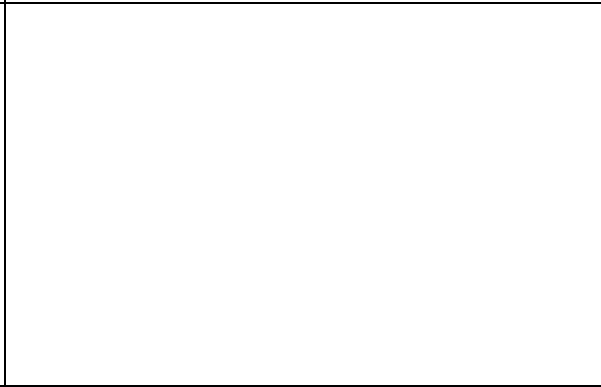
Sub-plot 3



Sub-plot 4



Sub-plot 5



AU2 – Photo Point 3	
Photo Point location:	27°38'58.1"S, 152°30'58.5"
Date:	08/08/2018
	
360°	180°
	
90°	270°

AU2 – Photo Point 2	
Photo Point location:	27°38'56.7"S, 152°30'55.5"
Date:	08/08/2018
	
360°	180°
	
90°	270°

Appendix D

Offset Management Plan – Annual Report September 2024



CHERISH THE
ENVIRONMENT

Offset Management Plan Annual Report June 2024

**Koala Habitat Offset
40-100 Harrison Road Calvert
EPBC 2014/7306**

Stockland Development Pty Ltd

Prepared by Cherish the Environment Foundation Limited

September 2024

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2. Introduction and Background

2.1. Introduction

This report outlines progress in management and conformity with the approved Offset Management Plan (EPBC 2014/7306).

Property Details

The property is located at 40-100 Harrison Road, Calvert and described as Lot 230 CH311971

2.2. Management Objectives

The overarching management intent for the offset area is the removal of weeds, reduction of threats and protection of native vegetation to prevent the loss of biodiversity, maintain ecological processes and improve koala habitat quality. The successful implementation of proposed management mechanisms will assist with the creation of a self-sustaining, continuous area of high quality koala habitat supporting their population within the local landscape. This will help to achieve ICC's vision to create a locally significant conservation area within the Little Liverpool Range Corridor.

Natural regeneration and regrowth will be encouraged in open/sparse areas and areas of remnant vegetation will be managed to enhance and sustain their ecological condition and local environmental values to reduce their exposure to threatening processes including weed invasion, pests, pollution, clearing and disturbance.

2.3. Management Outcomes

The management strategies aim to protect and improve the value of the offset area as koala habitat. This will be primarily achieved through rehabilitation of the offset area (weed control) and implementation of other strategies such as restricting human and livestock access and fire management within the offset area. Management of the site will be undertaken for a minimum of ten years with ultimate weed control to achieve less than 5% total weed coverage. The intensity of management will be driven by the results of condition assessments completed on a regular basis. These assessments will be used to inform future determinations of koala habitat quality and are anticipated to show an improvement within five years across 50% of the offset area.

The dominant feature regarding ecological benefit within the offset area will be achieved through rehabilitation of the vegetation communities, thereby improving the quality of the habitats provided. It is expected that the greatest ecological benefit/improvement of the offset site may be attained within a year. This result is possible because as soon as the area is gazetted as an offset, it will be subject to a targeted management regime including ongoing management of weeds and grazing livestock as well as protection from self-assessable vegetation clearing.

The management outcome for the declared area is that the vegetation within meets the criteria, thresholds and descriptions outlined in the definition of remnant vegetation in the VMA. Additionally, that the entire declaration area is controlled and managed for the removal and suppression of declared weed species. Management outcomes are consistent with the requirements EPBC Act *Environmental Offsets Policy* and generally in accordance with management outcomes of the *Queensland Environmental Offsets Policy 2014*.

Habitat assessment and fauna assessment conducted in 2023 at the five year mark of the offset demonstrated that the offset has met its offset outcomes and the site has now entered a maintenance phase.

3. Offset Management Actions 2023/24

The management actions listed in the Offset Management plan to deliver improved koala habitat quality are detailed below along with progress and actions to June 2024.

The core objective of the Offset Management Plan is to maintain and enhance the koala habitat values throughout the declaration area. This will be primarily achieved through weed management works. Other management actions will also contribute however these are viewed as secondary to weed management. As such, monitoring and reporting will be undertaken to confirm if this primary objective has been or is going to be achieved. This includes both short term and long term criteria to measure success. The area, which is already functioning as koala habitat, is to be managed through weed removal and cooperative fire management and predator exclusion.

Rainfall affects vegetation growth, erosion, and weed growth. The site continued to experience periods of above average rainfall during the 23/24 reporting period.

Summary Actions

A summary of planned actions and progress is attached in Table 1.

Table 1 Planned Actions And Progress to June 2024

Management action	Monitoring action	Timeframe	
		Trigger-based	Progress to 2024
Erosion mitigation	<ul style="list-style-type: none"> inspect completed mitigation measures 	<ul style="list-style-type: none"> approximately one month post completion; and approximately two weeks post first minor rainfall event; and approximately two weeks post first major rainfall event 	<ul style="list-style-type: none"> Assessment and mitigation actions complete. Inspections post severe rain events completed. No erosion issues identified
Access infrastructure	<ul style="list-style-type: none"> inspect existing and new access infrastructure 	<p>Existing access infrastructure:</p> <ul style="list-style-type: none"> approximately two weeks post major rainfall event <p>New access infrastructure:</p> <ul style="list-style-type: none"> approximately one month post completion; and approximately two weeks post first minor rainfall event; and approximately two weeks post first major rainfall event 	<ul style="list-style-type: none"> Maintenance tracks and cross drainage maintained x 2. Inspections post severe rain events completed. Downed vegetation removed, access maintained.
Weed management	<ul style="list-style-type: none"> assess weed infestations and success of weed reduction measures 	<p>Weed reduction measures:</p> <ul style="list-style-type: none"> approximately six months post completion 	<ul style="list-style-type: none"> Inspections to assess regrowth conducted. Increase in overall ground vegetation, including weeds consequent to ongoing rainfall conditions.

Management action	Monitoring action	Timeframe	
		Trigger-based	Progress to 2024
			Weed treatment has been increase with an intensive round planned for Spring 2024
Fire management	<ul style="list-style-type: none"> • assess suitability of fire breaks and access tracks 	<ul style="list-style-type: none"> • approximately one month post fire event 	<ul style="list-style-type: none"> • Boundary firebreaks slashed x 2 along with access tracks and inter-rows in the in-fill plantings. Cool Burn planned for Autumn 2024
Infill planting	<ul style="list-style-type: none"> • assess success of infill planting 	<ul style="list-style-type: none"> • approximately six months post completion 	<ul style="list-style-type: none"> • Completed and maintained weed free.
Pest and animal management	<ul style="list-style-type: none"> • assess presence of pests and suitability of boundary fencing • undertake pest management 	<ul style="list-style-type: none"> • ad hoc as part of property management 	<ul style="list-style-type: none"> • Boundary fencing erected so the entire site excludes stock. • Wildlife cameras indicate no pest fauna on site. Locations to be altered for 2024 to assess different locations

3.1. Erosion Mitigation

Significant active erosion points must be repaired where possible and feasible (i.e. likely to succeed or be effective). Repair work involves re-profiling (where appropriate) and re-directing overland water flow away from the erosion path using cross-drainage. Cross-drainage should be located along all permanent access tracks at appropriate intervals. Allowance should be made for future maintenance of cross-drainage throughout the site.

Progress to May 2019

Cut-off diversion drains to prevent ongoing erosion were constructed at several locations on old and unused access tracks.

Progress to June 2020

No major storm events received and overall rainfall only 64% of long term average (Amberley BoM).

Previously constructed erosion control diversion drains on abandoned tracks and washouts were inspected and are in serviceable condition.

Progress to June 2021

The previous diversions and increases in ground cover due to stock removal have resulted in no evidence of significant erosion resulting from the March 2021 rain event.

Progress to June 2022

The previous diversions and increases in ground cover due to stock removal have resulted in no evidence of significant erosion resulting from the February and May 2022 rain events.

Progress to June 2023

The previous diversions and increases in ground cover due to stock removal and climate conditions have resulted in no evidence of significant erosion resulting from ongoing rainfall conditions rain events.

Progress to June 2024

The previous diversions and increases in ground cover due to stock removal and climate conditions have resulted in no evidence of significant erosion resulting from ongoing rainfall conditions rain events.

3.2. Access Infrastructure

The construction and/or re-opening of tracks will be necessary to facilitate weed management, infill planting establishment and maintenance, fence line construction and maintenance, pest management and fire protection activities.

Progress to May 2019

A track network was carefully designed and constructed across the property that meets management requirements. All tracks have cross drainage to prevent erosion as required. The tracks are to a standard that is accessible by standard high clearance vehicles and are maintained and slashed regularly for fire management.

Inspections immediately following severe rain events were conducted to assess and ensure any erosion could be repaired.

Progress to June 2020

Tracks were slashed and maintained twice through the period. This involved repair to the cut-off drains due largely to settlement.

Inspections immediately following severe rain events were conducted to assess and ensure any erosion could be repaired.

Progress to June 2021

Inspections immediately following severe rain events were conducted to assess and ensure any erosion could be repaired. No repairs were required, however there has been some deposition in the cross road drainage from the March 2021 event which will require maintaining to improve capacity.

Progress to June 2022

Inspections immediately following severe rain events were conducted to assess and ensure any erosion could be repaired. No repairs were required, however there has been further deposition in the cross road drainage from the February 2022 and May 2022 event which will require maintenance.

Progress to June 2023

Inspections immediately following severe rain events were conducted to assess and ensure any erosion could be repaired. No repairs were required. Tracks are now on a scheduled maintenance program.

Progress to June 2024

Inspections immediately following severe rain events were conducted to assess and ensure any erosion could be repaired. No repairs were required. Scheduled maintenance planned for Spring 2024

3.3. Weed Management

The weed management actions aim to improve the flora and fauna values of the area through weed removal and promoting native species growth and will provide the greatest positive impact on koala habitat.

An intensive, 5-year weed management program is proposed for the remnant and regrowth parts of the offset area. The primary weed treatment process will begin as soon as practical, with follow-up weed treatment undertaken annually. After the first three years, the required management intensity should reduce significantly.

Weed management will occur in two phases throughout the approval period

1. Intensive weed management until year 6; and
2. Ad-hoc weed management from year 6 until the end of the approval period.

Progress to May 2019

Comprehensive primary weed treatment process commenced across the entire site with emphasis on lantana and prickly pear in June 2019 and completed in October 2019. The main areas for more intensive assessment are the drainage lines where the lantana was dense and is now open. The methodology involved setting out transects and predominantly hand pulling/ digging of weeds. This labour intensive process achieved excellent results with little chemical use.

Progress to June 2020

Follow up weed treatment commenced in June 2020 with an ongoing focus on lantana, climbing asparagus and prickly pear.

Progress to June 2021

Weeds have not been in sufficient abundance to trigger intervention following inspections to February 2021. This was due mainly to the previous comprehensive weed control and prevailing dry conditions.

There are now emergent weeds such as fleabane and lantana regrowth following the March rain event.

Fleabane (*Conyza* spp.) is an annual or biennial weed which is widespread in south east Queensland. It readily germinates in wet autumn conditions.

Progress to June 2022

There are currently emergent weeds such as fleabane and lantana regrowth following the February and May 2022 rain events. Further weed treatment will be required in the coming months.

Progress to June 2023

There are currently emergent weeds lantana regrowth following ongoing above average rainfall. Further weed treatment will be required in the coming months particularly in gully areas of the property.

Progress to June 2024

The wetter than average 2023/24 summer period has resulted in increased emergence of lantana on site. An intensive lantana program was commenced in August/September 2024 to ensure control. Weed treatment tracking is provided below:



3.4. Fire Management

At this stage in the project, fire management activities have been limited to fire exclusion and asset protection. Prescribed burning (for fuel reduction or regeneration initiation) is restricted within the V-Dec area until a Fire Management Plan is developed. This plan will need to be reviewed/endorsed or similar by the rural fire brigade or other relevant stakeholder prior to implementation.

Strategic fire access tracks were initially established in consultation with neighbours where possible along the property boundary and at other strategic locations. Neighbours are resistant to any prescribed burning and are vigilant in fire management.

Well maintained tracks provide for rapid deployment and gates have been installed at strategic locations on boundary fencing to allow for movement across boundaries.

Progress to May 2019

Slashing of all boundary and maintenance tracks as well as inter-rows of the in-fill plantings is maintained to reduce fuel loads.

Progress to June 2020

Slashing of all boundary and maintenance tracks as well as inter-rows of the in-fill plantings is maintained to reduce fuel loads.

Progress to June 2021

Slashing of all boundary and maintenance tracks as well as inter-rows of the in-fill plantings is maintained to reduce fuel loads. There have been no fires in or near the site.

Progress to June 2022

Slashing of all boundary and maintenance tracks as well as inter-rows of the in-fill plantings has continued to be maintained to reduce fuel loads. There have been no fires in or near the site.

Progress to June 2023

Slashing of all boundary and maintenance tracks as well as inter-rows of the in-fill plantings has continued to be maintained to reduce fuel loads. There have been no fires in or near the site. A cool burn is being planned for autumn 2023 to assist with regeneration.

Progress to June 2024

Slashing of all boundary and maintenance tracks as well as inter-rows of the in-fill plantings has continued to be maintained to reduce fuel loads. There have been no fires in or near the site. A cool burn was not conducted in the autumn of 2024 due to unsuitable weather conditions and is now planned for Autumn 2025

3.5. Infill Planting

A small, one hectare patch of open, grassy area in the south-east corner of Lot 230 CH311971 has been infill planted. Approximately 400 trees typical of regional ecosystems 12.9-10.2 and 12.9-10.3 will be planted in the area.

Progress to May 2019

The infill area was planted in March 2018 with some being replaced in October 2018 following severe frost damage. The area is maintained weed free in the rows and slashed between the rows to reduce both competition and fire risk.

Progress to June 2020

The infill area is established but growth is slow due to the continuing dry conditions and competition from established trees. The area is maintained weed free in the rows and slashed between the rows to reduce both competition and fire risk.

Post-plant weed control conducted in January 2020 and April 2020. Post-plant spray has been effective (weeds and grass along the tree rows is dead or dying). Planted trees are healthy and show no signs of spray damage.

Perimeter and inter-rows were slashed in April 2020.

Progress to June 2021

The infill area is established and trees continue to grow steadily although slow due to the continuing dry conditions and competition from established trees. The area is maintained weed free in the rows and slashed between the rows to reduce both competition and fire risk.

Post-plant weed control was conducted in January 2021 and May 2021. Post-plant spray has been effective (weeds and grass along the tree rows is dead or dying). Planted trees are healthy and show no signs of spray damage.

The perimeter and inter-rows were slashed in January 2021. [Appendix C Photo Point 2](#) shows the infill site condition in June 2020 and June 2021.

Progress to June 2022

The infill area is established and trees continue to grow steadily with reasonable growth due to wet conditions. The area is maintained weed free in the rows and slashed between the rows to reduce both competition and fire risk.

Post-plant weed control was conducted in January 2021, May 2021 and May 2022. Post-plant spray has been effective (weeds and grass along the tree rows is dead or dying). Planted trees are healthy and show no signs of spray damage.

[Appendix C Photo Point 2](#) shows the infill site condition in June 2020, June 2021 and June 2022.

Progress to June 2023

The infill area is established and trees continue to grow steadily with reasonable growth due to wet conditions. The area is maintained weed free in the rows and slashed between the rows to reduce both competition and fire risk.

Post-plant weed control was conducted in January 2021, May 2021 and May 2022 and February 2023. Post-plant spray has been effective (weeds and grass along the tree rows is dead or dying). Planted trees are healthy and show no signs of spray damage.

Progress to June 2024

As the plantation has reached its establishment, maintenance activities include spot spraying for weeds as required.

3.6. Pest and Animal Management

There is no internal fencing on the property. Boundary fencing will be constructed, repaired and maintained to exclude domestic stock and pests. Pest animals such as wild dogs will be addressed via a control program that will be implemented at the discretion of the landholder.

This fencing is scheduled to be established/constructed within 12 months of the V-Dec being certified and must be in place for the duration of the approval.

A wild dog control program will occur ad hoc during the approval period.

Progress to May 2019

Fencing has been repaired/ replaced along the entire eastern boundary, and new fencing erected on the northern and north western boundaries.

Wildlife cameras have been deployed and are regularly monitored. Animals captured include kangaroos, wallabies, bandicoots, echidnas, and possums. There has been no evidence of wild dogs or pigs presence across the site.

Progress to June 2020

Fencing has been inspected regularly and repaired as required, mainly due to limbs falling across the fence.

Wildlife cameras have been deployed and are regularly monitored. Due to the drought and lack of water on site, a small water station was deployed to attract wildlife to the camera. The water station was popular with a range of birds. Images captured include kangaroos, wallabies, echidna, lace monitors and possums. There has been no evidence of wild dogs or pigs presence across the site.

Progress to June 2021

Fencing has been inspected regularly and repaired as required, mainly due to limbs falling across the fence.

Wildlife cameras have been deployed and are regularly monitored. Due to the drought and lack of water on site, a small water station was deployed to attract wildlife to the camera. The water station was popular with a range of birds. Images captured include kangaroos, wallabies, echidna, lace monitors and possums. There has been no evidence of wild dogs or pigs presence across the site. The water station was removed in January 2021 due to improved conditions.

Progress to June 2022

There continues to be no evidence of wild dogs or pigs presence across the site.

Progress to June 2023

There continues to be no evidence of wild dogs or pigs presence across the site.

Progress to June 2023

There continues to be no evidence of wild dogs or pigs presence across the site.

3.7. Habitat Improvement Monitoring

In accordance with Condition 3 of the approval, to compensate for the impacts to koala habitat, detailed outcomes and milestone must be achieved. Success will be measured by comparing baseline values for koala habitat quality and extent to future data.

Progress to May 2019

A comprehensive site condition assessment was carried out in July and August of 2018, to benchmark current vegetation condition and thus provide a point of reference for future verification of management intervention.

Regional ecosystem vegetation was mapped and reference plots established.

Progress to June 2020

Five Photo Reference Points were established using the condition assessment transects as a base for ongoing monitoring. A map of the reference sites and the geo-referenced photo points is contained in Appendix C.

Progress to June 2021

Five Photo Reference Points continued to be monitored.

Progress to June 2022

Five Photo Reference Points continued to be monitored.

Progress to 2023

A site condition assessment of the site at the five year mark has been undertaken demonstrating an improvement in ecological condition on the site. Koala utilisation monitoring is planned to occur by mid October 2023

Progress to 2024

Koala monitoring conducted in October 2023 demonstrated utilisation of the site by Koalas.

4. Conclusion

As outlined, the activities are consistent with the management objectives and the annual management plan.

Wetter weather conditions prevailed for most of the year with a continuing La Nina climate event resulting in a flush of ground cover and improved leaf cover. There has been good growth in the infill planting. However this has also caused a re-emergence of some weed species that will require treatment

There have been no outstanding events or issues and the site continues to be on track to meet the offset objectives.

5. Appendices

Appendix A: Site Map

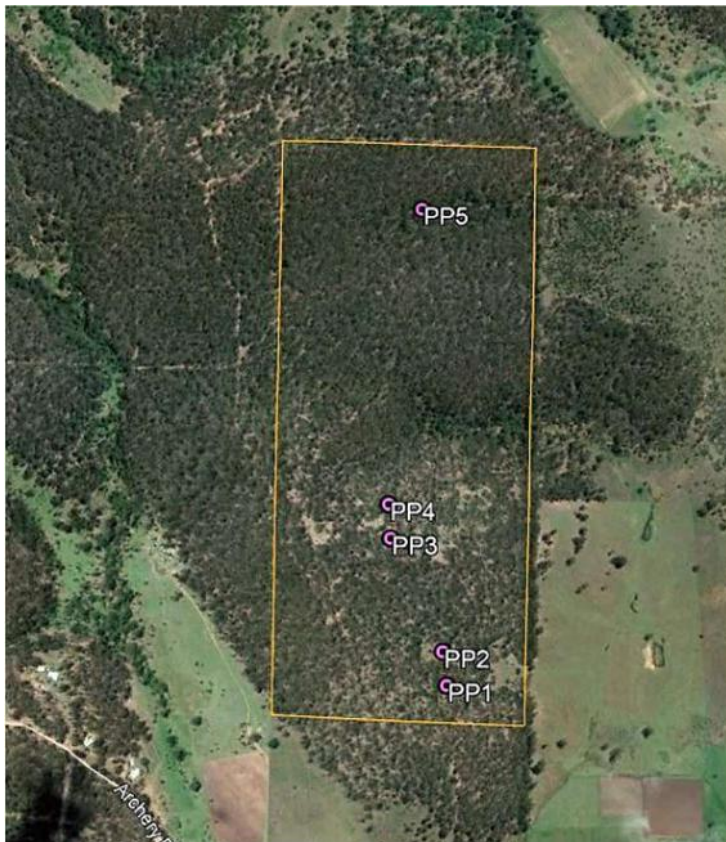
Appendix B: Photo points

5.1 Appendix A: Site Map

Figure 1: Bounding coordinates for offset area



5.2 Appendix B: Monitoring Points



PP1



PP2



PP3



PP4



PP5

