



Submissions Report

Charbon Colliery MP08_0211 Mod 2

Clarence Colliery DA504-00 Mod 6

January 2021

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Abbreviations

Aboriginal Cultural Heritage Management Plan	ACHMP
Biodiversity Conservation and Science Directorate	BCS
Centennial Coal Company	Centennial
Coarse Coal Reject	CCR
Country Rail Network	CRN
Department of Planning, Industry & Environment	DPIE
Department of Primary Industries	DPI
Division of Resources and Geoscience	DRG
EMM Consulting Pty Ltd	EMM
Environment Protection Authority	EPA
Environmental Impact Statement	EIS
Environmental Planning and Assessment Act 1979	EP&A Act
John Holland Rail	JHR
Lithgow City Council	LCC
Local Government Area	LGA
Longwall	LW
Metres	m
Mid-Western Regional Council	MWRC
Million tonnes per annum	Mtpa
Mining Exploration & Geoscience	MEG
Mining Operations Plan	MOP
NSW Resources Regulator	RR
Response to Submissions	RTS
Southern Shorthaul Railroad	SSR
State significant development	SSD
Transport for NSW	TfNSW

1 INTRODUCTION

1.1 Background

Progressive rehabilitation has been ongoing at Charbon Colliery (Charbon) since the cessation of mining operations following the depletion of approved coal reserves. Charbon currently undertakes rehabilitation and mine closure activities at the site pursuant to SSD 08_0211.

An opportunity has been identified to enhance rehabilitation at Charbon by using coarse coal reject (CCR) material from Centennial's Clarence Colliery (Clarence) to backfill historical mining areas requiring rehabilitation. Charbon proposes to import CCR from Clarence by train to assist the mine develop a final landform that is representative of existing landforms within and adjacent to site. Minimal new infrastructure or upgrades to existing infrastructure is required to facilitate the transfer of CCR.

Charbon is seeking to modify SSD 08_0211, pursuant to section 4.55(2) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), to allow for the transfer of CCR from Clarence to Charbon and the use of this material on-site during rehabilitation activities. To facilitate the transfer of CCR from Clarence to Charbon, Centennial is also seeking to modify Clarence's development consent (DA 504-00), pursuant to section 4.55(2) of the EP&A Act, to allow for the exportation of CCR from Clarence to Charbon by rail.

To support both modifications, a Modification Report was produced including relevant technical assessments and placed on public exhibition, which concluded on 21 October 2020.

1.2 Request for Submissions Report

On 23 October 2020, the Planning & Assessment Division within the Department of Planning, Industry & Environment (DPIE), requested the preparation of a Submissions Report to address matters raised in submissions received during the public exhibition period of the Modification Report.

This Submissions Report has been prepared by Centennial Coal Company Limited (Centennial) to respond to the submissions received and builds on information presented in the Modification Report. This Submissions Report is to be read in conjunction with the Modification Report and has been drafted to reflect the draft guideline *Preparing a Submissions Report, Guidance for State Significant Projects* (DPIE, 2019).

2 ANALYSIS OF SUBMISSIONS

2.1 Breakdown of submissions

A total of 13 submissions were received during the public exhibition period of the Modification Report. These submissions are categorised as follows:

NSW Government Agency Submissions

Nine submissions were received from NSW Government agencies comprising the following:

- Biodiversity Conservation and Science Directorate (BCS)
- DPIE Crown Lands
- DPIE Water
- DPI – Agricultural Resources
- NSW Environment Protection Authority (EPA)
- NSW Resources Regulator (RR)
- Regional NSW – Mining Exploration & Geoscience (MEG)
- Transport for NSW (TfNSW)
- WaterNSW

Submissions from government agencies were in the form of comments with no submissions from government agencies objecting to the proposed modification.

Local Government Submissions

Two submissions were received from local government being Mid-Western Regional Council (MWRC) providing comments on the modification and Lithgow City Council (LCC) in support of the modification.

Individual Public Submissions

Two public submissions were received with one in support of the modification and the second objecting to the modification.

Appendix 1 provides a summary of the issues raised across the submissions by each category. A register of all issues and comments made in submissions received in relation to the proposed modification are provided in **Appendix 2** along with a reference as to where in this Submissions Report these matters have been addressed.

2.2 Categorisation of Issues

Matters raised in submissions have been grouped into one of the following five categories:

- **The Project** - issues associated with the modification's elements (e.g. the site, the physical layout and design, uses and activities, timing etc).
- **Procedural matters** – technical issues associated with the modification process (e.g. level or quality of engagement, compliance with assessment requirements, identification of relevant statutory requirements etc).
- **Environmental, social or economic impacts** - issues associated with the impacts of the modification (e.g. impacts to amenity, air, noise, biodiversity, water, heritage etc including the management or monitoring of impacts).
- **Project Merits** – matters regarding the benefits associated with the modification (e.g. modification justification, consistency with Government plans, policies or guidelines).
- **Other Matters** - issues that are beyond the scope of the modification such as broader policy matters or issues that are not relevant to the modification.

From the five classifications above, the key matters have been further classified into the sub-categories below.

The Project

- Impact of reversing train movements at Clarence (TfNSW)
- REA rehabilitation at Clarence Colliery (LCC)
- Final land use and rehabilitation strategy (RR)

Procedural Matters

- Requirement to complete a BDAR (BCS)
- Modelled train movements (TfNSW)
- Timing of rail movements (TfNSW)
- Requirement to update Clarence and Charbon MOPs (RR)

Environmental, Social or Economic Impacts

- Offsite rail noise impacts (TfNSW)
- Notification and engagement prior to use of CRN (TfNSW)
- Train movements around peak traffic times (LCC)
- Dust generation from transport of CCR (LCC)
- Licensing and management of groundwater (DPIE Water)
- Airly Mine water transfers (MWRC and DPIE Water)

Project Merits

- Submissions made that support the modification
- Submissions made that don't object to the modification

Other Matters

- Objections raised in public submission (M. Abbott).

Appendix 1 provides a submissions summary and **Appendix 2** provides a register of submitters.

3 RESPONSE TO SUBMISSIONS

3.1 Project Matters

3.1.1 Impact of reversing train movements at Clarence

TfNSW raised a concern regarding the impact of reversing train movements both entering and exiting the Clarence rail loop, as both movements have the potential to block the Main Western Rail Line. Consideration has been given by the Centennial logistics team regarding the potential impact of reversing train movements from Clarence Loop onto the main line. At present, Centennial's rail operators Southern Shorthaul Rail (SSR) conduct this maneuver at Clarence regularly with no issues and should approval be granted, the daily CCR train service would be timetabled for this operation to occur. Due to the infrequent operation of trains west of Mount Victoria it is expected that this additional train movement will have no material impact on passenger or freight services.

3.1.2 REA rehabilitation at Clarence Colliery

Over a period of five years, it is anticipated that up to 1.5 million tonnes of CCR will be transported from Clarence to Charbon with an average annual transfer of between 300,000 tonnes and 350,000 tonnes. This may delay the progression of reject emplacement from Clarence's Reject Emplacement Area 6 (REA6) to REA5; however, Clarence's reject emplacement strategy and existing rehabilitation commitments will not change as a result of the proposed modifications. Rehabilitation will continue to be undertaken in accordance with Clarence's Mining Operations Plan (MOP).

Whilst CCR material is removed from Clarence's REA 6, the continued operation of Clarence is expected to refill/recharge the REA over Clarence's projected life of mine. This will result in a return of REA 6 to its pre-transfer level therefore not reducing the amount of material available onsite for final rehabilitation.

3.1.3 Final land use and rehabilitation strategy

Final land use and rehabilitation of Charbon Colliery including the rail loop will be in accordance with the existing approved MOP. Should this modification be approved, the MOP will be updated in accordance with SSD 08_0211 to address any additional infrastructure including the proposed hardstand area adjacent to the existing rail loop. Presently the Charbon MOP identifies the rail loop as retained infrastructure to be retained in the final landform for beneficial post mining land use. Given it has the potential for beneficial post mining land use, it is likely that the proposed hardstand area will be included as part of the proposed infrastructure. This will be determined in consultation with all relevant stakeholders as part of the MOP review and update.

3.2 Procedural Matters

3.2.1 Requirement to complete a BDAR

BCS requested that as the modification will increase impacts on biodiversity values a BDAR prepared in accordance with the NSW *Biodiversity Conservation Act 2016* is required to accompany the modification application. A BDAR produced in accordance with the NSW Biodiversity Assessment Method is appended to this Submission Report to satisfy this requirement (**Appendix 3**).

3.2.2 Modelled train movements

Regarding the consideration of passenger train movements to Broken Hill/Perth, these were incorporated into the numbers presented in Table 8.9 of the Modification Report. This was confirmed in section 8.5.2. ii) d) of the Modification Report.

3.2.3 Timing of rail movements

Centennial's logistics and marketing personnel, in addition to our rail providers (SSR and Pacific National),

engage with TfNSW and CRN (JHR) regularly over the course of normal operations and have processes in place to request and confirm rail slots. Rail schedules are requested and confirmed on a week to week basis.

3.2.4 Requirement to update Clarence and Charbon MOPs

Both Clarence's and Charbon's MOP will be reviewed and revised as necessary should the modification be approved. This review and update will address the matters outlined in RR's submission.

3.3 Environmental, social or economic impacts

3.3.1 Offsite rail noise impacts

Rail noise on the CRN was assessed as part of Mod 1 to Charbon Colliery's consent (MP08_0021) which was based on 10 train movements per day (eight trains in the day period and two trains in the night period), equivalent to the number of train paths allocated on the Wallerawang-Gwabegar Railway at the time of assessment. The predicted cumulative train noise emissions reported complied with JHR's Environment Protection Licence (EPL) 13421 noise limits under Condition L2.1. As part of the proposed modification, one CCR-laden train will be used per day (i.e. two rail movements) to transport CCR from Clarence to Charbon. This is well within the previously assessed and approved eight train movements during the day period (7am - 10pm). As such this modification will not have any consequential impact on the noise limits under Condition L2.1 of JHR's EPL 13421.

3.3.2 Notification and engagement prior to use of CRN

Centennial's logistics and marketing personnel, in addition to our rail providers (SSR and Pacific National), engage with TfNSW and CRN (JHR) regularly over the course of normal operations. Should the modification be approved, the commencement of CCR trains would be communicated through these existing channels well in advance of planned operation.

3.3.3 Train movements around peak traffic times

Whilst noting LCC did not object to the project, LCC requested further consideration be given to the issue of train movements potentially affecting traffic at level crossings during peak traffic times.

It is noted that train slots are granted weekly by the respective rail authorities. Given the relatively low volume of rail movements under this proposal (i.e. one train per day) it is not expected that the modification will have a significant impact on peak traffic. This was confirmed in the level crossing impact assessment that was appended to the Modification Report (Appendix I) which concluded that the existing level of safety of all assessed level crossings is considered acceptable and no capacity constraints have been identified on the assessed sections of the rail network.

Prior to the commencement of CCR trains, consultation will be undertaken with Clarence Colliery's Community Consultative Committee (CCC) which is attended by LCC representatives to confirm the allocated train slots.

3.3.4 Dust generation from transport of CCR

In meeting the request from LCC to avoid dust generation during transport, the CCR will be sufficiently washed, stabilised (compacted) and contained prior to movement from Clarence Colliery. The CCR exists as a washed product given it is the rejects produced from the coal washing process at Clarence Colliery. Once washed the CCR is predominantly rock greater than ~50mm diameter. As it has been washed, the CCR has a higher moisture content than the product coal and by nature is less dusty than saleable product coal. Saleable product coal is always transferred to ports and power stations without coverings of the train coal wagons. No significant air borne emissions over and above the minimal amounts produced during normal rail operations are expected from the daily transfer of CCR from Clarence to Charbon.

3.3.5 Licensing and management of groundwater

DPIE Water provided five post approval recommendations. Should the modification be approved, Charbon's existing Water Management Plan (WMP) will be reviewed and updated as required to address matters arising from the modification including the recommendations identified by DPIE Water.

The Modification Report proposes a number of mitigation measures to reduce the potential for contamination to occur as a result of the importation of Clarence's CCR both prior to arrive on-site at Charbon and as part of ongoing rehabilitation activities.

Groundwater and surface water monitoring and management will continue at Charbon in accordance with the WMP, which will be updated to include regular monitoring of groundwater quality at five locations in order to detect potential changes to groundwater quality.

3.3.6 Airly Mine water transfers

MWRC emphasised concerns regarding water transfers between Charbon and Airly which are sought to be extended in Charbon's development consent to 31 August 2037 to align with Airly Mine's development consent (SSD-5581). The Charbon to Airly mine water transfer trains approved in 2019 and undertaken in accordance with licensed limits are currently on hold due to good recent rainfall and improved water utilisation at Airly Mine. Centennial hosts periodic CCC's with both Charbon's and Airly's communities, which include a representative from the respective local government authority, who would be informed regarding any restart of the water transfer train should the need occur. Charbon additionally undertakes local community consultation with affected landowners and would engage with downstream water users ahead of planned water transfers.

DPIE Water made a recommendation regarding undertaking the Airly Mine water transfers in accordance with the WMP and relevant licenses. Should the modification be approved, the WMP will be reviewed and revised accordingly. Any future water transfers, should the need arise, will be undertaken in accordance with the WMP as well as license/development consent conditions.

3.4 Project merits

3.4.1 Support

One public submission registered support for the modification. In addition the Department of Regional NSW – Mining, Exploration & Geoscience (MEG) supports the objectives of the Modification and concludes that should the Modification be approved, efficient and optimised resources outcomes can be achieved, and any identified risks or opportunities can be effectively regulated through the conditions of mining authorities issued under the *Mining Act 1992*. NSW Environment Protection Authority confirmed their support for the modification and that impacts can be managed by the current Environment Protection Licences.

3.4.2 No objection

Three NSW government agency submissions raised no objections to the proposed modification. These submissions were received from Crown Lands, DPI – Agricultural Resources and WaterNSW.

LCC stated no objections are raised from an environmental planning perspective and the relevant ecological, social and economic effects of the proposed modifications have been adequately addressed.

MWRC noted that Council is satisfied that all items of significant concern have been addressed adequately in the MR and that Council has no further comments in relation to the transfer of CCR. Council did however raise issues associated with the water transfers undertaken between Charbon Colliery and Airly Mine. This is addressed in section 3.5.1 below.

3.5 Other matters

3.5.1 Objection raised in public submission

Whilst the objection to the modification is noted, none of the issues raised are of direct relevance to the modification itself. In response to each point raised by the community member in question (refer **Appendix 2 Table C**):

- 1) Clarence Colliery undertakes environmental monitoring in accordance with approved management plans required under its consent to determine its environmental performance. This is reported to relevant government agencies in addition to the broader community via the Centennial website.
- 2) The modification is not seeking any change with regard to coal extraction rates or volumes.
- 3) Whilst the modification is not seeking any change to extraction rates or volumes, Clarence Colliery presently undertakes greenhouse reporting in accordance with legislative requirements in addition to the review and implementation of energy usage efficiencies where possible.
- 4) This modification aims to proactively provide a net benefit to both Clarence and Charbon Collieries through improved use and storage of CCR to enhance the overall landform at Charbon whilst optimising the ability to emplace CCR at Clarence.
- 5) The modification is not seeking any change regarding coal extraction rates or volumes at Clarence and no additional land or vegetation clearing is proposed at Clarence under this Modification.

4 ADDITIONAL MITIGATION MEASURES

No additional mitigation measures are proposed in this Submissions Report.

5 REFERENCES

Centennial Coal Company (2019) *Statement of Environmental Effects for Charbon Colliery SSD 08_0021 Modification 1*.

EMM Consulting (2020) *Modification report for modifications to DA504-00 and SSD 08_0211*.

APPENDIX 1 – SUMMARY OF SUBMISSIONS

Issue	Project Matters			Procedural				Environmental, social or economic impacts						Project Merits		Other
	Reversing train movements at Clarence	REA rehabilitation at Clarence Colliery	Final land use and rehabilitation strategy	Requirement to complete a BDAR	Modelled train movements	Timing of rail movements	Requirement to update Clarence and Charbon MOPs	Offsite rail noise impacts	Notification and engagement prior to use of CRN	Train movements around peak traffic times	Dust generation from transport of CCR	Licensing and management of groundwater	Airly Mine water transfers	Support	No objection	Objection raised in public submission
Biodiversity Conservation and Science Directorate				1												
DPIE – Crown Lands															1	
DPIE Water												1	1			
DPIE – Agricultural Resources															1	
EPA														1		
NSW Resources Regulator			1				1									
MEG														1		
TfNSW	1				1	1		1	1							
WaterNSW															1	
MWRC													1		1	
LCC		1								1	1				1	
Public submissions														1		1
Sub Total	1	1	1	1	1	1	1	1	1	1	1	1	2	3	5	1
Total	3			4				7						8		1

APPENDIX 2 – REGISTER OF SUBMITTERS AND MATTERS RAISED

Table A provides summaries of matters provided by government agencies and identifies where within this Submissions Report the matter has been addressed.

Table A: Summary of Matters in Submissions from Government Agencies

Government Agency	Comment / Issue	Section Reference
Biodiversity, Conservation and Science Directorate (BCS)	As the proposal will increase impacts on biodiversity values BCS considers that a BDAR prepared in accordance with the BC Act is required to accompany the modification application.	3.2.1
Crown Lands	Crown Lands has no comments for this proposal as there will be no change to the footprint of the operation. If any details for the proposal changes, Crown Lands would appreciate the opportunity to make any necessary further comments.	3.4.2
DPIE Water	The following recommendations are provided by DPIE Water and NRAR.	3.3.5
	All ongoing and extension of water transfers from Charbon Colliery to Airly Mine until 31 January 2037 are to be conducted in accordance with the existing and updated water management plan (WMP) and current licencing conditions.	3.3.6
DPI – Agricultural Resources	There are no issues to be raised in relation to this modification.	3.4.2
Environment Protection Authority	The EPA supports the proposal and has no further information requirements. No changes to either Environment Protection Licences 726 or 528 will be required should proposal be approved with any potential environmental impact of the proposal being manageable through the existing licence conditions.	3.4.2
Regional NSW – Mining Exploration and Geoscience	MEG supports the objectives of the Modifications and concludes that should the Modifications be approved, efficient and optimised resource outcomes can be achieved, and any identified risks or opportunities can be effectively regulated through the conditions of mining authorities issued under the Mining Act 1992.	3.4.1
	Based on the review of the Modification Report, the MAI requests further information to confirm the final land use(s) and rehabilitation strategy associated with the rail loop at Charbon	3.1.3

Government Agency	Comment / Issue	Section Reference
NSW Resources Regulator	Colliery given the additional hardstand area that is being constructed as part of the modification.	
	Charbon Colliery and Clarence Colliery will be required to have a revised Mining Operations Plan (MOP) in place prior to the commencement of the activities nominated in the modification.	3.2.4
Transport for NSW	It is not evident that consideration has been given to the impact of reversing train movements both entering and exiting the Clarence loop as both movements will result in blocking the Main Western Rail Line.	3.1.1
	Clarification is required on Section 2.1.4 and Table 8.9 of the Modification Report in regards to whether it has included passenger train movements to Broken Hill/Perth.	3.2.2
	The applicant is advised that the actual timing of the rail movements needs to be confirmed between an accredited rail operator and the respective network owners.	3.2.3
	The Noise and Vibration Impact Assessment in support of the modifications states that one CCR-laden train will be used per day to transport CCR from Clarence to Charbon, which is considered well within the previously assessed and approved eight train movements during the day period, therefore, a detailed assessment of off-site rail noise impacts has not been included as part of this assessment. However, the Assessment does not contain information as to whether the rail noise on the CRN will be within JHR's Environmental Protection Licence 1342 (EPL).	3.3.1
	Not many services are currently running on parts of the CRN that will be used to transport CCR. Sufficient notice will be required by JHR before the additional rail service commences so that maintenance inspection and any necessary repairs can be scheduled.	3.3.2
WaterNSW	The proposal is not located near any WaterNSW land, assets or infrastructure, therefore we have no particular comments or requirements regarding the proposal.	3.4.2

Table B provides a summary of matters raised by Local Government Authorities and identifies where within this Submissions Report the matter has been addressed.

Table B: Summary of Matters in Submissions from Local Government Authorities

LGA	Comment / Issue	Section Reference
Lithgow City Council	No objections are raised by Lithgow City Council from an environmental planning perspective and the relevant ecological, social and economic effects of the proposed modifications have been adequately addressed.	3.4.2
	Increased train movements will be minimal (1 movement in each direction per day between the sites), however, it is indicated the likely time for these movements will be mid-morning and mid-afternoon by a train up to 500 metres long. It is noted from the submitted documentation the increased impacts from these impacts on local traffic movements and level crossings will be minimal and acceptable. Council accepts this conclusion but would like to request further consideration to avoid train movements around peak traffic times, or if this cannot be avoided, to limit the maximum length of trains to minimise impacts on traffic circulation in local communities during high demand traffic periods.	3.3.3
	The repurposing and reuse of the CCR from Clarence at Charbon is supported and is considered generally to be a sustainable use of resources. It is understood the CCR is surplus to needs at the Clarence site and is not needed for future rehabilitation of that site (with the majority of works being undertaken below ground). Council would like to emphasise that the relocation of CCR material to Charbon should not unnecessarily reduce any filling materials required for the future rehabilitation of the Clarence site and thus result in potential cumulative impacts resulting from the need to import fill materials to Clarence to compensate for the relocated CCR.	3.1.2
	It is noted from the supporting documentation that the CCR is to be transported in uncovered rail containers (see section 4.13 of the EIS). Council would like to ensure that all necessary precautions are in place to prevent and avoid unnecessary and unreasonable movement and discharge of dust and CCR particles from the rail cars during their movement between Clarence and Charbon. It is requested that the CCR material be sufficiently washed, stabilised, contained and covered prior to its movement from the Clarence site.	3.3.4
Mid-Western Regional	In light of recent drought conditions, Council would like to emphasise that the reduction in volume of water downstream as a result of the continuation of water transfers between Charbon	3.3.6

LGA	Comment / Issue	Section Reference
Council	and Airly operations is likely to generate concern in the community. Council acknowledges that the extraction of water is within the allowable limits specified in the proponent's water licenses. However, it is recommended that priority be given to downstream water users during periods of drought. Appropriate mechanisms should also be put in place to monitor and inform downstream water users of planned water transfers.	
	Council is satisfied that all items of significant concern have been addressed adequately in the modification report and thus Council has no further comments in relation to the transfer of course coal reject.	3.4.2

Table C provides a summary of matters raised in submissions from individual community members and identifies where within this Submissions Report the matter has been addressed.

Table C: Summary of Matters in Submissions from Individual Community Members

Individual	Comment / Issue	Section Reference
Phillip Enderby	I support this project	3.4.1
Mary Abbott	I am writing to object to the Clarence Coal Mine Modification 6 for the following reasons, 1. The companies poor environmental record over the past years. Contamination of the Sydney Water catchment and the Blue Mountains National Park. The contamination also impacted wildlife in this area. 2. The removal of such large amounts of coal, on top of what has already been extracted, will damage the water table and cause additional subsidence in the Garden of Stones and the hanging swamps. 3. The burning of fossil fuels is adding to the climate change and this must be taken into account when assessing such application. I was directly impacted by the recent fires and am very concerned for myself and future generations if the use of fossil fuels continue. 4. This is the companies 6 modification to the Development application, which to me indicates poor planning. 5. This area has been impacted by bushfires and needs time to recover. Finally I only received notification on Friday 16th October, 2020 not allowing enough time to write a detailed submission. I also feel the timing of this application will mean many people living close to this project may not reply because they so busy trying to	3.5.1

Individual	Comment / Issue	Section Reference
	get their lives back together after losing their homes in the recent bush fires.	

APPENDIX 3 – BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

CHARBON COLLIERY: ROAD WIDENING

Streamlined Biodiversity Development Assessment Report: Small Area



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V1
28 January 2021

REPORT

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Approval for issue

Mark Aitkens



28 January 2021

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Appendix F BAM-C credit report

1 INTRODUCTION

1.1 Description of Project

Charbon Coal Pty Limited is proposing a modification (Mod 2) to Charbon Colliery's consent State Significant Development (SSD) 08_0211, under Section 4.55(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act), to import coarse coal reject (CCR) material from Clarence Colliery by train to backfill and rehabilitate historical mining areas (hereafter referred to as the 'Project').

Modification to the SSD consent if approved will authorise:

- Importation of CCR from Clarence Colliery to Charbon by rail. This will involve one fully laden train per day;
- Minimal disturbance to establish a level train unloading area adjacent to the existing rail loop;
- Establish and upgrade haul roads within existing disturbed areas;
- Construction of a link road to facilitate vehicle movements between the proposed hardstand and Charbon's existing haul roads;
- Construction of powerline poles and an additional 11-kV transmission line for Charbon's existing pump shed; and
- Use of CCR for ongoing rehabilitation of Charbon.

Some removal of native vegetation is required to allow for upgrading of the haul road to support the Project construction and operation.

As the Project is a modification to an SSD, application of the Biodiversity Assessment Methodology (BAM) is mandatory (State of NSW 2020).

1.2 Identification of Subject Land

The Subject Land is at Charbon Road, Charbon NSW 2848 Australia. The Lot/Section/Plan numbers relevant to the Project are:

- Lot 76 DP755765;
- Lot 12 DP1179184;
- Lot 6 DP259893;
- Lot 146 DP755765;
- Lot 11 DP731484;
- Lot 86 DP755765;
- Lot 102 DP879293;
- Lot 5 DP1179184;
- Lot 8 DP1179184;
- Lot 3 DP1179184;
- Lot 1 DP46452;
- Lot 1 DP593624; and
- Lot 160 DP755765.

The Subject Land is within Mid-Western Regional Local Government Area (LGA). The location of the Subject Land and Project are shown in **Figure 1**.

1.3 Sources of information used in assessment

Sources of information used in this assessment include:

- Proposal layers and concept designs provided by Centennial;
- Department of Agriculture, Water and Environment (DAWE) Australian Government's Species Profiles and Threats (SPRAT) database (<http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>) (DAWE 2021a);
- DAWEs EPBC Act Protected Matters Search Tool (<http://www.environment.gov.au/epbc/protected-matters-search-tool>; DAWE 2021b);
- Department of Planning, Industry and Environment (DPIE) Threatened Species Profiles (<http://www.environment.nsw.gov.au/threatenedspeciesapp/>; DPI 2020a);
- Interim Biogeographical Regionalisation for Australia (IBRA) and IBRA sub-regions (<http://www.environment.gov.au/land/nrs/science/ibra>);
- DPIEs profiles of threatened species, populations and ecological communities;
- DPIEs VIS Mapping (<http://www.environment.nsw.gov.au/research/VISmap.htm>);
- NSW Biodiversity Values Map (<https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BVMap>; Accessed January 2021); and
- State of NSW (2020). Biodiversity Assessment Method.

1.4 Identification of assessment method applied

A streamlined assessment module for small area developments was used since the extent of clearing required for the Project fell below the area clearing threshold shown in Table 12 of BAM 2020 (State of NSW). That is, the minimum lot size for the Subject Land is 40 ha (Zoning AB4 under the Mid-Western Regional Local Environmental Plan 2012). Hence, the extent of clearing of ~0.06 ha is required for the Project falls below the ≤3 ha maximum clearing area limit.

Moreover, in accordance with Appendix C of BAM 2020, the streamlined assessment module for small area developments may be used to assess the biodiversity values of land that is located within an area on the Biodiversity Values Map, except where the biodiversity value included on the Biodiversity Values Map is core koala habitat identified in a plan of management under the State Environmental Planning Policy (Koala Habitat Protection) 2019. However, the Project Area lies outside mapped core Koala Habitat, as per the Biodiversity Offset Scheme (BOS) Entry Threshold Map (**Appendix A**). As such, the streamlined assessment module for small area developments may be applied in this case.

1.5 Staff Qualifications

This report was written by Hayden Beck and Shelomi Doyle. It was reviewed and issued for approval by Mark Aitkens (Accredited BAM Assessor - BAAS17034). Historical flora and fauna surveys were undertaken by Mark Aitkens (2015-2017). Recent surveys were undertaken by Shelomi Doyle, Joe Gibbs, Joe May and Giorgia Xu.

1.6 Definitions

Terms and definitions adopted in this report are listed in **Table 1**.

Table 1 Terms and definitions

Term	Definition
BAM	Biodiversity Assessment Method
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme
Buffer Area	Land within 500 m of Project Area ¹

REPORT

Term	Definition
CAA	Charbon Application Area
CCR	Coarse Coal Reject
LGA	Local Government Area
Local Area	Land within 10km radius of the Project Area
MIA	Mining Infrastructure Area
Project	Modification 2 to Charbon Colliery SSD 08_0211
Project Area	Land to which the Project applies (i.e. where ground disturbance is proposed)
SAII	Serious and Irreversible Impact
Subject Land	Land Parcels where Project is located
SSD	State Significant Development
TECs	Threatened Ecological Communities

1. A 500 m buffer is applied since the Project is linear development.

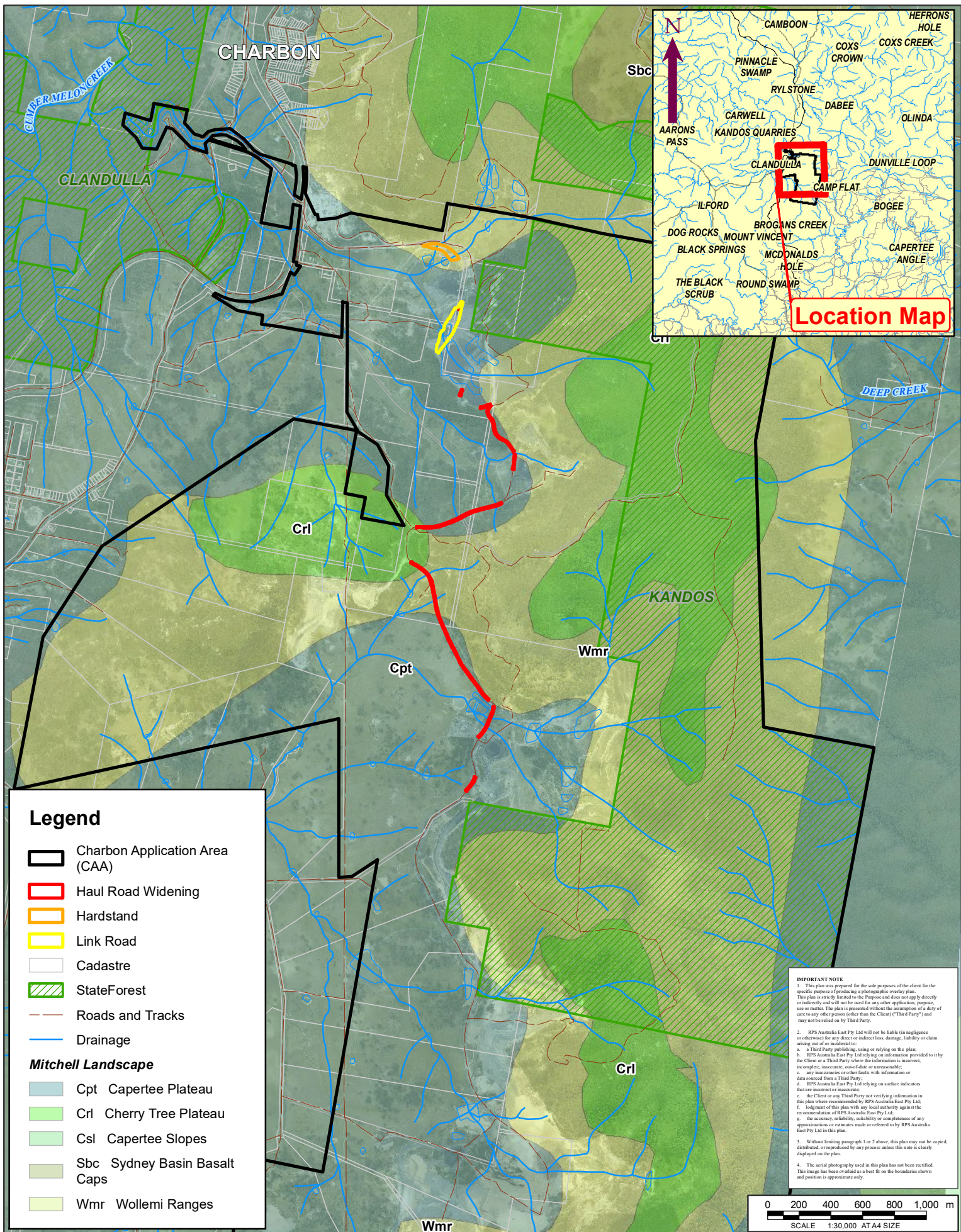


FIGURE 1: LOCATION OF SUBJECT LAND AND PROJECT

LOCATION: CHARBON

DATUM: GDA2020

JOB NO.: PR 146693

PROJECTION: GDA2020 MGA Zone 55

PURPOSE: BDAR

Data Sources:
RPS_Client
mga56_Charbon_2015

Technician: Natalie Wood

Date: 25/01/2021

CLIENT: CENTENNIAL

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2 LANDSCAPE CONTEXT

2.1 IBRA Bioregions and subregions

The Project Area is located just within the South Eastern Highlands Interim Biogeographic Regionalisation for Australia (IBRA) region and Capertee Uplands subregion. However, for the purposes of vegetation mapping, the best fitting plant community type (PCT) allocated was for the immediately adjacent NSW South Western Slopes IBRA region and Capertee Valley Sub Region (i.e. the boundary between the two regions is only ~0.5 km from the Project Area).

2.2 NSW Landscape regions

The Project is to occur primarily on Capertee Plateau Mitchell Landscape (NPWS 2003; **Figure 1**). Small sections of the Project occur on Cherry Tree Plateau and Wollemi Ranges Mitchell Landscape (NPWS 2003).

2.3 Area

The Project Area footprint is approximately 4.67 ha. Approximately 0.06 ha of native vegetation will be removed for the Project.

2.4 Native vegetation

Approximately 258.02 ha of vegetation occurs within the 500 m Buffer (~50.25%). Native vegetation within this Buffer Area is shown in **Figure 3**.

Vegetation mapping and inspection of recent aerial photography indicates a limited amount of vegetation clearing within the locality, resulting in a large continuous native vegetation patch, which includes immediately adjacent to the Subject Land, Clandulla State Forest (1,400 ha) and Kandos State Forest (1,600 ha) (**Figure 2**).

2.5 Cleared Areas

Approximately 49.75% (255.41 of 513.43 ha) of the 500 m Buffer is cleared (**Figure 3**). Past clearing of native vegetation has occurred due to:

- Public roads;
- Haul roads;
- Unsealed access tracks;
- Rail lines;
- Open cut and underground mines and associated facilities;
- Clearing by past forestry;
- Livestock farming;
- Rural housing; and
- Transmission line easements.

2.6 Rivers and Streams

First and second order tributaries of Cumber Mellon Creek and Rileys Creek are located within or downslope of the Project Area, which discharge into Cudgegong River. The ephemeral nature of these creeks is reflected in small flows during wet periods and cease to flow during drought periods. A number of small

dams have been constructed along these drainage lines, which has altered flow levels somewhat. Cumber Mellon Creek and Rileys Creek are mapped as Key Fish Habitats by DPI (2007).

2.7 Wetlands

Within the Project Area there are several constructed sediment dams. These are mine-related infrastructure and offer little in the way of vegetation or habitat value.

2.8 Connectivity Features

The Project Area provides a variety of habitat linkages along creeks, gullies and ridgelines. Vegetation mapping and inspection of recent aerial photography indicates vegetation clearing within the locality has fragmented the landscape. Nevertheless, vegetation at the Project Area is connected to a large and continuous native vegetation, including several conservation areas, which include Clandulla State Forest, Kandos State Forest and Capertee National Park. More broadly, the bushland within the Project Area is connected to a vast tract of vegetation to the east, which includes the Wollemi and Yengo National Parks.

2.9 Areas of Geological Significance and Soil Hazard Features

There are several sandstone crevices and cliffs within and adjacent to the Subject Land. Geological features and Soil Landscape Units present within the Project Area are provided in **Figure 2**, **Figure 3** and **Table 2**.

Table 2 Soil Landscape Units

Soil Landscape	Formative Process	Composition	Hazards
Collingwood	Colluvial-alluvial	Red Podzolic Soils	Minor sheet erosion.
Capertee	Colluvial-alluvial	Yellow Podzolic Soils	High erosion hazard when uncovered.
Three Sisters	Predominantly colluvial	Shallow soils	Minor sheet erosion. Landslides on steep slopes.

2.10 Areas of Outstanding Biodiversity Value

No areas of outstanding Biodiversity Value are known to occur within the Project Area.

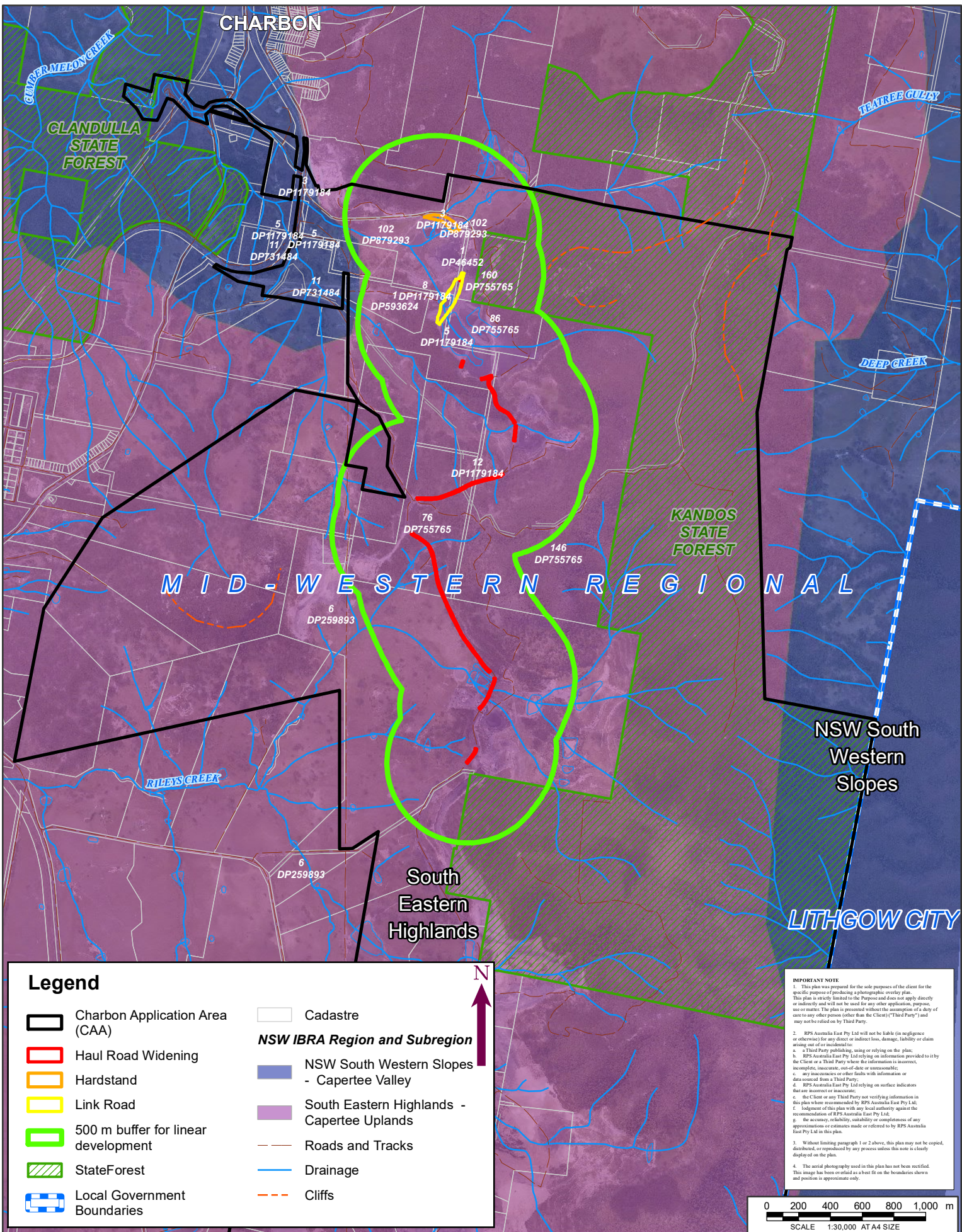


FIGURE 2: SITE CONTEXT AND LANDSCAPE FEATURES

LOCATION: CHARBON

DATUM: GDA2020

JOB NO.: PR 146693

PROJECTION: GDA2020 MGA Zone 55

PURPOSE: BDAR

Data Sources:
RPS_Client
mga56_Charbon_2015

Technician: Natalie Wood

Date: 27/01/2021

CLIENT: CENTENNIAL

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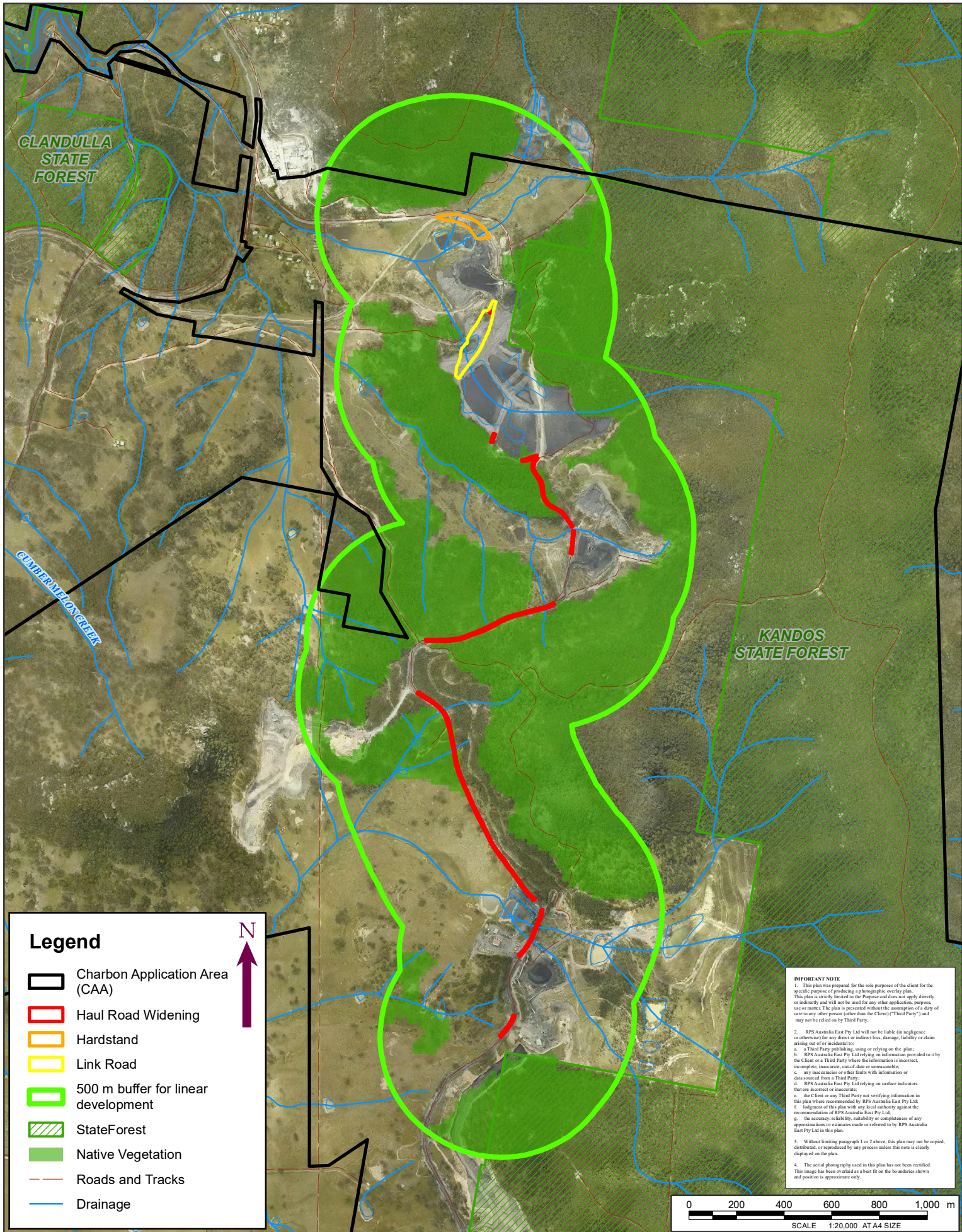


FIGURE 3: NATIVE VEGETATION WITHIN BUFFER AREA

LOCATION: CHARBON	DATUM: GDA2020
JOB NO.: PR 146693	PROJECTION: GDA2020 MGA Zone 55
PURPOSE: BDAR	Data Sources: RPS, Client mgs56_Charbon_2015
Technician: Natalie Wood	Date: 25/01/2021

CLIENT: CENTENNIAL

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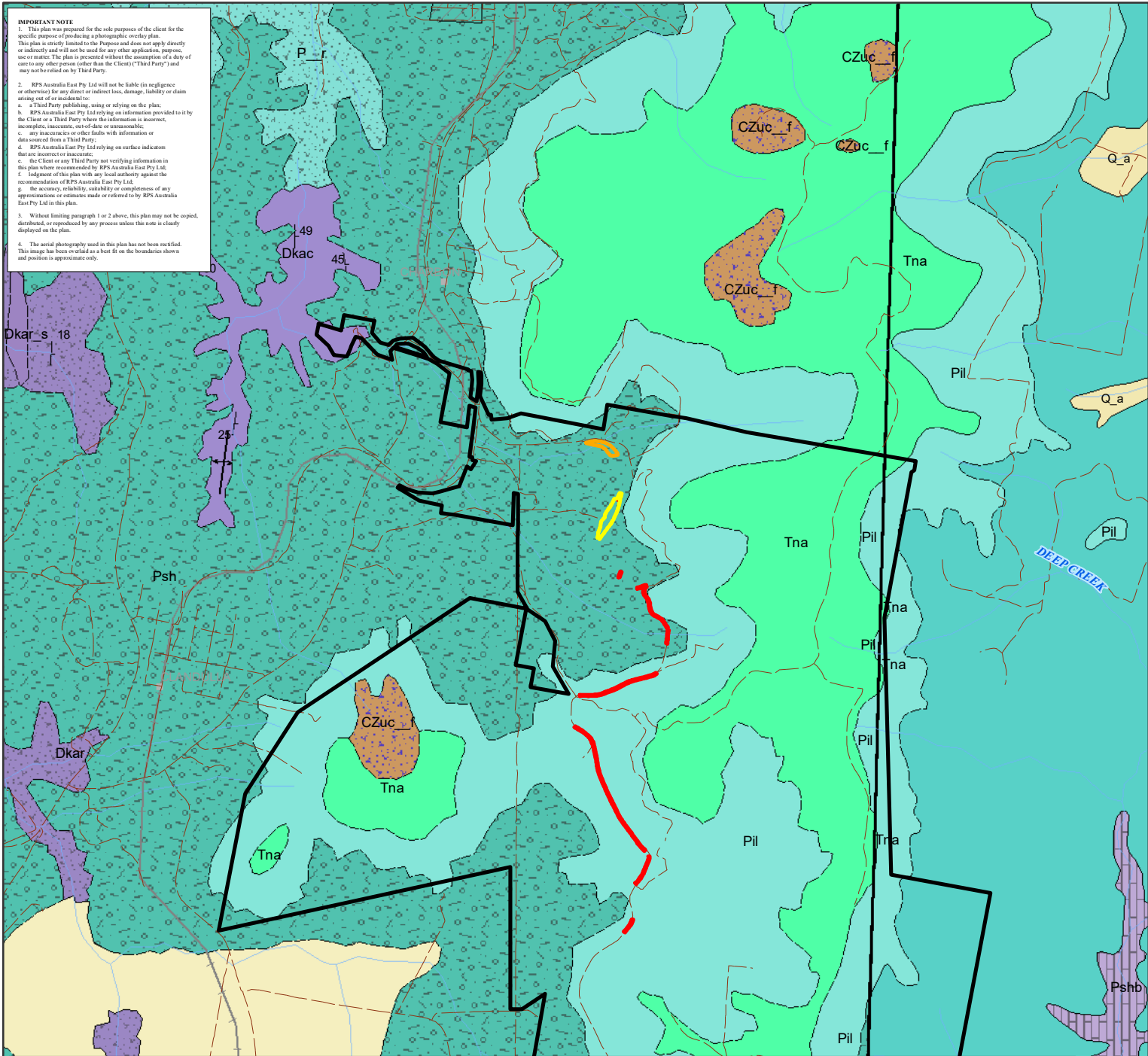
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Legend

- Charbon Application Area (CAA)
- Haul Road Widening
- Hardstand
- Link Road
- BuiltUpAreas
- Railways
- Roads and Tracks
- Watercourse

RockUnits_LachlanOro...

Limestone

RockUnits_LachlanOrogen_Pol...

Devonian to Devonian, Ungrouped Eastern Lachlan Devonian units - limestone, Dul_

Early Devonian to Early Devonian, Winding Pinch Formation, D_w

Pragian to Emsian, Carwell Creek Formation, Dkac

Rock Unit Polygons - CSP - colours

Q_a

Rock Unit Polygons - CIP - pattern fills

Basalt

CZuc_f

P_r

Pil

Psh

Tna

Strike and dip of bedding

Anticline, position accurate

Rock Unit Polygons - LAO - pattern fills

Pyroclastic rock

Sandstone

Rock Unit Polygons - LAO - colours

Dkac

Dkar

Dkar_s

0 500 1,000 1,500 2,000 m
SCALE 1:40,000 AT A4 SIZE

FIGURE 4: AREAS OF GEOLOGICAL SIGNIFICANCE

LOCATION: CHARBON

DATUM: GDA2020

PROJECTION: GDA2020 MGA Zone 55

JOB NO.: PR 146693

Data Sources:

PURPOSE: BDAR

RPS_Client
mga56_Charbon_2015

Technician: Natalie Wood

Date: 25/01/2021

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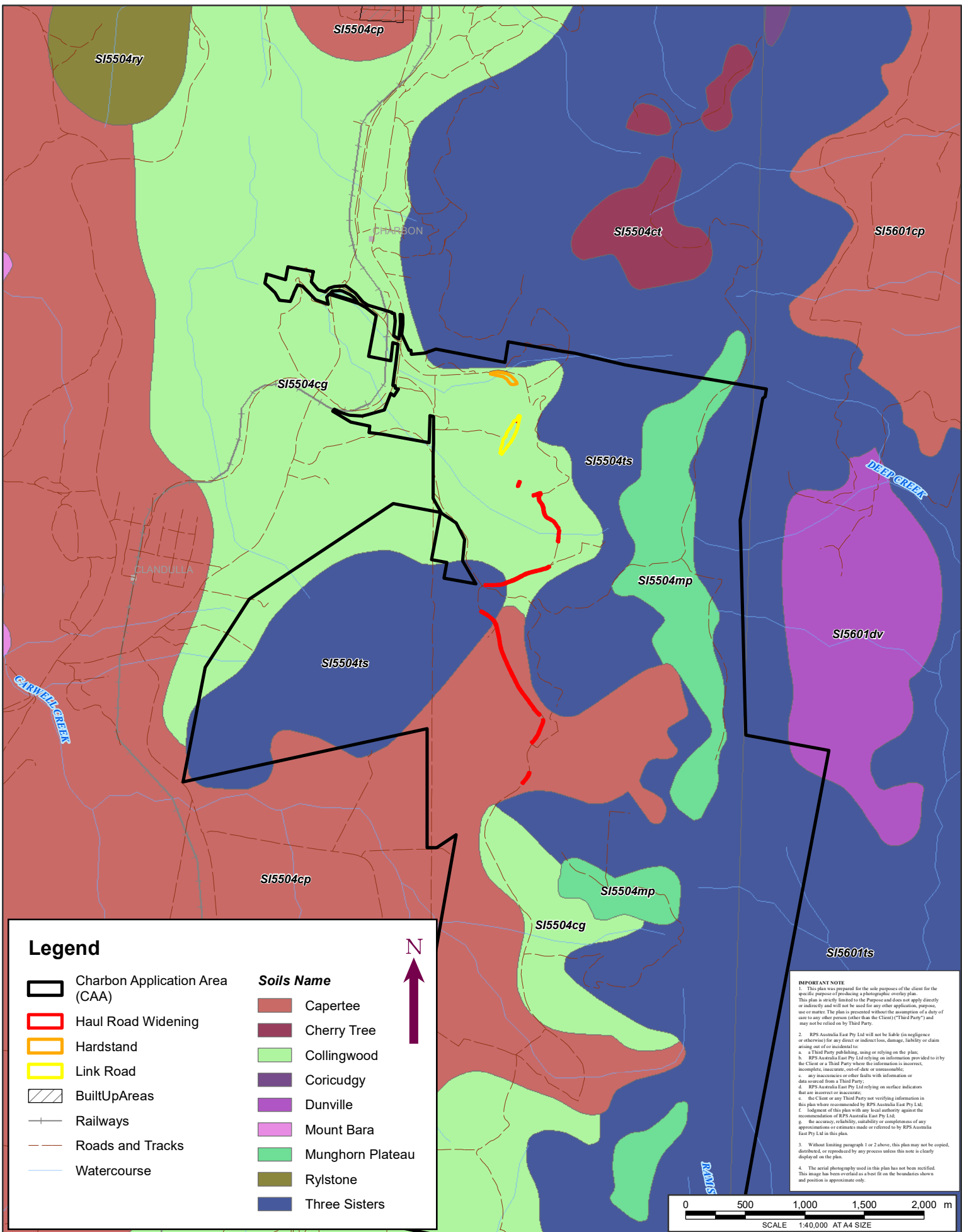


FIGURE 5: SOIL LANDSCAPE

LOCATION: CHARBON

DATUM: GDA2020

JOB NO.: PR 146693

PROJECTION: GDA2020 MGA Zone 55

PURPOSE: BDAR

Data Sources:
RPS_Client
mga56_Charbon_2015

Technician: Natalie Wood

Date: 25/01/2021

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3 NATIVE VEGETATION, TECS AND VEGETATION INTEGRITY

3.1 Native Plant Species

Approximately 54 flora species were detected within the BAM plot: 35 native and 19 weed species. For a full list of species see **Appendix B**.

3.2 High Threat Weeds

Of the 14 weed species detected in the BAM plot, three were considered as high threat weeds under the BAM. These include:

- *Asparagus aethiopicus*
- *Hypericum perforatum*; and
- *Senecio jacobaea*.

3.3 Patch size

The native vegetation to be cleared is part of a large continuous patch, which includes immediately adjacent to the Subject Land, Clandulla State Forest (1,400 ha) and Kandos State Forest (1,600 ha). In accordance with the BAM, patch size area was assigned as a class, being <5ha, 5–24 ha, 25–100 ha or ≥ 100. This determines the allocation of patch size with ≥100 ha.

3.4 Plant Community Type (PCT)

3.4.1 Method of assessing PCTs

3.4.1.1 Review of Existing Information

Vegetation mapping produced by RPS in 2017 (unpublished data), which extends throughout the CAA. This was supported quantitatively in 2020 by undertaking Rapid Data Points (RDPs) and collecting BAM plot data in accordance with the BAM.

3.4.1.2 Floristic Survey

One flora plot was carried out in accordance with the BAM to assess the composition, structure and function components of vegetation integrity (**Appendix C**). The location of this BAM plot was situated to achieve maximum coverage of the small amount of vegetation within the site, and represent the vegetation to be cleared.

The following attributes were measured in each plot:

- One standard 20 x 20 m plot, to assess the composition and structure attributes, including trees, shrubs, grasses, forbs, ferns and other growth forms;
- One standard 20 x 50 m plot (1000 m²) to assess the function attributes: number of large trees (i.e. > 50 cm DBH), stem size class, tree regeneration, length of fallen logs, high threat exotic vegetation cover and hollow-bearing trees; and
- Five 1 m² sub-plots to assess average litter cover for the plots.

3.4.2 PCTs identified within the development site

One PCT was identified within the Project Area:

- PCT 1088 - Red Box - Grey Gum - stringybark woodland on talus slopes of the western Blue Mountains, Sydney Basin Bioregion.

Survey effort and clearing extents of this PCT are outlined in **Table 3**.

Table 3 PCTs present within the Project Area

PCT	Condition	Clearing (ha)	No. BAM plots required	No. BAM plots undertaken
1088 - Red Box - Grey Gum - stringybark woodland on talus slopes of the western Blue Mountains, Sydney Basin Bioregion	Moderate/Poor	~0.06	1	1

Further information including a description of this PCT and justification for its selection, is shown in **Table 4**.

Table 4 Description of PCT 1088 within the Project Area

PCT 1088 – Red Box - Grey Gum - stringybark woodland on talus slopes of the western Blue Mountains, Sydney Basin Bioregion	
Description:	Open forest or woodland with an open understorey of shrubs and ground layer of forbs and grasses. Occurs on talus slopes below the major cliff lines of the Wolgan and Capertee Valleys in the western Blue Mountains.
BAM Plot Number:	1
Diagnostic upper stratum species:	<i>Eucalyptus blaxlandii</i>
Diagnostic middle stratum species:	<i>Acacia falciformis</i>
Diagnostic ground stratum species:	<i>Dichondra repens</i> , <i>Plantago debilis</i>
Justification:	Dominant species support previous extensive mapping survey effort (i.e. <i>Eucalyptus blaxlandii</i> with <i>Eucalyptus punctata</i>) in the area surrounding. For the purposes of vegetation mapping, the best fitting Plant Community Type allocated was for the immediately adjacent NSW South Western Slopes IBRA region and Capertee Valley Sub Region (i.e. the boundary between the two regions is only ~0.5 km from the Project Area).
Classification:	Not associated with a TEC.
Condition:	Moderate/Poor - Vegetation is impacted by edge effects associated with roads and a constructed sediment dam immediately adjacent. Few remnant eucalypts were present. The mid and ground storey had moderate weed presence.
Estimate of percent cleared value of dominant PCT:	50%



Plate 1 Area of road to be widened in PCT 1088

3.5 Vegetation Integrity Score

The Vegetation Integrity Score as calculated by the BAM-C (Version 36; last updated 21/12/20) is provided in **Table 5**.

Table 5 Vegetation Integrity Score

Composition condition score	Structure condition score	Function condition score	Current vegetation integrity score
89.9	30.4	74.2	58.7

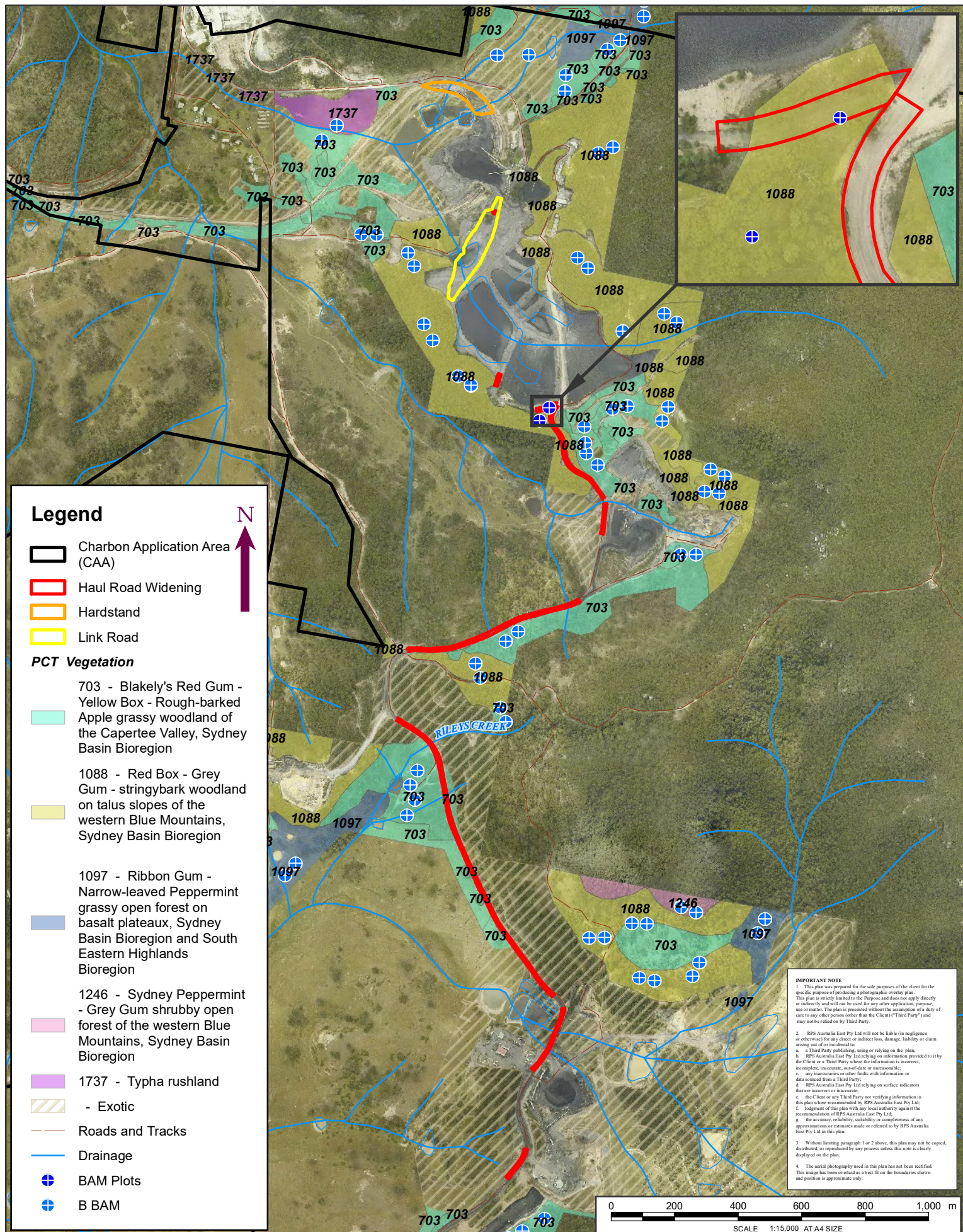


FIGURE 6: PLANT COMMUNITY TYPES AND VEGETATION PLOT

LOCATION: CHARBON	DATUM: GDA2020
JOB NO.: PR 146693	PROJECTION: GDA2020 MGA Zone 55
PURPOSE: BDAR	Data Sources: RPS_Client mgs56_Charbon_2015
Technician: Natalie Wood	Date: 27/01/2021

CLIENT: CENTENNIAL

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4 HABITAT SUITABILITY FOR THREATENED SPECIES

4.1 Survey Effort

Site inspections were carried out by RPS Ecologists on 7 to 9 and 25 to 28 August 2015, 7 to 11 October 2015, 1 to 5 February 2016, 19 March 2020 and 14 December 2020. **Table 6** and **Appendix D** summarise the survey effort undertaken within the CAA.

Table 6 Survey effort

Date	Survey effort
25 to 28 August 2015; 7 to 9 August 2015	BBAM plots and RDPs
7 to 10 October 2015	Bird surveys; Call Playback; Spotlighting; Harp trapping
9 to 11 February 2016	Bird surveys
1 to 5 February 2016	Arboreal Elliot trapping (Elliott A; 18 traps over four nights); Terrestrial Elliot trapping (Elliott B; 10 traps over four nights); Call playback (four nights); Spotlighting (four nights)
19 March 2020	RDPs and vegetation mapping confirmation
14 December 2020	BAM plot and threatened flora survey

4.1.1 Flora

4.1.1.1 Vegetation mapping

Preliminary plant community types (PCTs) were assigned to areas of relatively homogenous land cover (i.e. vegetation zones). Additional revisions were performed following collection of Rapid Data Points (RDPs) and completion of targeted field surveys (i.e. revision of boundaries and condition classes). PCT extent was calculated using Geographic Information System (GIS) to determine the number of BAM plots required. Data collected from RDPs was used to assist vegetation classification and refine the boundaries and distribution of PCTs. Data collected at each RDP include:

- Dominant canopy species;
- Main associated species;
- Landscape position;
- Characteristic mid-storey species;
- Characteristic groundcover species; and
- Other diagnostic features.

4.1.1.2 BAM plots

One BAM plot was undertaken on 14 December 2020 in accordance with Section 4.2 of BAM (State of NSW 2020). The species list from this plot is provided in **Appendix B** and data sheets are provided in **Appendix C** (**Figure 6**). More broadly, 49 BBAM plots were undertaken within the CAA for a previous assessment by RPS (unpublished data) in 2015 (**Figure 6**).

4.1.1.3 Threatened flora survey

Targeted flora searches were conducted with the aim of locating threatened flora species identified as Species Credit Species (BC Act) or those having a moderate or greater likelihood of occurrence within the Project Area. Searches were made within potential habitat occurring within the Project Area, guided by OEH (2016). Plant specimens of unknown or significant status were collected for later identification or lodgement with the National Herbarium in Sydney.

4.1.1.4 Fauna

Fauna survey efforts were undertaken by RPS (2015 to 2016; unpublished data). These survey methods are described below and are shown in **Appendix D**.

4.1.1.4.1 Spotlighting

Spotlighting was undertaken with the use of a 75-Watt hand-held spotlight and head torch whilst walking and driving over the Project Area. Areas of dense bush were targeted; however, tracks were also spotlighted whilst entering and exiting the Project Area.

4.1.1.4.2 Nocturnal Call Playback

Pre-recorded calls of Koala, owls and threatened gliders with the potential to occur within the Project Area were broadcast to elicit vocal responses or to attract these species to the Project Area. The calls were broadcast through an amplification system (loud hailer) designed to project the sound for at least 1 km under still night conditions.

4.1.1.4.3 Anabat census

Microbat echolocation calls were recorded using Anabat Detector units set to remotely record for the entire night (6pm to 6am). Survey locations had emphasis placed on areas deemed likely to provide potential foraging and flyway sites for microbats. Bat call analysis was undertaken by Echo Ecology. Each call sequence ('pass') was assigned to one of three categories, according to the confidence with which identification could be made, being:

- Definite - Pass identified to species level and could not be confused with another species;
- Probable - Pass identified to species level and there is a low chance of confusion with another species; and
- Or Possible - Pass identified to species level but short duration or poor quality of the pass increases the chance of confusion with another species.

4.1.1.4.4 Avifauna Census

Point/area bird census sites were surveyed on each investigation day. Each survey comprised of point-based, 20-minute count of 0.79 ha (50 m radius) circular plots. During the 20 min period, the observer stayed at the point, watching and listening for bird activity in the surrounding 50 m. This allowed the observer to safely keep track of individual birds within the reduced area, recording the numbers of each species and the closest distance that they approached the point during the 20 min period. The data was recorded in four distance categories around each point: 0-10, 10-20, 20-30 and 30-50 m. Birds beyond this search perimeter were also recorded during this time and indicated as "outside". Surveys were conducted within 3 hours of sunrise to improve the consistency of sampling conditions across the Project Area (i.e. period of highest bird activity).

During the bird survey, any cryptic bird species that may have been missed during the point count period were noted. Birds flying through the area were not recorded unless they were regarded as making some use of that vegetation type, for example, foraging in the airspace above.

4.1.1.4.5 Herpetofauna Census

Herpetofauna (frog and reptile) searches were carried out across the Project Area, targeting areas of appropriate habitat. Some suitable reptile habitat was scattered throughout the Project Area, including areas of rock assemblages, logs and leaf litter.

4.1.1.4.6 Harp Trapping

Harp traps were deployed overnight for two consecutive nights to census local microbat populations.

4.2 Ecosystem credit species

Table 7 Ecosystem credit species

Species (Common name)	BC Act
<i>Artamus cyanopterus cyanopterus</i> Dusky Woodswallow	Vulnerable
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo (Foraging)	Vulnerable
<i>Climacteris picumnus victoriae</i> Brown Treecreeper (eastern subspecies)	Vulnerable
<i>Daphoenositta chrysoptera</i> Varied Sittella	Vulnerable
<i>Dasyurus maculatus</i> Spotted-tailed Quoll	Vulnerable
<i>Falsistrellus tasmaniensis</i> Eastern False Pipistrelle	Vulnerable
<i>Hieraaetus morphnoides</i> Little Eagle (Foraging)	Vulnerable
<i>Hoplocephalus bungaroides</i> Broad-headed Snake (Foraging)	Endangered
<i>Lathamus discolor</i> Swift Parrot (Foraging)	Endangered
<i>Lophoictinia isura</i> Square-tailed Kite (Foraging)	Vulnerable
<i>Melithreptus gularis gularis</i> Black-chinned Honeyeater (eastern subspecies)	Vulnerable
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat (Foraging)	Vulnerable
<i>Neophema pulchella</i> Turquoise Parrot	Vulnerable
<i>Ninox connivens</i> Barking Owl (Foraging)	Vulnerable
<i>Petroica boodang</i> Scarlet Robin	Vulnerable
<i>Petroica phoenicea</i> Flame Robin	Vulnerable
<i>Phascolarctos cinereus</i> Koala (Foraging)	Vulnerable
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox (Foraging)	Vulnerable
<i>Saccolaimus flaviventris</i> Yellow-bellied Sheathtail-bat	Vulnerable
<i>Varanus rosenbergi</i> Rosenberg's Goanna	Vulnerable

4.2.1 Exclusions

Calyptorhynchus lathamii (Glossy Black-Cockatoo) was excluded since there was no presence of *Allocasuarina* or *Casuarina* species. *Grantiella picta* (Painted Honeyeater) was also removed due to an absence of mistletoes present at a density of greater than five mistletoes per hectare.

4.3 Candidate Species Likely to Occur

The suite of threatened species likely to occur on or use the proposed site according to Steps 1 and 2 in BAM Section 5.2, to be assessed for species credits, are provided in **Table 8**. Note that these species were assumed present due to no habitat constraints, whilst survey effort could not rule their presence out.

The Candidate Species found within or adjacent to the Project Area were:

- *Callocephalon fimbriatum* (Gang-gang Cockatoo); and
- *Chalinolobus dwyeri* (Large-eared Pied Bat).

A Species polygon for these species is provided in **Figure 7**. See **Appendix E** for threatened species detected by RPS 2015 (unpublished data) adjacent to the Project Area.

4.3.1 Potential Serious and Irreversible Impact (SAIL) species

Chalinolobus dwyeri (Large-eared Pied Bat) was the only potential serious and irreversible impact (SAIL) species detected or considered likely to occur in the Project Area. According to Step 3 of Section 5.2 of BAM, a candidate species may be removed from the list if “microhabitats” required by the species are absent. As the nearest sandstone cliffs/ ridgelines, which constitute potential breeding habitat for the species (i.e. caves, overhangs or escarpments; DPIE 2021b), was located ~700m from the Project Area it is considered unlikely that the Project will have an SAIL on *C. dwyeri* (Large-eared Pied Bat). Nevertheless, as the Project Area is located within 2km of this potential breeding habitat, hence a Species credit liability still applies.

Table 8 Candidate species likely to occur

Species (Common name)	BC Act	Serious and Irreversible Impact (SAIL)
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo	Vulnerable	No
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	Vulnerable	No SAIL threshold is potential breeding habitat and presence of breeding individuals. Potential breeding habitat is PCTs associated with the species within 100m of rocky areas containing caves, or overhangs or crevices, cliffs or escarpments, or old mines, tunnels, culverts, derelict concrete buildings. Surveys must be undertaken as per the Threatened Bat Survey Guide to confirm breeding habitat. Species mapping polygon for breeding habitat must use high resolution aerial imagery and topographic maps to identify features on the subject land (caves, scarps, cliffs etc). Polygon must be at least 100m wide (or 50m radius for point locations such as caves) with the breeding habitat features (may be multiple) as the centroid (see Threatened Bat Survey Guide). All breeding habitat on or within 100m of the subject land and the area immediately surrounding the feature must be identified. All habitat on the subject land should also be mapped if present. Use high resolution aerial imagery and topographic maps to identify potential roost habitat features on the subject land within 2km caves, scarps, cliffs etc. Species polygon boundary should align with PCTs on the subject land to which the species is associated that are within 2km of identified potential roost habitat feature

4.3.2 Candidate Species Excluded

Candidate Species excluded based on habitat constraints or survey are listed in **Table 9**.

Table 9 Threatened species likely to occur

Species (Common name)	BC Act	Habitat constraint	Justification for removal
<i>Burhinus grallarius</i> Bush Stone-curlew	Endangered		Bird census found no individuals within Project Area.
<i>Calyptrorhynchus lathamii</i> Glossy Black-Cockatoo (Breeding)	Vulnerable	- Hollow bearing trees - Living or dead tree with hollows greater than 15cm diameter and greater than 5m above ground	Bird census found no individuals within Project Area. No hollow-bearing trees within Project Area.
<i>Eucalyptus cannonii</i> Capertee Stringybark	Vulnerable		Flora survey found no individuals within Project Area. Survey was undertaken during BAM survey timetable.
<i>Grevillea divaricata</i>	Endangered		No species belonging to the <i>Grevillea</i> genus were detected within the Project Area. There is no known occurrence of this species within the Charbon Colliery.
<i>Grevillea obtusiflora</i>	Endangered		No species belonging to the <i>Grevillea</i> genus were detected within the Project Area. There is no known occurrence of this species within the Charbon Colliery.
<i>Hieraaetus morphnoides</i> Little Eagle (Breeding)	Vulnerable	Nest trees - live (occasionally dead) large old trees within vegetation)	Bird census found no individuals within Project Area. Project Area lacks suitable nest trees to support breeding.
<i>Hoplocephalus bungaroides</i> Broad-headed Snake (Breeding)	Endangered	- Rocky areas - Including escarpments, outcrops and pogodas within the Sydney Sandstone geologies	Project Area lacks suitable rock structures to support breeding.
<i>Lathamus discolor</i> Swift Parrot (Breeding)	Endangered	As per mapped areas	Project Area is outside the mapped breeding area for this species.
<i>Lophoictinia isura</i> Square-tailed Kite (Breeding)	Vulnerable	Nest trees	Project Area lacks suitable nest trees.
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat (Breeding)	Vulnerable	- Caves - Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records with microhabitat code "IC - in cave " observation type code "E nest-roost " with numbers of individuals >500	Project Area lacks caves, tunnels, mines, culverts or other structures known or suspected to be used for breeding.
<i>Mixophyes balbus</i> Stuttering Frog	Endangered		Survey found no habitat within Project Area.
<i>Ninox connivens</i> Barking Owl (Breeding)	Vulnerable	- Hollow bearing trees - Living or dead trees with hollows greater than 20 cm diameter and greater than 4m above the ground	No hollow-bearing trees within Project Area.

REPORT

Species (Common name)	BC Act	Habitat constraint	Justification for removal
<i>Paralucia spinifera</i> Purple Copper Butterfly, Bathurst Copper Butterfly	Endangered	Bursaria spinosa or within 40m of Bursaria spinosa	Project Area lacks <i>Bursaria spinosa</i> subsp. <i>lasiophylla</i> .
<i>Petrogale penicillata</i> Brush-tailed Rock-wallaby	Endangered		Survey found no individuals within Project Area.
<i>Prostanthera cryptandroides</i> subsp. <i>cryptandroides</i> Wollemi Mint-bush	Vulnerable		No species belonging to the <i>Prostanthera</i> genus were detected within the Project Area. There is no known occurrence of this species within the Charbon Colliery.
<i>Prostanthera stricta</i> Mount Vincent Mint-bush	Vulnerable		No species belonging to the <i>Prostanthera</i> genus were detected within the Project Area. There is no known occurrence of this species within the Charbon Colliery.
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox (Breeding)	Vulnerable	Breeding camps	Survey found no breeding camps in Project Area.
<i>Pultenaea sp. Olinda</i>	Endangered	- Rocky areas - Ledges and crevices associated with pagoda formations on Narrabeen sandstone or within 50 m	Project Area lacks rocky areas or pagoda formations.
<i>Veronica blakelyi</i>	Vulnerable		Survey found no individuals within Project Area. Survey was undertaken during BAM survey timetable.

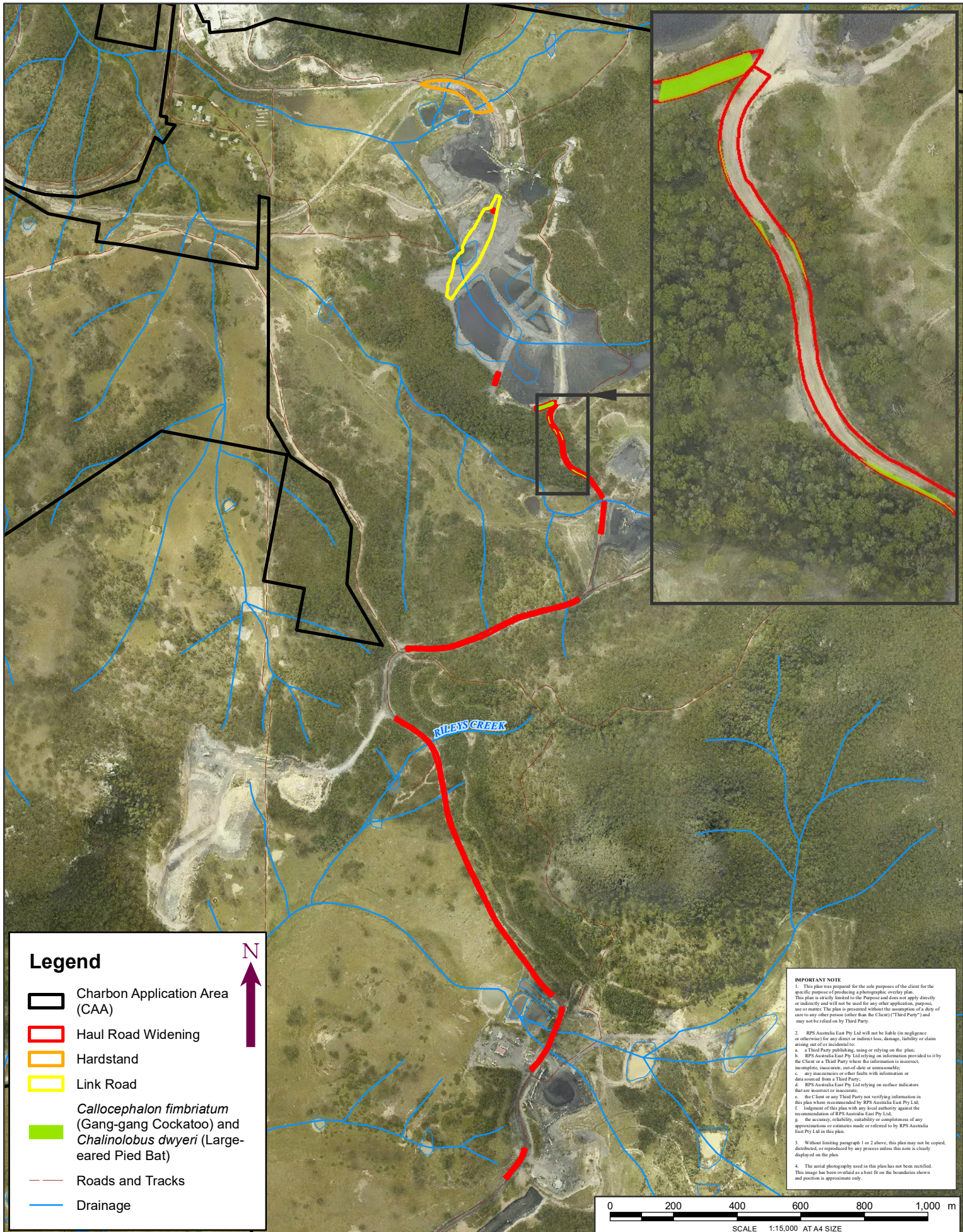


FIGURE 7: CALLOCEPHALON FIMBRIATUM (GANG-GANG COCKATOO) AND CHALINOLOBUS DWYERI (LARGE-EARED PIED BAT)

LOCATION: CHARBON		DATUM: GDA2020	
JOB NO.: PR 146693		PROJECTION: GDA2020 MGA Zone 55	
PURPOSE: BDAR		Data Sources: RPS, Client mga56_Charbon_2015	
Technician: Natalie Wood		Date: 27/01/2021	

CLIENT: CENTENNIAL

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5 PRESCRIBED IMPACTS

5.1.1 Impacts of development on water quality, water bodies and hydrological processes that sustain threatened species

The proposal will avoid directly impacting any water bodies or hydrological processes. Nevertheless, surface runoff arising from the Project Area may flow into Cumber Mellon Creek and Rileys Creek. Candidate species that could associate with these downstream tributaries are threatened frogs such as *Mixophyes balbus* (Stuttering Frog). This species depends upon water of a suitable quality and quantity, supplied from such tributaries, to support their resource requirements, including breeding habitat.

Potential impacts on water quality from the proposal will be restricted primarily to the construction phase; when earthworks may expose and destabilise soil. It is not expected that the Project will significantly change the water balance within these tributaries as areas of hard substrate to be constructed is an incremental increase to that already present.

5.1.2 Impacts of vehicle strikes on threatened species of animals

Vehicles will require frequent access to the site during the construction and operational phases during daytime only, which may pose a risk to several threatened species. During operation, an increase in truck movements would occur over the proceeding hours to shift the CCR to the pits. The risk of vehicle strike on threatened species is assessed in **Table 10**.

Table 10 Assessment of impact of vehicle strike on threatened fauna

Species	Likelihood of strike	Predicted impacts
<i>Calyptorhynchus lathamii</i> Glossy Black-Cockatoo	Low – species generally flies near canopy.	Unlikely to be struck by vehicles
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	Low – species is nocturnal and generally flies near canopy.	Unlikely to be struck by vehicles
<i>Hoplocephalus bungaroides</i> Broad-headed Snake	Low – species is nocturnal and uses rocky outcrops that are away from Project.	Unlikely to be struck by vehicles
<i>Petrogale penicillata</i> Brush-tailed Rock-wallaby	Low – species is nocturnal and may be prone to strike when foraging.	Unlikely to be struck by vehicles
<i>Phascolarctos cinereus</i> Koala	Low – species is nocturnal and may be prone to strike when moving between trees.	Unlikely to be struck by vehicles
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox	Low – species is nocturnal and generally flies near canopy.	Unlikely to be struck by vehicles
<i>Lathamus discolor</i> Swift Parrot	Low – species generally flies near canopy.	Unlikely to be struck by vehicles
<i>Lophoictinia isura</i> Square-tailed Kite	Low – species generally flies near canopy.	Unlikely to be struck by vehicles
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat	Low – species is nocturnal and generally flies near canopy.	Unlikely to be struck by vehicles
<i>Ninox connivens</i> Barking Owl	Low – species is nocturnal and generally flies near canopy.	Unlikely to be struck by vehicles
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo	Low – species generally flies near canopy.	Unlikely to be struck by vehicles
<i>Hieraaetus morphnoides</i> Little Eagle	Low – species generally flies near canopy.	Unlikely to be struck by vehicles

6 AVOID AND MINIMISE IMPACTS

6.1 Avoiding and Minimising Impacts on Native Vegetation and Habitat

Centennial reduced impacts of the Project on biodiversity values by restricting it to pre-disturbed areas wherever possible. Sections 6.1.1 and 6.1.2 detail how impacts to Biodiversity were avoided and or minimised.

6.1.1 Train unloading area

All construction and operation of the level train unloading area was positioned within an area devoid of native vegetation. By doing so, impacts to biodiversity values were avoided for this Project component.

6.1.2 Haul road upgrade and link road construction

Centennial has prioritised the use of existing access and haul roads to facilitate construction and operation wherever possible. This allowed the impact on biodiversity values to be isolated to a limited extent of disturbed bushland (i.e. ~0.06 ha). This vegetation to be impacted by the Project is of depauperate state, as it is currently subject to edge effects, being located adjacent to existing roads. Areas to be impacted also lack hollow-bearing trees, a native understory or other habitat features that Candidate species typically associate with.

6.2 Avoiding and Minimising Prescribed Biodiversity Impacts

The BC Regulation (clause 6.1) identifies actions that are prescribed as impacts to be assessed under the Biodiversity Offsets Scheme. **Sections 6.2.1 to 6.2.2** detail how impacts to potential Prescribed Biodiversity Impacts were avoided or minimised. Mitigation measures to further reduce the potential to impact these Prescribed Biodiversity Impacts are provided in **Table 12**.

6.2.1 Impacts of development on water quality, water bodies and hydrological processes that sustain threatened species

To minimise any potential water quality issues arising from earthworks, such as sedimentation, sediment and erosion controls will be implemented during construction. Following construction, any disturbed areas will be stabilised to ensure that there are no ongoing risks to water quality that may result from erosion. Water quality risks may also arise from chemical and oil spills from construction equipment. In the case of a chemical or oil spill, spill containment and clean-up protocols will be followed to minimise potential for these substances from contaminating nearby waterways. Mitigation actions to reduce risks of water contamination arising from construction are detailed in **Section 8**. Through use of appropriate mitigation measures to minimise risks of runoff contamination, the Project is unlikely to impact the bioregional persistence of the suite of threatened species likely to use downstream areas of habitat.

6.2.2 Impacts of vehicle strikes on threatened species of animals

Risk of vehicle strike will be reduced during construction by ensuring all construction are to be undertaken during the day. To further mitigate risks of strikes on nature fauna, vehicle speed limits are to be strictly enforced during both construction and operation. Inductions to all personnel during construction and operation will also be undertaken to ensure drivers are aware of the potential for animal vehicle strike, and the hours where risk is greatest (i.e. dawn and dusk). These requirements are provided in **Section 8**.

7 ASSESSMENT OF IMPACTS

7.1 Direct Impacts

The direct impacts resulting from the Project are summarised in **Table 11**.

Table 11 Direct impacts

Project component	Area
Train unloading area	0.00 ha
Upgrade haul roads	0.00 ha
Construction of link road	~0.06 ha
Total	~0.06 ha

7.2 Indirect Impacts

Indirect impacts that need to be considered are listed in Section 8.2 of BAM. Those that are relevant to the Project are:

- Inadvertent impacts on adjacent habitat or vegetation;
- Reduced viability of adjacent habitat due to edge effects;
- Reduced viability of adjacent habitat due to noise, dust or light spill; and
- Transport of weeds and pathogens from the site to adjacent vegetation.

Given the nature of the Project, the following impacts were considered not applicable:

- Increased risk of starvation or exposure, and loss of shade or shelter;
- Loss of breeding habitat;
- Trampling of threatened flora species;
- Inhibition of nitrogen fixation and increased soil salinity;
- Fertiliser drift;
- Rubbish dumping;
- Wood collection;
- Increase in predatory species;
- Increase in pest animal populations;
- Change in fire regimes; and
- Disturbance to specialist breeding and foraging habitat (e.g. beach nesting for shorebirds).

Table 12 identifies the type, frequency, duration and consequence of the indirect impacts that may occur due to applicable indirect impacts, in accordance with Section 9.1.4.2 of BAM.

8 MITIGATION AND MANAGEMENT OF IMPACTS

Measures to mitigate or manage impacts to biodiversity values are detailed in **Table 12**.

Table 12 Mitigation measures to avoid and minimise impacts on native vegetation and habitat

Mitigation measure	Proposed management measure	Timing	Frequency	Responsibility	Risk of failure	Risk and consequence of residual impacts
Impacts on fauna and their habitat						
Fauna protection protocols	Pre-clearance surveys by qualified ecologist prior to tree; and Apply procedures to safely fell habitat trees and release areas for any rescued fauna.	Construction	One-off	Centennial / contractor	Medium	Some individuals may be impacted if not detected.
Retain other habitat attributes	Hollow logs and rock habitat within the clearance areas will be retained and carefully placed into the adjacent bushland.	Construction	One-off	Centennial / contractor	Low	Some fauna may be injured/die
Maintain upper catchment hydrology (maintain ephemerality)	Erosion and sediment controls will be designed to prevent permanent or semi-permanent ponding of water	Construction	One-off	Centennial / contractor	Low	Impacts on water quality to flora and fauna associated with downstream waterways
Indirect impacts on native vegetation and habitat						
Protect adjacent habitat or vegetation	Boundaries for vegetation removal clearly established prior to clearing using tape by a qualified ecologist; All vehicles and equipment accessing site must use established access sites only; and Restrict load/equipment set down areas to well within the designated impact area.	Construction	One-off	Centennial / contractor	Low	Some adjacent vegetation or habitat may be damaged
Minimise noise and light spill	Avoid night work; and Take measures to reduce noise (e.g. use of noise barriers).	Construction	One-off	Centennial / contractor	Low	Minor impacts of noise on fauna during day only
Dust management	Monitoring of dust generate during earthworks, suspending work if dust is blown into adjacent bushland and use of water carts.	Construction	Ongoing	Centennial / contractor	Low	None

Mitigation measure	Proposed management measure	Timing	Frequency	Responsibility	Risk of failure	Risk and consequence of residual impacts
Weed and pathogen management	Good hygiene practices are to be used to reduce the risk of spreading weeds and pathogens, including ensuring that all machinery, materials and personnel are clean of any weed seed to entering the site Priority Weeds listed under <i>Biosecurity Act</i> (2015) to be actively managed on site to limit the spread of weeds into the adjacent forested areas; and Weeds removed from the subject site are to be disposed of appropriately at an approved waste facility; and occurrences of pathogens (e.g. Myrtle Rust and Phytophthora) will be reported, treated and monitored.	Construction	Infrequent	Centennial / contractor	Medium	Introduction and spread of invasive species that may outcompete or exclude native fauna; and Reduction of habitat quality in adjacent bushland. Introduction of Chytrid disease, impacting local frog populations
Fire response measures	Fire extinguishers accessible on site.	Construction	Infrequent	Centennial / contractor	Low	Uncontrolled burn
Rubbish management	All waste generated during construction is to be collected and deposited offsite at a suitable waste facility.	Construction	One-off	Centennial / contractor	Low	None
Staff training and site briefing to educate contractors on biodiversity management measures	Contractors are made aware of biodiversity management measures through site induction and toolbox talks; and Contractors Construction Environmental Management Plan (CEMP) to include all biodiversity management measures.	Pre-construction and Construction	Ongoing	Centennial / contractor	Low	Impacts to adjacent bushland and waterways
Prescribed biodiversity impacts						
Sediment and erosion controls	Erosion and sediment control measures are to be implemented and maintained to prevent sediment moving offsite, and sediment laden water entering any watercourse; Erosion controls are to be regularly inspected for their functionality	Construction	One-off	Centennial / contractor	Low	Sedimentation of downstream aquatic habitats

Mitigation measure	Proposed management measure	Timing	Frequency	Responsibility	Risk of failure	Risk and consequence of residual impacts
	and cleared if required, especially after rainfall; Excavated material should be stockpiled well away from areas where native vegetation is to be retained and waterways; and Work areas stabilised progressively during works.					
Prevent water pollution	No release of dirty water into drainage lines/waterways; All fuel/chemicals are to be stored in either self-bunded containers or in a bunded facility; An emergency spill kit is always to be kept on sites where equipment is being used; An emergency spill response plan developed; and Regular inspection of equipment and vehicles for fuel or oil leaks.	Construction	Infrequent	Centennial / contractor	Low	Water pollution
Avoid vehicle strike	Vehicles will adhere to a 40 km/hr speed limit. Site inductions are to include risks associated with vehicle strike. Strict adherence to construction and operational periods (i.e. daylight hours).	Construction and operation	Ongoing	Centennial / contractor	Medium	Fauna strike by vehicle

9 THRESHOLDS FOR ASSESSING AND OFFSETTING IMPACTS OF THE PROPOSAL

9.1 Impacts of the proposal on threatened species and/or threatened populations at risk of an SAI

The Project is removing habitat ~0.06 ha of habitat for *Chalinolobus dwyeri* (Large-eared Pied Bat). However, this is not considered an SAI as the habitat to be removed is not microhabitat of a kind necessary for breeding or within 100 m of breeding habitat. The habitat loss is foraging habitat only. No further assessment of an SAI is required.

9.2 Impacts requiring offset

The Project is required to provide an offset for the following matters (**Figure 8**):

- ~0.06 ha of PCT 1088 Red Box - Grey Gum - stringybark woodland on talus slopes of the western Blue Mountains, Sydney Basin Bioregion;
- ~0.06 ha of habitat for *Chalinolobus dwyeri* (Large-eared Pied Bat); and
- ~0.06 ha of habitat for *Callocephalon fimbriatum* (Gang-gang Cockatoo).

9.3 Impacts not requiring offset (or assessment)

The assessment of non-vegetated lands located within the Project area is ~4.61 ha (**Figure 9**). No further assessment (or offsetting provisions) is required for this area as there is no loss of native vegetation, associated habitat or any prescribed impacts.

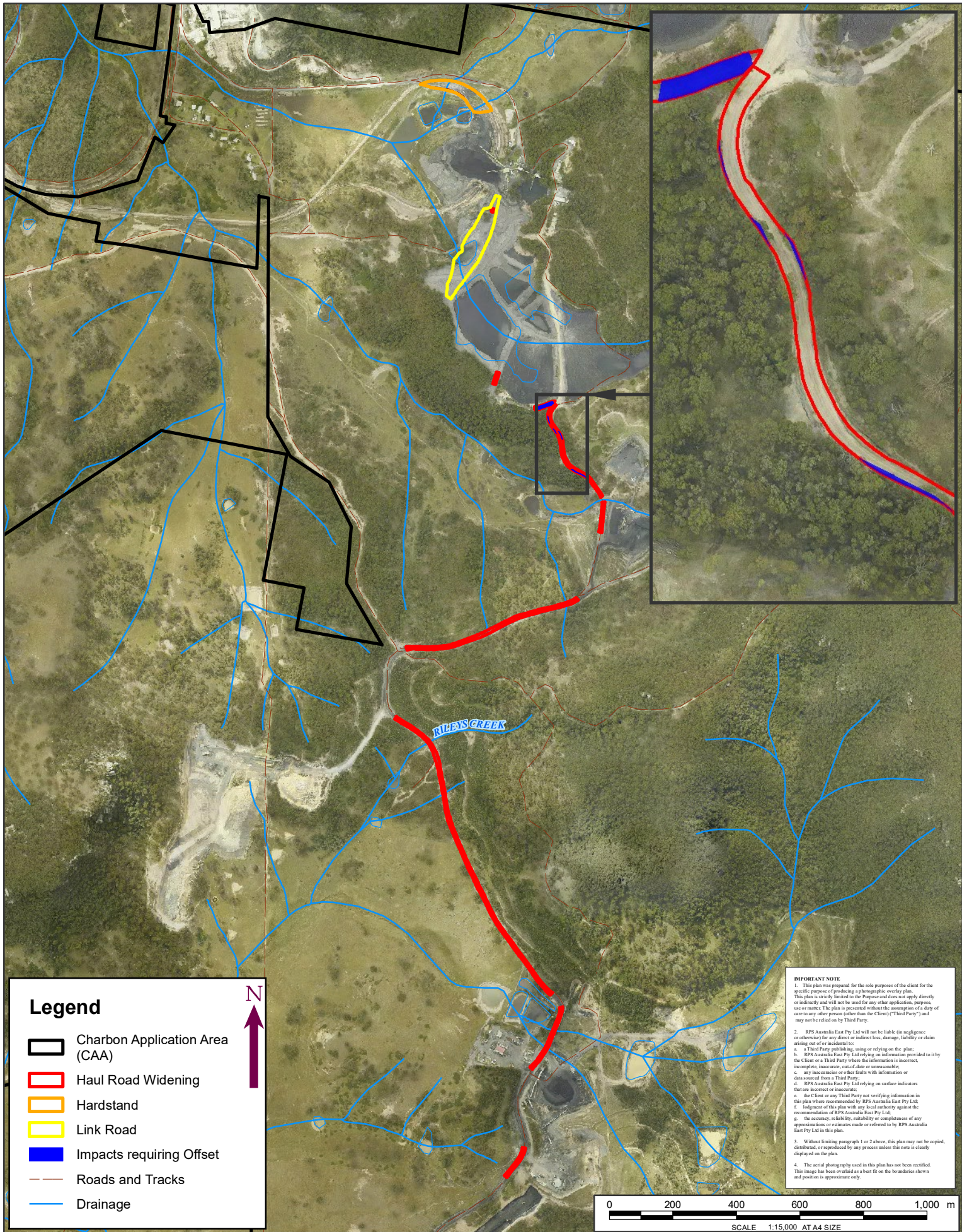


FIGURE 8: IMPACTS REQUIRING OFFSET

LOCATION: CHARBON	DATUM: GDA2020
JOB NO.: PR 146693	PROJECTION: GDA2020 MGA Zone 55
PURPOSE: BDAR	Data Sources: RPS_Client mga56_Charbon_2015
Technician: Natalie Wood	Date: 27/01/2021

CLIENT: CENTENNIAL

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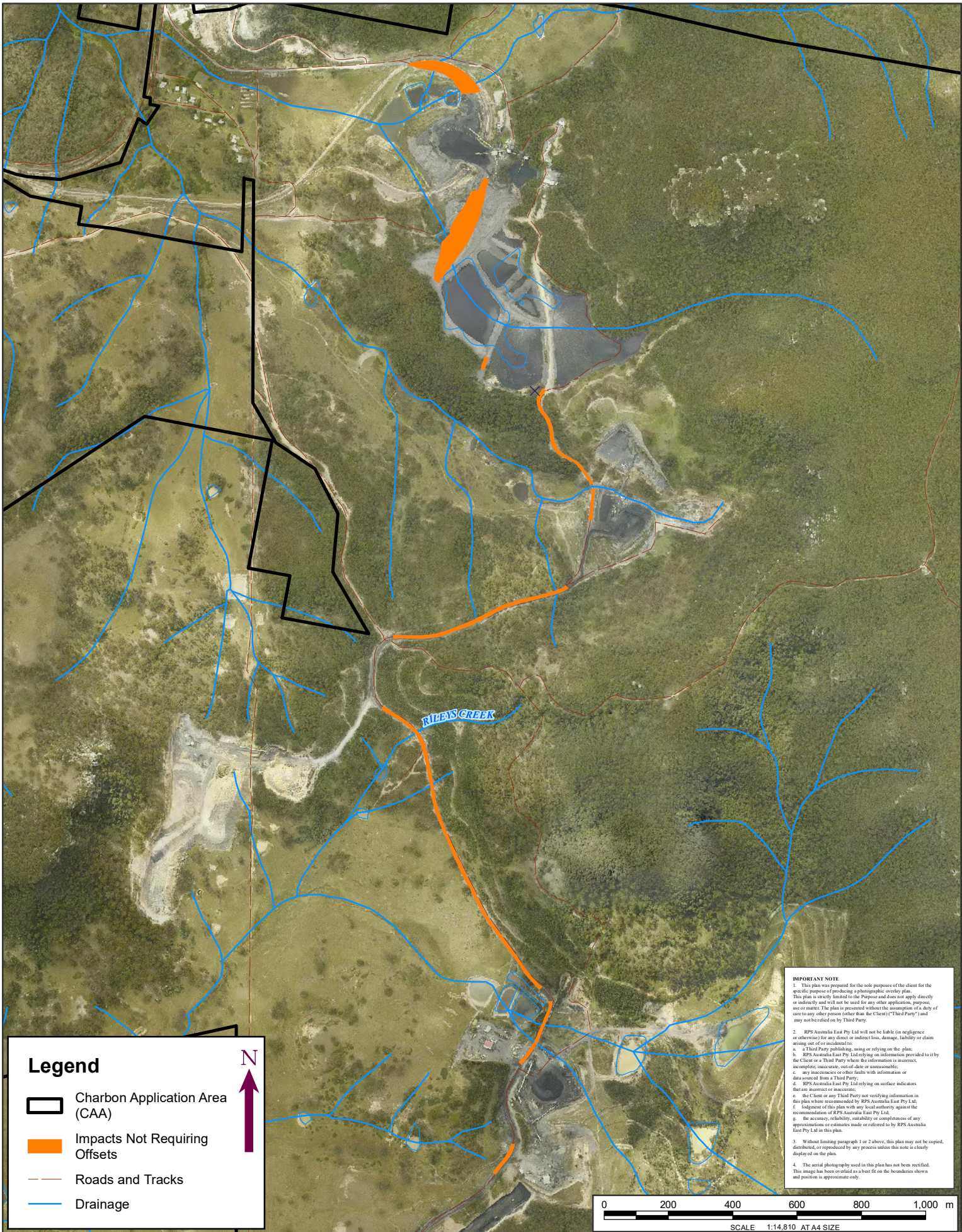


FIGURE 9: IMPACTS NOT REQUIRING OFFSET / ASSESSMENT

LOCATION: CHARBON	DATUM: GDA2020
JOB NO.: PR 146693	PROJECTION: GDA2020 MGA Zone 55
PURPOSE: BDAR	Data Sources: RPS, Client
Technician: Natalie Wood	mg56_Charbon_2015
Date: 27/01/2021	

CLIENT: CENTENNIAL

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10 APPLYING THE NO NET LOSS STANDARD

10.1 Impact on PCTs/TECs

The Project will impact ~0.06 ha of PCT 1088. This PCT is not consistent with any TEC.

10.2 Impact on threatened species at risk of an SAIL or incidentally observed via site visit

To be considered an SAIL, an impact is required to occur within 100 m of breeding habitat for *Chalinolobus dwyeri* (Large-eared Pied Bat). As impacts are outside of 100 m from potential breeding habitat for this species, it is considered impacts of the Project are unlikely to present a risk of an SAIL. Nevertheless, as the Project will impact native vegetation within 2 km of potential breeding habitat for this species, species credits are required to offset this impact.

10.3 Ecosystem credits required for impacts on biodiversity values

Two ecosystem credits are required for impacts on PCT 1088 Red Box - Grey Gum - stringybark woodland on talus slopes of the western Blue Mountains, Sydney Basin Bioregion. This PCT is not part of a TEC.

10.3.1 Ecosystem credit classes

Ecosystem credit classes are shown in **Table 13**.

Table 13 Credit class for ecosystem credits

PCT	Class	Trading group	HBT	Credits	IBRA region
PCT 1088 Red Box - Grey Gum - stringybark woodland on talus slopes of the western Blue Mountains, Sydney Basin Bioregion	Upper Riverina Dry Sclerophyll Forests This includes PCT's: 269, 285, 289, 290, 298, 302, 304, 314, 338, 340, 342, 353, 1088, 1094, 1095	Upper Riverina Dry Sclerophyll Forests - ≥ 50% - < 70% cleared group (including Tier 3 or higher threat status).	No	2	Capertee Valley , Capertee Uplands, Inland Slopes and Wollemi. or Any IBRA subregion that is within 100 km of the outer edge of the impacted site

10.4 Species credits required for impacts on biodiversity values

Species credits required for impacts are:

- 2 Species credits for *Callocephalon fimbriatum* (Gang-gang cockatoo); and
- 3 Species credits for *Chalinolobus dwyeri* (Large-eared Pied Bat).

Impacts on these species are not considered a risk of an SAIL.

10.4.1 Species credit classes

Species credit classes are shown in **Table 14**.

Table 14 Credit class

Species Credit Species	Credits	IBRA region
<i>Callocephalon fimbriatum</i> (Gang-gang cockatoo)	2	Any in NSW
<i>Chalinolobus dwyeri</i> (Large-eared Pied Bat)	3	Any in NSW

11 REFERENCES

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Appendix A
Biodiversity Values Map

Biodiversity Offset Scheme (BOS) Entry Threshold Map



1: 56,832



2,887.1 0 1,443.53 2,887.1 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes

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Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	25/01/2021 6:38 PM	BDAR Required*
Total Digitised Area	313.87 ha	
Minimum Lot Size Method	LEP	
Minimum Lot Size	0.1 ha	
Area Clearing Threshold	0.25 ha	
Area clearing trigger Area of native vegetation cleared	Unknown [#]	Unknown [#]
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no	no
Date of the 90 day Expiry	N/A	

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to <https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor> to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is "likely to significantly affect threatened species" as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BOSET user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Office of Environment and Heritage and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies with all aspects of the *Biodiversity Conservation Act 2016*.

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature _____ Date: 25/01/2021 06:38 PM

Appendix B

Species List

Scientific Name	Common Name	Family	BC Act	EPBC Act	Cover	Abundance
<i>Acacia falciformis</i>	Broad-leaved Hickory	Fabaceae (Mimosoideae)			1.0	4
<i>Acacia longifolia</i>		Fabaceae (Mimosoideae)			0.1	1
<i>Acaena novae-zelandiae</i>	Bidgee-widgee	Rosaceae			0.1	15
<i>Asparagus aethiopicus</i>	Asparagus Fern	Asparagaceae			0.1	20
<i>Astroloma humifusum</i>	Native Cranberry	Ericaceae			0.1	2
<i>Austrostipa</i> spp.		Poaceae			0.1	15
<i>Brachychiton populneus</i>	Kurrajong	Malvaceae			0.2	2
<i>Brassica</i> spp.	Brassica	Brassicaceae			0.2	10
<i>Brassicaceae indeterminate</i>	Mustards	Brassicaceae			0.1	20
<i>Cassinia</i> spp.		Asteraceae			0.1	40
<i>Centaurium erythraea</i>	Common Centaury	Gentianaceae			0.1	10
<i>Cheilanthes sieberi</i>	Rock Fern	Pteridaceae			0.1	7
<i>Cirsium vulgare</i>	Spear Thistle	Asteraceae			0.1	5
<i>Clematis glycinoides</i>	Headache Vine	Ranunculaceae			0.1	2
<i>Conyza</i> spp.		Asteraceae			0.1	20
<i>Cotoneaster</i> spp.		Malaceae			0.2	3
<i>Cynoglossum australe</i>		Boraginaceae			0.1	20
<i>Desmodium varians</i>	Slender Tick-trefoil	Fabaceae (Faboideae)			0.1	1
<i>Dichondra repens</i>	Kidney Weed	Convolvulaceae			0.1	5
<i>Echium vulgare</i>	Viper's Bugloss	Boraginaceae			0.2	30
<i>Eucalyptus blaxlandii</i>	Blaxland's Stringybark	Myrtaceae			30.0	6
<i>Euchiton sphaericus</i>	Star Cudweed	Asteraceae			0.1	30
<i>Geitonoplesium cymosum</i>	Scrambling Lily	Luzuriagaceae			0.1	3
<i>Geranium</i> spp.		Geraniaceae			0.1	8
<i>Hardenbergia violacea</i>	False Sarsaparilla	Fabaceae (Faboideae)			0.2	1
<i>Hydrocotyle laxiflora</i>	Stinking Pennywort	Apiaceae			0.1	5
<i>Hypericum perforatum</i>	St. Johns Wort	Clusiaceae			0.1	3
<i>Hypochoeris radicata</i>	Catsear	Asteraceae			0.1	3
<i>Linum trigynum</i>	French Flax	Linaceae			0.1	30
<i>Lomandra glauca</i>	Pale Mat-rush	Lomandraceae			0.1	15
<i>Lysimachia arvensis</i>	Scarlet Pimpernel	Primulaceae			0.1	3
<i>Marrubium vulgare</i>	White Horehound	Lamiaceae			0.5	25
<i>Microlaena stipoides</i>	Weeping Grass	Poaceae			0.2	30
<i>Notelaea longifolia f. longifolia</i>		Oleaceae			0.2	1
<i>Orobanche</i> spp.		Scrophulariaceae			0.1	3
<i>Petrorhagia nanteuillii</i>	Proliferous Pink	Caryophyllaceae			0.1	50
<i>Plantago debilis</i>	Shade Plantain	Plantaginaceae			0.1	15

REPORT

Scientific Name	Common Name	Family	BC Act	EPBC Act	Cover	Abundance
<i>Plantago lanceolata</i>	Lamb's Tongues	Plantaginaceae			0.1	5
<i>Poa sieberiana</i>	Snowgrass	Poaceae			0.1	20
<i>Poaceae indeterminate</i>	Grasses, reeds and bamboos	Poaceae			0.1	5
<i>Rytidosperma caespitosum</i>	Ringed Wallaby Grass	Poaceae			0.2	50
<i>Rytidosperma tenuius</i>		Poaceae			0.1	10
<i>Scabiosa spp.</i>		Dipsacaceae			0.1	5
<i>Senecio jacobaea</i>	Ragwort	Asteraceae			20.0	1,000
<i>Senecio quadridentatus</i>	Cotton Fireweed	Asteraceae			0.1	7
<i>Solanum nigrum</i>	Black-berry Nightshade	Solanaceae			0.1	10
<i>Solanum prinophyllum</i>	Forest Nightshade	Solanaceae			0.1	4
<i>Vittadinia cuneata</i>		Asteraceae			0.1	50
<i>Wahlenbergia spp.</i>	Bluebell	Campanulaceae			0.1	40

Appendix C
BAM Data

Bearing approx 200°

START PHOTO (0m) = J4: 3:55
END PHOTO (50m) = J4: 3:57pm

RPS

BAM Site – Field Survey Form – Transect

Date: 14/12/20 Job Number: 146693 Job Name: Charbon road upgrade Recorders: SP + J4
Plot Number/ID: BAM1 Photo: SP-3-26 ^{Start} Zone: Plot Dimensions: 20 x 50
Plot Start - E: 217717.53 N: 6355692.85 End - E: 217690.53 N: 6355651.52

BAM Attribute 1,000 m ² plot			BAM Attribute (400 m ² plot)		Sum values
DBH (cm)	# Tree Count	# Stems with Hollows	Count of Native Richness	Trees	
80+	—	—		Shrubs	
50 - 79	1	—		Grasses	
30 - 49	P	—		Forbs	
20 – 29	P	—		Ferns	
10 – 19	P	—		Other	
5 – 9	P	—	Sum of cover of native vascular plants by growth form group	Trees	
< 5	P	—		Shrubs	
Length of logs (m) ≥10 cm in diameter, > 50 cm in length				Grasses	
				Forbs	
				Ferns	
				Other	

tree count - Counts apply when the number of tree stems within a size class is ≤ 10. Estimates used when > 10. For a multi-stemmed tree, only the largest living stem is included in the count. For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count. Stems may be dead & may be shrubs

Litter cover 1x1m plot Subplot score (%)	5m - LEFT	15m - RIGHT	25m - LEFT	35m - RIGHT	45m - LEFT
	a 65	b 75	c 65	d 65	e 55

Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter).

Subplot score (%) 1x1m plot	
Rock cover	
5m - L	a 5
15m R	b 2 -
25m L	c 0 -
35m R	d 0 -
45m L	e 0 -
Bare ground cover	
5m - L	a 1
15m R	b 0 -
25m L	c 2
35m R	d 5
45m L	e 1
Cryptogam cover	
5m - L	a 0 -
15m R	b 0 -
25m L	c 0 -
35m R	d 0 -
45m L	e 0 -

Physiography + site features that may help in determining PCT & Management Zone				
Aspect		Landform Element		Landform Pattern
Lithology		Soil Surface Texture		Morphological Type
Slope	Sloping to SSW 0-5%	Soil Colour		Site Drainage
Microrelief		Soil Depth		Distance to nearest water & type

Plot Disturbance	Severity Code	Age code	Observational evidence
Clearing (inc logging)	2	R/NR	Log piles & track through plot
Cultivation (inc.pasture)			↳ likely from previous road widening or track maintenance.
Soil erosion			
Firewood/CWD removal			
Grazing (identify native/stock)			
Fire damage			
Storm damage			
Weediness	3	R	
Other			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe. Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)

Date: 14/2/20 Job Number: 146693 Job Name: Charbon road upgrade Plot Number/ID: 1 Recorders: SD + JG

RPS

Plot Start - E: 217717.53 N: 6355692.88 End - E: _____ N: _____ Veg Class? _____ Photo: SD start

Species Name	% Cover	Abund	Species Name	% Cover	Abund
1 stringy bark-enc. tenella? <i>Baxthall</i>	30.	6.	26 Cirsium vulgare.	0.1	5
2 Acacia falciiformis.	1	4	27 Brachychiton populneum.	0.2	2
3 Austra stipa sp.	0.1	15.	28 Solanum nigrum.	0.1	10.
4 Senecio jacoben.	20	1000+	29 Neteleaea longifolia.	0.2	1
5 Cynoglossum australe.	0.1	20.	30 Solanum prinophyllum.	0.1	4.
6 Asparagus fern.	0.1	20	31 Poa sieb.	0.1	20.
7 Echinon sphaericus.	0.1	30	32 Araena novo zealandii	0.1	15.
8 Saffron thistle. <i>Conthamus latatus</i>	0.1	15.	33 Cheilanthes sieberi	0.1	7.
9 Rykidosperma sp. small. <i>caeritiform</i>	0.2	50.	34 Lysimachia aurea.	0.1	3
10 Microlaena stipoides.	0.2	30.	35 Centaurea erythraea.	0.1	10
11 Purple bulb shape weed <i>Petrophragma</i>	0.1	50.	36 Cassia sp (juvenile).	0.1	40.
12 plantago debilis.	0.1	15.	37 Rykidosperma sp hairy <i>tenuis</i>	0.1	10.
13 oxalis sp	0.1	5.	38 yellow babys breath <i>Linum trigynum</i>	0.1	30.
14 Comandra glauca	0.1	15.	39 Hypochaeris radicata.	0.1	3.
15 Onyza sp.	0.1	20.	40 Hypericum perforatum	0.1	3
16 Geranium sp.	0.1	8.	41 Plantago lanceolata	0.1	5
17 Echinon sp.	0.2	30.	42 tall brassicaceae <i>Brassica sp.</i>	0.2	10.
18 Wahlenbergia sp?	0.1	40.	43 Shepherd purse? <i>Brassicaceae indet.</i>	0.1	20.
19 V. Hadina/ cutis <i>Cuneata</i>	0.1	50.	44 exotic parasite. <i>Orobanch</i>	0.1	3.
20 Centaurea plesium cynosum.	0.1	3.	45 porcellae sp. shiny.	0.1	5.
21 Laniun / plectranthus silver. <i>virgate</i>	0.5	25.	46 Desmodium varians.	0.1	1
22 Dichondra repens	0.1	5.	47 Hardenbergia violacea.	0.2	1
23 Hydrocotyle laxiflora.	0.1	5.	48 Cotoneaster sp.	0.2	3.
24 Astroloma multiflorum?	0.1	2.	49 Senecio quadridentatus? silver.	0.1	7.
25 Clematis sp. few teeth.	0.1	2.	50 Comandra multiflora.	0.1	1

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m. Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

newby: Euc punctata.

Acacia longissima.
Scabiosa sp.

0.1
0.1 5

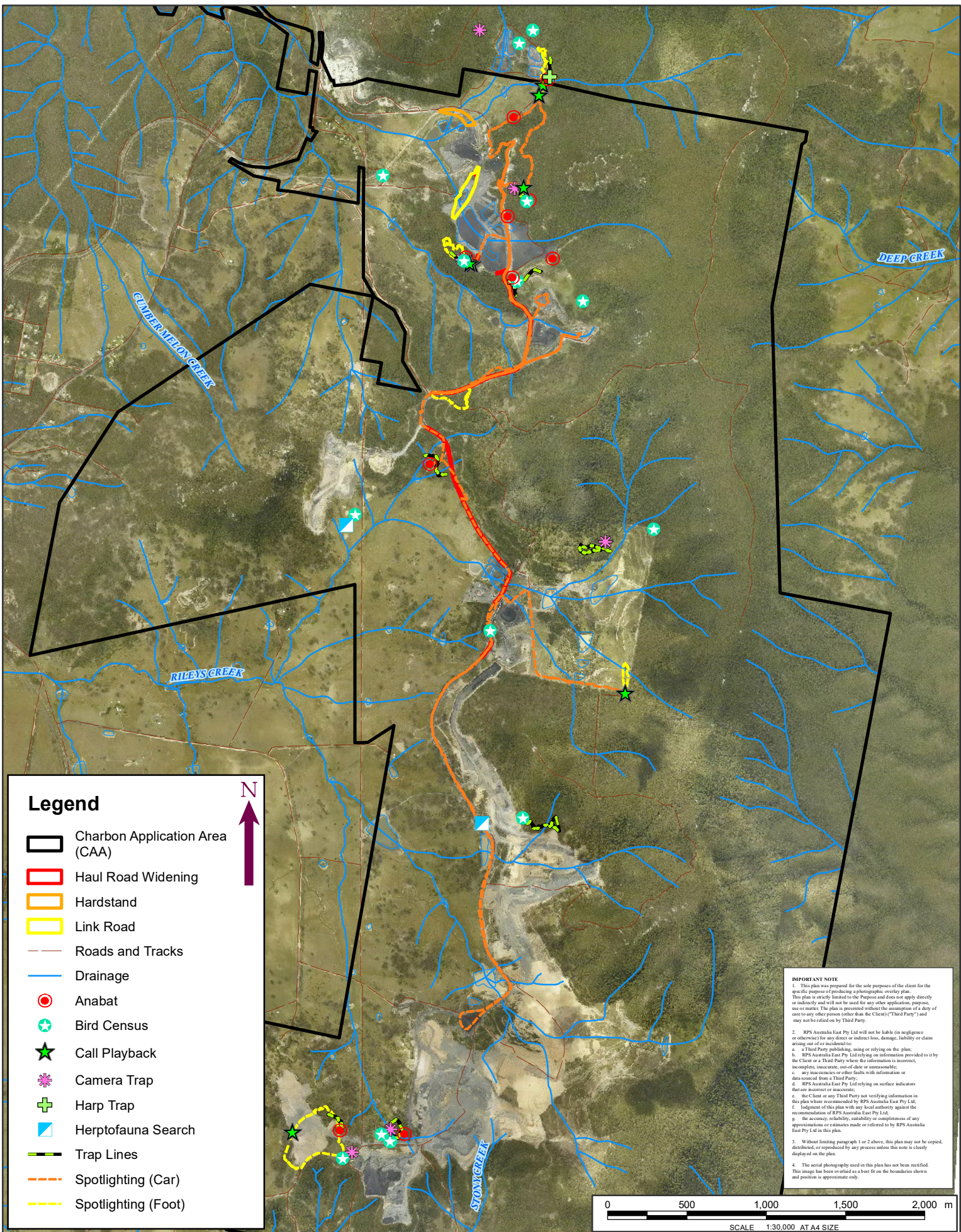
1280821

Table A1 BAM plot photographs

Plot no.	Photograph
Start	
End	

Appendix D

Fauna survey effort



APPENDIX A: SURVEY EFFORTS

LOCATION: CHARBON	DATUM: GDA2020
JOB NO.: PR 146693	PROJECTION: GDA2020 MGA Zone 55
PURPOSE: BDAR	Data Sources: RPS_Client mga56_Charbon_2015
Technician: Natalie Wood	Date: 27/01/2021

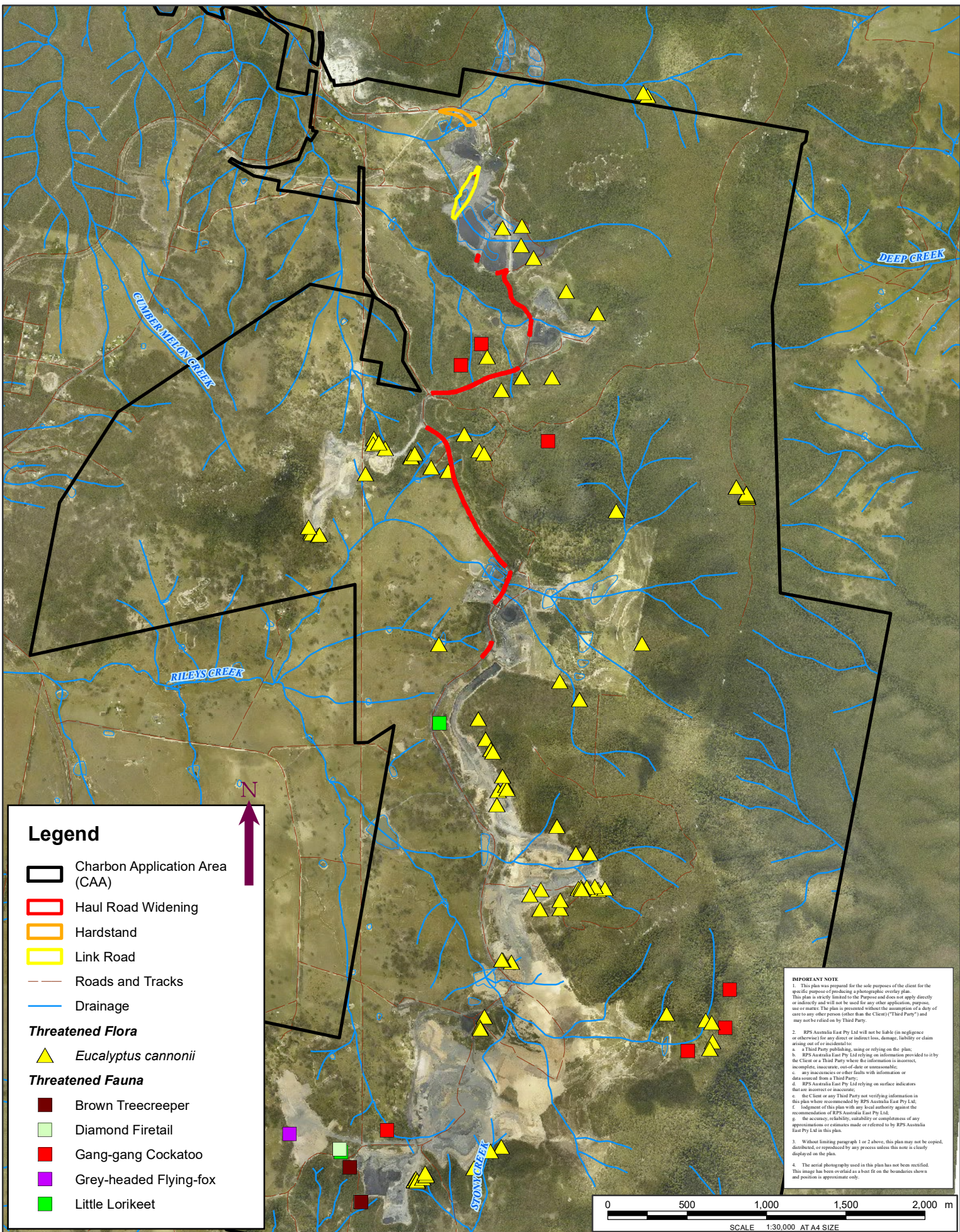
CLIENT: CENTENNIAL

RPS AUSTRALIA EAST PTY LTD (ABN 44 140 292 762)
Unit 2A, 45 Fitzroy Street, Carrington, NSW, Australia, 2294 PO Box 120, Carrington, NSW, 2294
T: 02 4940 4200 F: 02 4940 4299 www.rpsgroup.com.au



Appendix E

Threatened flora and fauna



APPENDIX B: THREATENED SPECIES

LOCATION: CHARBON

DATUM: GDA2020

JOB NO.: PR 146693

PROJECTION: GDA2020 MGA Zone 55

PURPOSE: BDAR

Data Sources:
RPS_Client
mga56_Charbon_2015

Technician: Natalie Wood

Date: 27/01/2021

CLIENT: CENTENNIAL

RPS AUSTRALIA EAST PTY LTD (ABN 44 140 292 762)
Unit 2A, 45 Fitzroy Street, Carrington, NSW, Australia, 2294 PO Box 120, Carrington, NSW, 2294
T: 02 4940 4200 F: 02 4940 4299 www.rpsgroup.com.au



Appendix F

BAM-C credit report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00023833/BAAS17034/21/00023834	Charbon Mod 2 BDAR Haul Road	21/12/2020
Assessor Name	Report Created	BAM Data version *
Mark Aitkens	29/01/2021	36
Assessor Number	BAM Case Status	Date Finalised
BAAS17034	Open	To be finalised
Assessment Revision	Assessment Type	BOS entry trigger
0	Part 4 Developments (Small Area)	BOS Threshold: Area clearing threshold

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	BC Act Listing status	EPBC Act listing status	Species sensitivity to gain class (for BRW)	Biodiversity risk weighting	Potential SAI	Ecosystem credits
Red Box - Grey Gum - stringybark woodland on talus slopes of the western Blue Mountains, Sydney Basin Bioregion											
1	1088_Mod Poor	Not a TEC	58.7	58.7	0.06			High Sensitivity to Potential Gain	1.75		2
										Subtotal	2
										Total	2

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAI	Species credits
<i>Callocephalon fimbriatum / Gang-gang Cockatoo (Fauna)</i>								
1088_ModPoor	58.7	58.7	0.06	Vulnerable	Not Listed	2	False	2
							Subtotal	2
<i>Chalinolobus dwyeri / Large-eared Pied Bat (Fauna)</i>								
1088_ModPoor	58.7	58.7	0.06	Vulnerable	Vulnerable	3	True	3
							Subtotal	3