Mt Arthur Coal Extension Project EPBC 2011/5866 and 2014/7377

30 September 2024

Contents

Introduction

Hunter Valley Energy Coal Pty Ltd (ACN 062 894 464) (HVEC) operates the Mt Arthur Coal complex, which consists of approved open cut and underground mining operations, a rail loop and associated rail loading facilities. The operations are located in the Upper Hunter Valley, NSW approximately five kilometres south west of Muswellbrook.

This report has been prepared to address the following conditions in the two approvals issued under the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC), held by HVEC:

- Condition 14 of EPBC 2011/5866; and
- Condition 18 of EPBC 2014/7377.

Description of activities

EPBC No.	Project name	Approval holder ACN or ABN	Approved action	Location	Person accepting responsibility for the report	Dates for the reporting period of the report	Date of preparation of the report
2011/5866	Mt Arthur Coal Extension Project	ACN 062 894 464	The development of five new open cut extension areas to uncover additional coal reserves on the existing Mt Arthur Coal Complex	Muswellbrook in the Upper Hunter Valley, NSW	James Nixon	1 July 2023 to 30 June 2024	30 September 2024
2014/7377	Mt Arthur Coal open cut modification	ACN 062 894 464	The continuation of the open cut mining operations of approximately 128 million tonnes of ROM Coal within HVEC's existing mining tenements and application area – ML1487, ML 1358, ML 1548, Sublease CL 229, ML 1655 and ML 1739	Muswellbrook, NSW	James Nixon	1 July 2023 to 30 June 2024	30 September 2024

Compliance table

In accordance with Condition 14 of EPBC 2011/5866 and Condition 18 of EPBC 2014/7377 this report provides an update of HVEC's compliance against the relevant approval conditions.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
EPBC Approval No. 2011/5866				
5866	1	The person taking the action must not clear more than 693.8 ha of the EPBC-listed White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland critically endangered ecological community (147.8 ha of woodland and 546 ha derived native grassland) within the proposed action areas of the Mt Arthur coal complex (shown in Appendix 1).	Compliant	A total area of 363.95 Ha has been cleared to end of the reporting period, which includes: • 84.01 ha of the EPBC listed White Box-Yellow Box-Blakely's Red Gum Grassy Woodland • 279.92 ha of the EPBC listed White Box-Yellow Box-Blakely's Red Gum Grassy Woodland Derived Native Grassland
5866	2	The person taking the action must not clear more than 362.7 ha of woodland providing suitable habitat for the EPBC listed Regent Honeyeater and Swift Parrot within the proposed action areas of the Mt Arthur coal complex (shown in Appendix 1). Woodland that provides suitable habitat for these species on this site includes the box-ironbark dominated woodlands and the remaining woodland and forest vegetation types present on the proposed action areas.	Compliant	A total area of 254 ha of woodland providing suitable habitat for the EPBC listed Regent Honeyeater and Swift Parrot has been cleared to end of the reporting period.
5866	3	The person taking the action must register a legally binding conservation covenant over the conservation and offset areas identified in Table 1 (and shown in Appendix 2a and 2b) by 30	Compliant	All conservation areas and offsets were registered on title before 30 December 2017.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		December 2017. The mechanism must provide enduring protection for no less than: a) 707.7 ha of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Ecological Community (Box Gum Woodland); and b) 738.7 ha of suitable habitat for *Anthochaera phrygia* (Regent Honeyeater) and *Lathamus discolor* (Swift Parrot). *Note: Offsetting requirements for Regent Honeyeater and Swift Parrot habitat may be accommodated within the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Ecological Community components if this habitat is verified as present and includes specific habitat requirements for each of these species in accordance with the Department's listing advice, conservation advice and/or recovery plans.*		
5866	4	The person taking the action must commence progressive regeneration of 1915 ha of woodland and forest communities, including 299.20 ha of Box Gum Woodland identified in Table 1, as described in the Preliminary Documentation within 1 year of commencement of construction.	Compliant	Progressive regeneration of woodland and forest communities at Mt Arthur Coal commenced in the mid-1990s. Rehabilitation activities are as per those reported in the Annual Review, published to the BHP Regulatory web page. BHP | Environment | Regulatory information
5866	5	The person taking the action must submit for the Minister's approval the Biodiversity Management Plan (BMP) for the project by 30 June 2013. The BMP must reflect the proposed Mt Arthur Coal Complex Biodiversity Offset Strategy as outlined in Table 1 and as generally described in the Preliminary Documentation and focus on the re- establishment and	Compliant	HVEC submitted the BMP to the Minister for approval on 28 June 2013. The BMP was approved by the Department of Agriculture, Water and the Environment (DAWE) on 12 August 2014.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		protection of a minimum of 707.7 ha of Box Gum Woodland and a minimum of 738.7 ha of suitable habitat for Regent Honeyeater and Swift Parrot. The approved BMP must be implemented.		The BMP was revised and approved by both the DP&E, on 22 May 2019, and the DAWE, on 5 June 2019.
5866	6	The BMP must describe how the implementation of the offset strategy would be integrated with the overall rehabilitation of the site and with local and regional corridors, existing conservation areas and existing biodiversity commitments at Mt Arthur Coal.	Compliant	DAWE has reviewed the BMP and found that it meets the requirements of Condition 6. The revised BMP was approved by the DAWE on 5 June 2019.
5866	7	The BMP must include, but not be limited to, the following information: a) a text description and map to clearly define the location, boundaries and size of the conservation and offset areas and the regeneration area and rehabilitation corridors. This must be accompanied with the offset attributes and a shape file; b) details of the mechanisms, legal instrument, steps and timing for registering a legally binding conservation covenant that provides enduring protection over each nominated conservation and offset area; c) a detailed description of the current condition of the extant vegetation of each conservation and offset area prior to any management activities. This will provide a baseline description of the vegetation condition for the purpose of monitoring; d) details of vegetation communities to be re-established to achieve the 500 ha regeneration area and 1415 ha of rehabilitated corridors:	Compliant	The DAWE has reviewed the BMP and found that it meets the requirements of Condition 6. The revised BMP was approved by the DAWE on 5 June 2019. The management actions undertaken within the rehabilitation corridors and their outcomes are presented in the Annual Review published on BHP Regulatory web page. The assessment of management actions undertaken within the offset areas are presented in the Conservation Agreement Monitoring attached to this report.

Condition Number	Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
	i. timing of progressive regeneration; ii. criteria to determine success of re-establishment of the Box Gum Woodland and other woodland and forest communities; iii. documentation including mapping of current environmental values relevant to MNES of the area; iv. where revegetation through planting seedlings and/or seeds is intended details of appropriate species and ratios of species relevant to historically occurring listed migratory and listed threatened species' habitat and the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Ecological Community; and the source and provenance of the seed and/or seedlings which will be used. e) details of measures to offset the impacts to the MNES described in conditions 3 and 4 including: i. details of management actions that will improve the condition of a minimum of 707.7 ha within the conservation and offset areas and 299.2 ha regeneration area to 'state 1' consistent with the state and transition model for Box Gum Woodland (Rawlings et al, 2010) and listing advice for the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Ecological Community; ii. management schedules for all conservation and offset areas, the regeneration area and the rehabilitation corridors identifying targeted actions for specific areas to		

Condition Number	Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
	protect and enhance the extent and condition of habitat values of the offset areas, a map showing areas to be managed; iii. type of actions for each conservation and offset area, the regeneration area and rehabilitation corridors and details of methods to be used; iv. timing of management actions for each area; v. performance criteria for each action; vi. a detailed monitoring plan for each action including, but not limited to, control sites, periodic ecological surveys to be undertaken by a qualified ecologist, as agreed to in writing by the Minister, and consistent with survey guidelines for nationally threatened species and communities, to assess the success of the management actions measured against identified milestones and objectives; vii. contingency measures to be implemented if performance criteria are not met; viii. a process to report, to the Department, the progress of management actions undertaken in the conservation and offset areas, regeneration area and rehabilitation corridors and the outcome of those actions, including identifying any need for improved management and actions to undertake such improvement; and ix. details of the various parties responsible for management, monitoring and implementing the		

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		management activities, including their position or status as a separate contractor.		
5866	8	Where strategic grazing is proposed as a management tool, the person undertaking the action must provide, as part of the BMP identified in condition 5, details of the proposed grazing activities for each management area. This must include: a) objectives b) details of the grazing methods to be used c) timing including seasons in which grazing will occur, period of grazing and rest period d) stocking rate per season e) monitoring of impacts of grazing including any changes in the condition of vegetation, habitat and weed density.	Compliant	The approved BMP details proposed grazing activities. This is covered in Section 11.1 of the BMP.
5866	9	Grazing activities must be undertaken in accordance with the guidelines for strategic grazing (Rawlings et al, 2010) and managed so that for each management unit at least 70% of the sward meets a minimum height of 10cm.	Not Applicable	No grazing activities were undertaken during the reporting year.
5866	10	If the person undertaking the action proposes to undertake any action within the conservation and offset areas and regeneration area, other than those management activities related to managing the conservation and offset areas and regeneration area, or as set out in the conditions, approval must be obtained, in writing from the Minister. In seeking the Minister's approval the person undertaking the action must provide a detailed assessment of the area where the action is proposed to take	Compliant	Only activities relating to offset management were undertaken in the offset areas.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		place and an assessment of all associated adverse impacts on MNES. If the Minister agrees to the action within the conservation or offset area, the area identified for the action may be excised from the proposed conservation and offset areas and alternative offsets may be required in relation to the impact on MNES.		
5866	11	All survey data collected for the project must be collected and recorded so as to conform to data standards notified from time to time by the Department. When requested by the Department, the proponent must provide to the Department all species and ecological survey data and related survey information from ecological surveys undertaken for MNES. This survey data must be provided within 30 business days of request, or in a timeframe agreed to by the Department in writing. The Department may use the survey data for other purposes.	Compliant	Records of data collected from conservation and offset area surveys during the reporting period are maintained by Mt Arthur Coal. No requests for survey data were made by the DAWE during the reporting period.
5866	12	Within 14 days after the commencement of the action, the person taking the action must advise the Department in writing of the actual date of commencement.	Compliant	HVEC commenced the action on 21 May 2012 and advised the DAWE of the commencement of the action on 31 May 2012. Notification was made via a letter issued to Ms Adrienne Lea at the DAWE.
5866	13	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the Biodiversity Offset Strategy and the Biodiversity 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	Compliant	Accurate records substantiating all activities associated with or relevant to the conditions of approval are maintained by HVEC. No requests for records of activities were made by the DAWE during the reporting period.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		will be posted on the Department's website. The results of audits may also be publicised through the general media.		
5866	14	Within three (3) months of the end of each Financial Year (30 June - 1 July) after the commencement of the action, the person taking the action must publish a report on their website addressing compliance with the conditions of this approval, including implementation of any management plans and strategies as specified in the conditions. Documentary evidence providing proof of the date of publication and non- compliance with any 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.	Partially Compliant	All Annual Compliance Reports are published on the BHP website in September of each year: BHP | Environment | Regulatory information
5866	15	If the person taking the action wishes to carry out any activity otherwise than in accordance with the Biodiversity Offset Strategy and the Biodiversity Management Plan as specified in the conditions, the person taking the action must submit to the Department for the Minister's written approval a revised version of that Biodiversity Offset Strategy and the Biodiversity Management Plan. The varied activity shall not commence until the Minister has approved the varied plan in writing. The Minister will not approve a varied plan unless the revised plan would result in an equivalent or improved environmental outcome over time. If the Minister approves the revised Biodiversity Offset Strategy and the Biodiversity Management Plan, that Biodiversity Offset Strategy and the Biodiversity Management Plan, must be implemented in place of the Biodiversity Offset	Compliant	No varied activities are applicable for the 2022-2023 reporting period.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		Strategy and the Biodiversity Management Plan, originally approved.		
5866	16	If the Minister believes that it is necessary or convenient for the better protection of listed threatened species and communities and listed migratory species to do so, the Minister may request that the person taking the action make specified revisions to the Biodiversity Offset Strategy and the Biodiversity Management Plan, specified in the conditions and submit the revised Biodiversity Offset Strategy and the Biodiversity Management Plan for the Minister's written approval. The person taking the action must comply with any such request. The revised approved Biodiversity Offset Strategy and the Biodiversity Management Plan must be implemented. Unless the Minister has approved the revised Biodiversity Offset Strategy and the Biodiversity Management Plan then the person taking the action must continue to implement the Biodiversity Offset Strategy and the Biodiversity Management Plan originally approved, as specified in the conditions.	Not triggered	No request was received from the Minister to make specified revisions to the BMP during the reporting year.
5866	17	Unless otherwise agreed to in writing by the Minister, the person taking the action must publish all management plans referred to in these conditions of approval on their website. Each management plan must be published on the website within 1 month of being approved.	Compliant	The BMP is published on the BHP company website BHP | Environment | Regulatory information
EPBC Approval No. 2014/7377				
7377	1	The person taking the action must not clear more than 58.4 ha (within modification areas A-E shown in Appendix A) of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC) listed White Box Yellow Box Blakely's Red Gum Grassy	Compliant	Total area of EPBC-listed White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland critically endangered ecological community cleared to the end of the reporting period is 25.60 ha.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		Woodland and Derived Native Grassland Critically Endangered Ecological Community.		
7377	2	The person taking the action must not clear more than 53.4 ha (within modification areas A-E shown in Appendix A) of woodland that provides suitable habitat for the Regent Honeyeater (Anthochaera phrygia), Swift Parrot (Lathamus discolor) and Grey- headed Flying-fox (Pteropus poliocephalus). Woodland that provides suitable habitat for these species on this site includes the box-ironbark dominated woodlands and the remaining woodland and forest vegetation types present on the referred areas.	Compliant	A total area of 33.23 ha of suitable habitat was cleared by the end of the reporting period.
7377	3	The person taking the action must compensate for the loss of 58.4 ha of the White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland Critically Endangered Ecological Community and 53.4 hectares of native woodland which provides foraging and nesting habitat for the Regent Honeyeater (*Anthochaera phrygia*), Swift Parrot (*Lathamus discolor*) and Grey-headed Flying-fox (*Pteropus poliocephalus*) by: a) securing the following offsets, prior to commencement of the action, through a legally binding conservation covenant over the conservation and offset areas: i. 131 ha expansion of the Saddlers Creek Conservation area located approximately 1 km south of the proposed action area; and ii. 410 ha expansion of the Middle Deep Creek Offset area located approximately 70 km north of the Action area.	Compliant	Saddlers Creek Conservation Area and Middle Deep Creek Offset were registered on title on 21 June 2017 and 20 February 2017 respectively.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
7377	4	The person taking the action must submit to the Department, for approval by the Minister, a revised Biodiversity Management Plan (BMP) for the project by 30 June 2017. The BMP must reflect the proposed Mt Arthur Coal Complex Biodiversity Offset Strategy as generally described in the Preliminary Documentation for EPBC 2011/5866, and include the additional offsets which are described in the Preliminary Documentation for EPBC 2014/7377. The Preliminary Documentation states: a) the following offsets will be secured to compensate for the removal of the 58.4 ha of Box Gum Woodland CEEC and 53.4 ha of foraging habitat: i. a 410 ha expansion of the existing Middle Deep Creek offset area located approximately 70 km north of the Action area; and ii. a 131 ha expansion of the existing Saddlers Creek offset area located approximately 1 km south of the Action area.	Compliant	A revised Biodiversity Management Plan (BMP) was submitted to the Department of Energy and the Environment (DOEE, now the Department of Agriculture, Water and the Environment) for approval on 29 June 2017.
7377	5	The BMP must describe how the implementation of the offset strategy would be integrated with the overall rehabilitation of the site and with local and regional corridors, existing conservation areas and existing biodiversity commitments at the Mt Arthur Coal mine.	Compliant	The Department has reviewed the BMP and found that it meets the requirements of Condition 6. The revised BMP was approved by DAWE on 5 June 2019.
7377	6	The revised BMP must include the additional offsets for the proposed action described in EPBC 2014/7377 and follow the requirements for the BMP outlined in the conditions in EPBC 2011/5866 described below: a) a text description and map to clearly define the location and boundaries of the conservation and offset areas and	Compliant	The DAWE has reviewed the BMP and found that it meets the requirements of Condition 6. The revised BMP was approved by the DAWE on 5 June 2019.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		regeneration areas. This must be accompanied with the offset attributes and a shape file; b) details of the mechanisms, legal instrument, steps and timing for registering a legally binding conservation covenant that provides enduring protection over each nominated conservation and offset area; c) a detailed description of the current condition of the extant vegetation of each conservation and offset area identified in the Preliminary Documentation for EPBC 2014/7377 prior to any management activities. This will provide a baseline description of the vegetation condition of the additional offset areas for the purpose of monitoring; d) details of measures to offset the impacts to the MNES described in condition 2 and 3 including: i. details of management actions that will improve the condition of a minimum of 541 ha within the offset areas; ii. management schedules for the offset areas identifying targeted actions for specific areas to protect and enhance the extent and condition of habitat values of the offset areas, a map showing areas to be managed; iii. type of management actions for each offset area and details of methods to be used; iv. timing of management actions for each offset area; v. performance criteria for each action;		The management actions undertaken within the rehabilitation corridors and their outcomes are presented in the Annual Review published on BHP Regulatory web page. The assessment of management actions undertaken within the offset areas are presented in the Conservation Agreement Monitoring attached to this report.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		vi. a detailed monitoring plan for each action including, but not limited to: ~ control sites; and ~ periodic ecological surveys to be undertaken by a qualified ecologist, as agreed to in writing by the Minister, and consistent with survey guidelines for nationally threatened species and communities, to assess the success of the management actions measured against identified milestones and objectives; vii. contingency measures to be implemented if performance criteria are not met; viii. a process to report, to the Department, the progress of management actions undertaken in offset areas and the outcome of those actions, including identifying any need for improved management and actions to undertake such improvement; and ix. details of the various parties responsible for management, monitoring and implementing the management activities, including their position or status as a separate contractor.		
7377	7	Where strategic grazing is proposed as a management tool, the person undertaking the action must provide, as part of the BMP identified in condition 5, details of the proposed grazing activities for each management area. This must include: a) objectives; b) details of the grazing methods to be used;	Compliant	Refer to the response provided for condition 8 of 2011/5866.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		c) timing including seasons in which grazing will occur, period of grazing and rest period; d) stocking rate per season; and e) monitoring of impacts of grazing including any changes in the condition of vegetation, habitat and weed density.		
7377	8	Grazing activities must be undertaken in accordance with the guidelines for strategic grazing in A Guide to Managing Box Gum Grassy Woodlands, Kimberlie Rawlings, David Freudenberger and David Carr, Department of Environment, Water, Heritage and the Arts, Canberra, 2010.	Not Applicable	Refer to the response provided for condition 9 of 2011/5866.
7377	9	If the person undertaking the action proposes to undertake any action within the offset areas, other than those management activities related to managing the offset areas, or as set out in the conditions, approval must be obtained, in writing from the Minister. In seeking the Minister's approval the person undertaking the action must provide a detailed assessment of the area where the action is proposed to take place and an assessment of all associated adverse impacts on MNES. If the Minister agrees to the action within the offset area, the area identified for the action must be excised from the proposed offset areas and alternative offsets secured in relation to the impact on MNES.	Compliant	Only activities relating to offset management were undertaken in the offset areas.
7377	10	The person taking the action may choose to revise a management plan approved by the Minister without submitting it for approval under s.143A of the EPBC Act, if the taking of the action in accordance with the revised management plan would not be likely to have a new or increased impact on a protected	Compliant	Refer to the response provided for condition 15 of 2011/5866.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		matter under the conditions of this approval. If the person taking the action makes this choice, they must: a) notify the Department in writing that the approved management plan has been revised and provide the Department with an electronic copy of the revised management plan; b) implement the revised management plan from the date that it is submitted to the Department; and c) for the life of this approval, maintain a record of the reasons the person taking the action considers that taking the action in accordance with the revised management plan would not be likely to have a new or increased impact on a protected matter under the conditions of this approval.		
7377	11	The person taking the action may revoke its choice under Condition 10 at any time by notice to the Department. If the person taking the action revokes the choice to implement a revised management plan, without approval under Section 143A of the EPBC Act, the management plan approved by the Minister must be implemented.	Not triggered	Noted.
7377	12	Condition 10 does not apply if the revisions to the approved management plan include changes to offsets provided under the management plan in relation to a matter protected by a controlling provision for the action, unless otherwise agreed in writing by the Minister. This does not otherwise limit the circumstances in which the taking of the action in accordance with a revised management plan would, or would not, be likely to have new or increased impacts.	Not triggered	Noted.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
7377	13	If the Minister gives a notice to the person taking the action that the Minister is satisfied that the taking of the action in accordance with the revised management plan would be likely to have a new or increased impact on a protected matter by the conditions of this approval, then: a) condition 10 does not apply, or ceases to apply, in relation to the revised management plan; and b) the person taking the action must implement the previous management plan most recently approved by the Minister. To avoid any doubt, this condition does not affect any operation of conditions 10, 11 and 12 in the period before the day the notice is given. At the time of giving the notice the Minister may also notify that for a specified period of time that Condition 10 does not apply for one or more specified plans required under the approval.	Not triggered.	No notice provided by the Minister.
7377	14	If, at any time after 5 years from the date of this approval, the person taking the action has not substantially commenced the action, then the person taking the action must not substantially commence the action without the written agreement of the Minister.	Compliant	The action commenced during November 2017.
7377	15	Within 30 days after the commencement of the action, the person taking the action must advise the Department in writing of the actual date of commencement.	Compliant	Refer to EPBC report dated 28 September 2018.
7377	16	Unless otherwise agreed to in writing by the Minister, the person taking the action must publish all management plans, referred to in these conditions of approval on their website. Each	Compliant	Refer to the response provided for condition 17 of 2011/5866.

Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		management plan must be published on the website within 1 month of being approved by the Minister or being submitted under Condition 10a.		
7377	17	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the Offset Strategy and Biodiversity 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.	Compliant	Refer to the response provided for condition 13 of 2011/5866.
7377	18	Within three months of the end of each Financial Year (1 July - 30 June) after the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans 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	Partially compliant	Refer to the response provided for condition 14 of 2011/5866.

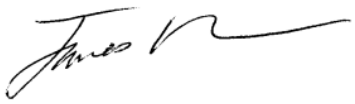
Condition Number		Condition	Compliant/ Non Compliant/ Not Triggered	Evidence/Comments
		required by this condition with written agreement of the Minister to do so.		
7377	19	Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions 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 triggered	No notice provided by the Minister.

New environmental risks

No new environmental risks from the Project were identified during the reporting period.

Declaration of accuracys

In making this declaration, I am aware that sections 490 and 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (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 (please print): James Nixon

Position (please print): Superintendent Environment

Organisation (please print including ABN/ACN if applicable): Hunter Valley Energy Coal Limited (ACN 062894464)

Date: 30 September 2024

Mt Arthur Coal Conservation Agreement Monitoring Report

January 2023 to December 2023

Roxburgh offset with completed hazard reduction burn area in the foreground

Contents

Introduction

Hunter Valley Energy Coal Pty Ltd (HVEC) operates the Mt Arthur Coal Complex, which consists of approved open cut and underground mining operations, a rail loop and associated rail loading facilities. The Mt Arthur Coal Mine is located approximately 5 kilometres southwest of Muswellbrook within the Muswellbrook Shire Local Government Area (LGA) in the Upper Hunter Valley of NSW. The Mt Arthur Coal Mine Project includes biodiversity offset areas the purpose of which is to offset the residual biodiversity impacts of the Project.

Conservation Agreements (CA(s)) have been established for each of the biodiversity offsets in accordance with Planning Approval (PA 09_0062) (specifically, Schedule 3, Condition 39), EPBC2011/5866 (specifically, condition 7 (b)), and EPBC2014/7377 (specifically, condition 3(a)). The Conservation Areas are managed to restore and protect conservation values.

Reporting obligations associated with the following CAs are shown in Table 1:

- Middle Deep Creek and Oakvale Offset Conservation Area;
- Roxburgh Road Conservation Area;
- Thomas Mitchell Drive Onsite Offset Conservation Area;
- Saddlers Creek Conservation Area;
- Mount Arthur Conservation Area; and
- Thomas Mitchell Drive Off-site Offset Conservation Area.

Table 1 CA Reporting Obligations

CA Section	Requirement
Condition 17(b)	Following completion of the Monitoring Program the Owner should (at least every three years), complete a monitoring report, including photo point photos, noting changes occurring in the Conservation Area. This will form the basis for decisions about ongoing management actions for the Conservation Area. A copy of all monitoring reports should be forwarded to OEH.
Annexure C Item 1	Annual reports to be prepared according to specifications in Annexure D Monitoring Program.
Annexure D Clause (c)	After each Monitoring Event, the Owner must produce a monitoring report on the Conservation Area by 30 December of each year, beginning in 2018 (Monitoring Report). The Monitoring Report must be submitted to OEH within 21 days of it being received by the Owner.

Purpose

The purpose of this report is to address the annual reporting requirements outlined in Annexure D Clause (c) of the following CAs:

- Middle Deep Creek and Oakvale Offset CA;
- Roxburgh Road CA;
- Thomas Mitchell Drive On-site Offset CA;
- Saddlers Creek CA;
- Mount Arthur Offset CA; and
- Thomas Mitchell Drive Off-Site Offset CA.

Scope

This report to the Biodiversity Conservation Trust (BCT) outlines the activities conducted as part of the monitoring event for the 2023 calendar year for each CA.

Pursuant to Annexure D Clause (c) of the CAs the monitoring report includes:

i. a description of all completed management actions undertaken in the previous 12 month period;

ii. total cost of all works completed in undertaking the management actions listed in items 1 and 2 of Annexure C to the CA;

iii. completed monitoring data sheets (including photographs) using the template provided in Table 3 of Annexure D to the CA;

iv. a discussion of the changes recorded at monitoring points and quadrats.

v. a summary of quadrat data for each photo point (collected biennially – next collection is 2024)

vi. a discussion of the condition of Conservation Values.

vii. a discussion of effectiveness of any management actions implemented; and

viii. recommendations and proposed management actions to be performed in the following year(s).

Timing of execution of Annexure C relating to management of the Conservation Areas s depends upon the Commencement Year of each particular CA. The Commencement Dates for each CA is provided in Table 2.

Table 2 CA Commencement Dates

CA	Commencement Date
Middle Deep Creek and Oakvale Offset Conservation Area	16 December 2016
Roxburgh Road Conservation Area	20 June 2017
Thomas Mitchell Drive Onsite Conservation Area	28 April 2017
Saddlers Creek Conservation Area	21 June 2017
Mount Arthur Conservation Area	3 May 2017
Thomas Mitchell Drive Off-site Offset Conservation Area	2 December 2016

Middle Deep Creek Conservation Area

Conservation Values

Management of the Middle Deep Creek Conservation Area (MDCCA) commenced in December 2016 with 2023 being year 7 of management activities. The conservation area is approximately 1257 hectares. The baseline conservation values or biodiversity values are described in detail in Annexure B the Conservation Agreement. The MDCCA is managed to restore and protect conservation values by management actions, monitoring and reporting. Baseline monitoring has shown that the MDCCA holds significant biodiversity values.

Cumberland Ecology undertook the annual monitoring event in November 2023. The annual event monitoring report provides an update of Conservation Values (Appendix A). The management actions below will continue to maintain and improve the conservation values.

Management Summary

Table 3 provides details on the management actions undertaken during the calendar year at MDCCA addressing the reporting requirements defined in Annexure D, clause (c) of the CA.

Table 3 Middle Deep Creek Conservation Area (Year 6) management actions

Management action	Description	Approximate Spend	Effectiveness	Recommendations
Weed control across the Conservation Area (focusing on noxious and environmental weeds)	St Johns Wort has been the major focus of weed control during January 2023. As reported last year a campaign to control dense infestations of St Johns Wort was undertaken, Slashing wasn't required as spaying was complete before seed set. Monitoring during spring identified only sparce occurrences in areas where control was undertaken over the last 3 years. Spraying of these outbreaks has occurred in December 2023 and will continue in January 2024.Control of other weeds such as Box Thorn and	$ 80,500.00	Significant success in the control of St Johns Wort has been achieved by diligent control of dense infestations using spraying and slashing over the last 3 years. Monitoring during spring 2023 identified only sparce patches of St John's Wort in previously treated areas. Dense infestations were noted on adjoining land demonstrating the success of the campaign.	Maintain access and monitoring. Implement spraying of sparce areas. Formal event monitoring (November 2023) has identified the presence of St John's Wort and annual weeds in the walk through assessment. St Johns Wort. These areas will continue to be monitored and controlled. The recommendation for annual weeds is to rely on plantings of canopy species. Consideration of the reintroduction of the stem boring moth

Management action	Description	Approximate Spend	Effectiveness	Recommendations
	Prickly Pear were opportunistically treated at the same time.		Result: Areas once densely infested are now only sparsely infested.	Cactoblastis Cactorum for the control of Prickly Pear.
Improve the condition of the Conservation Area through revegetation activities	**Seed Collection** No Seeds collected onsite during 2023. Local district seeds have been purchased from a local supplier in 2022. These seeds are currently in controlled storage for a later direct seeding program. **Planting** No planting occurred in 2023. Deer and Pig damage to trees and tree guards noted during routine monitoring. Tree maintenance and straitening of tree guards has occurred. The BCT audit (2022) identified that no further planting was required in the areas planted to year 4. Year 5 to 10 plantings commenced in autumn 2022 with over 100 ha planted. These areas include grasslands identified by the BCT and areas identified for years 5 to 10 in Annexure B Diagram 7 of the Conservation Agreement. Seedlings have been planted at 30 Eucalypts per hectare.	• Seed collection – $400.00 storage fee Tree maintenance, watering and tree guard replacement. $53,000.00	Seeds purchased for direct seeding and tubestock. As reported in 2022 natural regrowth and year 1 to 4 plantings required by Annexure B Diagram B7 of the Conservation Agreement have provided suitable tree densities in these areas. No further planting is required in these locations. Years 5-10 plantings commenced in 2022 along with grassland areas identified by the BCT. Losses experienced by damage from feral deer and feral pigs. Survival to be reassessed in 2024 to ensure target of 15 overstorey trees per hectare.	Continue to ensure seeds available for planting programs. Direct seeding of understory in islands throughout planted areas to be implemented once control of weeds has occurred (scheduled for June 2024 or later depending on significant rainfall). Replacement of overstorey tubestock is planned for 2024. Slashing between plantings scaled back (as per BCT 2023 audit) and only to be implemented if adaptive management identifies that slashing is required. Continued plantings as per the 5 to 10 year planting plan in the CA.
Pest animal monitoring and control (local co-	Trail camera monitoring has identified the presence of Deer, Pigs and Foxes.	$ 10 000	Cats - nil to low numbers. (traps set with no results)	Continued focus on biodiversity threats such as foxes and cats. Continued

Management action	Description	Approximate Spend	Effectiveness	Recommendations
ordination with Local Land Services and OEH)	No dogs or cats observed. Monitoring included over 14 nights of camera monitoring, searching for scats, tracks and prey signs. Humane control of pigs (41 removed). Control also undertaken in the neighbouring Oakvale property. Deer are present 35 noted during monitoring in August. Event monitoring (November 2023) recorded 16 Deer. Humane control (7 removed). Foxes (1 fox removed)		Deer numbers lower following humane control program over the last 2 years. Pigs are in medium. Many larger breeding stock have been removed. Wild dogs and cats not present in monitoring numbers. Foes in low numbers.	control of other feral animals. Continue to work with LLS and neighbouring properties on wild dog and fox control program.
Construct and maintain fire breaks and implement fire management hazard reduction burns. **Operate with NSW Rural Fire Service or fire management contractor to implement mosaic or partial area hazard reduction burn.**	Tracks and boundaries were slashed in January and March to retain access and maintain firebreaks. No hazard reduction burns were undertaken during the reporting period. 2 burn plans mapped and submitted to RFS for approval in 2021 still awaiting assessment from RFS. Approval delays to burn plans have resulted in these plans being out of date. New burn plans are required. Burns are now planned for Winter 2024.	$17,000.00	No fires reported. Approval of Section 100 certificates under the Rural Fires Services act from RFS will require new plans to be submitted.	Implement approved hazard reduction burns (2) following approval of burn certificates by RFS. 2 Burns planned in late Winter 2024.
Fencing	6 km of boundary fauna friendly fencing completed.	$84,000.00	New fence completed from front gate along eastern and northern boundary of property. Eastern side	Install approximately 8 km of fauna friendly fencing in 2024. This will

Management action	Description	Approximate Spend	Effectiveness	Recommendations
			boundary from lower front gate to the northern corner.	complete the boundary fence as fauna friendly. Continue to remove internal fencing in 2024.
Annual Reports for Monitoring Program	Cumberland Ecology was engaged by Mt Arthur Coal to undertake ecological monitoring surveys at a total of 6 monitoring sites within the conservation area to address (iii) and (iv) of Annexure D, clause (c) of the CAs. Ecological monitoring surveys were undertaken in November 2023. An event monitoring report (Attachment A) has been completed which includes photo and data monitoring (no biometric data as this is only required Biennially), a discussion of changes recorded at monitoring points recommendations for each monitoring point. A walk through assessment was undertaken in November 2023 as part of the program as described in the CA Annexure D Table 3 Monitoring Data Sheet template. Recommendations are also included.	$10,000.00	Reference point monitoring completed and attached. Walk through assessment completed in November 2022 and attached.	Implement monitoring report recommendations.
Threatened species, populations and endangered ecological communities (EEC)	The BCT annual audit and conservation agreement actions guides works to improve the management of threatened species, populations, and endangered communities.	Not applicable	Current program and BCT recommendations aim to improve conditions for threatened Species, populations, and EEC's.	Implementation of BCT audit report recommendations.
Aboriginal places and Aboriginal objects	No risk to Aboriginal Places and Aboriginal Objects during the 12 month monitoring period.	$00.00	Not applicable	Implement due diligence Cultural Heritage report of the hazard reduction burn area prior to burning.

Weed Control

Photo 1. A key focus at the Middle Deep Creek offset in 2023 has been weed control. The area shown in the photo was once densely infested with St Johns Wort in 2021 and 2022. During 2023 only spares isolated infestations exist and these have been controlled with spot spraying.

Signage

Photo 2. Signs have been erected to assist with unauthorised access.

Roxburgh Road Conservation Area

Conservation Values

Management of the Roxburgh Road Conservation Area (RRCA) commenced in June 2017 with 2023 being years 6 - 7 of management activities. The conservation area is approximately 109 hectares. The conservation values or biodiversity values are described in detail in Annexure B the Conservation Agreement (CA). The RRCA is managed to restore and protect conservation values by management actions, monitoring and reporting. Baseline monitoring has shown that the RRCA holds significant biodiversity values.

Cumberland Ecology undertook the annual monitoring event in November 2023. The annual event monitoring report provides an update of Conservation Values (Appendix A). The management actions below will continue to maintain and improve the conservation values.

The management actions below will continue to maintain and improve the conservation values.

Management

Table 4 provides details on the management actions undertaken during the calendar year at RRCA addressing the reporting requirements defined in Annexure D, clause (c) of the CA.

Table 4 Roxburgh Road Conservation Area (Year 5 - 6) management actions

Management action	Description	Approximate Spend	Effectiveness	Recommendations
Weed control across the Conservation Area (focusing on noxious and environmental weeds)	Weed control for 2023 focussed on mechanical slashing of annual weeds in open areas as part of fire hazard reduction.	$7000.00	Infestations of boxthorn, African olive and prickly pear were successfully controlled across the entire 109 ha of the CA by the end of 2022. These weeds will now only require maintenance control. Smaller boxthorn and African olive are present and difficult to spot. Total eradication isn't anticipated for this CA.	Monitor and control of weeds as required. Cumberland Ecology noted boxthorn in the November 2023 monitoring report highlighting that this weed will require ongoing control.
Seed collection	No seed collection was required.	$ Nil	Not required.	No changes proposed.

Management action	Description	Approximate Spend	Effectiveness	Recommendations
Pest animal monitoring and control (local co-ordination with Local Land Services and OEH)	No significant feral animals located using observations and looking for animal signs along tracks etc. Feral animal numbers are low in this offset.	$ 2,300.00	Feral animal numbers are low in this offset	Continue with LLS community Program. Continue with monitoring and observations including traps, scats and footprints, etc.
Construct and maintain fire breaks and implement fire management hazard reduction burns. **Operate with NSW Rural Fire Service or fire management contractor to implement mosaic or partial area hazard reduction burn.**	Boundaries, firebreaks, and access tracks slashed. Three hazard reduction burns totalling 22 ha undertaken in August 2023. See attached burning operations report.	$ 7,100.00 $62,800.00	Effective Hazard reduction burns undertaken as planned.	Nil
Fencing and Infrastructure	No Fencing required.	$0.00	Boundary fences have been replaced with fauna friendly fencing over the past 3 Years. Only 600 metres remaining to complete boundary.	Finish 600 metres of fauna friendly boundary fencing over the next 2 years.
Annual Reports for Monitoring Program	Cumberland Ecology was engaged by Mt Arthur Coal to undertake ecological monitoring surveys at a total of 2 monitoring sites within the conservation area to address (iii) and (iv) of Annexure D, clause (c) of the CAs. Ecological monitoring surveys were undertaken in November 2023. An event monitoring report (Attachment A) has been completed which includes Data sheets photo monitoring, a discussion of changes recorded at monitoring points recommendations for each monitoring	$10,000.00	Reference point data and photo monitoring completed and attached.	N/A

Management action	Description	Approximate Spend	Effectiveness	Recommendations
	point. A walk through assessment was undertaken in November 2023 as part of the program as described in the CA Annexure D Table 3 Monitoring Data Sheet template. Recommendations are also included. Biometric monitoring to occur in 2024.			
Threatened species, populations and endangered ecological communities (EEC)	The BCT audit report 2022 makes recommendations which should be followed improve the management of threatened species, populations and endangered communities.	Not applicable	Current program and BCT recommendations aim to improve conditions for threatened Species, populations and EEC's.	Implementation of BCT audit report recommendations.
Aboriginal places and Aboriginal objects	No risk to Aboriginal Places and Aboriginal Objects during the 12-month monitoring period. A due diligence Cultural Heritage survey has been undertaken for the plan hazard reduction burns	Not applicable	Not applicable	N/A

Hazard reduction burns

Photo 1 – Hazard reduction burn being undertaken. Approximately 22 Hectares burnt in three burns.

Quarry Rehabilitation

Photo 2 –Old quarry/borrow pit rehabilitated by placement of hay over clay surface. Vegetation starting to colonise the area.

Attachment 1

Roxburgh East and West Hazard Reduction Operations Report

BURNING OPERATIONS RECORD – ROXBURY EAST DIV

Completed by Incident Controller

FORECAST WEATHER AND INDICES								
Date	**Time (hrs)**	**T (°C)**	**RH (%)**	**Wind Dir.**	**Wind (km/h)***	**FDI**	**KBDI**	**Weather Source**
5 Sept	0900	17	42	W	15	Low	80	BoM
5 Sept	1500	22	32	W	27	Low	80	BoM
Weather changes due:		NO – consistent weather predicted all day.						

* BOM wind speed is measured at 10 m height

BURN SITE WEATHER READINGS (Take reading at burn start, hourly during the burn and at completion. Half-hourly readings may be required during the burn if unpredicted weather changes occur)								
Date	**Time (hrs)**	**T (°C)**	**RH (%)**	**Wind Dir.**	**Wind (km/h)***	**FDI**	**FMC (%)**	**Comments**
5 Sept	0900	15	60	W	9	Low	13%	Briefing completed.
5 Sept	1100	17	50	W	9	Low	13%	Ignition commenced wind as predicted FH 1m.
5 Sept	1300	18	47	WSW	15	Low	13%	Burn progressing along Bravo sector through timber.
5 Sept	1500	21	44	WSW	27	Low	13%	Burn progressing along Alpha sector to tie in.
5 Sept	1700	17	55	W	15	Low	13%	Burn completed, patrol commenced, all fire within containment.

FIRE BEHAVIOUR			
Time	**Flame Ht (m) Scorch Ht (m)**	**ROS (m/min)**	**Comments**
0930	1/3m	1m/m	Progressing as planned
1100	1/3m	2m/m	Progressing as planned
1300	1.5/3m	2.5m/m	Progressing as planned
1500	1/3m	2m/m	Progressing as planned - approaching containment.
1700	1/3m	1m/m	Internal burning only

SITUATION REPORTS		
Time	**Call sign**	**Comments**
0930	N/A	Briefing completed – test burn undertaken – connected RFS to confirm progressing with burn – FH 1m, slow progress to secure containment.
1030	Alpha to IC	Burn commenced along Bravo sector cross slope to the north and slowly down slope to the east. Progressing well.
1130	Alpha to IC	Burn continuing north along Bravo sector cross slope to the north and slowly down slope to the east. Downslope burn at hold till Bravo sector burns further to the north. Progressing well.
1230	Alpha to IC	Burn continuing north along Bravo sector cross slope to the north and slowly down slope to the east. Downslope burn at hold till Bravo sector burns further to the north. Progressing well.
1330	Alpha to IC	Burn commencing in Alpha sector at decision point and working from Bravo sector in the north to the south. Progressing well.
1430	Alpha to IC	Burn commencing in Alpha sector at decision point and working from Bravo sector in the north to the south. Progressing well.
1530	Alpha to IC	Burn coming to conclusion commence mop-up and black-out. Progressing well.
1630	Alpha to IC	No breach of containment - mop-up and black-out continuing. Progressing well.
1730	Alpha to IC	No active fire - internal smoldering and combustion - black-out to 30m – night patrol established.

DEBRIEF REPORT	
Burn Implementation Prompt: Did the burn progress correctly and smoothly? If not, what problems occurred?	Burn progressed as planned. Access and water supply adequate, no smoke hazard to community of road infrastructure
Fire Behaviour Prompt: Was there any unusual or unexpected fire behaviour observed?	Fire behavior was expected.
Prescriptions Prompt: Do the prescriptions need revision? If so, how can they be improved?	Predicted weather met the prescription.
OHS Prompt: Were there any accidents or near misses?	No near-misses or incidences.
Hazards Prompt: Were all hazards identified in the plan and how effective were the suggested treatments?	High level of iron bark stumps and wood burning on ground.
Assets Prompt: Was there any damage to assets?	No assets damaged.
Suggested Improvements Prompt: Consider planning, preparation, procedures, equipment, communications, maintenance, supervision, training	BHP require to be present at briefing.

Report prepared by:	**Duncan Scott-Lawson**	 23/11/2023
	Name	Signature & date

Post Burn Assessment

Completed by Prescribed Burn Planner

Area Information		
Gross area burnt	Approx 7ha	
Estimated burn coverage	100 %	
Estimated post burn fuel load	0-5 t/ha Score: ☐ Low ☒ Mod ☐ High ☐ V. High ☐ Extreme	
Estimated crown scorch	0 %	
Operational Performance		
		Comment (if no, why?)
Burn contained within planned boundaries?	☒ Yes ☐ No	No breach of containment
Fuel reduction objective met?	☒ Yes ☐ No	Objectives of burn plan met.
Environmental requirements met?	☒ Yes ☐ No	Burn completed with HRC requirements
Remedial Action		
Prompt: Describe any remedial action required	Apply BHP post-burn handover report. Maintain patrol for days and following and specifically on windy days.	
Remedial Action Completed	Date: 10/10/2023	

Report prepared by:	**Duncan Scott-Lawson**	23/11/2023
	Name	Signature & date

BURNING OPERATIONS RECORD – ROXBURY WEST DIV

Completed by Incident Controller

FORECAST WEATHER AND INDICES								
Date	**Time (hrs)**	**T (°C)**	**RH (%)**	**Wind Dir.**	**Wind (km/h)***	**FDI**	**KBDI**	**Weather Source**
4 Sept	0900	19	38	NW	17	Low	80	BoM
4 Sept	1500	24	55	SW	35	Low	80	BoM
Weather changes due:		NO – consistent weather predicted all day.						

* BOM wind speed is measured at 10 m height

BURN SITE WEATHER READINGS (Take reading at burn start, hourly during the burn and at completion. Half-hourly readings may be required during the burn if unpredicted weather changes occur)								
Date	**Time (hrs)**	**T (°C)**	**RH (%)**	**Wind Dir.**	**Wind (km/h)***	**FDI**	**FMC (%)**	**Comments**
4 Sept	0900	19	38	NW	17	Low	13%	Briefing completed.
4 Sept	1100	20	50	W	9	Low	13%	Ignition commenced wind as predicted FH 1m.
4 Sept	1300	21	44	WSW	17	Low	13%	Burn progressing along Alpha sector through timber.
4 Sept	1500	24	55	SW	27	Low	13%	Burn progressing along Bravo sector to tie in.
4 Sept	1700	19	50	W	17	Low	13%	Burn completed, patrol commenced, all fire within containment.

FIRE BEHAVIOUR			
Time	**Flame Ht (m) Scorch Ht (m)**	**ROS (m/min)**	**Comments**
0930	1/3m	1m/m	Progressing as planned
1100	1/3m	2m/m	Progressing as planned
1300	1.5/3m	2.5m/m	Progressing as planned
1500	1/3m	2m/m	Progressing as planned - approaching containment.
1700	1/3m	1m/m	Internal burning only

SITUATION REPORTS		
Time	**Call sign**	**Comments**
0930	N/A	Briefing completed – test burn undertaken – connected RFS to confirm progressing with burn – FH 1m, slow progress to secure containment.
1030	Alpha to IC	Burn commenced along Alpha sector cross slope to the north and slowly down slope to the south in Bravo sector. Progressing well.
1130	Alpha to IC	Burn commenced along Alpha sector cross slope to the north and slowly down slope to the south in Bravo sector. Progressing well.
1230	Alpha to IC	Burn along Alpha sector reach western containment. Allowing back burning to establish depth prior to introducing downwind fire. Progressing well.
1330	Alpha to IC	Downwind fire in both Alpha and Bravo sectors Progressing well.
1430	Alpha to IC	Downwind fire in both Alpha and Bravo sectors, black-out to 10m commenced. Progressing well.
1530	Alpha to IC	Burn coming to conclusion commence mop-up and black-out to 30m. Progressing well.
1630	Alpha to IC	No breach of containment - mop-up and black-out continuing. Progressing well.
1730	Alpha to IC	No active fire - internal smoldering and combustion - black-out to 30m – night patrol established.

DEBRIEF REPORT	
Burn Implementation Prompt: Did the burn progress correctly and smoothly? If not, what problems occurred?	Burn progressed as planned. Access and water supply adequate, no smoke hazard to community of road infrastructure
Fire Behaviour Prompt: Was there any unusual or unexpected fire behaviour observed?	Fire behavior was expected.
Prescriptions Prompt: Do the prescriptions need revision? If so, how can they be improved?	Wind velocities on ground lower than predicted.
OHS Prompt: Were there any accidents or near misses?	No near-misses or incidences.
Hazards Prompt: Were all hazards identified in the plan and how effective were the suggested treatments?	High level of iron bark stumps and wood burning on ground.
Assets Prompt: Was there any damage to assets?	No assets damaged.
Suggested Improvements Prompt: Consider planning, preparation, procedures, equipment, communications, maintenance, supervision, training	N/A

Report prepared by:	**Duncan Scott-Lawson**	 23/11/2023
	Name	Signature & date

Post Burn Assessment

Completed by Prescribed Burn Planner

Area Information		
Gross area burnt	Approx 15ha	
Estimated burn coverage	80 %	
Estimated post burn fuel load	2-5 t/ha Score: ☒ Low ☐ Mod ☐ High ☐ V. High ☐ Extreme	
Estimated crown scorch	0 %	
Operational Performance		
		Comment (if no, why?)
Burn contained within planned boundaries?	☒ Yes ☐ No	No breach of containment
Fuel reduction objective met?	☒ Yes ☐ No	Objectives of burn plan met.
Environmental requirements met?	☒ Yes ☐ No	Burn completed with HRC requirements
Remedial Action		
Prompt: Describe any remedial action required	Apply BHP post-burn handover report. Maintain patrol for days and following and specifically on windy days.	
Remedial Action Completed	Date: 10/10/2023	

Report prepared by:	**Duncan Scott-Lawson**	23/11/2023
	Name	Signature & date

Thomas Mitchell Drive Onsite Conservation Area

Conservation Values

Management of the Thomas Mitchell Drive Onsite Conservation Area (TMD Onsite CA) commenced in April 2017 with 2023 being years 6 - 7 of management activities. The conservation area is approximately 219 hectares. The conservation values or biodiversity values are described in detail in Annexure B the Conservation Agreement. The TMDOCA is managed to restore and protect conservation values by management actions, monitoring and reporting. Baseline monitoring has shown that the TMD Onsite CA holds significant biodiversity values.

Cumberland Ecology undertook the annual monitoring event in November 2023. The annual event monitoring report provides an update of Conservation Values (Appendix A). The management actions below will continue to maintain and improve the conservation values.

Management

Table 5 provides details on the management actions undertaken during the calendar year at TMD Onsite CA addressing the reporting requirements defined in Annexure D, clause (c) of the CA.

Table 5 Thomas Mitchell Drive Onsite Conservation Area (Year 6 - 7) management actions

Management action	Description	Approximate Spend	Effectiveness	Recommendations
Weed control across the Conservation Area (focusing on noxious and environmental weeds)	Environmental weeds were the focus for 2023 with areas of *Acacia Saligna* and Cootamundra wattle removed by mechanical removal along the southern half of the eastern boundary. Non endemic native species and boxthorn were mechanically removed from historic plantation plantings on the northern end of the offset. Slashing of open grassland areas in late summer also occurred in preparation for tree planting. This slashing reduced	$ 38,600	Control of targeted weeds effective. Although slashing doesn't remove the weeds it allows for better vision of management options whilst reducing seed load. Mechanical removal of environmental weeds successful. St Johns Wort control successful following consistent control over several years. Outbreak densities now sparse.	Slashing may be used for the next couple of seasons whilst alternative strategies are developed. Coolatai control using wick wiping planned for early 2024. Spot spraying of Prickly Pear planned for early 2024.

Attachment 1

Sadders Creek Central, East (a), East (b) and West Hazard Reduction Operations Report

Management action	Description	Approximate Spend	Effectiveness	Recommendations
	future seed loads of annual weed species and reduced the fire hazard. Dry conditions stunted coolatai grass growth following earlier slashing before the planned winter or spring weed wiping. Rain in December 23 stimulated growth with wick wiping planned in early 2024. The large areas of St Johns Wort control reported over the previous 3 years has reduced the presence of this weed from dense (2021 and 2022) to scatted levels this year. Spraying of St Johns Wort in these scatterd locations has occurred. Slashing of grass land has exposed prickly pear that now can be easily sprayed due to visibility. Spraying planned for early 2024.			
Improve the condition of the Conservation Area through revegetation activities	**Seed Collection** No Seeds collected onsite during 2023. Local district seeds have been purchased from a local supplier in 2022. Eucalypt seed was used to nursery tubestock for the 2023 planting campaign. Understory seed was used for direct seeding in islands throughout the planted areas. **Planting**	• Seed Storage $400.00	Seeds used for tubestock and direct seeding.	Monitor and maintain plantings. Infill plant if required.

Management action	Description	Approximate Spend	Effectiveness	Recommendations
	Over 85 ha planted during winter 2023 in derived grassland identified within the areas shown in Annexure B Diagram 5 of the CA. Planting spacing 15 metres for eucalypt canopy species aligning with ecological communities. Direct seeding of understory species occurred in islands throughout the planted areas.	Tubestock, ground preparation planting treeguards and maintenance $203,500	CA planting plan completed 3 years ahead of schedule.	
Pest animal monitoring and control (local co-ordination with Local Land Services and OEH)	Local Land Services risk assessments prevent baiting within 2 km of residential areas of Muswellbrook. Control of dogs, cats and foxes for this offset was undertaken by a regional baiting program on the mine site to the west of the TMD onsite CA and in the southern end of TMD onsite CA during June 2023. The baiting work is programmed to coordinate with the regional baiting program coordinated by the Local Land Service (LLS). Monitoring by cameras, observation and tracks and signs of animal.	Covered by larger regional programme at the adjacent mine and surrounding properties. Approximately $6,000.00 spent	No records of animals removed in 2023.	Ongoing participation in regional LLS program. Continue monitoring using cameras, observations and scat identification. Implement control as required.
Construct and maintain fire breaks and implement fire management hazard reduction burns. **Operate with NSW Rural Fire Service or fire management contractor to implement mosaic or partial area hazard reduction burn.**	Slashing as described in the weeds section has reduced the fire hazard. No hazard reduction burns were undertaken during the reporting period. Strategic prescribed burn hazard reduction program developed with burning no planned for the next 2 years. Falling powerlines within the Ausgrid easement triggered a small 0.8 hectare fire which spread from the easement into	$9,000 slashing	One fire reported. Slashing used to reduce fire risk.	No changes proposed.

Management action	Description	Approximate Spend	Effectiveness	Recommendations
	an area of bulloak. The fire was quickly controlled.			
Fencing	No new fencing undertaken in 2023. Many internal fences were removed.	N/A	N/A	New fauna friendly fencing of over 2km is proposed for the northern end of the offset along Thomas Mitchell Drive.
Annual Reports for Monitoring Program	Cumberland Ecology was engaged by Mt Arthur Coal to undertake ecological monitoring surveys at a total of 4 monitoring sites to address (iii) and (iv) of Annexure D, clause (c) of the CAs. Ecological monitoring surveys were undertaken November 2023. An event monitoring report (Attachment A) has been completed which includes photo monitoring, a discussion of changes recorded at monitoring points recommendations for each monitoring point. A walk through assessment was undertaken in November 2023 as part of the program as described in the CA Annexure D Table 3 Monitoring Data Sheet template. Recommendations are also included. Regeneration monitoring not required until 4 years after planting/revegetation has been undertaken (estimated commencement 2025)	$10,000.00	Reference point monitoring and walk through assessment completed and attached.	See report.
Threatened species, populations and endangered ecological communities (EEC)	The BCT audit report 2023 makes recommendations which should be followed improve the management of threatened species, populations and endangered communities.	Not applicable	Current program and BCT recommendations aim to improve conditions for threatened Species, populations and EEC's.	Implementation of BCT audit report recommendations. An area of Bull Oak is planned for thinning in 2024 as required by the BCT audit.

Management action	Description	Approximate Spend	Effectiveness	Recommendations
Aboriginal places and Aboriginal objects	No risk to Aboriginal Places and Aboriginal Objects during the 12 month monitoring period.	Not applicable	Not applicable	No changes proposed.

Planting.

Eucalypt plantings as per the CA planting plan and aligning with ecological communities occurred during winter 2023. Planting spacing of Eucalypt canopy species being every 15 metres using tree guards. Direct seeding of understorey species in islands has also been completed. All areas in the planting schedule are now complete with approximately 20 hectares planted in 2021 and approximately 85 hectares in 2023. Direct seeding was completed in 2023. Small areas identified in the planting schedule were naturally regenerating. These areas will remain unplanted. Monitoring and replacement planting if required is planned for future years.

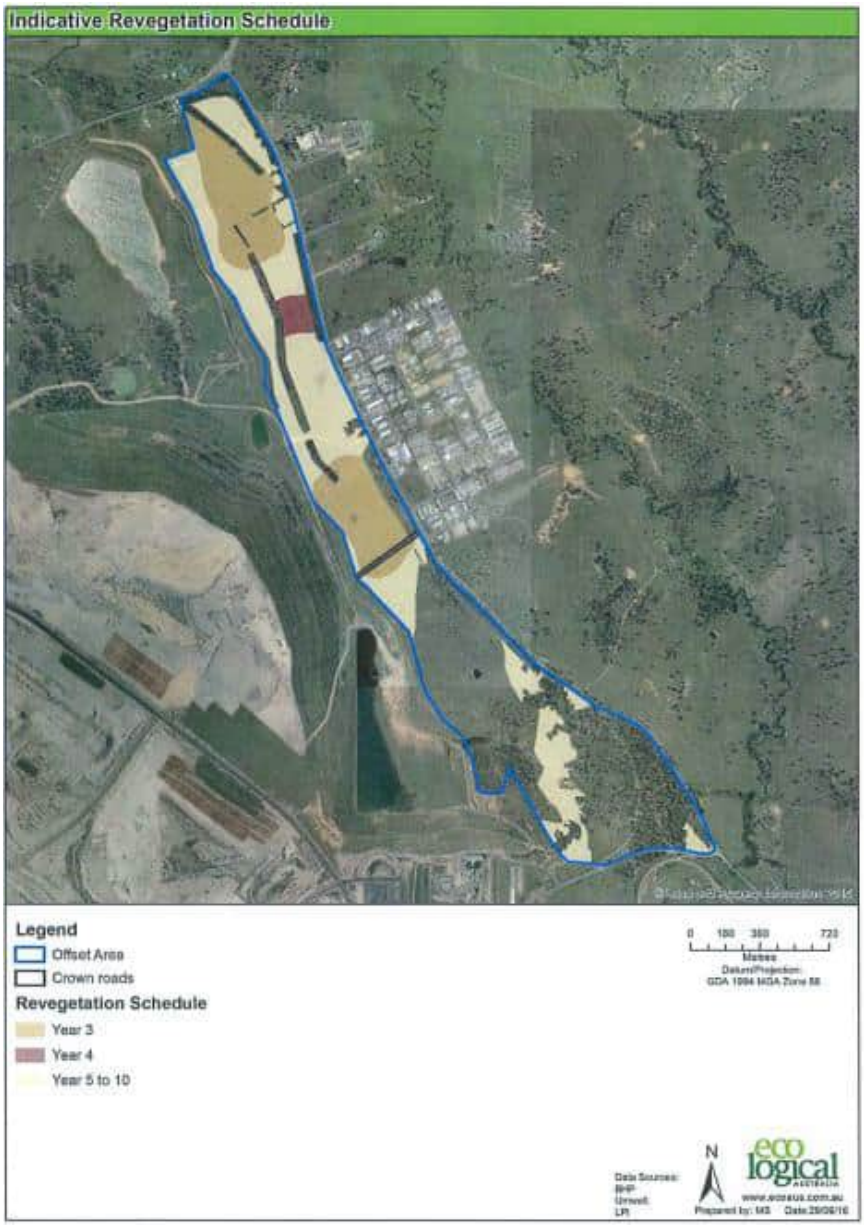


Photo 1 – Surface preparation for tree planting.

Photo 2 – Trees planted.

Saddlers Creek Conservation Area

Conservation Values

Management of the Saddlers Creek Conservation Area (SCCA) commenced in June 2017 with 2023 being year 6 - 7 of management activities. The conservation area is approximately 431.3 hectares. The conservation values or biodiversity values are described in detail in Annexure B the Conservation Agreement. The SCCA is managed to restore and protect conservation values by management actions, monitoring and reporting. Baseline monitoring has shown that the SCCA holds significant biodiversity values.

Cumberland Ecology undertook the annual monitoring event in November 2023. The annual event monitoring report provides an update of Conservation Values (Appendix A). The management actions below will continue to maintain and improve the conservation values.

Management

Table 6 provides details on the management actions undertaken during the calendar year at (SCCA) addressing the reporting requirements defined in Annexure D, clause (c) of the CA.

Table 6 Saddlers Creek Conservation Area (Year 5 - 6) Completed management actions

Management action	Description	Approximate Spend	Effectiveness	Recommendations
Weed control across the Conservation Area (focusing on noxious and environmental weeds)	Weed control focused on spot spaying of Mother of Millions along Saddlers Creek, St John's Wort and mechanical removal of boxthorn and honey locus. Slashing in for plantings and fire hazard reduction controlled annual weeds	$ 78,500.00	Maintenance of approximately 80 hectares grassland with weed infestations reported last year has seen a noted decrease in St Johns Wort. Dense Mother of Millions controlled near Saddlers Creek.	Prickly pear will be the focus for early 2024 and minimising the spread of Coolatai grass will also be a focus along with regular control of other weed species.
Improve the condition of the Conservation Area through revegetation activities	**Seed Collection** No Seeds collected onsite during 2023. Local district seeds have been purchased from a local supplier in 2022. Eucalypt seed was used to nursery tubestock for the 2023 planting campaign. Understory seed was used	Seed Storage $400.00	Seeds purchased for direct seeding and tubestock.	

Management action	Description	Approximate Spend	Effectiveness	Recommendations
	for direct seeding in islands throughout the planted areas. **Planting** Over 82.3 ha planted during winter 2023 in derived grassland identified within the areas shown in Annexure B Diagram 5 of the CA and in additional areas following hazard reduction burn. This Planting spacing 15 metres for eucalypt canopy species (30 trees per hectare) aligning with ecological communities. Direct seeding of understory species occurred in islands throughout the planted areas. These plantings complete the 35 hectares shown in the planting plan in Annexure B Diagram 5 of the CA with 23.5 hectares planted in 2022 and 13 hectares in 2023. Additional areas 56.3 planted in other grassland areas. Total plantings for Saddlers Creek completed approximately 114.8ha	Tubestock, ground preparation, planting, tree guards and maintenance. $197, 800	CA planting plan completed 3 years ahead of schedule.	Monitor and maintain plantings. Infill plant if required.
Pest animal monitoring and control (local co-ordination with Local Land Services and OEH)	1080 baiting programs were undertaken in June and July for eradication of cats, foxes and dogs. The baiting work is programmed to fit in with the regional baiting program coordinated by the Local Land Service (LLS). Humane control of	$ 6,300.00 spent on pig control and cat and fox trapping program	No records of animals removed in 2023.	Continue with regional program and monitoring.

Management action	Description	Approximate Spend	Effectiveness	Recommendations
	pigs and the setting up of cat and fox traps was also undertaken. LLS undertook an aerial control program on adjacent property along the downstream section of Saddlers Creek. This program removed approximately 80 pigs from the catchment.			
Construct and maintain fire breaks and implement fire management hazard reduction burns. **Operate with NSW Rural Fire Service or fire management contractor to implement mosaic or partial area hazard reduction burn.**	Boundaries, firebreaks, and access tracks slashed. Three hazard reduction burns totalling approximately 85ha undertaken in August 2023. An addition 22 hectares was also burnt in an area adjacent to Saddlers Central in land managed for conservation but outside of the CA. See attached burning operations reports. This completes the requirements in the CA agreement of two hazard reduction burns in 10 years.	$ 11,200.00 $ 50,376.00	85ha of hazard reduction burning undertaken using 3 burns safely executed. This completes the requirements in the CA agreement of two hazard reduction burns in 10 years.	Continue to monitor the CA for bushfire risk. Maintain firebreaks and access for emergency control.
Fencing	1.250 ha of fauna friendly fencing installed	$ 43,000.00	Fencing requirement from CA met with fencing program over the past 4 years.	No changes proposed.
Annual Reports for Monitoring Program	Cumberland Ecology was engaged by Mt Arthur Coal to undertake ecological monitoring surveys at a total of 11 monitoring sites to address (iii) and (iv) of Annexure D, clause (c) of the CAs. Ecological monitoring surveys were undertaken in November 2023. An event monitoring report (Attachment A) has been completed which includes photo and data monitoring, a discussion of	$10,000.00	Reference point monitoring completed and attached. Walk through assessment completed in November 2023.	Implement recommendations from report.

Management action	Description	Approximate Spend	Effectiveness	Recommendations
	changes recorded at monitoring points recommendations for each monitoring point. A walk through assessment was undertaken in November 2023 as part of the program as described in the CA Annexure D Table 3 Monitoring Data Sheet template. Recommendations are also included.			
Threatened species, populations and endangered ecological communities (EEC)	The BCT audit report 2023 makes recommendations which should be followed to improve the management of threatened species, populations and endangered communities. Mulching of Bull Oak lock out regrowth undertaken in an area approximately 2ha leaving other native trees in place. This trail recommended by the BCT is to thin bull oak allowing for the reestablishment of box gum woodland.	$40,000 for thinning Bull Oak.	Current program and BCT recommendations aim to improve conditions for threatened Species, populations and EEC's. Bull oak thinning effective to open up trial area.	Implementation of BCT audit report recommendations.
Aboriginal places and Aboriginal objects	No risk to Aboriginal Places and Aboriginal Objects during the 12 month monitoring period.	Not applicable	Not applicable	No changes proposed.

Hazard Reduction

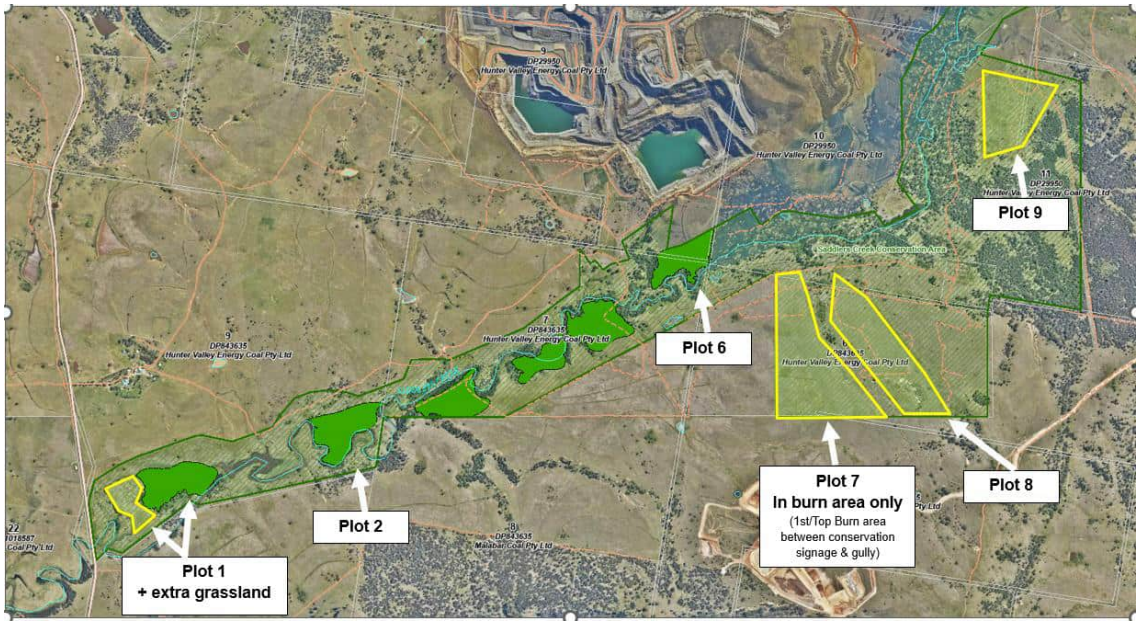
Photo 1 Pre burn safety and operations briefing.

Photo 2 Hazard reduction underway August 2023.

Photo 3 Direct Seeding Post Burn.

Photo 4 Tree planting post burn.

Photo 5 Tree planting areas 2023. Over 82 hectares planted in plots 1,2,6,7,8 and 9 during 2023. Plots 1 and 7 were in the 2023 hazard reduction burn area. Plots 3 4 and 5 were planted in 2022. The total area planted is 114 ha approximately.



Tree Thinning

Photo 6. Drone shot of area where Bull Oak lock out has been thinned leaving only box gum woodland and larger Bull Oaks. This opens the area for box gum woodland to improve its condition. Approximately 1.5 hectares trialled.

Photo 7 Before thinning.

Photo 8 After thinning.

Attachment 1

Sadders Creek Central, East (a), East (b) and West Hazard Reduction Operations Report

BURNING OPERATIONS RECORD – SADDLERS CENTRAL DIV

Completed by Incident Controller

FORECAST WEATHER AND INDICES								
Date	**Time (hrs)**	**T (°C)**	**RH (%)**	**Wind Dir.**	**Wind (km/h)***	**FDI**	**KBDI**	**Weather Source**
3 Sept	0900	14	86	W	2	Low	80	BoM
3 Sept	1500	21	32	S	11	Low	80	BoM
Weather changes due:		NO – consistent weather predicted all day.						

* BOM wind speed is measured at 10 m height

BURN SITE WEATHER READINGS (Take reading at burn start, hourly during the burn and at completion. Half-hourly readings may be required during the burn if unpredicted weather changes occur)								
Date	**Time (hrs)**	**T (°C)**	**RH (%)**	**Wind Dir.**	**Wind (km/h)***	**FDI**	**FMC (%)**	**Comments**
3 Sept	0900	11	80	S	11	Low	13%	Briefing completed.
3 Sept	1100	16	72	S	17	Low	13%	Ignition commenced wind as predicted FH 1m.
3 Sept	1300	17	77	S	23	Low	13%	Burn progressing along Foxtrot and Echo sector.
3 Sept	1500	21	62	S	21	Low	13%	Burn completed, patrol commenced, all fire within containment.
3 Sept	1700	16	77	S	16	Low	13%	Burn completed, patrol commenced, all fire within containment.

FIRE BEHAVIOUR			
Time	**Flame Ht (m) Scorch Ht (m)**	**ROS (m/min)**	**Comments**
0930	1/3m	1m/m	Progressing as planned
1100	1.5/3m	1.5m/m	Progressing as planned
1300	1.5/3m	1.5m/m	Progressing as planned
1500	1.5/3m	1.5m/m	Progressing as planned - approaching containment.
1700	N/A	N/A	No active fire - Burn completed

SITUATION REPORTS		
Time	**Call sign**	**Comments**
0930	N/A	Briefing completed – test burn undertaken – connected RFS to confirm progressing with burn – FH 1m, slow progress to secure containment.
1030	Alpha to IC	Burn commenced along Foxtrot sector working south Echo sector working west. Progressing well.
1130	Alpha to IC	Burn continuing along Foxtrot sector working south Echo sector working west. Progressing well.
1230	Alpha to IC	Slight wind change, commencing delta sector. Progressing well.
1330	Alpha to IC	Echo and Delta sector coming together to tie in burn, reaching containment. Progressing well.
1430	Alpha to IC	No active fire - black-out to 30m – night patrol established.

DEBRIEF REPORT	
Burn Implementation Prompt: Did the burn progress correctly and smoothly? If not, what problems occurred?	Burn progressed as planned. Access and water supply adequate, no smoke hazard to community of road infrastructure.
Fire Behaviour Prompt: Was there any unusual or unexpected fire behaviour observed?	Increase wind velocities increased backing fire pressure on Echo sector.
Prescriptions Prompt: Do the prescriptions need revision? If so, how can they be improved?	Actual wind was 5km/hr stronger than predicted the applied pressure at ignition.
OHS Prompt: Were there any accidents or near misses?	No near-misses or incidences.
Hazards Prompt: Were all hazards identified in the plan and how effective were the suggested treatments?	No unexpected hazards.
Assets Prompt: Was there any damage to assets?	No assets damaged.
Suggested Improvements Prompt: Consider planning, preparation, procedures, equipment, communications, maintenance, supervision, training	

Report prepared by:	**Duncan Scott-Lawson**	 23/11/2023
	Name	Signature & date

Post Burn Assessment

Completed by Prescribed Burn Planner

Area Information		
Gross area burnt	Approx 22ha	
Estimated burn coverage	100 %	
Estimated post burn fuel load	0 t/ha Score: ☒ Low ☐ Mod ☐ High ☐ V. High ☐ Extreme	
Estimated crown scorch	100 % (grasslands)	
Operational Performance		
		Comment (if no, why?)
Burn contained within planned boundaries?	☒ Yes ☐ No	No breach of containment
Fuel reduction objective met?	☒ Yes ☐ No	Objectives of burn plan met.
Environmental requirements met?	☒ Yes ☐ No	Burn completed with HRC requirements
Remedial Action		
Prompt: Describe any remedial action required	Apply BHP post-burn handover report.	
Remedial Action Completed	Date: 10/10/2023	

Report prepared by:	**Duncan Scott-Lawson**	23/11/2023
	Name	Signature & date

BURNING OPERATIONS RECORD – SADDLERS EAST 1a DIV

Completed by Incident Controller

FORECAST WEATHER AND INDICES								
Date	**Time (hrs)**	**T (°C)**	**RH (%)**	**Wind Dir.**	**Wind (km/h)***	**FDI**	**KBDI**	**Weather Source**
2 Sept	0900	10	66	S	9	Low	80	BoM
2 Sept	1500	14	36	S	7	Low	80	BoM
Weather changes due:		NO – consistent weather predicted all day.						

* BOM wind speed is measured at 10 m height

BURN SITE WEATHER READINGS (Take reading at burn start, hourly during the burn and at completion. Half-hourly readings may be required during the burn if unpredicted weather changes occur)								
Date	**Time (hrs)**	**T (°C)**	**RH (%)**	**Wind Dir.**	**Wind (km/h)***	**FDI**	**FMC (%)**	**Comments**
2 Sept	0900	10	66	S	9	Low	13%	Briefing completed.
2 Sept	1100	11	58	S	15	Low	13%	Ignition commenced wind as predicted FH 1m.
2 Sept	1300	14	55	S	17	Low	13%	Burn progressing along Alpha sector.
2 Sept	1500	14	52	S	19	Low	13%	Burn progressing along Bravo and Charlie sector to tie in.
2 Sept	1700	10	60	S	12	Low	13%	Burn completed, patrol commenced, all fire within containment.

FIRE BEHAVIOUR			
Time	**Flame Ht (m) Scorch Ht (m)**	**ROS (m/min)**	**Comments**
0930	1/3m	1m/m	Progressing as planned
1100	1.5/3m	1.5m/m	Progressing as planned
1300	1.5/3m	1.5m/m	Progressing as planned
1500	1.5/3m	1.5m/m	Progressing as planned - approaching containment.
1700	N/A	N/A	No active fire - Burn completed

SITUATION REPORTS		
Time	**Call sign**	**Comments**
0930	N/A	Briefing completed – test burn undertaken – connected RFS to confirm progressing with burn – FH 1m, slow progress to secure containment.
1030	Alpha to IC	Burn commenced along Alpha sector to the north and south high winds slow progress. Progressing well.
1130	Alpha to IC	Alpha sector slow progress du o high wind velocities. Progressing well.
1230	Alpha to IC	Slight wind change, still burning Alpha sector obtaining depth in containment, back-out along the way following ignition. Progressing well.
1330	Alpha to IC	Commencing in Bravo and Charlie sector head fire to Alpha Sector high rate of fire spread. Progressing well.
1430	Alpha to IC	Continuing Bravo and Charlie sector, blackout along the way. Progressing well.
1530	Alpha to IC	Continuing Bravo and Charlie sector, blackout along the way. Progressing well.
1630	Alpha to IC	No breach of containment - mop-up and black-out continuing. Progressing well.
1730	Alpha to IC	No active fire - black-out to 30m – night patrol established.

DEBRIEF REPORT	
Burn Implementation Prompt: Did the burn progress correctly and smoothly? If not, what problems occurred?	Burn progressed as planned. Access and water supply adequate, no smoke hazard to community of road infrastructure.
Fire Behaviour Prompt: Was there any unusual or unexpected fire behaviour observed?	Increase wind velocities increased backing fire pressure on Alpha sector.
Prescriptions Prompt: Do the prescriptions need revision? If so, how can they be improved?	Actual wind was 10km/hr stronger than predicted the applied pressure at ignition.
OHS Prompt: Were there any accidents or near misses?	No near-misses or incidences.
Hazards Prompt: Were all hazards identified in the plan and how effective were the suggested treatments?	No unexpected hazards.
Assets Prompt: Was there any damage to assets?	No assets damaged.
Suggested Improvements Prompt: Consider planning, preparation, procedures, equipment, communications, maintenance, supervision, training	

Report prepared by:	**Duncan Scott-Lawson**	 23/11/2023
	Name	Signature & date

Post Burn Assessment

Completed by Prescribed Burn Planner

Area Information		
Gross area burnt	Approx 23ha	
Estimated burn coverage	100 %	
Estimated post burn fuel load	0 t/ha Score: ☒ Low ☐ Mod ☐ High ☐ V. High ☐ Extreme	
Estimated crown scorch	100 % (grasslands)	
Operational Performance		
		Comment (if no, why?)
Burn contained within planned boundaries?	☒ Yes ☐ No	No breach of containment
Fuel reduction objective met?	☒ Yes ☐ No	Objectives of burn plan met.
Environmental requirements met?	☒ Yes ☐ No	Burn completed with HRC requirements
Remedial Action		
Prompt: Describe any remedial action required	Apply BHP post-burn handover report.	
Remedial Action Completed	Date: 10/10/2023	

Report prepared by:	**Duncan Scott-Lawson**	23/11/2023
	Name	Signature & date

BURNING OPERATIONS RECORD – SADDLERS EAST 1b DIV

Completed by Incident Controller

FORECAST WEATHER AND INDICES								
Date	**Time (hrs)**	**T (°C)**	**RH (%)**	**Wind Dir.**	**Wind (km/h)***	**FDI**	**KBDI**	**Weather Source**
2 Sept	0900	10	66	S	9	Low	80	BoM
2 Sept	1500	14	36	S	7	Low	80	BoM
Weather changes due:		NO – consistent weather predicted all day.						

* BOM wind speed is measured at 10 m height

BURN SITE WEATHER READINGS (Take reading at burn start, hourly during the burn and at completion. Half-hourly readings may be required during the burn if unpredicted weather changes occur)								
Date	**Time (hrs)**	**T (°C)**	**RH (%)**	**Wind Dir.**	**Wind (km/h)***	**FDI**	**FMC (%)**	**Comments**
2 Sept	0900	10	66	S	9	Low	13%	Briefing completed.
2 Sept	1100	11	58	S	15	Low	13%	Ignition commenced wind as predicted FH 1m.
2 Sept	1300	14	55	S	17	Low	13%	Burn progressing along Alpha sector.
2 Sept	1500	14	52	S	19	Low	13%	Burn progressing along Bravo and Charlie sector to tie in.
2 Sept	1700	10	60	S	12	Low	13%	Burn completed, patrol commenced, all fire within containment.

FIRE BEHAVIOUR			
Time	**Flame Ht (m) Scorch Ht (m)**	**ROS (m/min)**	**Comments**
0930	1/3m	1m/m	Progressing as planned
1100	1.5/3m	1.5m/m	Progressing as planned
1300	1.5/3m	1.5m/m	Progressing as planned
1500	1.5/3m	1.5m/m	Progressing as planned - approaching containment.
1700	N/A	N/A	No active fire - Burn completed

SITUATION REPORTS		
Time	**Call sign**	**Comments**
0930	N/A	Briefing completed – test burn undertaken – connected RFS to confirm progressing with burn – FH 1m, slow progress to secure containment.
1030	Alpha to IC	Burn commenced along Alpha sector to the north and south high winds slow progress. Progressing well.
1130	Alpha to IC	Alpha sector slow progress du o high wind velocities. Progressing well.
1230	Alpha to IC	Slight wind change, still burning Alpha sector obtaining depth in containment, back-out along the way following ignition. Progressing well.
1330	Alpha to IC	Commencing in Bravo and Charlie sector head fire to Alpha Sector high rate of fire spread. Progressing well.
1430	Alpha to IC	Continuing Bravo and Charlie sector, blackout along the way. Progressing well.
1530	Alpha to IC	Continuing Bravo and Charlie sector, blackout along the way. Progressing well.
1630	Alpha to IC	No breach of containment - mop-up and black-out continuing. Progressing well.
1730	Alpha to IC	No active fire - black-out to 30m – night patrol established.

DEBRIEF REPORT	
Burn Implementation Prompt: Did the burn progress correctly and smoothly? If not, what problems occurred?	Burn progressed as planned. Access and water supply adequate, no smoke hazard to community of road infrastructure.
Fire Behaviour Prompt: Was there any unusual or unexpected fire behaviour observed?	Increase wind velocities increased backing fire pressure on Alpha sector.
Prescriptions Prompt: Do the prescriptions need revision? If so, how can they be improved?	Actual wind was 10km/hr stronger than predicted the applied pressure at ignition.
OHS Prompt: Were there any accidents or near misses?	No near-misses or incidences.
Hazards Prompt: Were all hazards identified in the plan and how effective were the suggested treatments?	No unexpected hazards.
Assets Prompt: Was there any damage to assets?	No assets damaged.
Suggested Improvements Prompt: Consider planning, preparation, procedures, equipment, communications, maintenance, supervision, training	

Report prepared by:	**Duncan Scott-Lawson**	 23/11/2023
	Name	Signature & date

Post Burn Assessment

Completed by Prescribed Burn Planner

Area Information		
Gross area burnt	Approx 40ha	
Estimated burn coverage	100 %	
Estimated post burn fuel load	0 t/ha Score: ☒ Low ☐ Mod ☐ High ☐ V. High ☐ Extreme	
Estimated crown scorch	100 % (grasslands)	
Operational Performance		
		Comment (if no, why?)
Burn contained within planned boundaries?	☒ Yes ☐ No	No breach of containment
Fuel reduction objective met?	☒ Yes ☐ No	Objectives of burn plan met.
Environmental requirements met?	☒ Yes ☐ No	Burn completed with HRC requirements
Remedial Action		
Prompt: Describe any remedial action required	Apply BHP post-burn handover report.	
Remedial Action Completed	Date: 10/10/2023	

Report prepared by:	**Duncan Scott-Lawson**	23/11/2023
	Name	Signature & date

BURNING OPERATIONS RECORD – SADDLERS WEST DIV

Completed by Incident Controller

FORECAST WEATHER AND INDICES								
Date	**Time (hrs)**	**T (°C)**	**RH (%)**	**Wind Dir.**	**Wind (km/h)***	**FDI**	**KBDI**	**Weather Source**
16 Sept	0900	12	86	SE	7	Low	80	BoM
16 Sept	1500	20	62	SE	16	Low	80	BoM
Weather changes due:		NO – consistent weather predicted all day.						

* BOM wind speed is measured at 10 m height

BURN SITE WEATHER READINGS (Take reading at burn start, hourly during the burn and at completion. Half-hourly readings may be required during the burn if unpredicted weather changes occur)								
Date	**Time (hrs)**	**T (°C)**	**RH (%)**	**Wind Dir.**	**Wind (km/h)***	**FDI**	**FMC (%)**	**Comments**
16 Sept	0900	12	84	SE	7	Low	13%	Briefing completed.
16 Sept	1100	17	73	SE	16	Low	13%	Ignition commenced wind as predicted FH 1m.
16 Sept	1300	19	70	SE	25	Low	13%	Burn progressing along Gamma sector.
16 Sept	1500	19	72	SE	24	Low	13%	Burn completed, patrol commenced, all fire within containment.
16 Sept	1700	13	68	SE	17	Low	13%	Burn completed, patrol commenced, all fire within containment.

FIRE BEHAVIOUR			
Time	**Flame Ht (m) Scorch Ht (m)**	**ROS (m/min)**	**Comments**
0930	1/3m	1m/m	Progressing as planned
1100	1.5/3m	1.5m/m	Progressing as planned
1300	1.5/3m	1.5m/m	Progressing as planned
1500	1.5/3m	1.5m/m	Progressing as planned - approaching containment.
1700	N/A	N/A	No active fire - Burn completed

SITUATION REPORTS		
Time	**Call sign**	**Comments**
0930	N/A	Briefing completed – test burn undertaken – connected RFS to confirm progressing with burn – FH 1m, slow progress to secure containment.
1030	Alpha to IC	Burn commenced along Gamma sector working east. Commenced burning in Hotel sector to tie in eastern section of burn. Progressing well.
1130	Alpha to IC	Burn continuing along Gamma sector. Hotel sector awaiting depth in Gamma sector prior to progressing. Progressing well.
1230	Alpha to IC	Burn continuing along Gamma sector burning south towards Hotel sector. Hotel sector commenced burning east to tie in burn. Progressing well.
1330	Alpha to IC	Gamm and Hotel sector coming together to tie in burn, reaching containment. Progressing well.
1430	Alpha to IC	No active fire - black-out to 30m – night patrol established.

DEBRIEF REPORT	
Burn Implementation Prompt: Did the burn progress correctly and smoothly? If not, what problems occurred?	Burn progressed as planned. Access and water supply adequate, no smoke hazard to community of road infrastructure.
Fire Behaviour Prompt: Was there any unusual or unexpected fire behaviour observed?	Increase wind velocities increased backing fire pressure on Gamma sector.
Prescriptions Prompt: Do the prescriptions need revision? If so, how can they be improved?	Actual wind was 10km/hr stronger than predicted the applied pressure at ignition.
OHS Prompt: Were there any accidents or near misses?	No near-misses or incidences.
Hazards Prompt: Were all hazards identified in the plan and how effective were the suggested treatments?	Uncontrolled neighboring stock. Standing stag 50m from containment in Hotel sector.
Assets Prompt: Was there any damage to assets?	No assets damaged.
Suggested Improvements Prompt: Consider planning, preparation, procedures, equipment, communications, maintenance, supervision, training	

Report prepared by:	**Duncan Scott-Lawson**	23/11/2023
	Name	Signature & date

Post Burn Assessment

Completed by Prescribed Burn Planner

Area Information		
Gross area burnt	Approx 22ha	
Estimated burn coverage	100 %	
Estimated post burn fuel load	0 t/ha Score: ☒ Low ☐ Mod ☐ High ☐ V. High ☐ Extreme	
Estimated crown scorch	100 % (grasslands)	
Operational Performance		
		Comment (if no, why?)
Burn contained within planned boundaries?	☒ Yes ☐ No	No breach of containment
Fuel reduction objective met?	☒ Yes ☐ No	Objectives of burn plan met.
Environmental requirements met?	☒ Yes ☐ No	Burn completed with HRC requirements
Remedial Action		
Prompt: Describe any remedial action required	Apply BHP post-burn handover report.	
Remedial Action Completed	Date: 10/10/2023	

Report prepared by:	**Duncan Scott-Lawson**	23/11/2023
	Name	Signature & date

Mt Arthur Conservation Area

Conservation Values

Management of the Mt Arthur Conservation Area (MACA) commenced in May 2017 with 2023 being year 6 - 7 of management activities. The conservation area is approximately 101 hectares. The conservation values or biodiversity values are described in detail in Annexure B the Conservation Agreement. The MACA is managed to restore and protect conservation values by management actions, monitoring and reporting. Baseline monitoring has shown that the MACA holds significant biodiversity values.

Cumberland Ecology undertook the annual monitoring event in November 2023. The annual event monitoring report provides an update of Conservation Values (Appendix A). The management actions below will continue to maintain and improve the conservation values.

Management

Table 7 provides details on the management actions undertaken during the calendar year at the MACA addressing the reporting requirements defined in Annexure D, clause (c) of the CA.

Table 7 Mt Arthur Conservation Area (Year 5 - 6) management actions

Management action	Description	Approximate Spend	Effectiveness	Recommendations
Weed control across the Conservation Area (focusing on noxious and environmental weeds)	The prevalence of weeds in the bushland areas is low. Most weeds occur in the small areas of open grasslands (approximately 4 hectares). No weed control was undertaken in 2023 in the open grasslands. Weed control in 2023 focused on the other offsets in the Mt Arthur portfolio as these were a priority this year.	$NIL	N/A	Focus on weed in open grasslands including Prickly Pear, Cotton Bush and Galenia.
Improve the condition of the Conservation Area through revegetation activities	**Seed Collection** No Seeds collected onsite during 2023.	• Seed collection – $ 0.00		5 ha of plantings in grassland scheduled for 2023 were postponed due to dry conditions. Direct seeding

Management action	Description	Approximate Spend	Effectiveness	Recommendations
	Planting 5 ha of hand direct seeding was undertaken in November 2022. The seeding consisted of eucalyptus overstorey and a mixture of understorey species. No seedlings noted during 2023 inspections due to dry conditions.	• Tubestock – $ Nil	No results from direct seeding as yet. Planting requirement of 5 hectares from the planting schedule in the CA completed by direct seeding.	will be monitored before further plantings considered
Pest animal monitoring and control (local co-ordination with Local Land Services and OEH)	Control of dogs, foxes and pigs for this offset was undertaken by a regional baiting program on the minesite and within the offset during June 2023. The baiting work is programmed to fit in with the regional baiting program coordinated by the Local Land Service (LLS). 14 nights of camera monitoring was also undertaken.	Covered by regional programme at the adjacent mine. Covered by regional programme at the adjacent mine. Approximately $2000.00 apportioned to this offset.	No records of animals removed in 2023.	Continue monitoring and implementation of regional program.
Construct and maintain fire breaks and implement fire management hazard reduction burns. **Operate with NSW Rural Fire Service or fire management contractor to implement mosaic or partial area hazard reduction burn.**	Terrain makes slashing of boundaries and fire breaks impossible. The offset relies on the surrounding mines bushfire management. Strategic prescribed burn hazard reduction program developed.	$ Nil	No fires reported.	No changes proposed.
Fencing	No new fences in 2023. Approximately 955 metres of fauna friendly fences installed during 2020. Conservation	$ Nil	Fencing program effective.	Fencing complete. No further fencing at this stage.

Management action	Description	Approximate Spend	Effectiveness	Recommendations
	signs placed on accessible boundaries where fencing is impractical.			
Annual Reports for Monitoring Program	Cumberland Ecology was engaged by Mt Arthur Coal to undertake ecological monitoring surveys at a total of 14 monitoring sites to address (iii) and (iv) of Annexure D, clause (c) of the CAs. Ecological monitoring surveys were undertaken November 2023. An event monitoring report (Attachment A) has been completed which includes photo and data monitoring, a discussion of changes recorded at monitoring points recommendations for each monitoring point. A walk through assessment was undertaken in November 2022 as part of the program as described in the CA Annexure D Table 3 Monitoring Data Sheet template. Recommendations are also included.	$10,000.00	Reference point monitoring completed and attached. Walk through assessment completed in December 2022 and attached	Continue monitoring and reporting.
Threatened species, populations and endangered ecological communities (EEC)	The BCT audit report 2023 makes recommendations which should be followed improve the management of threatened species, populations and endangered communities.	Not applicable	Current program and BCT recommendations aim to improve conditions for threatened Species, populations and EEC's.	Implementation of BCT audit report recommendations.
Aboriginal places and Aboriginal objects	No risk to Aboriginal Places and Aboriginal Objects during the 12 month monitoring period.	Not applicable	Not applicable	No changes proposed.

Thomas Mitchell Drive Offsite Conservation Area

Conservation Values

Management of the Thomas Mitchell Drive Offsite Conservation Area (TMD Offsite CA) commenced in December 2016 with 2023 being year 7 of management activities. The conservation area is approximately 492 hectares. The conservation values or biodiversity values are described in detail in Annexure B the Conservation Agreement. The TMD Offsite CA is managed to restore and protect conservation values by management actions, monitoring and reporting. Baseline monitoring has shown that the TMD Offsite CA holds significant biodiversity values.

Cumberland Ecology undertook the annual monitoring event in November 2023. The annual event monitoring report provides an update of Conservation Values (Appendix A). The management actions below will continue to maintain and improve the conservation values.

Management

Table 38 provides details on the management actions undertaken during the calendar year at TMD Offsite CA addressing the reporting requirements defined in Annexure D, clause (c) of the CA.

Table 8 Thomas Mitchell Drive Offsite Conservation Area (Year 6) management actions

Management action	Description	Approximate Spend	Effectiveness	Recommendations
Weed control across the Conservation Area (focusing on noxious and environmental weeds)	Weed control focused on mechanical slashing in planted areas to control annual weeds. Small areas of St Johns Wort were controlled but these were only small areas. Prickly Pear is noticeable in slashed areas and is planned for control in early 2024.	$ 26,200.00.	Control of targeted weeds effective. Prickly Pear treated in 2021 successfully killed in burn areas. Regeneration of Prickly pear has been identified in slashed areas.	Ongoing monitoring and weed control across CA required. Prickly pear regeneration is the focus for early 2024.
Improve the condition of the Conservation Area	**Seed Collection**	• Seed Storage $400.00		Continue to ensure seeds available for planting programs. Direct seeding to

Management action	Description	Approximate Spend	Effectiveness	Recommendations
through revegetation activities	No Seeds collected onsite during 2023. Local district seeds have been purchased from a local supplier in 2022. Eucalypt seed was used for nursery tubestock used for the 2023 planting campaign. Understory seed was used for direct seeding in islands throughout the 2021 and 2023 planted areas. Direct seeding in islands is planned for the 2022 planted areas. **Planting** Tubestock planting was undertaken in Winter 2023 mostly in the derived grassland identified within the year 5 to 10 areas shown in Annexure B Diagram 5 of the CA, with over 20 ha planted. Seedlings have been planted at 30 Eucalypts per hectare. Understory seed was used for direct seeding in islands throughout the planted areas.	Tube stock and planting $ 67,000.00	Survival monitoring of plantings is above 50% target.	be implemented in island throughout the 2022 planted areas. Much of the remaining areas (50 ha approx.) of the year 5 to 10 areas shown in Annexure B Diagram 5 of the CA are showing signs of natural regeneration and the need for planting will be assessed in 2024. Monitoring and maintenance of plantings to continue
Pest animal monitoring and control (local co-ordination with Local Land Services and OEH)	Feral animal monitoring continued. No significant numbers of feral animals noted.	• $ 7,000.00	No records of animals removed in 2023.	Continue monitoring using observations and scat identification. Implement control as required. Rotational trail camera programme being continued to look at all pest species throughout the area
Construct and maintain fire breaks and implement fire management hazard reduction burns.	Boundaries slashed to maintain firebreaks.	• 15,000.00	Boundaries required slashing to maintain firebreaks. Burning programme identified in CA agreement completed in 2021.	No further burns proposed.

Management action	Description	Approximate Spend	Effectiveness	Recommendations
Operate with NSW Rural Fire Service or fire management contractor to implement mosaic or partial area hazard reduction burn.				
Fencing	Unauthorised access near Thomas Mitchell Drive Industrial Estate required the repair and strengthening of fencing. Repairs were also made to fencing in a gully adjoining the Travelling Stock Route in the south western end of the site.	$ 2000.00	Fencing program effective. 4 km of fauna friendly fencing has been completed prior to 2022. 6 km of boundary fencing remain as non fauna friendly.	Fencing is planned for 2024.
Annual Reports for Monitoring Program	Cumberland Ecology was engaged by Mt Arthur Coal to undertake ecological monitoring surveys at a total of 6 monitoring sites to address (iii) and (iv) of Annexure D, clause (c) of the CAs. Ecological monitoring surveys were undertaken November 2023. An event monitoring report (Attachment A) has been completed which includes photo and data monitoring, a discussion of changes recorded at monitoring points recommendations for each monitoring point. A walk through assessment was undertaken in November 2023 as part of the program as described in the CA Annexure D Table 3 Monitoring Data Sheet template. Recommendations are also included.	$10,000.00	Reference point monitoring completed and attached. Walk through assessment completed in November 2023 also attached.	Continue monitoring and reporting.
Threatened species, populations and endangered ecological communities (EEC)	The BCT audit report 2023 makes recommendations which should be followed improve the management of	Not applicable	Current program and BCT recommendations aim to improve	Implementation of BCT audit report recommendations.

Management action	Description	Approximate Spend	Effectiveness	Recommendations
	threatened species, populations and endangered communities.		conditions for threatened Species, populations and EEC's.	
Aboriginal places and Aboriginal objects	No risk to Aboriginal Places and Aboriginal Objects during the 12 month monitoring period. Due diligence surveys prior to and following hazard reduction burns to assess protection of artifacts.	Not Applicable	No impact recorded.	No changes proposed.

Fencing Maintenance

Photo 1 – Fence before repairs in gully.

Photo 2 - Fences repaired.

Erosion Gully Rehabilitation

Photo 3 – Eroded head gully erosion has been rehabilitated using rock placed upon geofabric to stabilise the gully head and mulch placed on erodible soil above gully. The track above the gully has been repaired by improved camber and drainage.

Photo 4 – Areas circled in red show the area rehabilitated as above. Approximately 0.4 ha of erosion rehabilitated.

Appendix 1
Ecological Monitoring Surveys

12 December 2023

Mark Nolan
Approvals Principal
Mt Arthur Coal / NSW Energy Coal
Thomas Mitchell Drive
Muswellbrook, NSW, 2333

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Mt. Arthur Conservation Agreement Monitoring

Dear Mark,

Cumberland Ecology was engaged by Mount Arthur Coal to undertake ecological monitoring surveys at a total of 43 monitoring sites within six conservation areas to meet monitoring requirements identified in the Conservation Agreement (CA) for each conservation area. Ecological monitoring surveys were undertaken within the conservation areas in November 2023.

Monitoring undertaken in 2023 did not include the collection of floristic biometric attribute data utilising the Biodiversity Assessment Method and was limited to site photographs and opportunistic observations identified in Annexure D, Table 3 of each conservation area's CA.

The purpose of this letter is to provide the following details for each conservation area monitored:

- A brief description of the vegetation at the monitoring sites;
- Monitoring photographs to allow comparison to previous years' monitoring photographs;
- Brief discussion of the conservation values for each conservation area;
- Recommendations for future management of the conservation areas; and
- Datasheets for each monitoring site.

These details are provided separately for each conservation area in the following appendices:

- **Appendix A** - Roxburgh Road Conservation Area;
- **Appendix B** - Saddlers Creek Conservation Area;

- **Appendix C** - Mount Arthur Conservation Area;
- **Appendix D** - Thomas Mitchell Drive On-site Conservation Area;
- **Appendix E** - Thomas Mitchell Drive Off-site Conservation Area; and
- **Appendix F** – Middle Deep Creek and Oakvale Conservation Area.

If you have any questions or require further information, please contact either me, or Bryan Furchert in our Sydney office on (02) 9868 1933.

Yours sincerely,

Mikael Peck
Senior Project Manager/ Ecologist
mikael.peck@cumberlandecology.com.au

APPENDIX A :
Roxburgh Road Offset

A.1. Description and Monitoring Photographs

A.1.1. RX1: PCT 1691 Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter

Monitoring site RX1 is located in an area of PCT 1691 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter, and is dominated by a canopy of *Eucalyptus crebra* (Narrow-leaved Ironbark), with a native shrub layer of *Notelaea microcarpa* (Native Olive), *Acacia paradoxa* (Kangaroo Thorn), *Solanum cinereum* (Narrawa Burr), *Bursaria spinosa* (Native Blackthorn) and *Teucrium betchei*. Native groundcovers included *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Austrostipa scabra* (Speargrass), *Cymbopogon refractus* (Barbed Wire Grass), *Aristida ramosa* (Purple Wiregrass) and *Bothriochloa decipiens* (Red Grass). Weed coverage is very low, and includes *Opuntia stricta* (Common Prickly Pear), *Opuntia aurantiaca* (Tiger Pear) and *Conyza bonariensis* (Flaxleaf Fleabane).

North – Photo 3926

East – Photo 3927

South – Photo 3928

West – Photo 3929

A.1.2. RX2: PCT 1691 Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter

Monitoring site RX2 is located in an area of PCT 1691 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter in derived native grassland (DNG) form. It contains no canopy; however, *Eucalyptus crebra* (Narrow-leaved Ironbark) seedlings are present as well as the native shrub *Eremophila debilis* (Winter Apple). Native groundcovers include *Sporobolus creber* (Western Rat-tail Grass), *Aristida ramosa* (Purple Wiregrass), *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Bothriochloa decipiens* (Red Grass) and *Lomandra filiformis* (Wattle Mat-rush). Weed coverage is moderate with *Verbena bonariensis* (Purpletop), *Verbena quadrangularis* and *Opuntia aurantiaca* (Tiger Pear).

North – Photo 3921

East – Photo 3922

South – Photo 3923

West – Photo 3924

A.2. Discussion and Recommendations

A.2.1. Discussion of Conservation Values

Overall, the Roxburgh Conservation Area is considered to be in moderate to good condition. Opportunistic observations made while walking/driving through the conservation area identified the following:

- Access tracks have been slashed which allows for easy access throughout the site. No disturbance to woody vegetation observed as a result of slashing;
- No signs of feral animals or rubbish dumping;
- Placement of habitat logs at one location (refer to **Table 1**);
- Natural regeneration of *Eucalyptus crebra* (Narrow-leaved Ironbark) in some areas (refer to **Table 1**);
- Slashing of open areas containing high cover of the exotic *Verbena bonariensis* (Purpletop) (refer to **Table 1**);
- Evidence of recent low intensity hazard reduction burns (refer to **Table 1**); and
- Substantial weed infestations of *Verbena bonariensis* (Purpletop), *Galenia pubescens* (Galenia), *Lycium ferocissimum* (Boxthorn) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) (refer to **Table 1**).

Substantial weed infestations were frequently observed in open grassland areas. Both *Verbena bonariensis* (Purpletop) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) have been observed in high numbers within similar grassland areas elsewhere in the region in 2023 and their prevalence is considered to be a result of environmental conditions, and not a lack of management within the conservation area. Further to this, the relatively high coverage of these species are not considered to substantially impede the natural regeneration of the conservation area as regenerating Eucalypts were observed within such areas.

Although only relatively small, isolated areas of the high threat weeds *Galenia pubescens* (Galenia) and *Lycium ferocissimum* (Boxthorn) were observed, such areas will likely impede regeneration in surrounding areas in the short- to medium-term if not controlled.

Table 1 below identifies the species and locations of weed infestations, native canopy regeneration, as well as evidence of slashing and burning recorded within the conservation area.

Table 1 Details of weed infestations, native regeneration and other notes recorded within the Roxburgh Conservation Area

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
269	56	289805	6424541	*Verbena bonariensis* and *Gomphocarpus fruticosus*.	Regeneration of *E. crebra* common.	Area of rehabilitation, habitat logs placed.
270	56	289969	6424532	Dense area of *Verbena bonariensis*.	-	-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
271	56	290086	6424541	-	-	Location of recent hazard reduction burn.
272	56	290492	6424423	Dense area of *Verbena bonariensis*.	-	-
273	56	290523	6424409	Dense area of *Verbena bonariensis*.	-	-
274	56	290558	6424386	*Lycium ferocissimum* present.	-	-
275	56	290585	6424342	Dense area of *Verbena bonariensis*.	-	-
276	56	290480	6424311	Dense area of *Verbena bonariensis*.	-	-
277	56	290425	6424298	Dense area of *Verbena bonariensis*.	-	-
278	56	290370	6424284	Dense area of *Verbena bonariensis*.	-	-
279	56	290494	6424537	Dense area of *Galenia pubescens*.	-	-
280	56	290542	6424679	Scattered *Opuntia stricta*.	Substantial regeneration of *E. crebra*.	-
281	56	290794	6424539	Dense area of *Verbena bonariensis*.	-	-
282	56	290815	6424523	Scattered *Opuntia stricta*.	-	-
283	56	290920	6424483	Dense area of *Verbena bonariensis*.	-	-
284	56	290973	6424474	Dense area of *Verbena bonariensis*.	-	-
285	56	291109	6424484	-	-	-
286	56	291057	6424534	Area of *Verbena bonariensis, Verbascum virgatum* and *Lycium ferocissimum*.	-	-
287	56	291027	6424578	*Lycium ferocissimum* present.	-	-
288	56	291003	6424617	*Lycium ferocissimum* present.	-	-
289	56	290965	6424663	*Lycium ferocissimum* present.	-	-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
290	56	290874	6424763	Area of *Verbena bonariensis, Verbascum virgatum*, *Opuntia stricta* and *Lycium ferocissimum*.	-	-
291	56	291146	6424496	Dense area of *Verbena bonariensis*.	-	-
292	56	291210	6424546	-	-	Location of recent hazard reduction burn.
293	56	291209	6424736	Dense area of *Verbena bonariensis*.	-	-
294	56	291158	6424830	Dense area of *Verbena bonariensis*.	-	-
295	56	291131	6424868	*Lycium ferocissimum* and *Opuntia stricta* present.	-	-
296	56	291163	6425127	Dense area of *Verbena bonariensis*.	-	-
297	56	290950	6425349	-	Substantial regeneration of *E. crebra*.	-
298	56	290863	6425350	Dense area of *Galenia pubescens*.	-	-
299	56	290627	6425141	Scattered *Opuntia stricta*.	-	-
300	56	290829	6425044	-	-	Slashed area of *Verbena bonariensis*.
301	56	291087	6424966	Dense area of *Verbena bonariensis*.	-	-
302	56	290938	6424992	Area of *Verbena bonariensis* and *Galium pubescens*.	-	-
303	56	290591	6425068	Dense area of *Verbena bonariensis*.	-	-
304	56	290425	6424824	Dense area of *Verbena bonariensis*.	-	-
305	56	290390	6424794	Area of *Verbena bonariensis* and *Galium pubescens*.	-	-
306	56	290329	6424720	Dense area of *Verbena bonariensis*.	-	-
307	56	290277	6424717	Dense area of *Verbena bonariensis*.	-	-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
308	56	290171	6424731	Area of *Verbena bonariensis* and *Galium pubescens*.	-	-
309	56	290157	6424704	-	-	Location of recent hazard reduction burn.
310	56	290014	6424934	*Verbena bonariensis* and *Galium pubescens* present.	-	Location of recent hazard reduction burn.

**WP = Waypoint*

A.2.2. Recommendations

Recommendations include continued weed management targeting any high threat weeds (e.g. *Lycium ferocissimum* and *Galenia pubescens* – refer to **Table 1**) as a priority, as well as all other management actions identified in the CA. Although large infestations of *Verbena bonariensis* (Purpletop) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) were observed, targeted control of these species is not considered to be economical or that beneficial as a result of the likely high soil seed bank of these species already present.

Therefore, it is recommended that the best way to reduce coverage of these species in the long-term is to continue to undertake additional plantings (and manage existing plantings) of appropriate canopy species (i.e. plant the same species as nearby woodland (primarily *Eucalyptus crebra*)). Any plantings should be made within open areas that do not contain large amounts of natural regeneration or previous plantings.

Any tree plantings should be sourced from local provenance (preferably sourced from remnant vegetation within the conservation area), be made within open areas, and be protected with tree guards and the surrounding exotic vegetation routinely targeted through spot-spraying to increase plantings chances of survival (i.e. reduce competition from surrounding environmental weeds).

In 2020, the high threat weed *Carthamus lanatus* (Saffron Thistle) was observed in very high numbers throughout the conservation area and wider region, and a high level of seed is likely to be stored in the soil seed bank. In order to reduce this species seed bank in the soil, it is recommended that the conservation area be checked in late September-early October (prior to its flowering period) for dense infestations. If the species is observed in very high numbers, slashing should be carried out prior to it flowering and setting seed. Otherwise, the already high seed bank will continue to increase in the future.

A.3. Datasheets

Date: 7/11/2023	Project #: Rx 2	
Species	**Cover**	**Abundance**
Canopy		
1 Eue. creb. (seedlings)		
2		
3		
4		
5		
Shrub		
1 Eremoph. debilis		
2		
3		
4		
5		
Groundcover		
1 Sporob. creb.		
2 Aristida ramosa		
3 Micro stip.		
4 Lomandra filif.		
5 Both. deup.		
Weeds		
1 Verbena bonar.		
2 Opuntia aurc.		
3 Verbena quad.		
4		
5		

Date: 7/11/2023	Project #: Rx 1	
Species	**Cover**	**Abundance**
Canopy		
1 Eue. creborg		
2		
3		
4		
5		
Shrub		
1 Acacia pragdoz		
2 Bursaria spinosa		
3 Notelaea micro.		
4 Solanum brownii. cinereum		
5 Teucrium betteleri		
Groundcover		
1 Cymbo refract		
2 Microlaena stip.		
3 Both. deup.		
4 Austro scab.		
5 Arist. ramosa		
Weeds		
1 Opuntia stricta		
2 Conyza sumatr.		
3 Opuntia aurc.		
4		
5		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**

Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.

GF Group: TG=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other

Stratum: C = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	RX1	Date	7/11/23
Vegetation Community			
1. Site Photo(s)Taken	3926 - 3929		

2. Floristic BioMetric attributes	
Native cover	
Overstorey:	
Midstorey:	
Groundcover(grass):	
Groundcover (shrub):	
Groundcover (other):	
Native species richness:	
Proportion of canopy species regenerating	
Exotic cover	
Number of trees with hollows	
Total length of fallen logs	

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	280	254	Substantial regeneration. E. oleb. in mid grey
Threatened species sightings			
Fire event/fuel	In plot		Moderate litter, some logs very dry.
Weeds			280 - Scattered Opuntia stricta
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MPA RX2	Date 7/11/23	
Vegetation Community			
1. Site Photo(s)Taken	3921 - 3924		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	269 surrounding plot	247 252	New rehab area - treated - habitat logs placed → Euc. circ ryen common
Threatened species sightings	nil		
Fire event/fuel	In plot 271	250 - 253	Recently been burnt - low intensity burn area
Weeds	269 270	248 249	Gamph finit + verb bonar. verbena bonar. → also verbena up 272 - 273 + 275 - 278
Pest animals			
Visitor impact/vehicles	Next to plot	252	slashed tracks
Rubbish dumping	nil		

274 = 1x Lycium ferox.

Site	Roxburgh	Date	7/11/2023
Staff	BF + MP	GPS	32

WP	Notes (e.g. regrowth, plantings, weed infestations)	Photo
279	carpet of Galenia pubescens near dam	3925
282-	Verb. bon. 283-284, 290 291, 293-294. 296-	
282	scattered opunt stricta	
285	Verb. bon, verbasc. virg, Lycium ferociss.	255
287	patch 5+ Lyc ferociss. +288, 289	
290	Opunt strict, Lycium ferociss, Verb bon, verbasc. virg.	
292	Another burn area - low intensity	3931
295	Lyc. ferox + opuntia stricta	
297	Eue. creb. regen	
298	Galenia pubescens common	
299	Relatively Weed free, some opuntia stricta	256
300	sloped verbena bon.	256
301	Verbena bon, 303-304, 306-307	
302	Galenia + verb. bon	
305	Verbena bon + Galenia pub. +308	
309	309 - burn area, up gully + up hill	257-258
310	Verbena + galenia + burnt - low intensity	259 3932

APPENDIX B :
Saddlers Creek Offset

B.1. Description and Monitoring Photographs

B.1.1. SC1: PCT 116 Weeping Myall - Coobah - Scrub Wilga shrubland of the Hunter Valley

Monitoring site SC1 is located an area of PCT 116 Weeping Myall – Coobah – Scrub Wilga shrubland of the Hunter Valley, and is dominated by a canopy of *Acacia pendula* (Weeping Myall), and a shrub layer of *Maireana microphylla* (Small-leaf Bluebush), *Atriplex semibaccata* (Creeping Saltbush), *Eremophila debilis* (Winter Apple) and *Sclerolaena muricata* (Black Rolypoly). Native groundcovers included *Paspalidium distans*, *Austrostipa verticillata* (Slender Bamboo Grass), *Chloris ventricosa* (Plump Windmill Grass), *Microlaena stipoides* var. *stipoides* (Weeping Grass) and *Einadia trigonos* (Fishweed). Weed cover is high with *Galenia pubescens* (Galenia), *Bromus catharticus* (Prairie Grass) *Conyza sumatrensis* (Tall Fleabane), *Sida rhombifolia* (Paddy's Lucerne) and *Lycium ferocissimum* (African Boxthorn).

North – Photo 3964

East – Photo 3965

South – Photo 3966

West – Photo 3967

B.1.2. SC2: PCT 1691 Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter

Monitoring site SC2 is located in an area of PCT 1691 Narrow-leaved Ironbark – Grey box grassy woodland of the central and upper Hunter in DNG form, and includes a shrub layer of *Maireana microphylla* (Small-leaf Bluebush). Native groundcovers include *Aristida ramosa* (Purple Wiregrass), *Senecio quadridentatus* (Cotton Fireweed), *Sporobolus creber* (Western Rat-tail Grass), *Bothriochloa decipiens* (Red Grass) and *Cymbopogon refractus* (Barbed Wire Grass). Weed cover is high and includes *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush), *Sida rhombifolia* (Paddy's Lucerne), *Carthamus lanatus* (Saffron Thistle), *Hypericum perforatum* (St. John's Wort) and *Cirsium vulgare* (Spear Thistle).

North – Photo 3973

East – Photo 3974

South – Photo 3975

West – Photo 3976

B.1.3. SC3: PCT 1691 Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter

Monitoring site SC3 is located in an area of PCT 1691 Narrow-leaved Ironbark – Grey box grassy woodland of the central and upper Hunter, and is dominated by a canopy of *Eucalyptus albens* x *moluccana*, with *Brachychiton populneus (*Kurrajong), *Allocasuarina luehmannii* (Bulloak) and *Acacia salicina* (Cooba). The shrub layer includes *Bursaria spinosa* (Native Blackthorn), *Acacia decora* (Western Silver Wattle), *Dodonaea viscosa* subsp. *angustifolia*, *Acacia falcata* (Hickory Wattle) and *Maireana microphylla* (Small-leaf Bluebush). Native groundcovers include *Aristida ramosa* (Purple Wiregrass), *Cymbopogon refractus* (Barbed Wire Grass), *Rytidosperma setaceum* (Small-flower Wallaby Grass), *Austrostipa verticillata* (Slender Bamboo Grass) and *Austrostipa scabra* (Speargrass). Weed cover is low with *Chloris gayana* (Rhodes grass), *Bryophyllum delagoense* (Mother-of-millions) and *Hyparrhenia hirta* (Coolatai Grass).

North – Photo 3984

East – Photo 3985

South – Photo 3986

West – Photo 3987

B.1.4. SC4: PCT 1692 Bull Oak grassy woodland of the central Hunter Valley

Monitoring site SC4 is located in an area of PCT 1692 Bull Oak grassy woodland of the central Hunter Valley, and is dominated by a canopy of *Allocasuarina luehmannii* (Bulloak) and a shrub layer of *Acacia salicina* (Cooba). Native groundcovers include *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Einadia polygonoides*, *Sporobolus creber* (Western Rat-tail Grass), *Aristida ramosa* (Purple Wiregrass) and *Chloris ventricosa* (Plump Windmill Grass). Weed cover is low with scattered occurrences of *Bryophyllum delagoense* (Mother-of-millions), *Opuntia stricta* (Common Prickly Pear), *Senecio madagascariensis* (Fireweed), *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) and *Conyza sumatrensis* (Tall Fleabane).

North – Photo 3990

East – Photo 3991

South – Photo 3992

West – Photo 3993

B.1.5. SC5: PCT 1692 Bull Oak grassy woodland of the central Hunter Valley

Monitoring site SC5 is located in area of PCT 1692 Bull Oak grassy woodland of the central Hunter Valley in DNG form. The monitoring plot contains no canopy species; however, *Allocasuarina luehmannii* (Bulloak) are present in surrounding areas. Native shrub layer includes *Dodonaea viscosa* subsp. *angustifolia* and *Solanum cinereum* (Narrawa Burr). Native groundcovers include *Aristida ramosa* (Purple Wiregrass), *Cymbopogon refractus* (Barbed Wire Grass), *Chloris ventricosa* (Plump Windmill Grass), *Microlaena stipoides* var. *stipoides* (Weeping Grass) and *Sporobolus creber* (Western Rat-tail Grass). Weed cover is low and includes *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush), *Hypericum perforatum* (St. John's Wort), *Senecio madagascariensis* (Fireweed), *Cirsium vulgare* (Spear Thistle) and *Sida rhombifolia* (Paddy's Lucerne).

North – Photo 3997

East – Photo 3998

South – Photo 3999

West – Photo 4001

B.1.6. SC6: PCT 1731 Swamp Oak - Weeping Grass grassy riparian forest of the Hunter Valley

Monitoring site SC6 is located in an area of PCT 1731 Swamp Oak – Weeping Grass grassy riparian forest of the Hunter Valley, and is dominated by a canopy of *Casuarina glauca* (Swamp Oak) with *Brachychiton populneus* (Kurrajong) also present. The shrub layer includes *Acacia salicina* (Cooba) and *Trema tomentosa* var. *aspera* (Peach-leaf Poison-bush). Native groundcovers include *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Austrostipa verticillata* (Slender Bamboo Grass), *Commelina cyanea, Glycine tabacina* and *Rumex brownii* (Swamp Dock). Weed cover is high and includes *Bromus catharticus* (Prairie Grass), *Galenia pubescens* (Galenia), *Pavonia hastata, Lycium ferocissimum* (African Boxthorn) and *Solanum nigrum* (Black-berry Nightshade)

North – Photo 3955

East – Photo 3956

South – Photo 3957

West – Photo 3958

B.1.7. SC7: PCT 1731 Swamp Oak - Weeping Grass grassy riparian forest of the Hunter Valley

Monitoring site SC7 is located in an area of PCT 1731 Swamp Oak – Weeping Grass grassy riparian forest of the Hunter Valley, and is dominated by a canopy of *Casuarina glauca* (Swamp Oak) with *Brachychiton populneus* (Kurrajong) also present. Native shrubs include *Teucrium juncea*. Native groundcovers include *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Commelina cyanea* (Native Wandering Jew), *Austrostipa verticillata* (Slender Bamboo Grass), *Pellaea falcata* (Sickle Fern) and *Cayratia clematidea* (Native Grape). Weed cover is high and includes *Sida rhombifolia* (Paddy's Lucerne), *Juncus acutus* (Sharp Rush), *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush), *Bryophyllum delagoense* (Mother-of-millions), *Marrubium vulgare* (White Horehound) and *Lycium ferocissimum* (African Boxthorn).

North – Photo 3978

East – Photo 3979

South – Photo 3980

West – Photo 3981

B.1.8. SC8: PCT 42 River Red Gum / River Oak riparian woodland wetland in the Hunter Valley

Monitoring site SC8 is located in an area of PCT 42 River Red Gum / River Oak riparian woodland wetland in the Hunter Valley in DNG form. No canopy or shrub layer is present. Native groundcovers include *Aristida ramosa* (Purple Wiregrass), *Sporobolus creber* (Western Rat-tail Grass), *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Carex inversa* (Knob Sedge) and *Chloris truncata* (Windmill Grass). Weed cover is very high and includes *Paspalum dilatatum* (Paspalum), *Bromus racemosus* (Smooth Brome), *Hypericum perforatum* (St. John's Wort), *Hyparrhenia hirta* (Coolatai Grass) and *Cirsium vulgare* (Spear Thistle).

North – Photo 3948

East – Photo 3949

South – Photo 3950

West – Photo 3951

B.1.9. SC9: PCT 42 River Red Gum / River Oak riparian woodland wetland in the Hunter Valley

Monitoring site SC9 is located in an area of PCT 42 River Red Gum / River Oak riparian woodland wetland in the Hunter Valley, and is dominated by a canopy of *Eucalyptus albens* x *moluccana* and *Eucalyptus blakelyi* (Blakely's Red Gum), with scattered *Brachychiton populneus* (Kurrajong), *Allocasuarina luehmannii* (Bulloak) and *Acacia salicina* (Cooba). Native shrubs include *Bursaria spinosa* (Native Blackthorn), *Solanum cinereum* (Narrawa Burr) and *Indigofera australis* (Australian Indigo). Native groundcovers include *Themeda triandra* (Kangaroo Grass), *Lomandra longifolia* (Spiny-headed Mat-rush), *Bothriochloa decipiens* (Red Grass), *Cymbopogon refractus* (Barbed Wire Grass) and *Aristida ramosa* (Purple Wiregrass). Weed cover is low and includes scattered occurrences of *Opuntia stricta* (Common Prickly Pear), *Pavonia hastata, Cirsium vulgare* (Spear Thistle) *Conyza sumatrensis* (Tall Fleabane) and *Senecio madagascariensis* (Fireweed).

North – Photo 3968

East – Photo 3969

South – Photo 3970

West – Photo 3971

B.1.10. SC10: PCT 1737 Typha rushland

Monitoring site SC10 is located an area of PCT 1737 Typha rushland, and is dominated by the exotic *Juncus acutus* (Sharp Rush), but also includes the natives *Phragmites australis* (Common Reed), *Capillipedium spicigerum* (Scented-top Grass), *Aristida ramosa* (Purple Wiregrass), *Microlaena stipoides* var. *stipoides* (Weeping Grass) and *Austrostipa scabra* (Speargrass). Weed cover is very high and includes *Juncus acutus* (Sharp Rush) dominating the creek line. *Plantago lanceolata* (Lamb's Tongue), *Paspalum dilatatum* (Paspalum), *Cirsium vulgare* (Spear Thistle) and *Hypochaeris radicata* (Catsear) are also present.

North – Photo 3936

East – Photo 3937

South – Photo 3938

West – Photo 3939

B.1.11. SC11: PCT 1737 Typha rushland

Monitoring site SC11 is located in an area of PCT 1737 Typha rushland, and is dominated by *Juncus acutus* (Sharp Rush), but also includes the natives *Paspalum distichum* (Water Couch), *Schoenoplectus mucronatus*, *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Typha orientalis* (Broad-leaved Cumbungi) and *Aristida ramosa* (Purple Wiregrass). Weed cover is moderate and includes *Juncus acutus* (Sharp Rush), *Paspalum dilatatum* (Paspalum), *Cirsium vulgare* (Spear Thistle) and *Polypogon monspeliensis* (Annual Beardgrass).

North – Photo 3943

East – Photo 3944

South – Photo 3945

West – Photo 3946

B.2. Discussion and Recommendations

B.2.1. Discussion of Conservation Values

Overall, the Saddlers Creek Conservation Area is considered to be in moderate to good condition. Opportunistic observations made while walking/driving through the conservation area identified the following:

- Significant improvements to access tracks made that allows for easy access throughout the site. No disturbance to woody vegetation observed as a result of access track improvements;
- Moderate signs of feral animals including European Rabbit (*Oryctolagus cuniculus*) scats recorded at five (5) separate areas, as well as feral pigs (*Sus scrofa*) recorded within the conservation area for the first time (refer to **Table 2**);
- No signs of rubbish dumping;
- Natural regeneration of native canopy/shrub species (refer to **Table 2**);
- Significant *Eucalyptus* plantings throughout open grassland areas (refer to **Table 2**);
- Evidence of recent low intensity hazard reduction burns (refer to **Table 2**);
- Evidence of recent control (spraying) of *Hypericum perforatum* (St. John's Wort) (refer to **Table 2**);
- Substantial regrowth of *Acacia pendula* (Weeping Myall) listed as an endangered population under the NSW *Biodiversity Conservation Act 2016* (BC Act) (refer to **Table 2**); and
- Moderate to substantial weed infestations of *Paspalum dilatatum* (Paspalum), *Pavonia hastata, Bryophyllum delagoense* (Mother-of-millions), *Hypericum perforatum* (St. John's Wort), *Cirsium vulgare* (Spear Thistle), *Juncus acutus* (Sharp Rush), *Verbascum virgatus* (Twiggy Mullein), *Ricinus communis* (Castor Oil Plant), *Lycium ferocissimum* (African Boxthorn), *Conyza sumatrensis* (Tall Fleabane), *Chloris gayana* (Rhode's Grass), *Verbena bonariensis* (Purpletop), *Verbena quadrangularis, Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) and *Galenia pubescens* (Galenia) (refer to **Table 2**).

With the exception of the high threat weeds *Bryophyllum delagoense* (Mother-of-millions), *Lycium ferocissimum* (African Boxthorn), *Ricinus communis* (Castor Oil Plant) and *Galenia pubescens* (Galenia), weed infestations recorded were largely restricted to open grassland areas. The high occurrences of *Verbena bonariensis* (Purpletop), *Paspalum dilatatum* (Paspalum) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) within open areas has also been observed in high numbers elsewhere in the region in 2023 within similar areas (i.e. open grasslands). As such, their prevalence is considered to be associated with environmental conditions rather than a lack of management within the conservation area.

Areas of the high threat weeds *Bryophyllum delagoense* (Mother-of-millions), *Lycium ferocissimum* (African Boxthorn) and *Galenia pubescens* (Galenia) observed within woodland areas will likely impede regeneration in surrounding areas in the short- to medium-term if not controlled.

Table 2 below identifies the species and locations of weed infestations, native canopy/shrub regeneration (including *Acacia pendula*), feral animals, as well as evidence of slashing and burning recorded within the conservation area.

Table 2 Details of weed infestations, native regeneration and other notes recorded within the Saddlers Creek Conservation Area

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
311	56	295548	6412449	*Paspalum dilatatum* common in replanting areas.	Significant *Eucalyptus* plantings with tree guards and direct seeding of grasses including *Aristida racemosa*.	Recent hazard reduction burn.
312	56	296031	6412630	*Paspalum dilatatum* common in replanting areas.	Significant *Eucalyptus* plantings with tree guards and direct seeding of grasses including *Aristida racemosa*.	Recent hazard reduction burn.
313	56	296744	6412849	-	-	Rabbit scats.
314	56	296745	6412851	High number of *Galenia pubescens* and *Pavonia hastata*.	Regeneration of *E. blakelyi* in open areas.	-
315	56	296791	6412868	*Paspalum dilatatum* common.	Significant *Eucalyptus* plantings with tree guards and high number of native grasses present.	-
316	56	296991	6412969	-	Significant *Eucalyptus* plantings with tree guards.	Rabbit scats.
318	56	297538	6412939	Low number of *Hypericum perforatum*.	Significant *Eucalyptus* plantings with tree guards. Moderate cover of native grasses.	Rabbit scats.
319	56	297664	6413258	Moderate number of *Verbena bonariensis, Gomphocarpus fruticosus* and *Paspalum dilatatum*.	-	-
320	56	298470	6413541	Moderate number of *Galenia pubescens, Cirsium vulgare* and *Juncus acutus*.	Regeneration of *Angophora floribunda* and *Casuarina glauca*.	

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
321	56	298349	6413468	-	Significant *Eucalyptus* plantings with tree guards.	-
322	56	299276	6413482	-	Significant *Eucalyptus* plantings with tree guards.	Recent hazard reduction burn.
323	56	299702	6413010	-	Significant *Eucalyptus* plantings with tree guards.	Recent hazard reduction burn.
324	56	299343	6413380	-	*Acacia pendula* regrowth.	*Acacia pendula* regrowth is coppicing following hazard reduction burn in area.
325	56	299504	6413419	-	*Acacia pendula* regrowth.	-
327	56	299270	6413918	Moderate number of *Bryophyllum delagoense*.	-	-
328	56	299262	6413958	-	Significant regeneration of *Eucalypts* around/under mature trees.	-
329	56	299302	6413996	High number of *Verbascum virgatum, Cirsium vulgare* and *Verbena bonariensis*.	-	-
330	56	299313	6413879	Moderate number of *Ricinus communis* and *Lycium ferocissimum*.	-	-
333	56	300205	6414088	-	-	Three pigs.
334	56	300417	6414773	-	Regeneration of *E. blakelyi* in open areas.	-
335	56	300280	6414719	-	Regeneration of *E. albens* x *moluccana*.	-
336	56	298832	6413891	-	Significant *Eucalyptus* plantings with tree guards.	-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
337	56	299932	6414027	Moderate patches of *Verbena bonariensis*.	*Casuarina glauca* regeneration on edge of forested areas.	-
338	56	299987	6414621	Moderate patches of *Verbena bonariensis* and *Gomphocarpus fruticosus*.	Scattered Eucalypt regeneration.	-
339	56	300267	6415256	-	Scattered Eucalypt and native shrub regeneration in/around eroded gully areas.	-
340	56	300330	6415379	Moderate number of *Lycium ferocissimum* and *Bryophyllum delagoense*.	-	Rabbit scats.
341	56	300543	6414765	-	Significant *Eucalyptus* plantings with tree guards.	-
342	56	300884	6414329	-	-	Sprayed patch of *Hypericum perforatum*.
343	56	300892	6414134	-	*Acacia decora* coppicing after slashing within powerline easement.	-
344	56	300753	6414150	Scattered patches of *Bryophyllum delagoense*.	-	-
345	56	300733	6413923	Moderate number of *Gomphocarpus fruticosus*.	significant regeneration of *Dodonaea viscosa* subsp. *angustifolia*, moderate regeneration of *Allocasuarina luehmannii*, *Acacia salicina, Acacia decora* and *Brachychiton populneus*.	-
346	56	300783	6413909	Moderate number of *Gomphocarpus fruticosus, Hypericum perforatum* and *Conyza sumatrensis*.	Significant regeneration of *Dodonaea viscosa* subsp. *angustifolia*, moderate regeneration of *Allocasuarina luehmannii, Acacia salicina, Acacia decora*	-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
					and *Brachychiton populneus*.	
347	56	300873	6415352	High number of *Chloris gayana, Gomphocarpus fruticosus* and *Galenia pubescens*.	Limited natural regeneration, limited to fringes of woodland/forest areas.	-
348	56	300432	6415246	-	Natural regeneration of *E. albens* x *moluccana* and *E. blakelyi*.	-
349	56	300506	6415286	-	Natural regeneration of *E. blakelyi*.	-
350	56	298883	6413598	Moderate number of *Paspalum dilatatum, Pavonia hastata, Gomphocarpus fruticosus* and *Verbena quadrangularis*.	Older regeneration of *E. blakelyi* and *E. melliodora*.	-
351	56	299107	6413762	-	Natural regeneration of *E. blakelyi*.	-
352	56	298860	6413474	-	Natural regeneration of *E. blakelyi*.	-
353	56	297095	6412772	High number of *Paspalum dilatatum* and *Verbena bonariensis*.	-	Rabbit scats.
354	56	296464	6412725	High number of *Paspalum dilatatum* and *Verbena bonariensis*.	-	-

**WP = Waypoint*

B.2.2. Recommendations

Recommendations include continued weed management targeting any high threat weeds (e.g. *Bryophyllum delagoense*, *Lycium ferocissimum*, *Hypericum perforatum*, *Galenia pubescens*) as a priority, as well as all other management actions identified in the CA. Although large infestations of weeds (e.g. *Verbena bonariensis* (Purpletop), *Paspalum dilatatum* (Paspalum) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush)) were observed, targeted control of these species is not considered to be economical or that beneficial as a result of the likely high soil seed bank of these species already present. Therefore, it is recommended that the best way

to reduce coverage of these species in the long-term is to continue to undertake additional plantings (and manage previous plantings) of appropriate canopy (i.e. plant the same species as nearby woodland) in open grassland areas as the prevalence of these weeds within wooded areas is very low (i.e. conditions under canopy trees is not conducive for the substantial growth of weed species observed in the conservation area). Any plantings should be made within open areas that do not contain large amounts of natural regeneration or previous replantings.

Any tree plantings should be sourced from local provenance (preferably sourced from remnant vegetation within the conservation area), be made within open areas, and be protected with tree guards, and the surrounding exotic vegetation routinely targeted through spot-spraying to increase plantings chances of survival (i.e. reduce competition from surrounding environmental weeds).

In 2020, the high threat weed *Carthamus lanatus* (Saffron Thistle) was observed in very high numbers throughout the conservation area and wider region, and a high level of seed is likely to be stored in the soil seed bank. In order to reduce this species seed bank in the soil, it is recommended that the conservation area be checked in late September-early October (prior to its flowering period) for dense infestations. If the species is observed in very high numbers, slashing should be carried out prior to it flowering and setting seed. Otherwise, the already high seed bank will continue to increase in the future.

It is also recommended that targeted European Rabbit and Feral Pig controls be implemented at the locations where scats/individuals were recorded to minimise their spread to additional areas of the conservation area.

Further to the above, any future hazard reduction burns should avoid areas of *Acacia pendula* regrowth, or reduce intensity in such areas to limit burning to the ground layer only (i.e. avoid burning/killing more mature individuals).

B.3. Datasheets

Date: 9/11/2023	Project #: SC10		Date: 9/11/2023	Project #: SC11	
Species	**Cover**	**Abundance**	**Species**	**Cover**	**Abundance**
Canopy			**Canopy**		
1			1		
2			2		
3			3		
4			4		
5			5		
Shrub			**Shrub**		
1 Pinelea lin.			1		
2			2		
3			3		
4			4		
5			5		
Groundcover			**Groundcover**		
1 Phragmites aust			1 Typha orient.		
2 Cayillleedim spic			2 Schoenoplectiella mucron		
3 Micro stip.			3 Paspalum distich.		
4 Arist. ram.			4 micro stip.		
5 Austo scab.			5 Arist. ram		
Weeds			**Weeds**		
1 Juncus acutus			1 Juncus acut.		
2 Plantago lanc.			2 Cynodon dact.		
3 Paspalum dil.			3 Polygon ~~acicul~~ monsp.		
4 Cirsium vulg.			4 Cirs. vulg.		
5 Hypoch. radic.			5 Pasp. dil.		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**	**GF Group: TG**=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other
Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.	**Stratum: C** = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 9/11/2023	Project #: SC1		Date: 9/11/2023	Project #: SC9	
Species	**Cover**	**Abundance**	**Species**	**Cover**	**Abundance**
Canopy			**Canopy**		
1 Acacia pendula			1 E. molo albens		
2			2 Euc. blakei		
3			3 Acacia salicina		
4			4 Allo. luehm.		
5			5		
Shrub			**Shrub**		
1 Maireana micro.			1 Bus. spp.		
2 Atriplex semi.			2 Indigofera aust.		
3 Eremophila debilis			3 Solanum cinereum		
4 Sclerolaena muric.			4		
5			5		
Groundcover			**Groundcover**		
1 Aristida vert.			1 Themeda tri.		
2 Micro stip.			2 Lomandra long.		
3 Chloris virgata			3 Both. decip.		
4 Einadia trigonos.			4 Cymbo. refract.		
5 Paspalid distans			5 Avist. ramosa		
Weeds			**Weeds**		
1 Galenia pubescens			1 Opunt. stricta		
2 Conyza sumatr.			2 Cirs. vulg.		
3 Sida rhomb.			3 Pavonia hast.		
4 Lycium ferocissi			4 Conyza sumatr		
5 Bromus cath.			5 Sonchus mar.		

Cover (%): 0.1, 0.2, 0.3...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**

Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.

GF Group: TG=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other

Stratum: C = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 10/11/2023	Project #: SC3		Date: 10/11/2023	Project #: SC4	
Species	**Cover**	**Abundance**	**Species**	**Cover**	**Abundance**
Canopy			**Canopy**		
1 Eue. mol x albens			1 Allocas. Inehmana		
2 Brachy pop.			2 Acacia salic.		
3 Allocas. Inehmiana.			3		
4 Acacia salicina			4		
5			5		
Shrub			**Shrub**		
1 Dodonaea viscosa subsp. angustis			1		
2 Acacia falcata			2		
3 Bursaria spinosa			3		
4 maireana micro.			4		
5 Acacia decora			5		
Groundcover			**Groundcover**		
1 Aristida ram			1 Micro stip. stip.		
2 cymbopog refract.			2 Einadia polygon		
3 Rytidosp. setac			3 sporob creb.		
4 Austo. vent.			4 Arist. ram		
5 Austo scab.			5 chloris ventric		
Weeds			**Weeds**		
1 Bryoph delagoense			1 Bryophyll delagoense		
2 Hypp. hirt.			2 Opuntia stricta		
3 chloris gayana			3 Senecio mad		
4			4 Comp fruit		
5			5 Conyza sumatr.		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**
Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.

GF Group: TG=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other
Stratum: C = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 10 / 11 / 2023	Project #: SC5			Date: / /	Project #:	
Species	**Cover**	**Abundance**		**Species**	**Cover**	**Abundance**
Canopy				**Canopy**		
1				1		
2				2		
3				3		
4				4		
5				5		
Shrub				**Shrub**		
1 Rodonaea visc. angustifol.				1		
2 Solanum cinereum				2		
3				3		
4				4		
5				5		
Groundcover				**Groundcover**		
1 Aristida ramosa				1		
2 Cymbo refract				2		
3 Chloris ventri				3		
4 Micro spp.				4		
5 Sporob. creb.				5		
Weeds				**Weeds**		
1 Gomph frutic Hypp. hirta				1		
2 Hyper perfor				2		
3 Senecio mad.				3		
4 Cirs. vulg.				4		
5 Sida rhomb.				5		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**	**GF Group: TG**=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other
Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.	**Stratum: C** = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 9/11/2023	Project #: SC2	
Species	**Cover**	**Abundance**
Canopy		
1		
2		
3		
4		
5		
Shrub		
1		
2		
3		
4		
5		
Groundcover		
1 Aristida ramosa		
2 Senecio quadridentt.		
3 Sporob. creber		
4 Bath. deiip.		
5 Cymbopog. retract.		
Weeds		
1 Gomph. frut.		
2 Sida rhomb.		
3 Carthamus lanatus		
4 Hypericum perfor.		
5 Cirsium vulgare		

Date: 10/11/23	Project #: SC7	
Species	**Cover**	**Abundance**
Canopy		
1 Cas. glauca		
2 Brachychiton popul.		
3		
4		
5		
Shrub		
1 Terminum juncenum		
2		
3		
4		
5		
Groundcover		
1 Commelina cyanea		
2 micle stip stip.		
3 Austio vert.		
4 Pellaea falc.		
5 Cayratia clemat.		
Weeds		
1 Sida rhomb Lycium ferocis.		
2 Juncus aeutus		
3 Comph. frutC		
4 Bryoph. delagense		
5 Marrubium vulgare		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**

Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.

GF Group: TG=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other

Stratum: C = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 9/11/2023	Project #: SC8	
Species	**Cover**	**Abundance**
Canopy		
1		
2		
3		
4		
5		
Shrub		
1		
2		
3		
4		
5		
Groundcover		
1 Arist. ram		
2 Sporob. creba		
3 Micro stip.		
4 Carex inversa		
5 chloris truncata		
Weeds		
1 Hyper. perf.		
2 Pasp. dil.		
3 ~~Plant. lanc.~~ Hypo. hirta		
4 Bromus racemosus		
5 Cirs. vulg		

Date: 9/11/2023	Project #: SC8	
Species	**Cover**	**Abundance**
Canopy		
1 Cas. glauca		
2 Brachy popul.		
3		
4		
5		
Shrub		
1 Acacia salicina		
2 Trema aspera		
3		
4		
5		
Groundcover		
1 Austro vert.		
2 micro stip.		
3 ~~A~~ Commelina cyanea		
4 Glycine tabac.		
5 Rumex brown.		
Weeds		
1 Galenia pub.		
2 Pavonia hast.		
3 Bromus cath.		
4 Lyc. ferociss		
5 Solanum nigrum		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**	**GF Group: TG**=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other
Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.	**Stratum: C** = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: 0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet

Monitoring Point Number	SC 10	**Date**	~~8~~ 9/11/23
Vegetation Community			
1. Site Photo(s)Taken	3936 - 3939		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			

3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	311 312	259 - 262 263-265	Extensive tree planting + direct seeding grasses eg. Aristida ramosa More shaly - similar.
Threatened species sightings			
Fire event/fuel	311 + 312	267	Recently burnt - hazard reduction
Weeds	311 + 312	268	Pasp. dil common in adjacent revey areas → reccomend spraying paspalum and any other problematic weeds - post fire - good opportunity
Pest animals	~~[illegible]~~ In plot	266	Rabbit scats
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet

Monitoring Point Number	SC11	**Date**	9/11/23
Vegetation Community			
1. Site Photo(s)Taken	3936 3943 -3946		

2. Floristic BioMetric attributes

Native cover	
Overstorey:	
Midstorey:	
Groundcover(grass):	
Groundcover (shrub):	
Groundcover (other):	
Native species richness:	
Proportion of canopy species regenerating	
Exotic cover	
Number of trees with hollows	
Total length of fallen logs	

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	~~272~~ 314 315	272 273-275	Some E. blak regen in open areas eucalypt planting - direct seeding unknown but native grasses present - Both deep, [illegible] rain. — W316 euc. plantings
Threatened species sightings	—	—	—
Fire event/fuel			Relatively low risk - vegetation still green in creek
Weeds	~~272~~ 314 315	272 276	Galenia pub. + Pavonia hastata abundant Paspalum, dill common
Pest animals	in plot		Rabbit scats, cow bones
Visitor impact/vehicles	—	—	—
Rubbish dumping	—	—	—

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	3C8	Date	9/4/2023
Vegetation Community			
1. Site Photo(s)Taken	3948 - 3951		

2. Floristic BioMetric attributes	
Native cover	
Overstorey:	
Midstorey:	
Groundcover(grass):	
Groundcover (shrub):	
Groundcover (other):	
Native species richness:	
Proportion of canopy species regenerating	
Exotic cover	
Number of trees with hollows	
Total length of fallen logs	

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	318	277-278	edge of new Eucalypt plantings - native grasses present but doesn't appear seeded
Threatened species sightings			
Fire event/fuel			Low litter, grass slashed
Weeds	318	277	Hyper perf.
Pest animals	318 319		rabbit scats Verb ban, Comph. finch, Pasp. di
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	SC 6	**Date**	9/11/2023
Vegetation Community			
1. Site Photo(s)Taken	3955-3958		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			

3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	320 321 322	281 283	Young Angoph flor + Cas. glauca Euc. plantings Euc. plantings + native regens
Threatened species sightings	—	—	—
Fire event/fuel	In plot	279-280	Low litter, grass dry, lots logs + dead standing wood of Cas. glauc.
Weeds	320	282	Galenia pub., also rudy, Juncus acut.
Pest animals	In plot		Rabbit scat
Visitor impact/vehicles	—	—	—
Rubbish dumping	—	—	—

WP322 284 reveg -euc platings + burn area

323 -continuation of large burn /reveg area

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	SC1	**Date** 9/11/23	
Vegetation Community			
1. Site Photo(s) Taken	3964 - 3967		
2. Floristic BioMetric attributes			

Native cover	
Overstorey:	
Midstorey:	
Groundcover(grass):	
Groundcover (shrub):	
Groundcover (other):	
Native species richness:	
Proportion of canopy species regenerating	
Exotic cover	
Number of trees with hollows	
Total length of fallen logs	

3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	324 325	~~325~~ 326 285-286	Stand Acacia pendula regrowth - coppicing following burn - some with unburnt foliage → Patches of Acacia pendula regrowth scattered around
Threatened species sightings			
Fire event/fuel	In plot		Lots logs / dead wood, grass dry
Weeds			
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

331 euc. reveg pt: 294

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	SC 9	**Date**	9/11/23
Vegetation Community			
1. Site Photo(s)Taken	3968 - 3971		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			

3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	328	~~328~~ 289-290	euc. regen under trees throughout this area
Threatened species sightings	—	—	—
Fire event/fuel	In plot		Litter common + small woody debris
Weeds	327 ~~329~~ 329	288 291-292	~~327~~ Bryophyllum delagoense patch. Substantial occurrences of Verb. virgat + Cis vulg in dig dam + patch Verb. bon nearby 330 - patch Ricinus communis + Lycium ferocissimum Pht: 293 + Bryoph. delag.
Pest animals	—	—	—
Visitor impact/vehicles	—	—	—
Rubbish dumping	—	—	—

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	SC2	Date	9/11/2023
Vegetation Community			
1. Site Photo(s)Taken	3973-3976		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	334	295	Random E. blak in grassland No plantings further north.
	335	296	~~Natural Regen~~ (Euc. not saltbag)
Threatened species sightings			
Fire event/fuel	In plot		Dry, not much litter
Weeds	334		opuntia stricta, Hyptis suaveolens, Sida rhomb., Carth. lanatus
Pest animals			WP 333 - pigs x3
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	SC5	Date	10/11/2023
Vegetation Community			
1. Site Photo(s)Taken	3998 - 4001		

2. Floristic BioMetric attributes	
Native cover	
Overstorey:	
Midstorey:	
Groundcover(grass):	
Groundcover (shrub):	
Groundcover (other):	
Native species richness:	
Proportion of canopy species regenerating	
Exotic cover	
Number of trees with hollows	
Total length of fallen logs	

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	345 + 346	3009	substantial regen Dodon visc. ssp angust - lesser extent Allo. luch, Athein salic, A. deuva, Brady pop.
Threatened species sightings			
Fire event/fuel	In plot		Grassland very dry.
Weeds	345 346		Comph frutic. Comph frut, Hyper perf, Lagen sum.
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	SC7	Date	10/11/23
Vegetation Community			
1. Site Photo(s)Taken	3978 - 3981		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	337 332	299 300	Cas. glauca regen on edge of forest scattered euc. regen
Threatened species sightings			
Fire event/fuel	In plot		Logs uncommon, dense casuarina litter
Weeds	337 338	 300	Patches Verbena bon nearby in grassland Patches Verb bon + Lomph fruit
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet

Monitoring Point Number	SC3	**Date**	10/11/2023
Vegetation Community			
1. Site Photo(s)Taken	3984 - 3987		

2. Floristic BioMetric attributes

Native cover	
Overstorey:	
Midstorey:	
Groundcover(grass):	
Groundcover (shrub):	
Groundcover (other):	
Native species richness:	
Proportion of canopy species regenerating	
Exotic cover	
Number of trees with hollows	
Total length of fallen logs	

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	339	303	Regen - euc + shrubs in eroded gully areas
Threatened species sightings	—	—	—
Fire event/fuel	In plot	301, 302	moderate litter, woody debris + logs
Weeds	340	305	Bryophyllum delag + Lycium ferocissimum
Pest animals	In plot	304	Rabbit scats
Visitor impact/vehicles	—	—	—
Rubbish dumping	—	—	—

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	SC4	Date	10/11/2023
Vegetation Community			
1. Site Photo(s)Taken	3990 - 3993		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	343	307	Acacia decora coppicing after slashing
Threatened species sightings			
Fire event/fuel			Dry, Heavy litter - Casuarina clavodes
Weeds	343 344	308	Comph fruit. Substantial patches Bryophyll delago north of plot scattered patches of Bryoph. delag.
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

Site	saddlers creek	Date	10/11/23
Staff	BF, MP	GPS	52

WP	Notes (e.g. regrowth, plantings, weed infestations)	Photo
336	Euc. plantings	297-298
341	Euc plantings to north-east/east of WP	306
342	Sprayed patch - dead Hypericum perf.	
347	Regrowth very uncommon, limited to woodland/forest fringes chloris gay, Gamph fruit, Galenia pub	
348	E. mol & albus + E. blakelyi regrowth	310
349	E. blakei regrowth	311
350	old regen E. blakei, E. mellio, Pasp. dil, Pavonia hast, comph fruit, verbena grand	312-313
351	E. blakei regeneration	314
352	E. blakei regen	
353	very abundant rabbit scats weeds pasp dil, Verb. bonar.	315
354	Pasp. dil + Verb bon common to dominant	

APPENDIX C :
Mount Arthur Offset

C.1.1. MA1: PCT 1543 Rusty Fig - Native Quince - Native Olive dry rainforest of the Central Hunter Valley

Monitoring site MA1 is located in an area of PCT 1543 Rusty Fig – Native Quince – Native Olive dry rainforest of the Central Hunter Valley, and is dominated by a canopy of *Ficus rubiginosa* (Port Jackson Fig), with *Angophora floribunda* (Rough-barked Apple) and *Brachychiton populneus* (Kurrajong) also present. Native shrubs include *Clerodendrum tomentosum* (Hairy Clerodendrum), *Notelaea microcarpa* (Native Olive), *Teucrium junceum*, *Solanum brownii* (Violet Nightshade). Native groundcovers include *Adiantum aethiopicum* (Common Maidenhair) *Oplismenus imbecillis*, *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Cissus antarctica* (Kangaroo Vine), *Echinopogon ovatus* (Forest Hedge-hog Grass) and *Dichondra repens* (Kidney Weed). Weed cover is moderate and includes *Phytolacca octandra* (Inkweed), *Cirsium vulgare* (Spear Thistle), *Conyza sumatrensis* (Tall Fleabane) and *Solanum nigrum* (Black-berry Nightshade).

North – Photo 3902

East – Photo 3903

South – Photo 3904

West – Photo 3905

C.2. Description and Monitoring Photographs

C.2.1. MA2: PCT 1586 White Box -Sticky Daisy Bush - Bead Bush shrubby woodland with semi - evergreen vine thicket elements of the Central Hunter Valley

Monitoring site MA2 is located in an area of PCT 1586 White Box – Sticky Daisy Bush – Bead Bush shrubby woodland with semi – evergreen vine thicket elements of the Central Hunter Valley. The canopy includes *Acacia salicina* (Cooba), *Eucalyptus moluccana x albens, Eucalyptus blakelyi* (Blakely's Red Gum) and *Callitris endlicheri* (Black Cypress Pine). Native shrubs include *Teucrium junceum*, *Olearia elliptica* (Sticky Daisy-bush), *Acacia decora* (Western Silver Wattle), *Solanum brownii* (Violet Nightshade) and *Psydrax odorata* (Shiny-leaved Canthium). Native groundcovers include, *Austrostipa scabra* (Speargrass), *Aristida ramosa* (Purple Wiregrass), *Cymbopogon refractus* (Barbed Wire Grass), *Austrostipa scabra* (Speargrass) and *Themeda triandra* (Kangaroo Grass). Weed cover is very low with minor occurrences of *Tagetes minuta* (Stinking Roger) and *Verbascum virgatum* (Twiggy Mullein).

North – Photo 3864

East – Photo 3865

South – Photo 3866

West – Photo 3867

C.2.2. MA3: PCT 1586 White Box -Sticky Daisy Bush - Bead Bush shrubby woodland with semi - evergreen vine thicket elements of the Central Hunter Valley

Monitoring site MA3 is located in an area of White Box – Sticky Daisy Bush – Bead Bush shrubby woodland with semi – evergreen vine thicket elements of the Central Hunter Valley and includes a canopy of *Allocasuarina luehmannii* (Bulloak), *Acacia salicina* (Cooba) and *Eucalyptus blakelyi* (Blakely's Red Gum). Native shrubs include *Notelaea microcarpa* (Native Olive), *Acacia implexa* (Hickory Wattle), *Teucrium junceum*, *Myoporum montanum* (Western Boobialla) and *Solanum brownii* (Violet Nightshade). Native groundcovers include *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Aristida ramosa* (Purple Wiregrass), *Austrostipa scabra* (Speargrass), *Cymbopogon refractus* (Barbed Wire Grass) and *Lomandra filiformis* (Wattle Mat-rush). Weed cover is low with *Galenia pubescens* (Galenia) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) recorded.

North – Photo 3874

East – Photo 3875

South – Photo 3876

West – Photo 3877

C.2.3. MA4: PCT 1604 Narrow-leaved Ironbark -Grey Box - Spotted Gum shrub - grass open forest of the central and lower Hunter

Monitoring site MA4 is located in an area of PCT 1604 Narrow-leaved Ironbark – Grey Box – Spotted Gum shrub – grass open forest of the central and lower Hunter, and is dominated by a canopy of *Corymbia maculata* (Spotted Gum) and scattered *Brachychiton populneus* (Kurrajong). Native shrubs include *Notelaea microcarpa (Native Olive), Myoporum montanum* (Western Boobialla), *Psydrax odorata* (Shiny-leaved Canthium), *Maireana microcarpa* and *Acacia implexa* (Hickory Wattle). Native groundcovers include *Austrostipa verticillata* (Slender Bamboo Grass), *Austrostipa scabra* (Speargrass), *Aristida ramosa* (Purple Wiregrass), *Rytidosperma setaceum* (Small-flowered Wallaby-grass) and *Cymbopogon refractus* (Barbed Wire Grass). Weed cover is low with *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) and *Opuntia stricta* (Common Prickly Pear) recorded.

North – Photo 3843

East – Photo 3844

South – Photo 3845

West – Photo 3846

C.2.4. MA5: PCT 1604 Narrow-leaved Ironbark -Grey Box - Spotted Gum shrub - grass open forest of the central and lower Hunter

Monitoring site MA5 is located in an area of PCT 1604 Narrow-leaved Ironbark – Grey Box – Spotted Gum shrub – grass open forest of the central and lower Hunter in DNG form. No canopy species are present. Native shrub species include *Notelaea microcarpa* (Native Olive), *Myoporum montanum* (Western Boobialla), *Atriplex semibaccata* (Creeping Saltbush) and *Maireana microcarpa*. The native understorey includes *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Austrostipa scabra* (Speargrass), *Cymbopogon refractus* (Barbed Wire Grass), *Asperula conferta* (Common Woodruff) and *Lomandra filiformis* (Wattle Mat-rush). Weed cover is moderate and includes *Opuntia stricta* (Common Prickly Pear), *Verbena bonariensis* (Purpletop), *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush), *Linum trigynum* (French Flax) and *Oxypetalum coeruleum*.

North – Photo 3838

East – Photo 3839

South – Photo 3840

West – Photo 3841

C.2.5. MA6: PCT 1606 White Box - Narrow-leaved Ironbark - Blakely's Red Gum shrubby open forest of the central and upper Hunter

Monitoring site MA6 is located in an area of PCT 1606 White Box - Narrow-leaved Ironbark – Blakely's Red Gum open forest of the central and lower Hunter, and is dominated by a canopy of *Eucalyptus albens* x *moluccana* and *Eucalyptus blakelyi* (Blakely's Red Gum) as well as scattered occurrences of *Brachychiton populneus* (Kurrajong) and *Callitris endlicheri* (Black Cypress Pine). Native shrubs include *Teucrium junceum*, *Notelaea microcarpa* (Native Olive), *Olearia elliptica* (Sticky Daisy-bush), *Cassinia sifton* (Sifton Bush) and *Myoporum montanum* (Western Boobialla). Native groundcovers include *Rytidosperma setaceum* (Small-flowered Wallaby-grass), *Poa sieberiana* (Snowgrass), *Cymbopogon refractus* (Barbed Wire Grass) and *Aristida ramosa* (Purple Wiregrass). Weed cover is very low with *Conyza sumatrensis* (Tall Fleabane) recorded.

North – Photo 3882

East – Photo 3883

South – Photo 3884

West – Photo 3855

C.2.6. MA7: PCT 1606 White Box - Narrow-leaved Ironbark - Blakely's Red Gum shrubby open forest of the central and upper Hunter

Monitoring site MA7 is located in an area of PCT 1606 White Box – Narrow-leaved Ironbark – Blakely's Red Gum open forest of the central and lower Hunter in DNG form. Canopy species includes *Brachychiton populneus* (Kurrajong). Native shrub species include *Notelaea microcarpa* (Native Olive), *Solanum brownii* (Violet Nightshade), *Olearia elliptica* (Sticky Daisy-bush), *Teucrium junceum* and *Maireana microphylla* (Small-leaf Bluebush). Native groundcovers include *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Aristida ramosa* (Purple Wiregrass), *Austrostipa scabra* (Speargrass), *Lomandra filiformis* (Wattle Mat-rush) and *Chloris ventricosa* (Plump Windmill Grass). Weed cover is low and includes *Senecio madagascariensis* (Fireweed), *Verbena officinalis* (Common Verbena), *Cirsium vulgare* (Spear Thistle), *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) and *Verbascum virgatum* (Twiggy Mullein).

North – Photo 3859

East – Photo 3860

South – Photo 3861

West – Photo 3862

C.2.7. MA8: PCT 1608 Grey Box - Grey Gum - Rough-barked Apple - Blakely's Red Gum grassy open forest of the central Hunter

Monitoring site MA8 is located in an area of PCT 1608 Grey Box – Grey Gum – Rough-barked Apple – Blakely's Red Gum grassy open forest of the central Hunter, and is dominated by a canopy of *Eucalyptus blakelyi* (Blakely's Red Gum) as well as scattered *Allocasuarina luehmannii* (Bulloak). Native shrub species present include *Notelaea microcarpa* (Native Olive), *Teucrium junceum*, *Solanum brownii* (Violet Nightshade), *Myoporum montanum* (Western Boobialla) and *Acacia implexa* (Hickory Wattle). Native groundcovers include *Eragrostis leptostachya* (Paddock Lovegrass), *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Aristida ramosa* (Purple Wiregrass), *Cymbopogon refractus* (Barbed Wire Grass) and *Chloris ventricosa* (Plump Windmill Grass). Weed cover is low and includes *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush), *Sida rhombifolia* (Paddy's Lucerne) and *Opuntia stricta* (Common Prickly Pear).

North – Photo 3819

East – Photo 3820

South – Photo 3821

West – Photo 3822

C.2.8. MA9: PCT 1608 Grey Box - Grey Gum - Rough-barked Apple - Blakely's Red Gum grassy open forest of the central Hunter

Monitoring site MA9 is located in an area of PCT 1608 Grey Box – Grey Gum – Rough-barked Apple – Blakely's Red Gum grassy open forest of the central Hunter, and is dominated by a canopy of *Angophora floribunda* (Rough-barked Apple), with one *Brachychiton populneus* (Kurrajong) also present. Native shrub species include *Notelaea microcarpa* (Native Olive), *Teucrium junceum*, *Solanum brownii* (Violet Nightshade), *Myoporum montanum* (Western Boobialla) and *Acacia implexa* (Hickory Wattle). Native groundcovers include *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Austrostipa scabra* (Speargrass), *Aristida ramosa* (Purple Wiregrass), *Chloris ventricosa* (Plump Windmill Grass) and *Austrostipa verticillata* (Slender Bamboo Grass). Weed cover is low and includes *Opuntia stricta* (Common Prickly Pear), *Sida rhombifolia* (Paddy's Lucerne) and *Conyza sumatrensis* (Tall Fleabane).

North – Photo 3812

East – Photo 3813

South – Photo 3814

West – Photo 3815

C.2.9. MA10: PCT 1654 Narrow-leaved Ironbark - Grey Gum shrubby open forest on sandstone ranges of the upper Hunter Valley

Monitoring site MA10 is located in an area of PCT 1654 Narrow-leaved Ironbark – Grey Gum shrubby open forest on sandstone ranges of the upper Hunter Valley, and is dominated by a canopy of *Callitris endlicheri* (Black Cypress Pine), *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Eucalyptus blakelyi* (Blakely's Red Gum). Native shrubs include *Notelaea microcarpa* (Native Olive), *Olearia elliptica* (Sticky Daisy-bush), *Teucrium junceum*, *Solanum brownii* (Violet Nightshade) and *Psydrax odorata* (Shiny-leaved Canthium). Native groundcovers include *Aristida ramosa* (Purple Wiregrass), *Austrostipa scabra* (Speargrass), *Rytidosperma setaceum* (Small-flowered Wallaby-grass), *Chloris ventricosa* (Plump Windmill Grass) and *Bothriochloa decipiens* (Red Grass). Weed cover is low with *Conyza sumatrensis* (Tall Fleabane), *Opuntia stricta* (Common Prickly Pear) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) recorded.

North – Photo 3910

East – Photo 3911

South – Photo 3912

West – Photo 3913

C.2.10. MA11: PCT 1654 Narrow-leaved Ironbark - Grey Gum shrubby open forest on sandstone ranges of the upper Hunter Valley

Monitoring site MA11 is located in an area of PCT 1654 Narrow-leaved Ironbark – Grey Gum shrubby open forest on sandstone ranges of the upper Hunter Valley in DNG form. It comprises regrowth *Brachychiton populneus* (Kurrajong) as well as the native shrub *Notelaea microcarpa* (Native Olive). Other native shrubs include *Olearia elliptica* (Sticky Daisy-bush), *Teucrium junceum*, *Solanum brownii* (Violet Nightshade) and *Bursaria spinosa* (Native Blackthorn). Native groundcovers include *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Aristida ramosa* (Purple Wiregrass), *Chloris ventricosa* (Plump Windmill Grass), *Lomandra filiformis* (Wattle Mat-rush) and *Austrostipa verticillata* (Slender Bamboo Grass). Weed cover is low and includes *Verbena bonariensis* (Purpletop), *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush), *Verbena quadrangularis* and *Cirsium vulgare* (Spear Thistle).

North – Photo 3895

East – Photo 3896

South – Photo 3897

West – Photo 3898

C.2.11. MA12: PCT 1691 Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter

Monitoring site MA12 is located in an area of PCT 1691 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter in DNG form. Native canopy species include *Acacia salicina* (Cooba). Native shrubs include *Notelaea microcarpa* (Native Olive), *Maireana microcarpa*, *Myoporum montanum* (Western Boobialla) and *Acacia falcata* (Hickory Wattle). Native groundcovers include *Aristida ramosa* (Purple Wiregrass), *Cymbopogon refractus* (Barbed Wire Grass), *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Austrostipa scabra* (Speargrass) and *Lomandra filiformis* (Wattle Mat-rush). Weed cover is low and includes *Senecio madagascariensis* (Fireweed), *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush), *Opuntia stricta* (Common Prickly Pear), *Galenia pubescens* (Galenia) and *Lycium ferocissimum* (African Boxthorn).

North – Photo 3851

East – Photo 3852

South – Photo 3853

West – Photo 3854

C.2.12. MA13: PCT 1691 Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter

Monitoring site MA13 is located in an area of PCT 1691 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter, and is dominated by a canopy of *Eucalyptus albens x moluccana* as well as *Allocasuarina luehmannii* (Bulloak). Native shrubs include *Notelaea microcarpa* (Native Olive), *Solanum brownii* (Violet Nightshade), *Teucrium junceum*, *Olearia elliptica* (Sticky Daisy-bush) and *Acacia decora* (Western Silver Wattle). Native groundcovers include *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Aristida ramosa* (Purple Wiregrass), *Austrostipa scabra* (Speargrass), *Lomandra filiformis* (Wattle Mat-rush) and *Chloris ventricosa* (Plum Windmill Grass). Weed cover is low and includes *Cirsium vulgare* (Spear Thistle), *Conyza sumatrensis* (Tall fleabane), *Opuntia stricta* (Common Prickly Pear) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush).

North – Photo 3830

East – Photo 3831

South – Photo 3832

West – Photo 3833

C.2.13. MA14: PCT 1692 Bull Oak grassy woodland of the central Hunter Valley

Monitoring site MA14 is located in an area of PCT 1692 Bull Oak grassy woodland of the central Hunter Valley, and is dominated by a canopy of *Allocasuarina luehmannii* (Bulloak) with *Angophora floribunda* (Rough-barked Apple), *Eucalyptus albens x moluccana* and *Brachychiton populneus* (Kurrajong) also present. Native shrubs include *Notelaea microcarpa* (Native Olive), *Myoporum montanum* (Western Boobialla), *Solanum brownii* (Violet Nightshade), *Olearia elliptica* (Sticky Daisy-bush) and *Teucrium junceum*. Native groundcovers include *Aristida ramosa* (Purple Wiregrass), *Austrostipa scabra* (Speargrass), *Lomandra multiflora* (Many-flowered Mat-rush), *Dianella caerulea* var. *cinerascens* and *Eragrostis leptostachya* (Paddock Lovegrass) . Weed cover is low and includes *Cirsium vulgare* (Spear Thistle) and *Opuntia stricta* (Common Prickly Pear).

North – Photo 3825

East – Photo 3826

South – Photo 3827

West – Photo 3828

C.3. Discussion and Recommendations

C.3.1. Discussion of Conservation Values

Overall, the Mount Arthur Conservation Area is considered to be in good condition. Opportunistic observations made while walking/driving through the conservation area identified the following:

- No signs of feral animals or rubbish dumping;
- Natural regeneration of native canopy/shrub species in some areas (refer to **Table 3**); and
- Moderate weed infestations of *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush), *Opuntia stricta* (Common Prickly Pear) and *Verbena bonariensis* (Purpletop) (refer to **Table 3**).

Although substantial weed infestations of the weeds *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) and *Verbena bonariensis* (Purpletop) were recorded primarily in open grassland areas, this species has been observed in high numbers within similar grassland areas elsewhere in the region in 2023 and its prevalence is considered to be associated with environmental conditions rather than a lack of management within the conservation area.

Weed infestations are not widespread across the conservation area, but restricted to just a few areas (refer to **Table 3**). However, a noticeable increase in *Opuntia stricta* (Common Prickly Pear) was recorded. No individuals were observed to be impacted by the stem-boring moth *Cactoblastis cactorum*. In previous years, *Opuntia stricta* (Common Prickly Pear) has been recorded in low numbers; however, large numbers of individuals showed signs of being controlled by *Cactoblastis cactorum*.

Table 3 below identifies the species and locations of weed infestations and native canopy/shrub regeneration recorded within the conservation area.

Table 3 Details of weed infestations, native regeneration and other notes recorded within the Mount Arthur Conservation Area

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
253	56	297541	6417466	-	Scattered *E. albens* x *moluccana* and *E. blakelyi* regrowth common.	-
254	56	297555	6417334	-	Scattered *E. blakelyi* regrowth common.	-
256	56	297688	6417694	-	Scattered Eucalypt regrowth, little regeneration.	-
257	56	297632	6417663	Scattered *Opuntia stricta* and *Gomphocarpus fruticosus*.	-	-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
258	56	297601	6417649	*Gomphocarpus fruticosus* infestation along access track.	-	-
260	56	298817	6417608	-	Patch of *Acacia implexa* regeneration.	-
261	56	298773	6417570	-	Some *Corymbia maculata* regeneration on edge of woodland.	-
262	56	298736	6417562	-	Some Eucalypt regrowth along edges of woodland.	-
263	56	298699	6417590	-	Scattered *E. blakelyi* regrowth.	-
264	56	298660	6417646	-	*Acacia salicina* regrowth.	-
265	56	297606	6417097	*Gomphocarpus fruticosus* common in all open areas.	Some Eucalypt regrowth.	-
266	56	297498	6416715	*Gomphocarpus fruticosus* present.	Significant *E. blakelyi* and *Acacia implexa* regrowth.	-
267	56	297798	6416562	-	Regrowth *E. blakelyi*.	-
268	56	298775	6416906	Large patch of dead *Verbena bonariensis*.		-
Plot MA12		298581	6417714	-	*E. albens x moluccana* and *Acacia falcata* regrowth.	-
Plot MA2		297819	64117037	-	Regrowth of shrubby native species around MA2.	-
Plot MA3		297486	6416755	-	Scattered regrowth of Eucalypts and native shrubs.	-
Plot MA11		298736	6416927	-	Grassland areas limited to native shrubby regeneration only. Eucalypt regeneration along woodland fringes.	-

**WP = Waypoint*

C.3.2. Recommendations

Recommendations include continued weed management targeting any weed infestations (refer to **Table 3**) as a priority, as well as all other management actions identified in the CA. It is recommended that re-introduction of the stem-boring moth *Cactoblastis cactorum* be considered as a biological control for the introduce *Opuntia stricta* (Common Prickly Pear).

Although infestations of *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) and *Verbena bonariensis* (Purpletop) were observed, targeted control of scattered occurrences of this species is not considered to be economical or that beneficial as a result of the likely high soil seed bank of these species already present. Therefore, it is recommended that the best way to reduce coverage of these weed species, as well as others in the long-term, is to undertake additional plantings of appropriate canopy species (i.e. plant the same species as nearby woodland) in open grassland areas as the prevalence of weeds observed within wooded areas was very low (i.e. conditions under canopy trees is not conducive for the substantial growth of weed species observed in the conservation area). Any plantings should be made within open areas that do not contain large amounts of natural regeneration.

Any tree plantings should be sourced from local provenance (preferably sourced from remnant vegetation within the conservation area), be made within open areas, and be protected with tree guards and the surrounding exotic vegetation routinely targeted through spot-spraying to increase plantings chances of survival (i.e. reduce competition from surrounding environmental weeds).

Other than weed control and additional plantings, no further recommendations are made at this point in time as the conservation area is in good condition.

C.4. Datasheets

Date: 6 / 11 / 2023	Project #: MA 14	
Species	**Cover**	**Abundance**
Canopy		
1 Euc. mol + alb.		
2 Angoph flor.		
3 Allocas. luehman.		
4 Brachyc popul.		
5		
Shrub		
1 Teucrium junc		
2 Myopor mont.		
3 Notelaea micro		
4 Solanum brown.		
5 Olearia ellipt.		
Groundcover		
1 Arist. ram		
2 Austro scab.		
3 Dianella caerulea cinerascens		
4 Eragrost. lepto		
5 Lomandra multi.		
Weeds		
1 Cirsium vulg.		
2 Opuntia stric.		
3		
4		
5		

Date: 6 / 11 / 2023	Project #: MA 13	
Species	**Cover**	**Abundance**
Canopy		
1 Euc. mol. + albens		
2 Allocas. lueh.		
3		
4		
5		
Shrub		
1 Acacia decora		
2 Olearia elliptic.		
3 Notelaea micro.		
4 Teucrium junceum		
5 Solanum brown.		
Groundcover		
1 Austro. scabra		
2 Arist. ramosa		
3 Lomandra multi.		
4 Chloris ventric.		
5 Micro. stip.		
Weeds		
1 Cis. vulg.		
2 Opuntia strict.		
3 Gomph. frutic.		
4 Conyza sumatr.		
5		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**	**GF Group: TG**=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other
Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.	**Stratum: C** = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 6 / 11 / 2023	Project #: MA6	
Species	**Cover**	**Abundance**
Canopy		
1 Brachy pop.		
2 Euc. blakely		
3 Euc. mol (x albens)		
4 Callitris endlich.		
5		
Shrub		
1 Olearia elliptica		
2 Notelaea micro		
3 Teucrium junc.		
4 Cassinia arc.		
5 Myoporum Mont.		
Groundcover		
1 Poa sieb.		
2 Rytidosp. setac.		
3 Cymbopog. refract		
4 Aristida ram.		
5		
Weeds		
1 Conyza sumatr.		
2		
3		
4		
5		

Date: 7 / 11 / 2023	Project #: MA11	
Species	**Cover**	**Abundance**
Canopy		
1 Brachy pop.		
2		
3		
4		
5		
Shrub		
1 Notelaea micro		
2 Olearia ellipt.		
3 Teucrium junceum		
4 Bursaria spin		
5 Solanum brown.		
Groundcover		
1 Arist. ram.		
2 Micro stip		
3 Chloris ventric		
4 Lomandra filif		
5 Austro vert.		
Weeds		
1 Verbena bonar		
2 Gomph. frutic		
3 Verbena quadrang.		
4 Cirs. vulgare		
5		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**	**GF Group: TG**=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other
Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.	**Stratum: C** = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm^2 or circle with 71cm diameter, 0.5% = approx 1.4m^2, 1% = approx 2m^2, 5% = approx 4.5m^2, 25% = approx 10m^2*

Date: 6/11/2023	Project #: MA12	
Species	**Cover**	**Abundance**
Canopy		
1 Acacia salic.		
2		
3		
4		
5		
Shrub		
1 Notelaea micro.		
2 Maireana micro		
3 Acacia falc.		
4 Myoporum mont.		
5		
Groundcover		
1 Cymbopogon refractus		
2 Aristida ramosa		
3 Micro stlp.		
4 Lomandra fil f.		
5 Austro scabra.		
Weeds		
1 Opuntia stricta		
2 Gomph. frutic.		
3 Senecio madag.		
4 Galenia pubescens		
5 Lycium ferociss		

Date: 6/11/2023	Project #: MA7	
Species	**Cover**	**Abundance**
Canopy		
1 ~~Non-native~~ Brachy pop.		
2		
3		
4		
5		
Shrub		
1 Not. micro		
2 spart. juncea		
3 Solanum brown.		
4 Maireana micro.		
5 ~~Myoporum montanum~~ Olearia ellip.		
Groundcover		
1 Aristida ramosa		
2 chloris ventric.		
3 Austro scab.		
4 Lomandra fil.		
5 Microlaena stip		
Weeds		
1 Gomph. frutic.		
2 Cirsium vulgare		
3 Senecio madag.		
4 Verbena offic.		
5 Verbascum virgat.		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**	**GF Group: TG**=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other
Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.	**Stratum: C** = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 6 / 11 / 2023	Project #: MA9		Date: 6 / 11 / 2023	Project #: MA8	
Species	**Cover**	**Abundance**	**Species**	**Cover**	**Abundance**
Canopy			**Canopy**		
1 Angophora floribunda			1 Eue. blade.		
2 Brachy popul.			2 Allo. luehmannii		
3			3		
4			4		
5			5		
Shrub			**Shrub**		
1 Tereverum juncum			1 Not. micro		
2 Myoporum montanum			2 Teucrium junc.		
3 Notelaea micro.			3 Solanum brown.		
4 Solanum brown.			4 Myoporum montan		
5 Acacia implexa			5 Acacia implexa		
Groundcover			**Groundcover**		
1 Aristida ramosa			1 Eragr. leptos		
2 Micro Stip			2 Arist. ram		
3 Austro spp scabra			3 micro stip		
4 chloris ventric.			4 Cymbopog refract.		
5 Austrostipa ventic			5 chloris ventric.		
Weeds			**Weeds**		
1 Opuntia stricta			1 Gomph fruticc		
2 sida rhomb.			2 Sida rhomb.		
3 Lepyra sumatrensis			3 opuntia stricta		
4			4		
5			5		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**

Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.

GF Group: TG=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other

Stratum: C = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 6/11/2023	Project #: MA5		Date: 6/11/2023	Project #: MA4
Species	**Cover**	**Abundance**	**Species**	**Cover**	**Abundance**
Canopy			**Canopy**		
1			1 Corymbia maculata		
2			2 Blady pop.		
3			3		
4			4		
5			5		
Shrub			**Shrub**		
1 Atriplex semi.			1 Notelaea micro		
2 Maireana micro			2 maireana micro		
3 Notelaea micro			3 Myoporum montanum		
4 & Myopor mont.			4 Acacia implex.		
5			5 Psydrax odorata		
Groundcover			**Groundcover**		
1 Micro str			1 Austro vel		
2 Cymbo refract.			2 Austro scabra		
3 Austro scab.			3 Rytidosp. setaceum		
4 Asperula conferta			4 ~~Acacia implex~~ Aristid ramosa		
5 Lomandra fil.			5 Cymbo. refract.		
Weeds			**Weeds**		
1 Opuntia stricta			1 Eomph frut		
2 Verb. bon			2 Opuntia stricta		
3 Eomph. fruti			3		
4 Oxypetalum caeruli.			4		
5 Linum trigynum			5		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**

Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.

GF Group: TG=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other

Stratum: C = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 6 / 11 / 2023	Project #: MA2	
Species	**Cover**	**Abundance**
Canopy		
1 Acacia salicina		
2 ~~Spartoth. junceum~~ Callitris endlich.		
3 Euc. mol x albens		
4 Euc. blake.		
5		
Shrub		
1 Spartoth. junceum		
2 Olearia elliptica		
3 Solanum brownii		
4 Acacia decora		
5 Psydrax odor.		
Groundcover		
1 Chloris ventric.		
2 Aristida ramosa		
3 ~~Cynodon dactylon~~ Lymbo retractus		
4 Austo scab.		
5 Themeda triandra		
Weeds		
1 Tagetes minuta		
2 Verbascum virgat.		
3		
4		
5		

Date: 6 / 11 / 2023	Project #: MA3	
Species	**Cover**	**Abundance**
Canopy		
1 Acacia salicina		
2 Allocasuarina huehmann.		
3 Euc. blakelyi		
4		
5		
Shrub		
1 Notelaea micro.		
2 Acacia implexa		
3 Myoporum montanum		
4 Tetratheca junc.		
5 Solanum brownii		
Groundcover		
1 Aristida ramosa		
2 Lymbopon refractus		
3 Austo. scab.		
4 Lomandra fil. f.		
5 Micro. stip.		
Weeds		
1 Galenia pubescens		
2 Gamph. fruti.		
3		
4		
5		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**

Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.

GF Group: TG=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other

Stratum: C = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 7/11/2023	Project #: MA1		Date: 7/11/2023	Project #: MA10	
Species	**Cover**	**Abundance**	**Species**	**Cover**	**Abundance**
Canopy			**Canopy**		
1 Ficus rubiginh.			1 Callitris endich.		
2 Angophora floribu			2 Euc crebra		
3 Cissus antarct.			3 Euc. blake		
4 Brachy papu			4		
5			5		
Shrub			**Shrub**		
1 Tecticum junceum			1 Terminum junceum		
2 Clerodendrum tomen.			2 Olearia elliptic.		
3 Notelaea micro.			3 Notelaea micro.		
4 Solanum brown.			4 Solanum brownii		
5			5 Psydrax odor.		
Groundcover			**Groundcover**		
1 Adiantum aeth.			1 Austo. scab.		
2 Oplismenus imbecillis			2 Aristia ramosa		
3 Micro stip stip.			3 Chloris ventra.		
4 Echinopogon ovatus			4 Both. deup.		
5 Dichondra repens			5 Hytidosperma setaceum		
Weeds			**Weeds**		
1 Phytolacca octandra			1 Conyza sumatrensis		
2 Cirsium vulgare			2 Opuntia stict.		
3 Conyza sumatrensis			3 Lamph fruti.		
4 Solanum nigrum			4		
5			5		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**

Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.

GF Group: TG=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other

Stratum: C = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA9	**Date**	6/11/23
Vegetation Community			
1. Site Photo(s)Taken	3812 – 3815		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	253	3818	very scattered regrowth canop - E. alb + mol, E. blake.
Threatened species sightings			
Fire event/fuel	252	3816	Very dry – moderate fuel beds - leaf litter + mid size branches
Weeds			Rare occurrences opuntia stricta. Nothing significant
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA 8	Date	6/11/02
Vegetation Community			
1. Site Photo(s)Taken	3819 - 3822		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	254	3824	some scattered regrowth in open areas E. blakei.
Threatened species sightings			
Fire event/fuel	254		very dry - litter abundant, no logs but small branches <10cm diameter common
Weeds			
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA14	Date	6/11/23
Vegetation Community			
1. Site Photo(s)Taken	3825 - 3828		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			No disturbed areas/no regen
Threatened species sightings			
Fire event/fuel	255		High amount Alb cas. needles very dry.
Weeds			See plot.
Pest animals			
Visitor impact/vehicles			Access road nearby
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA13	**Date**	6/11/2023
Vegetation Community			
1. Site Photo(s)Taken	3830 - 3837		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	256 259	3835 3837	Very scattered eucalypt regrowth - not much regen. Lots Acacia falcata regen.
Threatened species sightings			
Fire event/fuel	In plot.		Very dry - moderate amount of leaf litter, some scattered logs.
Weeds	257		Some generally scattered opuntia Strict & Comph. Fruit.
Pest animals			
Visitor impact/vehicles			Access track adjacent.
Rubbish dumping			

WP 258 Pht 3836 Comph fruit along road

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA5	**Date**	6/11/2023
Vegetation Community			
1. Site Photo(s)Taken	3838-384		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	260 261	229 230-231	Patch Acacia implex regen. some eucalyptus mac regen on edge of forest patch
Threatened species sightings			
Fire event/fuel			Dry - low fuel bridge grass
Weeds			
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA~~5~~4	Date	6/11/23
Vegetation Community			
1. Site Photo(s)Taken			
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	262 263	see MA5 233	Some regrowth - limited to canopy edges. Scattered E. blak regrowth.
Threatened species sightings			
Fire event/fuel	262	232 ~~233~~	Very dry, high litter. No huge logs but lots small fuel <10cm d.i.m.
Weeds			
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

PH: WP:
234 264
Acacia salicina regrowth

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA 12	**Date** 6/11/23	
Vegetation Community			
1. Site Photo(s)Taken	3851 - 3854		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	surrounding plot.	235-236	Euc. mol. x albens / Acacia falcata regrowth surrounding plot.
Threatened species sightings			
Fire event/fuel	in plot.		Low litter, but lots dry grass
Weeds			
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA 7	**Date**	6/11/23
Vegetation Community			
1. Site Photo(s)Taken	3859 - 3862		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	265	236-237	Comp fruit common + some eucl. regrowth - General scattered regrowth through whole area
Threatened species sightings			
Fire event/fuel	In plot		Litter levels low but very dry grass
Weeds	Around plot		Comp. fruit, grasses common in all open areas.
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA 2	**Date** 6/11/2023	
Vegetation Community			
1. Site Photo(s)Taken	3864 - 3867		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	Around PG2	239	Regrowth mostly shrubby, species -olearia elliptica etc.
Threatened species sightings			
Fire event/fuel	In plot.		moderate level litter, no logs -everything very dry.
Weeds			
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA 3	Date	6/11/23
Vegetation Community	~~3874~~		
1. Site Photo(s)Taken	3874-3877		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	Surrounding plot 266	240	scattered regrowth of eucalypts and shrubs in all surrounding open areas. Lots E. blakl + A. implexa regrowth here
Threatened species sightings			
Fire event/fuel	In plot		Litter sparse - ground layer dry.
Weeds	266	246	Gomph fruit.
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA 6	**Date**	6/11/23
Vegetation Community			
1. Site Photo(s)Taken	3882 - 3885		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	267	241	Regrowth E. blakei
Threatened species sightings			
Fire event/fuel	In plot		moderate litter, no logs, some woody debris <10 cm diameter
Weeds			
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA 11	Date 7/11/23	
Vegetation Community			
1. Site Photo(s)Taken	3895 - 3898		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	Around plot	242	surrounding grassland shrub.open only except woodland fringes - Not mic, olearia ellipt etc Acacia falcata
Threatened species sightings			
Fire event/fuel	In plot		No litter - grass very dry.
Weeds	268	243	Large patch dead verb. bonar.
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA1	Date	7/11/2023
Vegetation Community			
1. Site Photo(s)Taken	3902-3905		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas			Intact forest all around
Threatened species sightings			
Fire event/fuel			Lots dry litter in rainforest understorey
Weeds			As per plot
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MA10	Date	7/11/23
Vegetation Community			
1. Site Photo(s)Taken	3910 - 3913		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	opposite slope		ryan eucalypts + shrubs - everything else forested
Threatened species sightings			
Fire event/fuel	In plot	244 -245	litter low - grass dry - lots dead standing callitris.
Weeds			
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

APPENDIX D :

Thomas Mitchell Drive On-site Offset

D.1. Description and Monitoring Photographs

D.1.1. TMDON1: PCT 1691 Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter

Monitoring site TMON1 is located in an area of PCT 1691 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter, and is dominated by a canopy of *Eucalyptus moluccana x albens* with *Allocasuarina luehmannii* (Bulloak) also present.. Native shrubs present include *Acacia parvipinnula* (Silver-stemmed Wattle) and *Atriplex semibaccata* (Creeping Saltbush). Native groundcovers include *Sporobolus creber* (Western Rat-tail Grass), *Aristida ramosa* (Purple Wiregrass), *Panicum effusum* (Hairy Panic), *Cymbopogon refractus* (Barbed Wire Grass) and *Bothriochloa decipiens* var. *decipiens*. Weed cover is low and includes *Plantago lanceolata* (Lamb's Tongue), *Paspalum dilatatum* (Paspalum), *Senecio madagascariensis* (Fireweed), *Opuntia stricta* (Common Prickly Pear) and *Hyperpathia hirta* (Coolatai Grass).

North – Photo 424

East – Photo 425

South – Photo 426

West – Photo 427

D.1.2. TMDON2: PCT 1691 Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter

Monitoring site TMON2 is located in an area of PCT 1691 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter, and is dominated by a canopy of *Eucalyptus blakelyi* (Blakely's Red Gum) as well as scattered occurrences of *Eucalyptus albens* x *moluccana* and *Acacia salicina* (Cooba). Native shrubs include *Teucrium junceum*, *Acacia falcata* (Hickory Wattle) and *Cassinia sifton* (Sifton Bush). Native groundcovers include *Aristida ramosa* (Purple Wiregrass), *Cymbopogon refractus* (Barbed Wire Grass), *Bothriochloa decipiens* var. *decipiens*, *Chloris ventricosa* (Plump Windmill Grass) and *Sporobolus creber* (Western Rat-tail Grass). Weed cover is low with *Eragrostis curvula* (African Lovegrass), *Bryophyllum delagoense* (Mother-of-millions), *Opuntia stricta* (Common Prickly Pear), *Conyza sumatrensis* (Tall Fleabane) and *Cirsium vulgare* (Spear Thistle).

North – Photo 319

East – Photo 320

South – Photo 321

West – Photo 322

D.1.3. TMDON3: PCT 1692 Bull Oak grassy woodland of the central Hunter Valley

Monitoring site TMON3 is located an area of PCT 1692 Bull Oak grassy woodland of the central Hunter Valley in DNG form. The native canopy includes scattered *Allocasuarina luehmannii* (Bulloak) and *Angophora floribunda* (Rough-barked Apple), with *Acacia decora* (Western Silver Wattle) present in the shrub layer. Native groundcovers include *Aristida ramosa* (Purple Wire Grass), *Themeda triandra* (Kangaroo Grass), *Juncus subsecundus*, *Bothriochloa decipiens* (Red Grass) and *Lomandra multiflora* (Many-flowered Mat-rush). Weed cover is high and includes *Axonopus fissifolius* (Narrow-leaved Carpet Grass), *Eragrostis curvula* (African Lovegrass), *Verbena rigida* (Veined Verbena), *Senecio madagascariensis* (Fireweed) and *Plantago lanceolata* (Lamb's Tongue).

North – Photo 369

East – Photo 370

South – Photo 371

West – Photo 372

D.1.4. TMDON4: PCT 1692 Bull Oak grassy woodland of the central Hunter Valley

Monitoring site TMON4 is located in an area of PCT 1692 Bull Oak grassy woodland of the central Hunter Valley, and is dominated by a canopy of *Allocasuarina luehmannii* (Bulloak) with *Acacia salicina* (Cooba) also present. Native shrubs include *Solanum cinereum* (Narrawa Burr) and *Sclerolaena birchii* (Galvanised Burr). Native groundcovers include *Aristida ramosa* (Purple Wiregrass), *Austrostipa scabra* (Speargrass), *Chloris ventricosa* (Plump Windmill Grass), *Sporobolus creber* (Western Rat-tail Grass) and *Enchylaena tomentosa* (Ruby Saltbush). Weed cover is low and includes *Opuntia stricta* (Common Prickly Pear), *Eragrostis curvula* (African Lovegrass), *Conyza sumatrensis* (Tall Fleabane), *Cirsium vulgare* (Spear Thistle) and *Bryophyllum delagoense* (Mother-of-millions).

North – Photo 337

East – Photo 338

South – Photo 339

West – Photo 340

D.2. Discussion and Recommendations

D.2.1. Discussion of Conservation Values

Overall, the Thomas Mitchell Drive On-site Conservation Area is considered to be in moderate condition. Opportunistic observations made while walking/driving through the conservation area identified the following:

- No signs of rubbish dumping;
- Moderate signs of the European Rabbit (*Oryctolagus cuniculus*), with scats recorded at five (5) separate areas (refer to **Table 4**);
- Significant *Eucalyptus* plantings throughout open grassland areas (refer to **Table 4**);
- Slashing of old *Acacia saligna* (Golden Wreath Wattle) infestation (refer to **Table 4**);
- Evidence of recent control (spraying) of *Hypericum perforatum* (St. John's Wort);
- Substantial regrowth of *Acacia pendula* (Weeping Myall) listed as an endangered population under the BC Act (refer to **Table 4**);
- Natural regeneration of native canopy/shrub species (refer to **Table 4**); and
- Moderate to substantial weed infestations of *Opuntia stricta* (Common Prickly Pear), *Galenia pubescens* (Galenia), *Pavonia hastata, Plumbago auriculata, Acacia baileyana* (Cootamundra Wattle), *Acacia saligna* (Golden Wreath Wattle), *Dimorphotheca ecklonis* (Cape Daisy), *Hyparrhenia hirtus* (Coolatai Grass), *Verbena quadrangularis, Verbena bonariensis* (Purpletop), *Senecio madagascariensis* (Fireweed), *Cirsium vulgare* (Spear Thistle), *Lycium ferocissimum* (African Boxthorn), *Cyperus eragrostis* (Umbrella Sedge), *Juncus acutus* (Sharp Mat-rush), *Hypericum perforatum* (St. John's Wort), *Acacia podalyriifolia* and *Verbena rigida* (Veined Verbena) (refer to **Table 4**).

The conservation area has a wide diversity and generally high abundance of weeds. The high occurrences of *Verbena bonariensis* (Purpletop) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) within open areas has also been observed in high numbers elsewhere in the region in 2023 within similar areas (i.e. open grasslands). As such, their prevalence is considered to be associated with environmental conditions rather than a lack of management within the conservation area.

A noticeable increase in *Opuntia stricta* (Common Prickly Pear) was recorded, particularly in recently slashed areas, and few individuals were observed to be impacted by the stem-boring moth *Cactoblastis cactorum*. In previous years, this species has been recorded in low to moderate numbers; however, large numbers of individuals showed signs of being controlled by *Cactoblastis cactorum*.

Table 4 below identifies the species and locations of weed infestations, native canopy/shrub regeneration and feral animals recorded within the conservation area.

Table 4 Details of weed infestations, native regeneration and other notes recorded within the Thomas Mitchell Drive On-site Conservation Area

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
355	56	301342	6421106	*Opuntia stricta* growth following slashing. *Galenia pubescens* and *Pavonia hastata* present in low numbers.	Significant *Eucalyptus* plantings with tree guards.	-
356	56	301802	6421279	*Opuntia stricta* common in open, slashed areas.	Significant *Eucalyptus* plantings with tree guards.	-
357	56	301469	6421680	*Plumbago auriculata* and *Acacia baileyana* present.	-	-
358	56	301454	6421731	-	-	Rabbit scats.
359	56	301451	6421841	Mature *Acacia saligna* present.	-	Slashing of long-term *Acacia saligna* infestation needs follow-up spraying. *Acacia salicina* mixed in, avoid spraying this species.
360	56	301429	6421838	Mature *Acacia saligna* present.	-	-
361	56	301378	6421788	*Dimorphotheca ecklonis* scattered.	-	-
362	56	301180	6421675	*Opuntia stricta* common in slashed grassland. *Hyparrhenia hirtus* and *Verbena quadrangularis* also present.	-	-
363	56	301118	6421579	*Verbena bonariensis* is common.	-	Sprayed *Hypericum perforatum*.
364	56	301115	6421565	*Hyparrhenia hirta* common to dominant in gully. *Senecio*	-	-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
				madagascariensis and *Cirsium vulgare* common.		
365	56	301082	6421530	-	Significant *Eucalyptus* plantings with tree guards. Some dead individuals, but most are living.	-
366	56	300843	6421682	*Lycium ferocissimum* and *Opuntia stricta*.	-	-
367	56	300863	6421681	*Cirsium vulgare* and *Cyperus eragrostis* common.	-	Rabbit scats.
369	56	300819	6421660	-	Dense *Allocasuarina luehmannii* regeneration along forest fringes.	-
370	56	300812	6421640	*Opuntia stricta* and *Hyparrhenia hirta* common in slashed easement.	-	-
371	56	300757	6421699	*Juncus acutus* dominant in damp areas. *Hyparrhenia hirtus* dominant in surrounding grassland.	-	-
372	56	300803	6421749	*Hypericum perforatum* and *Hyparrhenia hirta* common.	-	Rabbit scats in easement.
374	56	300648	6421823	-	Dense *Allocasuarina luehmannii* regeneration in cleared areas and Eucalypt regeneration in adjacent areas.	-
375	56	300595	6421917	Scattered Opuntia stricta.	*Acacia salicina* and *Allocasuarina luehmannii* regeneration common.	-
376	56	300570	6421967	Patch of *Lycium ferocissimum*.	Significant *Eucalyptus* plantings with tree guards. *Allocasuarina luehmannii* and	Rabbit scats.

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
					Angophora floribunda regeneration present.	
377	56	300511	6422176	-	Significant *Eucalyptus* plantings with tree guards. Regrowth under all mature trees including *Acacia salicina*, *Allocasuarina luehmannii* and some *E. melliodora*.	-
378	56	300624	6422349	-	*Acacia salicina* and *Allocasuarina luehmannii* regeneration around fringes of open areas.	-
379	56	300652	6422346	Substantial *Acacia saligna* infestation.	-	-
380	56	300677	6422408	-	Significant regeneration of *E. blakelyi, E. crebra, E. punctata* and *Acacia* sp.	-
381	56	300575	6422522	*Acacia podalyriifolia, Acacia baileyana, Opuntia stricta* and *Acacia saligna*.	-	-
382	56	300374	6422559	-	Significant *Eucalyptus* plantings with tree guards. High survival rate.	-
384	56	300220	6422680	-	Older plantings of *E. albens* x *moluccana* and *E. blakelyi* with good survival rate.	-
385	56	300142	6422955	*Opuntia stricta* extremely common is slashed areas.	*Acacia pendula* individuals scattered in area.	-
386	56	300137	6422831	*Opuntia stricta* extremely common is slashed areas.	-	*Acacia pendula* patch in area.
387	56	300181	6423064	High number of *Opuntia stricta*.	-	Potential *Acacia pendula* (no pods or flowers present to positively identify).

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
388	56	300164	6423117	-	-	*Acacia pendula*.
389	56	300116	6423170	-	Regrowth *Acacia salicina* common and scattered regrowth *E. albens* x *moluccana*.	-
390	56	299964	6423215	-	Significant *Eucalyptus* plantings with tree guards.	-
391	56	299864	6423226	*Acacia podalyriifolia*, potentially old revegetation.	-	-
392	56	299735	6423437	*Opuntia stricta* common.	Significant *Eucalyptus* plantings with tree guards.	-
393	56	299663	6423729	-	Significant *Eucalyptus* plantings with tree guards.	-
394	56	299709	6423847	*Opuntia stricta* and *Verbena rigida* common.	Significant *Eucalyptus* plantings with tree guards.	-
395	56	299732	6424027	*Opuntia stricta* and *Verbena rigida* common.	Significant *Eucalyptus* plantings with tree guards.	-
396	56	299610	6424463	*Opuntia stricta* less common.	Significant *Eucalyptus* plantings with tree guards.	Rabbit scats.
397	56	299419	6424701	Scattered *Opuntia stricta*.	Significant *Eucalyptus* plantings with tree guards.	-
398	56	299375	6424821	-	Significant *Eucalyptus* plantings with tree guards as well as older plantings.	-

**WP=Waypoint*

D.2.2. Recommendations

Recommendations include continued weed management targeting any high threat weeds (e.g. *Lycium ferocissimum*, *Hypericum perforatum*, *Galenia pubescens, Hyparrhenia hirtus* and *Opuntia stricta*) as a priority, as well as all other management actions identified in the CA. It is recommended that re-introduction of the stem-boring moth *Cactoblastis cactorum* be considered as a biological control for *Opuntia stricta* (Common Prickly Pear).

It is noted that the conservation area contains a known population of the threatened species, *Diuris tricolor* (Donkey Orchid). The known occurrences of this species have been well document through ongoing monitoring surveys. No weed spraying within 200m of any previously mapped occurrences of the species should occur. Further to this, any slashing undertaken within or nearby mapped occurrences of the species should be undertaken outside of the species' flowering period (September to October).

It is recommended that areas containing non-endemic Acacia species (e.g. *Acacia podalyriifolia, Acacia baileyana* and *Acacia saligna* – refer to **Table 4**) be controlled (i.e. cut and painted) to reduce their further spread within the conservation area.

Although large infestations of a variety of non-priority weeds are present within open areas, targeted control of these species is not considered to be economical or that beneficial as a result of the likely high soil seed bank of these species already present. Therefore, it is recommended that the best way to reduce coverage of these species in the long-term is to continue to undertake additional plantings (and manage existing plantings) of appropriate canopy species (i.e. plant the same species as nearby woodland) in open grassland areas as the prevalence of these weeds within wooded areas is very low (i.e. conditions under canopy trees is not conducive for the weed species recorded). Any plantings should be made within open areas that do not contain large amounts of natural regeneration or previous plantings.

Any tree plantings should be sourced from local provenance (preferably sourced from remnant vegetation within the conservation area), be made within open areas, and be protected with tree guards and the surrounding exotic vegetation routinely targeted through spot-spraying to increase plantings chances of survival (i.e. reduce competition from surrounding environmental weeds).

In 2020, the high threat weed *Carthamus lanatus* (Saffron Thistle) was observed in very high numbers throughout the conservation area and wider region, and a high level of seed is likely to be stored in the soil seed bank. In order to reduce this species seed bank in the soil, it is recommended that the conservation area be checked in late September-early October (prior to its flowering period) for dense infestations. If the species is observed in very high numbers, slashing should be carried out prior to it flowering and setting seed. Otherwise, the already high seed bank will continue to increase in the future.

D.3. Datasheets

Date: 13/11/2023	Project #: TMON2	
Species	**Cover**	**Abundance**
Canopy		
1 Eue. blakelyi		
2 Eue. mol. x albens		
3 Acacia salic.		
4		
5		
Shrub		
1 Tweedia juncea		
2 Cassinia arcuata		
3 Acacia falc.		
4		
5		
Groundcover		
1 Cymbo refract.		
2 Arist. ramosa		
3 Both. deup deup.		
4 Chloris ventric		
5 Sporob. creber		
Weeds		
1 Bryophyll. delagoense		
2 Opuntia stricta		
3 Eragrostis ~~[illegible]~~ curviflor		
4 Conyza sumatrensis		
5 Cirsium vulgare		

Date: 13/11/2023	Project #: TMON4	
Species	**Cover**	**Abundance**
Canopy		
1 Allo. leuh.		
2 Acacia salic.		
3		
4		
5		
Shrub		
1 Sclerolaena birchi		
2 Solanum cinereum		
3		
4		
5		
Groundcover		
1 Aristo scab.		
2 Arist. ram		
3 Chloris ventr.		
4 Sporob creber		
5 Enchyl. tomentosa		
Weeds		
1 Opuntia curic		
2 Conyza sumat.		
3 Galenia pubescens		
4 Eragrost. curv.		
5 Cirs. vulgare		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**

Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.

GF Group: TG=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other

Stratum: C = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 13/11/2023	Project #: TMON3			Date: 13/11/2023	Project #: TMON1	
Species	**Cover**	**Abundance**		**Species**	**Cover**	**Abundance**
Canopy				**Canopy**		
1 Allo luehmann.				1 Eue. molu albens		
2 ~~Eager~~ Angophs flor.				2 Allo. luehmann		
3				3		
4				4		
5				5		
Shrub				**Shrub**		
1 Acacia decora				1 Acacia ixior parvipinnula		
2				2 Atriplex semi		
3				3		
4				4		
5				5		
Groundcover				**Groundcover**		
1 Themeda tri				1 Aust. ramo		
2 Aust. ramosa				2 Sporob creb		
3 Juncus subsecundus				3 Cymbopog refractus		
4 Both. deeip.				4 Both deeip deeip.		
5 ~~Lomandra~~ multi.				5 Panic effus		
Weeds				**Weeds**		
1 Verb rigida				1 Senecio mad		
2 Axon. flssifo?				2 Opuntia stricta		
3 Eragr. curv.				3 Plant. lanc.		
4 Plant. lanc.				4 Pasp. dil.		
5 senecio mad.				5 Hypp. hirta		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**	**GF Group: TG**=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other
Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.	**Stratum: C** = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet

Monitoring Point Number	TMON 2	**Date**	13/11/23
Vegetation Community			
1. Site Photo(s)Taken	319 - 322		

2. Floristic BioMetric attributes	
Native cover	
Overstorey:	
Midstorey:	
Groundcover(grass):	
Groundcover (shrub):	
Groundcover (other):	
Native species richness:	
Proportion of canopy species regenerating	
Exotic cover	
Number of trees with hollows	
Total length of fallen logs	

3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	356	318	Planting in open area near Thom Mitchell drive
Threatened species sightings	—	—	—
Fire event/fuel	In plot	323	Moderate litter, fine woody debris, sparse logs very dry.
Weeds	356 357	324	Opunt strict growth common in open slashed areas. Random weeds - Plumbago auric, Acacia bail.
Pest animals	388	325	Rabbit scats
Visitor impact/vehicles	Plot	326	Track upslope but no evident impacts
Rubbish dumping	—	—	—

WP359
- Slashing of long term Acacia salig infestation
- needs follow up spray
- Acacia salic mixed in - caution
PH 326 + 329
- Adult Acacia salig
WP 360
PH: 327 + 328

Opuntia strict coming up from seed common in woodland areas and very common in slashed grassland.

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	TMON4	**Date** RB	13/11/2023
Vegetation Community			
1. Site Photo(s)Taken	337-340		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	352 369	352	Loose Alb luch regen at forest fringes
Threatened species sightings			
Fire event/fuel	In plot	346	Logs and small woody debris rare Allocas. cladode litter high - very dry
Weeds	366 367	347 349	Lycium ferox, opunt stricta Cirs. vulg. + Lycium europ common
Pest animals			rare rabbit scats
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	TMON 3	Date 13/11/23	
Vegetation Community			
1. Site Photo(s)Taken	369-372		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	375 376 In plot and surrounds 366	361-362 365	Acac. sul + Allo. luch regen common Euc. plantings Euc. plantings, Allo luch + A flor regen.
Threatened species sightings			
Fire event/fuel	In plot.	367	Low litter, no logs or woody debris grass very dry
Weeds	375 376	363 364	Scattered opunt stricta Lyc. ferox patch.
Pest animals	In plot	367	rabbit scats.
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	TMON 1	**Date**	13/11/23
Vegetation Community			
1. Site Photo(s)Taken	424-427		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	Plot and surrounds	422	Euc plantings from plot North to end of site
Threatened species sightings			
Fire event/fuel	In plot	423	Low litter, no woody material grass very dry.
Weeds	In plot		Opunt stricta
Pest animals	In plot		Rabbit scats
Visitor impact/vehicles			
Rubbish dumping			

Site	Onsite offset	Date	13/11/2023
Staff	BF	GPS	32

WP	Notes (e.g. regrowth, plantings, weed infestations)	Photo
355	Euc plantings - Opuntia stricta growth following slashing. Galenia pubescens, Paronia hist.	316-317
361	Osteospermum / Dimorphotheca echlonis - scattered patches in this area	330
362	Opuntia stricta growth common in slashed grassland + Hypp hirt, verbena quad.	331
363	verbena bonar. common, sprayed Hyperic. perf.	332
364	Hypp. hirt common to dominant in gully Sen mad + Cirs vulgare common	333
365	Euc. revey. in open area. Some dead, lots living.	334 - 336
370	Opunt strict + Hypp hirt common in slashed easement	353
371	Juncus acutus dom. in damp areas. hypp hirt dom in surrounding grassland	355 - 356
372 373	Hypericum perf + Hypp. hirt common Rabbit seats in easement.	357 + 358
374	Allo luch. regen abundant in clear area Euc. regen common adjacent	359 - 360
377	Euc. plantings throughout area - regrowth under all trees - Acacia salic + Allo luch + more rarely E. mol/albus	373 - 375
378	Some regrowth - mostly around fringes of open area Allo luch + Acacia salic.	376 - 377
379	substanstial Acacia saligna infestation	378
380	Lots regen Euc. dawson blake, E. crebra, E. punct, Acacia cheelii? - maybe planted veg.	379-380
381	Weeds - Acacia podalyriifolia, Acacia baileyana, opunt. strict Acacia saligna	381
382	Substantial areas of euc plantings - survival good	382-38[illegible]
382	Weeds common in some areas but overall seems low Hypp hirt, Verb bon., Opuntia - but much rarer than	
384	Appear to be older plantings - good success rate Mostly Euc. mol albus + E. blake	388-389
385	no flowers or pods but seems to be patch Acacia pendula + regrowth - some opunt strict scattered around.	390 - 396
385	Opuntia strict extremely common in slashed areas Acacia pendula? individuals still scattered out here	397-398
11	- they look planted by spacing, probably as older revey.	399
387	Looks different form Acacia pendula + regrowth abundant opunt stricta	400-408
388	- Acacia pendula as well	409-410
389	Acacia salicina regrowth common + some scattered E. mol/albus	411-412
390	Euc plantings still going here as part of very long strip	413-414
391	Acacia podyriifolia weedy here - appears to be quite old revegetation	415-416
392	Opuntia common, Another separate to main big planting area strip	417-418
393	Plantings still going	419

Site	TMON	**Date**	13/11/23
Staff	BT	**GPS**	32

WP	Notes (e.g. regrowth, plantings, weed infestations)	Photo
394	main planting strip still going | [illegible]	420
395	" " "	421
396	still plantings, lots rabbit scats, Not as much Opuntia	428 – 430
397	plantings, scattered opuntia	431 – 432
398	New and older plantings at end of site	433 – 434

APPENDIX E :

Thomas Mitchell Drive Off-site Offset

E.1. Description and Monitoring Photographs

E.1.1. TMOF1: PCT 1691 Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter

Monitoring site TMOF1 is located in an area of PCT 1691 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter in DNG form. It includes revegetated canopy and shrub species including *Eucalyptus blakelyi* (Blakely's Red Gum), *Eucalyptus crebra* (Narrow-leaved Ironbark), *Eucalyptus albens* (White Box), *Acacia salicina* (Cooba), *Acacia implexa* (Hickory Wattle), *Acacia decora* (Western Silver Wattle) and *Maireana microphylla* (Small-leaf Bluebush). Native groundcovers include *Aristida ramosa* (Purple Wire Grass), *Cymbopogon refractus* (Barbed Wire Grass), *Chloris ventricosa* (Plump Windmill Grass), *Bothriochloa decipiens* (Red Grass) and *Lomandra multiflora* (Many-flowered Mat-rush). Weed cover is moderate and includes *Paspalum dilatatum* (Paspalum), *Senecio madagascariensis* (Fireweed), *Verbena bonariensis* (Purpletop), *Galenia pubescens* (Galenia) and *Opuntia stricta* (Common Prickly Pear).

North – Photo 439

East – Photo 440

South – Photo 441

West – Photo 442

E.1.2. TMOF2: PCT 1691 Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter

Monitoring site TMOF2 is located in an area of PCT 1691 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter, and is dominated by a canopy of *Eucalyptus crebra* (Narrow-leaved Ironbark). Native shrubs include *Solanum cinereum* (Narrawa Burr) and *Pimelea curviflora*. Native groundcovers include of *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Aristida ramosa* (Purple Wire Grass), *Lomandra multiflora* (Many-flowered Mat-rush), *Cymbopogon refractus* (Barbed Wire Grass) and *Eragrostis leptostachya* (Paddock Lovegrass). Weed cover is low and includes *Opuntia stricta* (Common Prickly Pear), *Senecio madagascariensis* (Fireweed), *Conyza sumatrensis* (Tall Fleabane), *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) and *Galenia pubescens* (Galenia).

North – Photo 537

East – Photo 538

South – Photo 539

West – Photo 540

E.1.3. TMOF4: PCT 1731 Swamp Oak - Weeping Grass grassy riparian forest of the Hunter Valley

Monitoring site TMOF4 is located in an area of PCT 1731 Swamp Oak – Weeping Grass grassy riparian forest of the Hunter Valley, and is dominated by a canopy of *Casuarina glauca* (Swamp Oak) and *Eucalyptus blakelyi* (Blakely's Red Gum). Native groundcovers include *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Austrostipa verticillata* (Slender Bamboo Grass), *Commelina cyanea* (Native Wandering Jew), *Aristida racemosa* (Purple Wiregrass) and *Sida corrugata* (Corrugated Sida) . Weed cover is high with significant infestations of *Lycium ferocissimum* (African Boxthorn) and *Galenia pubescens* (Galenia), as well as *Verbena bonariensis* (Purpletop), *Paspalum dilatatum* (Paspalum) and *Ehrharta erecta* (Panic Veldtgrass).

North – Photo 507

East – Photo 508

South – Photo 509

West – Photo 510

E.1.4. TMOF5: PCT 42 River Red Gum / River Oak riparian woodland wetland in the Hunter Valley

Monitoring site TMOF5 is located in an area of PCT 42 River Red Gum / River Oak riparian woodland wetland in the Hunter Valley, and is dominated by a canopy of *Eucalyptus blakelyi* (Blakely's Red Gum) as well as scattered *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Brachychiton populneus* (Kurrajong). Native shrubs include *Notelaea microcarpa* (Native Olive) and *Cassinia sifton* (Sifton Bush). Native groundcovers include *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Aristida ramosa* (Purple Wiregrass), *Cymbopogon refractus* (Barbed Wire Grass), *Panicum effusum* (Hairy Panic) and *Eragrostis leptostachya* (Paddock Lovegrass). Weed cover is low to moderate and includes *Opuntia stricta* (Common Prickly Pear), *Sida rhombifolia* (Paddy's Lucerne), *Cirsium vulgare* (Spear Thistle), *Plantago lanceolata* (Lamb's Tongue) and *Opuntia aurantiaca* (Tiger Pear).

North – Photo 451

East – Photo 452

South – Photo 453

West – Photo 454

E.1.5. TMOF3: PCT 1731 Swamp Oak - Weeping Grass grassy riparian forest of the Hunter Valley

Monitoring site TMOF3 is located in an area of PCT 1731 Swamp Oak – Weeping Grass grassy riparian forest of the Hunter Valley and is dominated by a canopy of *Casuarina glauca* (Swamp Oak) with scattered *Angophora floribunda* (Rough-barked Apple). Native groundcovers include *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Austrostipa verticillata* (Slender Bamboo Grass), *Rumex brownii* (Swamp Dock), *Commelina cyanea* and *Lobelia purpurascens* (Whiteroot). Weed cover is low and includes *Bromus catharticus* (Prairie Grass), *Galenia pubescens* (Galenia), *Cynodon dactylon* (Couch), *Lycium ferocissimum* (African Boxthorn) and *Modiola caroliniana* (Red-flowered Mallow).

North – Photo 563

East – Photo 564

South – Photo 565

West – Photo 566

E.1.6. TMOF6: PCT 42 River Red Gum / River Oak riparian woodland wetland in the Hunter Valley

Monitoring site TMOF6 is located in an area of PCT 42 River Red Gum / River Oak riparian woodland wetland in the Hunter Valley, and is dominated by a canopy of *Eucalyptus blakelyi* (Blakely's Red Gum), with *Acacia salicina* (Cooba) also present. Native shrubs includes *Maireana microphylla* (Small-leaf Bluebush). Native groundcovers include *Austrostipa verticillata* (Slender Bamboo Grass), *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Commelina cyanea* (Native Wandering Jew), *Aristida ramosa* (Purple Wiregrass) and *Sida corrugata* (Corrugated Sida). Very high infestations of *Galenia pubescens* (Galenia) *Lycium ferocissimum* (African Boxthorn) were recorded, as well as occurrences of *Verbena bonariensis* (Purpletop), *Paspalum dilatatum* (Paspalum) and *Ehrharta erecta* (Panic Veldtgrass).

North – Photo 490

East – Photo 491

South – Photo 492

West – Photo 493

E.2. Discussion and Recommendations

E.2.1. Discussion of Conservation Values

Overall, the Thomas Mitchell Drive Off-site Conservation Area is considered to be in moderate to good condition. Opportunistic observations made while walking/driving through the conservation area identified the following:

- No signs of rubbish dumping and access tracks were slashed allowing easy access throughout the site. No disturbance to woody vegetation observed as a result of access track improvements;
- Moderate signs of the European Rabbit (*Oryctolagus cuniculus*), with scats recorded at four (4) separate areas (refer to **Table 5**);
- Evidence of *Hypericum perforatum* (St John's Wort) and *Lycium ferocissimum* (African Boxthorn) control through spraying;
- Evidence of cattle at one (1) location (refer to **Table 5**);
- Substantial areas of well-established revegetation within previously cleared areas;
- Significant *Eucalyptus* plantings throughout open grassland areas (refer to **Table 5**);
- Significant natural regeneration of native canopy species (refer to **Table 5**); and
- Weed infestations of *Hypericum perforatum* (St. John's Wort), *Hyparrhenia hirta* (Coolatai Grass), *Opuntia stricta* (Common Prickly Pear), *Galenia pubescens* (Galenia), *Lycium ferocissimum* (African Boxthorn), *Senecio madagascariensis* (Fireweed), *Cenchrus clandestinus* (Kikuyu Grass), *Plantago lanceolata* (Lamb's Tongue) *Verbena bonariensis* (Purpletop), *Verbena rigida* (Veined Verbena), *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush), *Paspalum dilatatum* (Paspalum), *Cirsium vulgare* (Spear Thistle), *Heliotropium amplexus* (Blue Heliotrope) and *Sida rhombifolia* (Paddy's Lucerne) recorded (refer to **Table 5**).

With the exception of *Lycium ferocissimum* (African Boxthorn)*, Opuntia stricta* (Common Prickly Pear) and *Galenia pubescens* (Galenia), weed infestations recorded were largely restricted to open grassland areas. The high occurrences of the weeds *Verbena bonariensis* (Purpletop) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) within open areas has also been observed in high numbers elsewhere in the region in 2023 within similar areas (i.e. open grasslands). As such, their prevalence is considered to be associated with environmental conditions rather than a lack of management within the conservation area.

Opuntia stricta (Common Prickly Pear) was recorded primarily only as scattered occurrences; however, only a few individuals were observed to be impacted by the stem-boring moth *Cactoblastis cactorum*. In previous years, this species has been recorded in lower numbers; however, large numbers of individuals observed previously showed signs of being controlled by *Cactoblastis cactorum*.

Table 5 below identifies the species and locations of weed infestations, native canopy regeneration and signs of feral animals recorded within the conservation area.

Table 5 Details of weed infestations, native regeneration and other notes recorded within the Thomas Mitchell Drive Off-site Conservation Area

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
399	56	301306	6422012	Scattered *Opuntia stricta* and *Galenia pubescens*.	Significant *Eucalyptus* plantings with tree guards. Good success rate.	-
400	56	301112	6422379	-	Significant *Eucalyptus* plantings with tree guards. Good success rate.	-
401	56	301223	6422233	*Galenia pubescens* common with scattered *Opuntia stricta*.	-	Rabbit scats.
402	56	301740	6422443	*Verbena bonariensis* and *Paspalum dilatatum* dominant. *Opuntia stricta* common.	-	-
403	56	301847	6422282	-	*Eucalyptus* regeneration or old plantings.	-
404	56	301722	6422501	-	*Eucalyptus crebra* regeneration along woodland edge.	-
405	56	301675	6422519	-	*Eucalyptus crebra* regeneration common.	-
406	56	301635	6422658	*Verbena bonariensis* and *Paspalum dilatatum* common along both sides of track.	*Eucalyptus crebra* regeneration common.	-
407	56	301540	6422843	*Verbena bonariensis* common.	Old regeneration area well established, some regrowth Eucalypts under old regeneration.	-
408	56	301423	6423071	*Paspalum dilatatum* dominant ground layer with *Verbena bonariensis, Hypericum perforatum* and *Senecio madagascariensis* common.	*E. crebra* and *E. blakelyi* regeneration common.	-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
409	56	301452	6423288		*E. crebra* regeneration abundant.	-
410	56	301390	6423350	*Hypericum perforatum* and *Paspalum dilatatum* common.	*E. crebra* and *Angophora floribunda* regeneration abundant.	-
411	56	301292	6423332	*Paspalum dilatatum* common.	Abundant regeneration of *E. blakelyi, E. crebra* and *Angophora floribunda*.	-
412	56	301291	6423425	Large patches of *Verbena bonariensis*.	Abundant *E. crebra* regeneration.	-
413	56	301305	6423510	*Plantago lanceolata* common with scattered *Opuntia stricta* and *Galenia pubescens*.	Significant *Eucalyptus* plantings with tree guards.	-
414	56	301251	6423516	Patches of *Verbena bonariensis*.	*E. crebra* regeneration.	-
415	56	301166	6423602	*Galenia pubescens* and *Verbena bonariensis* common.	Some Eucalypt regeneration.	-
416	56	301037	6423654	High number of *Verbena bonariensis* with scattered *Lycium ferocissimum* and *Opuntia stricta*.	Eucalypt regeneration common.	-
417	56	300979	6423745	*Verbena bonariensis* common.	Planted *Eucalyptus* and Eucalypt regeneration abundant in woodland and fringes.	-
418	56	300857	6424016	High number of *Verbena bonariensis*.	*Eucalyptus* plantings with tree guards with Eucalypt regeneration common under mature trees.	-
419	56	300796	6424150	High number of *Verbena bonariensis*.	*E. blakelyi* regeneration abundant in surrounding forests/flats.	-
420	56	300687	6424210	*Verbena bonariensis* common with scattered *Opuntia stricta, Cirsium vulgare* and *Lycium*	Eucalypt regeneration common.	Rabbit scats.

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
				ferocissimum under trees.		
421	56	300662	6424259	*Opuntia stricta* common.	*E. blakelyi* regeneration.	-
422	56	300606	6424202	-	*E. blakelyi* regeneration common with scattered *Casuarina glauca* regeneration.	-
423	56	300559	6424197	*Lycium ferocissimum* patch with *Cirsium vulgare*.	-	-
424	56	300549	6424216	Patch of *Chloris gayana*, *Galenia pubescens* and *Opuntia stricta*.	-	-
425	56	300582	6424260	*Opuntia stricta* common.	Abundant *E. blakelyi* regeneration.	-
426	56	300547	6424318	*Lycium ferocissimum* common.	-	-
427	56	300509	6424346	Field or *Verbena bonariensis* and *Lycium ferocissimum*.	Eucalypt regeneration.	-
429	56	300520	6424393	*Verbena bonariensis, Paspalum dilatatum* and *Cenchrus clandestinus* common.	*E. blakelyi* regeneration.	-
430	56	300719	6424333	Patches of *Verbena bonariensis*.	-	Significant rabbit activity (scats and warrens).
431	56	300637	6424484	-	Large *Eucalyptus* planting area with tree guards.	-
432	56	300548	6424630	-	*E. blakelyi* regeneration.	-
433	56	300515	6424733	-	*Eucalyptus* plantings with tree guards to property boundary.	-
434	56	300823	6424545	Abundant *Verbena bonariensis* with *Opuntia stricta*.	-	-
436	56	301140	6424349	Patches of *Verbena bonariensis*.	End of Eucalypt plantings.	-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
437	56	301334	6423897	-	*Eucalyptus* plantings with tree guards.	-
438	56	301411	6423794	-	*Eucalyptus* plantings with tree guards and Eucalypt regrowth.	-
439	56	301483	6423698	*Galenia pubescens* common. Scattered *Opuntia stricta*.		-
440	56	301724	6423509	Scattered *Opuntia stricta* and *Galenia pubescens*.	*E. crebra* regeneration common.	-
441	56	301903	6423365	*Opuntia stricta, Gomphocarpus fruticosus*, *Verbena bonariensis* and *Galenia pubescens* common.	*E. crebra* regeneration common.	-
442	56	301957	6423302	*Senecio madagascariensis, Heliotropium amplexus, Sida rhombifolia* and *Galenia pubescens* common.	Abundant *E. crebra* regeneration.	-
443	56	301901	6423236	*Opuntia stricta* common.	-	-
444	56	302077	6423200	Patches of *Verbena bonariensis*. Scattered *Opuntia stricta* and *Galenia pubescens*.	*E. crebra* regeneration.	-
445	56	302228	6422980	*Galenia pubescens* present.	Large *Eucalyptus* planting area with tree guards.	-
446	56	302303	6422873	*Galenia pubescens* common.	*E. crebra* regeneration common near woodland.	-
447	56	302361	6422891	*Galenia pubescens* common.	Top of large *Eucalyptus* planting area with tree guards.	-
448	56	302430	6423179	*Opuntia stricta, Verbena bonariensis* and *Paspalum dilatatum* present.	Sporadic regeneration of Eucalypts in open areas.	-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
449	56	302759	6423379	*Galenia pubescens* and *Lycium ferocissimum* present.	-	Rabbit scats.
450	56	302754	6423405	-	Some *Casuarina glauca* and *E. albens* x *moluccana* regeneration.	-
451	56	302786	6423462	Ground layer co-dominated by *Paspalum dilatatum* with *Galenia pubescens* present.	*E. blakelyi* and *Casuarina glauca* regeneration.	-
452	56	302794	6423517	-	*E. blakelyi* regeneration.	-
453	56	302767	6423646	-	Substantial patch of Eucalypt regeneration.	-
455	56	302711	6423643	-	-	Cow scat.
456	56	302905	6423399	*Paspalum dilatatum* common.	Some Eucalypt regeneration.	-
457	56	302882	6423275	*Paspalum dilatatum* common.	Large *Eucalyptus* planting area with tree guards on opposite edge.	-
458	56	302800	6422785	High number of *Galenia pubescens* with some *Opuntia stricta*.	Some Eucalypt regeneration.	-
459	56	302782	6422688	High number of *Galenia pubescens*.	*Eucalyptus* plantings with tree guards with some regeneration.	-
460	56	302787	6422541	*Galenia pubescens* common.	*Eucalyptus* plantings with tree guards.	-
461	56	302830	6422297	-	Significant regeneration downslope.	-
462	56	302890	6421946	*Opuntia stricta* present.	Eucalypt regeneration.	-
463	56	302982	6421326	-	Significant *E. crebra* regeneration.	-
464	56	302697	6421381	-	Significant *E. crebra* regeneration.	-
465	56	302394	6421412	-	Significant Eucalypt regeneration.	-

**WP=Waypoint*

E.2.2. Recommendations

Recommendations include continued weed management targeting any high threat weeds (e.g. *Hyparrhenia hirta*, *Lycium ferocissimum*, *Hypericum perforatum*, *Galenia pubescens* and *Cenchrus clandestinus*) as a priority, as well as all other management actions identified in the CA. Although large infestations of weeds (e.g. *Verbena bonariensis, Gomphocarpus fruticosus*) were observed in open areas, targeted control of these species in open areas is not considered to be economical or that beneficial as a result of the likely high soil seed bank of these species already present. Therefore, it is recommended that the best way to reduce coverage of these species in the long-term is to continue to undertake additional plantings (and manage existing plantings) of appropriate canopy species (i.e. plant the same species as nearby woodland) in open grassland areas as the prevalence of these weeds within wooded areas is very low (i.e. conditions under canopy trees is not conducive for the weed species recorded). Any plantings should be made within open areas that do not contain large amounts of natural regeneration or previous plantings.

Any tree plantings should be sourced from local provenance (preferably sourced from remnant vegetation within the conservation area), be made within open areas, and be protected with tree guards and the surrounding exotic vegetation routinely targeted through spot-spraying to increase plantings chances of survival (i.e. reduce competition from surrounding environmental weeds).

In 2020, the high threat weed *Carthamus lanatus* (Saffron Thistle) was observed in very high numbers throughout the conservation area and wider region, and a high level of seed is likely to be stored in the soil seed bank. In order to reduce this species seed bank in the soil, it is recommended that the conservation area be checked in late September-early October (prior to its flowering period) for dense infestations. If the species is observed in very high numbers, slashing should be carried out prior to it flowering and setting seed. Otherwise, the already high seed bank will continue to increase in the future.

It is also recommended that targeted European Rabbit controls be implemented at the location where a warren was recorded to minimise their spread to additional areas of the conservation area. Further to this, all cattle should be excluded from the conservation area as identified in the CA.

E.3. Datasheets

Date: 14/11/2023	Project #: TMOF1	
Species	**Cover**	**Abundance**
Canopy		
1 Acacia implexa		
2 Euc. blake.		
3 Euc. crebra		
4 Euc. albens		
5 Acacia salicina		
Shrub		
1 Maireana micro.		
2 Acacia deera		
3		
4		
5		
Groundcover		
1 Aristida ramosa		
2 Cymbo refractus		
3 Chloris ventricosa		
4 Lomandra multi.		
5 Both. decip.		
Weeds		
1 Plantag Paspalum dilat.		
2 Senecio mad.		
3 Verbena bonar.		
4 Galenia pubescens		
5 Opuntia stricta		

Date: 14/11/2023	Project #: TMOF5	
Species	**Cover**	**Abundance**
Canopy		
Euc. blake (potentially E. tenet hybrids, large fruit, buds fairly small)		
2 Euc. crebra		
3 Brachy pop.		
4		
5		
Shrub		
1 Cassinia arcu.		
2 Notelaea micro.		
3		
4		
5		
Groundcover		
1 Cymbo refractus		
2 Eragrostis lepto		
3 Panicum effus.		
4 Arist. ramo.		
5 Micro stip stip.		
Weeds		
1 Opuntia stricta		
2 Sida rhomb.		
3 Cirs. vulg.		
4 Plant. lanceol.		
5 Opuntia auric		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**

Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.

GF Group: TG=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other

Stratum: C = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 14/11/2023	Project #: JMOF2	
Species	**Cover**	**Abundance**
Canopy		
1 Euc. creb.		
2		
3		
4		
5		
Shrub		
1 Solan. cinereum		
2 Pimelea curv.		
3		
4		
5		
Groundcover		
1 Eragr. lepto		
2 Arist. ram.		
3 Lomand. mult.		
4 Micro stip stip		
5 Cymbo refract.		
Weeds		
1 Opuntia stricta		
2 Conyza sumatr.		
3 Senecio madl.		
4 Gomph. fruct.		
5 Galenia pub.		

Date: 14/11/2023	Project #: JMOF3	
Species	**Cover**	**Abundance**
Canopy		
1 Cas. glauca		
2 Angoph. flor.		
3		
4		
5		
Shrub		
1		
2		
3		
4		
5		
Groundcover		
1 Austro vert		
2 Micro stip stip		
3 Lobelia purp.		
4 Rumex brownii		
5 Commelina cyanea		
Weeds		
1 Cynod dactylon		
2 Bromus cath.		
3 Lyc. ferocisss		
4 Galen pub.		
5 Modiola caro.		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**	**GF Group: TG**=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other
Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.	**Stratum: C** = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 14/11/2023	Project #: TMOF 6			Date: 14/11/2023	Project #: TMOF4	
Species	**Cover**	**Abundance**		**Species**	**Cover**	**Abundance**
Canopy				**Canopy**		
1 E. blake.				1 E. blake.		
2 Acacia salicina				2 cas. glauca		
3				3		
4				4		
5				5		
Shrub				**Shrub**		
1 Maireana micro				1		
2				2		
3				3		
4				4		
5				5		
Groundcover				**Groundcover**		
1 Micro stip stip				1 Austro vert.		
2 Arist. raum				2 micro stip stip		
3 Austro vert.				3 Commelina cyanea		
4 comm. cyanea				4 Arist. ramosa		
5 Einad nut. nut.				5 Sida corrug.		
Weeds				**Weeds**		
1 Galenia pubs.				1 Lyc. ferocis 3 dense and problematic		
2 Lycium ferociss				2 Galenia pub occurrences of both.		
3 Ciss. vitis				3 Ehrharta erecta		
4 Physalis oEtandM				4 Verb. bonar.		
5 Opuntia stricta				5 Parop. dil		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**	**GF Group: TG**=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other
Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.	**Stratum: C** = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	TMOF 1	Date 14/11/23	
Vegetation Community			
1. Site Photo(s) Taken	439-442		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	In plot 446	439-442 444	TMB area rehab several years old - good success rate with eucalypts & Acacia spp. mass eucl. plantings
Threatened species sightings			
Fire event/fuel	In plot	443	Low litter, no logs or woody debris dry grass
Weeds	~~439~~ 401	444	Senecio madl, Cirs. vulgare, Verb. rigidor Galenia common, Opuntia scattered
Pest animals	In plot		Rabbit scats
Visitor impact/vehicles			
Rubbish dumping			

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet

Monitoring Point Number	TMOF 6	**Date**	14/11/23
Vegetation Community			
1. Site Photo(s)Taken	490 – 493		

2. Floristic BioMetric attributes

Native cover	
Overstorey:	
Midstorey:	
Groundcover(grass):	
Groundcover (shrub):	
Groundcover (other):	
Native species richness:	
Proportion of canopy species regenerating	
Exotic cover	
Number of trees with hollows	
Total length of fallen logs	

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	420 421	483 487	Abundant E. blak + E. creb regen. E. blak regen
Threatened species sightings	—	—	—
Fire event/fuel	In plot	489	Litter sparse but small wood + logs common - vegetation dry.
Weeds	420 421	484 488	Conyza sumat, Cirsium vulg, Verb rig, Opuntia str, Cynod dact ~~- big patches vege. Aero under trees~~ Opunt stricta common
Pest animals	In plot	485-486	rabbit scats + burrows
Visitor impact/vehicles	—	—	—
Rubbish dumping	—	—	—

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet

Monitoring Point Number	TMOF 4	**Date**	14/11/2023
Vegetation Community			
1. Site Photo(s) Taken	507 – 510		

2. Floristic BioMetric attributes	
Native cover	
Overstorey:	
Midstorey:	
Groundcover(grass):	
Groundcover (shrub):	
Groundcover (other):	
Native species richness:	
Proportion of canopy species regenerating	
Exotic cover	
Number of trees with hollows	
Total length of fallen logs	

3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	422 424	494+496 498	Euc. blake regen common, sporadic cas. glauca regen E. crebs, E. blake + cas. glauca regen
Threatened species sightings			
Fire event/fuel	In plot		Litter low, besides casuarina rhodes under cas. glauca - grass dry
Weeds	422 423	495 497	verb bon - big patches, iris vulg, lasp d.t. Lyc. ferocissa patch + iris. vulg
Pest animals	426 Next to plot	500 -502	Lambusia common - rabbit burrows PH: 511
Visitor impact/vehicles			
Rubbish dumping			

425
PH: 499
Abundant
E. blake regen

424
chloris gay +
Galenia pubesc
+ opunt stricta

425
opunt stricta common

WP 426 - lyc. ferocissa common PH: 503

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	TMOF2	Date	14/11/2023
Vegetation Community			
1. Site Photo(s)Taken	537- 540		
2. Floristic BioMetric attributes			

Native cover	
Overstorey:	
Midstorey:	
Groundcover(grass):	
Groundcover (shrub):	
Groundcover (other):	
Native species richness:	
Proportion of canopy species regenerating	
Exotic cover	
Number of trees with hollows	
Total length of fallen logs	

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	442	533-534	Abundant E. creb regen
Threatened species sightings	—	—	
Fire event/fuel	In plot	541	Moderate litter, some small woody debris, sparse logs
Weeds	442 443	535	Senecio madl, Heliotrop amp, sida rhomb, Galenia pub, Opunt. strict common
Pest animals	—	—	—
Visitor impact/vehicles	—	—	—
Rubbish dumping	—	—	—

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	JMOF3	Date	14/11/23
Vegetation Community			
1. Site Photo(s)Taken	563-566		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	450 451 452	556 557-558 559-560	Some regen - Cas. glauc + Euc. alb + mol. E. blake + Cas glauc. regen E. blake regen
Threatened species sightings	—	—	—
Fire event/fuel	454	/	Low litter, some logs, grass still reasonably green
Weeds	449 451	555 —	Galen pub + lyc. ferocis. Asp. dil common to dominant, Galen pub.
Pest animals	449 455	554 567	Rabbit scats cow scat
Visitor impact/vehicles	—	—	—
Rubbish dumping	—	—	—

453 substantial patch regen - flooding? P19: 561-562

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	TMOF5	Date	14/11/23
Vegetation Community			
1. Site Photo(s)Taken	451 - 454		

2. Floristic BioMetric attributes	
Native cover	
Overstorey:	
Midstorey:	
Groundcover(grass):	
Groundcover (shrub):	
Groundcover (other):	
Native species richness:	
Proportion of canopy species regenerating	
Exotic cover	
Number of trees with hollows	
Total length of fallen logs	

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	403 404	446 447	some scattered Euc. regen ~~exotic~~ of old plantings E. crebra regen on woodland edge
Threatened species sightings			
Fire event/fuel	In plot	449 - 450	moderate litter, some small woody debris, logs fairly common - grass + litter very dry.
Weeds	402 404	445 447	Verb bon + Rosp. dil dominant, Opuntia str. common Verb bon + Rosp dil dom on corner of woodland
Pest animals	404	448	Pig cow scats
Visitor impact/vehicles			
Rubbish dumping			

Site	Thom mitch offsite	Date	14/11/23
Staff	BF	GPS	32

WP	Notes (e.g. regrowth, plantings, weed infestations)	Photo
399	Substantial area euc plantings - in good condition - scattered opuntia + Galenia	435-438
404	E. creb regrowth common, large patches verb bon, Galenia pub reasonably common	455
405	E. creb regen common.	456-457
406	Verb bon + Pasp dilat common to dominant both sides of track E. creb regen common	458
407	old revey area - well established - some younger eucalypts from seed. Verbena bon. common.	459-460
408	Euc. regen common, Pasp dil dominant, verb. bon common E. blake + crebra - Hyper perf + saleria mad also common	461-462
409	Euc. crebra regen abundant.	463
410	E. creb + A. flor regen abundant. Hyper perf + Pasp dil common	464
411	Abundant Euc. regen E. blake, Euc. crebra, A. flor, Pasp dil. dom	465-466
412	Abundant E. creb regen large patches verb bon	467
413	Large euc planting area - Plant lanc. very common - scattered opunt strict + Galenia pub.	468
414	E. creb regen + Verb bona. patch	469
415	Galenia pub + verb bon common - some Euc. regen.	470
416	Euc regen common, lots Verb bon, scattered Lye. faro + opuntia strict	471
417	open areas surrounding all planted euc, Euc. regen abundant in woodland / fringes + verb bon patches -	472-475
418	Euc. plantings in open areas, Euc. regen common under trees verb bonar everywhere	477-478
419	Euc. blake regen abundant in surrounding forest / flats Verb. bon everywhere.	479-480
420	scattered opuntia Verbon common, Euc. regen common. + rabbit scats + cirs. vulg + Lye. ferociss	481-482
427	Field of verbena, Lye. ferociss, Euc. regen.	504-505
428/9	E. blake regen + verbena bonar, Pasp dil common to dominant + Conch clavi.	506
428	some Euc. blake regen, dense verb. bon.	512
430	Abundant large rabbit scat piles in area + Verb bon patches	513-514
431	Large Euc. planting area	515-517
432	Euc. regen - E. blake.	518
433	Euc. plantings to property boundary	519
434	opuntia strict - sub standard verbena patches across hillside	520
435	straw bales - erosion control?	521
436	End of Euc. plantings + Verben bonar patches	522-523 + 524

Site	14/11/2023 Thom-mitch offset	Date	
Staff	BF offsite	GPS	32

WP	Notes (e.g. regrowth, plantings, weed infestations)	Photo
437	Euc. plantings	526-527
438	Euc. plantings + regrowth (background)	529
439	Galenia pub common, some opuntia	530
440	regen common - E. creb scattered Opunt strict + Galenia pub.	531
441	regen common E. creb. Galenia pub., opunt. stricta, Gomph fruitic, verb bon	532
444	Verbena bonar patches + E. creb regen + scattered opunt strict + Galenia pub.	~~533-534~~ 542-543
445	Top of large Euc. planting area Galenia pub	544
446	Euc. creb regen common downslope near trees - Galenia pub common at waypoint	545-546
447	Top of large Euc. planting area | Galenia pub + Sen madn common P# 550	547-549
448	sporadic regen in large semi-cleared area opuntia + verb bon + Pasp. dilat	551 +552-553 other direction plantings
456	Some Euc regen - Pasp dil. common	568
457	Opposite edge big euc planting area | Pasp. dil common	569-570
458	Some Euc. regen, lots Galenia pub, some opuntia	571
459	Euc. plantings + some regen, Lots Gal. pub.	572
460	More Euc. plantings Gal pub common	
461	Lots regen downslope	573-574
462	regen + Opunt strict	575
463	Lots regen E. creb	
464	Lots E. creb regen	
465	Lots regen	576

APPENDIX F :

Middle Deep Creek and Oakvale Offset

F.1. Description and Monitoring Photographs

F.1.1. MDC1: PCT 281 Rough-Barked Apple - Red Gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion

Monitoring site MDC1 is located an area of PCT 281 Rough-barked Apple – Red Gum – Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion, and is dominated by a canopy of *Eucalyptus blakelyi* (Blakely's Red Gum) and *Eucalyptus albens x moluccana*. Shrub species include *Olearia elliptica* (Sticky-daisy Bush) and *Notelaea macrocarpa* var. *macrocarpa*. Common native groundcover species includes *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Echinopogon caespitosus* (Bushy Hedgehog-grass), *Poa labillardierei* (Tussock), *Aristida ramosa* (Purple Wiregrass) and *Geranium solanderi* (Native Geranium). Weed cover is moderate and includes *Cirsium vulgare* (Spear Thistle), *Rosa rubiginosa* (Sweet Briar), *Opuntia stricta* (Common Prickly Pear), *Bidens pilosa* (Cobbler's Pegs) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush).

North – Photo 4020

East – Photo 4021

South – Photo 4022

West – Photo 4023

F.1.2. MDC2: PCT 618 White Box x Grey Box - Red Gum - Rough-barked Apple grassy woodland on rich soils on hills in the upper Hunter Valley

Monitoring site MDC2 is located in an area of PCT 618 White Box x Grey Box – Red Gum – Rough-barked Apple grassy woodland on rich soils on hills in the upper Hunter Valley, and is dominated by a canopy of *Eucalyptus albens* x *moluccana* and *Eucalyptus blakelyi* (Blakely's Red Gum). The shrub layer includes regrowth canopy species as well as *Cassinia quinquefaria, Bursaria spinosa* (Native Blackthorn), *Notelaea macrocarpa* var. *microcarpa* and *Olearia elliptica* (Sticky Daisy-bush). Common native groundcovers includes *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Poa labillardierei* (Tussock), *Aristida ramosa* (Purple Wiregrass), *Lomandra multiflora* (Many-flowered Mat-rush) and *Dichondra repens* (Kidney Weed). Weed cover is high and includes *Cirsium vulgare* (Spear Thistle), *Rosa rubiginosa* (Sweet Briar), *Opuntia stricta* (Common Prickly Pear), *Lolium perenne* (Perennial Ryegrass) and *Verbena bonariensis* (Purpletop).

North – Photo 4025

East – Photo 4026

South – Photo 4027

West – Photo 4028

F.1.3. MDC3: PCT 1684 Silvertop Stringybark - Rough-barked Apple - Bundy open forest of the Liverpool Ranges and Northern Tablelands escarpment

Monitoring site MDC3 is located in an area of PCT 1684 Silvertop Stringybark – Rough-barked Apple – Bundy open forest of the Liverpool Ranges and Northern Tablelands escarpment, and is dominated by a canopy of *Eucalyptus albens x moluccana* with *Eucalyptus laevopinea* (Silver-top Stringybark) also present. The midstory/shrub layer includes regrowth canopy species as well as *Notelaea microcarpa* (Native Olive), *Cassinia quinquefaria*, *Bursaria spinosa* (Native Blackthorn) and *Olearia elliptica* (Sticky-daisy Bush). Common native groundcover species include, *Dichelachne micrantha* (Shorthair Plumegrass), *Poa labillardierei* (Tussock), *Aristida ramosa* (Purple Wiregrass), *Geranium solanderi* (Native Geranium). Weed cover is moderate and includes *Rosa rubiginosa* (Sweet Briar), *Cirsium vulgare* (Spear Thistle), *Verbena bonariensis* (Purpletop), *Conyza sumatrensis* (Tall Fleabane) and *Opuntia stricta* (Common Prickly Pear).

North – Photo 4014

East – Photo 4015

South – Photo 4016

West – Photo 4017

F.1.4. MDC4: PCT 1684 Silvertop Stringybark - Rough-barked Apple - Bundy open forest of the Liverpool Ranges and Northern Tablelands escarpment

Monitoring site MDC4 is located in an area of PCT 1684 Silvertop Stringybark – Rough-barked Apple – Bundy open forest of the Liverpool Ranges and Northern Tablelands escarpment in derived native grassland (DNG) form. No canopy or shrub species present. Common groundcover species present include *Senecio quadridentatus* (Cotton Fireweed), *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Aristida ramosa* (Purple Wiregrass), *Poa labillardierei* (Tussock) and *Lobelia purpurascens* (Whiteroot). Weed cover is high with *Cirsium vulgare* (Spear Thistle), *Verbena bonariensis* (Purpletop), *Sida rhombifolia* (Paddy's Lucerne), *Opuntia stricta* (Common Prickly Pear) and *Silybum marianum* (Variegated Thistle).

North – Photo 4009

East – Photo 4010

South – Photo 4011

West – Photo 4012

F.1.5. MDC5: PCT 281 Rough-Barked Apple - Red Gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion

Monitoring site MDC5 is located in an area of PCT 281 Rough-barked Apple – Red Gum – Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion, and is dominated by a canopy of *Eucalyptus melliodora* (Yellow Box) and *Eucalyptus blakelyi* (Blakely's Red Gum). The shrub layer includes *Bursaria spinosa* (Native Blackthorn). Common native groundcovers include, *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Geranium homeanum, Austrostipa verticillata* (Slender Bamboo Grass), *Dichondra repens* (Kidney Weed) and *Aristida ramosa* (Purple Wire Grass). Weed cover is high and includes *Cirsium vulgare* (Spear Thistle), *Hypericum perforatum* (St. John's Wort), *Rosa rubiginosa* (Sweet Briar), *Opuntia stricta* (Common Prickly Pear) and *Chenopodium album* (Fat Hen).

North – Photo 4041

East – Photo 4042

South – Photo 4043

West – Photo 4044

F.1.6. MDC6: PCT 618 White Box x Grey Box - Red Gum - Rough-barked Apple grassy woodland on rich soils on hills in the upper Hunter Valley

Monitoring site MDC6 is located in an area of PCT 618 White Box x Grey Box – Red Gum – Rough-barked Apple grassy woodland on rich soils on hills in the upper Hunter Valley in DNG form. No canopy species are present and the only native shrub present is *Cryptandra spinescens*. Common native groundcovers include *Asperula conferta* (Common Woodruff), *Poa labillardierei* (Tussock), *Aristida ramosa* (Purple Wiregrass), *Microlaena stipoides* (Weeping Grass) and *Lomandra multiflora* (Many-flowered Mat-rush). Weed cover is low and includes *Verbena bonariensis* (Purpletop), *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush), *Cirsium vulgare* (Spear Thistle), *Hypericum perforatum* (St. John's Wort) and *Sida rhombifolia* (Paddy's Lucerne).

North – Photo 4035

East – Photo 4036

South – Photo 4037

West – Photo 4038

F.2. Discussion and Recommendations

F.2.1. Discussion of Conservation Values

Overall, the Middle Deep Creek and Oakvale Conservation Area is considered to be in good condition. Opportunistic observations made while walking/driving through the conservation area identified the following:

- No signs of rubbish dumping;
- Decrease in canopy dieback compared to previous year's monitoring;
- Moderate to high signs of feral animal with 16 feral deer recorded, as well as the presence or evidence of feral pigs at five (5) separate locations (refer to **Table 6**);
- *Cymbidium canaliculatum* individual recorded which is listed as an endangered population under the BC Act (refer to **Table 6**);
- Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*), listed as vulnerable under the BC Act, recorded at two separate locations (refer to **Table 6**);
- Significant *Eucalyptus* plantings throughout open grassland areas (refer to **Table 6**);
- Significant natural regeneration of native canopy species (refer to **Table 6**);
- Replacement of older perimeter fencing with new fencing (refer to **Table 6**); and
- Moderate to substantial weed infestations of *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush), *Opuntia stricta* (Common Prickly Pear), *Sida rhombifolia* (Paddy's Lucerne), *Carthamus lanatus* (Saffron Thistle), *Rosa rubiginosa* (Sweet Briar), *Cirsium vulgare* (Spear Thistle), *Hypericum perforatum* (St. John's Wort), *Conyza sumatrensis* (Tall Fleabane), and *Silybum marianum* (Variegated Thistle) (refer to **Table 6**).

With the exception of *Opuntia stricta* (Common Prickly Pear) and *Rosa rubiginosa* (Sweet Briar), weed infestations recorded were largely restricted to open grassland areas. The high occurrences of the weeds *Verbena bonariensis* (Purpletop) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) within open areas has also been observed in high numbers elsewhere in the region in 2023 within similar areas (i.e. open grasslands). As such, their prevalence is considered to be associated with environmental conditions rather than a lack of management within the conservation area.

Table 5 below identifies the species and locations of weed infestations, native canopy regeneration and signs of feral animals recorded within the conservation area.

Table 6 Details of weed infestations, native regeneration and other notes recorded within the Middle Deep Creek and Oakvale Conservation Area

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
1	56	314426	6483859	-	*E. albens* x *moluccana* regeneration around remnant trees.	-
2	56	314274	6484080	Low number of *Cirsium vulgare* and *Gomphocarpus fruticosus*.	*E. albens* x *moluccana* regeneration around remnant trees.	-
3	56	314316	6484270	-	*E. albens* x *moluccana* regeneration around remnant trees.	-
4	56	314242	6484446	-		Moderate canopy dieback, approximately 20% of total canopy. Noticeably less than previous year.
5	56	314250	6484526	Low number of *Conyza sumatrensis* and *Gomphocarpus fruticosus*.		-
6	56	314266	6484637	Low number of *Sida rhombifolia, Conyza sumatrensis* and *Cirsium vulgare*.		-
7	56	314079	6484744	Low number of *Opuntia stricta* and *Sida rhombifolia*		New boundary fences being installed.
8	56	313953	6484906	Low number of *Conyza sumatrensis, Silybum marianum* and *Opuntia stricta*		-
9	56	313803	6485215	-	Moderate regeneration of *E. albens* x *moluccana* around remnant trees.	Moderate canopy dieback, approximately 20% of total canopy.

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
						Noticeably less than previous year.
10	56	313634	6485439	-		Seven deer recorded.
11	56	313476	6485646	Moderate number of *Conyza sumatrensis* and *Sida rhombifolia*.	Moderate regeneration of *E. albens* x *moluccana*.	-
12	56	313353	6485904	Moderate number of *Conyza sumatrensis* and *Verbena bonariensis*.	Moderate regeneration of *E. albens* x *moluccana*.	-
13	56	313293	6486002	High number of *Verbena bonariensis*.		-
14	56	313145	6486236	-	High cover of *Austrostipa verticillata* and *E. albens* x *moluccana* regeneration.	-
15	56	313052	6486301	High number of *Verbena bonariensis* and *Sida rhombifolia*.		-
16	56	312818	6486630	High number of *Sida rhombifolia*.		-
17	56	312611	6486831	Moderate number of *Verbena bonariensis, Conyza sumatrensis, Cirsium vulgare, Carthamus lanatus, Sida rhombifolia, Hypericum perforatum* and *Gomphocarpus fruticosus*.	Moderate regeneration of *E. albens* x *moluccana*.	-
18	56	312491	6486996	High number of *Silybum marianum*.		-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
19	56	312177	6487301	Low number of *Conyza sumatrensis, Verbena bonariensis, Hypericum perforatum* and *Silybum marianum*.		-
20	56	312086	6487450	-	Moderate regeneration of *E. albens* x *moluccana* and *Angophora floribunda*.	-
21	56	311955	6487701	Moderate number of *Verbena bonariensis, Cirsium vulgare, Rosa rubiginosa* and *Hypericum perforatum*.		-
22	56	311924	6487776	Moderate to high number of *Verbena bonariensis, Cirsium vulgare, Rosa rubiginosa* and *Hypericum perforatum*.		-
23	56	311894	6487836	Moderate to high number of *Verbena bonariensis, Cirsium vulgare, Rosa rubiginosa* and *Hypericum perforatum*.		-
24	56	312041	6487956	-	Moderate canopy regeneration along access tracks.	-
25	56	312207	6487863	-	Moderate regeneration of *E. albens* x *moluccana*.	-
26	56	312374	6487730	-	Moderate regeneration of *E. albens* x *moluccana*.	Low dieback of canopy (~10%).

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
27	56	312709	6487660	-		*Cymbidium canaliculatum* - flowering.
28	56	312946	6487556	-	High regeneration of *E. albens* x *moluccana*.	-
29	56	313241	6487473	Moderate number of *Sida rhombifolia*.		-
30	56	313292	6487438	-	Moderate regeneration of *E. albens* x *moluccana*.	-
31	56	313616	6487494	-	Moderate regeneration of *E. albens* x *moluccana*.	-
32	56	313829	6487423	-	Moderate regeneration of *E. albens* x *moluccana*.	-
33	56	314006	6487379	-	Moderate regeneration of *E. albens* x *moluccana*.	-
34	56	314701	6487103	-		Evidence of significant pig activity (substantial number of diggings).
36	56	314714	6487136	-		Evidence of significant pig activity (substantial number of diggings).
37	56	314176	6487157	-		Seven pigs recorded.
38	56	314086	6487106	-	Significant regeneration of *E. albens* x *moluccana*.	-
39	56	314037	6486987	-		Grey-crowned Babbler (x3).
41	56	313849	6487028	High number of *Hypericum perforatum*.		-
42	56	314000	6486963	High number of *Hypericum perforatum*.		-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
43	56	314020	6486938	High number of *Hypericum perforatum*.		-
44	56	314033	6486895	High number of *Hypericum perforatum*.		-
45	56	314038	6486767	High number of *Hypericum perforatum*.		-
46	56	313812	6486861	High number of *Hypericum perforatum*.		-
47	56	314824	6486728	Low regeneration of *E. albens* x *moluccana*.		-
48	56	314605	6486635	Moderate number of *Hypericum perforatum*.		-
49	56	314498	6486332	Moderate number of *Hypericum perforatum*.		-
50	56	314729	6486042	Moderate number of *Cirsium vulgare*.	Significant *Eucalyptus* plantings with tree guards.	-
51	56	315026	6485701	-		-
52	56	315058	6485276	-		Moderate impact associated with pigs (diggings).
53	56	315073	6485304	-	Moderate regeneration of E. albens x moluccana.	-
54	56	315237	6486118	-	Significant *Eucalyptus* plantings with tree guards. High natural regeneration of *E. blakelyi*.	Six deer observed and heavy grazing evident (compacted ground layer).
55	56	315323	6486182	High number of *Verbena bonariensis*, low to moderate number of *Cirsium vulgare* and *Hypericum perforatum*.		-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
56	56	315204	6486489	Low to moderate number of *Cirsium vulgare* and *Hypericum perforatum*.		-
57	56	315393	6486224	High number of *Verbena bonariensis*.		-
58	56	315419	6486154	High number of *Verbena bonariensis*.		-
59	56	315454	6486072	High number of *Verbena bonariensis*.		-
60	56	315751	6486085	-	Significant *Eucalyptus* plantings with tree guards.	Three pigs recorded.
61	56	316087	6486008	-	Moderate regeneration of *E. albens* x *moluccana*.	-
62	56	316073	6485989	Moderate to high number of *Cirsium vulgare*. Low number of *Hypericum perforatum*.		-
63	56	316294	6486386	Moderate number of *Cirsium vulgare*.	Significant *Eucalyptus* plantings with tree guards.	-
64	56	315921	6486756	-	Moderate regeneration of *E. albens* x *moluccana*. Significant *Eucalyptus* plantings with tree guards.	-
65	56	315945	6487009	-	Moderate regeneration of *E. albens* x *moluccana*.	-
66	56	316174	6485523	Moderate number of *Cirsium vulgare*.	Significant *Eucalyptus* plantings with tree guards.	-
67	56	316086	6485465	-	Moderate regeneration of *E. albens* x *moluccana*.	-
68	56	315880	6485343	-	Significant *Eucalyptus* plantings with tree guards.	-
69	56	315532	6485331	-	Significant *Eucalyptus* plantings with tree guards.	-
70	56	315936	6484938	-	Significant *Eucalyptus* plantings with tree guards.	-

WP*	Zone	Easting	Northing	Weed Infestations	Replantings/ Regeneration	Other Notes
71	56	316146	6484830	-		Three deer.
72	56	316314	6484625	-	Significant *Eucalyptus* plantings with tree guards.	-
73	56	315976	6484262	-	Significant *Eucalyptus* plantings with tree guards.	-
74	56	315774	6484155	-		Grey-crowned Babbler (x3).
75	56	315515	6484133	-	Significant *Eucalyptus* plantings with tree guards.	-
76	56	315404	6484156	-	Significant *Eucalyptus* plantings with tree guards.	-
77	56	315206	6484199	-	Significant *Eucalyptus* plantings with tree guards.	-
78	56	315067	6484459	-	Moderate natural regeneration of canopy.	-
79	56	315998	6483862	-	Significant *Eucalyptus* plantings with tree guards.	-
80	56	315927	6483767	-	Significant *Eucalyptus* plantings with tree guards.	-
81	56	316017	6483631	-	Moderate regeneration of *E. albens* x *moluccana*.	-

F.2.2. Recommendations

Recommendations include continued weed management targeting any high threat weeds (e.g. *Hypericum perforatum*) as a priority, as well as all other management actions identified in the CA. Although large infestations of weeds (e.g. *Verbena bonariensis, Gomphocarpus fruticosus*) were observed in open areas, targeted control of these species in open areas is not considered to be economical or that beneficial as a result of the likely high soil seed bank of these species already present. Therefore, it is recommended that the best way to reduce coverage of these species in the long-term is to continue to undertake additional plantings (and manage existing plantings) of appropriate canopy species (i.e. plant the same species as nearby woodland) in open grassland areas as the prevalence of these weeds within wooded areas is very low (i.e. conditions under canopy trees is not conducive for the weed species recorded). Any plantings should be made within open areas that do not contain large amounts of natural regeneration or previous plantings.

Any tree plantings should be sourced from local provenance (preferably sourced from remnant vegetation within the conservation area), be made within open areas, and be protected with tree guards and the surrounding exotic vegetation routinely targeted through spot-spraying to increase plantings chances of survival (i.e. reduce competition from surrounding environmental weeds).

In 2020, the high threat weed *Carthamus lanatus* (Saffron Thistle) was observed in very high numbers throughout the conservation area and wider region, and a high level of seed is likely to be stored in the soil seed bank. In order to reduce this species seed bank in the soil, it is recommended that the conservation area be checked in late September-early October (prior to its flowering period) for dense infestations. If the species is observed in very high numbers, slashing should be carried out prior to it flowering and setting seed. Otherwise, the already high seed bank will continue to increase in the future.

It is also recommended that targeted feral deer and pig controls be implemented to minimise their spread to additional areas of the conservation area.

F.3. Datasheets

Date: 13/11/2023	Project #: MDC1		Date: 13/11/2023	Project #: MDC2	
Species	**Cover**	**Abundance**	**Species**	**Cover**	**Abundance**
Canopy			**Canopy**		
1 Euca blak			1 Euca blak		
2 Euca albe x molu.			2 Euca albe x molu.		
3			3		
4			4		
5			5		
Shrub			**Shrub**		
1 Nate micr micr			1 olea ~~micr~~ elli		
2 olea ~~micr~~ elli			2 Cass gum		
3			3 Nate micr micr		
4			4 Burs spin		
5			5		
Groundcover			**Groundcover**		
1 Poa labi			1 Aris ramo		
2 Micr stip stip			2 Micro stip stip		
3 Aris ramo			3 Lama mult		
4 Echi cael.			4 poa labi		
5 Gera solen			5 Dich repe		
Weeds			**Weeds**		
1 Cirs vulg.			1 Cirs vulg.		
2 Rosa rubi			2 Verb bona		
3 Opun stri			3 Rosa rubi		
4 Bide pilo			4 Opun stri		
5 Gomp frut			5 Loli pere		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**	**GF Group: TG**=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other
Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.	**Stratum: C** = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 13/11/2023	Project #: MDC4	
Species	**Cover**	**Abundance**
Canopy		
1		
2		
3		
4		
5		
Shrub		
1		
2		
3		
4		
5		
Groundcover		
1 Sene quad		
2 Micro stip stip		
3 Aris roma		
4 Poa labi		
5 Lobe purp.		
Weeds		
1 Cirs vulg		
2 Verb bona		
3 Sida rhom		
4 Opun stri		
5 Silg mari		

Date: 13/11/2023	Project #: MDC3	
Species	**Cover**	**Abundance**
Canopy		
1 Euca molu x albe		
2 Euca ~~gran~~ laev.		
3		
4		
5		
Shrub		
1 Note micr micr		
2 Cass quin		
3 Burs spin		
4 Olea ~~elip vise~~ ell.		
5		
Groundcover		
1 Dich micr		
2 Poa labi		
3 Aris roma		
4 Gera sola		
5 Lomn mult.		
Weeds		
1 Rosa rubi		
2 Cirs vulg.		
3 Verb bona		
4 Cenc soma		
5 Opun stri		

Cover (%): 0.1, 0.2, 0.3...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**

Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.

GF Group: TG=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other

Stratum: C = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

Date: 14/11/2023	Project #: MDC6		Date: 14/11/2023	Project #: MDC5	
Species	**Cover**	**Abundance**	**Species**	**Cover**	**Abundance**
Canopy			**Canopy**		
1			1 Euca moll		
2			2 Euca blak.		
3			3		
4			4		
5			5		
Shrub			**Shrub**		
1 Crgf spin			1 Burs spin		
2			2		
3			3		
4			4		
5			5		
Groundcover			**Groundcover**		
1 Aspe cont			1 Micr stip v. stip		
2 Aris ramo			2 Aust vert		
3 ~~Sene quad~~ Loma mult.			3 Gera home		
4 Micr stip v. stip.			4 Dich repe		
5 Poa labi			5 Aris ramo		
Weeds			**Weeds**		
1 Verb bona			1 Cirs vulg		
2 Gomp trct			2 Hype pert		
3 Cirs vulg			3 Rosa rubi.		
4 Hype pert.			4 Opun str.		
5 Sida rhom.			5 Chen albu		

Cover (%): **0.1, 0.2, 0.3**...etc. up to **1, 2, 3**...etc. up to **10, 15, 20, 25**...etc. up to **100**

Abundance (Count): **1, 2, 3**... up to **10, 20, 30**...up to **100, 200**... up to **1,000**...etc.

GF Group: TG=Tree, **SG**=Shrub, **GG**=Grass, **FG**=Forb, **EG**=Fern, **OG**=Other

Stratum: C = Canopy, **SC** = Sub-canopy, **S** = Shrub, **G** = Ground

Cover Note: *0.1% = approx 63 cm² or circle with 71cm diameter, 0.5% = approx 1.4m², 1% = approx 2m², 5% = approx 4.5m², 25% = approx 10m²*

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MDC 4	**Date** 13.11.23	
Vegetation Community			
1. Site Photo(s)Taken	4009 - 4012		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas			none
Threatened species sightings			none .
Fire event/fuel			moderate fuel load.
Weeds	22 - 23	4095.	mod/high weeds Rosa rubi. velo lana, Cirs vulg, Sida rhom.
Pest animals			none .
Visitor impact/vehicles			none .
Rubbish dumping			none .

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MDC 3	**Date** 13.11.23	
Vegetation Community			
1. Site Photo(s)Taken	4014 – 17		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	24	4098	Moderate regen Euca goni along access track
Threatened species sightings			none.
Fire event/fuel			mod/high fuel load.
Weeds			Low weeds - any suna.
Pest animals			none.
Visitor impact/vehicles			~~none~~ Access track.
Rubbish dumping			none.

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MDC 1	**Date** 13.11.23	
Vegetation Community			
1. Site Photo(s)Taken	4020 – 4023.		

2. Floristic BioMetric attributes	
Native cover	
Overstorey:	
Midstorey:	
Groundcover(grass):	
Groundcover (shrub):	
Groundcover (other):	
Native species richness:	
Proportion of canopy species regenerating	
Exotic cover	
Number of trees with hollows	
Total length of fallen logs	

3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			none.
Threatened species sightings			none.
Fire event/fuel	35	4106	Moderate fuel load.
Weeds			Low weed infestation
Pest animals	34l36	4105 & 4107.	Heavy pig impact.
Visitor impact/vehicles			none.
Rubbish dumping			none.

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MDC2	Date 13.11.23	
Vegetation Community			
1. Site Photo(s)Taken	4025 – 28		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			~~low~~ done.
Threatened species sightings	39		Grey-crowned Babbler x 3.
Fire event/fuel	40	4110	Mod/high fuel load.
Weeds			Low weed infestat° - cirs vulg.
Pest animals	37	~~410~~	Seven pigs in vicinity.
Visitor impact/vehicles			Access tracks been slashed
Rubbish dumping			None.

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MDC 6	**Date** 14.11.23	
Vegetation Community			
1. Site Photo(s)Taken	4035 - 38		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	S3	4126	Mod. regen - Eucalbox molu-
Threatened species sightings			None
Fire event/fuel			Low fuel load.
Weeds			Low speed - cirsvulg. veb bonee,
Pest animals	S2	4125	Mod. impact of pigs.
Visitor impact/vehicles			None.
Rubbish dumping			None.

ANNEXURE D TABLE 3 - MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number	MDCS	**Date** 14.11.23	
Vegetation Community			
1. Site Photo(s)Taken	4041 - 4044		
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
Number of trees with hollows			
Total length of fallen logs			

3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas	54.	4127 4128	Planted Euca sp. High natural regen. Euca 6lah
Threatened species sightings			None
Fire event/fuel			Low/mod fuel load.
Weeds	55	4129.	High verb bona infestatn low/mod cirs vulg; Hype perf – wp 56
Pest animals	54.		Six deer. / heavy grasing deer – wp 56 / macropod Deer/Pig control.
Visitor impact/vehicles			None
Rubbish dumping			None

Site	17185 (MDC)	Date	13.11.2023
Staff	RM · MP	GPS #20	

WP	Notes (e.g. regrowth, plantings, weed infestations)	Photo
01	Euca albe x mole regen around	4077
	remnant trees.	
02	" " "	4078
	" "	
02	Low number of Comp frat &	
	Cirs vulg. weeds	
03	Euca albe x mole regen around	4079
	remnant trees.	
04	Canopy dieback (20% c.)	
	first seen 3yrs ago.? (check).	
05	Low number of weeds - Cony.	4080
	sumatrensis & Comp frat.	
06	Low number of weeds - Sida	4081
	rhomb, cony sumatrensis & Cirs vulg.	
07	Minor weeds - Open stri, Sida	~~4082~~
	rhom. - little to no regen.	
07	New fencing being installed.	4082
08	Minor weed - Data stram, cony	
	sumatrensis, Open stric. - little to no	
	regen in area. → Silybum mari.	4083
09	Dieback (20%) - of canopy trees	4084
	- regeneration present around	
	remnant trees.. Euca albe x mole	
10	Seven deer (at least) sited in	
	Gully vegetation.	
11	Moderate weeds - cony sumatrensis, Sida rhom	4085
	Moderate regen Euca albe x mole.	
12	Moderate weeds. cony sumatrensis verb bon	4086
	moderate regen. Euca albe x mole.	

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Site	17185 (MOC)	Date	13 Nov 2023
Staff		GPS	10

WP	Notes (e.g. regrowth, plantings, weed infestations)	Photo
13	High weeds - verb bona infest^{n}.	4087
14	High regen at Aust vert, low	
	canopy regen Euca albe x molu.	4088
15	High weed infestat^{n} - Verb bona,	4089
	Sida rhom	
16	High weed infestat^{n} - Sida rhom	4090
17	Moderate regen Euca albe x molu.	4091
	Moderate weeds - Verb bona, Cenq suma	
	Cirs vulg, Cath lana (saffron thist)	~~4092~~
	Sida rhom, Hype perf, Gamp fvet	
18	High weeds infestat^{n} Sily mari	4092
19	low weed infestat^{n} Cenq suma,	
	verb bona, Hype perf Sily mari	
20	Moderate regen Argo flor x	4093
	Euca albe x molu.	
	Moderate weed infestat^{n} Cenq suma	~~4094~~.
21	Moderate weeds infest - Verb bona,	4094
	Cirs vulg, Rosa rubi, Hype perf.	
25	Moderate regen Euca albe x molu.	4100
26	Moderate regen Euca albe x molu.	4101
	Dieback of canopy (10%).	
27	Cymb coral in flower on stag.	4102
28	High regen Euca molu x albe	4103
29	Mod. weeds infestat^{n} Sida rhom.	
30	Mod. regen Euca molu x albe	4104
31	" " " " "	
32	" " " " "	
33	" " " " "	

37 Seven pigs.

38 Significant regen Eucn albe x mole.
ph 4109

41-46 Heavy weed infestat^{n} Hype pert.

47. - Low regen Eucn albe x mole
- Mod weed infestat^{n} - Hype pert.
- Three deer. - ph 4111

48 - Mod weed infestat^{n}. Hype pert
ph 4112.

49 - Mod weed infestat^{n} Hype pert.
ph 4113.

50 - Re-plantings (Reveg) Eucn spp. ph - 4115
Moderate weed infestat^{n} - Cirs vulg.

51 - Mod/high weed infestat^{n} - verb bona ph 4114
ph 4116.

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14. 11. 2023

57 - High verb bona infest.

58 - " " " ".

59 " " " " ph - 4118

60 Re-plantings (reveg) - Pigs present
ph 4132

ph 4133.

61 - Mod. regen Euca albe x molu. ph 4134

62 - Mod/high Cirs vulg infestatn starting.

- Low Hype perf infestatn.

ph 4135

63 - Re-planting (reveg). Cirs vulg infest Mod.

64 - ph 4136-37 Nat. regen high e Euca albe x molu

re-planting (reveg).

65 - ph 4138 Mod. Nat. regen Euca albe x molu.

66 - ph 4140 - Re-plantings (regen) e mod/high

cirs vulg.

67 - Nat-regen ph 4141 - Mod/high Euca albe x molu.

68 - ph 4142 _ Re-plantings (regen).

69 - Re-plantings (regen)

70 - " " "

71 - Three deer.

72 - Re-plantings (regen) e vista of

re-plantings abound after ph. 4143-44

73 - Re-plantings (regen).

74 - Grey-crowned Babblers x 3

75-77 - Re-plantings (vegen)

78 - ph 4145. Nat. reveg. moderate.

79 - ~~ph 4146~~ - Replantings (reveg).

80 - Re-plantings - (reveg). - cattle present

outside replantings (low number).

81 - Nat-regen moderate. Euca albe x molu.