

HUNTER VALLEY OPERATIONS



EPBC 2016-7640

Annual Compliance Report

1 January 2022 to 31 December 2022

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Declaration of accuracy

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) Michael LloydPosition (please print) Environmental & Community Coordinator

Organisation (please print including ABN/ACN if applicable)

HV Operations Pty Limited (ABN 76 606 478 399)Date 31 January 2023

Cover Photo: Green and Golden Bell Frog (*Litoria aurea*) at Crescent Head North constructed pond.

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1 Introduction

Hunter Valley Operations (HVO) became a jointly controlled operation between Glencore (49%) and Yancoal (51%) on 4 May 2018. Certain mining operations at HVO are regulated by Commonwealth approval, EPBC 2016/7640.

This annual compliance report has been prepared in accordance with the Annual Compliance Report Guidelines (Commonwealth of Australia 2014) and addresses compliance with the conditions of the EPBC 2016/7640 approval. The period covered by this report is for the calendar year 2022. For ease of reporting, HVO transitioned the reporting year from the November to October period to the calendar year with the January 2021 extended report submission.

As a result, this report covers the period 1 January 2022 to 31 December 2022 (the reporting period).

1.1 Background

Hunter Valley Operations is located at Lemington, approximately 24 kilometres northwest of Singleton in the Hunter Valley, NSW. The Commonwealth Minister for the Environment, under provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), issued approval EPBC 2016/7640 for the continuation of open cut coal mining operations, within the HVO mine complex, in areas that were previously approved by the State after the commencement of the EPBC Act 1999. Approval was granted on 10 October 2016 and the action commenced on 1 November 2016.

The EPBC 2016/7640 approval (last modified in August 2017), requires various offsets to be established as a result of the impacts upon Matters of National Environmental Significance (MNES). The offsets are required in respect of the following protected matters:

- Central Hunter Valley Eucalypt Forest (CHVEF) - 61ha;
- Swift Parrot (*Lathamus discolor*) foraging habitat – 68.1ha;
- Regent Honeyeater (*Anthochaera phrygia*) breeding and foraging habitat – 68.4ha; and
- Green and Golden Bell Frog (*Litoria aurea*) breeding (2.6ha) and foraging habitat (102.7ha).

The Offset Strategy (Biodiversity Offset Strategy – State Approved Mining (EPBC2016/7640)), approved by the Minister on 23 October 2017, details the offset areas that are to be secured and managed in relation to this approval. The offset areas are summarised below as the:

- Wandewoi Biodiversity Area (BA) – To offset approximately 63% of the action's impacts on Central Hunter Valley Eucalypt Forest (CHVEF) and 100% of the action's impacts on the Swift Parrot.
- Mitchelhill BA - To offset the residual 37% of the action's impacts on CHVEF and 53.9% of the Regent Honeyeater impacts.
- Condon View BA - To offset the remaining 46.1% of the Regent Honeyeater impacts.
- Crescent Head BA - To offset 99.25% of the action's impacts on the Green and Golden Bell Frog (GGBF). The residual 0.75% offset for the GGBF is being provided through other compensatory measures. HVO contributed the residual funds towards a GGBF Habitat Mapping project at Crescent Head which was managed by the Biodiversity & Conservation Division of the NSW Department of Planning, Infrastructure and Environment.

In accordance with the approval, the Wandewoi BA, Mitchelhill BA, Condon View BA and the Crescent Head BA offset sites are to be secured in perpetuity with legally binding agreements.

HVO has been working with Commonwealth and State agencies to finalise the legally binding arrangements that will secure the offset sites in perpetuity in the most appropriate manner. HVO has agreed to the terms of a draft Conservation Agreement pursuant to s305 of the EPBC Act to satisfy the requirement for offset security.

An overview of the consultation that has taken place between HVO and the Department Climate Change, Energy, the Environment and Water (DCCEEW) (or the prior agencies) to finalise this matter is set out in the following chronological timeline:

27 September 2018: An approval variation request was submitted to the DCCEEW. The variation sought to extend the date by which the offsets had to be secured due to the ongoing dialogue with the various State and Commonwealth agencies about the most appropriate mechanism to satisfy the in-perpetuity security requirement in HVO's conditions of approval. DCCEEW officers were in agreement with the request, however, given that HVO was also discussing the proposal to substitute a component of the Wandewoi BA for the Hook property, the DCCEEW asked that the variation request be resubmitted to include all matters being discussed at the time.

18 October 2018: The second variation request was submitted to DCCEEW that proposed to:

- a) vary the approval to allow for the grassland component of the Wandewoi offset to be swapped for a property that contains the critically endangered Central Hunter Valley eucalypt forest and woodland;
- b) vary the approval to extend the date by which the offsets must be secured;
- c) vary the approval to permit the use of a s305 Conservation Agreement under Part 14 the EPBC Act to secure the offset sites in perpetuity; and
- d) request approval of the Minister for the HVO offset sites to be secured by entering into a s305 Conservation Agreement.

This second variation request required the revision of the Biodiversity Offset Strategy, the existing Biodiversity Areas Management Plans, the EPBC calculations and the preparation of a management plan and a specific weed management plan for the Hook Property. Ecological assessments of the Hook property were supplied to DCCEEW for review and preliminary acceptance of the quality of the proposed offset variation to ensure that the proposed Hook BA met the required quantum of impact.

13 June 2019: New DCCEEW officer allocated.

1 October 2019: New DCCEEW officer allocated.

31 October 2019: HVO provides DCCEEW with revised BOS, revised BOMP, BBAM assessments and offsets assessment calculators for Hook and Wandewoi.

21 November 2019: HVO provides to DCCEEW the GGBF residual impact calculation report and the spreadsheet with the management costs and potential projects as suggested by the NSW Biodiversity and Conservation Division of DPI&E.

25 November 2019: DCCEEW approves the GGBF residual offset liability calculations and proposed projects and requests additional offset calculations for the Hook proposal.

2020: Extensive discussion with DCCEEW officers and legal regarding offset assessment calculations required. Provision of ecological reports justifying the Hook variation proposal.

30 January 2021. DCCEEW agrees that the HVO Offset Strategy, the Biodiversity Areas Management Plan and EPBC calculations are appropriate to send to the Delegate for consideration.

24 June 2021: New DCCEEW officer allocated.

12 July 2021: Following consideration of HVO's second variation request, the draft variation to EPBC 2016/7640 conditions of approval was provided by DCCEEW for HVO to review.

2 August 2021: DCCEEW provides edits required to the BOS and BOMP.

3 August 2021: HVO's response to the proposed conditions of approval was submitted to DCCEEW.

27 October 2021: After addressing the comments provided by DCCEEW, and having regard to the draft conditions of approval that have been provided by DCCEEW, HVO submitted the revised HVO Offset Strategy, the Biodiversity Areas Management Plan and EPBC calculations to DCCEEW for consideration by the Delegate. HVO considers these documents to be in final form, subject to approval by the Delegate.

9 November 2021: DCCEEW provided a draft Conservation Agreement for review by HVO for the purpose of implementing the security arrangement for the HVO offset sites.

17 November 2021: DCCEEW provided a second version of the draft conditions of approval to HVO for its review.

3 December 2021: HVO's feedback on the draft Conservation Agreement and the second draft conditions of approval were provided to DCCEEW.

20 December 2021: HVO and DCCEEW participated in a meeting to discuss HVO's feedback on the draft Conservation Agreement. At the conclusion of that meeting, DCCEEW indicated that it would respond to HVO's feedback in early 2022.

31 January 2022: DCCEEW provided the amended Conservation Agreement to HVO for review.

9 February 2022: HVO proposes separate Conservation Agreements for each BA.

11 March 2022: HVO completes review of amended Conservation Agreement. New DCCEEW officer allocated in March.

17 March 2022: DCCEEW requests HVO provide additional justification why separate Conservation Agreements should be applied to each BA.

21 March 2022: HVO provides justification for separate Conservation Agreements and offers to prepare the separate Agreements using the amended Agreements as a template.

29 March 2022: DCCEEW agrees to separate Agreements and requests separate BOMPs.

20 April 2022: DCCEEW provides draft variation to approval conditions for agreement. New DCCEEW officer allocated.

31 May 2022: HVO provides separate management plans and edited Conservation Agreements to DCCEEW.

9 June 2022: HVO provides DCCEEW updated Biodiversity Offsets Strategy with updated calculations.

30 June 2022: DCCEEW provides BOMP reviews to HVO and requests edits.

7 November 2022: DCCEEW provides HVO with track changed Conservation Agreements for review.

1.2 Landowner Details

"Interest Holder" for each of the BAs:

HV Operations Pty Limited,
Coal & Allied Operations Pty Limited, and
Anotero Pty Limited

For communications regarding the BAs, the relevant contact details are:

Attn: Manager – Environment and Community
Hunter Valley Operations
PO Box 315,
Singleton, NSW, 2330.

Email: environmentandcommunity@hvo.com.au

2 Condition of Compliance

2.1 EPBC 2016/7640

Condition Number	Condition	Compliance status	Evidence/Comments
1	The person taking the action must not clear more than 54.4 hectares of the Central Hunter Valley Eucalypt Forest and woodland (CHVEF) ecological community from the Riverview Pit and 6.6 ha of the CHVEF ecological community from within the West Pit and must limit all vegetation clearing to within the project disturbance boundaries defined at Schedule 1, Figures 1 - 4.	Compliant	Disturbance limited to within project disturbance boundaries through the HVO Ground Disturbance Permit process. From within the EPBC areas, HVO has, in total, cleared 46.65 ha of CHVEF from Riverview Pit and 5.7 ha of CHVEF from West Pit. All vegetation clearing was restricted to within the State and Commonwealth approved project boundaries.
2	The person taking the action must prepare and submit a Vegetation Clearance Plan (VCP) for the Minister's approval to mitigate impacts of the action on the CHVEF ecological community, the Regent Honeyeater (<i>Anthochaera phrygia</i>), Swift Parrot (<i>Lathamus discolor</i>) and the Green and Golden Bell Frog (<i>Litoria aurea</i>). The VCP must include:	Compliant	Vegetation Clearance Plan (VCP) was submitted to the DCCEEW and approved by the Acting Assistant Secretary 24 October 2016. The VCP was modified in 2020 to clarify the control measures specific to the EPBC areas correct minor formatting errors.
2a	Clear delineation of vegetation to be cleared, as per the disturbance boundary shown in Schedule 1 Figures 1 - 4, and vegetation that is to be retained.	Compliant	These areas are outlined within Section 2.1 and Chapter 3 of the VCP. The areas to be cleared are first identified and approved within the GDP. In the field, the areas to be cleared were delineated by a surveyor prior to clearing.
2b	Pre-clearance survey methods, which must include but not be limited to the following requirements:		
	i. A qualified ecologist must undertake a pre-clearance survey within 24 hours prior to the removal of potential foraging, nesting or breeding habitat for the Regent Honeyeater or foraging habitat for the Swift Parrot in areas identified in Schedule 2, Figures 1 - 5.	Compliant	Chapter 3 of the VCP. All pre-clearance surveys were undertaken by qualified ecologist. No species listed or nests were identified during the surveys.
	ii. If during pre-clearance surveys, Regent Honeyeater or Swift Parrot individuals are identified within the clearance area the VCP must specify the use of a two stage clearing protocol where non-habitat trees are cleared 24 hours prior to any habitat trees being cleared, to encourage fauna to move out of a habitat area.	Compliant	Section 3.2 and 3.3 of the VCP. No species listed or nests were identified during the surveys.

	iii.	In the event an active Regent Honeyeater nest is identified during pre-clearance surveys, vegetation clearing and overburden removal within 100 m of the active nest should be delayed up until the Regent Honeyeater nest is no longer actively being used .	Compliant	Section 3.3 of the VCP. No species listed or nests were identified during the surveys.
	iv.	A qualified ecologist must undertake pre-clearance surveys within a 2 week period prior to the removal of potential breeding habitat for the Green and Golden Bell Frog. Surveys are to be undertaken within all potential breeding habitat areas identified in Schedule 2, Figure 2 as well as a 200m buffer around each potential breeding habitat area.	Compliant	Section 3.3 of the VCP. Ecological pre-clearance surveys undertaken during the reporting year, using the methodology detailed in the Vegetation Clearance Plan. Surveys focussed on waterbodies and any potential habitat trees for the Regent Honeyeater, Swift Parrot and other protected species. No GGBF were found during the survey.
	v.	Pre-clearance survey methods for the Green and Golden Bell Frog must meet the survey effort requirements for the Green and Golden Bell Frog stipulated in the Survey Guidelines for Australia's threatened frog (2010) Commonwealth of Australia	Compliant	Section 3.3 of the VCP. Ecological pre-clearance surveys undertaken during the reporting year, using the methodology detailed in the Vegetation Clearance Plan. Surveys focussed on waterbodies and any potential habitat trees for the Regent Honeyeater, Swift Parrot and other protected species. No GGBF were found during the survey.
	vi.	In the event Green and Golden Bell Frog individuals, metamorphs or tadpoles are located during pre-clearance surveys, they are to be handled and translocated in accordance with the Hygiene protocols for the control of diseases in frogs (2008) Department of Environment and Climate Change (NSW).	Compliant	Section 3.3 of the VCP. No GGBF were observed or heard within the EPBC area during the reporting period.
2c		Include measures to avoid, suppress and control the spread of plant pathogens (such as <i>Phytophthora cinnamomi</i>) and <i>chytrid</i> fungus that may degrade habitat for protected matters . The action must not commence until the Vegetation Clearance Plan, required by Condition 2, has been approved by the Minister .	Compliant	Chapter 4 of the VCP. The VCP includes hygiene protocols to manage the spread of potential pathogens. Any machinery brought onto site from outside HVO to clear within the EPBC area will be washed of soil and mud prior to entering the extension area relevant to the EPBC 2016/7640 approval. The VCP also outlines measures to avoid the spread of Chytrid fungus from survey equipment, clearing machinery and during frog handling. HVO requires Ground Disturbance Permits (GDP) to be approved prior to any disturbance activities. Applicable GDPs prepared during the reporting year required proponents to comply with the veg clearance procedures required by HVO's EPBC 2016/7640 approval condition 2.
3		The approved Vegetation Clearance Plan must be implemented.	Compliant	Measures required by the VCP have been implemented for disturbance associated with Ground Disturbance Permits (GDP's).

4	<p>To compensate for residual impacts to protected matters the person taking the action must, under a legally binding agreement, secure in perpetuity 405.8 ha at the Wandewoi Biodiversity Area, described in 4(a)(b) and (c) within three (3) years from the date of this approval. The Wandewoi Biodiversity Area must include:</p>	Non-compliant	<p>Wandewoi Biodiversity Area was required to be secured in perpetuity by 10 October 2019. Due to the ongoing drought that occurred up to 2020 impacting the likelihood of success of the required rehabilitation of 230ha at Wandewoi, HVO proposed to substitute the grassland component of the Wandewoi BA for the CHVEF on the Hook property. HVO has been in discussion with DCCEEW regarding a proposed variation to the offsets and the conditions of approval since mid-2018 with a formal request submitted in September 2018. This discussion included the security mechanism to be applied to the offsets and sought an extension to the conditions of approval to permit the offsets to be secured under a s305 conservation mechanism. Subsequent variations requesting the same matters were submitted in October 2018, September 2020 and May 2021.</p> <p>HVO was advised that the variation would not be submitted to the Delegate in isolation. Given that the Department considered that the negotiations at the time were close to being acceptable, a 'package' that comprising a revised management plan, revised Offset Strategy and conditions of approval that included the extension requested by HVO would be sent to the Delegate for their consideration. These documents were revised and submitted as requested. With changes in personnel within the Department, the documents were re-reviewed each time and DCCEEW requested additional edits with each personnel change. HVO has asked for DCCEEW's response to the requests for the extension only to be told that the submission of the request would be sufficient in the event of an audit.</p> <p>The most recent discussion on 7/11/2022 relates to the provision of the edited conservation agreement for HVO's review. These have been reviewed and will be provided to DCCEEW with the revised documents in February 2023. A full timeline of discussions between HVO and DCCEEW are detailed in Section 1.1 of this report.</p>
4a	405.8 hectares of the CHVEF ecological community;	Compliant	<p>The Wandewoi BA that has been agreed with the Department contain 405.8ha of CHVEF. This includes 175.8ha of Grey Box Woodland (CHVEF CEEC) and 230ha of Grey Box Derived Native Grassland (DNG).</p> <p>The revised HVO Biodiversity Areas Management Plan that was submitted to the DCCEEW for approval on 18 October 2019 includes detail on the Hook property and proposes the Wandewoi BA to be 234.1ha within the larger 406.3 ha property.</p>

4b	175.8 hectares of foraging habitat for the Swift Parrot; and	Compliant	The Wandewoi BA that has been agreed with the Department contains 175.8ha of foraging habitat for the Swift Parrot, comprising 175.8ha of Grey Box Woodland (CHVEF CEEC). This woodland component at Wandewoi remains unchanged in the revised HVO Biodiversity Areas Management Plan that includes detail on the Hook property.
4c	40 ha of regenerating foraging habitat for the Swift Parrot.	Compliant	The Wandewoi BA that has been agreed with the Department contains foraging habitat for the Swift Parrot, including 230ha of Grey Box Derived Native Grassland (DNG). Once the variation has been approved by the Delegate, the DNG areas at Wandewoi will be regenerated to CHVEF, including 40 ha of foraging habitat. The revised Wandewoi BA Management Plan propose a larger regenerating foraging habitat area at Wandewoi as a result of the EPBC calculations with the Hook property swap.
5	To compensate for residual significant impacts to 22.7 ha of Class A condition CHVEF from the Riverview Pit extension area the person taking the action must identify a direct offset site that meets requirements of the EPBC Act Offset Policy and secure the offset in perpetuity under a legally binding agreement within 12 months from the date of approval of the Offset Strategy at Condition 10.	Non-compliant	Direct offset site at Mitchelhill detailed in Biodiversity Offset Strategy (Condition 10) was to be protected under a legally binding agreement by 23 October 2018. A conservation mechanism to secure the BAs was discussed with the NSW Biodiversity Conservation Trust and the Office of Environment and Heritage. A suitable mechanism could not be agreed upon and the DCCEEW agreed that a s305 conservation mechanism may be appropriate. A variation to extend the date to allow the HVO BAs to be secured under a s305 was submitted to the DCCEEW on 27 September 2018 and 18 October 2018. The date extension requires an approval variation which the DCCEEW intends to include in the Delegate's submission discussed in Condition 4 above. HVO has asked for DCCEEW's response to the requests for the extension only to be told that the submission of the request would be sufficient in the event of an audit. The most recent discussion on 7/11/2022 relates to the provision of the edited conservation agreement for HVO's review. These have been reviewed and will be provided to DCCEEW with the revised documents in February 2023. A full timeline of discussions between HVO and DCCEEW are detailed in Section 1.1 of this report.

6	<p>To compensate for residual significant impacts to 68.4 ha of breeding and foraging habitat for the Regent Honeyeater the person taking the action must identify a direct offset site that meets requirements of the EPBC Act Offset Policy and secure the offset in perpetuity under a legally binding agreement within 12 months from the date of approval of the Offset Strategy at Condition 10.</p>	<p>Non-compliant</p>	<p>Direct offset sites at Mitchelhill and Condon View detailed in Biodiversity Offset Strategy (Condition 10) is to be protected under a legally binding agreement by 23 October 2018. A conservation mechanism to secure the BAs was discussed with the NSW Biodiversity Conservation Trust and the Office of Environment and Heritage. A suitable mechanism could not be agreed upon and the DCCEEW agreed that a s305 conservation mechanism may be appropriate. As noted in Section 1 above, a variation to extend the date to allow the HVO BAs to be secured under a s305 was submitted to the DCCEEW on 27 September 2018 and 18 October 2018. The date extension requires an approval variation which the DCCEEW intends to include in the Delegate's submission discussed in Condition 4 above.</p> <p>HVO has asked for DCCEEW's response to the requests for the extension only to be told that the submission of the request would be sufficient in the event of an audit.</p> <p>The most recent discussion on 7/11/2022 relates to the provision of the edited conservation agreement for HVO's review. These have been reviewed and will be provided to DCCEEW with the revised documents in February 2023. A full timeline of discussions between HVO and DCCEEW are detailed in Section 1.1 of this report.</p>
7	<p>To compensate for residual significant impacts to 2.6 ha of breeding habitat and 102.7 ha of foraging habitat for the Green and Golden Bell Frog the person taking the action must identify an offset package that meets requirements of the EPBC Act Offset Policy and secure a direct offset site in perpetuity under a legally binding agreement within 12 months from the date of approval of the Offset Strategy at Condition 10</p>	<p>Non-compliant</p>	<p>Direct offset sites at Crescent Head detailed in Biodiversity Offset Strategy (Condition 10) is to be protected under a legally binding agreement by 23 October 2018. A conservation mechanism to secure the BAs was discussed with the NSW Biodiversity Conservation Trust and the Office of Environment and Heritage. A suitable mechanism could not be agreed upon and the DCCEEW has agreed that a s305 conservation mechanism may be appropriate. As noted in Section 1 above, a variation to extend the date to allow the HVO BAs to be secured under a s305 was submitted to the DCCEEW on 27 September 2018 and 18 October 2018. The date extension requires an approval variation which the DCCEEW intends to include in the Delegate's submission discussed in Condition 4 above.</p> <p>HVO has asked for DCCEEW's response to the requests for the extension only to be told that the submission of the request would be sufficient in the event of an audit.</p> <p>The most recent discussion on 7/11/2022 relates to the provision of the edited conservation agreement for HVO's review. These have been reviewed and will be provided to DCCEEW with the revised documents</p>

			in February 2023. A full timeline of discussions between HVO and DCCEEW are detailed in Section 1.1 of this report.
8	Prior to securing the direct offsets required by Conditions 4, 5, 6 and 7 the direct offset sites and legally binding agreements must be agreed to by the Minister .	Compliant	Direct offset sites have been approved by the Assistant Secretary (DCCEEW) on 23 October 2017 through approval of the Biodiversity Offset Strategy – State Approved Mining (EPBC2016/7640) dated October 2017. The terms of legally binding agreements have also been agreed with DCCEEW.
9	The action cannot continue for more than 12 months from the date of approval of the Offset Strategy at Condition 10, unless the direct offset sites required by Conditions 5, 6 and 7 have been secured in perpetuity under a legally binding agreement by the person taking the action .	Non-compliant	Direct Offset Sites detailed in Biodiversity Offset Strategy (Condition 10) are to be protected under a legally binding agreement by 23 October 2018. The DCCEEW has agreed that a s305 conservation mechanism may be appropriate. To facilitate this, a change to the conditions of EPBC 2016/7640 is required and, hence, as noted in Section 1 above, a variation to extend the date required to secure the BAs was submitted on 27 September 2018 and 18 October 2018. No formal response to the request has been received as at the time of this report. HVO has asked for DCCEEW’s response to the requests for the extension only to be told that the submission of the request would be sufficient in the event of an audit. The most recent discussion on 7/11/2022 relates to the provision of the edited conservation agreement for HVO’s review. These have been reviewed and will be provided to DCCEEW with the revised documents in February 2023. A full timeline of discussions between HVO and DCCEEW are detailed in Section 1.1 of this report.
10	Within six (6) months from the commencement of the action the person taking the action must prepare and submit an Offset Strategy for the Minister’s approval. The Offset Strategy must specify the development of the offset package and how direct offset sites required by Conditions 5, 6 and 7 will be identified, secured and managed in perpetuity. The Offset Strategy must:	Compliant	Biodiversity Offset Strategy (BOS) – State Approved Mining (EPBC2016/7640) submitted to DCCEEW on 1 May 2017. Approved by the Assistant Secretary (DCCEEW) on 23 October 2017.
10a	Describe the development of the offset package and identify the proposed direct offset sites required by Conditions 5, 6 and 7, include a detailed description of the direct offset sites and demonstrate how the direct offset sites meet the EPBC Act Offset Policy and provide an adequate offset for the residual significant impacts to protected matters .	Compliant	Chapter 3, 4 and 5 of the BOS.
10b	Include proposed timeframes in which the direct offset sites will be secured by a legal binding agreement and a detailed description of how the legally binding agreement will secure the direct offset sites in perpetuity.	Compliant	Section 6 of the BOS. DCCEEW are preparing a submission for the Delegate to vary the conditions of approval and implement a s305 conservation mechanism to secure the sites in perpetuity.
10c	Proposed measures for the long term management of the direct offset sites .	Compliant	Section 6 of the BOS.

	The Offset Strategy approved by the Minister must be implemented	Compliant	Biodiversity Offset Strategy (BOS) – State Approved Mining (EPBC2016/7640) approved by the Assistant Secretary (DCCEEW) on 23 October 2017. Direct Offset sites detailed in the BOS have been purchased and the management activities outlined in the BOS are being implemented at the BAs.
11	For the protection of the CHVEF as well as habitat for the Regent Honeyeater, Swift Parrot and Green and Golden Bell Frog the person taking the action must prepare and submit a Biodiversity Offset Management Plan (BOMP) for the Minister's approval within 12 months from the date of this approval. At a minimum, the BOMP must:	Compliant	Biodiversity Offset Management Plans for the BAs were submitted to the DCCEEW for approval on the 10 October 2017. Reviews by the Department have requested additional edits to the BOMPs. Discussions regarding the security mechanism and the variation that was submitted to the DCCEEW on 27 September 2018 and 18 October 2018 requires an approval variation. The DCCEEW stated that the varied BOMPs, BOS, s305 conservation agreement and the variation are to be submitted to the Delegate as a package. DCCEEW are preparing a submission for the Delegate to vary the conditions of approval and implement a s305 conservation mechanism to secure the sites in perpetuity. The submission will accompany the revised documents that will be submitted in February 2023.
11a	Clearly identify the direct offset sites described in Conditions 4, 5, 6 and 7. This must include offset attributes, shapefiles , textual descriptions and maps to clearly define the location and boundaries of the direct offset sites .	Compliant	The Wandewoi, Mitchelhill and Hook BOMPs describe the direct offset site for CHVEF and Swift Parrot relevant to Condition 4 and 5 of the approval. The Mitchelhill and Condon View BOMPs describe the direct offset site for the Regent Honeyeater relevant to Condition 6 of the approval. The Crescent Head BOMP describes the direct offset site for Green and Golden Bell Frog relevant to Condition 7 of the approval.
11b	Provide a description of the offset attributes for each protected matter and how the offset site meets the offset requirements under Conditions 4, 5, 6 and 7.	Compliant	The Wandewoi, Mitchelhill and Hook BOMPs describe the offset attributes for CHVEF and Swift Parrot relevant to Condition 4 and 5 of the approval. The Mitchelhill and Condon View BOMPs describe the offset attributes for the Regent Honeyeater relevant to Condition 6 of the approval. The Crescent Head BOMP describes the offset attributes for Green and Golden Bell Frog relevant to Condition 7 of the approval.
11c	Provide a survey and description of the current condition (prior to any management activities) of the direct offset sites identified in Conditions 4, 5, 6 and 7.	Compliant	The Wandewoi, Mitchelhill, Hook, Condon View and the Crescent Head BOMPs describes the survey results and provides a description of the

			condition of each BA following the purchase of the properties relevant to Condition 4 and 5 of the approval.
11d	<p>Include detailed management actions, including regeneration and revegetation strategies to be undertaken at the direct offset sites to improve the ecological quality of these areas. The BOMP must also include:</p> <ul style="list-style-type: none"> i. Management actions relating to improving habitat quality for protected matters including but not limited to: weed management, feral animal management, erosion and sediment control and fire management. ii. A description and timeframes that management measures would be implemented to improve the condition of CHVEF and habitat for the Regent Honeyeater, Swift Parrot and the Green and Golden Bell Frogs on the direct offset sites. iii. Performance and completion criteria for evaluating the management of the direct offset sites, and criteria for triggering remedial action. iv. A program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria. v. A description of potential risks to the successful implementation of the plan, a description of the measures that will be implemented to mitigate against these risks and a description of the contingency measures that will be implemented if defined triggers arise. vi. Details of who would be responsible for monitoring, reviewing, and implementing the plan. 	Compliant	<p>Chapter 5 of each BOMP describes the detailed management actions, timing, performance criteria and completion criteria relevant to the direct offset site for the CHVEF, Regent Honeyeater, Swift Parrot and GGBF.</p> <p>Chapter 6 of each BOMP describes the monitoring program.</p> <p>Chapter 7 of each BOMP provides a description of potential risks and corrective actions.</p> <p>Chapter 2 of each BOMP provides responsibilities for the MP.</p>
12	The BOMP approved by the Minister must be implemented at the direct offset sites required to meet the requirements of Conditions 5, 6 and 7 within three (3) months from the date the offsets are secured under a legally binding agreement .	Not triggered	<p>Direct Offset Sites required to meet Conditions 5, 6 and 7 are to be protected under a legally binding agreement by 23 Oct 2018. The DCCEEW has agreed that a s305 conservation mechanism may be appropriate. A request for an extension to this date to allow the HVO BAs to be secured under a s305 was submitted to the DCCEEW on 27 September 2018 and 18 October 2018. DCCEEW are preparing a submission for the Delegate to vary the conditions of approval and implement a s305 conservation mechanism to secure the sites in perpetuity. The submission will accompany the revised documents that will be submitted in February 2023.</p> <p>Note that the direct offset sites are being managed in accordance with the DCCEEW -reviewed draft management plan.</p>
13	To ensure timely compensation for significant impacts to protected matters , the approved BOMP must be implemented at the Wandewoi Biodiversity Area within one (1) month from the date the BOMP is approved, regardless if the	Not triggered	Wandewoi BA Management Plan was originally submitted to DCCEEW for review and approval on the 10 October 2017 and has been updated and resubmitted following Departmental reviews. Management activities

	Wandewoi Biodiversity Area has been secured under a legally binding agreement .		outlined in the BOMP are being implemented including: fence and grazing activities management, track management, weed spraying and vertebrate pest control.
14	The person taking the action may choose to revise a management plan approved by the Minister without submitting it for approval under Section 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 matter under the conditions of this approval. If the person taking the action makes this choice, they must:	Compliant	In 2020, minor edits were made including changes to Section 4.2.2 of the VCP to clarify operational controls related to management of root rot fungus. Other minor changes were made to specify that the protocols in the VCP were restricted to the approved EPBC areas and to remove a duplicate photo and correct figure referencing in the text. In accordance with Condition 14 of the EPBC approval, HVO determined that these minor changes would not be likely to have a new or increased impact on a protected matter, therefore, the revised VCP was not required to be submitted to DCCEEW for approval. More details are outlined in Section 8.
14a	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;	Compliant	Notification and the revised VCP was provided to the Department on 6 January 2022.
14b	Implement the revised management plan from the date that it is submitted to the Department; and	Compliant	The revised management plan is being implemented.
14c	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.	Compliant	Justification for the decision that 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 has been documented and outlined in the VCP notification letter to the DCCEEW dated 6 January 2023.
15	The person taking the action may revoke its choice under Condition 14 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	
16	Condition 14 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	
17	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	Not triggered	

	management plan would be likely to have a new or increased impact on a protected matter by the conditions of this approval, then:		
17a	Condition 14 does not apply, or ceases to apply, in relation to the revised management plan; and	Not triggered	
17b	The person taking the action must implement the previous management plan most recently approved by the Minister	Not triggered	
	To avoid any doubt, this condition does not affect any operation of conditions 14, 15 and 16 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 14 does not apply for one or more specified plans required under the approval	Not triggered	
18	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 has commenced as per the notified Commencement of Action (1 November 2016).
19	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	Department of Environment and Energy advised by letter dated 9 November 2016 that the action had commenced in accordance with the approved Vegetation Clearance Plan on the 1 November 2016.
20	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 by the Minister or being submitted under Condition 14.a	Not triggered	The HVO Biodiversity Areas Management Plan will be published when approved by the Minister.
21	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 VCP, 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	All disturbance-related activities received prior approval through HVO's GDP process. Records of activities and outcomes are maintained by site personnel and stored within the document management system. Activities have been undertaken in accordance with the applicable conditions of approval and HVO's approved policies, plans and strategies.
22	Within three months of every 12 month anniversary of 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-	Compliant	HVO has published on its website compliance reports for the previous compliance reporting years. This compliance report outlines HVO's compliance with the approval conditions for 2022 (1 January 2022 – 31 December 2022).

compliance with any of the conditions of this approval must be provided to the **Department** at the same time as the compliance report is published. Reports must remain on the website for the period this approval has effect. The approval holder may cease preparing and publishing compliance reports required by this condition with written agreement of the **Minister** to do so.

Note that the reporting year was transitioned to the calendar year during the 2020 reporting year. The report submitted 31 January 2021 represented 14 months of activity to account for the additional months following the November commencement of the action.

23	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
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2.2 Vegetation Clearance Plan

Commitment	Compliance status	Evidence/Comments
1. A GDP will be completed and approved prior to any clearance in the extension areas.	Compliant	The GDP process is a mandatory process at HVO prior to any surface disturbance activities. All clearance activities that have occurred within the extension areas have gained prior conditional approval through HVO's GDP process.
2. Conduct pre-clearance surveys for CHVEF in accordance with Section 3.1.1	Compliant	Pre-clearance surveys have been undertaken prior to all clearance activities within the extension area.
3. Identify clearance limits on plans and on the ground.	Compliant	Prior to clearing, HVO surveyors peg and delineate the limit of the area to be cleared.
4. Conduct pre-clearance surveys for listed species in accordance with Section 3.3, 3.4 and 3.5.	Compliant	The pre-clearance surveys include targeted surveys for the listed species outlined (GGBF, Regent Honeyeater and Swift Parrot).
5. Manage listed species during vegetation clearance in accordance with Section 3.3.4, 3.4.4 and 3.5.4.	Compliant	None of the listed species have been identified as occurring within the area during the pre-clearance surveys or clearance activities.
6. All clearing machinery involved in vegetation and/or topsoil clearance in the extension areas will visit the wash-down facility for cleaning prior to entering the EPBC areas.	Compliant	The Vegetation Clearance Plan requires machinery brought onto site from outside HVO to clear within the EPBC area to be washed of soil and mud prior to entering the West Pit extension area relevant to the EPBC 2016/7640 approval. This cleaning is to be documented as part of the GDP process.
7. Disinfection measures are implemented in accordance with Section 4.	Compliant	All equipment is washed to remove vegetation and loose soil prior, and following, the pre-clearance surveys. This process is outlined in the pre-clearance survey reports.
8. Records will be kept in accordance with Section 5.2.	Compliant	Actions occurring during the pre-clearance surveys have been documented in each pre-clearance survey report. HVO's GDP process is used to document washdown requirements for earthmoving equipment.
9. Publish the annual compliance report on the proponent's website.	Compliant	This compliance report will be placed on the HVO public website prior to submission.

3 New Environmental Risks and Potential threats to Matters of National and State Environmental Significance

No additional environmental risks or threats to matters of national environmental significance have been identified during the reporting period.

4 Summary of Climatic Conditions

Table 4.1 shows the monthly rainfall compared to the long term average for the BAs. The rainfall received during 2022 exceeded the annual average and contributed to the access difficulties experienced at all the BAs.

Table 4.1. Rainfall received during 2022 against the average annual rainfall occurring at each of the BAs.

Site	Weather station	Annual Rainfall Received (mm)	Annual Average (mm)	Surplus/Deficit (mm)
Condon View	Putty Tea Rooms # 61209	1321.8	730.9	+590.9
Crescent Head	Crescent Head # 59047	2285.5*	1420.9	+864.6
Hook	Elderslie # 61092	1181.0	702.2	+478.8
Mitchelhill	Muswellbrook (Lindisfarne) # 61168	964.2*	609.5	+354.7
Wandewoi	Jerrys Plains #61130	935.0*	656.2	+278.8

* average monthly rainfall used when data missing.

5 Management and Monitoring Schedule

Established offset sites at Wandewoi, Mitchelhill, Hook, Condon View and Crescent Head Biodiversity Areas (BAs) offset the impacts on *Lathamus discolor* (Swift Parrot), *Anthochaera phrygia* (Regent Honeyeater), *Litoria aurea* (Green and Golden Bell Frog) (GGBF) and Central Hunter Valley Eucalypt Forest and Woodland (CHVEFW). The Crescent Head offset area is the only site established to offset impacts to GGBF; the monitoring requirements for this BA are discussed separately in this report.

The objectives for each offset are outlined in Table 5.1.

Table 5.1. Offset objectives for each BA.

Offset area	CHVEFW	Swift Parrot	Regent Honeyeater	Green and Golden Bell Frog
Wandewoi BA	Y	Y		
Mitchelhill BA	Y	Y	Y	
Hook BA	Y	Y		
Condon View BA			Y	
Crescent Head BA				Y

The Biodiversity Management Plan for each site identifies the key conservation outcomes of the long-term management and protection of the offset areas. These outcomes are outlined in Table 5.2.

Table 5.2. Desired conservation outcomes for the HVO offset areas as outlined by the proposed HVO Management Plan (HVO 2021).

Conservation outcome	Wandewoi BA	Mitchelhill BA	Hook BA	Condon View BA
Protection of the BA under a legally binding conservation covenant	X	X	X	X
Protect and improve the ecological quality of CHVEFW at Wandewoi, Mitchelhill and Hook BAs	X	X	X	
Improve the CHVEFW derived grassland areas so they attain the key characteristics of CHVEFW	X	X	X	
Increased condition and extent of suitable habitats for the Regent Honeyeater and Swift Parrot within protected reserves at Wandewoi, Mitchelhill, Hook and Condon View BAs	X	X	X	X
Enhanced landscape connectivity with the surrounding landscape	X	X	X	X
Improved fauna movement and flora dispersal opportunities with the surrounding landscape	X	X	X	X
Enhanced network of protected vegetation within the Hunter Valley	X	X	X	X

The management plan lists the conservation values, key performance indicators, and completion criteria identified for the offset areas. Key performance indicators and completion criteria for foraging habitat and habitat connectivity and condition are being realised through this monitoring program and management response.

The landscape monitoring requires an interpretation of aerial photo images of the BAs over time and is not considered in this compliance report. This report provides a summary of investigations and activities undertaken to address both the ecological and management requirements of HVO's BAs.

Offset monitoring has been ongoing according to the schedule in Table 5.3 since the EPBC approval in 2016 and the subsequent consultation and acceptance of the draft Biodiversity Areas Management Plan with the DCCEE.

During the 2022 reporting year, favourable environmental conditions enabled monitoring events in addition to the schedule in Table 5.3 to be undertaken. The additional opportunistic monitoring is reported in this annual compliance report.

Table 5.3. Monitoring schedule proposed in Biodiversity Areas Management Plan and implemented in all BAs.

Monitoring method	2018	2019	2020	2021	2022	2023	2024-2028
Landscape							
Aerial photo interpretation	X						X
Ecological							
Condition Assessment	Spring	Spring		Spring		Spring	If required
Bird Assemblage	Winter	Winter		Winter		Winter	If required
GGBF – monitoring	Sept – March			Sept - March			Every 4th year
GGBF – habitat assessment	Spring	Spring		Spring		Spring	Biennial
Management							
Rapid Condition Assessment		Spring	Spring	Spring	Spring	Spring	If required
Property Inspection	Biannual						
Mosquito Fish	Biannual			Annual			If required

6 Management Activities - 2022

Various conservation, monitoring, management and maintenance activities were undertaken within the BAs throughout the reporting period between 1 January 2022 and 31 December 2022. An overview of the various activities that occurred is presented in Table 6.1.

With the La Nina weather system experienced across eastern Australia in 2022, access to many sites were restricted and the ability to utilise machinery within the offsets was severely restricted in many areas without getting bogged. For this reason, the management activities that could be undertaken during the 2022 reporting period was less than that undertaken in previous years due to access issues.

Table 6.1. Overview of activities undertaken within the HVO EPBC 2016/7640 BAs during the reporting period.

Site	Activities undertaken during the reporting period
Condon View	Property inspections, weed control, vertebrate pest management, rapid condition assessment.
Crescent Head	Slashing of boundary firebreaks and internal access tracks, track management, weed control, pig trapping, frog monitoring, property inspections and bushfire assessment. Closure of Tropical Soda Apple Biosecurity Undertaking with Kempsey Council.
Hook	Rapid condition assessment, property inspections, African Olive mapping, control and mulching, other species weed management, vertebrate pest management, slashing of boundary firebreaks and internal access tracks and bushfire assessment.
Mitchelhill	Property inspections, weed management, rapid condition assessment, vertebrate pest management, slashing of boundary firebreaks and internal access tracks and bushfire assessment. Activities specific to the western BA: Repair access right of way, monitoring tree plantings.
Wandewoi	Slashing of boundary firebreaks and internal access tracks, flood damage boundary fence repair, track management, property inspections, rapid condition assessment, weed control, vertebrate pest management and bushfire assessment.

6.1 Residual Compensatory Measures

On the 25th November 2019, the then Department of the Environment and Energy (now Department of Climate Change, Energy, the Environment and Water) approved HVO's estimates that the residual offset liability identified in the approved Offset Strategy was \$24,510. It was also agreed that the proposed projects would be appropriate activities on which to spend the required money.

In 2020, HVO entered an agreement with the Biodiversity & Conservation Division of the NSW Department of Planning, Infrastructure and Environment to contribute these funds towards a fine-scale wetland mapping project around the Crescent Head area, and a GGBF habitat mapping within the identified study area. The wetland mapping occurred in 2020 and was provided with the 2020 compliance report.

The habitat mapping occurred during 2021 which concluded HVO's commitment for the residual offset liability.

6.2 Property Inspections and Activities

Property inspections were undertaken regularly across all the BAs during the reporting period and provided critical advice regarding works that needed to be prioritised. A summary of the condition of each BA based on the property inspection reports is as follows:

Condon View

As per previous years, Condon View has few serious management issues and does not have issues with illegal access. Despite being logged at some point many years ago, the site is well vegetated, has minimal weeds that are primarily located around an old dam, and recruitment of various native species has been observed. During 2022, weed control and vertebrate pest management activities were the main activities that occurred within the BA.

With the extensive rainfall received, the access track that crosses the main gully that traverses the BA eroded preventing vehicle access to the rear of the property. The location of the washout is at the end of a steep section of track that crosses a neighbouring allotment. The terrain, and risk of bogging in the remote area, prohibited truck access for many months following identification of the issue. Alternative routes for an access track located entirely within the BA was investigated without success. Difficulties contacting the adjoining neighbour also occurred.

The track will be repaired early in 2023 now that the ground has dried and the risk of bogging the vehicle is reduced. An alternative route that allows access to the rear of the property will again be investigated.

Monitoring within the BA has identified various native fauna species as utilising the offset. This BA has the benefit of being located close to the Wollommi National Park in an area that is well vegetated and did not burn in the bushfires of 2020. The pest management activities will continue in 2023.



Figure 6.1. Erosion gully preventing access to the rear of the Condon View BA.

Crescent Head

The Crescent Head BAs are well vegetated and the rainfall experienced during 2022 resulted in all dams at capacity. The tracks were managed to facilitate safe access. No new damage to vegetation was recorded. No new trespass events were noted during 2022.

As per previous years, no dog baiting occurred at the Crescent Head offsets due to discussions with the Ranger of the adjacent National Parks indicating that a pure population of dingos exist in the Park that assist to manage the pig population. Should evidence of the dingos potentially impacting the GGBF become available, a dog baiting programme will be implemented within the Crescent Head BAs.

Crescent Head North is in good condition but does have some weed issues, particularly at the exposed edges of vegetation where light is greater than beneath the established plants. As it is liable to flooding events, weed incursion and feral aquatic pests have been recorded within low lying areas and aquatic habitats. The weeds are being managed and during 2022, the main weed targeted in the northern BA is Lantana (*Lantana camara*) with Mickey mouse plant (*Ochna serrulata*) being a priority species to manage in 2023.

Management issues experienced during 2022 included access problems due to flooding and boggy ground restricting vehicle movement across areas of the BA (Figure 6.2), ongoing weed management and maintenance of regrowth vegetation on the tracks.

The Biosecurity Undertaking with the Kempsey Shire Council to ensure the removal of the Tropical Soda Apple was completed in April 2022 following the formal inspection by Kempsey Shire Council Weeds Officer. This completed a three year management programme specific to the eradication of the Tropical Soda Apple from the Crescent Head North BA to prevent the declared weed from establishing. As the movement of these seeds is assisted by flooding, future property inspections undertaken at the Crescent Head BA will examine whether any new infestations have established within the BA as a result of the extensive flooding events experienced.

The few existing internal fencelines will be retained to contain any potential stray cattle from adjacent properties. A small number of stacked roofing tiles can be found near Pond 1 at Crescent Head North. Being inert, these are being retained in situ as additional habitat for frogs, such as the GGBF.

During the inspections, the constructed frog ponds and associated water tanks were reported to be in good condition. Several Green and Golden Bell Frogs were photographed within the constructed pond and around the grass beneath the pond (Figure 6.4). No fish or tadpoles were noted within the constructed pond. A potted sedge was placed in the pond to provide habitat for tadpoles within the pond and attract tadpole food resources. It is intended to increase this habitat within the ponds during 2023. Various native fauna were sighted during the inspections and included red brow finches, kangaroos, mallard ducks, willy wag tails, lace monitors, eagle, pheasant coucal and red bellied black snakes.



Figure 6.2. Flooding through the fenceline at Crescent Head North BA.

Crescent Head South is also in good condition but requires grass biomass management in areas to reduce the risk of bushfire. The dominant management issue in the reporting period was vegetation management, specifically along access tracks and boundaries, maintaining habitat connectivity, and bushfire management.

Vegetation management was undertaken to allow movement corridors between the constructed frog pond and Pond D. With the above average rainfall experienced over the last few years, the areas that allowed the ready movement of frogs within the area between Pond D and the constructed pond was developing from a low grassy *Banksia* heathland into a closed forest system with the establishment of *Eucalyptus* and other trees becoming more prolific. In accordance with the draft management plan for the BA, and in line with the *Best Practice Guidelines for Green and Golden Bell Frog Habitat*, the trees were mulched within a restricted area to prevent shadowing of the constructed pond and encourage grassy tussock growth between the two sites.

In addition, the area immediately south of the old tea tree plantation was identified as an extreme fire risk due to the height of the grassy vegetation. As this area is difficult to manage without mulching or spraying a large area (neither being preferred options within frog habitat), an east-west firebreak was installed along the southern boundary of the plantation immediately north of the grassy area to allow for fire management should it be required. This break allows access to a small dam that was previously inaccessible.

No tadpoles were observed within the artificial frog ponds at the Crescent Head South BA. As occurred at the northern BA, a potted sedge was placed in the pond to provide habitat for tadpoles within the pond and attract tadpole food resources. It is intended to increase this habitat within the ponds during 2023. While no GGBF have been sighted within this BA, native fauna sighted during the inspections included various frog species, kangaroos, wallabies, quails and evidence of bandicoots.

Some minor pig activity has been observed within both BAs at Crescent Head during 2022 and a pig trapping programme was undertaken. No pigs were caught or observed on the cameras despite the free-feed period, potentially indicating that the pigs were transient and not resident within the BA.

The observations from both BAs indicate that the constructed frog ponds are performing as intended. The bird netting over top of the constructed pond is changed annually to reduce the potential for GGBF using the pond to be subject to predation from birds. Breeding habitat for frogs has been provided and, to date, the mosquito fish has been unable to colonise the elevated habitat. Should mosquito fish be observed in the ponds during future monitoring events, the ponds will be drained through a sieve, flushed with fresh water from the adjoining water tanks to remove any fish and fingerlings, with any tadpoles caught in the sieve being returned to the cleaned pond.

The ponds will continue to be managed in accordance with the *Best Practice Guidelines Green and Golden Bell Frog Habitat* (2008) Department of Environment and Climate Change NSW.



Figure 6.3. Pond D at capacity within Crescent Head South BA.



Figure 6.4. Compilation of GGBFs observed in the constructed pond at in the Crescent Head North BA, April 2022.

Hook

The primary management issues within the Hook property is the removal of African Olive (*Olea europaea subspecies cuspidate*) and, to a lesser degree, Lantana, to enable the recruitment of native species consistent with the Central Hunter Valley Eucalypt Forest and Woodland ecological community. With the exception of the African olive and Lantana, exotic weeds are primarily concentrated within the grassland areas. A diverse suite of native species is recruiting across all areas of the site but active management of the exotic grasslands are required and planned for 2023.

As with the other BAs, due to the boggy conditions resulting from the extensive rainfall, vehicle access to sections of the BA was restricted which inhibited, or delayed, many management actions that were planned to be undertaken for much of the year.

During the reporting period, no damage to vegetation or illegal trespass was recorded. Tracks were slashed and extensive weed control and vertebrate pest management occurred.

In February 2022, the entire Hook property was surveyed to record the locations of all African olive individuals in accordance with the Hook BA Intensive Weed Management Plan. Weed management services were undertaken by hand in April primarily targeted the African olive regrowth and lantana occurring within the areas that were mulched last year. This is discussed further in Section 6.4.

Where the olive vegetation is more dense, the cut and paint method is ineffective due to difficulty accessing the stems, the cut olives not being able to fall away due to the proximity of adjacent vegetation, and the density of the dead vegetation creating a fire hazard. As such, a 24 tonne excavator with a mulching head attachment is used with the stumps being sprayed immediately following the mulching. This has proved to be extremely effective and African olive was able to be removed from larger areas in a shorter amount of time. The mulched biomass enabled light to reach the ground in these areas, which, with the increased rainfall experienced, has proven beneficial for native species regrowth. Due to the boggy conditions, the excavator was not engaged within the offset during 2022 due to the increased risk of disturbing large areas of the ground unnecessarily. The conditions dried up later in the year and mulching of the olives will occur in January 2023.

In the HVO EPBC variation proposal that was submitted to the Delegate, HVO has made a commitment to reduce the extent of African olives on the Hook BA by 30% annually. The effectiveness of the mulching programme to enable HVO to meet the 30% reduction in African olive commitment was encouraging. This commitment is discussed further in Section 6.4.

Until a decision has been made by the Delegate regarding the proposed EPBC variation, the Hook property will continue to be managed and monitored according to the HVO Biodiversity Areas Management Plan, which includes the activities committed to under the Hook BA Intensive Weed Management Plan.

Mitchelhill

The Mitchelhill West BA is in good condition. During the reporting period, no damage to vegetation or illegal trespass were recorded. The tracks are in fair condition but, as with the other BAs, the wet weather restricted vehicle access to certain areas of the BA which restricted management activities that could be undertaken in these areas.

Despite this, weed management did occur with the major weeds targeted being African boxthorn (*Lycium ferocissimum*), Fleabane (*Erigeron bonariensis*) and Galenia (*Galenia pubescens*) along with Purpletop (*verbena bonariensis*) and Spiny rush (*Juncus acutus*) around the dams.

The planted riplines were slashed between the rows where natural regrowth has not occurred. Due to the extensive rainfall experienced in 2021 and the summer of 2022, the rows had extensive growth of weeds such as Fleabane and Purpletop. These weeds were removed with a brushcutter in February 2022, the majority of the tree guards collected and survival counts undertaken.

Natural recruitment was noted across the BA and, while the planted tubestock in the riplines have established well, supplementary plantings will be required for the larger area at Mitchelhill West. This will be planned in 2023 and implemented in 2024.

The right of way at the rear of Mitchelhill West BA provides access to the western portion of the Mitchelhill West BA, is required by consultants and contractors operating within the offset and provides a safe egress from the BA in the event of fire or other emergency. With the extensive La Nina rainfall experienced during 2022, this right of way was severely eroded and in need of repair. HVO contributed \$33,500 to the repair and topdressing of the track.

The Mitchelhill East BA is primarily steep country which is why it is predominately vegetated with few cleared areas. The weeds present on the BA are typical of those within agricultural environments and, while these can be found in scattered dense infestations, the majority are located within the lines ripped to facilitate the planted tubestock. Natural regeneration is occurring within the BA extending into the cleared grassland areas. Management of this regrowth and weed competition within the ripped lines will continue throughout 2023.

The identified Aboriginal cultural heritage PAD area fencing is intact and remains in good condition.

Wandewoi

The management of weed growth is the main issue at the Wandewoi BA although the majority of the weed proliferation was in the cleared, previous agricultural areas and gullies. The major weeds targeted were Green cestrum (*Cestrum parqui*), African boxthorn, Galenia, Prickly pear (*Opuntia spp*), Indian mustard (*Brassica x juncea*), Farmers Friend (*Bidens pilosa*) and various thistles. Slashing of the tracks and open areas assisted in managing weed establishment where possible with careful planning to avoid areas of native regrowth.

As the BA overlooks the township of Jerrys Plains, weed growth was particularly prominent within the BA from public areas. Community complaints were received regarding the extent of weed establishment within areas of the BA – noticeable by the colour change in the landscape. HVO instigated weed management activities within the Wandewoi BA to reduce the weed growth and weed seed development. This included

slashing of open areas and encouraging cattle to graze the steep gullies and rocky areas where slashing was not possible or weed spraying not feasible.

HVO allowed cattle to graze the offset area knowing that the ridgelines did not offer watering points and thus the cattle would be more likely to stay lower in the landscape where the weeds were more prominent.

Within the Wandewoi BA, grazing exceeded the four week period specified in the Management Plan during 2019/2020 and 2021/2022 due to the abundance of biomass. Given the Wandewoi offset is in excess of 400ha, grazing by a small herd of cattle during the La Nina weather pattern did little to reduce the biomass extent.

For the 2019/2020 grazing activities, the results of the biomass assessments were reported in the HVO 2019 EPBC 2016-7640 Annual Compliance Report (submitted 2020).

For the 2021/2022 grazing activities, the biomass assessments of the Wandewoi BA determined that, at 4,335 kg/ha, the average herbage mass across the site was higher than the trigger point (2,500 kg/ha) for the removal of grazing livestock. At no sample site did the average total herbage mass fall below the critical trigger for grazing.

The assessment determined that, while ground cover levels varied across the BA, the majority of the area maintained a ground cover level above 90%. This is also well above the 70% ground cover trigger point which is based on greater potential for erosion risk.

The option to utilise grazing within specific areas to reduce vegetative biomass will be retained within the management plans, and, with agreement, a greater emphasis will be placed on biomass triggers for the removal of grazing activities.

With the increased rainfall experienced across the region, the Hunter River broke its banks and flooded lower portions of the BA. As a result, flood debris was removed and fence repairs were undertaken to the Wandewoi boundary fence. The area flooded was the lowland previous grazing area that the variation has proposed to excise from the BA and be replaced by the established vegetation within the Hook property.

Cultural heritage barriers are being maintained and vertebrate pests (pigs and wild dogs) are routinely managed during trapping and baiting programmes. Widespread recruitment of native species has been observed within the woodland along the ridgeline.

6.3 Vertebrate Pest Management

Vertebrate pest management has been undertaken within all of HVOs EPBC biodiversity areas in conjunction with the Local Land Services (LLS), NSW National Parks and Wildlife Services (NPWS) and surrounding landholders. During 2022, HVO participated in a 1080 baiting programme that targeted dogs and foxes, and pig trapping and baiting across the HVO lands and biodiversity offset areas.

The wild dog baiting programme occurred across the Mitchelhill (East and West), Hook, Wandewoi and Condon View BAs. While no dog baiting programmes occurred at the Crescent Head BA, a pig trapping programme was undertaken during 2022 based on evidence of a small number of pigs traversing the property. The property inspection reports at Crescent Head have not indicated a need to undertake wild dog and fox control to manage predation on the GGBF. Discussions around regional dog baiting programmes have occurred with the Kempsey NPWS due to the Crescent Head BAs adjoining the Limeburners Creek and Hat Head National Parks. To date, NPWS officers have indicated a reluctance to bait for dingos due to a 'pure' population of dingos occurring within Limeburners Creek National Park (pers comm.) and their ability to control pig populations and ensure that the pigs are transient across the area.

1080 Baiting Programme

Wild dog baiting programmes within the BAs occurred during May and October 2022. Ten-eighty (1080) bait stations are selected based on previous baiting station locations, motion camera results from previous programs and sightings of wild dogs and foxes, biodiversity concerns and the location of tracks and trails within the offsets. Stations were either established as Ejector Bait Sites or baited with fresh meat containing sodium fluoroacetate (1080) at a concentration that targeted wild dogs and foxes.

The ground baiting method used aligns with the *Humane pest animal control: Code of Practice and Standard Operating Procedures* produced by NSW Department of Primary Industry (DPI) and amended in September 2019.

The location of the baits within each BA for both the autumn/winter and the spring 2022 programmes are shown in figures 6.4 to 6.13.

The spring 2022 vertebrate pest management programme represented the tenth baiting programme undertaken at the Mitchelhill, Hook and Wandewoi BAs, and the twelfth undertaken at the Condon View BA. Some of the fauna recorded on the motion sensor cameras during the baiting programmes are shown in Section 9.

A summary of the baiting programmes undertaken at the BAs is outlined in Table 6.2. The final column entitled 'Baiting efficiency excluding other' removes the non-target species from the calculation and gives a more accurate representation of the efficiency for the target species.

The results at all sites indicate a clear dominance of dogs taking the baits as opposed to foxes or other non-target species. Based on tracks and photographic evidence, the main non-target species consuming the baits appears to be the lace monitor (*Varanus varius*).

This outcome is welcomed as although research shows that Australian native fauna are naturally resistant to 1080, and concentrations in the meat bait need to be substantially higher to adversely affect the animals, any native species take is an undesirable outcome for baiting results.

A comparison of the baiting results across all sites between 2018 and 2022 indicates that the baiting programme does not ensure a linear decline in vertebrate pests the following year despite efforts and expenditure. This emphasises the importance of a centralised coordination (LLS in this case) to ensure adjacent landholders participate in the scheme to minimise other properties becoming a source from where recolonisation can occur. The vertebrate pest management programme will continue during 2023.

Table 6.2. Comparison of Results of all 1080 Vertebrate Pest Management Programmes for HVO Biodiversity Areas (except Crescent Head).

Baiting Program	No. of Baiting Sites	Baiting opportunities	Baits taken by Dogs	Dog (%)	Baits taken by Foxes	Fox (%)	Baits taken by other (non-target) species	Other (%)	Total No. of Baits Taken	No. Sites where baits taken at least once	Represented as Percentage (%)	No. sites with baits taken on all occasions	No. sites with no baits taken	No. baits Disturbed Not Taken	No. baits taken alternatively by Dog or Fox	Baiting Efficiency %	Baiting efficiency (excl 'other')
Jun 18 LBEL	11	22	7	88%	1	13%	0	0%	8	8	73%	0	3	1	0	36%	36%
Sep 18 LBEL	11	22	7	100%	0	0%	0	0%	7	5	45%	2	6	3	0	32%	32%
May 19 LBEL	11	21	2	67%	1	33%	0	0%	3	3	27%	0	8	0	0	14%	14%
Oct 19 LBEL	11	22	13	65%	5	25%	2	0%	20	9	82%	7	2	0	5	91%	82%
May 20 LBEL	11	22	9	100%	0	0%	0	0%	9	8	73%	1	3	1	0	41%	41%
Oct 20 LBEL	11	22	8	47%	6	35%	3	18%	17	10	91%	8	1	2	2	77%	64%
May 21 LBEL	11	22	9	90%	1	10%	0	0%	10	6	55%	3	5	1	0	45%	45%
Oct 21 LBEL	13	26	11	79%	3	21%	0	0%	14	10	77%	4	3	0	2	54%	54%
May 22 LBEL	13	26	3	100%	0	0%	0	0%	3	2	15%	1	11	0	0	12%	12%
Oct 22 LBEL	11	22	8	100%	0	0%	0	0%	8	6	55%	2	5	1	0	36%	36%

Baiting Program	No. of Baiting Sites	Baiting opportunities	Baits taken by Dogs	Dog (%)	Baits taken by Foxes	Fox (%)	Baits taken by other (non-target) species	Other (%)	Total No. of Baits Taken	No. Sites where baits taken at least once	Represented as Percentage (%)	No. sites with baits taken on all occasions	No. sites with no baits taken	No. baits Disturbed Not Taken	No. baits taken alternatively by Dog or Fox	Baiting Efficiency %	Baiting efficiency (excl 'other')
Jun 18 MITE	6	12	2	50%	2	50%	0	0%	4	4	67%	0	2	0	0	33%	33%
Sep 18 MITE	6	11	1	50%	1	50%	0	0%	2	1	17%	1	5	1	1	18%	18%
May 19 MITE	6	12	2	100%	0	0%	0	0%	2	2	33%	0	4	0	0	17%	17%
Oct 19 MITE	6	12	0	0%	2	100%	0	0%	2	2	33%	0	4	5	0	17%	17%
May 20 MITE	6	12	2	100%	0	0%	0	0%	2	2	33%	0	4	2	0	17%	17%
May 20 MITE	6	12	0	0%	1	100%	0	0%	1	1	17%	0	5	0	0	8%	8%
May 21 MITE	7	14	5	100%	0	0%	0	0%	5	4	57%	1	3	2	0	36%	36%
Oct 21 MITE	5	10	5	63%	1	13%	2	25%	8	5	100%	3	0	0	0	80%	60%
May 22 MITE	6	12	3	75%	1	25%	0	0%	4	3	50%	1	2	2	0	33%	33%
Oct 22 MITE	6	12	3	60%	2	40%	0	0%	5	4	67%	1	2	0	0	42%	42%

Baiting Program	No. of Baiting Sites	Baiting opportunities	Baits taken by Dogs	Dog (%)	Baits taken by Foxes	Fox (%)	Baits taken by other (non-target) species	Other (%)	Total No. of Baits Taken	No. Sites where baits taken at least once	Represented as Percentage (%)	No. sites with baits taken on all occasions	No. sites with no baits taken	No. baits Disturbed Not Taken	No. baits taken alternatively by Dog or Fox	Baiting Efficiency %	Baiting efficiency (excl 'other')
Jun 18 MITW	11	22	7	78%	2	22%	0	0%	9	6	55%	3	5	0	0	41%	41%
Sep 18 MITW	11	22	9	64%	1	7%	4	29%	14	9	82%	5	2	0	1	64%	45%
May 19 MITW	11	22	8	67%	4	33%	0	0%	12	9	82%	3	2	3	1	55%	55%
Oct 19 MITW	11	22	15	75%	4	20%	1	5%	20	11	100%	9	0	1	2	91%	86%
May 20 MIT W	10	20	7	70%	3	30%	0	0%	10	8	80%	2	2	2	2	50%	50%
Oct 20 MIT W	11	22	11	55%	7	35%	2	10%	20	10	91%	10	1	0	5	91%	82%
May 21 MIT W	15	27	17	100%	0	0%	0	0%	17	13	87%	4	2	6	0	63%	63%
Oct 21 MIT W	11	22	10	50%	4	20%	6	30%	20	11	100%	9	0	0	3	91%	64%
May 22 MIT W	12	24	11	79%	3	21%	0	0%	14	9	75%	5	3	0	2	58%	58%
Oct 22 MIT W	11	22	8	62%	5	38%	0	0%	13	9	82%	4	2	1	3	59%	59%

Baiting Program	No. of Baiting Sites	Baiting opportunities	Baits taken by Dogs	Dog (%)	Baits taken by Foxes	Fox (%)	Baits taken by other (non-target) species	Other (%)	Total No. of Baits Taken	No. Sites where baits taken at least once	Represented as Percentage (%)	No. sites with baits taken on all occasions	No. sites with no baits taken	No. baits Disturbed Not Taken	No. baits taken alternatively by Dog or Fox	Baiting Efficiency %	Baiting efficiency (excl 'other')
May 17 CON	11	22	11	100%	0	0%	0	0%	11	8	73%	3	3	1	0	50%	50%
Sep 17 CON	11	22	10	56%	1	5%	7	39%	18	11	100%	7	0	0	0	81%	50%
Jun 18 CON	11	22	8	89%	1	11%	0	0%	9	8	73%	1	3	0	0	41%	41%
Sep 18 CON	11	21	9	56%	1	6%	6	38%	16	8	73%	8	3	0	1	76%	48%
May 19 CON	11	21	5	71%	2	29%	0	0%	7	4	36%	3	7	1	2	33%	33%
Oct 19 CON	12	24	13	65%	5	25%	2	10%	20	10	83%	10	2	1	4	83%	75%
May 20 CON	15	27	9	56%	7	44%	0	0%	16	11	73%	6	4	0	5	59%	59%
Oct 20 CON	15	30	12	50%	2	8%	10	42%	24	14	93%	10	1	0	1	80%	47%
May 21 CON	17	34	13	100%	0	0%	0	0%	13	10	59%	3	7	1	0	38%	38%
Oct 21 CON	18	30	13	45%	9	31%	7	24%	29	18	100%	9	0	1	4	97%	73%
May 22 CON	15	30	6	45%	1	31%	0	24%	7	6	40%	1	9	0	0	23%	23%
Oct 22 CON	13	26	12	86%	1	7%	1	7%	14	9	69%	5	4	3	1	54%	50%

Baiting Program	No. of Baiting Sites	Baiting opportunities	Baits taken by Dogs	Dog (%)	Baits taken by Foxes	Fox (%)	Baits taken by other (non-target) species	Other (%)	Total No. of Baits Taken	No. Sites where baits taken at least once	Represented as Percentage (%)	No. sites with baits taken on all occasions	No. sites with no baits taken	No. baits Disturbed Not Taken	No. baits taken alternatively by Dog or Fox	Baiting Efficiency %	Baiting efficiency (excl 'other')
Jun 18 WAN	6	12	7	88%	1	12%	0	0%	8	6	67%	1	2	2	1	67%	67%
Sep 18 WAN	6	12	9	100%	0	0%	0	0%	9	6	100%	3	0	0	0	75%	75%
May 19 WAN	6	12	5	83%	1	17%	0	0%	6	4	67%	2	2	0	1	50%	50%
Oct 19 WAN	6	12	7	88%	0	0%	1	13%	8	5	83%	3	1	2	0	67%	67%
May 20 WAN	6	12	5	71%	2	29%	0	0%	7	4	67%	3	2	1	0	58%	58%
Oct 20 WAN	6	12	6	86%	1	14%	0	0%	7	5	83%	5	1	0	1	58%	58%
May 21 WAN	6	12	8	73%	2	18%	1	9%	11	6	100%	4	0	0	0	92%	83%
Oct 21 WAN	6	12	3	33%	2	22%	4	44%	9	6	100%	3	0	0	1	75%	42%
May 22 WAN	6	12	5	63%	2	25%	0	0%	8	5	83%	2	1	0	2	67%	67%
Oct 22 WAN	6	12	4	57%	0	0%	3	43%	7	5	83%	2	1	0	0	58%	33%

Note
 MITE = Mitchelhill East BA WAN = Wandewoi BA LBEL = Lower Belford (Hook)
 MITW = Mitchelhill West BA CON = Condon View BA

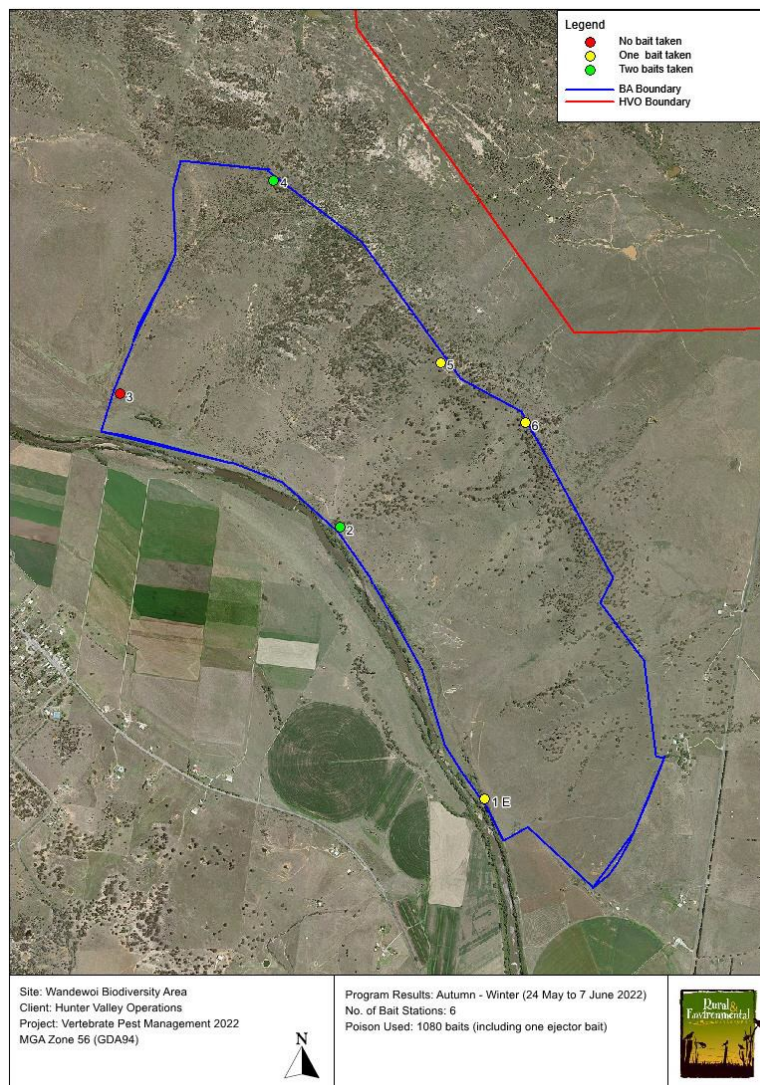


Figure 6.5. Wandewoi BA vertebrate pest management results for the Autumn-Winter 2022 programme.



Figure 6.6. Wandewoi BA vertebrate pest management results for the Spring 2022 programme.

Note: The area applicable to EPBC 2016/7640 include the six bait stations along the ridgeline on the western edge of the figure.



Figure 6.7. Hook property vertebrate pest management results for the Autumn-Winter 2022 programme.



Figure 6.8. Hook property vertebrate pest management results for the Spring 2022 programme.



Figure 6.9. Mitchelhill East BA vertebrate pest management results for the Autumn-Winter 2022 programme.



Figure 6.10. Mitchelhill East BA vertebrate pest management results for the Spring 2022 programme.



Figure 6.11. Mitchelhill West BA vertebrate pest management results for the Autumn-Winter 2022 programme.

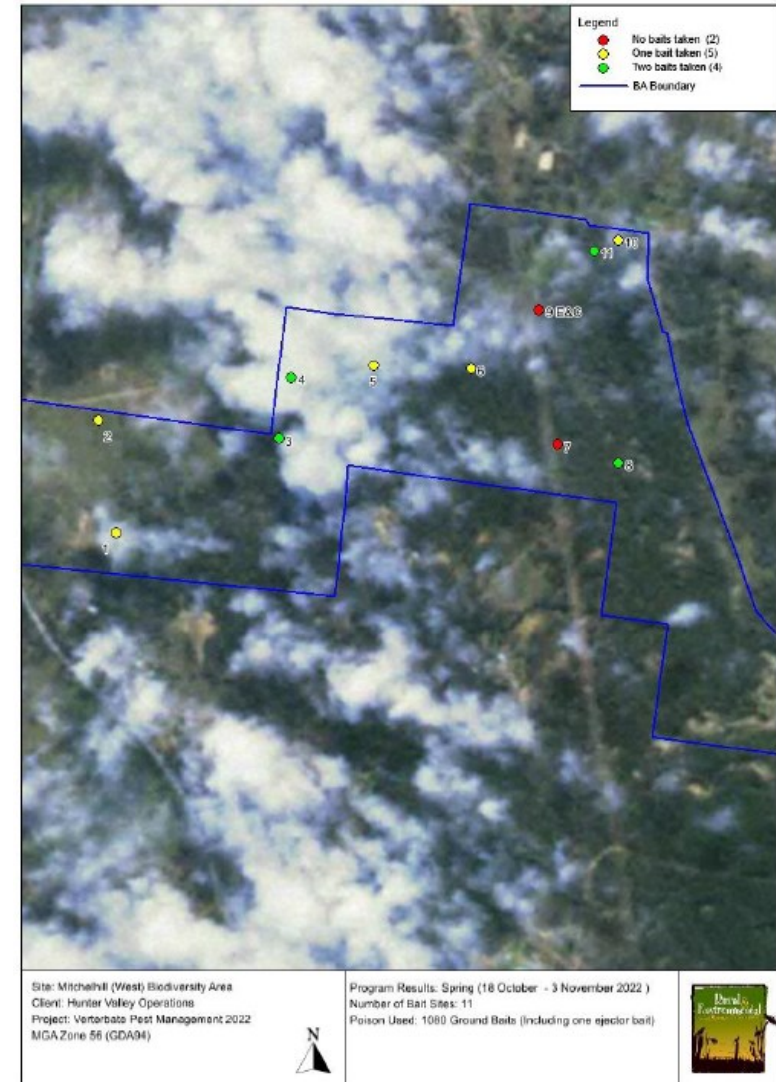


Figure 6.12. Mitchelhill West BA vertebrate pest management results for the Spring 2022 programme.



Figure 6.13. Condon View BA vertebrate pest management results for the Autumn-Winter 2022 programme.



Figure 6.14. Condon View BA vertebrate pest management results for the Spring 2022 programme.

Note: these figures also include the adjoining State offset for Yancoal's Mount Thorley Warkworth mine. The area applicable to EPBC 2016/7640 are the bait stations in the southern corner.

2022 Pig Trapping Programme

HVO undertook pig baiting and trapping programmes at HVO and the Crescent Head BA during 2022. The programmes were in response to monitoring results and observations that reported pigs traversing the Hunter River and accessing water bodies at the Crescent Head BA.

Baits or traps were established at various locations along the Hunter River, including sites within the Wandewoi BA, and three locations at the Crescent Head BAs. The locations of the control sites can be seen in figures 6.14 to 6.16. Free feed stations were initially provided to encourage visitation by the pigs. Once visitation was determined, the free feed stations were swapped for the sodium nitrate bait stations. Sodium nitrate baits were used as studies have found that the effect on pigs is immediate with little impact on non-target species.

Each trap was baited and monitored with either a live stream HogEye Camera trap system or standard motion sensor camera system. This system allows for remote activation of the trap and aligns with the Code of Practise and Standard Operation Procedures.

Each station was checked daily using the live web based system and visited if required to restock food or access the trap.

The locations, time periods and pigs caught can be seen in Tables 6.3 and 6.4 below.

No pigs were seen to visit the trap stations in the Wandewoi or Crescent Head BAs during the 2022 programmes. This may indicate that the pigs were transient rather than resident within the areas. If they were present during the baiting programme, it is expected that the pigs would have been observed through the motion sensor camera.

Pig trapping occurs twice a year at HVO which will include the Wandewoi BA again in 2023. A trapping programme will also occur at the Crescent Head BAs should monitoring results indicate that the pigs still traverse the area.

Table 6.3. HVO 2022 Pig Control Summary and Results.

Trap Reference	Time period	Pigs Controlled
Winter:		
Observation Site 2	3 weeks	12
Observation Site 7	3 weeks	0
Observation Site 10	3 weeks	0
Observation Site 13	3 weeks	15
Observation Site 16	3 weeks	5

Note: Observation Site 10 is located within the Wandewoi BA.

Table 6.4. Crescent Head 2022 Pig Trapping Summary and Results.

Trap Reference	Free feed 23/9/2022	Free feed 30/9/2022	Free feed 9/11/2022	Time period (days)	Pigs Controlled
Pest Trap 1	20kg cracked corn, trap set and camera added	No pig evidence, site refreshed	No pig evidence. Site packed away	0	0
Pest Trap 2	20kg cracked corn, trap set and camera added	No pig evidence, site refreshed	No pig evidence. Site packed away	0	0
Pest Trap 3	20kg cracked corn, trap set and camera added	No pig evidence, site refreshed	No pig evidence. Site packed away	0	0



Figure 6.15. Pig trap locations along the Hunter River at HVO during the winter 2022 programme.

Note: Observation Site 10 is located within the Wandewoi BA.

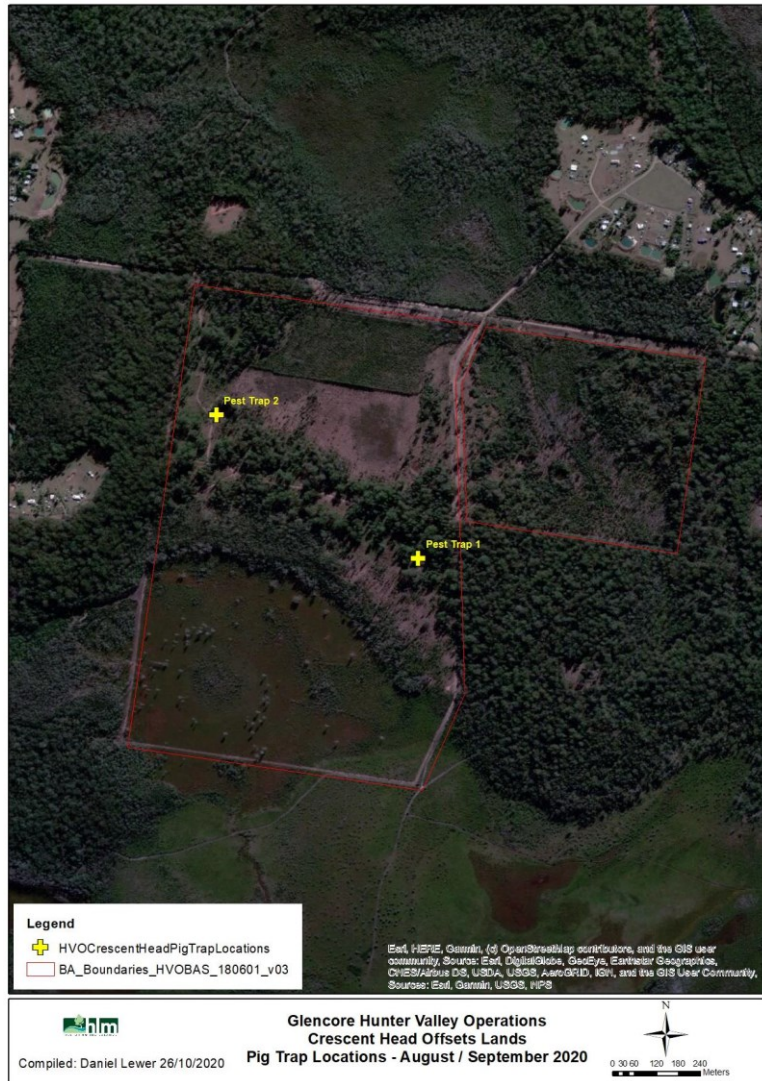


Figure 6.16. Pig trap locations 1 and 2 at Crescent Head South BA during the spring 2022 programme.

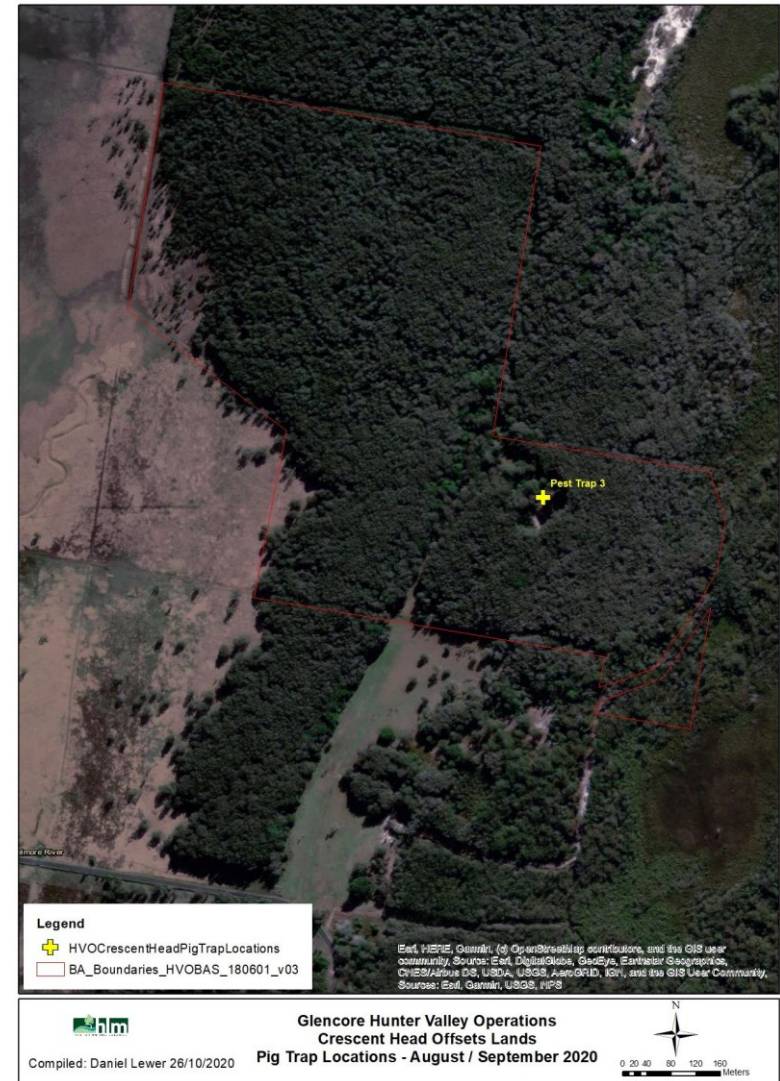


Figure 6.17. Pig trap location 3 at the waterhole within the Crescent Head North BA during the spring 2022 programme.

6.4 Hook BA Intensive Weed Management Plan

The Intensive Weed Management Plan for the Hook BA was implemented to reduce the extent of the African olive (*Olea europaea subsp. cuspidata*) population within the Hook BA and, to a lesser extent, Lantana (*Lantana camara*) and prickly pear (*Opuntia species*). The Hook BA Intensive Weed Management Plan was submitted to DCCEE for approval with the EPBC variation as part of the HVO Biodiversity Areas Management Plan.

Under the *Biosecurity Act 2015*, all landowners have a responsibility to control noxious weeds on their property, known as a General Biosecurity Duty. Landowners or land managers have a “General Biosecurity Duty” to prevent, eliminate or minimise the biosecurity risk posed or likely to be posed by priority weeds. African olive is listed as a priority weed for the Hunter region.

In the Plan, HVO has committed to reducing the extent of African olive within the Hook BA by 30% per year. This exceeds the 20% reduction recommended by the Upper Hunter Weeds Authority General Biosecurity Control Duty Guidelines.

The Plan states that in February each year, the Hook BA will be surveyed to determine the extent and location of African olive individuals.

The third African olive survey was undertaken on the BA during 2022; the first being in February 2020, then 2021. Results from this year’s survey will be included for comparison with the previous survey, however it is important to note that only the western portion of the offset was surveyed in 2021 as the majority of weed treatment was carried out in this area during the past year. The entire offset was re-surveyed during the 2022 reporting period and future surveys will depend on where weed treatment occurred during the year.

Data was collected and mapped according to the following:

- Large plants (individual)
- Medium plants (individual)
- Small plants (individual)
- Seedling (individual)
- Medium to large patch
- Seedling to small patch
- Previously treated areas

Plant size was determined according to the following heights:

- Seedling: up to 12cm
- Small: 12cm to 100cm (1m)
- Medium: Approximately 1m to 3m in height
- Large: Greater than 3m in height

During the survey, individual Lantana and prickly pear plants on the western portion of the offset are recorded as these weed species are also considered priority for control at Lower Belford BA. There was no discerning between plant sizes for either Lantana or prickly pear,

The results from the 2022 survey are outlined in Table 6.5 and Figures 6.17 and 6.18.

When access is not an issue, activities that remove African Olive target the more dense areas and areas containing the large mature seeding individuals to reduce the volume of seed being produced within the property. The additional time prior to a targeted effort on the smaller individuals will allow the identified seedlings to grow taller to enable them to be readily identified and removed prior to reaching maturity.

The areas targeted for weed control during the year are determined based on the survey results and any environmental site constraints. The areas for 2022 can be seen in Figure 6.18.

A summary of the 2022 survey results are shown in Table 6.5. Comparing the results between 2021 and 2022, there is an increase in the large tree count while the medium tree count remained static. Both the small tree count and seedlings increased. Overall the number of individuals recorded in the survey increased by 52% and the cover of dense stands between the 2021 and 2022 surveys reduced from 15.79% of the BA to 8.8%.

These results can be attributed to the focus being on the mulching of the olive stand in 2021 and the improved growing conditions experienced during the year. This is shown in the reduction of the medium-large olive patch from 18.05ha to 7.92ha.

The number of large individuals recorded is attributed to both the increased plant growth during the La Nina year, plus the survey following mulching being expected to record an increase in individual plants. This is due to improved access to plants that were not mulched, or were previously recorded as being with a patch. In addition, increased germination is anticipated with the increased light and reduced competition that follows the mulching activity.

HVO has a commitment to reduce the olive population by 30% per year. The dense stands of African Olive decreased by 55%. Although there was a 52% increase in individuals identified, the majority of which were small, immature plants that do not yet produce seeds and are not able to disperse into new areas.

Observations in the field indicate that there has been only minimal regrowth from the trees that were cut and painted to date. The use of the 24 tonne excavator with a mulching head attachment to remove the denser patches of large African olive individuals was shown to be very effective and cost efficient. This practice will continue in 2023 where the remaining patch size is of sufficient area for the mulching to occur.

Table 6.5. Summary of the 2022 African olive survey against the previous survey results.

Categories	2020	2021	2022
	Total No Individuals		
Large (over 3m)	578	440	939
Medium (1-3m)	967	762	764
Small (12cm-1m)	2209	2068	3322
Seedling ($\leq 12\text{cm}$)	416	438	640
Total	4170	3708	5665
Patch description	Patch size (ha)		
Medium-large	20.44	18.05	7.92
Small- seedling	0.88	0.29	0.9
Previously treated	9.32	5.80	4.63
Total	30.64	24.14	13.45

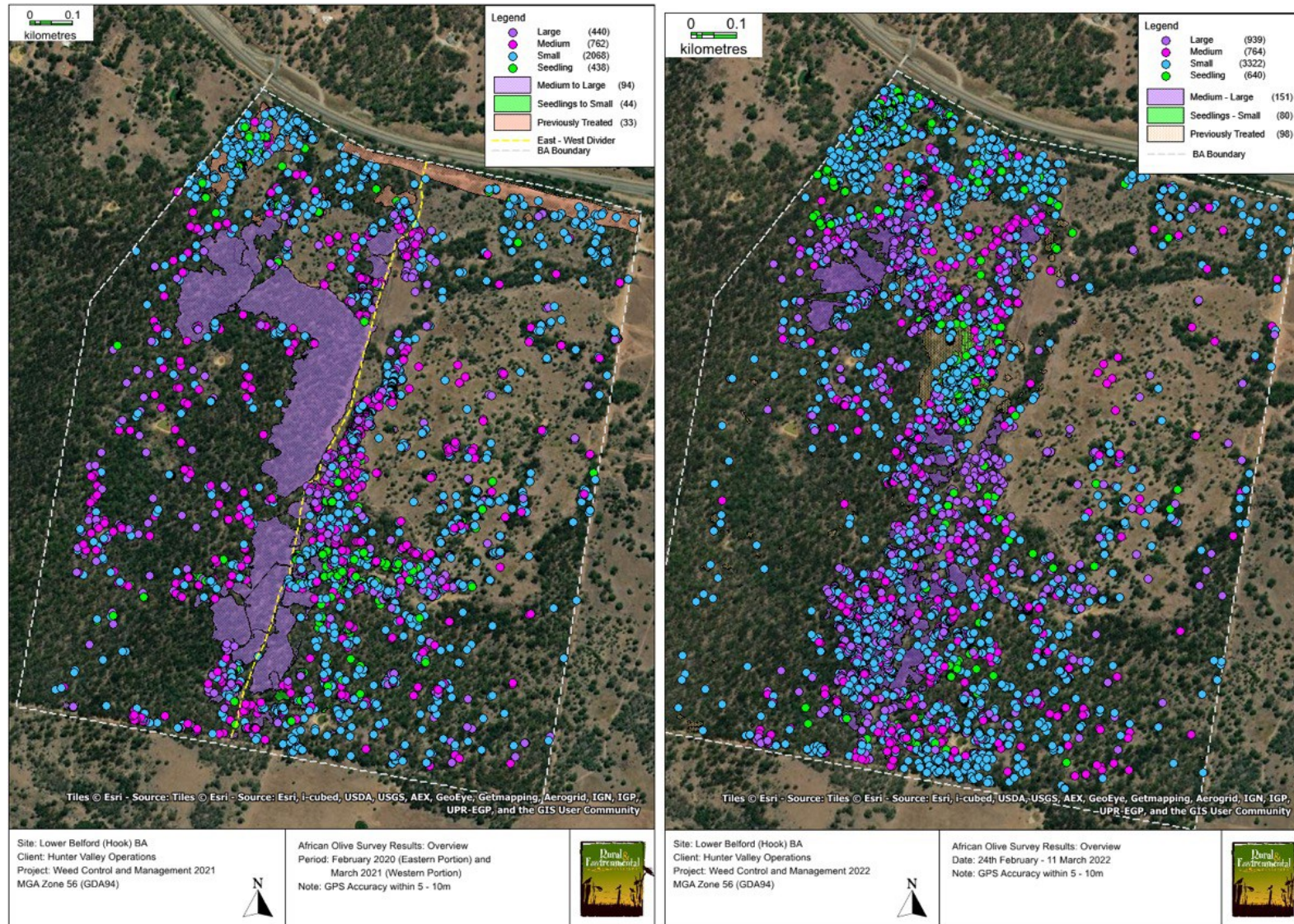


Figure 6.18. African olive survey results at the Hook BA. February 2021 survey (left) and 2022 survey (right) indicating removal activities undertaken during the 2021 reporting year.



Figure 6.19. Areas within the Hook BA where weed control was undertaken within 2022.

7 Ecological Monitoring

Ecological monitoring has been undertaken at each of the BAs as per the monitoring schedule outlined in Table 5.3. The objectives of monitoring is to confirm that the BOMP for each BA is being effectively implemented and the conservation objectives are being achieved.

Each BOMP lists the conservation values, key performance indicators, and completion criteria identified for the offset areas. Key performance indicators and completion criteria for foraging habitat and habitat connectivity and condition are being realised through the monitoring program and management response.

7.1 Ecological Monitoring

The following table provides a summary of the ecological monitoring activities undertaken across the various BAs as outlined in the BOMPs and in accordance with the monitoring schedule in Table 5.3.

The locations of each of the monitoring points and detailed description of each monitoring methodology can be seen in Chapter 6 of each BOMP and Figures 7.1 to 7.7.

Table 7.1. Ecological monitoring activities completed during the reporting year.

Monitoring event	Site	Months
Condition assessment	All BAs	Not required in 2022 reporting year
Bird assemblage	Condon View, Hook, Mitchelhill, Wandewoi	Not required in 2022 reporting year
GGBF monitoring	Crescent Head	Not required in 2022 reporting year but supplementary monitoring undertaken
Mosquito Fish monitoring	Crescent Head	Completed – Section 7.1.6
Rapid condition assessment	Condon View Crescent Head Hook Mitchelhill Wandewoi	Completed – Section 7.1.1 and Appendix A
Property inspections	Wandewoi	Jan, Feb, April, Jul, Aug, Nov
	Mitchelhill	Jan, Feb, April, Jul, Aug, Oct, Nov
	Hook	Jan, April, Jul, Aug, Nov
	Condon View	Jan, Feb, April, Jun, Jul, Aug
	Crescent Head	Jan, April, Jun, Aug

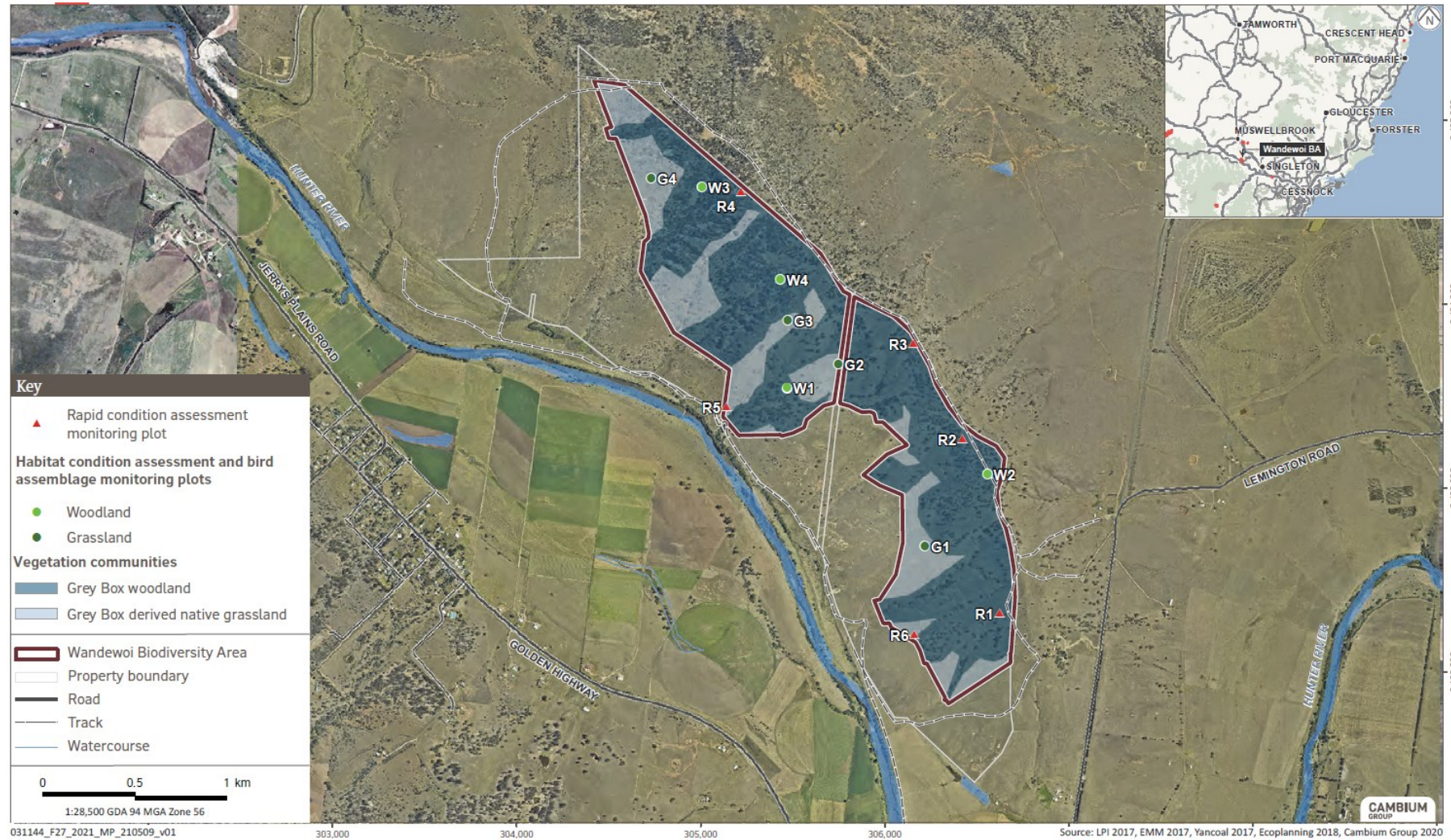


Figure 7.1. Rapid condition assessment, habitat condition assessment and bird assemblage monitoring locations at the Wandewoi Biodiversity Area.

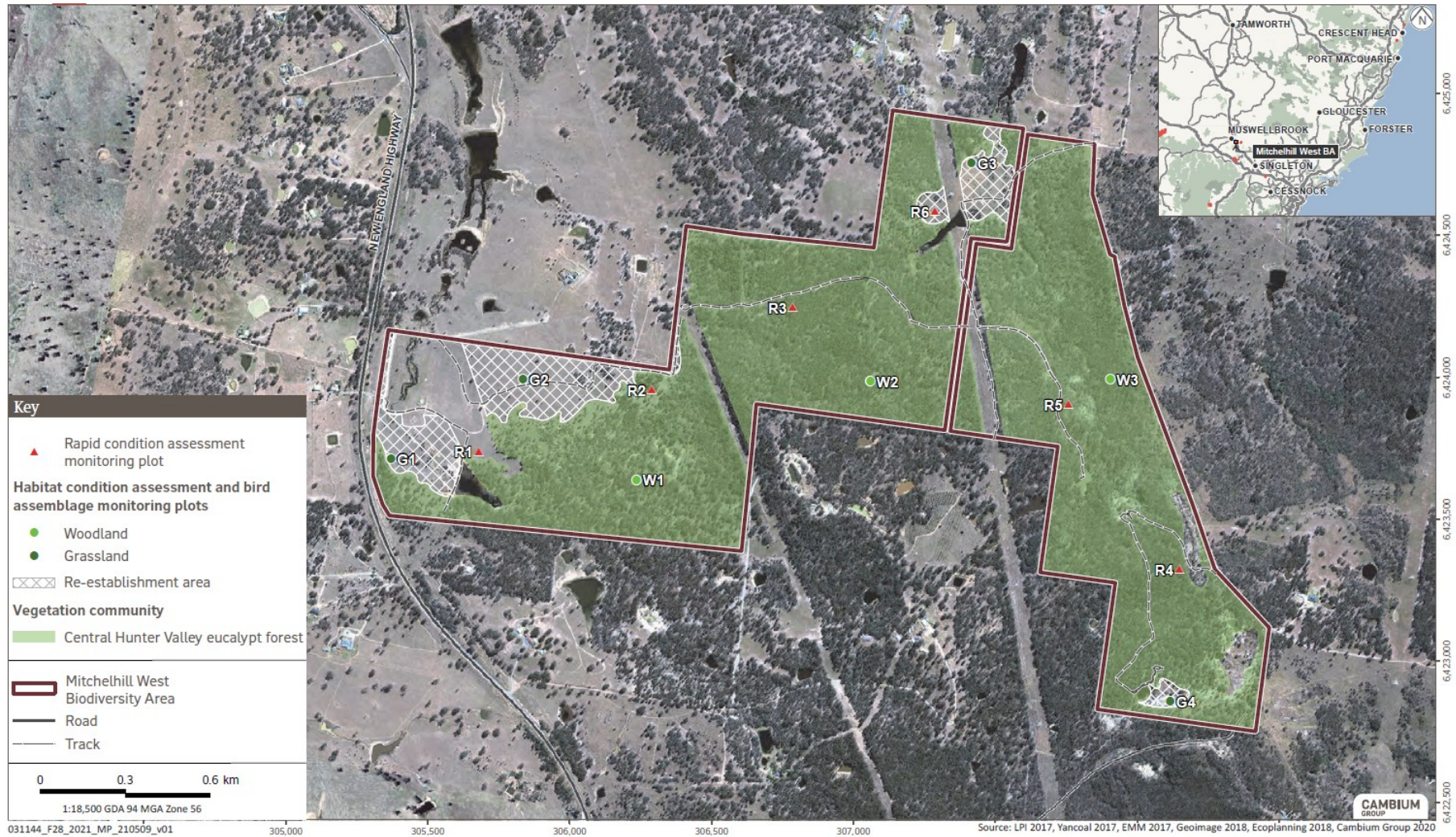


Figure 7.2. Rapid condition assessment, habitat condition assessment and bird assemblage monitoring locations at the Mitchelhill (West) Biodiversity Area.



Figure 7.3. Rapid condition assessment, habitat condition assessment and bird assemblage monitoring locations at the Mitchelhill (East) Biodiversity Area.



Figure 7.4. Rapid condition assessment, habitat condition assessment and bird assemblage monitoring locations at the Hook Biodiversity Area.

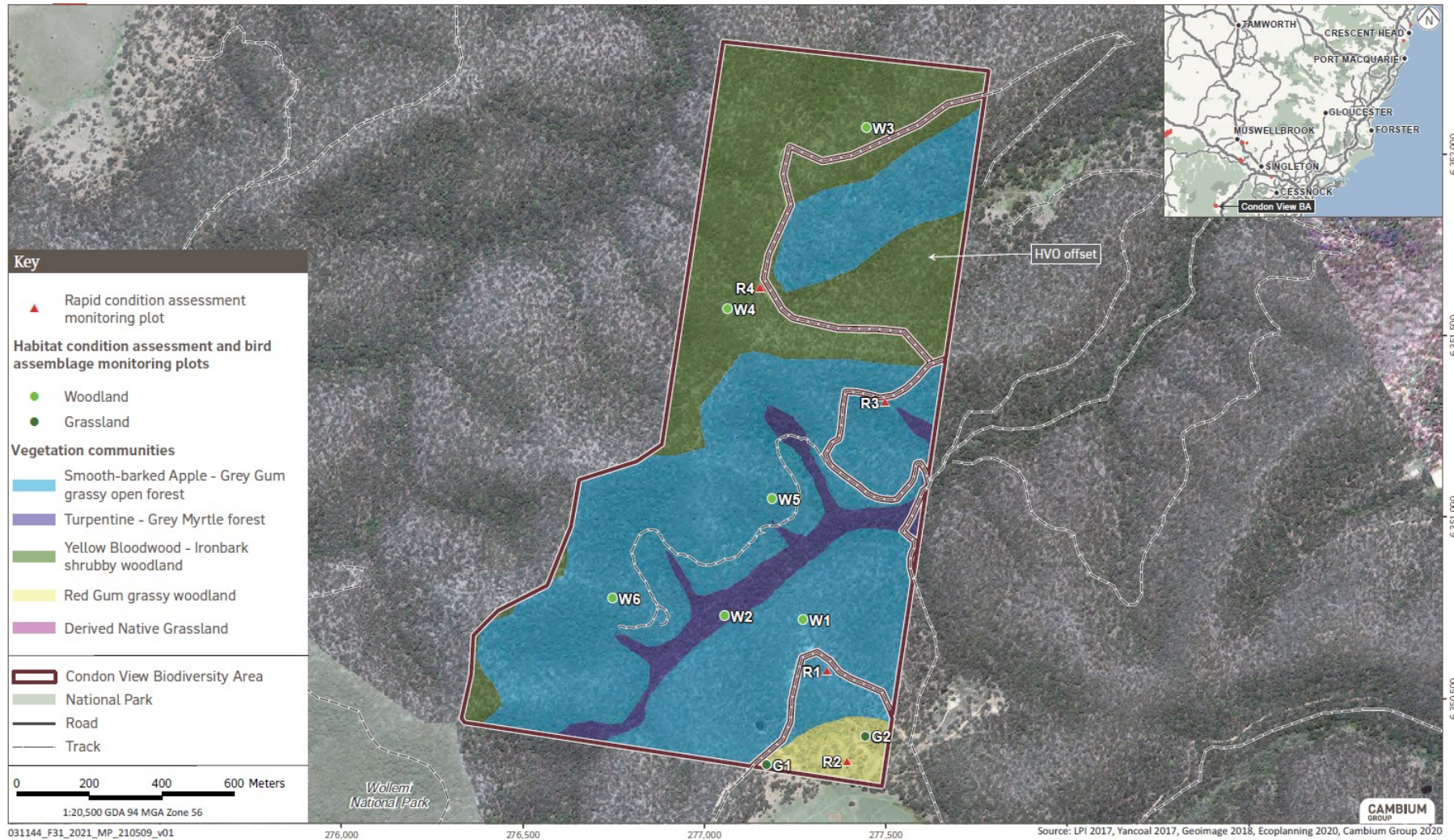


Figure 7.5. Rapid condition assessment, habitat condition assessment and bird assemblage monitoring locations at the Condon View Biodiversity Area.



Figure 7.6. Rapid condition assessment, habitat condition assessment and bird assemblage monitoring locations at the Crescent Head (North) Biodiversity Area.



Figure 7.7. Rapid condition assessment, habitat condition assessment and bird assemblage monitoring locations at the Crescent Head (South) Biodiversity Area.

7.1.1 Rapid Condition Assessments

The rapid condition assessments (RCE) are presented in Appendix A and the locations can be seen in figures 7.1 to 7.7. The results from the 2021 and 2022 RCE are presented. The quick assessment determined that there was no change in condition between the years, which, in the absence of full ecological assessments, assist to identify any urgent issues within the BA that arise between years.

7.1.2 Condition Assessment

As shown in Table 5.3, no condition assessments were required in 2022. Ecological condition assessments will be undertaken at each of the BAs in 2023.

7.1.3 Bird assemblage monitoring

As with the conditions assessments, no bird assemblage monitoring was required in 2022. This monitoring will occur at each of the BAs in 2023 as indicated in Table 5.3.

7.1.4 Green and Golden Bell Frog Habitat Assessment

Habitat assessments for the GGBF were not required in 2022 but will be undertaken in 2023 as per Table 5.3.

As discussed in Section 6.2, specific management was undertaken in 2022 to ensure that suitable foraging and movement corridors exist at both Crescent Head BAs for the GGBF.

At Crescent Head North, maintenance of the grassland around the constructed pond and the targeted removal of weeds, such as Lantana, Mickey Mouse Plant and the Tropical Soda Apple, will ensure that the offset is able to provide suitable habitat for the GGBF that is free from Mosquito Fish.

At Crescent Head South, the vegetation is transitioning to a closed forest ecosystem with the establishment and growth of the eucalypts. If allowed to continue, this vegetation would overshadow the ponds and reduce basking opportunities. Mulching of the eucalypt regrowth in the area adjacent to the constructed pond occurred in 2022 to ensure that the local habitat was suitable for the needs of the GGBF and the site is managed in accordance with the *Best Practice Guidelines Green and Golden Bell Frog Habitat* (2008).

7.1.5 Green and Golden Bell Frog Surveys

No GGBF surveys were scheduled to occur at the Crescent Head BAs in 2022.

The significant rainfall that occurred at Crescent Head across 2022 (table 4.1) created ideal conditions for frogs with rainfall exceeding the average. September received 181.4mm (average 44.6mm) while October received 150mm (average 86.9mm). Rainfall during November was sub-optimal with less than the required 50mm falling across the month prior to the survey.

Two opportunistic surveys targeting the GGBF occurred in November 2022 while the consultant was there to do the required mosquito fish monitoring. As the GGBF occurs at Crescent Head North (figure 6.3), the supplementary GGBF survey was only undertaken at Crescent Head South, where no sightings of the species have been recorded as part of the monitoring programme.

The survey methods used to detect GGBF were call detection, call playback, call imitation, spotlighting of banks and emergent vegetation and dip-netting for tadpoles. The frog hygiene protocol (DECC 2008) was practiced during the monitoring period when arriving at the first pond, when moving between ponds and at the reference site.

While several GGBF were observed at the Crescent Head North constructed pond in April 2022 (Figure 6.4), no GGBF were recorded at Crescent Head South during the surveys. Three species of frog were recorded at Crescent Head south: *Litoria caerulea* (Australian Green Tree Frog), *Litoria fallax* (Eastern Dwarf Tree Frog) and *Litoria nasuta* (Striped Rocket Frog). These frog species were recorded within ponds (Table 7.2) as well as *L. fallax* and *L. nasuta* being recorded at the Crescent Head South offline pond.

7.1.6 Mosquito Fish Monitoring

This section documents Mosquito Fish monitoring for the Crescent Head Biodiversity Area over the 2022 monitoring period (which extends from spring 2022 to autumn 2023). This is the fifth year that monitoring of the mosquito fish within the ponds has occurred. Three inground ponds are being monitored at both sites along with the constructed pond at each site. This data has been compared to baseline information from monitoring in 2018 and data collected in previous years.

As per the monitoring schedule, prior to the spring 2021, Mosquito Fish surveys were undertaken biannually (in spring and autumn), while from spring 2021, the survey is conducted annually.

In November 2022, water occurred in Ponds 1 and 2 and the offline pond at Crescent Head North but not at Pond 3 while all ponds and the offline pond at Crescent Head South contained water.

Mosquito Fish were recorded in all ponds with water for Crescent Head North and at all ponds at Crescent Head South.

At Crescent Head North, comparing 2021 data to this survey in 2022, Mosquito Fish abundance decreased slightly in Pond 1 from 166 to 127. There was one Mosquito Fish netted at Pond 2, the first one recorded at Crescent Head North. This may have been an outcome of recent flooding events at the Crescent Head North BA permitting the Mosquito Fish to disperse.

At Crescent Head South, Mosquito Fish were present at all ponds, with abundance increasing at all three ponds. Pond 3 at Crescent Head South showed the most significant increase with an increase from 217 to 629 between the last two monitoring events. Pond 1 and Pond 2 showed only slight increases with Mosquito Fish abundance. Although not assessed, it is possible that a higher number of fish were caught at Pond 3 in November 2022 is due to dissolved oxygen levels in the water column being low resulting in a higher number of fish close to the surface where oxygen levels are generally higher (Pyke 2005).

The abundance of Mosquito Fish shifts markedly between seasons and years with similar survey effort. While this phenomenon is acknowledged in the literature, the factors that affect change in abundance are poorly understood (MDBA 2011).

One tadpole (species unidentifiable) occurred in the offline pond at Crescent Head North, and no tadpoles at Crescent Head South. Both offline ponds were observed to have macroinvertebrates present.

No tadpoles were captured during dip and sweep methods at any of the ponds at Crescent Head North and South or at the offline ponds.

There are native fish present that may also influence tadpole survival. Firetail Gudgeons were found at Pond 1 Crescent Head North and Pond 1 Crescent Head South. The Striped Gudgeon is known to predate on Mosquito Fish and other invertebrates, was not recorded during the November 2022 survey period but has been found previously at both Pond 1 and Pond 2 at Crescent Head South.

While the Firetail Gudgeon is a known predator of GGBF tadpoles (Pyke and White 2000), it is not known if Striped Gudgeon also predate on tadpoles. Monitoring of the number of the species of Firetail Gudgeon over time is suggested.

Monitoring in accordance with the current program in the management plan will continue. The management actions will be flexible enough to adapt to new findings as monitoring and management is undertaken. Changes in species composition following any control measure will be closely evaluated to better inform future active management of Mosquito Fish.

Given the presence of native fish within the ponds, draining of the ponds to rid the Mosquito Fish may present a challenge to regulators. This will be investigated along with potential alternate options to provide breeding and forage habitat for GGBF tadpoles within the existing standing water resources.

The management plan provides key performance criteria and completion criteria related to the conservation objectives as well as criteria related to specific conservation management actions. The criteria relevant to Mosquito Fish monitoring are addressed in Table 7.4 and Table 7.5 for the conservation objectives and specific management actions, respectively.

Table 7.2 Frog species recorded during the GGBF opportunistic survey.

Scientific name	Common name	Crescent Head South																	
		Pond 1						Pond 2						Pond 3					
		Oct-18	Mar-19	Feb-20	Oct-21	Nov-21	Nov-22	Oct-18	Mar-19	Feb-20	Oct-21	Nov-21	Nov-22	Oct-18	Mar-19	Feb-20	Oct-21	Nov-21	Nov-22
<i>Crinia signifera</i>	Common Eastern Froglet			X+														X+	
<i>Crinia tinnula</i>	Wallum Froglet																	X	
<i>Limnodynastes dumerilii</i>	Eastern Banjo Frog				X													X	
<i>Limnodynastes peronii</i>	Striped Marsh Frog	X		X+	X									X+	X	X+	X	X+	
<i>Limnodynastes tasmaniensis</i>	Spotted Marsh Frog	X+																	
<i>Litoria aurea</i>	Green and Golden Bell Frog																		
<i>Litoria dentata</i>	Bleating Tree Frog				X	X+													
<i>Litoria caerulea</i>	Green Tree Frog			X+		X+	X			X+									
<i>Litoria fallax</i>	Eastern Dwarf Tree Frog	X	X,S	X+	X	X+	X+	X	X		X	X	X	X		X	X	X	X
<i>Litoria gracilentata</i>	Dainty Green Tree Frog			X+	X	X+					X	X						XX	
<i>Litoria latopalmata</i>	Boad-palmed Rocket Frog													X+					
<i>Litoria nasuta</i>	Striped Rocket Frog	X		X+	X	X					X	X	X				X+	X	X
<i>Litoria peronii</i>	Brown Tree Frog				X	X+					X							X	
<i>Litoria tyleri</i>	Tyler's Tree Frog																X		
<i>Uperoleia fusca</i>	Dusky Toadlet			X+		X+				X+							X+		
<i>Uperoleia laevigata</i>	Smooth Toadlet										X								

Note: X = recorded (heard and/or observed), S = captured with sweep net, + = denotes species heard calling at a distance from the monitoring pond,
1 = denotes dry ephemeral pond/swamp at time of survey.

Table 7.3. Cumulative Mosquito Fish results from the monitoring to date.

Scientific name	Common name	Crescent Head North																							
		Pond 1								Pond 2								Pond 3							
		Oct 18	Mar 19	Oct 19	Feb 20	Oct 20	Mar 21	Oct 21	Nov 22	Oct 18	Mar 19	Oct 19	Feb 20	Oct 20	Mar 21	Oct 21	Nov 22	Oct 18	Mar 19	Oct 19	Feb 20	Oct 20	Mar 21	Oct 21	Nov 22
<i>Gambusia holbrooki</i>	Mosquito Fish	10	67	97	261	304	491	166	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Gobiomorphus australis</i>	Striped Gudgeon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Gobiomorphus coxii</i>	Cox's Gudgeon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hypseleotris galii</i>	Firetail Gudgeon	-	108	18	17	-	12	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hypseleotris compressa</i>	Empire Gudgeon	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paratya sp.</i>	Freshwater Shrimp	P	-	P	P	P	P	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed	Tadpole	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Crustaceans	-	-	-	-	P	-	P	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1 = denotes dry ephemeral pond/swamp at time of survey, P = present

Scientific name	Common name	Crescent Head South																							
		Pond 1								Pond 2								Pond 3							
		Oct 18	Mar 19	Oct 19	Feb 20	Oct 20	Mar 21	Oct 21	Nov 22	Oct 18	Mar 19	Oct 19	Feb 20	Oct 20	Mar 21	Oct 21	Nov 22	Oct 18	Mar 19	Oct 19	Feb 20	Oct 20	Mar 21	Oct 21	Nov 22
<i>Gambusia holbrooki</i>	Mosquito Fish	43	30	69	315	1743	282	120	25	36	129	67	101	245	56	24	49	48	30	167	300	217	43	30	69
<i>Gobiomorphus australis</i>	Striped Gudgeon	-	1	-	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	1	-
<i>Gobiomorphus coxii</i>	Cox's Gudgeon	1	-	-	-	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
<i>Hypseleotris galii</i>	Firetail Gudgeon	3	19	7	3	1	-	9	5	4	3	1	4	9	18	-	2	1	-	1	-	-	3	19	7
<i>Paratya sp.</i>	Freshwater Shrimp	P	-	P	P	P	-	P	P	-	P	P	-	P	P	P	-	-	-	-	-	-	P	-	P
Mixed	Tadpole	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = incidental record, P = present

Scientific name	Common name	Crescent Head North Offline Pond	Crescent Head South Offline Pond	Crescent Head North Offline Pond	Crescent Head South Offline Pond	Crescent Head South Offline Pond
		Oct 21	Oct 21	Nov 21	Nov 22	Nov 22
<i>Gambusia holbrooki</i>	Mosquito Fish	-	-	-	-	-
<i>Litoria aurea</i>	Green and Golden Bell Frog	-	-	-	-	-
Mixed	Tadpole	-	-	-	-	-

Table 7.4. Progress towards performance and completion criteria relevant to the conservation objectives.

Habitat value	Key performance indicator	Completion ccriteria
Existing breeding habitat	<p><i>Reduction in the Mosquito Fish population in the ponds where control methods are possible.</i></p> <p>No substantial change to Mosquito Fish populations at Pond 1 at Crescent Head North and Ponds 1 to 2 at Crescent Head South</p>	<p><i>Mosquito Fish control trials are completed and their success is evaluated by analysis of monitoring results.</i></p> <p>Not yet commenced</p>

Table 7.5. Progress towards performance and completion criteria relevant to pond management.

Performance criteria	Year 1 to year 10	Completion criteria
Pond management		
Offline ponds	<p><i>Complete drainage survey. Prepare plan for construction. Construct ponds and water capture to fill ponds. Review success.</i></p> <p>Drainage survey completed, construction of ponds completed GGBF detected at the offline pond at Crescent Head North during 2022 (Figure 6.4).</p>	<p><i>Drainage survey completed. Ponds have been constructed in accordance with design.</i></p> <p>Ponds constructed at Crescent Head North and South</p>
Pond A to F	<p><i>Complete drainage survey. Prepare plan for pond refurbishment. Implement plan. Conduct Mosquito Fish control. Review success.</i></p> <p>Drainage survey completed, refurbishment not yet commenced</p>	<p><i>Drainage survey completed. Ponds refurbished in accordance with plan. Mosquito Fish control completed in suitable ponds in accordance with approved methods.</i></p> <p>Not yet commenced</p>
Monitoring	<p><i>Monitor number of Mosquito Fish following initial control. Monitor for the presences of Green and Golden Bell Frogs. Follow-up monitoring and control of Mosquito Fish. Monitor for the presence of Green and Golden Bell Frogs.</i></p> <p>Monitoring completed as required in 2022</p>	<p><i>Mosquito Fish numbers have declined in Pond A to F where suitable. Mosquito Fish are absent from offline ponds. Suitable frog habitat has been established within managed areas.</i></p> <p>Fifth monitoring period completed for all permanent ponds</p> <p>Mosquito fish populations consistently present in Pond 1 at Crescent Head North and Ponds 1-3 at Crescent Head South. One Mosquito Fish was recorded in Crescent Head North Pond 2 for the first time.</p> <p>Offline ponds have been created and Mosquito Fish have not been recorded in these ponds.</p>

8 Vegetation Clearance Plan

The Vegetation Clearance Plan (VCP) documents measures to manage CHVEF, Regent Honeyeater, Swift Parrot and the GGBF during the vegetation clearance for the approved action. The VCP was prepared in accordance with conditions 1, 2, 21 and 22 of EPBC 2016-7640 and was implemented following the Minister's approval of the Plan on 24 October 2016.

Condition 1 of EPBC 2016/7640 states that HVO must not clear more than 54.4 ha of CHVEF from within the Riverview Pit EPBC boundary and 6.6 ha of CHVEF from within the West Pit EPBC boundary.

HVO has, in total, cleared 46.65 ha of CHVEF from Riverview Pit and 5.7 ha of CHVEF from West Pit. All vegetation clearing was restricted to within the State and Commonwealth approved project boundaries.

The VCP is initially managed through HVO's Ground Disturbance Permit process whereby pre-clearance checks and conditions are applied prior to any disturbance or on-ground works. Conditional approvals are applied to each permit which include specific requirements to comply with the surveys and processes outlined in the VCP.

No surveys have recorded the Regent Honeyeater, Swift Parrot or the Green and Golden Bell Frog (adults, metamorphs or tadpoles) as residing or traversing across the EPBC area since the approval was obtained.

In 2020, minor edits were made including changes to Section 4.2.2 of the VCP to clarify operational controls related to management of root rot fungus. The changes implemented were to restrict the need to wash equipment prior to entering the West Pit extension area (relevant to the EPBC approval) only if the machinery was to be brought onto site from outside HVO. Earthmoving activities have been occurring across HVO land for some time and no evidence has been found that dieback is occurring despite frequent inspections and monitoring events being undertaken by ecologists annually.

Other minor changes were made to specify that the protocols in the VCP were restricted to the approved EPBC areas and to remove a duplicate photo and correct figure referencing in the text.

In accordance with Condition 14 of the EPBC approval, HVO determined that these minor changes would not be likely to have a new or increased impact on a protected matter, therefore, the revised VCP was not required to be submitted to DCCEEW for approval. However, as part of our internal assurance process, we have identified that HVO was yet to notify the DCCEEW of the revised VCP or provide a copy in accordance with Condition 14(a).

The revised VCP was provided to the Department on 6 January 2022.

More details are outlined in the compliance table in Section 2.

9 Fauna Captured on Camera



Figure 9.1. Two wild dogs *Canis lupis familiaris*, photographed during the Spring Vertebrate Pest Baiting program at the Mitchelhill East BA.



Figure 9.2. Large lace monitor, *Varanus varicus* photographed during the Spring Vertebrate Pest baiting program at the Condon View BA.



Figure 9.3. Short-beaked echidna, *Tachyglossus aculeatus*, at the Condon View BA.



Figure 9.4. Common wombat, *Vombatus ursinus*, at the Condon View BA.

10 References

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Appendix A - Rapid Condition Assessment: Current and Previous Year Tables

Rapid Condition Assessment - Woodland

Wandewoi Biodiversity Area

November 2022

Auditor: Cambium Group (Emilie Mascarenhas)

Note: True = 1, False = 0

Hunter Valley Operations

Site ID	WAN R1	WAN R2	WAN R3	WAN R4	WAN R5	WAN R6
Low grazing intensity - never farmed	0	0	0	0	Grassland	Grassland
Tree and shrub regeneration present (<2m)	0	1	1	1		
Infrequent fire regime (<5year intervals)	1	1	1	1		
Healthy mature trees (no dieback)	1	0	1	1		
Little to no evidence of rabbits	1	1	1	1		
Little to no evidence of foxes/cats	1	1	1	1		
Low abundance of weeds (most remnants contain some weeds)	0	0	0	1		
No evidence of firewood collection	1	1	1	1		
No obvious signs of erosion or salinity	1	1	1	1		
Not susceptible to fertiliser application, herbicide or pesticide drift	1	1	1	1		
Less than 20% trees with Mistletoe (NB some mistletoe is healthy)	1	1	1	1		
Few tracks, trails or fence lines	1	1	1	1		
Presence of native shrubs	0	1	1	1		
Presence of large, old growth trees with hollows	1	0	1	1		
Dead timber is left standing	1	1	1	1		
Fallen timber and logs are left on the ground	1	1	1	1		
Abundance of native ground flora	0	0	0	1		
Presence of litter, cryptogams, cracks and rocks	1	1	1	1		
Remnant is large (> 5ha is optimum)	1	1	1	1		
Connected to or in close proximity to other remnant vegetation	1	1	1	1		

Health Rating

15	15	17	19		
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Rapid Condition Assessment - Woodland

Wandewoi Biodiversity Area

November 2021

Auditor: Cambium Group (Emilie Mascarenhas)

Note: True = 1, False = 0

Hunter Valley Operations

Site ID	WAN R1	WAN R2	WAN R3	WAN R4	WAN R5	WAN R6
Low grazing intensity - never farmed	0	0	0	0	Grassland	Grassland
Tree and shrub regeneration present (<2m)	0	1	1	1		
Infrequent fire regime (<5year intervals)	1	1	1	1		
Healthy mature trees (no dieback)	1	0	1	1		
Little to no evidence of rabbits	1	1	1	1		
Little to no evidence of foxes/cats	1	1	1	1		
Low abundance of weeds (most remnants contain some weeds)	0	0	0	1		
No evidence of firewood collection	1	1	1	1		
No obvious signs of erosion or salinity	1	1	1	1		
Not susceptible to fertiliser application, herbicide or pesticide drift	1	1	1	1		
Less than 20% trees with Mistletoe (NB some mistletoe is healthy)	1	1	1	1		
Few tracks, trails or fence lines	1	1	1	1		
Presence of native shrubs	0	1	1	1		
Presence of large, old growth trees with hollows	1	0	1	1		
Dead timber is left standing	1	1	1	1		
Fallen timber and logs are left on the ground	1	1	1	1		
Abundance of native ground flora	0	0	0	1		
Presence of litter, cryptogams, cracks and rocks	1	1	1	1		
Remnant is large (> 5ha is optimum)	1	1	1	1		
Connected to or in close proximity to other remnant vegetation	1	1	1	1		

Health Rating

15	15	17	19		
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Rapid Condition Assessment - Woodland

Mitchelhill (West) Biodiversity Area

November 2022

Auditor: Cambium Group (Emilie Mascarenhas)

Note: True = 1, False = 0

Hunter Valley Operations

Site ID	MIT-W R1	MIT-W R2	MIT-W R3	MIT-W R4	MIT-W R5	MIT-W R6
Low grazing intensity - never farmed	Grassland	1	1	1	1	Grassland
Tree and shrub regeneration present (<2m)		1	1	1	1	
Infrequent fire regime (<5year intervals)		1	1	1	1	
Healthy mature trees (no dieback)		1	1	1	1	
Little to no evidence of rabbits		1	1	1	1	
Little to no evidence of foxes/cats		1	1	1	1	
Low abundance of weeds (most remnants contain some weeds)		1	1	1	1	
No evidence of firewood collection		1	1	1	1	
No obvious signs of erosion or salinity		1	1	1	1	
Not susceptible to fertiliser application, herbicide or pesticide drift		1	1	1	1	
Less than 20% trees with Mistletoe (NB some mistletoe is healthy)		1	1	1	1	
Few tracks, trails or fence lines		1	1	1	1	
Presence of native shrubs		0	1	1	1	
Presence of large, old growth trees with hollows		0	1	1	1	
Dead timber is left standing		1	1	1	1	
Fallen timber and logs are left on the ground		1	1	1	1	
Abundance of native ground flora		1	1	1	1	
Presence of litter, cryptogams, cracks and rocks		1	1	1	1	
Remnant is large (> 5ha is optimum)		1	1	1	1	
Connected to or in close proximity to other remnant vegetation		1	1	1	1	

Health Rating

	18	20	20	20	
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Rapid Condition Assessment - Woodland

Mitchelhill (West) Biodiversity Area

November 2021

Auditor: Cambium Group (Emilie Mascarenhas)

Note: True = 1, False = 0

Hunter Valley Operations

Site ID	MIT-W R1	MIT-W R2	MIT-W R3	MIT-W R4	MIT-W R5	MIT-W R6
Low grazing intensity - never farmed	Grassland	1	1	1	1	Grassland
Tree and shrub regeneration present (<2m)		1	1	1	1	
Infrequent fire regime (<5year intervals)		1	1	1	1	
Healthy mature trees (no dieback)		1	1	1	1	
Little to no evidence of rabbits		1	1	1	1	
Little to no evidence of foxes/cats		1	1	1	1	
Low abundance of weeds (most remnants contain some weeds)		1	1	1	1	
No evidence of firewood collection		1	1	1	1	
No obvious signs of erosion or salinity		1	1	1	1	
Not susceptible to fertiliser application, herbicide or pesticide drift		1	1	1	1	
Less than 20% trees with Mistletoe (NB some mistletoe is healthy)		1	1	1	1	
Few tracks, trails or fence lines		1	1	1	1	
Presence of native shrubs		0	1	1	1	
Presence of large, old growth trees with hollows		0	1	1	1	
Dead timber is left standing		1	1	1	1	
Fallen timber and logs are left on the ground		1	1	1	1	
Abundance of native ground flora		1	1	1	1	
Presence of litter, cryptogams, cracks and rocks		1	1	1	1	
Remnant is large (> 5ha is optimum)		1	1	1	1	
Connected to or in close proximity to other remnant vegetation	1	1	1	1		

Health Rating

	18	20	20	20	
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Rapid Condition Assessment - Woodland

Mitchelhill (East) Biodiversity Area

November 2022

Auditor: Cambium Group (Emilie Mascarenhas)

Note: True = 1, False = 0

Hunter Valley Operations

Site ID	MIT-E R1	MIT-E R2	MIT-E R3	MIT-E R4	MIT-E R5	MIT-E R6
Low grazing intensity - never farmed	Grassland	1	0	Grassland	0	0
Tree and shrub regeneration present (<2m)		1	1		1	1
Infrequent fire regime (<5year intervals)		1	1		1	1
Healthy mature trees (no dieback)		1	1		1	1
Little to no evidence of rabbits		1	1		1	1
Little to no evidence of foxes/cats		1	1		1	1
Low abundance of weeds (most remnants contain some weeds)		1	1		0	0
No evidence of firewood collection		1	1		1	1
No obvious signs of erosion or salinity		1	1		1	1
Not susceptible to fertiliser application, herbicide or pesticide drift		1	1		1	1
Less than 20% trees with Mistletoe (NB some mistletoe is healthy)		1	1		1	1
Few tracks, trails or fence lines		1	1		1	1
Presence of native shrubs		1	1		1	1
Presence of large, old growth trees with hollows		0	0		0	1
Dead timber is left standing		1	1		1	1
Fallen timber and logs are left on the ground		1	1		1	1
Abundance of native ground flora		1	1		1	1
Presence of litter, cryptogams, cracks and rocks		1	1		0	0
Remnant is large (> 5ha is optimum)	1	1	1	1		
Connected to or in close proximity to other remnant vegetation	1	1	1	1		

Health Rating

	19	18		16	17
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Rapid Condition Assessment - Woodland

Mitchellhill (East) Biodiversity Area

November 2021

Auditor: Cambium Group (Emilie Mascarenhas)

Note: True = 1, False = 0

Hunter Valley Operations

Site ID	MIT-E R1	MIT-E R2	MIT-E R3	MIT-E R4	MIT-E R5	MIT-E R6
Low grazing intensity - never farmed	Grassland	1	0	Grassland	0	0
Tree and shrub regeneration present (<2m)		1	1		1	1
Infrequent fire regime (<5year intervals)		1	1		1	1
Healthy mature trees (no dieback)		1	1		1	1
Little to no evidence of rabbits		1	1		1	1
Little to no evidence of foxes/cats		1	1		1	1
Low abundance of weeds (most remnants contain some weeds)		1	1		0	0
No evidence of firewood collection		1	1		1	1
No obvious signs of erosion or salinity		1	1		1	1
Not susceptible to fertiliser application, herbicide or pesticide drift		1	1		1	1
Less than 20% trees with Mistletoe (NB some mistletoe is healthy)		1	1		1	1
Few tracks, trails or fence lines		1	1		1	1
Presence of native shrubs		1	1		1	1
Presence of large, old growth trees with hollows		0	0		0	1
Dead timber is left standing		1	1		1	1
Fallen timber and logs are left on the ground		1	1		1	1
Abundance of native ground flora		1	1		1	1
Presence of litter, cryptogams, cracks and rocks		1	1		0	0
Remnant is large (> 5ha is optimum)		1	1		1	1
Connected to or in close proximity to other remnant vegetation		1	1		1	1

Health Rating

	19	18		16	17
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Rapid Condition Assessment - Woodland

Hook Biodiversity Area

November 2022

Auditor: Cambium Group (Emilie Mascarenhas)

Note: True = 1, False = 0

Hunter Valley Operations

Site ID	HOO R1	HOO R2	HOO R3	HOO R4	HOO R5	HOO R6
Low grazing intensity - never farmed	0	1	1	1	1	1
Tree and shrub regeneration present (<2m)	1	1	1	1	1	1
Infrequent fire regime (<5year intervals)	1	1	1	1	1	1
Healthy mature trees (no dieback)	0	1	1	1	1	1
Little to no evidence of rabbits	1	1	1	1	1	1
Little to no evidence of foxes/cats	1	1	1	1	1	1
Low abundance of weeds (most remnants contain some weeds)	1	1	0	1	1	1
No evidence of firewood collection	1	1	1	1	1	1
No obvious signs of erosion or salinity	1	1	1	1	1	1
Not susceptible to fertiliser application, herbicide or pesticide drift	1	1	1	1	1	1
Less than 20% trees with Mistletoe (NB some mistletoe is healthy)	1	1	1	1	1	1
Few tracks, trails or fence lines	1	1	1	1	1	1
Presence of native shrubs	1	1	1	1	1	1
Presence of large, old growth trees with hollows	0	0	0	0	1	1
Dead timber is left standing	1	1	1	1	1	1
Fallen timber and logs are left on the ground	1	1	1	1	1	1
Abundance of native ground flora	1	1	1	1	1	1
Presence of litter, cryptogams, cracks and rocks	1	1	1	1	1	1
Remnant is large (> 5ha is optimum)	1	1	1	1	1	1
Connected to or in close proximity to other remnant vegetation	1	1	1	1	1	1

Health Rating

17	19	18	19	20	20
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Rapid Condition Assessment - Woodland

Hunter Valley Operations

Hook Biodiversity Area

November 2021

Auditor: Cambium Group (Emilie Mascarenhas)

Note: True = 1, False = 0

Site ID	HOO R1	HOO R2	HOO R3	HOO R4	HOO R5	HOO R6
Low grazing intensity - never farmed	0	1	1	1	1	1
Tree and shrub regeneration present (<2m)	1	1	1	1	1	1
Infrequent fire regime (<5year intervals)	1	1	1	1	1	1
Healthy mature trees (no dieback)	0	1	1	1	1	1
Little to no evidence of rabbits	1	1	1	1	1	1
Little to no evidence of foxes/cats	1	1	1	1	1	1
Low abundance of weeds (most remnants contain some weeds)	1	1	0	1	1	1
No evidence of firewood collection	1	1	1	1	1	1
No obvious signs of erosion or salinity	1	1	1	1	1	1
Not susceptible to fertiliser application, herbicide or pesticide drift	1	1	1	1	1	1
Less than 20% trees with Mistletoe (NB some mistletoe is healthy)	1	1	1	1	1	1
Few tracks, trails or fence lines	1	1	1	1	1	1
Presence of native shrubs	1	1	1	1	1	1
Presence of large, old growth trees with hollows	0	0	0	0	1	1
Dead timber is left standing	1	1	1	1	1	1
Fallen timber and logs are left on the ground	1	1	1	1	1	1
Abundance of native ground flora	1	1	1	1	1	1
Presence of litter, cryptogams, cracks and rocks	1	1	1	1	1	1
Remnant is large (> 5ha is optimum)	1	1	1	1	1	1
Connected to or in close proximity to other remnant vegetation	1	1	1	1	1	1
Health Rating	17	19	18	19	20	20

Rapid Condition Assessment - Woodland

Crescent Head Biodiversity Area

November 2022

Auditor: Ecoplanning

Note: True = 1, False = 0

Hunter Valley Operations

Site ID	CRE-S R1	CRE-S R2	CRE-S R3	CRE-S R4	CRE-N R1	CRE-N R2	CRE-N R3	CRE-N R4
Low grazing intensity - never farmed	1	1	1	1	1	1	1	1
Tree and shrub regeneration present (<2m)	1	1	1	1	1	1	1	1
Infrequent fire regime (<5year intervals)	1	1	1	1	1	1	1	1
Healthy mature trees (no dieback)	1	1	1	1	1	1	1	1
Little to no evidence of rabbits	1	1	1	1	1	1	1	1
Little to no evidence of foxes/cats	1	1	1	1	1	1	1	1
Low abundance of weeds (most remnants contain some weeds)	1	1	1	1	1	1	1	1
No evidence of firewood collection	1	1	1	1	1	1	1	1
No obvious signs of erosion or salinity	1	1	1	1	1	1	1	1
Not susceptible to fertiliser application, herbicide or pesticide drift	1	1	1	1	1	1	1	1
Less than 20% trees with Mistletoe (NB some mistletoe is healthy)	1	1	1	1	1	1	1	1
Few tracks, trails or fence lines	1	1	1	1	1	1	1	1
Presence of native shrubs	1	1	1	1	1	1	1	1
Presence of large, old growth trees with hollows	0	0	0	0	0	0	0	1
Dead timber is left standing	1	1	1	1	1	1	1	1
Fallen timber and logs are left on the ground	1	1	1	1	1	1	1	1
Abundance of native ground flora	1	1	1	1	1	1	1	1
Presence of litter, cryptogams, cracks and rocks	1	1	1	1	1	1	1	1
Remnant is large (> 5ha is optimum)	1	1	1	1	1	1	1	1
Connected to or in close proximity to other remnant vegetation	1	1	1	1	1	1	1	1

Health Rating

19	19	19	19	19	19	19	20
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Rapid Condition Assessment - Woodland

Crescent Head Biodiversity Area

October 2021

Auditor: Cambium Group (Emilie Mascarenhas)

Note: True = 1, False = 0

Hunter Valley Operations

Site ID	CRE-S R1	CRE-S R2	CRE-S R3	CRE-S R4	CRE-N R1	CRE-N R2	CRE-N R3	CRE-N R4
Low grazing intensity - never farmed	1	1	1	1	1	1	1	1
Tree and shrub regeneration present (<2m)	1	1	1	1	1	1	1	1
Infrequent fire regime (<5year intervals)	1	1	1	1	1	1	1	1
Healthy mature trees (no dieback)	1	1	1	1	1	1	1	1
Little to no evidence of rabbits	1	1	1	1	1	1	1	1
Little to no evidence of foxes/cats	1	1	1	1	1	1	1	1
Low abundance of weeds (most remnants contain some weeds)	1	1	1	1	1	1	1	1
No evidence of firewood collection	1	1	1	1	1	1	1	1
No obvious signs of erosion or salinity	1	1	1	1	1	1	1	1
Not susceptible to fertiliser application, herbicide or pesticide drift	1	1	1	1	1	1	1	1
Less than 20% trees with Mistletoe (NB some mistletoe is healthy)	1	1	1	1	1	1	1	1
Few tracks, trails or fence lines	1	1	1	1	1	1	1	1
Presence of native shrubs	1	1	1	1	1	1	1	1
Presence of large, old growth trees with hollows	0	0	0	0	0	0	0	1
Dead timber is left standing	1	1	1	1	1	1	1	1
Fallen timber and logs are left on the ground	1	1	1	1	1	1	1	1
Abundance of native ground flora	1	1	1	1	1	1	1	1
Presence of litter, cryptogams, cracks and rocks	1	1	1	1	1	1	1	1
Remnant is large (> 5ha is optimum)	1	1	1	1	1	1	1	1
Connected to or in close proximity to other remnant vegetation	1	1	1	1	1	1	1	1

Health Rating

19	19	19	19	19	19	19	20
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Rapid Condition Assessment - Woodland

Condon View Biodiversity Area

November 2022

Auditor: Cambium Group (Emilie Mascarenhas)

Note: True = 1, False = 0

Hunter Valley Operations

Site ID*	CON R1	CON R2	CON R3	CON R4
Low grazing intensity - never farmed	1	0	1	1
Tree and shrub regeneration present (<2m)	1	1	1	1
Infrequent fire regime (<5year intervals)	1	1	1	1
Healthy mature trees (no dieback)	1	1	1	1
Little to no evidence of rabbits	1	1	1	1
Little to no evidence of foxes/cats	1	1	1	1
Low abundance of weeds (most remnants contain some weeds)	1	0	1	1
No evidence of firewood collection	1	1	1	1
No obvious signs of erosion or salinity	1	1	1	1
Not susceptible to fertiliser application, herbicide or pesticide drift	1	1	1	1
Less than 20% trees with Mistletoe (NB some mistletoe is healthy)	1	1	1	1
Few tracks, trails or fence lines	1	1	1	1
Presence of native shrubs	1	1	1	1
Presence of large, old growth trees with hollows	1	0	0	1
Dead timber is left standing	1	1	1	1
Fallen timber and logs are left on the ground	1	1	1	1
Abundance of native ground flora	1	0	1	1
Presence of litter, cryptogams, cracks and rocks	1	0	1	1
Remnant is large (> 5ha is optimum)	1	1	1	1
Connected to or in close proximity to other remnant vegetation	1	1	1	1

Health Rating

20	15	19	20
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*R1 (HVO) = R1 (Yancoal), R2 = new site, R3 (HVO) = R5 (Yancoal), R4 (HVO) = R6 (Yancoal)

Rapid Condition Assessment - Woodland

Hunter Valley Operations

Condon View Biodiversity Area

November 2021

Auditor: Cambium Group (Emilie Mascarenhas)

Note: True = 1, False = 0

Site ID*	CON R1	CON R2	CON R3	CON R4
Low grazing intensity - never farmed	1	0	1	1
Tree and shrub regeneration present (<2m)	1	1	1	1
Infrequent fire regime (<5year intervals)	1	1	1	1
Healthy mature trees (no dieback)	1	1	1	1
Little to no evidence of rabbits	1	1	1	1
Little to no evidence of foxes/cats	1	1	1	1
Low abundance of weeds (most remnants contain some weeds)	1	0	1	1
No evidence of firewood collection	1	1	1	1
No obvious signs of erosion or salinity	1	1	1	1
Not susceptible to fertiliser application, herbicide or pesticide drift	1	1	1	1
Less than 20% trees with Mistletoe (NB some mistletoe is healthy)	1	1	1	1
Few tracks, trails or fence lines	1	1	1	1
Presence of native shrubs	1	0	1	1
Presence of large, old growth trees with hollows	1	0	0	1
Dead timber is left standing	1	1	1	1
Fallen timber and logs are left on the ground	1	1	1	1
Abundance of native ground flora	1	0	1	1
Presence of litter, cryptogams, cracks and rocks	1	1	1	1
Remnant is large (> 5ha is optimum)	1	1	1	1
Connected to or in close proximity to other remnant vegetation	1	1	1	1

Health Rating

20	15	19	20
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*R1 (HVO) = R1 (Yancoal), R2 = new site, R3 (HVO) = R5 (Yancoal), R4 (HVO) = R6 (Yancoal)