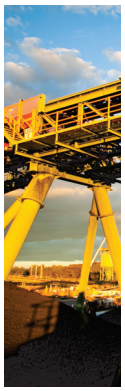


MOOLARBEN COAL COMPLEX
OC3 EXTENSION PROJECT

AMENDMENT REPORT

MAIN TEXT

YANCOAL
兖煤澳大利亚有限公司
MOOLARBEN COAL

EXECUTIVE SUMMARY

Mining operations at the Moolarben Coal Complex are currently approved until 31 December 2038 with a combined coal production rate of 22 million tonnes per annum in accordance with Project Approval (05_0117) (Stage 1) (as modified) and Project Approval (08_0135) (Stage 2) (as modified). The Moolarben Coal Complex comprises four approved open cut mining areas (OC1 to OC4), three approved underground mining areas (UG1, UG2 and UG4) and other mining related infrastructure (including coal processing and transport facilities).

Moolarben Coal Operations Pty Ltd (MCO) is proposing to extend open cut mining operations immediately south of the approved OC3 open cut pit as well as develop four new open cut pits to the east and south-east of the approved OC3 mining area, within existing mining tenements (the Project). This extension would provide approximately 10 years of mining (from 2025 to 2034), maximise use of the existing mining fleet and maintain steady production of run-of-mine (ROM) coal at the Moolarben Coal Complex post-completion of mining within the approved OC3 mining area.

MCO (2022) prepared the Moolarben Coal Complex OC3 Extension Project Environmental Impact Statement (the EIS) for the Project to support a development application under the NSW *Environmental Planning and Assessment Act 1979*. The Project EIS was placed on public exhibition by the then Department of Planning and Environment (now known as the Department of Planning, Housing and Infrastructure) from 17 November to 14 December 2022. During this period, government agencies, organisations and members of the public were invited to provide submissions on the EIS.

In response to submissions received on the EIS, MCO has amended the Project to reduce the indicative surface disturbance extent and incorporate additional avoidance measures relative to the EIS. The areas proposed for reduction has been targeted to further avoid key threatened species habitat and largely contiguous remnant woodland vegetation, as well as providing further setback from rocky habitat features and the Munghorn Gap Nature Reserve.

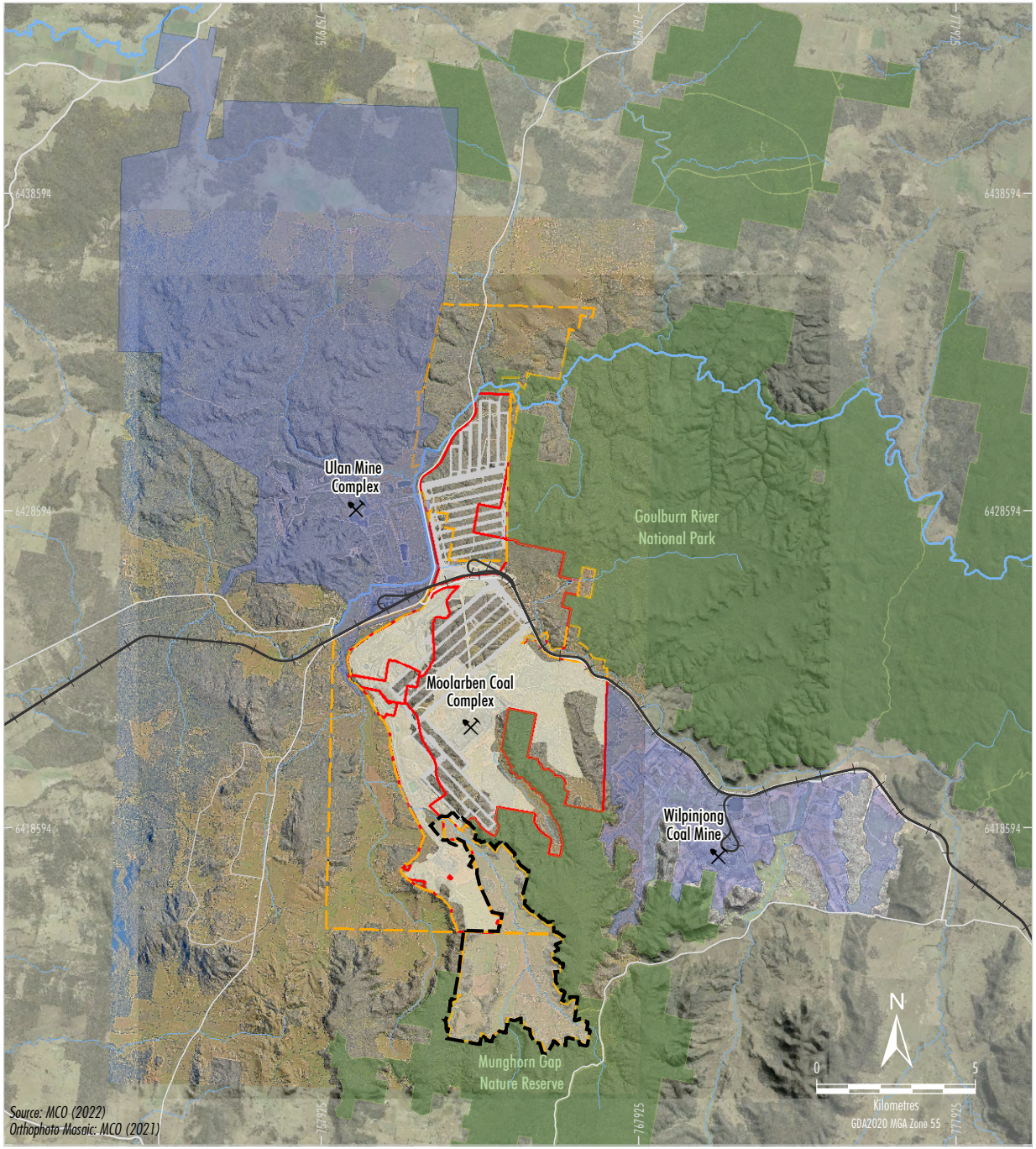
In summary, when compared to the EIS, the proposed amendments to the Project include:

- A reduction in the extent of proposed disturbance (from approximately 825 hectares [ha] to 675 ha).
- A reduction in the extent of proposed open cut mining.
- A reduction in total resource extracted from 40 million tonnes (Mt) to approximately 30 Mt over the life of the Project.
- A reduction in the peak annual ROM mining rate from 9 Mt to 8.5 Mt over the life of the Project.
- No change to the duration of the mine life (i.e. between approximately 2025 to 2034), peak workforce, or hours of operation of the mine.
- No change to the proposed final landform integration with the approved OC3 mining area (including no final voids in the rehabilitated final landform).
- A revised conceptual post-mining land use which incorporates additional areas of native woodland (i.e. from approximately 325 ha to 535 ha).
- An increase to the proposed Habitat Enhancement Area extent (from approximately 160 ha to 188 ha) which would be revegetated during mining.

Approval of the Project would provide a net increase in native woodland in the Moolarben Valley of 557 ha due to managed regeneration and revegetation within the Habitat Enhancement Area as well as rehabilitation of the final landform. This is in addition to MCO's statutory obligations for biodiversity offsets under the NSW *Biodiversity Conservation Act 2016*.

Approval of the Project would also provide a reduction in the number of final voids in the Moolarben Valley from one to zero, as the Project proposes to backfill the currently approved OC3 final void. Key avoidance, minimisation and mitigation measures for the amended Project are described and shown in Figures ES-1 to ES-9.

As a result of the proposed amendments, in particular the reduced indicative surface disturbance extent, the environmental impacts of the Project would largely be reduced compared to that presented in the EIS. Accordingly, the conclusion in the EIS that, on balance, the Project is a logical extension of an existing mining operation that would develop internationally in-demand resources, while minimising environmental impacts, and is in the public interest, remains unchanged.



Source: MCO (2022)
Orthophoto Mosaic: MCO (2021)

MCM-20-18 OC3 Ext AR ES_201B

The Project:

- *Is located in an existing mining precinct associated with the existing Moolarben Coal Complex, Ulan Mine Complex and Wilpinjong Coal Mine.*
- *Is a logical extension to the existing Moolarben Coal Complex within existing mining tenements and on Moolarben-owned freehold land.*
- *Would use existing coal handling, processing and transport infrastructure at the Moolarben Coal Complex.*
- *Proposes mining until 2034, which is within the approved mine life of the existing Moolarben Coal Complex (until 2038).*
- *Would not result in any change to the cumulative annual run-of-mine coal extraction limit for open cut operations at the Moolarben Coal Complex.*
- *Would provide for the continuity of employment by extending the duration of employment for the existing Stage 1 open cut workforce.*
- *Would generate royalty payments and taxes, as well as Project-related capital and other expenditure with local contractors and businesses.*

LEGEND

- National Park/Nature Reserve
- Exploration Licence Boundary
- Mining Lease Boundary
- Other Mining Operations
- Underground Longwall Layout
- Moolarben Coal Complex Approved Disturbance Footprint
- Project Study Area

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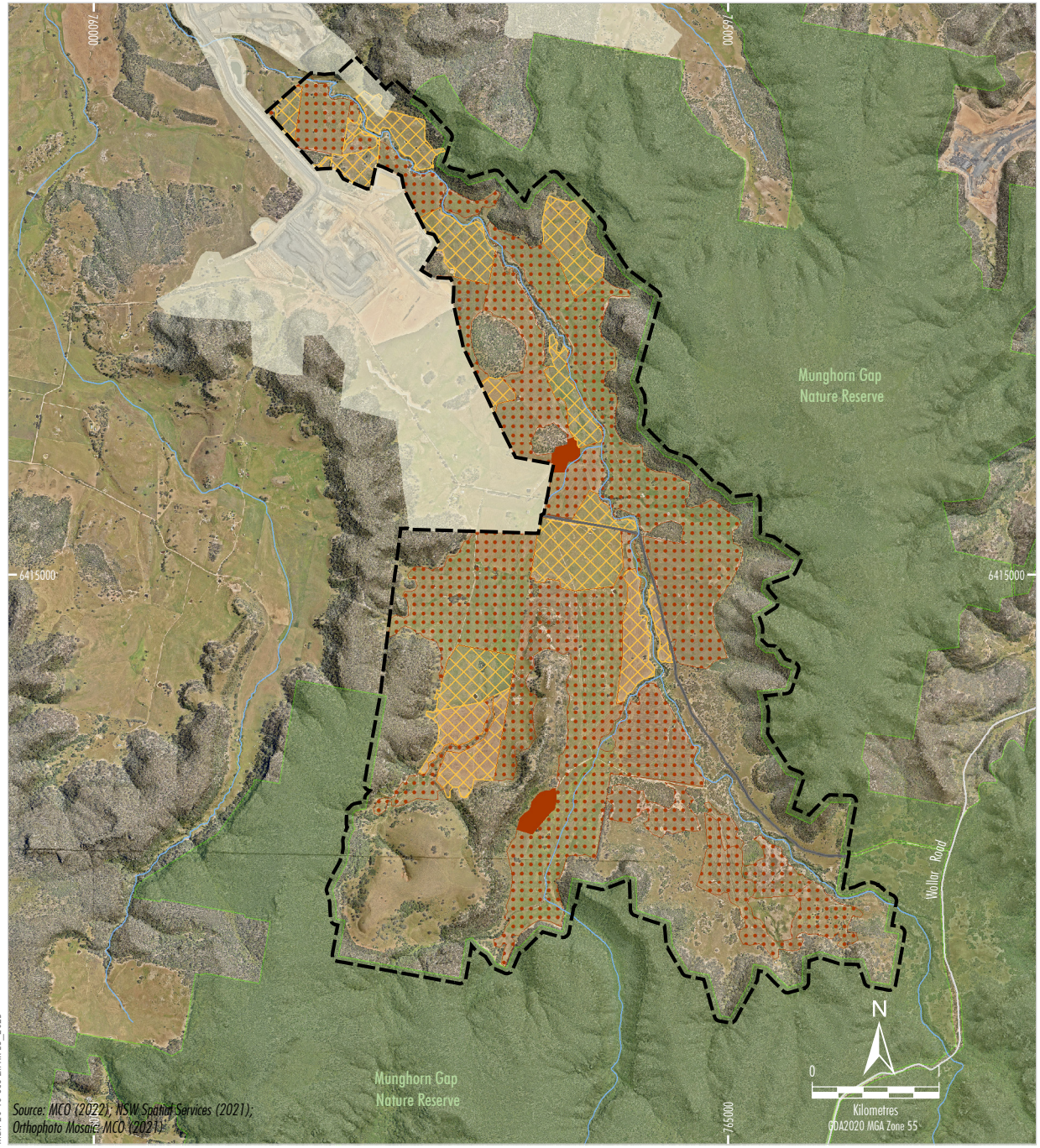
Project Location and Surrounding Mining Operations

Figure ES-1



Existing and historic land use within and adjacent to the Project Study Area is a combination of existing open cut mining and agricultural use (cropping/grazing).

Mining is currently occurring in the approved OC3 mining area for the existing Moolarben Coal Complex.

The Project Study Area contains previously cropped areas, and low-intensity grazing occurred as recently as 2023.

The Project disturbance extent has been preferentially located in previously-cleared agricultural areas to minimise environmental impacts to areas of woodland.

In the absence of the Project, the land would likely be returned to agricultural use (cropping and grazing), or other development (e.g. solar).

*If the Project were to be approved, there would be a significant **net gain in woodland [+ 557 ha]** as areas outside the disturbance area would be revegetated and a large portion of the post-mining landform would be rehabilitated to woodland.*

LEGEND

- National Parks/Nature Reserves
- Moolarben Coal Complex Approved Disturbance Footprint
- Project Study Area

NSW Land Use Mapping (DCCEEW, 2023)

- 3.2.0 Grazing Modified Pastures
- 3.3.0 Cropping
- 5.4.0 Residential and Farm Infrastructure
- 5.7.0 Transport and Communication

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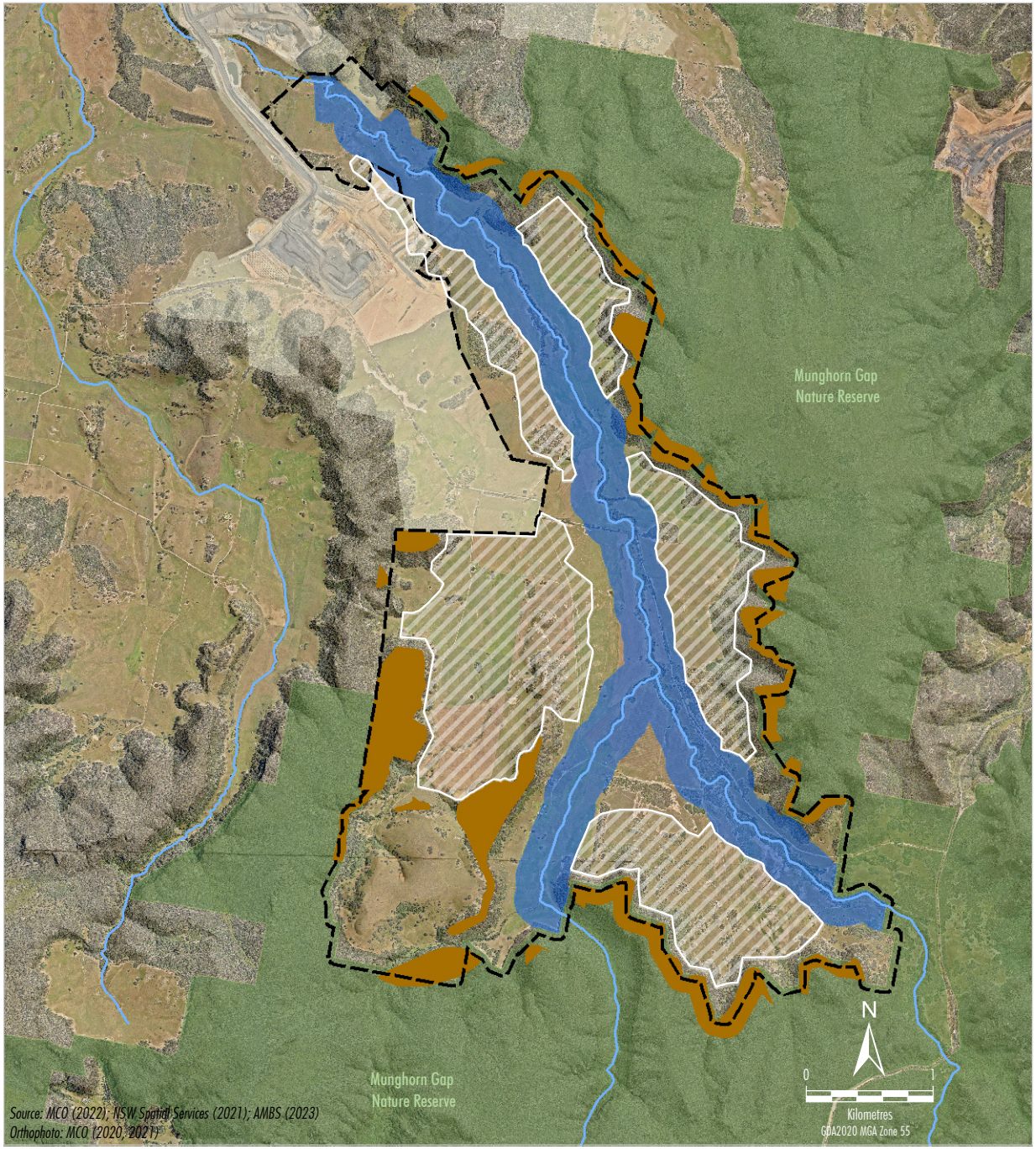
Existing Land Use within the Project Study Area

Figure ES-2



MCM-20-18-OC3-Ext-AR-ES_203A

The Project as presented in the EIS incorporated significant avoidance and minimisation measures.

- *Open cut mining was proposed to be set back at least 200 m from the highbank of Moolarben Creek and Murdering Creek, as well as at least 50 m from the Munghorn Gap Nature Reserve.*
- *Disturbance was also proposed to be avoided for all mapped rocky habitat for threatened bats and the Broad-headed Snake, as disturbance of this habitat is understood to be less responsive to management and/or remediation measures (e.g. compared to revegetation/rehabilitation of woodland habitat which has been demonstrated to be successful at the existing Moolarben Coal Complex rehabilitation and biodiversity offset areas).*
- *68% (i.e. approximately 488 ha) of native woodland in the Project Study Area was proposed to be avoided for the Project as presented in the EIS.*

In response to submissions on the EIS, additional avoidance, minimisation and mitigation measures have been proposed for the amended Project.

LEGEND
- National Park/Nature Reserve
- Moolarben Coal Complex Approved Disturbance Footprint
- Project Study Area
- Indicative Open Cut Pit Extent as Presented in the EIS

Avoidance and Minimisation Measures
- No Proposed Open Cut Mining within 200 m of Moolarben and Murdering Creek
- Mapped Rocky Habitat for Threatened Bats and Broad-headed Snake

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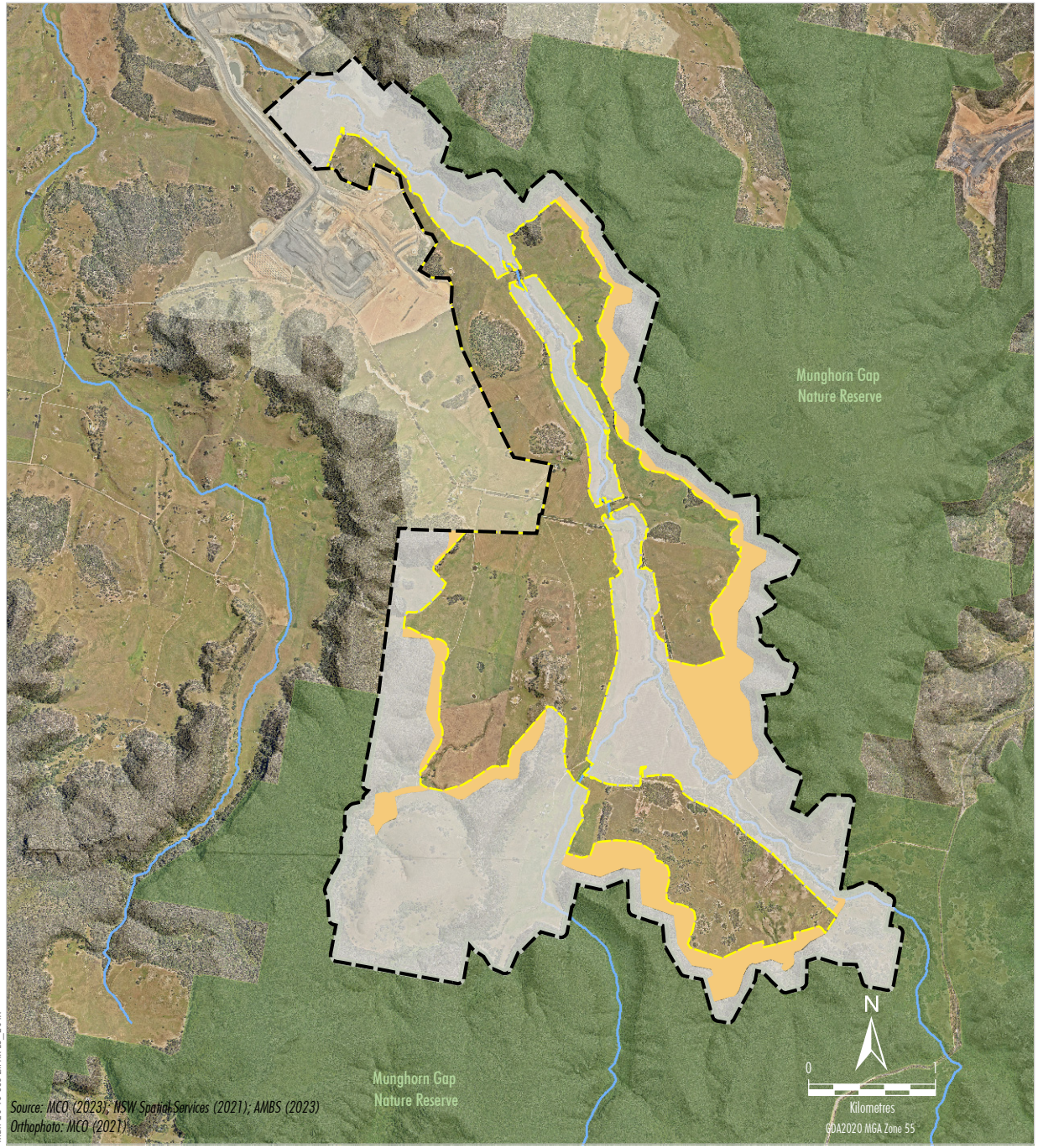
Project Avoidance and Minimisation Measures as Presented in the EIS

Figure ES-3



Source: MCO (2023); NSW Spatial Services (2021); AMBS (2023)
Orthophoto: MCO (2021)

MCM-20-18 OC3 Ext AR ES_204A

The Amended Project incorporates further avoidance, minimisation and mitigation measures and achieves the following:

- *Avoidance of any mining-related disturbance within 100 m of the Munghorn Gap Nature Reserve.*
- *Avoidance of any clearance of mapped rocky habitat and breeding habitat (defined as relevant vegetation within 100 m of mapped rocky habitat) for threatened bats and the Broad-headed Snake.*
- *Blast vibration would be limited to 50 mm/s at mapped rocky habitat, unless further geotechnical investigations support a higher value.*
- *Reduced impacts to Box-Gum Woodland CEEC (woodland component) and Regent Honeyeater Important Habitat Mapping for the amended Project by 59% and 56% respectively, compared to the EIS.*

This further avoidance, minimisation and mitigation results in a 25% reduction in the total coal resource proposed to be mined for the Project compared to the EIS (i.e. from 40 Mt to 30 Mt).

The amended Project would avoid approximately 50% of native woodland compared to the EIS disturbance footprint, and a total of approximately 84% of native woodland compared to the total mapped woodland in the Project Study Area.

LEGEND
- National Park/Nature Reserve
- Moolarben Coal Complex Approved Disturbance Footprint
- Project Study Area
- Indicative Amended Project Surface Disturbance Extent

Avoidance and Minimisation Measures
- Avoidance/Minimisation for the Project as Presented in the EIS
- Additional Avoidance/Minimisation for the Amended Project

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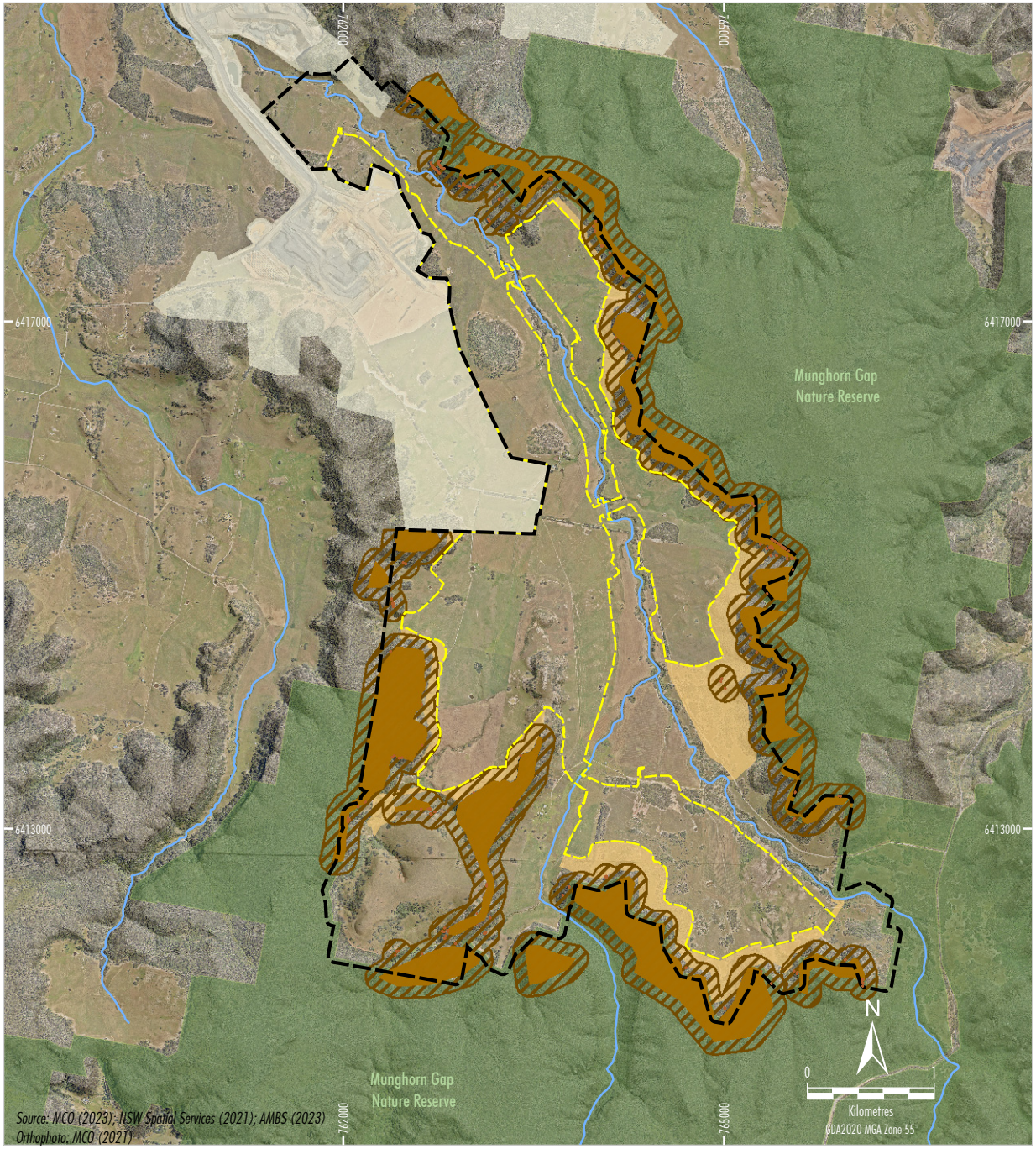
Further Avoidance and Minimisation for the Amended Project

Figure ES-4



MCM-20-18 OC3 Ext AR ES_205B

This figure demonstrates that the indicative surface disturbance extent for the amended Project avoids all mapped rocky habitat and breeding habitat (i.e. 100 m buffer from mapped rocky habitat) for threatened bats and the Broad-headed Snake.

In addition, blast vibration would be limited to 50 mm/s at mapped rocky habitat features, unless further geotechnical investigations support a higher value. This limit has been conservatively designed to prevent damage to mapped rocky habitat.

LEGEND

- National Park/Nature Reserve
- Moolarben Coal Complex Approved Disturbance Footprint
- Project Study Area
- Indicative Amended Project Surface Disturbance Extent
- Additional Avoidance/Minimisation for the Amended Project
- Mapped Rocky Habitat
- 100 m Buffer from Mapped Rocky Habitat (Breeding Habitat)

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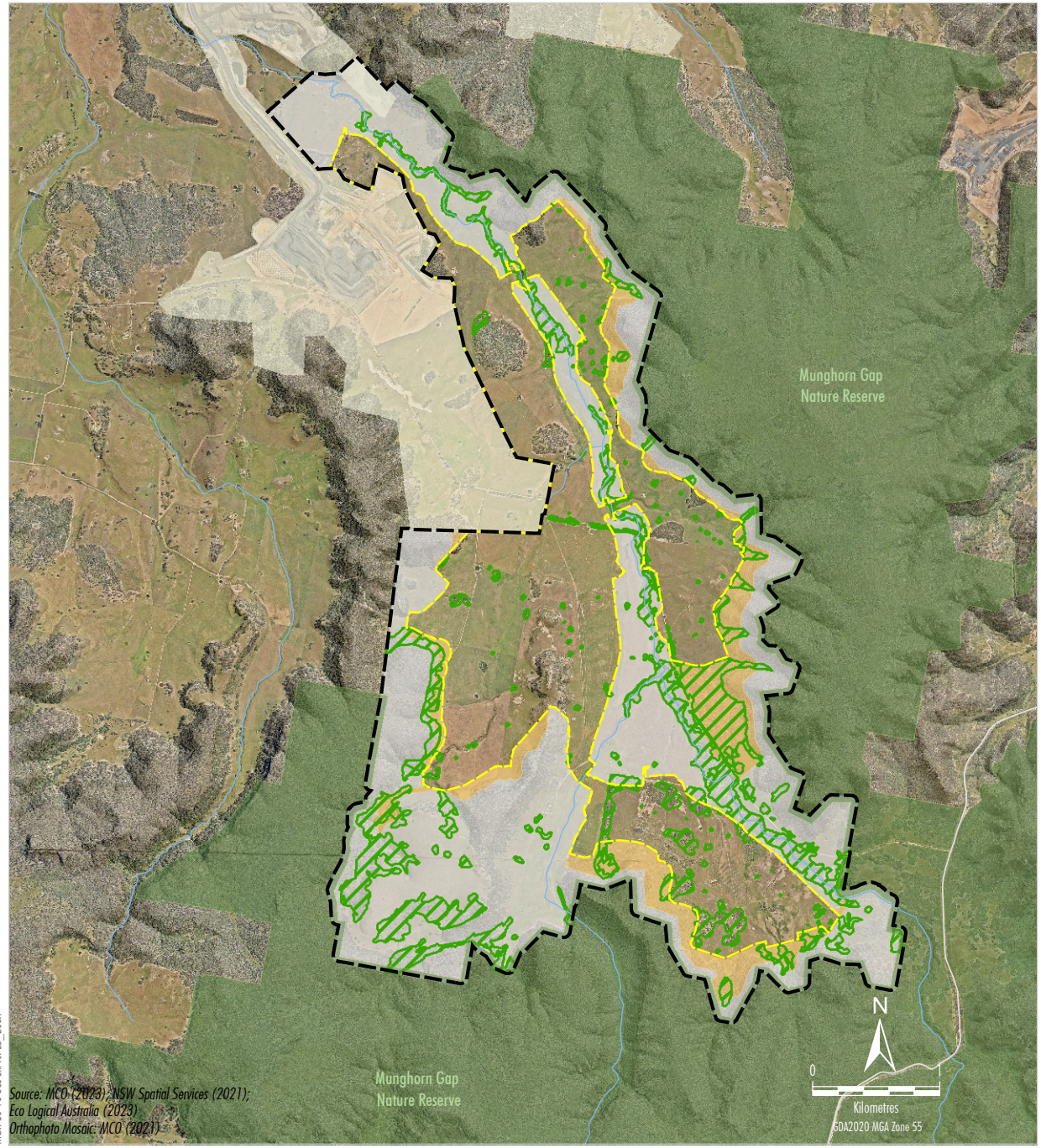
Threatened Bats and Broad-headed Snake Mapped Rocky Habitat

Figure ES-5



Source: MCO (2023); NSW Spatial Services (2021); Eco Logical Australia (2023) Orthophoto Mosaic: MCO (2021)

MCM-20-18 OC3 Ext AR ES_206A

This figure shows the extent of avoidance of Box-Gum Woodland CEEC (woodland component) for the amended Project when compared to the Study Area.

Overall, 84% (i.e. approximately 180 ha) of Box-Gum Woodland CEEC (woodland component) within the Project Study Area would be avoided for the amended Project.

The additional avoidance for the amended Project has reduced impacts to Box-Gum Woodland CEEC (woodland component) by 59% (i.e. approximately 50 ha) compared to the EIS disturbance footprint.

Residual impacts to Box-Gum Woodland CEEC (woodland component) are limited to scattered/isolated patches that are not feasible to avoid.

LEGEND

- National Park/Nature Reserve
- Moolarben Coal Complex Approved Disturbance Footprint
- Project Study Area
- Indicative Amended Project Surface Disturbance Extent
- Avoidance/Minimisation for the Project as Presented in the EIS
- Additional Avoidance/Minimisation for the Amended Project
- Box-Gum Woodland CEEC Woodland Component

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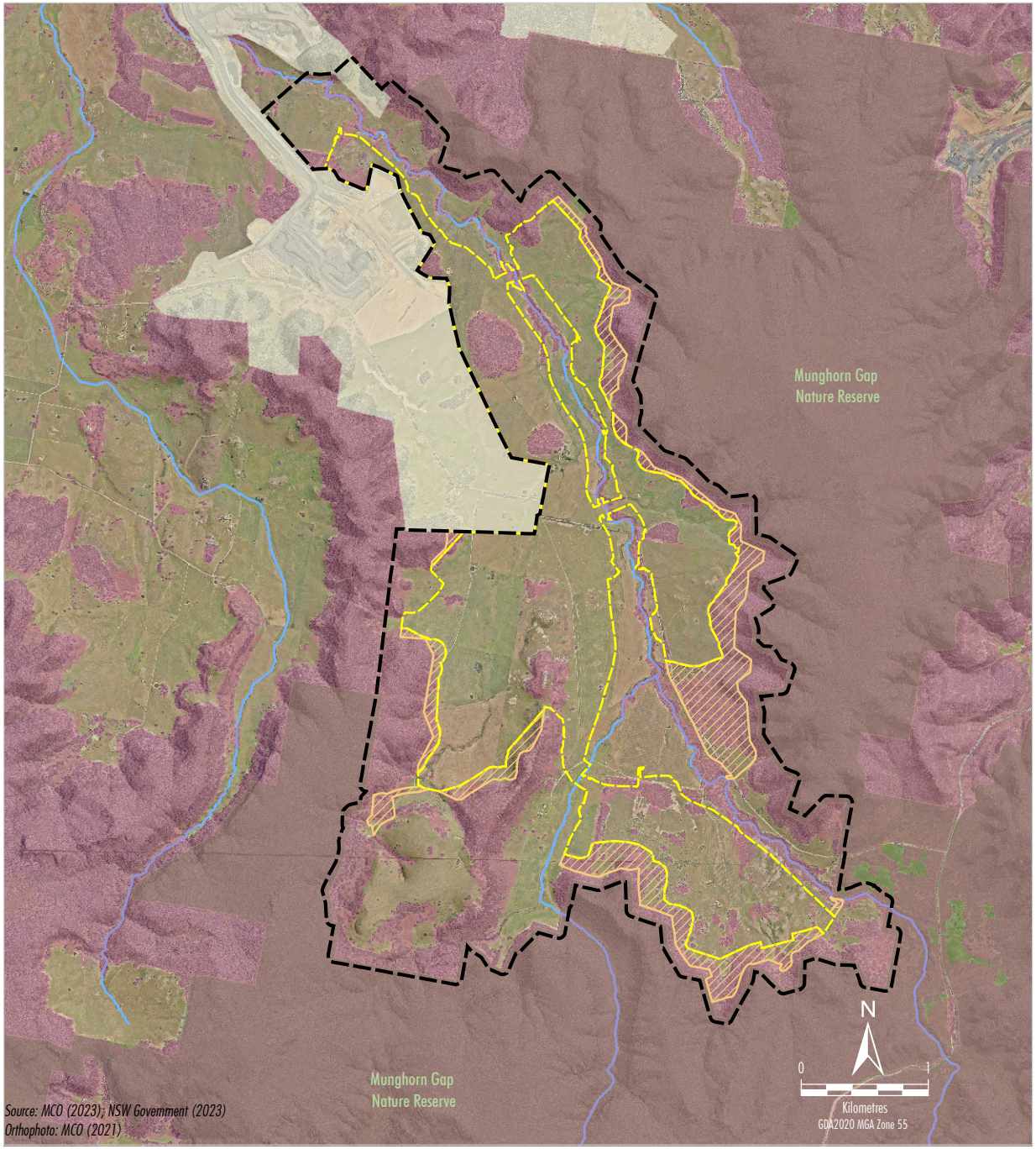
Box-Gum Woodland CEEC - Woodland Component

Figure ES-6



Source: MCO (2023); NSW Government (2023)
Orthophoto: MCO (2021)

MOM-20-18 0C3 Ext AR ES_207A

This figure shows the extent of avoidance of Regent Honeyeater Important Habitat Mapping for the amended Project when compared to the Study Area.

Overall, 88% (i.e. approximately 600 ha) of Regent Honeyeater Important Habitat Mapping within the Project Study Area would be avoided for the amended Project.

The additional avoidance for the amended Project has reduced impacts to Regent Honeyeater Important Habitat Mapping by 56% (i.e. approximately 100 ha) compared to the EIS.

Residual impacts to Regent Honeyeater Important Habitat Mapping are limited to scattered/isolated patches that are not feasible to avoid.

It is noted there are extensive areas of Regent Honeyeater Important Habitat Mapping in the immediate surrounds.

LEGEND

- National Park/Nature Reserve
- Moolarben Coal Complex Approved Disturbance Footprint
- Project Study Area
- Indicative Amended Project Surface Disturbance Extent
- Additional Avoidance/Minimisation for the Amended Project
- Regent Honeyeater Important Habitat Mapping

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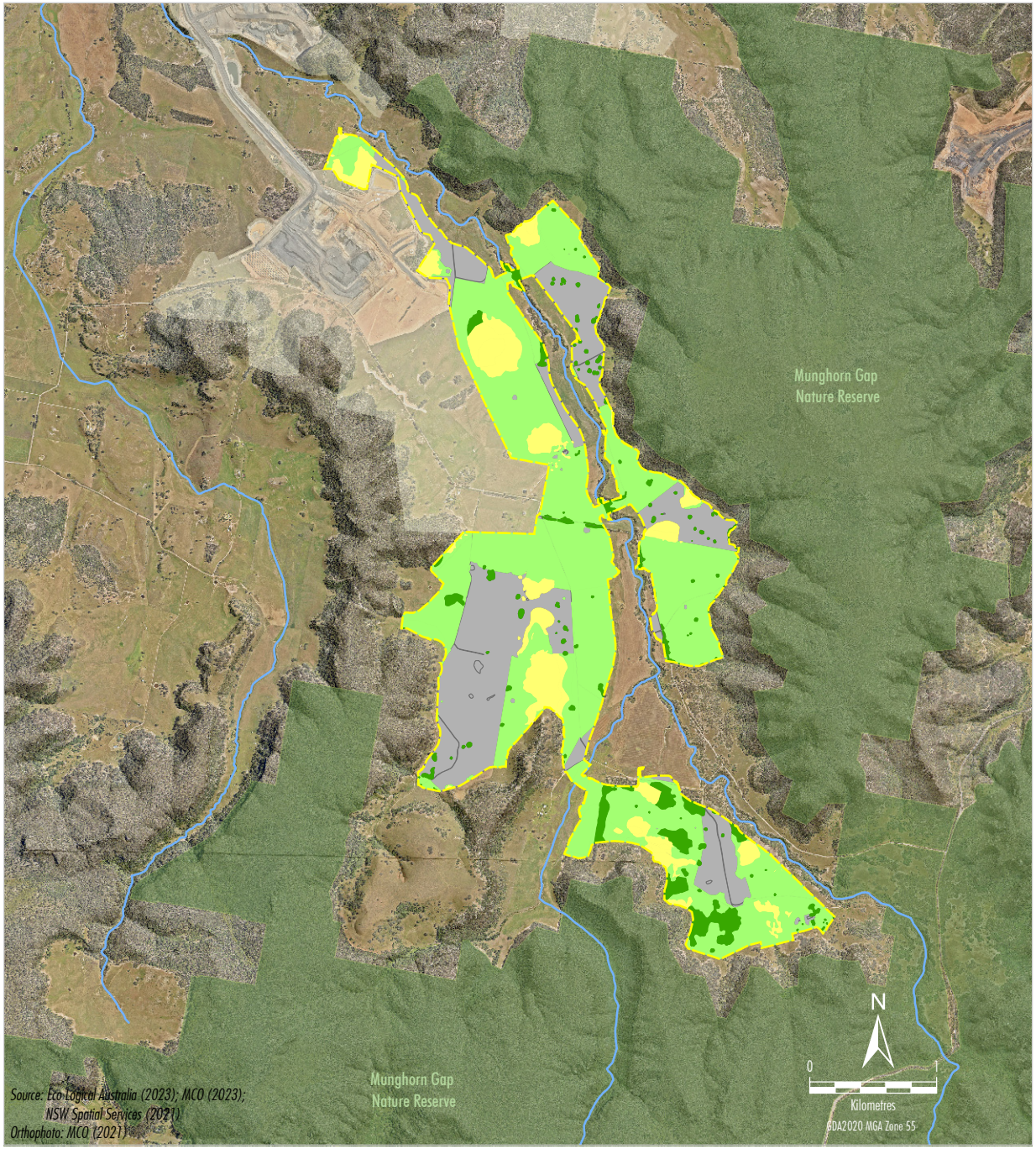
NSW Government Regent Honeyeater Important Habitat Mapping

Figure ES-7



MCM-20-18 OC3 Ext AR ES_208A

This figure shows residual impacts for the amended Project.

The majority of proposed disturbance is mapped as either Category 1 – Exempt Land (28%) (i.e. areas previously/ currently cropped or grazed) or the Derived Native Grassland component of Box-Gum Woodland CEEC (54%) (including areas that do not require offsets as they do not meet vegetation integrity thresholds due to past agricultural activities).

Further avoidance of the Derived Native Grassland component of Box-Gum Woodland CEEC and residual patches of native woodland is not considered reasonable or feasible for the Project.

Residual impacts to biodiversity are proposed to be compensated through revegetation in the Habitat Enhancement Area during mining, rehabilitation of mining landforms and securing biodiversity offsets (targeting Moolarben landholdings in close proximity to the Project).

LEGEND
- National Park/Nature Reserve
- Moolarben Coal Complex Approved Disturbance Footprint
- Indicative Amended Project Surface Disturbance Extent

Residual Impacts
- Box-Gum Woodland CEEC - Woodland
- Box-Gum Woodland CEEC - Derived Native Grassland
- Other Native Woodland
- Category 1 - Exempt Land and Other Exempt Land

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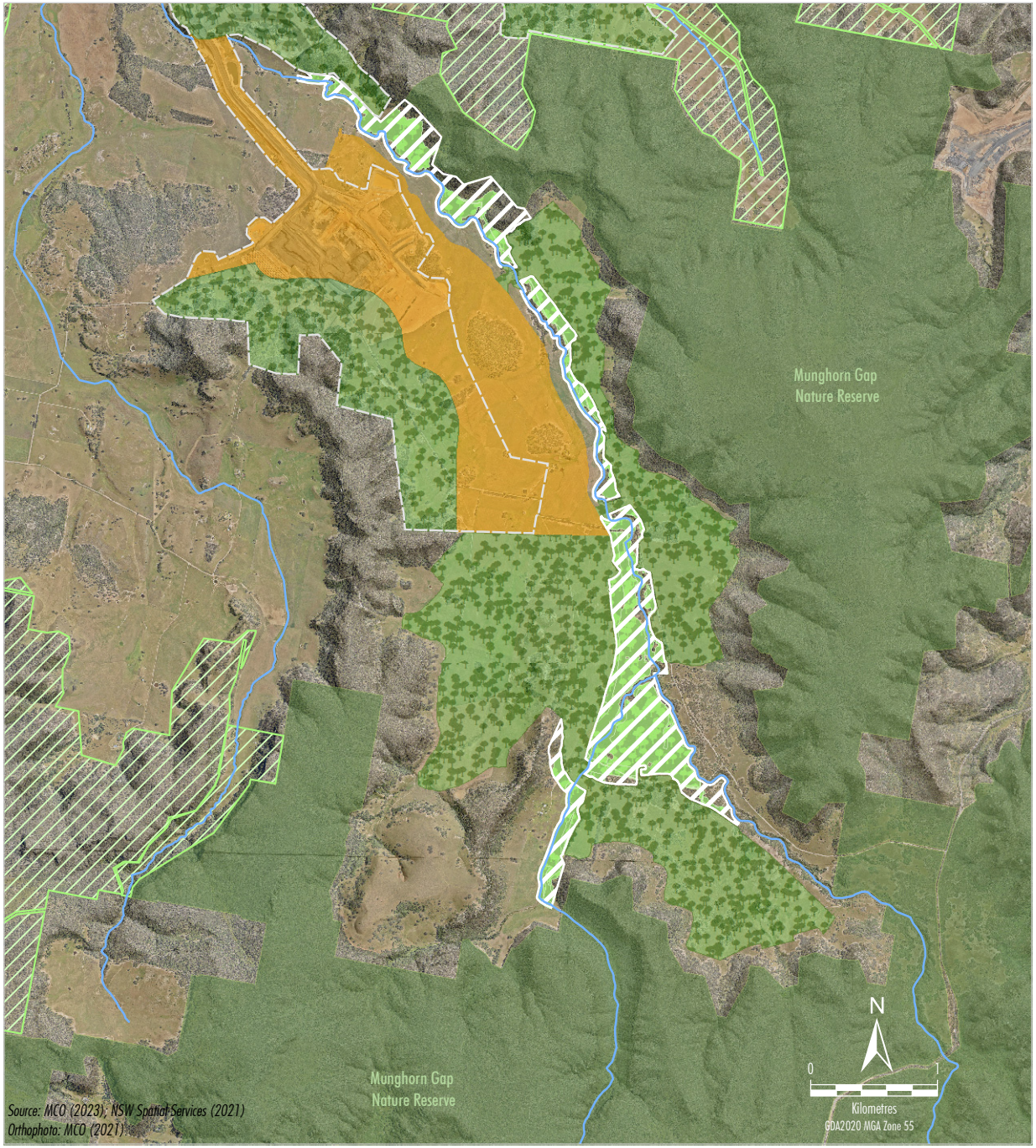
Residual Impacts of the Amended Project

Figure ES-8



MCM-20-18 OC3 Ext AR E5_209A

This figure shows the proposed Habitat Enhancement Area and conceptual post-mining land uses for the amended Project.

*During mining, 135 ha of native woodland revegetation works are proposed within the Habitat Enhancement Area. This would achieve a **net gain** in woodland in the Moolarben Valley during mining of 22 ha (i.e. 135 ha of native woodland revegetation vs 113 ha of native woodland disturbance).*

*Post-mining, approximately 535 ha of native woodland rehabilitation would occur on the final landform. Accordingly, the overall **net gain** in native woodland in the Moolarben Valley due to the Project would be **557 ha** in addition to meeting the required biodiversity offset obligation.*

These revegetation and rehabilitation areas would be integrated with proposed rehabilitation of the existing Moolarben Coal Complex, which is predominately native woodland.

In addition, MCO's preference is to maximise the use of its landholdings in close proximity to the Project to satisfy the Project's offset requirements. Any additional biodiversity offsets would complement other existing biodiversity offset areas in the region.

*The Project, if approved, would ultimately result in a significant **net gain** in biodiversity in the region through revegetation and rehabilitation to native woodland within and adjacent to the Project area, establishment of offset areas and increased connectivity with other remnant habitat areas.*

LEGEND

National Parks/Nature Reserves
Existing Biodiversity Offset Area
Moolarben Coal Complex Approved Disturbance Footprint

Conceptual Post-mining Land Uses
Agricultural Pasture
Native Woodland

Habitat Enhancement Area
Indicative Habitat Enhancement Extent
Indicative Revegetation Area Extent

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Proposed Habitat Enhancement Area and Conceptual Post-mining Land Use

Figure ES-9

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1 INTRODUCTION

1.1 BACKGROUND

The Moolarben Coal Complex is an existing mining operation located approximately 40 kilometres (km) north of Mudgee, New South Wales (NSW) (Figure 1-1).

The Moolarben Coal Complex is operated by Moolarben Coal Operations Pty Ltd (MCO) on behalf of the Moolarben Joint Venture (Moolarben Coal Mines Pty Ltd [MCM], Yancoal Moolarben Pty Ltd [YM] and a consortium of Korean power companies). MCO, MCM and YM are wholly owned subsidiaries of Yancoal Australia Limited (Yancoal).

Mining operations at the Moolarben Coal Complex are currently approved until 31 December 2038 with a combined coal production rate of 22 Million tonnes per annum (Mtpa) in accordance with Project Approval (05_0117) (Stage 1) (as modified) and Project Approval (08_0135) (Stage 2) (as modified). The Moolarben Coal Complex comprises four approved open cut mining areas (OC1 to OC4), three approved underground mining areas (UG1, UG2 and UG4) and other mining related infrastructure (including coal processing and transport facilities) (Figure 1-2).

MCO is proposing to extend open cut mining operations immediately south of the approved OC3 open cut pit as well as develop four new open cut pits to the east and south-east of the approved OC3 mining area, within existing mining tenements (the Project) (Figure 1-2).

The extended open cut mining operations would provide approximately 10 years of mining (from 2025 to 2034), maximise use of the existing mining fleet and maintain steady production of run-of-mine (ROM) coal at the Moolarben Coal Complex post-completion of mining within the approved OC3 mining area.

1.2 PROJECT ENVIRONMENTAL IMPACT STATEMENT

MCO (2022) prepared the Moolarben Coal Complex OC3 Extension Project Environmental Impact Statement (the EIS) for the Project to support the assessment process under the NSW *Environmental Planning and Assessment Act 1979*.

The Project EIS was placed on public exhibition by the then Department of Planning and Environment (DPE) (now known as the Department of Planning, Housing and Infrastructure [DPHI]) from 17 November to 14 December 2022. During this period, government agencies, organisations and members of the public were invited to provide submissions on the EIS.

In response to submissions received on the Project EIS, MCO is proposing to amend the Project indicative surface disturbance extent, as described in this Amendment Report. The amended Project indicative surface disturbance extent has been reduced to incorporate additional avoidance measures relative to the EIS. The additional avoidance areas and amended Project indicative surface disturbance extent compared to the EIS are shown on Figure 1-3.

MCO has also prepared a separate Submissions Report, which directly addresses matters raised in the government, organisation and public submissions on the Project EIS.

1.3 PROPOSED PROJECT AMENDMENTS

In summary, when compared to the EIS, the proposed amendments to the Project include:

- A reduction in the extent of proposed disturbance (from approximately 825 hectares [ha] to 675 ha).
- A reduction in the extent of proposed open cut mining.
- A reduction in total resource extracted from 40 Million tonnes (Mt) to approximately 30 Mt over the life of the Project.
- A reduction in the peak annual ROM mining rate from 9 Mt to 8.5 Mt over the life of the Project.
- No change to the duration of the mine life (i.e. between approximately 2025 to 2034), peak workforce, or hours of operation of the mine.

LEGEND
- State Forest
- National Park /Nature Reserve
- Local Government Boundary
- Exploration Licence Boundary
- Mining Lease Boundary
- Mining Operation
- Indicative Amended Project Surface Disturbance Extent

Source: NSW Spatial Services (2021)
MCO (2023)

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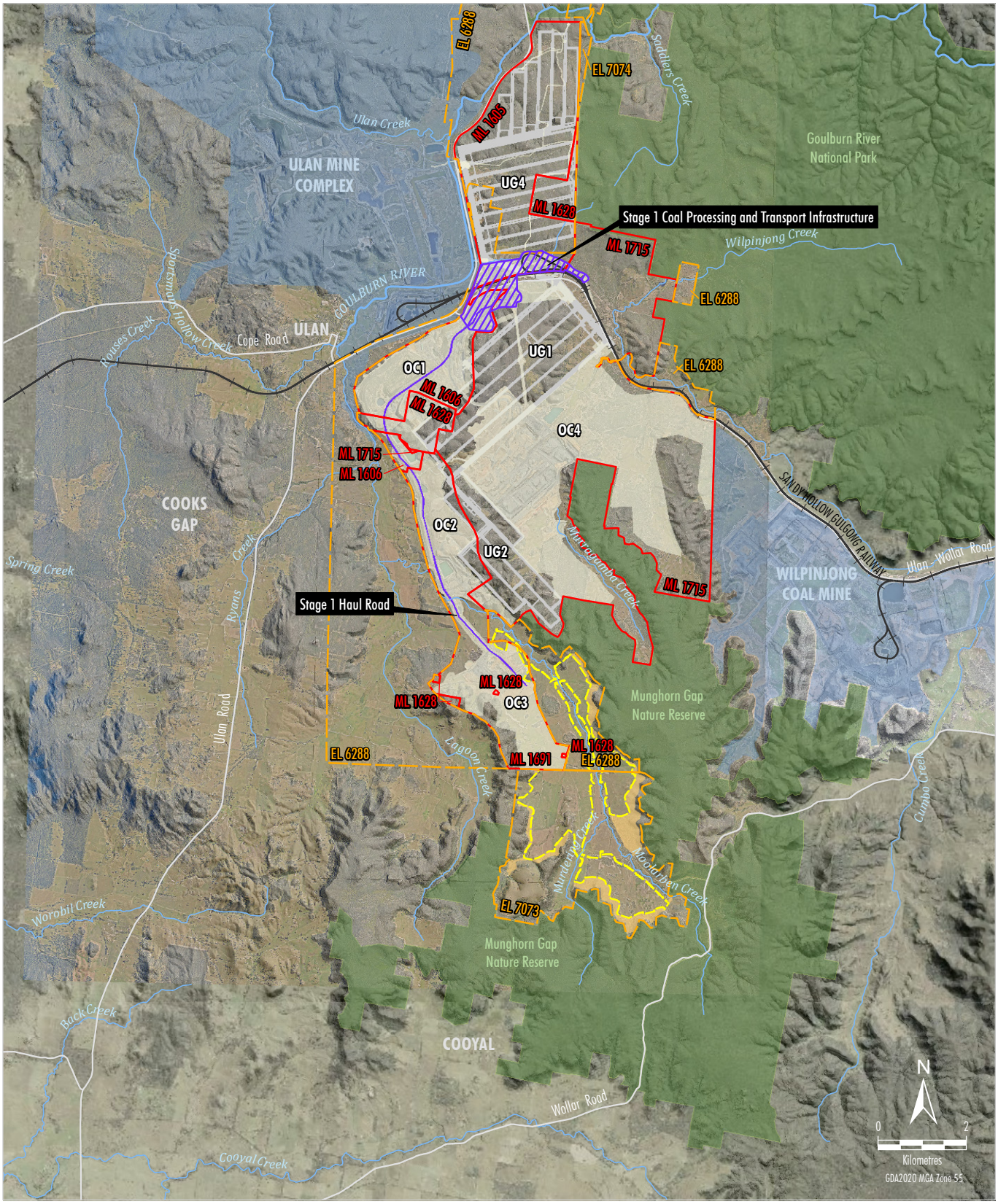
Project Location

Figure 1-1

MCM-20-18 OC3 Ext AR UPD MT_201A



MCM-20-18 OC3 Ext AR UPD MT_2020

LEGEND

- National Park/Nature Reserve
- Other Mining Operation
- Exploration Licence Boundary
- Mining Lease Boundary

Existing/Approved Development

- Underground Longwall Layout
- Moolarben Coal Complex Disturbance Footprint
- Stage 1 Coal Processing and Transport Infrastructure Footprint

OC3 Extension Project - Amended

- Indicative Amended Project Surface Disturbance Extent
- Additional Avoidance/Minimisation for the Amended Project

Source: MCO (2023); NSW Spatial Services (2021)
Orthophoto: MCO (2021)

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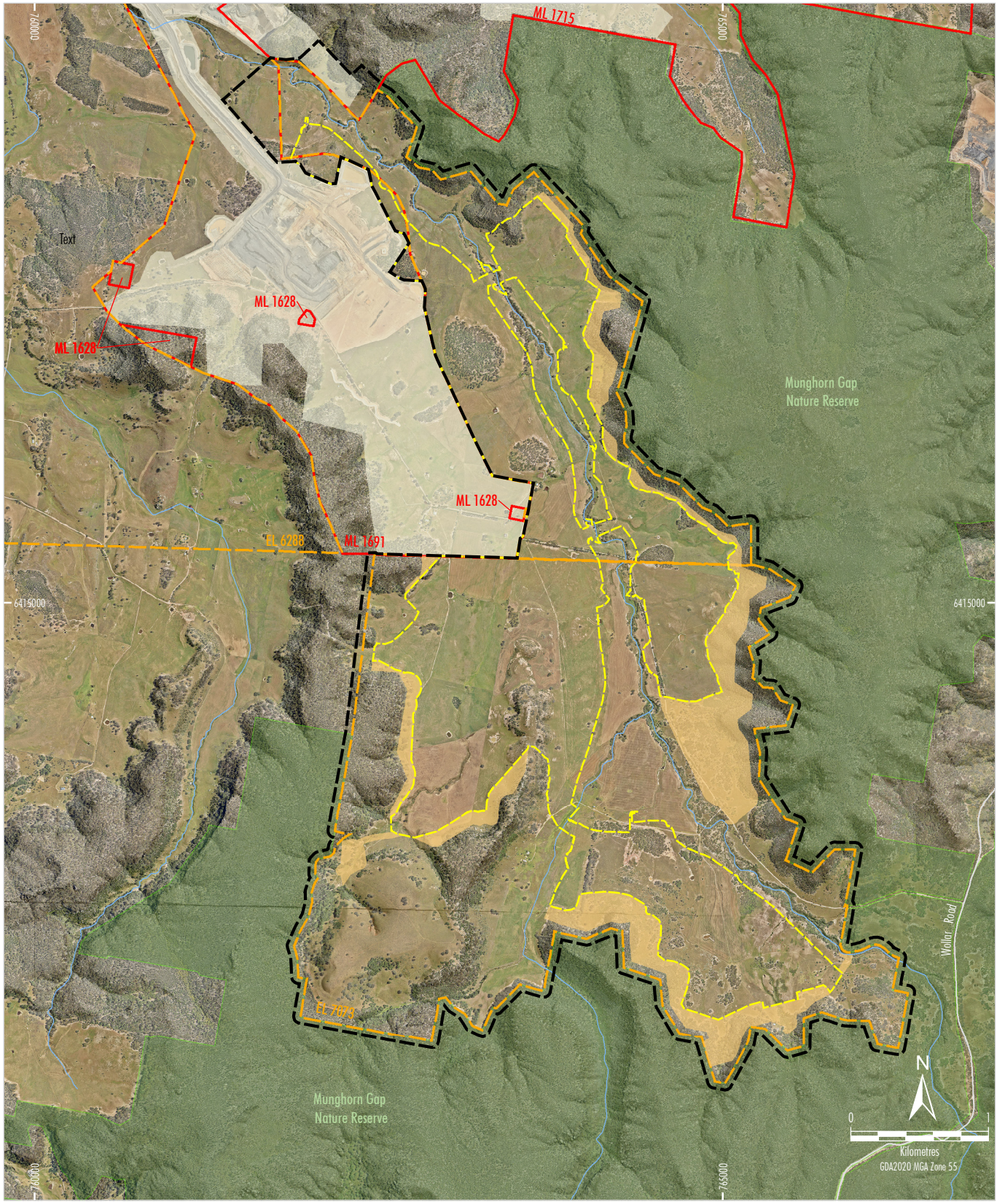
Approved Moolarben Coal Complex and Proposed Open Cut Extension

Figure 1-2



MCM-20-18 OC3 Ext AR UPD MT_203B

LEGEND

- National Park/Nature Reserve
- Exploration Licence Boundary
- Mining Lease Boundary
- Moolarben Coal Complex Disturbance Footprint
- OC3 Extension Project - Amended
- Project Study Area
- Indicative Amended Project Surface Disturbance Extent
- Additional Avoidance/Minimisation for the Amended Project

Source: MCO (2023); NSW Spatial Services (2021); Department of Planning, Industry & Environment (2021); Orthophoto Mosaic: MCO (2021)

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Amended Project Footprint

Figure 1-3

- No change to the proposed final landform integration with the approved OC3 mining area (including no final voids in the rehabilitated final landform).
- A revised conceptual post-mining land use which incorporates additional areas of native woodland (i.e. from approximately 375 ha to 535 ha).
- An increase to the proposed Habitat Enhancement Area extent (from approximately 160 ha to 188 ha) which would be revegetated during mining.

The revised revegetation and rehabilitation strategy means the amended Project, if approved, would result in:

- A net gain in native woodland in the Moolarben Valley of approximately 22 ha during mining due to revegetation within the Habitat Enhancement Area (i.e. approximately 113 ha of woodland to be cleared for the amended Project vs 135 ha of revegetation within the revised Habitat Enhancement Area extent).
- An overall net gain in native woodland in the Moolarben Valley of approximately 557 ha post-mining when considering revegetation during mining and rehabilitation of the final landform.
- A reduction in the number of voids in the Moolarben Valley from one to zero, as the Project proposes to backfill the currently approved OC3 final void, and provide a free-draining final landform (i.e. no residual voids).

Residual potential impacts on biodiversity would be offset in accordance with the BC Act (in addition to proposed revegetation with the Habitat Enhancement Area and rehabilitation of the final landform). MCO is expecting land based offset options to be available to secure the Project's total offset liability for the Regent Honeyeater and Koala (and potential for other threatened species following targeted surveys), including options to establish land-based offsets using Moolarben-owned land in the region. MCO is also investigating two potential "onsite" offset areas within the Project Study Area.

Further detail on the avoidance and minimisation measures incorporated in the amended Project are provided in Section 2, and a description of the amended Project is provided in Section 3.

1.4 APPLICANT DETAILS

MCO (ABN: 59 077 939 569) is the applicant for the Project. The contact details for MCO are:

Moolarben Coal Operations Pty Ltd
Postal: Locked Bag 2003,
Mudgee NSW 2850
Phone: +61 2 6376 1500

The Moolarben Coal Complex is located at 12 Ulan-Wollar Road, Ulan NSW 2850.

Further information on MCO and its mining operations can be found at:

http://www.moolarbencoal.com.au

1.5 STRUCTURE OF THIS DOCUMENT

The Amendment Report has been prepared in consideration of the *State significant development guidelines - preparing an amendment report* (DPE, 2022). The remainder of this document is structured as follows:

Section 2 Details the strategic context of the amended Project.

Section 3 Provides a detailed description of the proposed Project amendments.

Section 4 Details the statutory context of the amended Project.

Section 5 Describes the engagement undertaken in relation to the amended Project.

Section 6 Details the assessment of impacts of the amended Project.

Section 7 Provides a justification and evaluation of the amended Project merits.

Section 8 Lists the documents referenced in the Amendment Report.

Appendices A to K contain supporting information, including detailed engagement and specialist reports:

Appendix A Updated Project Description

Appendix B Updated Summary of Mitigation Measures

Appendix C Updated Biodiversity Development Assessment Report

Appendix D Expert Reviews of Potential Serious and Irreversible Impact Entities

Appendix E Updated Aboriginal Cultural Heritage Assessment

Appendix F Groundwater Review

Appendix G Surface Water Review

Appendix H Noise and Blast Impact Review

Appendix I Blast Vibration Impact Assessment

Appendix J Air Quality and Greenhouse Gas Amendment Report

Appendix K Addendum Economic Assessment

2 STRATEGIC CONTEXT

2.1 OVERVIEW

The strategic context of the Project, which includes the benefits of the Project to NSW and the region, is provided in Section 2 and Attachment 6 of the EIS. The overall strategic context described in the EIS remains unchanged in consideration of the proposed amendments to the Project. In summary:

- The Project is a logical extension of existing mining operations within existing mining tenements and company-owned freehold land.
- The Project presents an opportunity for MCO to continue to supply into thermal coal markets as well as meeting existing customer demands, from one of the lowest emissions intensive coal mining operations in Australia.
- The Project has the benefit of using existing coal handling, processing and transport infrastructure at the Moolarben Coal Complex, as well as existing open cut workforce.
- The Project would not increase the mine life of the approved Moolarben Coal Complex, nor would it increase the peak workforce or product coal transport.
- The resource can be recovered at a generally low depth of cover, allowing for economically efficient extraction with minimal potential for significant environmental impact.
- Land in the Project area has largely been historically cleared for agricultural uses.
- The Project is visually isolated from private residences by intervening elevated topography (associated with nearby ridgelines) which minimises potential amenity impacts to the closest dwellings.
- The Project is consistent with surrounding land uses as the local area is an existing mining precinct.

The amended Project also results in further reduced or avoided impacts to:

- Threatened fauna species habitat, including Large-eared Pied Pat (*Chalinolobus dwyeri*), Eastern Cave Bat (*Vespadelus troughtoni*), Broad-headed Snake (*Hoplocephalus bungaroides*), Regent Honeyeater (*Anthochaera phrygia*), Pink-tailed Legless Lizard (*Aprasia parapulchella*), Koala (*Phascolarctos cinereus*), Swift Parrot (*Lathamus discolor*) and Squirrel Glider (*Petaurus norfolcensis*).
- Threatened ecological communities, including *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (Box-Gum Woodland Critically Endangered Ecological Community [CEEC]).
- Threatened flora species, including Cotoneaster Pomaderris (*Pomaderris cotoneaster*).
- Potential terrestrial Groundwater Dependent Ecosystems (GDEs), including along Moolarben Creek.
- Amenity (e.g. noise, air quality and visual).
- Greenhouse gas (GHG) emissions.
- Aboriginal cultural heritage sites, including a reduced number of sites subject to direct impacts and updated management measures for sites subject to indirect impacts.

In addition, the revised revegetation and rehabilitation strategy means the amended Project, if approved, would result in:

- A net gain in native woodland in the Moolarben Valley of approximately 22 ha during mining due to revegetation within the Habitat Enhancement Area (i.e. approximately 113 ha of woodland to be cleared for the amended Project vs 135 ha of revegetation within the revised Habitat Enhancement Area extent).
- An overall net gain in native woodland in the Moolarben Valley of approximately 557 ha post-mining when considering revegetation during mining and rehabilitation of the final landform.
- A reduction in the number of voids in the Moolarben Valley from one to zero, as the Project proposes to backfill the currently approved OC3 final void, and provide a free-draining final landform (i.e. no residual voids).

2.2 AVOIDANCE AND MINIMISATION

2.2.1 Avoidance and Minimisation Proposed in the EIS

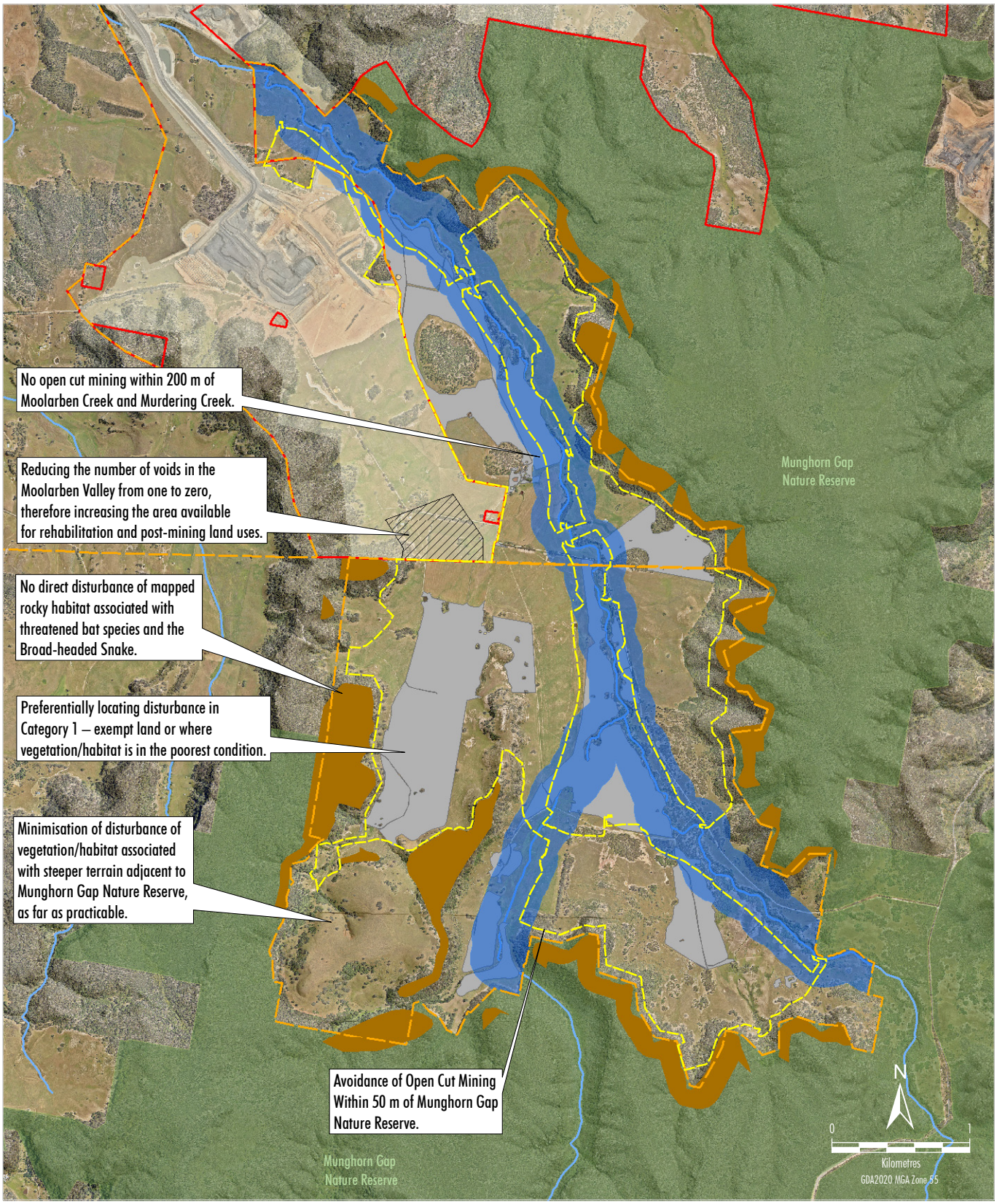
The Project as described in the EIS was developed and designed within operational and environmental constraints to achieve the following objectives:

1. Undertake a logical extension of existing mining operations.
   - The Project area is immediately adjacent to approved OC3 operations, and within existing mining tenements and company-owned freehold land.
   - It would utilise existing coal handling, processing and transport infrastructure at the Moolarben Coal Complex, as well as the existing open cut workforce.
   - The Project would maintain continuity of open cut mining, steady production of ROM coal and security of employment following completion of approved OC3 operations.
2. Avoid sensitive environmental features within the Moolarben Valley.
   - Land in the Project area has largely been historically cleared for agricultural uses.
   - The Project area would avoid direct disturbance of mapped rocky habitat associated with threatened bat species (namely Large-eared Pied Bat and Eastern Cave Bat) and Broad-headed Snake.
   - The Project would avoid open cut mining within 200 metres (m) of the high bank of Moolarben Creek and Murdering Creek.
   - The Project would not result in any direct impacts to the Munghorn Gap Nature Reserve.
3. Develop the Project within existing Moolarben Coal Complex amenity criteria.
   - No additional residences require acquisition or mitigation for the Project when compared to the existing Moolarben Coal Complex.
   - The Project location within the Moolarben Valley and surrounding elevated topography provides a natural barrier which limits amenity impacts at nearby private residences.
   - No increase to the mine life, peak workforce or product coal transport of the approved Moolarben Coal Complex as a result of the Project.
4. Facilitate an improved final landform and enable suitable post-mining land uses.
   - Open cut voids within the Project area would be progressively backfilled to develop a free draining final landform rather than leaving a water filled void.
   - Waste rock from the Project would also be used to backfill the approved OC3 final void.
   - Post-mining land uses would integrate with the approved OC3 mining area, and include a combination of native vegetation and agriculture.

Development of the Project considered a Study Area (refer Figure 1-3) constrained by existing Moolarben mining tenements and landholdings. As per the Joint Ore Reserve Committee Coal Resource Report presented in the Project EIS, total coal resources in the Study Area comprise approximately 100 Mt of ROM coal.

The Project as presented in the EIS incorporated a number of measures to avoid and minimise impacts to environmental features, native vegetation and threatened species habitat within the study area, including (Figure 2-1):

- Avoiding disturbance of mapped rocky habitat associated with threatened bat species and the Broad-headed Snake.
- Minimising disturbance of vegetation/habitat associated with steeper terrain adjacent to Munghorn Gap Nature Reserve, as far as practicable.
- No open cut mining within 200 m of the high bank of Moolarben Creek and Murdering Creek or within 50 m of the Munghorn Gap Nature Reserve.



MCM-20-18 OC3 Ext AR UPD MT_208C

LEGEND

National Park/Nature Reserve
Exploration Licence Boundary
Mining Lease Boundary
Moolarben Coal Complex Disturbance Footprint

OC3 Extension Project

Indicative Surface Disturbance Extent

Avoidance and Minimisation Measures

No Proposed Open Cut Mining within 200 m of Moolarben and Murdering Creek
Category 1 - Exempt Land
Mapped Rocky Habitat for Threatened Bats and Broad-headed Snake
Approved Final Void OC3 Mining Area

Source: MCO (2022); NSW Spatial Services (2021)
Orthophoto: MCO (2020, 2021)

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Project Avoidance and Minimisation Measures as Presented in the EIS

Figure 2-1

- Minimising the extent of infrastructure within the riparian zone of Moolarben Creek and Murdering Creek as far as practicable.
- Locating haul road creek crossings within previously cleared areas, where practicable and feasible.
- Maximising use of existing infrastructure at the Moolarben Coal Complex (i.e. coal handling and transport infrastructure) to minimise construction of additional infrastructure areas for the Project.
- Preferentially locating disturbance in Category 1 – exempt land or where vegetation/habitat is in the poorest condition (e.g. low quality Derived Native Grassland [DNG]).
- Reducing the number of voids in the Moolarben Valley from one to zero, therefore increasing the area available for rehabilitation and post-mining land uses.

As a result of the above measures, the Project as presented in the EIS achieved material minimisation and avoidance of Serious and Irreversible Impact (SAII) species habitat in the broader Study Area. Table 2-1 provides a summary of SAII entities' habitat avoided for the Project EIS and Table 2-2 provides the net increase of native woodland in the Study Area as a result of the Project.

These measures resulted in the proposed resource recovery of approximately 40 Mt of ROM coal for the Project as presented in the EIS, out of a total potential economically recoverable resource of approximately 100 Mt in the Study Area.

The Project as described in the EIS was considered to provide a balance between the design objectives, in particular reasonable avoidance and minimisation of impacts to sensitive environmental features while undertaking a logical and feasible extension of existing operations, which provides a benefit to the local community, region and State of NSW.

2.2.2 Further Avoidance and Minimisation Measures for the Amended Project

Background

Following the Project EIS exhibition period, submissions raised concerns with potential direct impacts to threatened species habitat, particularly SAII entities, as well as potential indirect impacts to the Munghorn Gap Nature Reserve.

MCO has reviewed the Project design and reduced the indicative surface disturbance extent to further avoid and/or minimise impacts to threatened species habitat.

The areas proposed for further avoidance and minimisation have targeted key threatened species habitat for potential SAII entities, largely contiguous remnant woodland vegetation, as well as further setback from the Munghorn Gap Nature Reserve and rocky habitat features. These areas are on the outer edge of the Project mining area such that the extent of open cut mining has been reduced while maintaining a feasible and economically viable mine plan (Figure 1-3).

The reduced extent of the open cut mining areas has an associated reduction in the available coal resource of approximately 10 Mt (i.e. total ROM extraction reduced from approximately 40 Mt to 30 Mt), with an associated reduction in royalty payments of $63 million ($AU2024).

The amended Project design achieves the following (Table 2-1 and Figure 2-2):

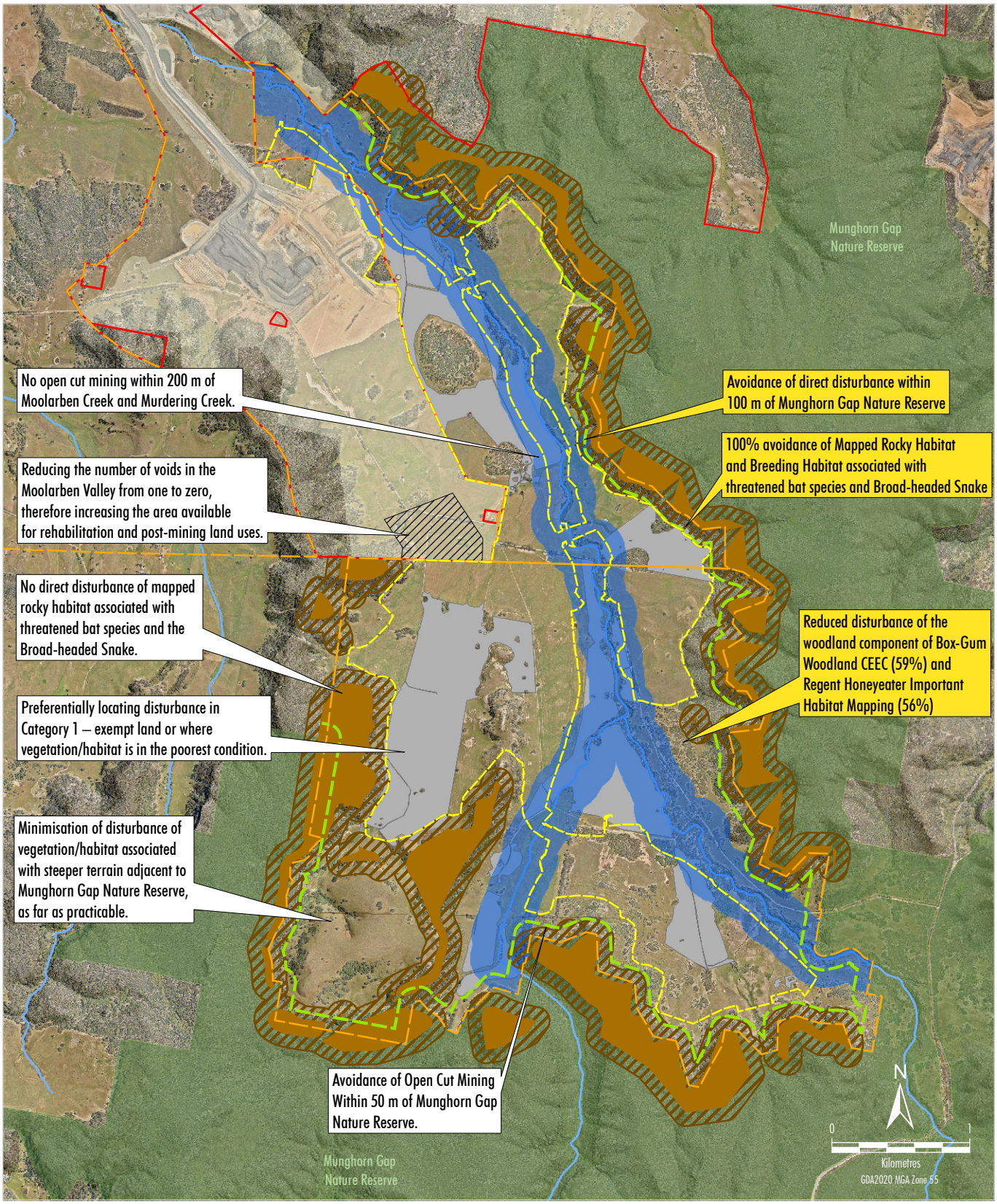
- Avoidance of any mining-related disturbance within 100 m of the Munghorn Gap Nature Reserve (noting the EIS proposed no open cut mining within 50 m of the Munghorn Gap Nature Reserve).
- Avoidance of any clearance of mapped rocky habitat and breeding habitat (defined as relevant vegetation within 100 m of mapped rocky habitat) associated with threatened bat species (i.e. Large-eared Pied Bat and Eastern Cave Bat) and the Broad-headed Snake (noting the EIS proposed avoidance of any clearance of mapped rock habitat).

Table 2-1
Avoidance of Habitat for SAII Entities in the Study Area, Project EIS Footprint and Amended Project Footprint

Common Name	Scientific Name	Habitat Component	Project Study Area	Project EIS Footprint	Amended Project Footprint		
					Total Habitat	Habitat Avoidance	
			Total Habitat	Total Habitat		Compared to Study Area	Compared to EIS Footprint
Box-Gum Woodland CEEC	*White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland*	Woodland	213 ha	84 ha	34 ha	84%	59%
		DNG	648 ha	394 ha	366 ha	43%	7%
Large-eared Pied Bat and Eastern Cave Bat	*Chalinolobus dwyeri and Vespadelus troughtoni*	Mapped rocky habitat	137 ha	**Complete avoidance**			
		Breeding habitat	376 ha	39 ha	**Complete avoidance**		
Broad-headed Snake	*Hoplocephalus bungaroides*	Mapped rocky habitat	137 ha	**Complete avoidance**			
		Breeding habitat	239 ha	38 ha	**Complete avoidance**		
Regent Honeyeater	*Anthochaera phrygia*	Mapped 'Important' Habitat	683 ha	184 ha	81 ha	88%	56%

Table 2-2
Net Increase in Native Woodland as a Result of the Project

Native Woodland Area	Project EIS	Amended Project
Native Woodland Vegetation Clearance	(230 ha)	(113 ha)
Total Revegetation during Mining (within Habitat Enhancement Area)	90 ha	135 ha
Net Increase in Woodland in Study Area during Mining	**- 140 ha**	**+ 22 ha**
Native Woodland Rehabilitation	325 ha	535 ha
Net Increase in Woodland in Study Area Following Completion of Mining and Rehabilitation	**+ 185 ha**	**+ 557 ha**



MCOA-20-18 OC3 Ext AR UPD MT_209D

LEGEND

- National Park/Nature Reserve
- Exploration Licence Boundary
- Mining Lease Boundary
- Moolarben Coal Complex Disturbance Footprint
- OC3 Extension Project - Amended
- Indicative Amended Project Surface Disturbance Extent

Avoidance and Minimisation Methods

- No Proposed Open Cut Mining within 200 m of Moolarben and Murdering Creek
- Category 1 - Exempt Land
- Mapped Rocky Habitat for Threatened Bats and Broad-headed Snake
- Breeding Habitat for Threatened Bats and Broad-headed Snake (100 m Buffer from Mapped Rocky Habitat)
- 100 m Buffer from Munghorn Gap Nature Reserve
- Approved Final Void OC3 Mining Area

Source: MCO (2023); NSW Spatial Services (2021)
Orthophoto: MCO (2021)

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Additional Avoidance and Minimisation Measures for the Amended Project

Figure 2-2

- Approximately 59% (i.e. 50 ha) less disturbance of the woodland component of Box-Gum Woodland CEEC compared to the Project EIS.
- Approximately 56% (i.e. 103 ha) less disturbance of Regent Honeyeater Important Habitat Mapping compared to the Project EIS.

In addition, blast design parameters have been reviewed, with input from PSM (2024), to develop vibration thresholds to protect sensitive geological features (including within the Munghorn Gap Nature Reserve and mapped rocky habitat) from indirect blast vibration impacts (further detail provided below and in Section 6.7).

Description of Targeted Measures for the Amended Project

The amended Project design was developed in consideration of the hierarchy for assessing potential impacts on biodiversity values as described in the NSW Biodiversity Assessment Method (BAM) (DPIE, 2020), specifically:

1. Avoidance.
2. Minimisation.
3. Mitigation.
4. Offset.

The targeted measures proposed to address potential impacts on biodiversity values as described in the BAM considered species records, habitat connectivity and quality as well as operational constraints, environmental management requirements and rehabilitation outcomes to ensure a balance between improved biodiversity outcomes and feasibility of the Project.

The proposed targeted measures are detailed further below. An updated Biodiversity Development Assessment Report (BDAR) is provided in Appendix C and the outcomes of the BDAR are described in Section 6.2.

1. Avoidance

Habitat for the Large-eared Pied Bat, Eastern Cave Bat and Broad-headed Snake (all SAII-listed entities) within the Project Study Area includes mapped rocky features, such as cliffs and rocky outcrops. The Project EIS proposed to avoid direct disturbance of all mapped rocky habitat within the Project Study Area.

The NSW Biodiversity, Conservation and Science Directorate (BCS) and NSW National Parks and Wildlife Services (NPWS) submission recommended MCO consider additional strategies to reduce impacts to Large-eared Pied Bat, Eastern Cave Bat and Broad-headed Snake habitat.

The amended Project includes additional setbacks such that there would be no direct disturbance of mapped rocky habitat (as proposed for the EIS Project) and breeding habitat (defined as relevant vegetation within 100 m of mapped rocky habitat) associated with the Large-eared Pied Bat, Eastern Cave Bat and the Broad-headed Snake.

On this basis, the amended Project would completely avoid areas that require consideration of SAII for these three entities.

Foraging habitat for the Large-eared Pied Bat and Eastern Cave Bat (defined as relevant vegetation within 2 km of mapped rocky habitat) remains within the amended Project indicative surface disturbance extent (albeit at a reduced extent) and would be offset accordingly.

It is noted that portions of the additional areas avoided to reduce impacts to the threatened bat species and the Broad-headed Snake are also Regent Honeyeater Important Mapped Habitat and Box-Gum Woodland CEEC (further detail provided below).

2. Minimisation

Regent Honeyeater

The Project EIS proposed to avoid approximately 73% (499 ha) of native woodland in the Study Area included in the NSW Government's Regent Honeyeater Important Habitat Mapping. This resulted in proposed disturbance of Regent Honeyeater Important Habitat Mapping of approximately 184 ha for the Project EIS.

The BCS and NPWS submission recommended MCO consider additional strategies to reduce impacts to Regent Honeyeater Important Habitat Mapping.

The amended Project indicative surface disturbance extent would reduce disturbance of Regent Honeyeater Important Habitat Mapping by approximately 56% (an additional 103 ha) compared to the Project EIS.

The remaining Regent Honeyeater Important Habitat Mapping in the amended Project indicative surface disturbance extent comprises smaller, isolated patches of woodland scattered throughout grassland and cleared land, and therefore, it was not considered feasible to achieve complete avoidance of this habitat.

There is total of approximately 556,841 ha of Regent Honeyeater Important Habitat Mapping in NSW. The remaining disturbance of Regent Honeyeater Important Habitat Mapping in the amended Project indicative surface disturbance extent (i.e. approximately 81 ha) represents approximately 0.02% of the total Important Habitat Mapping within NSW prepared by the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW).

The revised revegetation and rehabilitation strategy means the Project would result in a net increase in native woodland (i.e. potential habitat for Regent Honeyeater) in the Moolarben Valley of approximately 22 ha during mining and approximately 557 ha post-mining.

Box-Gum CEEC – Woodland Component

The Project EIS proposed to avoid approximately 59% (126 ha) of the woodland component of Box-Gum Woodland CEEC in the Study Area. This resulted in proposed disturbance of the woodland component of approximately 84 ha for the Project EIS.

The BCS and NPWS submission recommended MCO consider additional strategies to reduce impacts to Box-Gum Woodland CEEC.

The amended Project indicative surface disturbance extent would reduce disturbance of the woodland component of Box-Gum Woodland CEEC by approximately 59% (an additional 50 ha) compared to the Project EIS.

It is noted that MCO has focused on strategies to minimise impacts to the woodland component of Box-Gum Woodland CEEC to provide the most beneficial outcome to biodiversity values.

It was not considered feasible to significantly reduce disturbance of the DNG component given its lower biodiversity value and prevalence across the Project area. Nonetheless, disturbance of the DNG component of Box-Gum Woodland CEEC for the amended Project has still been reduced by approximately 7% (28 ha) compared to the Project EIS, as a result of other proposed biodiversity avoidance and minimisation measures.

The area of occupancy (AOO) of Box-Gum Woodland CEEC in NSW is estimated at 15,110,000 ha as per the NSW Threatened Species Scientific Committee (TSSC) listing for the community (NSW TSSC, 2020). The residual disturbance of Box-Gum Woodland CEEC (woodland and DNG) within the amended Project indicative surface disturbance extent (i.e. approximately 400 ha) represents 0.0027% of the estimated AOO in NSW (Hunter Ecology Pty Ltd [Hunter Eco], 2024).

The revised revegetation and rehabilitation strategy means the Project would result in a net increase in native woodland in the Moolarben Valley of approximately 22 ha during mining and approximately 557 ha post-mining.

3. Mitigation

Indirect Impacts

The Project EIS proposed to avoid open cut mining within 50 m of the Munghorn Gap Nature Reserve. Some water management infrastructure was required within 50 m of the Munghorn Gap Nature Reserve.

The BCS and NPWS submission recommended MCO consider appropriate setbacks from the Munghorn Gap Nature Reserve to reduce the potential for indirect impacts to NPWS lands and associated environmental values.

The amended Project would now avoid all mining-related disturbance within 100 m of the Munghorn Gap Nature Reserve.

In response to comments about the protection of geological features in the Munghorn Gap Nature Reserve, MCO has developed specific blast vibration limits, with input from blast, geotechnical and ecology specialists, to manage and mitigate potential indirect impacts to rocky habitat and associated threatened species during mining:

- Blast vibration would be limited to 50 millimetres per second (mm/s) at mapped rocky habitat features, unless further geotechnical investigation supports a higher value.
- Blast design and execution would be managed for blasts as required to achieve the vibration limit at mapped rocky habitat features. Additional blast vibration monitoring would be implemented.
- These limits would have the benefit of minimising potential indirect impacts to Aboriginal cultural heritage rock shelter sites within the mapped rocky habitat extent, and on geological features in the Munghorn Gap Nature Reserve.

Enhancement

The Project EIS proposed to establish a Habitat Enhancement Area within riparian zones along Moolarben Creek and Murdering Creek, outside the proposed indicative surface disturbance extent, including:

- approximately 70 ha of existing remnant woodland (which includes Regent Honeyeater Important Habitat Mapping, Koala habitat, and foraging habitat for Large-eared Pied Bat and Eastern Cave Bat); and
- approximately 90 ha of DNG and cleared land proposed to be revegetated to provide habitat values consistent with the remnant woodland.

To further mitigate potential impacts to threatened species habitat, the amended Project would extend the Habitat Enhancement Area by an additional 28 ha (to a total of approximately 188 ha).

The extended Habitat Enhancement Area would encompass riparian areas of Moolarben Creek and Murdering Creek, adjacent to proposed native woodland rehabilitation areas (Figure 2-3).

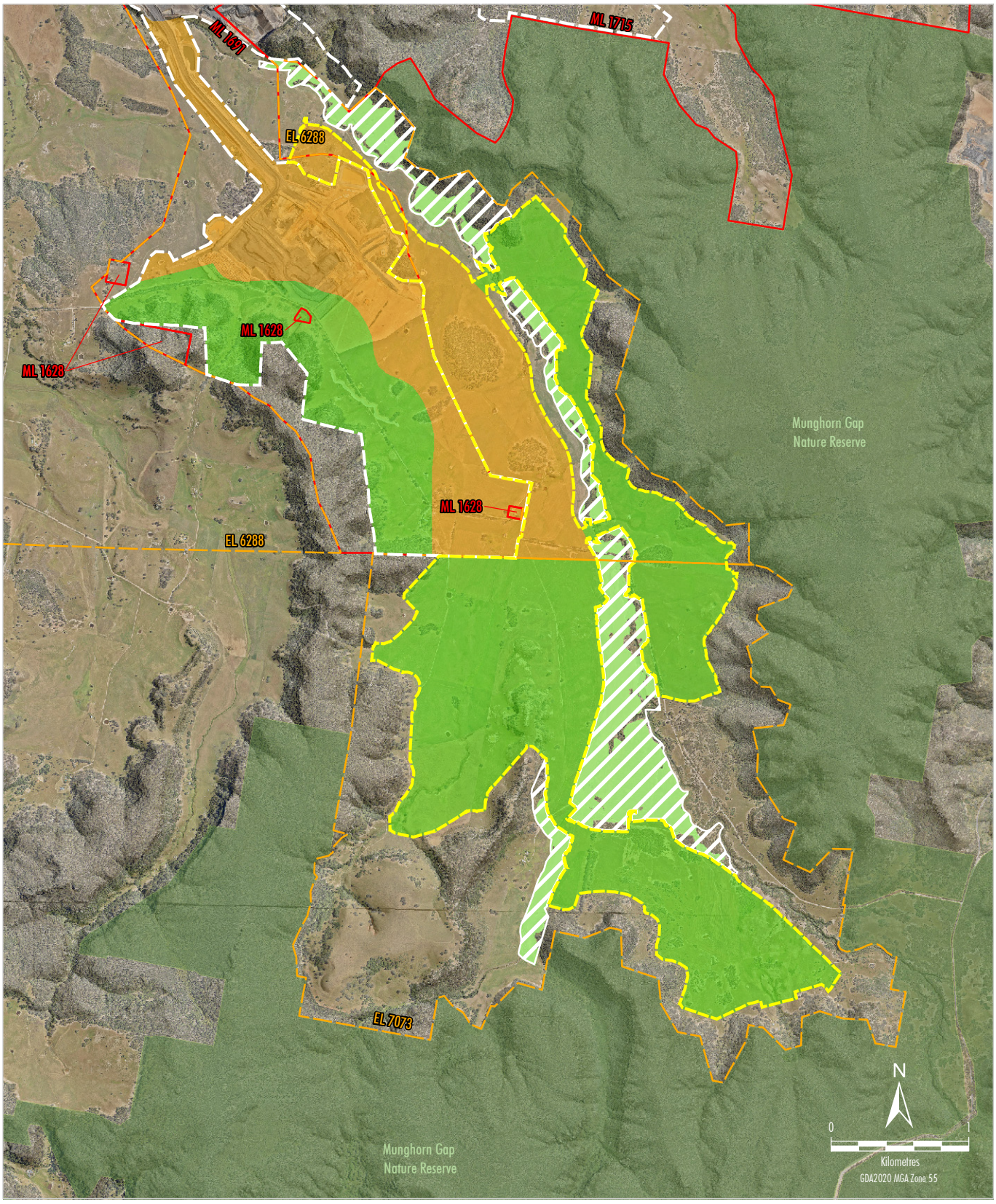
In consideration of the revised extent of native woodland clearance proposed for the amended Project (i.e. approximately 113 ha), revegetation of DNG/cleared land to woodland within the extended Habitat Enhancement Area would provide a net increase in woodland in the Moolarben Valley of approximately 22 ha during mining (i.e. not including rehabilitation).

The revegetation proposed within the Habitat Enhancement Area can occur during Project operations and therefore, provide mitigation prior to rehabilitation within the indicative surface disturbance extent.

The Habitat Enhancement Area would improve the condition of remnant vegetation, enhance habitat connectivity with the Munghorn Gap Nature Reserve and provide a net increase in native vegetation and associated species habitat in the Moolarben Valley during the life of the Project.

Rehabilitation

As described in the Project EIS, rehabilitation of backfilled areas would be undertaken progressively throughout the mine life as mining advances through the open cut mining areas.



MCIA-20-18 OC3 Ext AR UPD MT_204E

LEGEND

- National Park/Nature Reserve
- Exploration Licence Boundary
- Mining Lease Boundary
- Moolarben Coal Complex Disturbance Footprint
- OC3 Extension Project - Amended
- Indicative Amended Project Surface Disturbance Extent

Conceptual Post-mining Land Use Areas

- Agricultural Pasture
- Native Woodland

Habitat Enhancement Area

- Indicative Habitat Enhancement Area
- Indicative Revegetation Area Extent

Source: MCO (2023); NSW Spatial Services (2021)
Orthophoto: MCO (2021)

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Conceptual Post-mining Land Use Areas

Figure 2-3

Rehabilitated areas of native vegetation and species habitat would therefore be available within the Project indicative surface disturbance extent prior to completion of mining (as early as 2029), reducing the overall period that habitat is unavailable.

As a component of the review of the Project design, MCO has also identified opportunities to improve the conceptual post-mining land uses by increasing the area rehabilitated to native vegetation from approximately 325 ha to 535 ha.

With the Habitat Enhancement Area and rehabilitation, there is a long-term net increase in native woodland in the Moolarben Valley of approximately 557 ha.

The amended Project would maintain the key design principles for the conceptual final landform as detailed in the Project EIS, in particular the proposed backfilling of all open cut voids to provide a free-draining final landform (including the approved OC3 final void) and integration of the final landform with the approved OC3 area.

4. Offset

Offset Strategy

Residual potential impacts on biodiversity would be offset in accordance with the NSW *Biodiversity Conservation Act 2016* (BC Act), including retirement of credits, funding of a biodiversity conservation action and/or payment into the Biodiversity Conservation Fund.

MCO is expecting land-based offset options to be available to secure the Project's total offset liability for the Regent Honeyeater and Koala (and potential for other threatened species following targeted surveys), including options to establish land-based offsets using Moolarben-owned land in the region.

Onsite Offset Areas

MCO is investigating two potential "onsite" offset areas within the Project Study Area, associated with Regent Honeyeater Important Habitat Mapping, Box-Gum Woodland CEEC and other recorded threatened species and their habitat (including Large-eared Pied Bat, Eastern Cave Bat, Pink-tailed Legless Lizard, Squirrel Glider and Koala).

Establishment of these "onsite" offset areas would allow native vegetation and threatened species habitat avoided by the Project to be managed 'in perpetuity' and would improve habitat connectivity between the Habitat Enhancement Area and the adjacent Munghorn Gap Nature Reserve, particularly during mining and before rehabilitation is established within the indicative surface disturbance extent.

Consequential Benefits of the Amended Project

As a result of the proposed amendments to the Project indicative surface disturbance extent, a number of the potential environmental impacts from the Project would be minimised, including the following:

- Reduced disturbance of potential habitat for threatened species habitat including Pink-tailed Legless Lizard, Koala, Swift Parrot and Squirrel Glider.
- Reduced disturbance of potential habitat for threatened flora species including Cotoneaster Pomaderris.
- Reduced impacts to potential terrestrial GDEs including along Moolarben Creek.
- Reduced amenity impacts (e.g. noise, air quality and visual).
- Reduction in the overall Scope 1 GHG emissions for the life of mine from approximately 0.6 Million tonnes of carbon dioxide equivalent (Mt CO_2-e) to 0.5 Mt CO_2-e.
- Avoidance of an additional 29 Aboriginal cultural heritage sites, including:
    - 1 site assessed as being of high scientific significance;
    - 1 site of moderate scientific significance;
    - 3 sites of low-moderate scientific significance; and
    - 24 sites of low scientific significance.

The revised potential impacts of the amended Project are described further in Section 6.

Key Features of the EIS Retained for the Amended Project

The amended Project design would continue to achieve the overall Project objectives as per the EIS (Section 3.2) and retains other proposed avoidance and minimisation measures, as follows:

- No open cut mining within 200 m of the high bank of Moolarben Creek and Murdering Creek.
- Minimising the extent of infrastructure within the riparian zone of Moolarben Creek and Murdering Creek as far as practicable.
- Locating haul road creek crossings within previously cleared areas, where practicable and feasible.
- Maximising use of existing infrastructure at the Moolarben Coal Complex (i.e. coal handling and transport infrastructure) to minimise construction of additional infrastructure areas for the Project.
- Preferentially locating disturbance in Category 1 – exempt land or where vegetation/habitat is in the poorest condition (e.g. low quality DNG).
- Reduction in the number of final voids in Moolarben Valley from one to zero, increasing the area available for rehabilitation and post-mining land uses.

2.2.3 Justification of Extent of Further Avoidance and Minimisation Measures

The amended Project is considered to provide the most beneficial outcome to reduce impacts on threatened species habitat while continuing to achieve the Project design objectives, albeit with reduced resource recovery.

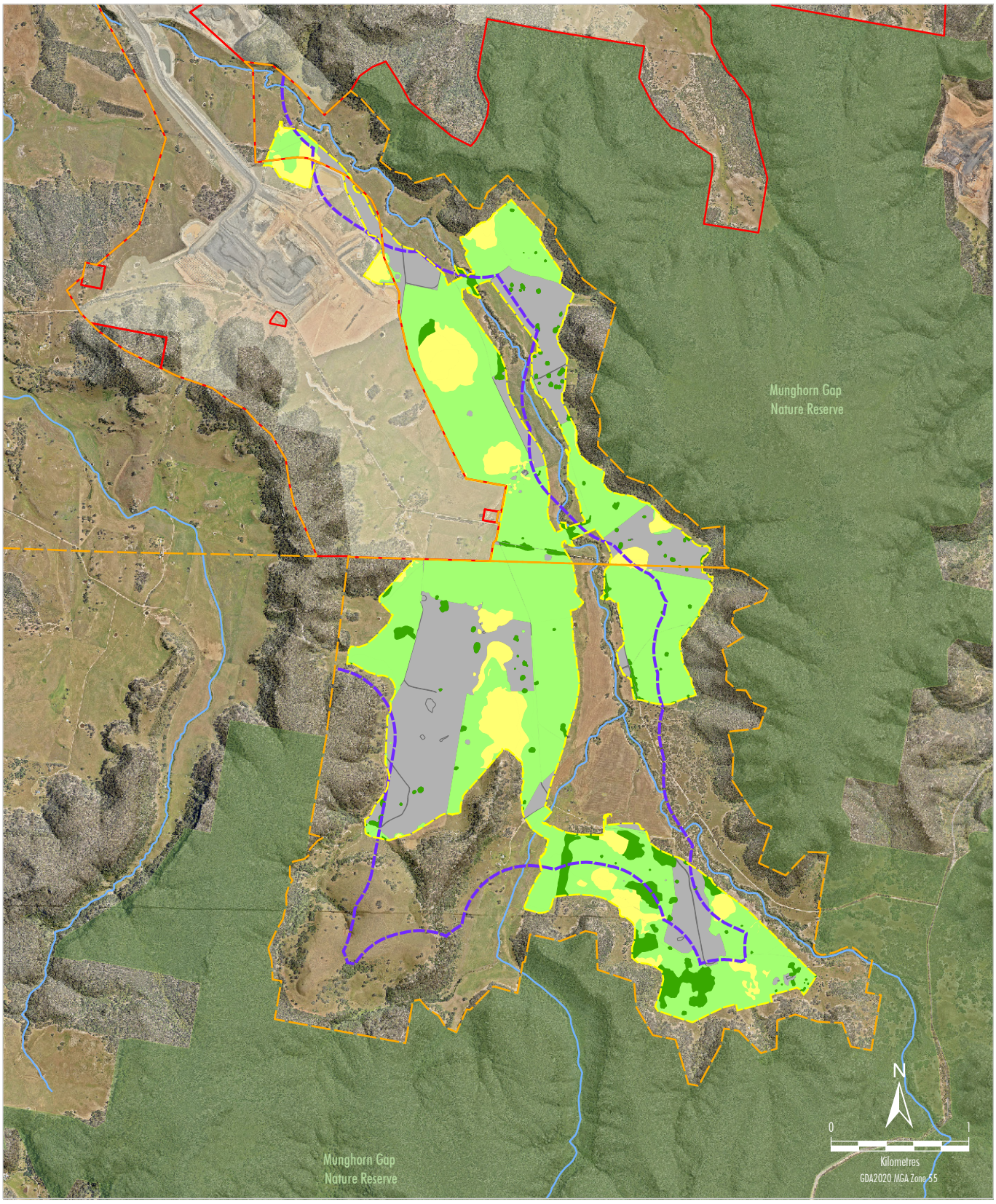
Higher value threatened species habitat remaining within the amended Project indicative surface disturbance extent comprises of isolated stands and scattered patches of woodland separated by areas of Category 1 – exempt land or DNG (i.e. not contiguous areas or corridors) (Figure 2-4). It would not be feasible to avoid all of this habitat as the discontinuous nature would result in open cut mining areas that are not mineable or economic.

Submissions received on the EIS recommended MCO consider additional strategies to minimise impacts to biodiversity values. In particular, BCS and NPWS recommended MCO apply a setback of 500 m to the boundary of the Munghorn Gap Nature Reserve.

MCO has reviewed the NPWS's *Development adjacent to National Parks and Wildlife Service lands - Guidelines for consent and planning authorities* (NPWS, 2020) and considers that the amended Project has been designed to satisfy the aims of the guideline. MCO also considers that the 100 m setback from the Munghorn Gap Nature Reserve is a conservative measure to mitigate indirect impacts during the relatively short life of the Project. Further detail is provided in the Submission Report.

Further reductions in the open cut mining areas than proposed for the amended Project are not considered reasonable or feasible and would reduce the viability of the Project. The consequences of further reductions in the open cut mining area for the amended Project include:

- Approved OC3 operations would cease following completion of approved mining in 2024, with associated impacts including:
  - the approved final void would remain in the OC3 final landform;
  - under-utilisation of existing processing and transport infrastructure at the Moolarben Coal Complex; and
  - sterilisation of ROM coal.
- Further reduction in construction capital expenditure.
- Further reduction in royalty payments and taxes for the amended Project.
- Further reduction in social benefits and Project-related expenditure with local contractors and businesses within the Mid-Western Regional Local Government Area.



MCIA-20-18 OC3 Ext AR UPD MT_210C

LEGEND

National Park/Nature Reserve
Exploration Licence Boundary
Mining Lease Boundary
Moolarben Coal Complex Disturbance Footprint
500 m Buffer from Munghorn Gap Nature Reserve

OC3 Extension Project - Amended

Indicative Amended Project Surface Disturbance Extent

Residual Impacts

Box-Gum Woodland CEEC - Woodland
Box-Gum Woodland CEEC - Derived Native Grassland
Other Native Woodland
Category 1 - Exempt Land and Other Exempt Land

Source: Eco Logical Australia (2023); MCO (2023); NSW Spatial Services (2021)
Orthophoto: MCO (2021)

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Residual Impacts of the Amended Project

Figure 2-4

3 DESCRIPTION OF THE AMENDED PROJECT

3.1 OVERVIEW

Table 3-1 provides a summary of the proposed amendments compared to the Project as presented in the EIS. The Project Description (Section 3 of the Project EIS) has been updated to incorporate the amendments described in Table 3-1. This is provided as Appendix A of this report.

Table 3-1
Project Summary Comparison Table

Project Component	Summary of the Project as Presented in the EIS	Summary of the Amended Project
Mine Life	Mining activities for the Project would be carried out until approximately 2034 (i.e. within the approved mine life of the existing Moolarben Coal Complex). Landform profiling and rehabilitation activities would continue following cessation of mining activities.	Unchanged.
Project Indicative Surface Disturbance Extent	Approximately 825 ha of disturbance associated with the Project, including open cut pits, internal haul roads and associated creek crossings, internal access roads, mine infrastructure area, water management infrastructure, ROM pads, waste rock emplacement areas and temporary rehabilitation and construction material stockpiles.	Approximately 675 ha of disturbance associated with the Project (i.e. a reduction of 150 ha). Key components of the Project layout would remain unchanged.
Open Cut Mining Areas	Mining within existing mining and exploration tenements and on Moolarben-owned freehold land, via conventional open cut mining methods (as per Moolarben Coal Complex Stages 1 and 2) within an extension to the approved OC3 open cut pit, as well as four new open cut pits.	The extent of proposed open cut mining areas has been reduced.
Open Cut Coal Extraction Limits	Up to 9 Mt of ROM coal would be extracted from the Project in any calendar year.	Up to 8.5 Mt of ROM coal would be extracted from the Project in any calendar year.
	An average of approximately 4 Mtpa of ROM coal would be extracted over the life of the Project.	An average of approximately 3 Mtpa of ROM coal would be extracted over the life of the Project.
	Up to 16 Mt (total) of ROM coal extracted cumulatively from the open cut operations at the Moolarben Coal Complex in any calendar year.	Unchanged.
Total ROM Coal Extraction	Approximately 40 Mt over the life of the Project.	Approximately 30 Mt over the life of the Project.
Total Waste Rock Extraction	Approximately 154 Million bank cubic metres (Mbcm) of waste rock extracted over the life of the Project.	Approximately 112 Mbcm of waste rock extracted over the life of the Project.
Coal Processing and Offsite Transport	All ROM coal extracted from the Project would be hauled to the existing Stage 1 infrastructure for processing and transport to market via rail. Transport would include an average of 8 trains per day and peak of 11 trains per day.	Unchanged.

Table 3-1 (Continued)
Project Summary Comparison Table

Project Component	Summary of the Project as Presented in the EIS	Summary of the Amended Project
Coal Rejects	Co-disposal of coal rejects with waste rock in the open cut voids.	Unchanged.
Workforce	Peak workforce expected to be up to approximately 1,000 personnel at the Moolarben Coal Complex (with up to approximately 400 personnel required to implement Project mining operations).	Unchanged.
Hours of Operations	Mining operations and associated activities would be carried out 24 hours per day, 7 days per week, consistent with existing Moolarben Coal Complex Operations.	Unchanged.
Site Access	No direct interaction with the public road network. Employees, contractors and deliveries would access the Project area via the existing Moolarben Coal Complex main site access via Ulan-Wollar Road and internal Moolarben Coal Complex roads.	Unchanged.
Water Management	Water management strategy based on maximising the diversion of clean water runoff around disturbance areas, containing and re-using mine water (to prevent downstream contamination) as well as controlling sediment runoff from disturbed areas such as waste rock emplacements or areas cleared in advance of mining.	Water management strategy unchanged. Location of some water management infrastructure components (dams, diversions, etc.) have changed to reflect the reduced open cut mining areas.
Final Landform	Project open cut voids would be progressively backfilled to develop a free draining final landform. No final voids would remain in the rehabilitated final landform (a reduction from three to two final voids that are currently approved for the Moolarben Coal Complex).	Unchanged (i.e. no final voids would remain in the Moolarben Valley). The extent of the final landform has been reduced due to the reduced open cut mining areas.
Rehabilitation and Landform	Landform profiling and rehabilitation of backfilled open cut pits would be undertaken progressively over the life of the Project. These activities would continue following cessation of mining activities.	Unchanged.
Post-mining Land Uses	The post-mining land use in the Project area would include a combination of agricultural land, native vegetation and targeted biodiversity enhancement measures.	Revised conceptual post-mining land use to incorporate additional areas of native woodland and increase the proposed extent of the Habitat Enhancement Area.
GHG Emissions	Annual average Scope 1 emissions have been estimated at approximately 0.058 Mt CO_2-e per year during operations.	Average Scope 1 emissions have been estimated at approximately 0.047 Mt CO_2-e per year during operations (i.e. a reduction in 0.011 Mt CO_2-e per year compared to the Project EIS).
Net Benefit to NSW	$182 million in Net Present Value (NPV) terms.	$190 million in NPV terms (i.e. an increase in $8 million compared to the Project EIS).

3.2 AMENDED PROJECT DESCRIPTION

3.2.1 Indicative Surface Disturbance Extent

As a result of the proposed additional avoidance and minimisation measures for the amended Project, the indicative surface disturbance extent has reduced by approximately 150 ha compared to the Project EIS (i.e. from approximately 825 ha to 675 ha total disturbance).

Key components of the Project layout would remain unchanged from the Project EIS, and include open cut mining areas, internal haul roads and associated creek crossings, internal access roads, mine infrastructure area, water management infrastructure, ROM pads, waste rock emplacement areas and temporary rehabilitation and construction material stockpiles.

The indicative surface disturbance extent for the amended Project is presented on Figure 1-3 and a revised Project general arrangement is presented on Figure 3-1.

3.2.2 Open Cut Mining Operations

As a result of the amended Project, the extent of the proposed open cut mining areas has been reduced. It is noted that the number of open cut mining pits would not change (i.e. extension to the approved OC3 open cut pit as well as four new open cut pits).

The amended Project open cut mining areas would provide approximately 30 Mt of ROM coal over the life of the Project (i.e. a reduction in 10 Mt compared to the Project EIS). A description of associated changes to the indicative mine schedule, mine progression and disturbance staging is provided below.

3.2.3 Indicative Mining Schedule

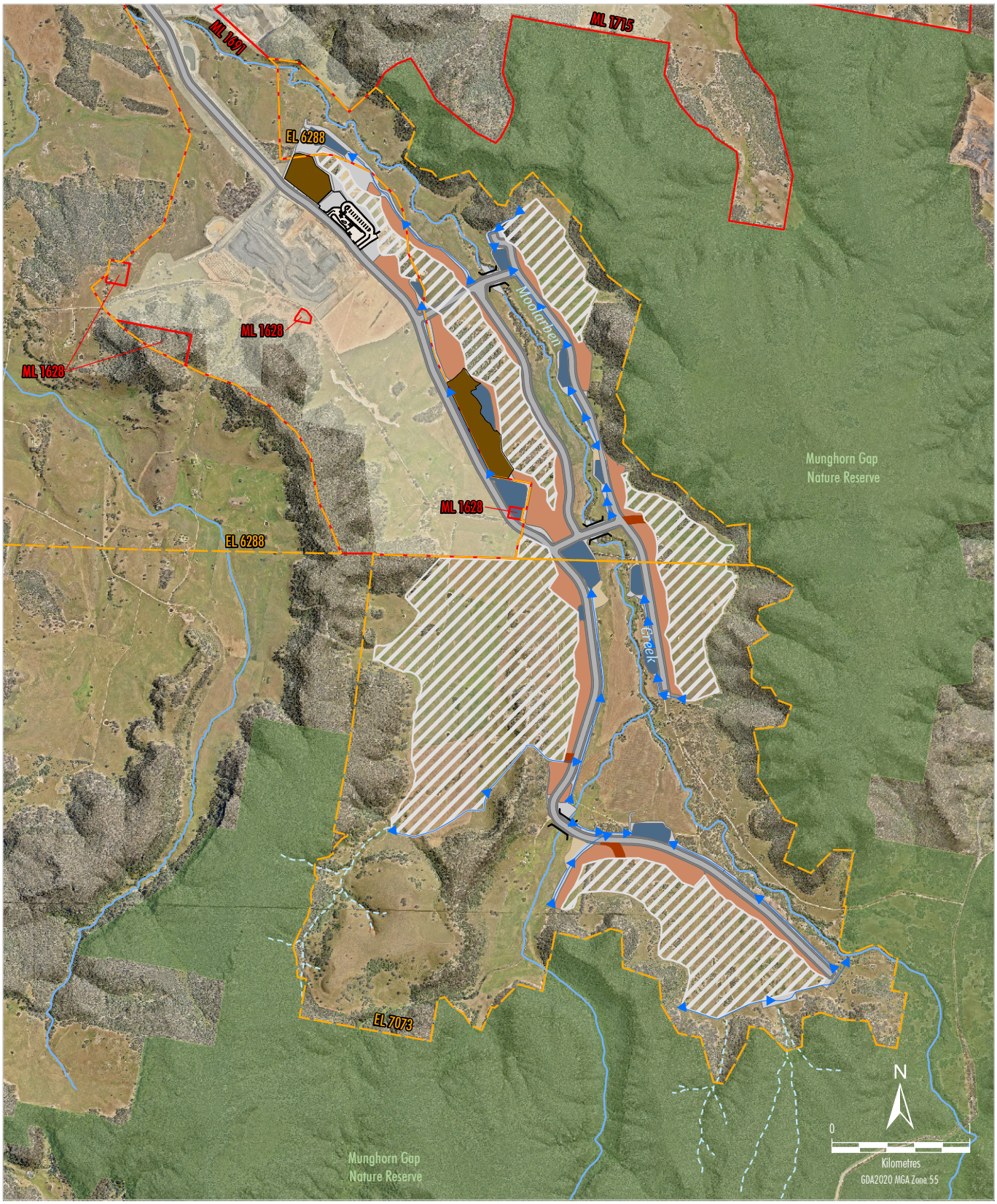
The revised indicative mine schedule for the amended Project is provided in Table 3-2 and revised indicative mining progression is shown on Figure 3-2.

Table 3-2
Revised Indicative Mine Schedule

Project Year	Nominal Calendar Year	Waste Rock (Mbcm)	ROM Coal (Mt)
1	2025	11.6	2.9
2	2026	17.7	5.0
3	2027	27.2	8.5
4	2028	10.8	1.5
5	2029	11.2	1.9
6	2030	10.8	1.8
7	2031	4.6	2.2
8	2032	9.9	2.2
9	2033	6.8	2.2
10	2034	1.0	1.6
Total[1]		**111.5**	**29.8**

[1] *Totals do not equal the sum of each row due to rounding.*

The amended Project would mine up to 8.5 Mtpa of ROM coal (average of approximately 3 Mtpa over the life of the Project). The reduction in the maximum ROM coal extraction rate from the Project EIS is a result of the updated mine planning for the amended Project to account for the reduced extent of open cut mining, total ROM extraction and revised mine progression.



MCM-20-18 OC3 Ext AR UPD MT_205D

LEGEND

- National Park/Nature Reserve
- Exploration Licence Boundary
- Mining Lease Boundary
- Moolarben Coal Complex Disturbance Footprint
- OC3 Extension Project - Amended
- Indicative Open Pit Extent
- Indicative ROM Pad
- Culvert
- Indicative Haul Roads and Infrastructure Corridor
- Indicative Infrastructure Area
- Indicative Construction/Rehabilitation Material Stockpiles
- Conceptual Flood Levee Embankment
- Conceptual Water Management Infrastructure
- Indicative Vehicle Access
- Conceptual Surface Water Drain

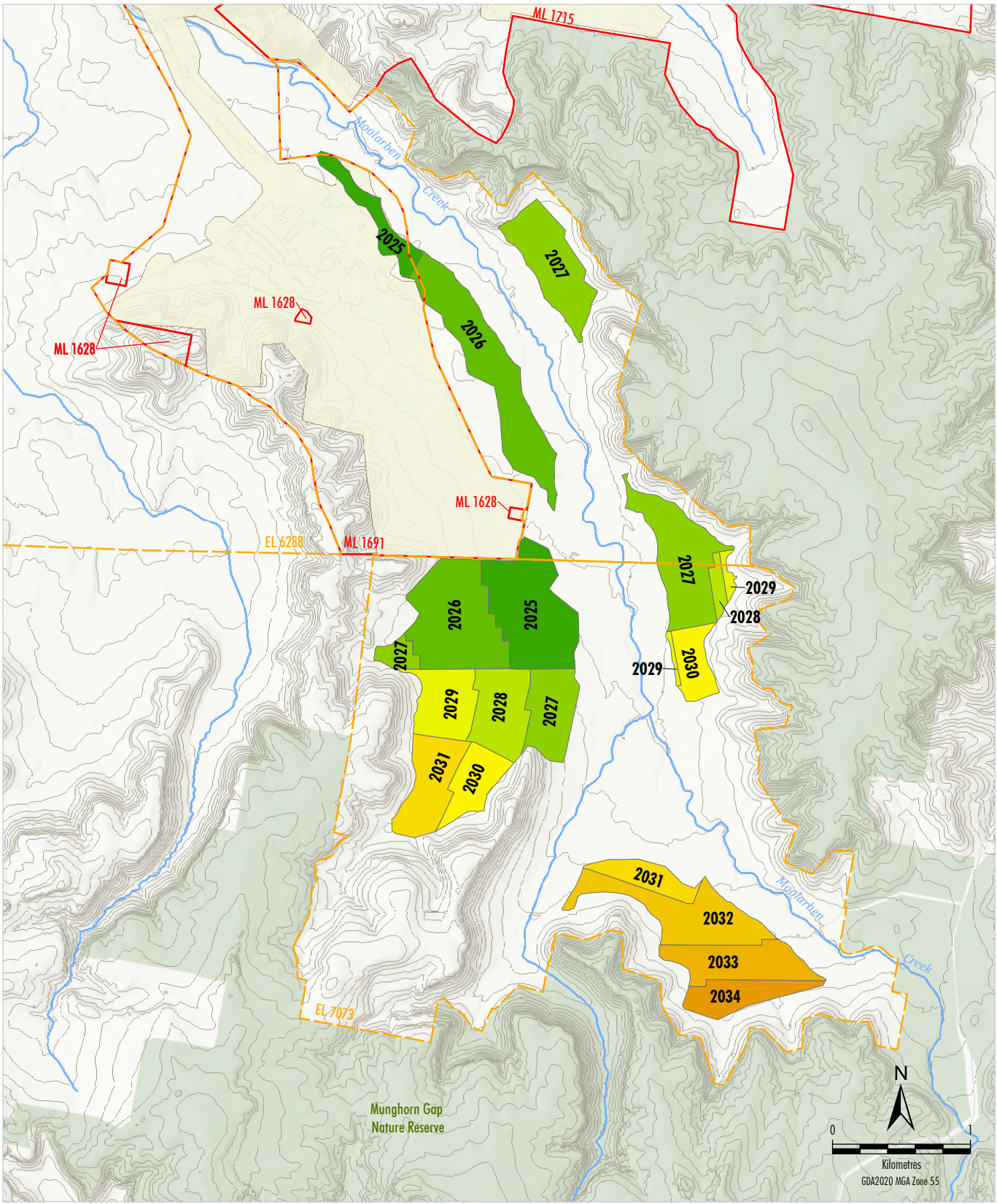
Source: MCO (2023); NSW Spatial Services (2021)
Orthophoto: MCO (2021)

YANCOAL 兖煤澳大利亚有限公司 MOOLARBEN COAL

MOOLARBEN COAL COMPLEX

General Arrangement of the Amended Project

Figure 3-1



MCM-20-18 OC3 Ext AR UPD MT_206B

LEGEND

- National Park/Nature Reserve
- Exploration Licence Boundary
- Mining Lease Boundary
- Moolarben Coal Complex Disturbance Footprint

OC3 Mine Progression - Amended

- 2025
- 2026
- 2027
- 2028
- 2029
- 2030
- 2031
- 2032
- 2033
- 2034

Source: MCO (2023); NSW Spatial Services (2021)

YANCOAL 兖煤澳大利亚有限公司 MOOLARBEN COAL

MOOLARBEN COAL COMPLEX

Indicative Mine Progression for Amended Project

Figure 3-2

Consistent with the Project EIS, the amended Project would not result in any change to the cumulative ROM coal extraction limit for open cut operations at the Moolarben Coal Complex (i.e. 16 Mtpa). Approximately 112 Mbcm of waste rock would be extracted over the life of the amended Project (Table 3-2) (i.e. a ratio of approximately 3.75 [Mbcm] to 1 [Mt of ROM coal]).

Development of the amended Project would still occur in three key stages; however, the extent of each stage has been updated to reflect the revised mine progression (Figure 3-3).

3.2.4 Water Management

The water management strategy, objectives and components described in the Project EIS would remain unchanged for the amended Project.

As a result of the amended Project indicative surface disturbance extent, temporary and permanent up-catchment diversion structures proposed in the Project EIS to be constructed upstream of mining operations on Spring Creek and in the southernmost pit would now be relocated within the amended Project indicative surface disturbance extent.

A description and updated predictive assessment of the performance of the Project water management system is presented in Section 6.5 and Appendix G.

3.2.5 Final Landform and Post-mining Land Uses

Habitat Enhancement Area

The Habitat Enhancement Area proposed along the eastern banks of Moolarben Creek and Murdering Creek would be expanded to encompass both sides of the Creeks, adjacent to proposed native woodland rehabilitation areas (Figure 2-3).

Final Landform

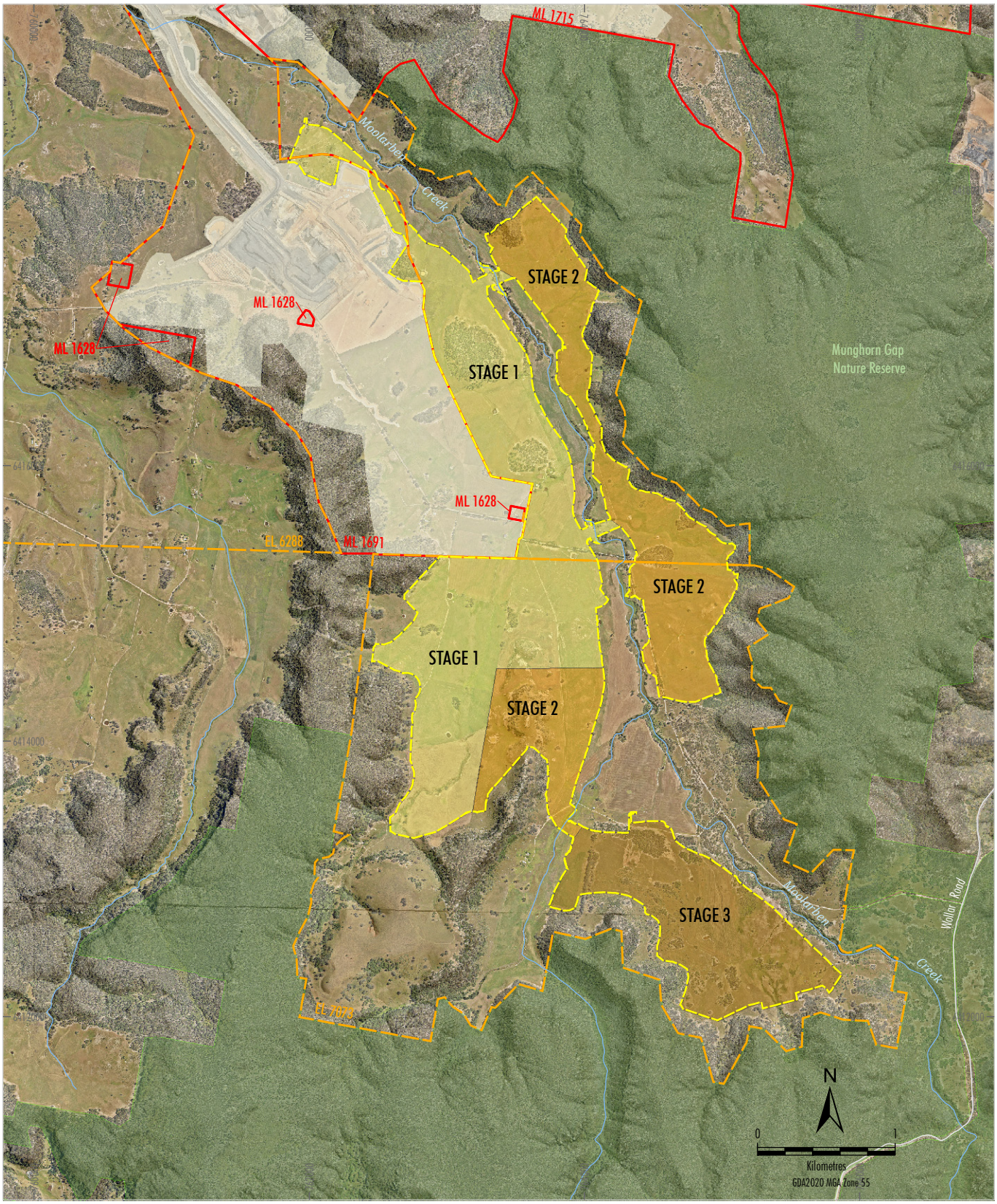
The amended Project would maintain the key design principles developed for the conceptual Project final landform in the Project EIS, in particular that open cut voids would be progressively backfilled as mining progresses so as to be free draining (i.e. no final voids would remain after completion of mining).

The amended Project would also maintain proposed backfilling of the approved OC3 final void using waste rock from the Project to integrate the landforms.

In order to facilitate the development of a free draining final landform for the amended Project, the temporary waste rock stockpile proposed in the approved OC3 mining area in the Project EIS would be extended into the Project area to assist with material balances. As described in the Project EIS, short-term rehabilitation and/or landform stabilisation works of the temporary stockpiles would be undertaken until the material is required to complete final landform shaping.

Post-mining Land Uses

The amended Project would also increase the extent of native woodland areas in the rehabilitated final landform (Figure 2-3). Some agricultural land would remain in the rehabilitated final landform adjacent to similar areas in the approved OC3 mining area.



MCM-20-18 OC3 Ext AR UPD MT_207B

LEGEND

- National Park/Nature Reserve
- Exploration Licence Boundary
- Mining Lease Boundary
- Moolarben Coal Complex Disturbance Footprint
- Indicative Amended Project Surface Disturbance Extent

Indicative Project Stages - Amended

- Stage 1
- Stage 2
- Stage 3

Source: MCO (2023); NSW Spatial Services (2021); Orthophoto Mosaic: MCO (2021)

YANCOAL 克煤澳大利亚有限公司 MOOLARBEN COAL

MOOLARBEN COAL COMPLEX

Amended Project Offset Staging

Figure 3-3

4 STATUTORY CONTEXT

The statutory approvals described in Section 4 and Attachment 7 of the EIS are unchanged by the proposed amendments to the Project. An updated statutory compliance table for the amended Project is provided in Table 4-1.

Table 4-1
Statutory Compliance Summary for the Amended Project

Relevant Statute	Section Addressed	Amended Project Compliance
NSW Acts		
Biodiversity Conservation Act 2016	Sections 4.2.10, 6.5, 6.6 and A7.4.6, and Appendices C and D of the EIS. Section 6.2 and Appendices C and D of this Amendment Report.	✓
Coal Mine Subsidence Compensation Act 2017	Sections 4.2.3 and A7.4.10 of the EIS.	✓
Dams Safety Act 2015	Sections 4.3 and A7.4.4 of the EIS.	✓
Environmental Planning and Assessment Act 1979	Sections 4.2.1 to 4.2.8, 4.3, 6 and A7.1 of the EIS.	✓
Fisheries Management Act 1994	Sections 4.2.3, 4.2.4 and A7.4.10 of the EIS.	✓
Heritage Act 1977	Sections 4.2.4, 6.12 and A7.4.10, and Appendix G of the EIS.	✓
Mining Act 1992	Sections 3, 4.2.3, 4.2.10 and A7.4.1, and Attachment 11 of the EIS.	✓
National Parks and Wildlife Act 1974	Sections 4.2.4, 4.2.10, 6.5, 6.11 and A7.4.10, and Appendices C and F of the EIS. Sections 6.2 and 6.3, and Appendices C, D and E of this Amendment Report.	✓
Petroleum (Onshore) Act 1991	Sections 4.2.3 and A7.4.10 of the EIS.	✓
Pipelines Act 1967	Sections 4.2.3 and A7.4.10 of the EIS.	✓
Protection of the Environment Operations Act 1997	Sections 3, 4.2.3, 4.2.10 and A7.4.2, and Appendices H and I of the EIS.	✓
Roads Act 1993	Sections 4.2.3, 4.2.10, 6.10 and A7.4.3, and Appendix O of the EIS.	✓
Rural Fires Act 1997	Sections 4.2.4 and A7.4.10 of the EIS.	✓
Water Management Act 2000	Sections 4.2.4, 4.2.10, 6.3, 6.4 and A7.4.5. and Appendices A and B of the EIS. Sections 6.4 and 6.5, and Appendices F and G of this Amendment Report.	✓
Other NSW Legislation	Section A7.4.10 of the EIS.	✓
NSW Planning Policies		
Mid-Western Regional Local Environmental Plan 2012	Sections 4.2.2, 4.3, 6.5, 6.11 and A7.3, and Appendices C and G of the EIS. Section 6.2 and Appendix C of this Amendment Report.	✓
State Environmental Planning Policy (Biodiversity and Conservation) 2021	Sections 6.5, 6.6 and A7.2.4, and Appendices C and D of the EIS. Section 6.2 and Appendix C of this Amendment Report	✓
State Environmental Planning Policy (Planning Systems) 2021	Sections 4.3 and A7.2.1 of the EIS.	✓
State Environmental Planning Policy (Resilience and Hazards) 2021	Sections 4.3, 6.13, 6.18 and A7.2.3, and Appendices M and R of the EIS.	✓
State Environmental Planning Policy (Resources and Energy) 2021	Sections 4.3, 7 and A7.2.2 of the EIS.	✓
State Environmental Planning Policy (Transport and Infrastructure) 2021	Sections 4.3, 6.10 and A7.2.5, and Appendix O of the EIS.	✓
Commonwealth Acts		
Environment Protection and Biodiversity Conservation Act 1999	Sections 4.2.9, 4.3, 7 and A7.4.9 of the EIS.	✓
National Greenhouse and Energy Reporting Act 2007	Sections 4.2.11, 6.16 and A7.4.7, Appendix J, and Attachment 5 of the EIS.	✓
Native Title Act 1993	Section 4.2.11, 6.11 and A7.4.8, and Appendix F of the EIS. Section 6.3 and Appendix E of this Amendment Report.	✓

5 ENGAGEMENT

Since lodgement of the EIS, MCO has continued to engage with key stakeholders regarding the Project, including government agencies and the community.

5.1 RELEVANT GOVERNMENT AGENCIES

MCO has continued to consult with DPHI on the Project since lodgement of the EIS regarding assessment issues raised in submissions and to provide regular updates on the status of preparation of the Submissions and Amendment Reports, including:

- A briefing meeting on 24 April 2023 to discuss the Project and key submissions received on the EIS.
- A briefing meeting on 24 August 2023 to provide an update on the Project, outcomes of agency consultation to date and an overview of the proposed amendments to the Project.
- Briefing meetings on 23 November 2023 and 26 February 2024 to provide an overview of the outcomes of updated environmental assessment of the amendments to the Project.

MCO held a Project briefing with the Resource Regulator and Rehabilitation and Securities Panel on 1 December 2022. At the briefing, MCO provided an overview of the Project, key outcomes of the EIS, the proposed final landform and post-mining land use and rehabilitation and mine closure details.

A briefing with the Commonwealth Department of Climate Change, Energy, the Environment and Water (Cth DCCEEW) was held on 15 September 2023 to provide an update on the Project and overview of the proposed amendments.

A planning agreement between MCO and Mid-Western Regional Council (MWRC) has been executed for the Project. As part of this agreement, MCO has provided a community contribution payment to MWRC to support construction of a Pump Track in Mudgee. MCO has also provided regular updates on the Project to the MWRC as part of ongoing consultation for the Moolarben Coal Complex operations.

Further detail on targeted agency consultation regarding comments received in submissions is provided in the Submissions Report.

5.2 OTHER PROJECT CONSULTATION

Since lodgement of the EIS, MCO has also undertaken broader engagement regarding the Project as follows:

- Project updates have been provided regularly to the Moolarben Coal Complex Community Consultative Committee at scheduled quarterly meetings (in November 2022, March, June, September and November 2023, and March 2024).
- Notification of public exhibition of the EIS in November and December 2022.
- Hosting a drop-in information session at the Cooyal Community Hall on 7 December 2022 to provide an opportunity to discuss the outcomes presented in the EIS.
- Update of the MCO website and distribution of a Project newsletter in November and December 2022 to provide an overview of the Project following lodgement of the EIS.
- Distribution of a Project newsletter in March 2024 to provide an update on the Project and overview of proposed amendments.
- Ongoing consultation with Registered Aboriginal Stakeholders in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW, 2010) regarding public exhibition of the EIS, additional fieldwork and assessment to address submissions and the revised Aboriginal Cultural Heritage Assessment (ACHA) report.
- Ongoing consultation with the adjacent Ulan Mine Complex and Wilpinjong Coal Mine regarding updates on the status of the Project and proposed amendments.
- Ongoing consultation with Yancoal and Moolarben Coal Complex employees and contractors.

Further detail regarding engagement activities since lodgement of the EIS is provided in the Submissions Report.

6 ASSESSMENT OF IMPACTS

6.1 IDENTIFICATION OF ISSUES

MCO has undertaken a review of the potential environmental impacts of the amended Project to identify key changes relative to the EIS. Where impacts are unchanged relative to the EIS, these have not been repeated in this Amendment Report.

The key potential environmental impacts for the amended Project are summarised in Table 6-1 and addressed in Sections 6.2 to 6.10. Additional assessment of the environmental impacts has been undertaken by specialists and is presented in Appendices C to K. Updated mitigation and management measures for the amended Project have been included in Appendix B.

6.2 BIODIVERSITY

Background

A reduction in the indicative surface disturbance extent for the amended Project to incorporate additional avoidance of threatened species habitat has resulted in a reduction in biodiversity impacts.

The Project as presented in the EIS incorporated a number of measures to avoid and minimise impacts to environmental features, native vegetation and threatened species habitat within the study area, which would be retained for the amended Project. The areas proposed for further avoidance and minimisation are threatened species habitat for potential SAII entities, largely contiguous remnant woodland vegetation, as well as further setback from the Munghorn Gap Nature Reserve and mapped rocky habitat features.

Additional mitigation measures have also been proposed for the amended Project to improve biodiversity values in the Moolarben Valley both during and post-mining, including blast vibration limits to minimise indirect impacts to mapped rocky habitat features and further revegetation within the Habitat Enhancement Area and additional woodland rehabilitation within the final landform.

Revised Potential Impacts

Direct Impacts

As a result of the proposed additional avoidance and minimisation measures for the amended Project, the indicative surface disturbance extent has reduced by approximately 150 ha compared to the Project EIS (i.e. from approximately 825 ha to 675 ha total disturbance area).

Development of the amended Project would still occur in three key stages; however, the extent of each stage has been updated (Figure 3-3). Table 6-2 provides a summary of the ecosystem and species credits associated with each disturbance stage of the amended Project.

The amended Project design achieves the following for potential SAII entities:

- Avoiding disturbance of mapped rocky habitat and breeding habitat (defined as relevant vegetation within 100 m of mapped rocky habitat) associated with threatened bat species (i.e. Large-eared Pied Bat and Eastern Cave Bat) and the Broad-headed Snake.
- Approximately 50 ha (59%) reduction in disturbance of the woodland component of Box-Gum Woodland CEEC compared to the Project EIS.
- Approximately 103 ha (56%) reduction in disturbance of Regent Honeyeater Important Habitat Mapping compared to the Project EIS.

Table 6-1
Summary of Key Potential Environmental Issues/Impacts of the Amended Project

Environmental Aspect	Key Potential Environmental Issues/Impacts	Section Addressed
Biodiversity	A reduction in the indicative surface disturbance extent for the amended Project to incorporate additional avoidance of threatened species habitat has resulted in a reduction in biodiversity impacts. A revised BDAR has been prepared by Niche Environment and Heritage Pty Ltd (Niche) to reflect the amended Project and associated offset liability. The revised BDAR supersedes the BDAR as presented in the EIS.	Section 6.2 and Appendices C and D
Aboriginal Cultural Heritage	A reduction in the indicative surface disturbance extent for the amended Project has resulted in reduced number of Aboriginal cultural heritage sites subject to direct impacts. An updated ACHA has been prepared by Niche to reflect the amended Project, as well as additional consultation, survey and test excavations. The updated ACHA supersedes the ACHA as presented in the EIS	Section 6.3 and Appendix E
Groundwater	Changes in groundwater drawdown as a result of the amended open cut pit extents and revised mine progression have been assessed by Australian Groundwater and Environmental Consultants Pty Ltd (AGE) for the amended Project. This report is an addendum to the Groundwater Assessment presented in the EIS	Section 6.4 and Appendix F
Surface Water	Changes to the site water balance have been reviewed by WRM Water & Environment Pty Ltd (WRM) for the amended Project. This report is an addendum to the Surface Water Assessment presented in the EIS	Section 6.5 and Appendix G
Noise	Noise modelling outcomes have been assessed by SLR Consulting Australia Pty Ltd (SLR) for the amended Project. This report is an addendum to the Noise Assessment presented in the EIS	Section 6.6 and Appendix H
Blasting	Potential changes to predicted blasting impacts at sensitive receivers have been assessed by SLR for the amended Project, including a revised blast vibration limit to protect mapped rocky habitat developed by PSM (2024). This report is an addendum to the Blasting Assessment presented in the EIS	Section 6.7 and Appendix H
Air Quality	Air quality modelling outcomes have been assessed by Todoroski Air Sciences Pty Ltd (TAS) for the amended Project. This report is an addendum to the Air Quality Assessment presented in the EIS	Section 6.8 and Appendix J
GHG Emissions	A reduction in the total resource extracted over the life of the amended Project has resulted in reduced GHG emissions. Calculation and assessment of the changes in GHG emissions has been undertaken by TAS for the amended Project. This report is an addendum to the GHG Assessment presented in the EIS	Section 6.9 and Appendix J
Economic Effects	Potential changes to economic net benefits have been assessed by AnalytEcon for the amended Project. This report is an addendum to the Economic Assessment presented in the EIS	Section 6.10 and Appendix K
Aquatic Ecology	The amended Project would not materially change the potential impacts as assessed in the EIS.	Section 6.11
Road Transport		
Non-Aboriginal Heritage		
Agricultural and Land Resources		
Landscape and Visual Character		
Social and Community Infrastructure		

Table 6-2
Amended Project Ecosystem and Species Credits

Credit Type	Stage 1	Stage 2	Stage 3	Total Credits
Ecosystem Credits				
White Box - Black Cypress Pine Shrubby Woodland (PCT 1610)	-	228	95	323
White Box - Black Cypress Pine Shrubby Woodland - Regenerating (PCT 1610)	49	76	78	203
Narrow-leaved Stringybark - Grey Gum Shrubby Open Forest (PCT 1629)	17	99	-	116
Grey Box - Slaty Box Shrub - Grass Woodland[1,2] (PCT 1655)	275	44	53	372
Narrow-leaved Ironbark - Black Pine - Narrow-leaved Wattle Shrub - Grass Open Forest (PCT 1656)	210	-	-	210
Narrow-leaved Ironbark - Black Pine - Narrow-leaved Wattle Shrub - Grass Open Forest – Regenerating (PCT 1656)	126	-	-	126
Narrow-leaved Ironbark - Black Pine - Sifton Bush Heathy Open Forest (PCT 1661)	84	-	-	84
Tantoon - *Lepyrodia leptocaulis* Shrubland (PCT 1711)	-	28	105	133
White Box Grassy Woodland[3] (PCT 266)*	33	17	319	369
White Box Grassy Woodland – Scattered Tree[3] (PCT 266)	21	4	-	25
White Box Grassy Woodland – Derived Native Grassland[3] (PCT 266)*	112	448	137	697
Rough-Barked Apple - Red Gum - Yellow Box Woodland[3] (PCT 281)	373	198	859	1,430
Rough-Barked Apple - Red Gum - Yellow Box Woodland - Scattered Tree[3] (PCT 281)	16	63	4	83
Rough-Barked Apple - Red Gum - Yellow Box Woodland - Derived Native Grassland (high condition)[3] (PCT 281)*	833	2,294	1,105	4,232
Rough-Barked Apple - Red Gum - Yellow Box Woodland - Derived Native Grassland (low condition)[3] (PCT 281)*	2,363	41	368	2,772
Grey Box x White Box Grassy Open Woodland[3] (PCT 483)*	2	-	-	2
Total	**4,514**	**3,540**	**3,123**	**11,177**
Species Credits				
Cotoneaster Pomaderris (*Pomaderris cotoneaster*)*	-	2	-	2
Pink-tailed Legless Lizard (*Aprasia parapulchella*)*	1,581.2	1,827.2	738.4	4,147^
Regent Honeyeater (*Anthochaera phrygia*)*	1,520	865	1,025	3,410
Koala (*Phascolarctos cinereus*)*	1,290	793	1,342	3,425
Squirrel Glider (*Petaurus norfolcensis*)	1,290	793	1,342	3,425
Large-eared Pied Bat (*Chalinolobus dwyeri*)*	1,935	1,189	2,013	5,137
Eastern Cave Bat (*Vespadelus troughtoni*)	1,935	1,189	2,013	5,137
Total	**9,551.2**	**6,658.2**	**8,473.4**	**24,683^**

1 *Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion vulnerable ecological community.*

2 *Central Hunter Valley Eucalypt Forest and Woodland CEEC.*

3 *Box-Gum Woodland CEEC.*

^ *Includes credits for impacts to habitat on Category 1 – exempt land, totals have been rounded up.*

* *Community or species would be offset in accordance with the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.*

As a result of the above, the Broad-headed Snake is no longer required to be offset as there would be no disturbance of associated habitat. In addition, the amended Project would completely avoid areas that require consideration of SAII for the Large-eared Pied Bat and Eastern Cave Bat (i.e. no disturbance of breeding habitat within 100 m of mapped rocky habitat.

The amended Project design also achieves the following for other biodiversity values:

- Avoidance of all mining-related disturbance within 100 m of the Munghorn Gap Nature Reserve.
- Reduced disturbance of potential habitat for other threatened fauna species, including the Pink-tailed Legless Lizard, Koala, Swift Parrot and Squirrel Glider.
- Avoidance of individual Cotoneaster Pomaderris plants[1].

Indirect Impacts

The amended Project design incorporates a 100 m setback of all disturbance (including open cut pit extents) from mapped rocky habitat. As a result, the potential for impacts as a result of blast vibration at mapped rocky habitat would be reduced, due to the greater distance from the proposed open cut pit extents when compared to the Project EIS.

In response to comments about the protection of geological features in the Munghorn Gap Nature Reserve, MCO has developed specific blast vibration limits, with input from blast, geotechnical and ecology specialists, to manage and mitigate potential indirect impacts to mapped rocky habitat and associated threatened species during mining.

Blast vibration would be limited to 50 mm/s at mapped rocky habitat features, unless further geotechnical investigation supports a higher value. At a vibration level of 50 mm/s, it is expected that there would be no impact to mapped rocky habitat or geological features located within the Munghorn Gap Nature Reserve distinguishable from natural processes (Appendix I).

Blast design and execution would be managed for blasts as required to achieve the vibration limit at mapped rocky habitat and additional blast vibration monitoring would be implemented. Further detail is provided in Section 6.7.

Serious and Irreversible Impacts

Section 6.7(2) of the NSW *Biodiversity Conservation Regulation 2017* (BC Regulation) provides the following principles regarding determination of SAII on biodiversity values (underlined for emphasis):

> *(2) An impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct because—*
>
> *(a) it will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline* **[Principle 1]***, or*
>
> *(b) it will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size* **[Principle 2]***, or*
>
> *(c) it is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution* **[Principle 3]***, or*
>
> *(d) the impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable* **[Principle 4]**.

NSW DCCEEW has prepared a list of threatened species and threatened ecological communities that it has assessed as likely to be at risk of SAII, considered to be where the species meet one or more of the principles provided in Section 6.7(2) of the BC Regulation.

As described above, there are five species considered to be potential SAII entities for the Project. These species and the relevant SAII principles of the BC Regulation relevant to each are summarised in Table 6-3 below.

[1] Disturbance is still proposed within a mapped buffer from the individual plants. This disturbance would be offset in accordance with the BC Act.

Table 6-3
SAII Entities for the Project as Presented in the EIS and Relevant Principles to Determine Impact

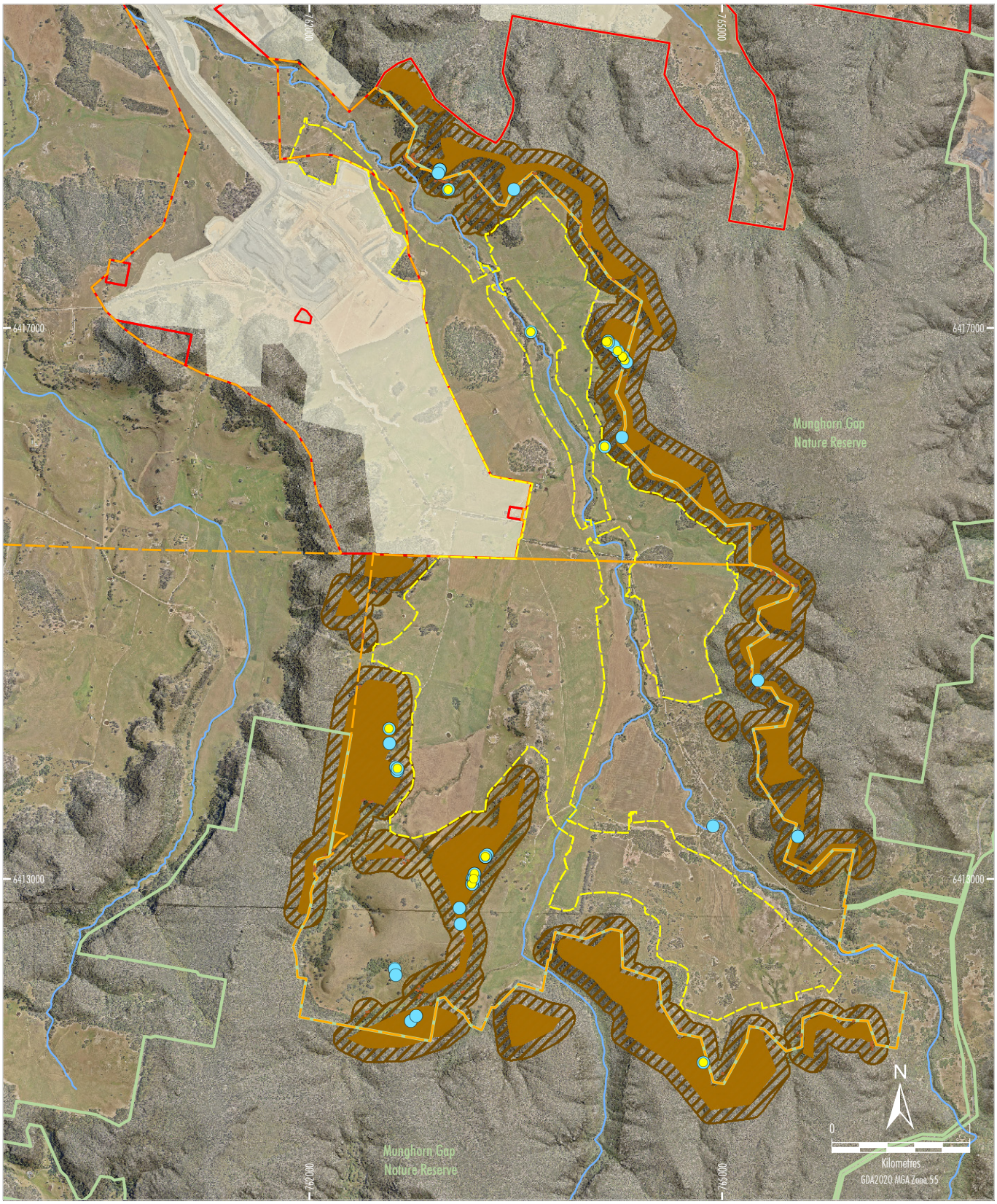
Relevant Principles to Determine Impact	SAII Entities for the Project (as Presented in the EIS)				
	Large-eared Pied Bat	Eastern Cave Bat	Broad-headed Snake	Regent Honeyeater	Box-Gum Woodland CEEC
Principle 1 – further decline				●	●
Principle 2 – reduce population size				●	●
Principle 3 – limited geographic distribution.					
Principle 4 – unlikely to respond to measures	●	●	●		

The BAM states that a decision maker must determine whether any residual impacts (i.e. impacts that would remain after implementation of proposed avoidance/minimisation measures) on biodiversity values are serious and irreversible.

A summary of residual potential impacts to SAII entities as a result of the amended Project and review by suitably qualified experts is provided below.

Large-eared Pied Bat and Eastern Cave Bat

- These species are listed as an SAII entity as they are reliant on abiotic (rocky) habitat and therefore unlikely to respond to measures to improve their habitat (Principle 4).
- The trigger for considering potential SAII for these species is any disturbance of breeding habitat, defined as relevant vegetation within 100 m of rocky habitat.
- The amended Project includes additional setbacks to avoid any direct disturbance of breeding habitat within 100 m of mapped rocky habitat associated with the Large-eared Pied Bat and Eastern Cave Bat (Figure 6-1). **On this basis, the Project would completely avoid areas that require consideration of SAII for these entities.**
- In addition, a blast vibration limit of 50 mm/s would be applied to mapped rocky habitat (unless further geotechnical investigation supports a higher value) associated with the Large-eared Pied Bat and Eastern Cave Bat to avoid the potential for damage to habitat due to indirect blasting impacts.
- Further to the proposed avoidance measures, measures to mitigate impacts on the Large-eared Pied Bat and Eastern Cave Bat would be described in an updated or new Biodiversity Management Plan, including:
  - measures to ensure the disturbance area setbacks from mapped rocky habitat for the Large-eared Pied Bat and Eastern Cave Bat are maintained;
  - a program to monitor mapped rocky habitat, including:
    - measures to manage blast designs during Project operations to comply with a vibration limit of 50 mm/s at mapped rocky habitat for the Large-eared Pied Bat and Eastern Cave Bat (unless further geotechnical investigation supports a higher value);
    - measures to monitor blast vibration, including monitoring at representative sites of mapped rocky habitat adjacent to the Project;
    - ongoing review of monitoring data to confirm and update site-specific vibration modelling where necessary; and
    - visual inspections of key representative mapped rocky habitat on a 6-monthly basis to confirm that the target outcome of no physical impact to mapped rocky habitat as a result of blasting vibrations is met.
  - a program to monitor Large-eared Pied Bat and Eastern Cave Bat in response to vibration;



MCIA-20-18 OC3 Ext AR UPD MT_211C

LEGEND

National Park/Nature Reserve
Exploration Licence Boundary
Mining Lease Boundary
Moolarben Coal Complex Disturbance Footprint
Indicative Amended Project Surface Disturbance Extent

Eastern Cave Bat and Large-eared Pied Bat

Mapped Rocky Habitat
100 m Buffer from Mapped Rocky Habitat (Breeding Habitat)
Eastern Cave Bat Record
Large-eared Pied Bat Record

Source: MCO (2023); NSW Spatial Services (2021); AMBS (2023)
Orthophoto: MCO (2021)

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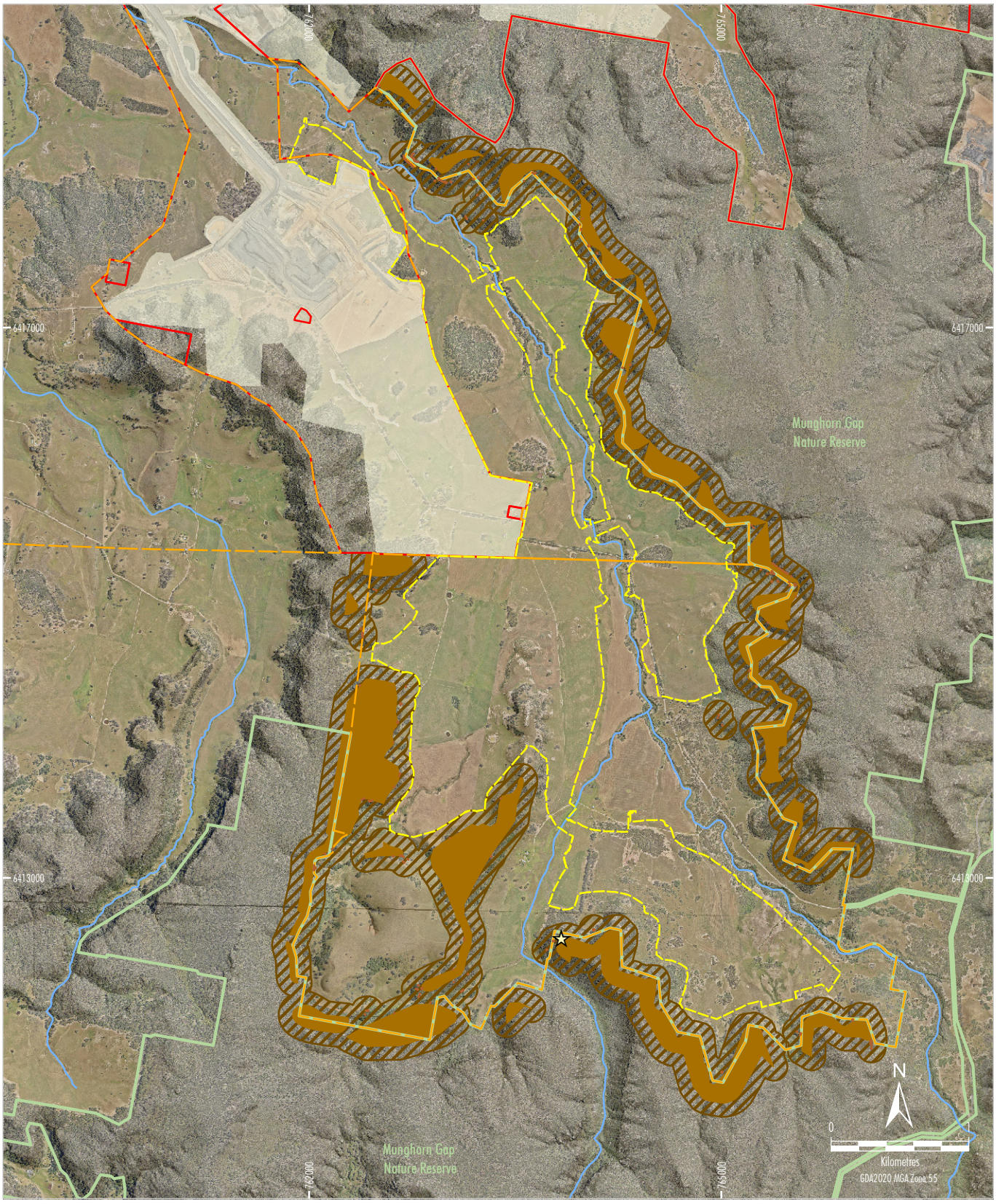
Eastern Cave Bat and Large-eared Pied Bat Habitat

Figure 6-1

  - measures to be implemented within the Habitat Enhancement Area to enhance potential foraging habitat for the Large-eared Pied Bat and Eastern Cave Bat (to be commenced within the first year of mining), including:
    - active revegetation (planting);
    - fencing to exclude livestock (as required); and
    - managing weeds, animal pests and bushfire risk within approximately 51 ha of foraging habitat and approximately 20 ha of breeding habitat.
  - identification of suitable Eucalypt species which could provide foraging habitat for the Large-eared Pied Bat and Eastern Cave Bat that would be included in areas undergoing revegetation within the Habitat Enhancement Area and rehabilitation on the mine final landform; and
  - measures to monitor areas undergoing rehabilitation on the mine final landform and revegetation within the Habitat Enhancement Area to evaluate the need for supplementary seeding/plantings.
- Suitably qualified experts (Andrew Lothian and Glenn Hoye) have undertaken a review of the potential residual impacts of the amended Project (after implementation of proposed avoidance, minimisation and mitigation measures) to the Large-eared Pied Bat and Eastern Cave Bat and concluded the Project would not contribute significantly to the risk of the species becoming extinct (Biodiversity Monitoring Services, 2024a).

Broad-headed Snake

- The Broad-headed Snake is listed as an SAII entity as it is reliant on abiotic (rocky) habitat and therefore unlikely to respond to measures to improve its habitat (Principle 4).
- The trigger for considering potential SAII for the Broad-headed Snake is any disturbance of breeding habitat, defined as relevant vegetation within 100 m of rocky habitat.
- The amended Project includes additional setbacks to avoid any direct disturbance of breeding habitat within 100 m of mapped rocky habitat associated with the Broad-headed Snake (Figure 6-2). **On this basis, the Project would completely avoid areas that require consideration of SAII for this entity.**
- As committed to for the Large-eared Pied Bat and Eastern Cave Bat, a blast vibration limit of 50 mm/s would be applied to mapped rocky habitat associated with the Broad-headed Snake to avoid the potential for damage to habitat due to indirect blasting impacts (unless further geotechnical investigation supports a higher value).
- Further to the proposed avoidance measures, measures to mitigate impacts on the Broad-headed Snake would be described in an updated or new Biodiversity Management Plan, including:
  - measures to ensure the disturbance area setbacks from mapped rocky habitat for the Broad-headed Snake are maintained;
  - a program to monitor the Broad-headed Snake in response to vibration;
  - measures to monitor and manage blast design to achieve the 50 mm/s blast vibration limit at mapped rocky habitat for the Broad-headed Snake (unless further geotechnical investigation supports a higher value);
  - measures to be implemented within the Habitat Enhancement Area to enhance potential habitat for the Broad-headed Snake (to be commenced within the first year of mining), including:
    - active revegetation (planting);
    - fencing to exclude livestock (as required); and
    - managing weeds, animal pests and bushfire risk within approximately 20 ha of breeding habitat.
  - measures to salvage and reuse large hollow-bearing trees/stags potentially suitable for the Broad-headed Snake on the mine final landform; and
  - measures to monitor areas undergoing revegetation within the Habitat Enhancement Area and rehabilitation on the mine final landform to evaluate the need for supplementary seeding/plantings.
- Suitably qualified experts (Andrew Lothian and Glenn Hoye) have undertaken a review of the potential residual impacts of the amended Project (after implementation of proposed avoidance, minimisation and mitigation measures) to the Broad-headed Snake and concluded the Project would not contribute significantly to the risk of the species becoming extinct (Biodiversity Monitoring Services, 2024b).



MCIA-20-18 OC3 Ext AR UPD MT_212B

LEGEND

- National Park/Nature Reserve
- Exploration Licence Boundary
- Mining Lease Boundary
- Moolarben Coal Complex Disturbance Footprint
- Indicative Amended Project Surface Disturbance Extent

Broad-headed Snake

- Mapped Rocky Habitat
- 100 m Buffer from Mapped Rocky Habitat (Breeding Habitat)
- Broad-headed Snake Record

Source: MCO (2023); NSW Spatial Services (2021); AMBS (2023)
Orthophoto: MCO (2021)

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Broad-headed Snake Habitat

Figure 6-2

Regent Honeyeater

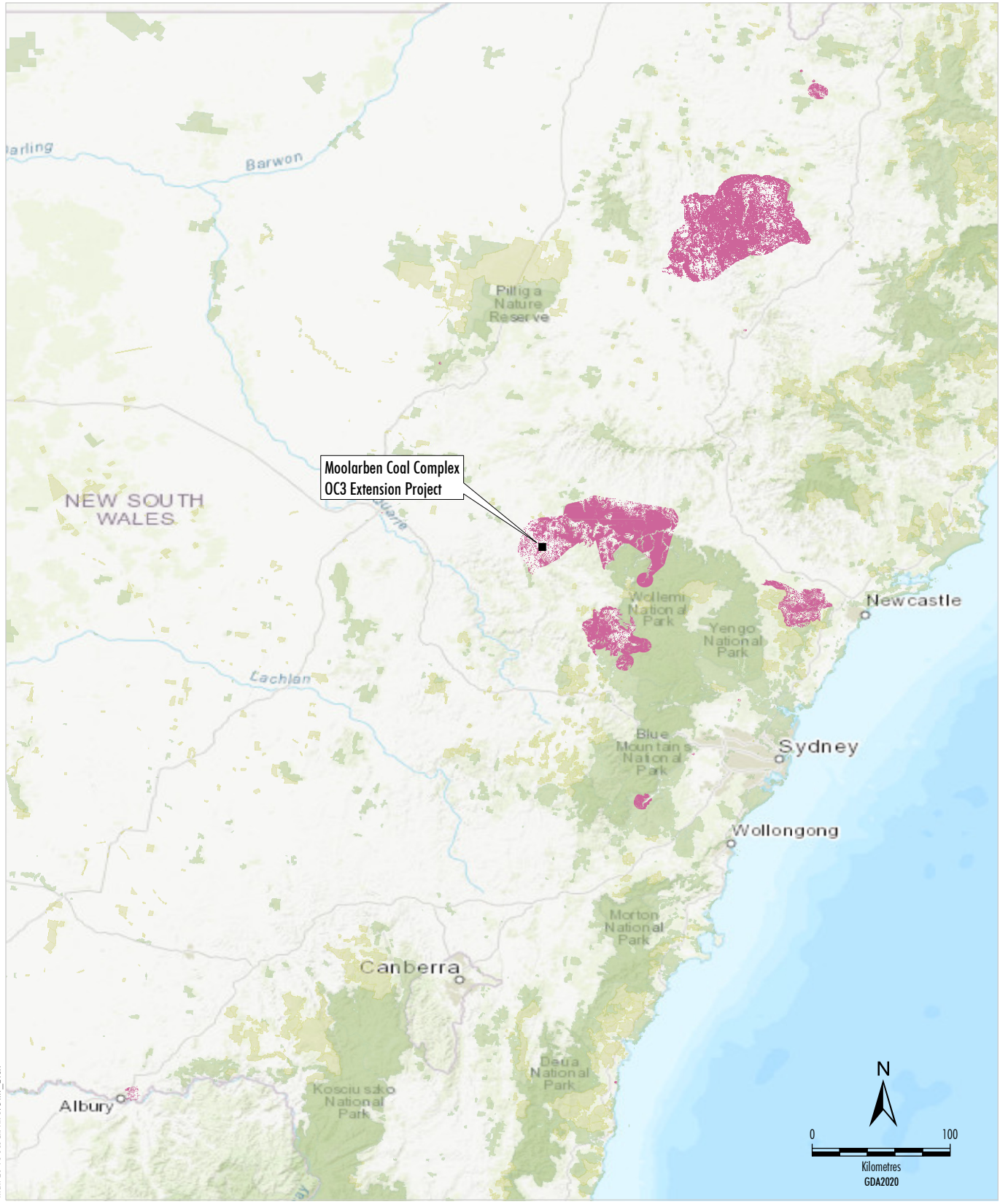
- The Regent Honeyeater is listed as an SAII entity as NSW DCCEEW considers it to be in a 'rapid rate of decline' (Principle 1) and have a 'very small population size' (Principle 2). NSW DCCEEW Regent Honeyeater Important Habitat Mapping in NSW compared to the Project is shown on Figure 6-3.
- The amended Project indicative surface disturbance extent would reduce disturbance of Regent Honeyeater Important Habitat Mapping (prepared by NSW DCCEEW) by approximately 56% (an additional 103 ha) compared to the Project EIS (Figure 6-4).
- Further to the proposed minimisation measures, measures to mitigate impacts on the Regent Honeyeater would be described in an updated or new Biodiversity Management Plan, including:
  - a vegetation clearance protocol to avoid accidental clearance of vegetation to be retained;
  - measures to be implemented to manage Noisy Miners prior to and during Regent Honeyeater breeding season;
  - measures to be implemented within the Habitat Enhancement Area to manage and enhance Mapped Important Habitat for the Regent Honeyeater (to be commenced within the first year of mining), including:
    - active revegetation (planting);
    - fencing to exclude livestock (as required); and
    - managing weeds, animal pests and bushfire risk within approximately 51 ha of mapped habitat.
  - a program to monitor for signs of the Regent Honeyeaters in the breeding season;
  - provision to evaluate methods to increase breeding success, if Regent Honeyeaters are found to be breeding at the site (including measures to minimise blasting impacts on trees while in use for Regent Honeyeater breeding);
  - identification of suitable Eucalypt species which could provide foraging habitat for the Regent Honeyeater that would be included in areas undergoing revegetation within the Habitat Enhancement Area and rehabilitation on the mine final landform; and
  - measures to monitor areas undergoing revegetation within the Habitat Enhancement Area and rehabilitation on the mine final landform to evaluate the need for supplementary seeding/plantings.
- Dr Stephen Debus (a suitably qualified expert) has undertaken a review of the potential for SAII of Regent Honeyeater as a result of the amended Project, which concluded the residual impact of the Project would not contribute significantly to the risk of the Regent Honeyeater becoming extinct (Debus, 2024). In particular, Dr Debus states:

  The following facts are pertinent to the risk of SAII for the Regent Honeyeater arising from the Project, including:

  - *the Regent Honeyeater has not been recorded in the Development Footprint (Niche 2022);*
  - *the clearing of 80.5 ha represents 0.01 % of the approximately 556,841 ha of total Mapped Important Habitat (NSW DCCEEW 2024b); and*
  - *the Habitat Enhancement Area is likely to result in a net gain of habitat extent and quality over time.*
- Dr Paul Frazier of 2rog Consulting Pty Ltd (2rog) has undertaken a review of existing rehabilitation monitoring data at the Moolarben Coal Complex to determine potential for re-establishment of habitat for threatened species (particularly Regent Honeyeater) in the proposed native woodland rehabilitation areas for the Project. The review concluded (2rog, 2024):

  … there is potential for the re-establishment of habitat for threatened species in rehabilitation for the Project in the long-term. In particular, existing rehabilitation at MCC:

  - *Recorded presence of several birds which forage either on the nectar or within the canopy of eucalyptus species, which provides a good indication of a developing eucalypt dominated canopy and associated provision of habitat for birds that utilise eucalypt canopies. This includes potential habitat for regent honey eaters (Anthochaera phrygia) and swift parrot (Lathamus discolor). As the canopy continues to mature, it is expected foraging opportunities for these threatened species will increase.*
  - *Currently provides or has potential to provide foraging habitat for a range of microbat species (including eastern cave bat (Vespadelus troughtoni) and large-eared pied bat (Chalinolobus dwyeri).*



MCM-20-18 OC3 Ext AR UPD MT_213A

LEGEND

- State Forest
- National Park /Nature Reserve
- NSW Government Regent Honeyeater Important Habitat Mapping

Source: ESRI Base (2023); NSW Government (2023)

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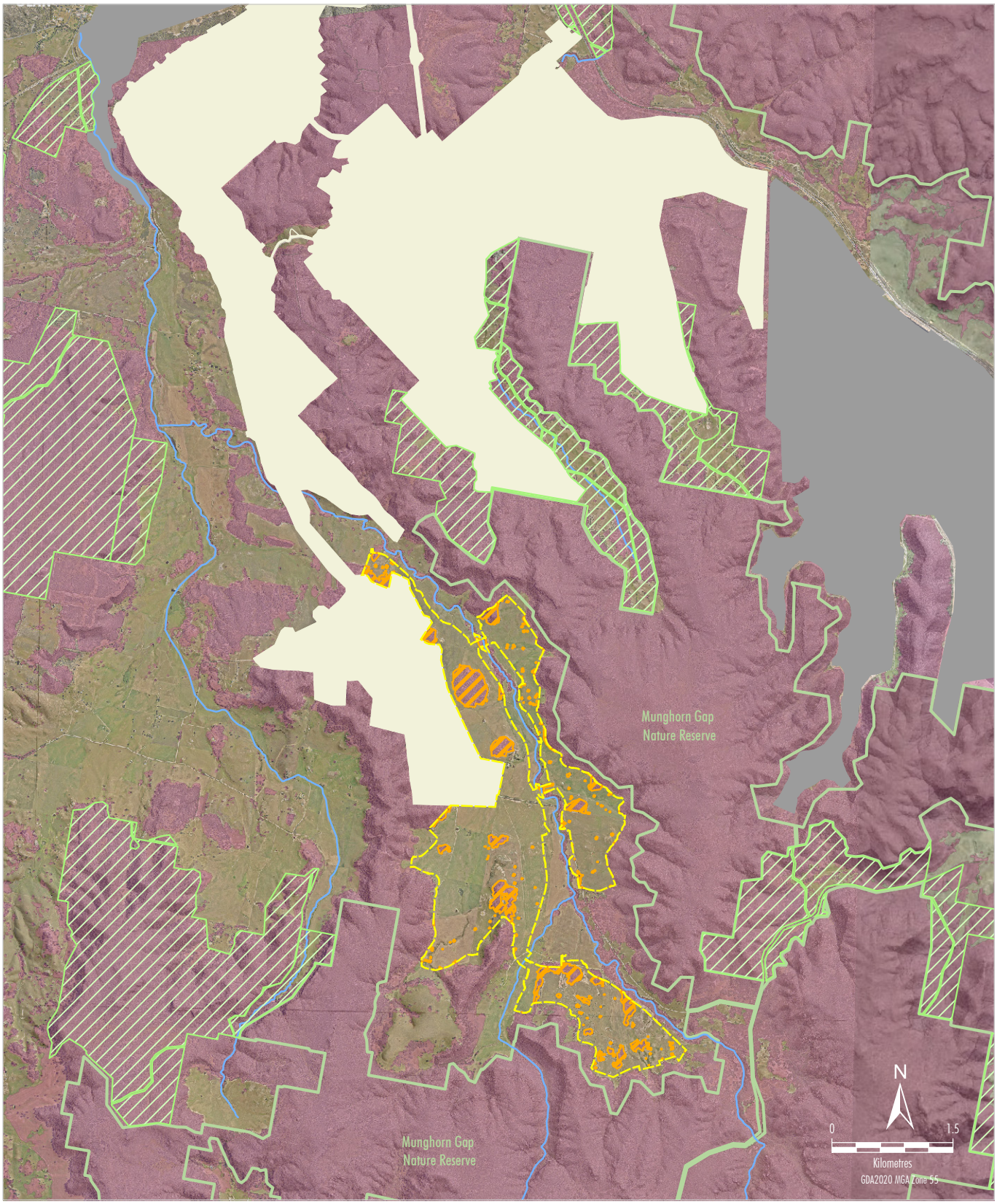
NSW Government Regent Honeyeater Important Habiat Mapping - NSW

Figure 6-3



MCM-20-18 OC3 Ext AR UPD MT_2144

LEGEND

- National Park/Nature Reserve
- Existing Biodiversity Offset Area
- Other Mining Operation
- Moolarben Coal Complex Disturbance Footprint
- Indicative Amended Project Surface Disturbance Extent
- NSW Government Regent Honeyeater Important Habitat Mapping
- NSW Government Regent Honeyeater Important Habitat Mapping Requiring Offset

Source: MCO (2023); DCCEEW (2023); BioNet Atlas (2023)
Orthophoto: MCO (2021)

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NSW Government Regent Honeyeater Important Habitat Mapping - Project Region

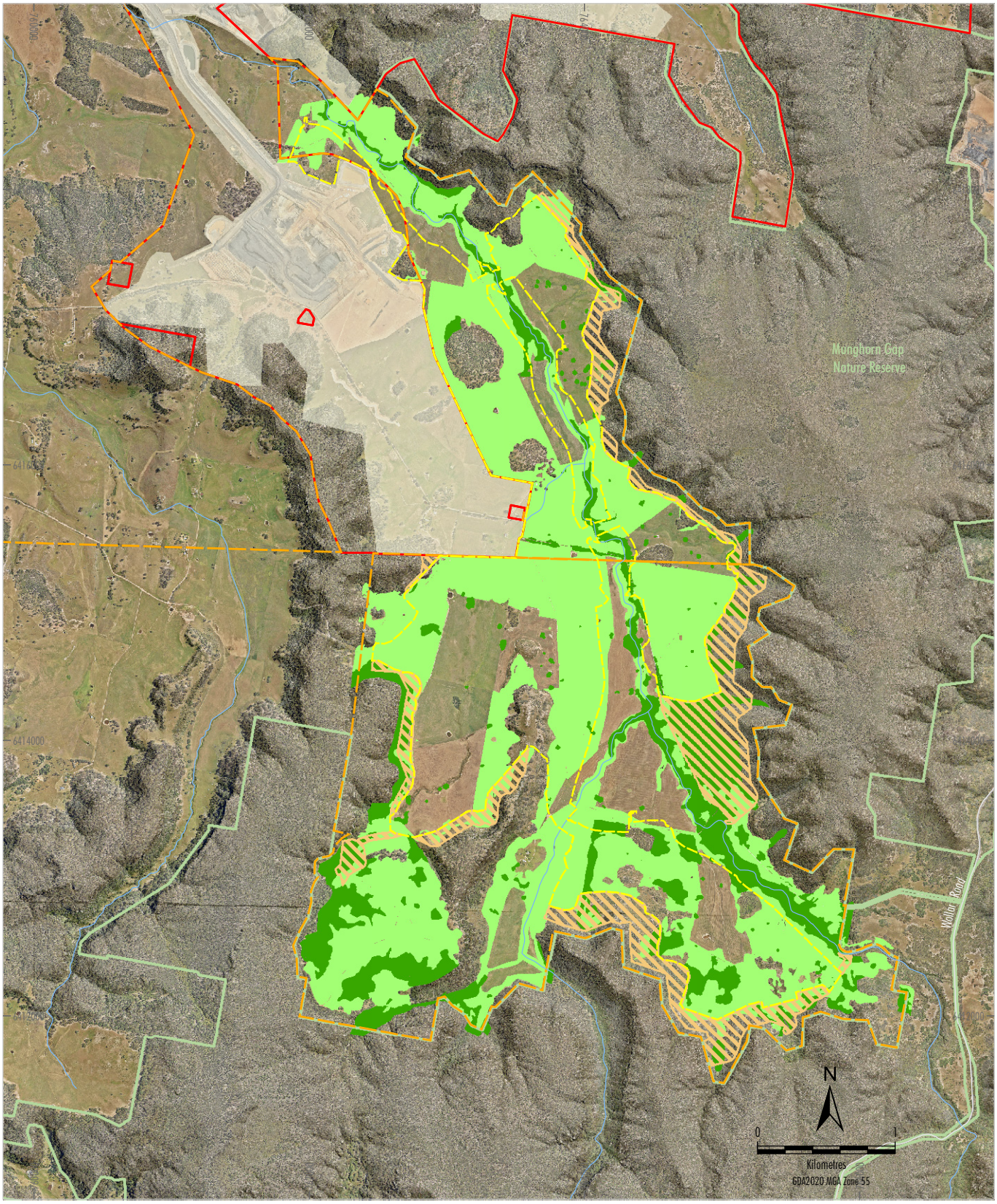
Figure 6-4

Box-Gum Woodland CEEC

- Box-Gum Woodland CEEC is listed as an SAII entity as NSW DCCEEW considers it to be in a 'rapid rate of decline' (Principle 1) and has a 'very small population size' (Principle 2).
- The amended Project indicative surface disturbance extent would reduce disturbance of the woodland component of Box-Gum Woodland CEEC by approximately 59% (an additional 50 ha) and the DNG component by approximately 7% (an additional 28 ha) compared to the Project EIS (Figure 6-5).
- The Project would also result in a long-term increase in native woodland in the Moolarben Valley of approximately 557 ha due to proposed revegetation and rehabilitation, including species consistent with Box-Gum Woodland CEEC.
- Further to the proposed minimisation measures, measures to mitigate impacts on the Box-Gum Woodland CEEC would be described in and updated or new Biodiversity Management Plan, including:
  - a vegetation clearance protocol to avoid accidental clearance of vegetation to be retained;
  - measures to control priority and environmental weeds within the disturbance, revegetation and rehabilitation areas in a manner that would not adversely impact on nearby Box-Gum Woodland CEEC;
  - measures to be implemented during construction and operations to identify and monitor priority and environmental weed infestations in the disturbance, revegetation and rehabilitation areas;
  - measures to be implemented during construction and operations to manage the potential for plant pathogens in the disturbance, revegetation and rehabilitation areas;
  - measures to be implemented during construction and operations to manage dust;
  - measures to be implemented within the Habitat Enhancement Area to enhance the Box-Gum Woodland CEEC (to be commenced within the first year of mining), including:
    - active revegetation (planting), including species characteristic of Box-Gum Woodland CEEC;
    - fencing to exclude livestock (as required); and
    - managing weeds, animal pests and bushfire risk within approximately 109 ha (33 ha of woodland and 76 ha of DNG) of mapped Box-Gum Woodland CEEC.
  - identification of plant species consistent with the Box-Gum Woodland CEEC that would be included in areas undergoing revegetation within the Habitat Enhancement Area and rehabilitation on the mine final landform;
  - measures to monitor areas undergoing revegetation within the Habitat Enhancement Area and rehabilitation on the mine final landform to evaluate the need for supplementary seeding/plantings; and
  - measures to reduce the risk of unplanned bushfire occurring with the Box-Gum Woodland CEEC.
- Dr Colin Driscoll (a suitably qualified expert) has undertaken a review of the potential for SAII of Box-Gum Woodland CEEC as a result of the amended Project, which concluded (Hunter Eco, 2024):

  This assessment has presented evidence to indicate that the impacts of the Project will not contribute significantly to the risk of the White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland becoming extinct on the grounds that:

  - *The ecological community does not have a very limited distribution.*
  - *The ecological community has been shown to respond to measures to improve its habitat and vegetation integrity.*
  - *The TEC to be cleared is mostly derived grassland (366.9 ha, 91.5 %), with a smaller portion of woodland (34.22 ha, 8.5%).*
  - *There is in the order of 15,110,000 ha of TEC in NSW (TSSC 2020) meaning that the total TEC lost to the project is 0.0027 % of the total occurrence which would not place the TEC as a whole at risk of extinction.*
  - *The Project would not result in isolation of any TEC remnants.*



MCM-20-18 OC3 Ext AR UPD MT_215B

LEGEND

- National Park/Nature Reserve
- Exploration Licence Boundary
- Mining Lease Boundary
- Moolarben Coal Complex Disturbance Footprint
- Indicative Amended Project Surface Disturbance Extent
- Additional Avoidance/Minimisation for Amended Project

Box-Gum Woodland CEEC

- Woodland
- Derived Native Grassland

Source: MCO (2023); NSW Spatial Services (2021); Eco Logical Australia (2023)
Orthophoto Mosaic: MCO (2021)

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Box-Gum Woodland CEEC - Woodland and Derived Native Grassland

Figure 6-5

Mitigation Measures

Additional Measures

The Project EIS proposed to establish a Habitat Enhancement Area of approximately 160 ha within riparian zones along Moolarben Creek and Murdering Creek, outside the proposed indicative surface disturbance extent.

To further mitigate potential impacts to threatened species habitat, the amended Project would extend the Habitat Enhancement Area by approximately an additional 28 ha (to a total of 188 ha) (Figure 2-3). Approximately 135 ha of DNG and cleared land within the Habitat Enhancement Area is proposed to be revegetated to provide habitat values consistent with the remnant woodland.

In consideration of the revised extent of native woodland clearance proposed for the amended Project (i.e. approximately 113 ha, comprising approximately 34 ha of Box-Gum Woodland), revegetation of DNG/cleared land to woodland within the extended Habitat Enhancement Area (i.e. approximately 135 ha) would provide a net increase in woodland in the Moolarben Valley of approximately 22 ha during mining. This is prior to any consideration of proposed native woodland rehabilitation within the Project indicative surface disturbance extent.

The existing land within the Habitat Enhancement Area has the following known values (i.e. prior to proposed revegetation) (Figure 6-6):

- Approximately 51 ha of remnant woodland, comprising approximately 33 ha of Box-Gum Woodland CEEC listed under the BC Act and EPBC Act.
- Approximately 76 ha of DNG, all of which is Box-Gum Woodland CEEC listed under the BC Act and EPBC Act (which is proposed to be revegetated to woodland).
- Approximately 59 ha of currently cleared land that would also be subject to revegetation.
- Habitat for threatened species, including:
  - Approximately 52 ha of Regent Honeyeater Important Habitat Mapping.
  - Approximately 51 ha of habitat for the Large-eared Pied Bat and Eastern Cave Bat, of which approximately 20 ha is within 100 m of rocky habitat (i.e. breeding habitat).
  - Approximately 20 ha of habitat within 100 m of rocky habitat (i.e. breeding habitat) for the Broad-headed Snake.
- Records of the Squirrel Glider and Large-eared Pied Bat, as well as potential habitat for species recorded in the surrounds (e.g. Pink-tailed Legless Lizard and Koala).

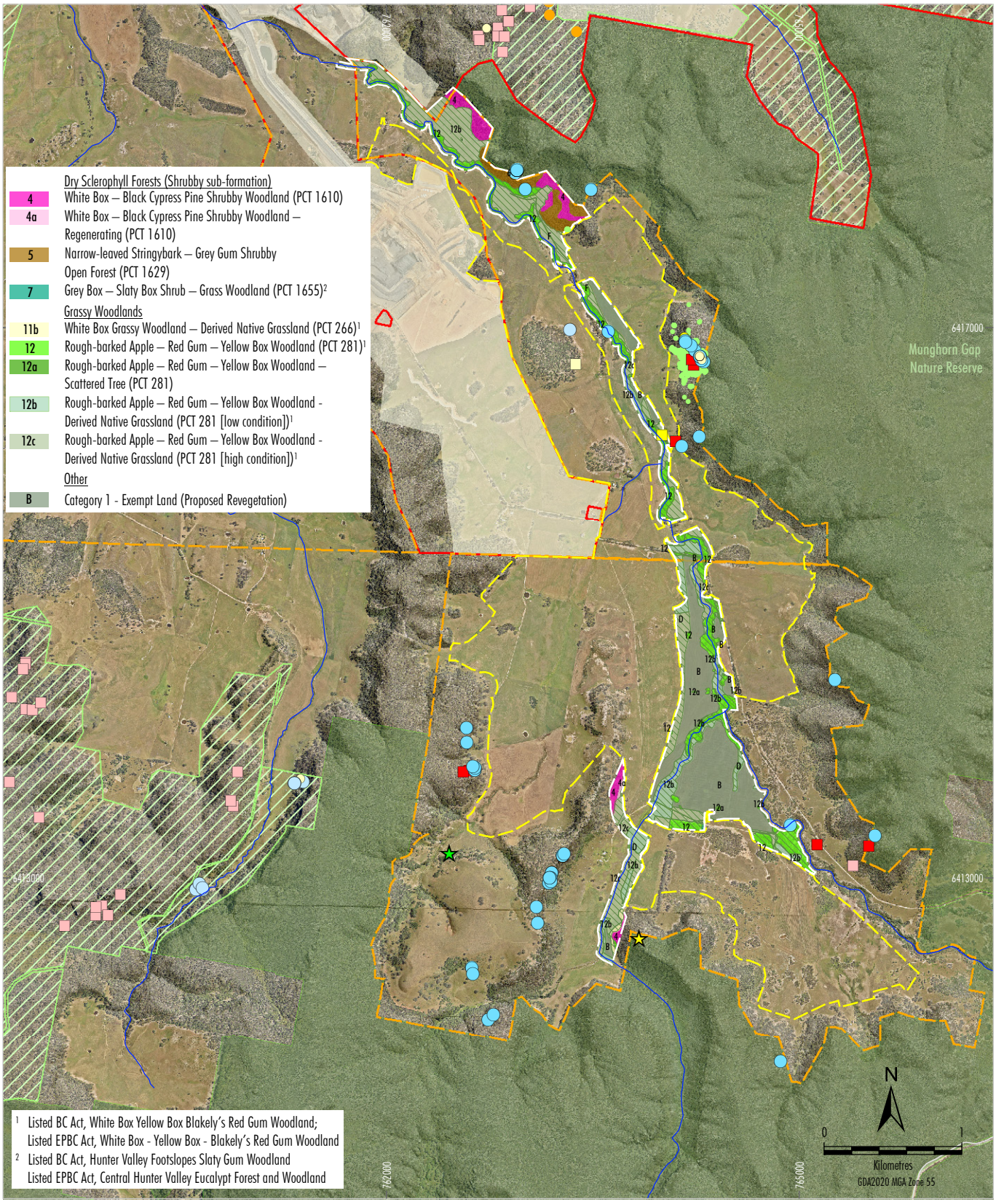
The Habitat Enhancement Area would improve the condition of remnant vegetation, enhance habitat connectivity with the Munghorn Gap Nature Reserve and provide a net increase in native vegetation and associated species habitat in the Moolarben Valley during the life of the Project.

As a component of the review of the Project design, MCO has also identified opportunities to improve the conceptual post-mining land uses by increasing the area rehabilitated to native woodland vegetation from approximately 325 ha to 535 ha (Figure 2-3). With the proposed revegetation within the extended Habitat Enhancement Area (i.e. net increase of approximately 22 ha during mining) and rehabilitation (i.e. approximately an additional 535 ha), there is a long-term net increase in native woodland in the Moolarben Valley of approximately 557 ha.

Offset Strategy

Residual potential impacts on biodiversity would be offset in accordance with the BC Act, including retirement of credits, funding of a biodiversity conservation action and/or payment into the Biodiversity Conservation Fund.

Consistent with the EIS, MCO would address the ecosystem and species credit requirement associated with each of the updated offset stages for the amended Project (Figure 3-3; Table 6-2) prior to commencement of relevant disturbance. It is noted that the proposed Habitat Enhancement Area and rehabilitation of the final landform are additional to any biodiversity offsets.



LEGEND

- National Park/Nature Reserve
- Existing Biodiversity Offset Area
- Exploration Licence Boundary
- Mining Lease Boundary
- Moolarben Coal Complex Disturbance Footprint
- Indicative Amended Project Surface Disturbance Extent

Habitat Enhancement Area

- Indicative Habitat Enhancement Area Extent
- Box-Gum Woodland CEEC

	Survey	Database
Threatened Flora Records		
Cotoneaster Pomaderris	●	
Threatened Fauna Records		
Pink-tailed Legless Lizard	★	
Broad-headed Snake	☆	
Koala	■	■
Squirrel Glider	■	■
Large-eared Pied Bat	●	●
Eastern Cave Bat	●	●
Swift Parrot		●

Source: MCO (2023); NSW Spatial Services (2021); Eco Logical Australia (2023); AMBS (2023). Orthophoto Mosaic: MCO (2021)

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Habitat Enhancement Area Values

Figure 6-6

MCO is expecting land based offset options to be available to secure the Project's total offset liability for the Regent Honeyeater and Koala (and potential for other threatened species following targeted surveys), including options to establish land-based offsets using Moolarben-owned land in the region.

MCO is also investigating two potential "onsite" offset areas within the Project Study Area, associated with Regent Honeyeater Important Habitat Mapping, Box-Gum Woodland CEEC and other recorded threatened species and their habitat (including Large-eared Pied Bat, Eastern Cave Bat, Pink-tailed Legless Lizard, Squirrel Glider and Koala).

6.3 ABORIGINAL CULTURAL HERITAGE

Background

The indicative surface disturbance extent for the Project has been reduced to incorporate additional avoidance and minimisation measures to address submissions received on the EIS. The ACHA presented in the EIS has been updated by Niche (2024b) to reflect the revised indicative surface disturbance extent for the amended Project, including recommended management measures.

The updated ACHA also incorporates additional information in response to comments received from Heritage NSW on the EIS, as well as outcomes of further consultation, survey and test excavation fieldwork undertaken since lodgement of the EIS.

A reduction in the indicative surface disturbance extent for the amended Project has resulted in a reduced number of Aboriginal cultural heritage sites subject to direct impacts and updated management measures for sites subject to indirect impacts.

Revised Potential Impacts

The Aboriginal cultural heritage sites within the Subject Area and a summary of revised level of proposed impact for the amended Project are provided in Table 6-4 and shown on Figure 6-7.

This includes a further eight sites (all assessed as being of low scientific significance) identified during additional fieldwork since lodgement of the EIS, including five artefact scatters (with/without Potential Archaeological Deposit [PAD]) and three isolated artefacts. Further detail is provided in Appendix E.

Direct Impacts

Sites located within or directly adjacent to the Project indicative surface disturbance extent have the potential to be directly impacted (totally or partially) by the Project.

The amended Project may result in direct disturbance (total or partial) of 55 known Aboriginal heritage sites (compared to 79 Aboriginal heritage sites for the EIS), comprising:

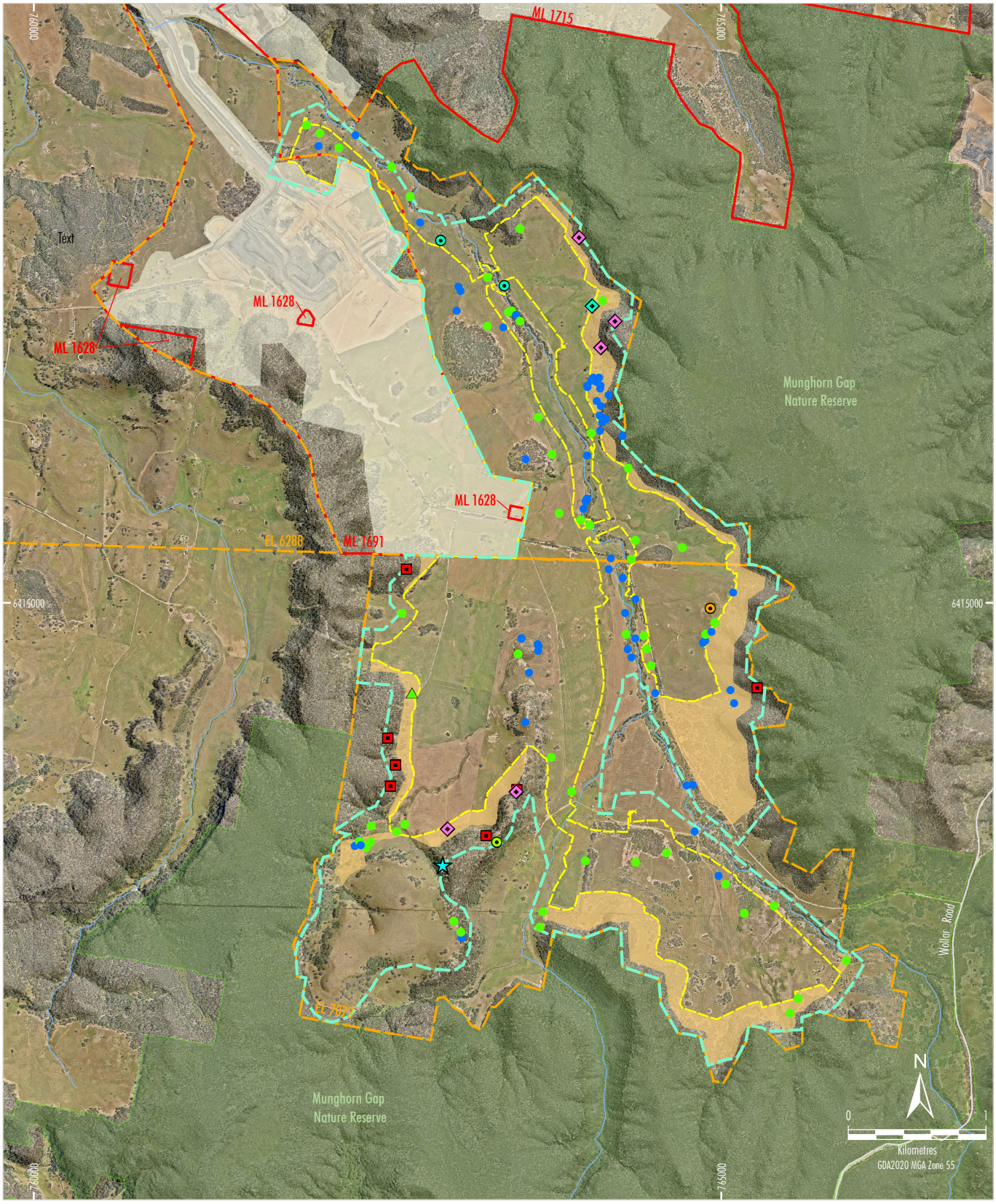
- Five sites assessed as being of moderate scientific significance.
- Four sites assessed as being of low-moderate scientific significance.
- 46 sites assessed as being of low scientific significance.

Indirect Impacts

A total of 12 known Aboriginal heritage rock shelter sites are within 230 m of the amended Project indicative surface disturbance extent and may be subject to indirect impacts, comprising:

- One site assessed as being of moderate scientific significance.
- Four sites assessed as being of low-moderate scientific significance.
- Seven sites assessed as being of low scientific significance.

Implementation of blast management measures (described below) would result in no indirect impacts to rock shelter sites outside the amended Project indicative surface disturbance extent.



MCN-20-18 OC3 Ext AR UPD MT_217C

LEGEND

National Park/Nature Reserve
Exploration Licence Boundary
Mining Lease Boundary

OC3 Extension Project - Amended

Indicative Amended Project Surface Disturbance Extent
ACHA Subject Area
Additional Avoidance Minimisation for the Amended Project

Aboriginal Heritage Sites - High Scientific Significance

Shelter with Possible Burial (S1MC538)

Aboriginal Heritage Sites - Low to Moderate Scientific Significance

Artefact Scatter
Artefact Scatter with PAD
Grinding Grooves and Artefacts
Isolated find
PAD
Shelter with Artefacts
Shelter with Artefacts and Grinding Groove
Shelter with Artefacts and PAD
Shelter with PAD

Source: MCO (2023); Niche (2023); NSW Spatial Services (2021); Orthophoto Mosaic: MCO (2021)

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Aboriginal Cultural Heritage Sites Within the Subject Area

Figure 6-7

Table 6-4
Summary of Relevant Known Aboriginal Heritage Sites within the Subject Area

Site Type	Assessed Scientific Significance	Level of Proposed Impact*	Number of Sites
Artefacts (with or without PAD)			
Artefact Scatters	Low	Direct	26
		None	14
	Low-moderate	Direct	4
		None	4
	Moderate	Direct	3
		None	1
Artefacts and PAD	Low	Direct	1
		None	1
Isolated Finds	Low	Direct	19
		None	48
PAD	Low-moderate	None	1
Shelters (with or without Artefacts or PAD)			
Shelter with Artefacts	Low	Indirect	1
Shelter with Artefacts and PAD	Low	Indirect	4
	Moderate	Indirect	1
Shelter with Artefacts and Grinding Groove	Moderate	Direct	1
Shelter with PAD	Low	Indirect	2
		None	1
	Low-moderate	Indirect	4
Other Site Types			
Shelter with Possible Burial (S1MC538)	High	None	1
Grinding Grooves and Artefacts (S1MC437)	Moderate	Direct	1
Total			**138**

After: Appendix E

Note: Site types have been updated where relevant to reflect outcomes of test excavation works undertaken since lodgement of the EIS.

** For the purpose of impact assessment, direct impact is defined as both total and partial impact to Aboriginal heritage sites located wholly or partially within the indicative surface disturbance extent for the amended Project.*

Mitigation Measures

Site-specific management measures are described in the updated ACHA (Appendix E). These measures would be incorporated in an updated or new Heritage Management Plan for the Project, in consultation with the Registered Aboriginal Parties.

The existing Moolarben Coal Complex Heritage Management Plan and Blast Management Plan provide a blast limit for Aboriginal rock shelter sites of 250 mm/s, with a requirement to monitor any blasts within 230 m of rock shelter sites.

Applying the blast vibration threshold for mapped rocky habitat (i.e. 50 mm/s) would also limit the potential for vibration damage of shelter sites (unless further geotechnical investigation supports a higher value). Blast vibration monitoring of shelter sites would be undertaken on a progressive basis to ensure that the relevant blast vibration limits are not exceeded.

6.4 GROUNDWATER

Background

As a result of the proposed additional avoidance and minimisation measures for the amended Project, the indicative surface disturbance extent and extent of the proposed open cut mining areas has reduced. A revised indicative mine schedule and mining progression have been developed for the amended Project.

Submissions on the EIS generally indicated the methodology adopted for groundwater modelling and impact assessment was acceptable, with DPE – Water (now known as the NSW DCCEEW) concluding:

> *All the SEARs relevant to groundwater impact have been satisfactorily addressed in the Groundwater Assessment report. The impact of the project on groundwater and its receptors was estimated using Modflow-USG groundwater model that was independently peer reviewed as fit for the purpose. Nevertheless, DPE Water assessed the groundwater model as acceptable with 66% rating. DPE Water agrees with the selection of proposed monitoring sites and the proposal to update the approved WMP for MCC once baseline information of the proposed monitoring sites are analysed.*

The changes in groundwater predictions as a result of the amended open cut mining pit extents and revised mine progression have been modelled by AGE (2024) for the amended Project (Appendix F) consistent with the methodology adopted for the EIS.

Revised Potential Impacts

The updated groundwater modelling for the amended Project would result in:

- a predicted peak in groundwater inflows to the open cut mining pits of approximately 156 ML per annum in 2027, which has reduced compared to the predictions presented in the EIS at a peak of approximately 181 ML per annum in 2029;
- an overall reduction in the extent of groundwater drawdown and mounding compared to the predictions presented in the EIS;
- approximately 6 ha of potential GDEs within the predicted drawdown extent of greater than or equal to 2 m, which has reduced compared to the EIS;
- a predicted reduction in baseflow to Moolarben Creek of 2.3 ML per annum, compared to 2.8 ML per annum presented in the EIS, which is considered negligible in consideration of the modelled baseflow to and observed streamflow in Moolarben Creek;
- no privately-owned bores predicted to experience drawdown greater than 2 m in accordance with the “minimal impact” criteria of the *NSW Aquifer Interference Policy*, consistent with the EIS; and
- no predicted drawdown or impacts at local spring features within and adjacent to the Munghorn Gap Nature Reserve and no predicted impacts at the Drip, consistent with the EIS.

Indicative groundwater licensing requirements for the amended Project are detailed in Table 6-5. MCO would comply with water licensing requirements under the NSW *Water Management Act 2000* over the life of the Project.

MCO has, and will continue to, hold sufficient licence entitlements for its annual water take, as is required under the *Water Management Act 2000*. If licence entitlements held by MCO (including when considering carry-over entitlements) are not predicted to be sufficient to account for licensable take, in the first instance, MCO would seek to trade entitlements with other Yancoal operations, where relevant.

Yancoal operates a number of mines in the Sydney Basin-North Coast Groundwater Source, which provides opportunities to trade licences between Yancoal-owned assets to meet the specific licensing requirements for each site, which fluctuate from year-to-year. The trading of WAL entitlements is a recognised and legally approved mechanism under the *Water Management Act 2000* to maximise the efficient use of the state’s water resources.

Table 6-5
Amended Project Indicative Water Licensing Requirements

Water Sharing Plan	Groundwater Source	MCO Owned Entitlements	Total Share Component	Maximum Predicted Take at the Moolarben Coal Complex (ML/y)[1]		Total Entitlements Available in Source[2]
				Approved Operations	With Amended Project	
NSW Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016	Sydney Basin – North Coast Groundwater Source	39799	2,950	3,910	3,937	68,283.5
NSW Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2022	Upper Goulburn River Water Source	37582, 19052, 41888	208	250	299	1,882
	Wollar Creek Water Source	36340, 37583	218	282	282	860

After: Appendix F.

ML/y = million litres per year.

[1] Typically occurs for one water year only.

[2] As per NSW Water Register.

Mitigation Measures

As described in the EIS, additional groundwater monitoring bores recommended in the Groundwater Assessment (AGE, 2022) would be incorporated in the Moolarben Coal Complex groundwater monitoring system.

No change to the recommendations is proposed as a result of the amended Project (Appendix F).

6.5 SURFACE WATER

Background

The objectives and components of the water management system for the amended Project are unchanged from those described in the EIS, in particular protection of the integrity of local and regional water resources and maximising the diversion of clean water runoff around disturbance areas.

While there were no submissions that required changes to the surface water modelling, potential changes to the surface water impact assessment have been reviewed by WRM (2024) for the amended Project.

Revised Potential Impacts

The outcomes of the updated surface water assessment for the amended Project are consistent with the assessment undertaken for the Project as presented in the EIS, and are as follows (Appendix G):

- When considering the 200 m setback of the highbank of Moolarben Creek and Murdering Creek and proposed clean water diversions, the loss of catchment flows in Moolarben Creek, Murdering Creek and Goulburn River would be indiscernible. Therefore, the potential impact on flows in these watercourses due to the excision of catchment from amended Project operations is considered negligible.
- There would be no loss of catchment post-mining as the open cut mining areas would be backfilled and rehabilitated to a free-draining landform. Relative to the “No Project” scenario, the amended Project would reduce catchment excision by approximately 24 ha, as the approved OC3 final void is proposed to be backfilled for the Project.

- Environmental risks from sediment dam overflows are expected to be low, as any minor increase in salinity of the Moolarben Creek during sediment dam overflows at the Project are predicted to be generally within the observed water quality ranges and would be substantially diluted by additional background flows further downstream along Moolarben Creek and further downstream in the Goulburn River.
- The Project water management system performs under a broad range of climatic conditions (133 years of climate data) and was tested with a sensitivity analysis for climate change and varying Australian Water Balance Model parameters. No uncontrolled spills of mine water dams and limited requirement for in-pit storage under wetter climatic conditions under the base case. Therefore, the Project would not have a measurable impact on receiving water quality in Moolarben Creek or the downstream Goulburn River.
- No predicted flooding impacts as the proposed haul road crossings and levees can manage the peak flows for the 1% annual exceedance probability design event, with adequate freeboard allowances (including for the climate change scenarios) and there would be no flooding impacts to Moolarben Creek (or any users) downstream of the Project.

Indicative surface water licensing requirements for the amended Project are detailed in Section 6.5. MCO would comply with water licensing requirements under the NSW *Water Management Act 2000* over the life of the Project.

Mitigation Measures

The water management system for the Project (designed in accordance with best practice principles for site water management) would be implemented over the life of Project operations. The Project water management system would be described in an updated or new Water Management Plan.

As described in the EIS, existing erosion and sediment controls and surface water monitoring and management for the Moolarben Coal Complex would also be implemented for Project operations.

MCO also accepts the Independent Expert Scientific Community recommendations regarding the establishment of additional monitoring locations, suite of parameters and frequency of sampling and other management measures (refer to the Submission Report for further detail).

6.6 NOISE

Background

No comments were received on the outcomes of the Noise and Blasting Impact Assessment in the EIS by the Environment Protection Authority (EPA).

As a result of the proposed additional avoidance and minimisation measures for the amended Project, the indicative surface disturbance extent and extent of the proposed open cut mining areas has reduced. Therefore, the proximity between the amended Project operations and privately-owned receivers is either the same or greater than assessed in the EIS.

Indicative peak mining activity for the amended Project (i.e. 8.5 Mtpa ROM coal in 2028) is slightly less than peak mining assessed in the EIS (i.e. 9 Mtpa ROM coal in 2027) and therefore negligible changes to the maximum mining fleet are required.

Potential changes to noise modelling outcomes have been assessed by SLR (2024) for the amended Project.

Revised Potential Impacts

Consistent with the EIS, the key outcomes of updated noise modelling for the amended Project are as follows (Appendix H):

- The predicted noise levels of the amended Project and the Moolarben Coal Complex cumulatively would comply with the criteria in both the Stage 1 and 2 Project Approvals for the Moolarben Coal Complex.
- There would be no exceedances of the relevant criteria under the *Noise Policy for Industry*, *Interim Construction Noise Guideline* and *Rail Infrastructure Noise Guideline* are predicted at any privately owned residences for the amended Project.

Mitigation Measures

As described in the EIS, the existing noise control and management measures for the Moolarben Coal Complex would also be implemented for Project operations.

6.7 BLASTING

Background

No comments were received on the outcomes of the Noise and Blasting Impact Assessment in the EIS by the EPA.

In response to comments on the EIS about the protection of sensitive geological features within the Munghorn Gap Nature Reserve, further blast and geotechnical assessment has been undertaken to develop an appropriate blast vibration limit (Appendix I).

As a result of the proposed additional avoidance and minimisation measures for the amended Project, the indicative surface disturbance extent and extent of the proposed open cut mining areas has reduced. Therefore, the proximity between the amended Project operations and privately-owned receivers is either the same or greater than assessed in the EIS.

Potential changes to predicted blasting impacts at sensitive receivers have been assessed by SLR (2024) for the amended Project in consideration of the blast vibration limit for mapped rocky habitat.

Revised Impact Assessment

Blast vibration would be limited to 50 mm/s peak particle velocity at mapped rocky habitat near the Project, unless further geotechnical investigation supports a higher value (Figure 6-1 and 6-2). While developed for mapped rocky habitat (including sensitive geological features), these blast vibration limits would also have the benefit of reducing blast vibration levels experienced at all other sensitive receivers surrounding the Project.

Modelling concludes that there would be no exceedances of the relevant overpressure and/or vibration criteria for human comfort under the *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration* at any privately-owned residences and non-residential receivers in Cooks Gap, Ulan or on any public roads (Appendix H).

Mitigation Measures

Existing blast management measures for the Moolarben Coal Complex, as described in the Project EIS, would also be implemented for amended Project operations. In order to incorporate geotechnical specialist recommendations, management of blast design and execution would be implemented for blasts nearest to mapped rocky habitat to achieve the recommended vibration limit.

Additional measures specific to the amended Project include:

- pre-blast desktop assessment to identify the proximity of mapped rocky habitat to planned blasts, in order to inform vibration modelling and therefore blast design;
- site-specific vibration modelling per blast to calculate Maximum Instantaneous Charge (MIC) required to meet the recommended vibration limit for nearest mapped rocky habitat;
- implementation of additional vibration monitoring at representative sites of mapped rocky habitat adjacent to the Project; and
- visual inspections of key representative mapped rocky habitat on a 6-monthly basis to confirm that the target outcome continues to be achieved, i.e. no physical impact to mapped rocky habitat (and therefore no physical impact to the Munghorn Gap Nature Reserve) distinguishable from natural processes as a result of blast vibrations.

6.8 AIR QUALITY

Background

No comments were received on the outcomes of the Air Quality Assessment in the EIS by the EPA.

As a result of the proposed additional avoidance and minimisation measures for the amended Project, the indicative surface disturbance extent and extent of the proposed open cut mining areas has been reduced. Therefore the proximity between the amended Project operations and privately-owned receivers is either the same or greater than assessed in the EIS.

Indicative peak mining activity for the amended Project (i.e. 8.5 Mtpa ROM coal in 2028) is slightly less than peak mining assessed in the EIS (i.e. 9 Mtpa ROM coal in 2027) and therefore negligible changes to the maximum mining fleet are required.

Potential changes to air quality modelling outcomes have been assessed by TAS (2023) for the amended Project.

Revised Potential Impacts

Consistent with the assessment undertaken for the EIS, no exceedances of the relevant criteria under the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA, 2022) are predicted for total suspended particles, particulate matter with an equivalent aerodynamic diameter of 2.5 micrometres (µm) or less ($PM_{2.5}$), particulate matter with an equivalent aerodynamic diameter of 10 µm or less (PM_{10}) or dust deposition at any privately owned residences as a result of the amended Project (Appendix J).

Mitigation Measures

As described in the EIS, the existing air quality mitigation and management measures, and predictive and real-time air quality management system and associated response protocols for the Moolarben Coal Complex would also be implemented for Project operations.

6.9 GREENHOUSE GAS

Background

A revised indicative mine schedule and mining progression have been developed for the amended Project.

A reduction in the total resource extracted over the life of the amended Project (from approximately 40 Mt to 30 Mt) has resulted in an associated reduction in GHG emissions estimates.

Calculation and assessment of the changes in GHG emissions has been undertaken by TAS (2023) for the amended Project. The updated GHG calculations also incorporate recommended emissions factors and other additional information in response to comments received from the DPE Science, Economics, Insights and Net Zero Emissions Modelling team (now known as NSW DCCEEW) on the EIS.

Revised Potential Impacts

Updated GHG emission estimates (annual average and total) for the amended Project are provided in in Table 6-6 and summarised below.

- Total Scope 1 emissions over the life of the amended Project are estimated to be 0.485 Mt CO_2-e, which is an average of approximately 0.047 Mt CO_2-e per year.
- The annual average Scope 1 emissions intensity for the amended Project is 0.0158 tonnes of carbon dioxide equivalent per tonne of ROM coal (t CO_2-e/t ROM coal), which is well below the Safeguard Mechanism industry average of 0.0653 t CO_2-e/t ROM.

Table 6-6
Summary of GHG Emissions Estimates for the Amended Project

Component	Estimated GHG Emissions (Mt CO_2-e)		
	Scope 1	Scope 2	Scope 3
Annual Average	0.047	0.005	6.406
Maximum Annual Value	0.110	0.019	18.291
Total	0.485	0.053	64.063

After: Appendix J

** The annual values exclude the decommissioning phase (i.e. between 2025 to 2034), however the total values include the decommissioning phase.*

Compared to the Project EIS, the amended Project results in a reduction in total Scope 1 emissions over the life of the amended Project of 0.12 Mt CO_2-e, which is an average of approximately 0.011 Mt CO_2-e per year (i.e. approximately 20% reduction in annual average Scope 1 emissions compared to the EIS).

Mitigation Measures

As described in the EIS, reasonable and feasible GHG mitigation and management measures implemented at the Moolarben Coal Complex, which are generally focused on minimising emissions through efficient use of diesel, would also be applied to the Project operations.

Implementation of further step change abatement is not considered reasonable or feasible for the Project.

The peer review of the GHG Assessment Report for the EIS by GHD (2022) concluded that electrification of the Project mining fleet is not considered feasible due to the short life of the Project (i.e. only 10 years) and lack of available battery-operated mobile equipment.

GHD (2022) also concluded that the low level of fugitive emissions associated with the Project means that it is not feasible to minimise these emissions.

Safeguard Mechanism

The Moolarben Coal Complex is regulated as a single facility under the Commonwealth *National Greenhouse and Energy Reporting Act 2007* (NGER Act) and the Commonwealth *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015* (Safeguard Mechanism). Scope 1 and 2 emissions from the Moolarben Coal Complex are reported annually to the Clean Energy Regulator in accordance with the NGER Act. As annual Scope 1 emissions exceed 100,000 tonnes of carbon dioxide equivalent (t CO_2-e), the Moolarben Coal Complex qualifies as a 'Safeguard facility'. Under the Safeguard Mechanism, Scope 1 emissions are subject to a baseline whereby emissions above the baseline must be offset by retiring carbon credits.

The Safeguard Mechanism has recently undergone major reforms that commenced on 1 July 2023. These reforms set out new declining baselines for all Safeguard facilities to support Australia in meeting its emissions reduction targets, including Net Zero by 2050. Baselines are set on an emission intensity basis. For the coal sector this is t CO_2-e/ t ROM coal.

All coal mining Safeguard facilities are subject to the same baseline setting methodology to incentivise the least emissions intensive production of ROM coal. Baseline emission intensities will transition from 95% site-specific: 5% industry average in FY24 to 50% site-specific: 50% industry average emissions intensities in FY30 and decline at a rate of 4.9% per annum. Beyond FY30, baselines are likely to continue to decline to reach net zero in 2050, however this post FY30 methodology will be settled at a later date (FY27) by the Cth DCCEEW.

The coal industry average emissions intensity has been set as 0.0653 t CO_2-e/ t ROM coal (Scope 1 only) and site-specific emissions intensities will be determined through a formal application process using historical NGER data. MCO is currently in the process of preparing this application. The baseline for the Moolarben Coal Complex moving forward will be finalised once this determination is made.

The Project would form part of the Moolarben Coal Complex facility, once approved, and would therefore also be subject to this Safeguard baseline.

NSW GHG Emissions Reductions Targets

The NSW *Climate Change (Net Zero Future) Act 2023* outlines the NSW Government's GHG emissions reduction targets of at least 50% by 2030, 70% by 2035 and net zero by 2050.

The Moolarben Coal Complex is approved to extract up to 24 Mtpa of ROM coal until 2038. Therefore, this extraction should be accounted for in GHG emissions projections for NSW. The Project would not result in any cumulative change to the approved coal production rate or mine life for the Moolarben Coal Complex.

The proportion of the amended Project's annual average Scope 1 emissions compared to the projected NSW emissions in 2030 according to the NSW Net Zero Emissions Dashboard (DPE, 2023) are:

- 0.04% of the 'base case' emission forecast (109.63 Mt CO_2-e).
- 0.07% of the 'current policy' emission forecast (71.55 Mt CO_2-e).

6.10 ECONOMIC

Background

As a result of the proposed additional avoidance and minimisation measures for the amended Project, a revised indicative mine schedule and mining progression have been developed for the amended Project and a reduction in the total resource extracted over the life of the amended Project (from approximately 40 Mt to 30 Mt).

Potential changes to economic net benefits have been assessed by AnalytEcon (2024) in an updated Economic Assessment for the amended Project.

Revised Potential Impacts

The total net benefit of the amended Project to the NSW economy is estimated to be $190 million in NPV terms (compared to $182 million for the EIS), comprising of:

- Royalty payments of $166 million in NPV terms.
- NSW's share of company income tax of $21 million in NPV terms.
- Net producer surplus of $3 million in NPV terms.

While total ROM coal extraction has reduced for the amended Project, the incremental net benefit has increased compared to the EIS due to application of increased NSW Government royalty rates (from 8.2% to 10.8%, effective from 1 July 2024) and changes in the mine production schedule.

Estimated costs of environmental externalities (e.g. Scope 1 and 2 GHG emissions) have also been updated (i.e. reduced environmental costs) for the amended Project to consider the reduced indicative surface disturbance extent and ROM coal extraction (Appendix K).

6.11 OTHER

Aquatic Ecology

An Aquatic Ecology Assessment was undertaken by Bio-Analysis Pty Ltd (2022) for the EIS, which concluded that the Project is expected to have negligible impacts on aquatic ecology at a regional scale. The reduced extent of mining operations and indicative surface disturbance extent for the amended Project would result in similar or reduced impacts compared to the EIS.

Additional stygofauna testing has been undertaken since lodgement of the EIS in response to the submission from BCS and NPWS which confirms the EIS predictions. Further detail is provided in the Submissions Report.

Road Transport

A Road Transport Assessment was undertaken by The Transport Planning Partnership (2022) for the EIS which concluded the existing road network can satisfactorily accommodate the forecast traffic demands of the Moolarben Coal Complex (including the Project) without any specific additional road upgrade requirements.

The amended Project would not result in any changes to the peak workforce numbers or mine life assessed in the EIS, and therefore there is no change to the assessed impacts.

Non-Aboriginal Heritage

A Non-Aboriginal Heritage Assessment was undertaken by Niche (2022) for the EIS which identified three items of local heritage significance within the Project area and concluded:

> *There are no aspects of the Project that would detrimentally impact on heritage values and significance within the Subject Area.*

The amended Project would not result in any change in the proposed level of impact or recommended management measures for these sites.

Agricultural and Land Resources

An Agricultural Impact Assessment was undertaken by 2rog (2022) for the EIS, supported by a Soils and Land Impact Assessment (Minesoils Pty Ltd, 2022).

The amended Project would not result in any change to the assessed impacts of reduction in agricultural production during the mine life. However, the extent of agricultural land reinstated in the final landform would reduce from approximately 500 ha to 140 ha to enable increased rehabilitation to native woodland, in response to comments on the EIS regarding biodiversity impacts and proposed additional mitigation measures.

The amended Project has reduced the indicative surface disturbance extent, and accordingly the area to be rehabilitated, and increased the extent of native woodland in the rehabilitated final landform (from approximately 325 ha to 535 ha).

Landscape and Visual Character

A Landscape and Visual Assessment was prepared for the EIS which concluded the Project would have a negligible level of visual impact during operations due to the proposed location within a valley surrounded by intervening topographical features.

The amended Project would reduce the indicative surface disturbance extent and therefore would result in no change to assessed visual impacts (i.e. negligible).

Social and Community Infrastructure

A Social Impact Assessment was undertaken by CDM Smith Australia Pty Ltd (2022) for the EIS which assessed the potential impacts of the Project cumulatively with existing social impacts experienced as a result of the approved Moolarben Coal Complex and other neighbouring mining operations. The Project would not increase the approved mine life of the Moolarben Coal Complex or increase peak employment.

The amended Project would not result in any change to the workforce or mine life as described and assessed in the EIS. The reduced impacts of the Project have the potential to reduce social impacts relating to concerns regarding environmental impacts of the Project (e.g. reduced impacts to biodiversity, Aboriginal cultural heritage and lower GHG emissions). In addition, net benefits may increase economic opportunities related to the Project.

No change to the proposed mitigation and management strategies is required for the amended Project.

7 JUSTIFICATION OF THE AMENDED PROJECT

The Project is an extension of the existing approved Moolarben Coal Complex, that would comply with applicable statutory requirements and relevant strategic and statutory planning policy objectives (Sections 2 and 4).

This would provide for the continuity and security of employment by extending the duration of employment for the existing open cut workforce. It would also continue to support the financial sustainability of the Moolarben Coal Complex and the broader Western Coalfield regional economy.

The existing Moolarben Coal Complex is one of the lowest emissions intensive coal mining operations in Australia. As per existing operations, the Project resource can be recovered at a generally low depth of cover, allowing for economically efficient extraction with minimal potential for significant environmental impact. The Project is visually isolated from surrounding private residences by intervening topography.

Engagement with members of the public and key Government agencies has informed MCO's design of the Project, including adoption of a range of avoidance measures to minimise potential amenity impacts to nearby residences, and conceptual post-mining land uses that include agricultural land and native vegetation.

The site is suitable for the proposed Project use, as mining operations and nearby agricultural enterprises have co-existed since the commencement of operations at the Moolarben Coal Complex, and the Project would generate a net benefit to the State of NSW. Economic benefits potentially forgone if the Project does not proceed amounts to a net benefit of $190 million in NPV terms to the State of NSW.

The Project has been designed to avoid or minimise potential impacts to key natural features in the local area (i.e. setbacks from higher order streams and avoidance of mapped rocky habitat associated with threatened bat species and the Broad-headed Snake located on the steeper terrain adjacent to and within the Munghorn Gap Nature Reserve).

In response to submissions received on the EIS, MCO has amended the Project to reduce the indicative surface disturbance extent and incorporate additional avoidance measures relative to the EIS. The areas proposed for reduction have been targeted to further avoid key threatened species habitat and largely contiguous remnant woodland vegetation, as well as providing further setback from rocky habitat features and the Munghorn Gap Nature Reserve.

In summary, when compared to the EIS, the proposed amendments to the Project include:

- A reduction in the extent of proposed open cut mining (from approximately 825 ha to 675 ha).
- A reduction in the extent of proposed open cut mining.
- A reduction in total resource extracted from 40 Mt to approximately 30 Mt over the life of the Project.
- A reduction in the peak annual ROM mining rate from 9 Mt to 8.5 Mt over the life of the Project.
- No change to the duration of the mine life (i.e. between approximately 2025 to 2034), peak workforce, or hours of operation of the mine.
- No change to the proposed integrated final landform with the approved OC3 mining area (including no final voids in the rehabilitated final landform).
- A revised conceptual post-mining land use which incorporates additional areas of native woodland (i.e. from approximately 325 ha to 535 ha).
- An increase to the proposed Habitat Enhancement Area extent (from approximately 160 ha to 188 ha) which would be revegetated during mining.

The revised revegetation and rehabilitation strategy means the amended Project, if approved, would result in:

- A net gain in native woodland in the Moolarben Valley of approximately 22 ha during mining due to revegetation within the Habitat Enhancement Area (i.e. approximately 113 ha of woodland to be cleared for the amended Project vs 135 ha of revegetation within the revised Habitat Enhancement Area extent).
- An overall net gain in native woodland in the Moolarben Valley of approximately 557 ha post-mining when considering revegetation during mining and rehabilitation of the final landform.
- A reduction in the number of voids in the Moolarben Valley from one to zero, as the Project proposes to backfill the currently approved OC3 final void, and provide a free-draining final landform (i.e. no residual voids).

Residual potential impacts on biodiversity would be offset in accordance with the BC Act (in addition to proposed revegetation with the Habitat Enhancement Area and rehabilitation of the final landform). MCO is expecting land based offset options to be available to secure the Project's total offset liability for the Regent Honeyeater and Koala (and potential for other threatened species following targeted surveys), including options to establish land-based offsets using Moolarben-owned land in the region. MCO is also investigating two potential "onsite" offset areas within the Project Study Area.

As a result of the proposed amendments, in particular the reduced indicative surface disturbance extent, the environmental impacts of the Project would largely be reduced compared to that presented in the EIS. Accordingly, the conclusion in the EIS that, on balance, the Project is a logical extension of an existing mining operation that would develop internationally in-demand resources, while minimising environmental impacts, and is in the public interest, remains unchanged.

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