

Permit

Environmental Protection Act 1994

Environmental authority EPPR03277115

This environmental authority is issued by the administering authority under Chapter 5 of the Environmental Protection Act 1994.

Environmental authority number: EPPR03277115

Environmental authority takes effect on 22 March 2024.

An annual return will be due each year on 01 April.

Environmental authority holder(s)

Name(s)	Registered address
QUEENSLAND COKING COAL PTY LTD	Suite 2, Level 6, 12 Creek Street "Blue Tower" BRISBANE CITY QLD 4000 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Resource Activity, Schedule 3, 09: A mining activity involving drilling, costeaning, pitting or carrying out geological surveys causing significant disturbance	EPC 1233
Resource Activity, Schedule 3, 10: Investigating the potential development of a mineral resource by large bulk sampling or constructing an exploratory shaft, adit or open pit	EPC 1233

Additional information for applicants

Environmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority (EA) is issued is a restatement of the ERA as defined by legislation at the time the EA is issued. Where there is any inconsistency between that description of an ERA and the conditions stated by an EA as to the scale, intensity or manner of carrying out an ERA, the conditions prevail to the extent of the inconsistency.

An EA authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the EA specifically authorises environmental harm.

A person carrying out an ERA must also be a registered suitable operator under the *Environmental Protection Act 1994* (EP Act).

Mobile and temporary activities

If you operate a mobile and temporary environmentally relevant activity (ERA), other than regulated waste transport, you are required to maintain a work diary. You must:

- use the approved form for a work diary (ESR/2015/1696);
- keep the work diary records for 2 years after the last entry;
- inform the administering authority within 7 days of the work diary being lost or stolen;
- record the information required in the work diary for each location within 1 day of leaving the location.

Contaminated land

It is a requirement of the EP Act that an owner or occupier of land give written notice to the administering authority if they become aware of the following:

- the presence of, or happening of an event involving, a hazardous contaminant on the land that is causing, or is reasonably likely to cause, serious or material environmental harm (notice must be given within 24 hours); or
- if the land is contaminated land – a change in the condition of the land that is causing, or is reasonably likely to cause, serious or material environmental harm (notice must be given within 24 hours); or
- a notifiable activity (as defined in Schedule 3) having been carried out, or is being carried out, on the land (notice must be given within 20 business days).

For further information, including the form for giving written notice, refer to the Queensland Government website www.qld.gov.au, using the search term 'duty to notify'.

Take effect

Please note that, in accordance with section 200 of the EP Act, an EA has effect:

- a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority – on the nominated day; or
- b) if the authority states a day or an event for it to take effect – on the stated day or when the stated event happens; or
- c) otherwise – on the day the authority is issued.

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Planning Act 2016* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect until the additional authorisation has taken effect.

If this EA takes effect when the additional authorisation takes effect, you must provide the administering authority written notice within 5 business days of receiving notification of the related additional authorisation taking effect.

The anniversary day of this environmental authority is the same day each year as the effective date. The payment of the annual fee will be due each year on this day. An annual return will be due each year on 01 April. If you have incorrectly claimed that an additional authorisation is not required, carrying out the ERA without the additional authorisation is not legal and could result in your prosecution for providing false or misleading information or operating without a valid environmental authority.



Signature

22 March 2024

Date

Ben Byrd
Department of Environment, Science and Innovation
Delegate of the administering authority
Environmental Protection Act 1994

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Obligations under the *Environmental Protection Act 1994*

In addition to the requirements found in the conditions of this environmental authority, the holder must also meet their obligations under the EP Act, and the regulations made under the EP Act. For example, the holder must comply with the following provisions of the Act:

- general environmental duty (section 319)
- duty to notify environmental harm (section 320-320G)
- offence of causing serious or material environmental harm (sections 437-439)
- offence of causing environmental nuisance (section 440)
- offence of depositing prescribed water contaminants in waters and related matters (section 440ZG)
- offence to place contaminant where environmental harm or nuisance may be caused (section 443)

Other permits required

This permit only provides an approval under the *Environmental Protection Act 1994*. In order to lawfully operate you may also require permits / approvals from your local government authority, other business units within the department and other State Government agencies prior to commencing any activity at the site. For example, this may include permits / approvals with your local Council (for planning approval), the Department of Transport and Main Roads (to access State controlled roads), the Department of Resources (to clear vegetation), and the Department of Agriculture and Fisheries (to clear marine plants or to obtain a quarry material allocation).

Conditions of environmental authority

Agency interest: General	
Condition number	Condition
A1	All reasonable and practicable measures must be taken to prevent or minimise environmental harm caused by the activities authorised by this environmental authority.
A2	This environmental authority does not authorise environmental harm unless a condition contained within the authority explicitly authorises the harm. Where there is no condition or the authority is silent on a matter, the lack of condition or silence does not authorise environmental harm.
A3	Activities authorised by this environmental authority must not cause environmental nuisance at a nuisance sensitive place.
A4	Costeering is not authorised by this environmental authority.
A5	Contaminants must not be directly or indirectly released to land, water, groundwater or air except for those releases authorised by the conditions of this environmental authority.
A6	Maintenance of measures, plant and equipment The environmental authority holder must: a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority; b) maintain such measures, plant and equipment in a proper and efficient condition; c) operate such measure, plant and equipment in a proper and efficient condition; and d) ensure all instruments and devices used for the measurement and monitoring of any parameter under any condition of this environmental authority are properly calibrated.
A7	Records of installation, calibration and maintenance carried out under condition A6 must be kept.
A8	Authorised activities The bulk sample activities conducted under this environmental authority must not exceed the total maximum disturbance areas listed in Table A1 - Maximum disturbance area for each bulk sample disturbance domain¹ and must not extend beyond the disturbance footprint depicted in Figure A1 – Project Layout. ¹The total disturbance footprint does not include exploration and groundwater monitoring activities that are authorised outside of Figure A1 – Project Layout.
A9	Notification of commencement of authorised activities The holder of this environmental authority must provide the administering authority with a date in writing for when activities authorised under condition A8 commence under this environmental authority no later than fourteen (14) days after the commencement of activities.

A10	The holder of this environmental authority is authorised to extract no more than 750,000 tonnes of run-of-mine (ROM) coal from EPC 1233.
A11	Extraction of ROM coal authorised under condition A10 must be completed within eighteen (18) months of the commencement of the activities authorised under condition A8 .

Table A1 – Maximum disturbance area for each bulk sample disturbance domain

Disturbance Domain	Maximum disturbance area (ha)
Bulk Sample Pit (pit and pit stand-off)	19.4
Out-of-pit Dump	11.0
MIA Complex	12.1
Water infrastructure at BSP	1.3
Water infrastructure at OOPD/MIA	6.0
Haul Road	12.8
Saraji Road access	2.5
Total Maximum Disturbance Footprint	65.2

A12	Monitoring, Reporting and Emergency Response Procedures Except where specified otherwise in another condition of this environmental authority, all monitoring records or reports required by this environmental authority must be kept for a period of not less than five (5) years.
A13	The holder of this environmental authority must notify the administering authority by written notification within twenty-four (24) hours , after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with, the conditions of this environmental authority.
A14	The notification in condition A13 must include the following: a) the location of the emergency or incident; b) the date and time of the emergency or incident; c) the estimated quantity and type of any substances involved in the emergency or incident; d) the potential impacts to environmental values caused by the emergency or incident; and e) where there is potential impact on livestock or human health, precautionary measures that should be taken.

A15	Within ten (10) business days following a notification under condition A13 or receipt of monitoring results, whichever occurs later, further written advice must be provided to the administering authority, including the following: a) results and interpretation of any samples taken and analysed; b) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm; and c) proposed actions to prevent a recurrence of the emergency or incident.
A16	Plans, reports and programs Any plans, reports or programs required by a condition of this environmental authority must be developed and reviewed by an appropriately qualified person.
A17	Upon request from the administering authority, copies of all records, plans, and other documentation required by the conditions of this environmental authority must be made available and provided to the administering authority within: a) ten (10) business days; or b) an alternative timeframe agreed between the administering authority and the environmental authority holder.
A18	Within twenty (20) business days; or an alternative timeframe agreed between the administering authority and the environmental authority holder, of receiving comments from the administering authority on any document, the document must: a) be updated by an appropriately qualified person having regard to the comments; and b) re-submitted to the administering authority.
A19	Monitoring and sampling All monitoring and sampling required by the conditions of this environmental authority must be carried out, interpreted, and recorded by an appropriately qualified person.
A20	Where a condition of this environmental authority requires compliance with a standard, policy or guideline published externally to this environmental authority and the standard is amended or changed subsequent to the issue of this environmental authority, the holder of this environmental authority must: a) comply with the amended or changed standard, policy or guideline within two (2) years of the amendment or change being made, unless a different period is specified in the amended standard or relevant legislation; and b) until compliance with the amended or changed standard, policy or guideline is achieved, continue to remain in compliance with the corresponding provision that was current immediately prior to the relevant amendment or change.

A21	Unless otherwise authorised in writing by the administering authority, all laboratory analyses required under this environmental authority must be carried out by a laboratory that has National Association of Testing Authorities accreditation for such analyses, with the exception of in situ monitoring of dissolved oxygen, temperature, pH, electrical conductivity and turbidity.
A22	Complaints The holder of this environmental authority must record all environmental complaints received about the activities including: a) name, address and contact number of the complainant; b) time and date of complaint; c) reasons for the complaint; d) investigations undertaken; e) conclusions formed; f) actions taken to resolve the complaint; g) any abatement measures implemented; and h) person responsible for resolving the complaint.
A23	The holder of this environmental authority must, when requested by the administering authority and within a reasonable timeframe agreed to by the administering authority: a) investigate any complaint of environmental harm; b) undertake the relevant specified monitoring; and c) within ten (10) business days of completion of the investigation, or no later than ten (10) business days after the end of the timeframe nominated by the administering authority to undertake the investigation, provide to the administering authority the results of the investigation (including an analysis and interpretation of the monitoring results) and details of the abatement measures implemented.
A24	Annual reporting An annual report must be prepared and submitted to the administering authority by 31 March each year.

A25	The report required by condition A24 must include the following information: a) The location, coordinates and area (hectares) of all areas currently disturbed by the activities carried out under this environmental authority, distinguished by whether the area has been disturbed, is currently under rehabilitation or has been fully rehabilitated in accordance with the conditions of this environmental authority; b) The date each area was disturbed; c) The date each area was rehabilitated; d) The date each drill hole was constructed; e) The date each drill hole was decommissioned; f) A map distinguishing the areas of existing disturbance, proposed disturbance for the subsequent year and existing and proposed rehabilitation; and, g) Details of the rehabilitation activities conducted for areas identified in A25(a) including whether additional maintenance and monitoring is required to assure achievement of the conditions in Agency interest: Rehabilitation.
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Agency interest: Air	
Condition number	Condition
B1	Dust and particulate matter monitoring The environmental authority holder must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust and particulate matter emissions generated by the activities do not cause exceedances of the following levels when measured at any sensitive or commercial place: a) Dust deposition of 120 milligrams per square metre per day, averaged over one (1) month, when monitored in accordance with the most recent version of Australian Standard AS3580.10.1 <i>Methods for sampling and analysis of ambient air—Determination of particulate matter—Deposited matter – Gravimetric method</i>. b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM₁₀) suspended in the atmosphere of 50 micrograms per cubic metre over a twenty-four (24)-hour averaging time when monitored in accordance with the most recent version of either: i) Australian Standard AS3580.9.9 <i>Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM₁₀ low volume sampler—Gravimetric method</i>; or ii) Any alternative method of monitoring PM₁₀ which may be permitted by the 'Air Quality Sampling Manual' as published from time to time by the administering authority. c) A concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a one (1) year averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.3:2003 <i>Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—Total suspended particulate matter (TSP)—High volume sampler gravimetric method</i>.
B2	When requested by the administering authority, or as a result of a complaint (which in the opinion of the authorised officer is neither frivolous nor vexatious nor based on mistaken belief), dust and/or particulate monitoring must be undertaken: a) at a place or places relevant to the potentially affected sensitive or commercial place as agreed upon with the administering authority; b) for a monitoring period as agreed upon with the administering authority; c) for the relevant contaminant limits, averaging periods and in accordance with the methods specified in condition B1; and d) the results of the monitoring undertaken are to be notified to the administering authority within ten (10) days following completion of monitoring.

Agency interest: Noise	
Condition number	Condition
C1	Noise nuisance Noise from the authorised activities must not cause an environmental nuisance at any sensitive place or commercial place.
C2	Noise limits Noise from the activity must not exceed the levels identified in Table C1 – Noise limits – Sensitive place .

Table C1 – Noise limits – Sensitive place

Noise level measured in dB(A)	Monday to Saturday			Sunday and Public Holidays		
	7am–6pm	6pm–10pm	10pm–7am	9am–6pm	6pm–10pm	10pm–9am
	Noise measured at sensitive place					
L _{Aeq} adj, 1 hr	40 dB(A)	40 dB(A)	35 dB(A)	35	35	35
L _{Amax} , 1 hr	N/A	N/A	45dB(A)	N/A	N/A	45 dB(A)

C3	All monitoring of noise emissions from the activity must be undertaken in accordance with the most recent version of Queensland Government's '<i>Noise Measurement Manual</i>' (ESR/2016/2195), the relevant Australian Standard and the <i>Environmental Protection Regulation 2019</i> (Chapter 5, Part 4) and must include the following descriptors, characteristics and conditions: a) L_{A10}, adj, 10 mins; b) L_{A 1}, adj, 10 mins; c) the level and frequency of occurrence of impulsive or tonal noise; d) atmospheric conditions including wind speed and direction; e) effects due to extraneous factors such as traffic noise; and f) location, date and time of recording.
C4	Noise monitoring exceedance If noise monitoring indicates an exceedance of any relevant limit in Table C1 – Noise limits – Sensitive place , noise abatement measures must be immediately implemented to minimise any adverse impacts to the sensitive place and to prevent any further exceedances.

C5	A report must be provided to the administering authority within ten (10) business days of an exceedance of noise limits in Table C1 – Noise limits – Sensitive place. The report must detail: a) the noise emission data at the sensitive place; b) a description of atmospheric conditions including wind speed and direction occurring at the time; c) the air quality data upwind of the authorised activities (if known); d) measures taken to reduce noise generated by the authorised activities including those undertaken under condition C4; and e) the contribution of the authorised activities to the noise level experienced at the sensitive place.
C6	When requested by the administering authority, noise and/or vibration monitoring must be undertaken at sensitive receptors and within a timeframe nominated by the administering authority.
C7	Blasting Blasting must not cause the limits prescribed in Table C2 – Blasting noise and vibration limits to be exceeded at a sensitive place.
C8	Blast monitoring program The environmental authority holder must develop and implement a blast monitoring program to monitor compliance with Table C2 – Blasting noise and vibration limits for all blasts conducted at the nearest and most affected sensitive place(s).
C9	Blast monitoring must include the following descriptors, characteristics, and conditions: a) location of the blast(s) within the mining area (including which bench level); b) atmospheric conditions including temperature, relative humidity, wind speed and wind direction; and c) location, date and time of recording.
C10	If monitoring indicates exceedance of the limits in Table C2 – Blasting noise and vibration limits, then the environmental authority holder must immediately implement airblast overpressure abatement measures so that airblast overpressure from the activity does not result in further environmental nuisance.

Table C2 – Blasting noise and vibration limits

Blasting noise and vibration limits	Sensitive place criteria	
	7am to 6pm	6pm to 7am
Airblast overpressure	115dB (Linear) Peak for 9 out of 10 consecutive blasts initiated and not greater than 120 dB (Linear) Peak at any time	No blasting is allowed during these times
Ground vibration peak particle velocity	5mm/second peak particle velocity for 9 out of 10 consecutive blasts and not greater than 10 mm/second peak particle velocity at any time	No blasting is allowed during these times

Agency interest: Surface Water	
Condition number	Condition
D1	With the exception of disturbance authorised in condition A8, the exploration activities must not be carried out: a) in standing waters, wetlands or lakes; b) in a watercourse; c) within three (3) metres of the top of the bank of any waters, wetlands, lakes or watercourses; or d) within or on the levee banks of the normal flow channel.
D2	Release to receiving waters Contaminants must not be released to any waters or the bed and banks of any waters unless otherwise permitted by this environmental authority.
D3	Mine affected water must not be released directly or indirectly to the receiving environment.
D4	Surface water runoff is permitted to be released to waters for the purpose of ensuring stormwater does not become mine affected water from: a) erosion and sediment control (ESC) structures identified in Table D1 – ESC structure monitoring locations that are installed and operated in accordance with the Erosion and Sediment Control Plan required by condition D24 if monitoring required by condition D5 confirms water quality is compliant with the sediment dam trigger values specified in Table D2 – Surface water quality objectives; and b) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with condition D19.
D5	The water from ESC structures must be monitored at the release locations detailed in Table D1 – ESC structure monitoring locations for each quality characteristic, and at the frequencies, specified in Table D2 – Surface water quality objectives .

Table D1 – ESC structure monitoring locations

ESC Structure	Location Latitude (GDA2020)	Location Longitude (GDA2020)	ESC structure water source location	Downstream monitoring point	Receiving waters description
SD1	22.332195° S	148.215683° E	In-Pit Spoil Dump	DL6_DS	Drainage Line 6
SD2	22.336146° S	148.218487° E	In-Pit Spoil Dump	DL6_DS	Drainage Line 6
SD3	22.364477° S	148.233515° E	Out-of-Pit Dump	HC_DS	Hughes Creek north tributary
SD4	22.334467° S	148.219984° E	Rehabilitated Pit	DL6_DS	Drainage Line 6

Table D2 – Surface water quality objectives

Quality characteristic (units)	Sediment dam trigger value	Downstream monitoring point trigger value	Source	Frequency
pH	6.5-8.5	6.5-8.5	EPP WQO (aquatic ecosystems)	Monthly and Daily during release (the first sample must be taken within 2 hours of commencement of release)
Electrical Conductivity (µS/cm)	864*	Baseflow: 720 ² Medium flow: 500 ³ High flow: 250 ⁴	EPP WQO (aquatic ecosystems)	
Turbidity (NTU) ¹	60*	50	EPP WQO (aquatic ecosystems)	
Total Suspended Solids (mg/L) ¹	102	85	Locally derived^	
Sulfate as SO ₄ (mg/L)	37 [#]	25	EPP WQO (aquatic ecosystems)	
Ammonia (µg/L)	900	900	ANZG 2018	
Nitrate (µg/L)	1100	1100	For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for Total Nitrate	
Filtered metals and metalloids				
Aluminium (µg/L)	192*	160	Locally derived^	Monthly and Commencement of release and thereafter weekly during release.
Arsenic (µg/L)	16*	13	ANZG 2018	
Lead (µg/L)	4.1*	3.4	ANZG 2018	
Mercury (µg/L)	0.72*	0.6	ANZG 2018	
Molybdenum (µg/L)	40.8*	34	ANZG 2018	
Selenium (µg/L)	6*	5	ANZG 2018	

Notes:

ANZG 2018 = *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia, or more recent version.

EPP WQO (aquatic ecosystems) = values derived from *Environmental Protection (Water) Policy 2009 Isaac River Sub-basin Environmental Values and Water Quality Objectives Basin No. 130 (part)*, including all waters of the Isaac River Sub-basin (including Connors River), Upper Isaac River catchment waters.

All metals and metalloids must be measured as 'dissolved' (from analysis of a field filtered sample) and total (unfiltered). Limits for metals and metalloids apply to dissolved results.

*20% increase on trigger value

[#] 95th percentile site specific

[^]locally derived trigger values (80th percentile values of natural surface water monitoring)

1 = Interim dam release point trigger values for Total Suspended Solids and Turbidity can be exceeded for water discharged from the sediment dam during uncontrolled releases during a heavy rainfall event over and above the sediment dam's design storage capacity.

2 = Less than 0.5 m³/s in the receiving waters.

3 = (> 0.5 – 5.0 m³/s) in the receiving waters.

4 = > 5.0 m³/s where 10 m³/s in the receiving waters

D6	If monitoring required by condition D5 , for any ESC structure, identifies an exceedance of any of the sediment dam trigger values identified in Table D2 – Surface water quality objectives , all water in that structure must be transferred to a storage listed in Table D4 – Mine affected water storages .
D7	If water quality sampling as specified in condition D5 identifies three (3) consecutive exceedances of sediment dam trigger values detailed in Table D2 – Surface water quality objectives , the environmental authority holder must complete an investigation into the cause of the exceedance in water quality and the potential for environmental harm.
D8	If an exceedance in accordance with condition D6 occurs, the holder of the environmental authority must notify the administering authority within twenty-four (24) hours of receiving the monitoring results of the three (3) consecutive exceedances via the pollution hotline.
D9	Following completion of the investigation required by condition D7 , the environmental authority holder must submit a written report to the administering authority within twenty (20) business days outlining: a) details of the investigation carried out including any assumptions and limitations of the investigation; and b) findings of the investigation including an explanation of the cause of the exceedances identified; and c) recommendations of the investigation; and d) actions taken to comply with the conditions of the environmental authority and to prevent environmental harm.
D10	Releases from ESC structures must not cause erosion of the bed and banks of the receiving environment or cause a material build-up of sediment in such waters.
D11	The holder of the environmental authority must design, install and maintain adequate stormwater management infrastructure to prevent stormwater from entering disturbed areas.
D12	Water monitoring and sampling must be in accordance with the latest version of the Queensland Government's ' <i>Monitoring and Sampling Manual 2018 – Environmental Protection (Water) Policy 2009</i> '.
D13	Receiving environment monitoring Surface waters must be monitored: a) for the quality characteristics in Table D2 – Surface water quality objectives; and b) at the monitoring frequency specified in Table D2 – Surface water quality objectives; and c) at the monitoring points identified in Table D3 – Surface waters monitoring locations and Figure D1 – Surface waters monitoring locations.

Table D3 – Surface waters monitoring locations

Station ID	Previous Station ID	Catchment Area	Latitude (GDA2020)	Longitude (GDA2020)	Description
Upstream sites					
DL6_US	N/A	East Creek	22.339508200° S	148.207957289° E	Drainage line 6 at the upstream MLA 700073 boundary
DL7_US	N/A	East Creek	22.347211456° S	148.209392813° E	Drainage line 7 at the upstream MLA 700073 boundary
HCN_US	N/A	Hughes Creek	22.370485469° S	148.226638033° E	Hughes Creek north tributary approximately 5.5 km upstream of Saraji Road
Downstream sites					
DL6_DS	VSW9	East Creek	22.334779125° S	148.221868903° E	Drainage line 6, at the downstream MLA 700073 boundary
DL7_DS	VSW7	East Creek	22.343101091° S	148.231039608° E	Drainage line 7, at the downstream MLA 700073 boundary
HC_DS	VSW4	Hughes Creek	22.384885209° S	148.266275740° E	Hughes Creek at the downstream MLA 700073 boundary

D14	Unless otherwise advised by the administering authority, if a water quality characteristic measured at a downstream site specified in Table D3 – Surface waters monitoring locations exceeds any the <i>Downstream monitoring point trigger values</i> specified in Table D2 – Surface water quality objectives, the holder of this environmental authority must compare this result to the applicable upstream site and: a) If the quality measured at a downstream site is equal to or less than the quality measured at the applicable upstream site, no further action is required; or b) If the quality measured at a downstream site is greater than the quality measured at the applicable upstream site, complete an investigation into the cause of the deterioration in water quality and the potential for environmental harm and submit a written report to the administering authority within twenty (20) business days outlining: i. details of the investigation carried out including any assumptions and limitations of the investigation; and ii. findings of the investigation including an explanation of the cause identified; and iii. recommendations of the investigation; and iv. actions taken to comply with the conditions of the environmental authority and to prevent environmental harm.
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D15	If an exceedance in accordance with condition D14(b) occurs, the holder of the environmental authority must notify the administering authority within twenty-four (24) hours of receiving the monitoring result via the pollution hotline.
D16	All surface water monitoring data must be submitted to the administering authority on request.
D17	Mine affected water storage monitoring The quality of water in water storages in Table D4 – Mine affected water storages must be monitored: a) at the location in Table D4 – Mine affected water storages; and b) at the monitoring frequency in Table D4 – Mine affected water storages; and c) for all quality characteristics specified in Table D2 – Surface water quality objectives; and d) include the volume of the water storage (in megalitres) at the time of monitoring.
D18	If results of any water storage monitoring from condition D17 exceed a trigger value for the water quality characteristics specified in Table D2 – Surface water quality objectives , then all necessary actions must be taken to prevent access to the waters by wildlife and livestock.

Table D4 – Mine affected water storages

Station ID	Latitude (GDA2020)	Longitude (GDA2020)	Description	Frequency
MIA MWD	22.364089° S	148.236432° E	MIA MWD	Quarterly
Pit MWD	22.335955° S	148.218298° E	Pit MWD	Quarterly

D19	Water management plan On or before the commencement of the bulk sample activities authorised under condition A8, a Water Management Plan must be developed and implemented for the authorised activity.
D20	The Water Management Plan must: a) provide for effective water management of actual and potential environmental impacts resulting from the authorised activity; and b) include: i. a study of the source of contaminants; and ii. a water balance model for the site; and iii. a water management system for the site; and iv. measures to prevent, manage and reduce mine drainage; and v. contingency procedures for incidents and emergencies; and vi. a program for monitoring and review of the effectiveness of the Water Management Plan.

D21	The Water Management Plan must be reviewed by 1 August of each calendar year. The review must be documented and: a) include a statement that the Water Management Plan has been reviewed by an appropriately qualified person; and b) assess the plan against the requirements under condition D20; and c) include recommended actions to ensure actual and potential environmental impacts are effectively managed; and d) provide details and timelines of the actions to be taken; and e) identify any amendments to be made to the Water Management Plan.
D22	Any amendment to the Water Management Plan identified by condition D21(e) must be made and the plan implemented by 1 September each year.
D23	Erosion and Sediment Control The holder of the environmental authority must design, install and maintain adequate erosion and sediment control structures wherever necessary to prevent or minimise erosion of disturbed areas and the release of sediment to any waters.
D24	On or before the commencement of the bulk sample activities authorised under condition A8, an Erosion and Sediment Control Plan must be developed and implemented for the authorised activity.
D25	The Erosion and Sediment Control Plan must demonstrate how erosion and sediment control measures detailed in the plan adequately minimise the release of sediment to receiving waters and must include at least the following: a) an assessment of the size and characteristics of all catchment areas; and b) an assessment of relevant properties of soils and waste materials; and c) identification of receiving waters environmental values, water quality objectives and management intent; and d) specification of minimum design criteria for erosion and sediment control structures to achieve the management intent of receiving waters; and e) locations and descriptions of all erosion and sediment control measures; and f) an audit schedule to ensure erosion and sediment control measures are maintained.

D26	The Erosion and Sediment Control Plan must be reviewed by 1 August for each calendar year. The review must be documented and must: a) include a statement that the Erosion and Sediment Control Plan has been reviewed by an appropriately qualified person; and b) assess the plan against the requirements of condition D25; and c) include recommended actions to ensure actual and potential environmental impacts are effectively managed; and d) provide details and timelines of the actions to be taken; and e) identify any amendments made to the Erosion and Sediment Control Plan.
D27	Any amendment to the Erosion and Sediment Control Plan identified by condition D26(e) must be made and the plan implemented by 1 September each year.
Agency interest: Groundwater	
Condition number	Condition
E1	Contaminants must not be released to groundwater.
E2	Groundwater Monitoring Bores The construction, maintenance, operation and decommissioning of each groundwater monitoring bore must be undertaken by an appropriately qualified person in a manner that: a) prevents contaminants entering the groundwater; and b) ensures representative groundwater samples from the target hydrogeological unit; and c) maintains the hydrogeological environment within the hydrogeological unit.
E3	A bore report must be kept for each monitoring bore which includes: a) a unique identification reference number and geographic coordinate location; and b) construction information including but not limited to the depth of bore, depth and length of casing, depth and length of screening and bore sealing details; and c) stratigraphy and target hydrogeological unit of the bore; and d) depth at which groundwater was intercepted; and e) the final standing water level after bore development.
E4	Groundwater monitoring bores MB01R, MB08R, MB11R and MB17 as identified in Table E1 – Groundwater monitoring locations and frequency and Figure E1 – Groundwater Monitoring Bore Locations must be installed, and a standing water level determined, prior to the commencement of the bulk sample activities authorised under condition A8 .

E5	Within one (1) month of completion of the determination required by condition E4, the environmental authority holder must submit a report to the administering authority to: a) replace all TBD values in Table E1 – Groundwater monitoring locations and frequency; and b) provide the baseline water level to replace all TBD values in Table E3 - Groundwater SWL trigger thresholds.
E6	Groundwater monitoring Groundwater quality and standing water level must be monitored: a) at the locations specified in Table E1 – Groundwater monitoring locations and frequency, as illustrated in Figure E1 – Groundwater Monitoring Bore Locations; and b) at the frequencies specified in Table E1 – Groundwater monitoring locations and frequency; and c) for quality characteristics listed in Table E2 – Groundwater quality limits.
E7	Monitoring and sampling of groundwater must comply with the latest version of the Queensland Government's <i>'Monitoring and Sampling Manual 2018 – Environmental Protection (Water) Policy 2009'</i>.
E8	By 30 June 2025, the environmental authority holder must submit a report to the administering authority to replace all TBD values in Table E2 – Groundwater quality limits based on at least twelve (12) samples collected over at least a twelve (12) month period and with consideration of the methods and matters stated in the latest version of the guideline <i>"Using monitoring data to assess groundwater quality and potential environmental impacts"</i>, February 2021.
E9	The report required in condition E8 must include a review of all groundwater quality limits indicated in Table E2 – Groundwater quality limits to assure that the limits are appropriate to: a) detect any impacts to groundwater quality due to the authorised activities conducted under this environmental authority; and b) determine compliance with conditions E12; and c) determine trends in groundwater quality.

Table E1 – Groundwater monitoring locations and frequency

Monitoring Bore	Hydrogeological Unit	Location (decimal degrees, GDA2020)		Surface RL (mAHD)	Screened Interval RL (depth)(mbgl)	Monitoring Frequency	
		Latitude	Longitude			Water level	Water quality
MB01R*	DLL coal seam	22.333428732° S	148.220070636° E	222.91	21.9 - 24.9	monthly	monthly
MB08R*	Weathered Permian	22.357739524° S	148.244501266° E	212.24	21.0 – 24.0	quarterly	quarterly
MB11R*	DLL coal seam	22.350287991° S	148.237375642° E	225.66	26.9 – 29.9	quarterly	quarterly
MB12	Back Creek Group	22.364028727° S	148.215646464° E	241.43	32.2 – 38.2	quarterly	quarterly
MB17*	TBD	22.340395410° S	148.213732530° E	TBD	TBD	monthly	monthly

*Bore to be installed as required by condition **E4**.

E10	Groundwater Quality Results of monitoring of groundwater from the monitoring bores identified in Table E1 – Groundwater monitoring locations and frequency must not exceed any of the groundwater quality limits specified in Table E2 – Groundwater quality limits on three (3) consecutive sampling occasions.
E11	If monitoring of bores identified in Table E1 – Groundwater monitoring locations and frequency exceed the groundwater quality limits specified in Table E2 – Groundwater quality limits on three (3) consecutive sampling occasions, the environmental authority holder must notify the administering authority within twenty-four (24) hours of receiving the results.
E12	Groundwater Quality Trigger investigation If monitoring results from groundwater monitoring bores listed in Table E1 – Groundwater monitoring locations and frequency, exceed any of the groundwater quality triggers specified in Table E2 – Groundwater quality triggers on three (3) consecutive sampling occasions the environmental authority holder must complete an investigation within fourteen (14) days of receiving the results to determine if the exceedance is a result of: a) activities authorised under this environmental authority; or b) natural variation; or c) neighbouring land use resulting in groundwater impacts.
E13	If the investigation under condition E12 determines that the exceedance was the result of activities authorised under this environmental authority, then a further investigation must be completed within twenty-eight (28) days of receiving the sampling results under condition E12.
E14	The investigation required under condition E13 must determine the source, cause and extent of contamination and implement appropriate mitigation and management measures to address any groundwater contamination and prevent recurrence of groundwater contamination.

E15	A report must be provided to the administering authority within forty-two (42) days of completion of the investigation under condition E12 detailing the investigations outcomes and the measures undertaken under the investigation.
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Table E2 – Groundwater quality limits

Parameter	Unit	Bores	Limit	Comment
pH (field)	pH unit	All bores	5.5 - 8.0	ANZG (2018)
Electrical Conductivity (field)	µS/cm	MB01R^	16,000	EPP WQO
		MB08R^	16,000*	EPP WQO
		MB11R^	16,000*	EPP WQO
		MB12	22,872	Site-specific 95th percentile
		MB17	16,000*	EPP WQO
Sulfate	mg/L	MB01R^	398	EPP WQO
		MB08R^	398*	EPP WQO
		MB11R^	398*	EPP WQO
		MB12	874	Site-specific 95th percentile
		MB17	398*	EPP WQO
Dissolved Metals and metalloids				
Aluminium	mg/L	All bores	0.055	ANZG (2018)
Arsenic	mg/L	All bores	0.013	ANZG (2018)
Barium	mg/L	All bores	0.10	Site-specific 95th percentile (grouped)
Boron	mg/L	All bores	0.66	Site-specific 95th percentile (grouped)
Cobalt	mg/L	All bores	0.004	Site-specific 95th percentile (grouped)
Copper	mg/L	All bores	0.0014	ANZG (2018)
Iron	mg/L	MB01R^	0.246*	EPP WQO
		MB08R^	0.246*	EPP WQO
		MB11R^	0.246*	EPP WQO
		MB12	4.94 [#]	Site-specific 95th percentile
		MB17	0.246*	EPP WQO
Lead	mg/L	All bores	0.0034	ANZG (2018)
Mercury	mg/L	All bores	0.0006	ANZG (2018)
Molybdenum	mg/L	All bores	0.034	ANZG (2018)
Selenium	mg/L	All bores	0.005	ANZG (2018)
Strontium	mg/L	MB01R^	TBD	Site-specific 95th percentile
		MB08R^	TBD	Site-specific 95th percentile
		MB11R^	TBD	Site-specific 95th percentile
		MB12	8.4	Site-specific 95th percentile
		MB17	TBD*	Site-specific 95th percentile
Uranium	mg/L	MB01R^	0.0005*	ANZG 2018
		MB08R^	0.0005*	ANZG 2018
		MB11R^	0.0005*	ANZG 2018
		MB12	0.0005*	ANZG 2018
		MB17	0.0005*	ANZG 2018
TRH (C6-C10)	µg/L	All bores	<20	LOR
TRH (C10-40)	µg/L	All bores	<50	LOR
Major Ions				

Parameter	Unit	Bores	Limit	Comment
Major ions (mg/L) (calcium, chloride, potassium, magnesium, sodium, bicarbonate, carbonate)	mg/L	All bores		For interpretation purposes only
Hardness	mg/L	All bores		For interpretation purposes only

Notes:

All metals and metalloids must be measured as 'dissolved' (from analysis of a field filtered sample) and total (unfiltered). Limits are based on 'dissolved' measurements.

* Site-specific limits are to be provided in accordance with condition E8.

^ indicates replacement bores to MB01, MB08 and MB11.

Requires additional investigated to ensure it is indicative of background conditions.

EPP WQO: Groundwater quality parameters derived from EPP (water) policy 2009 *Isaac River Sub-basin Environmental Values and Water Quality Objectives Basin No. 130 (part)*, including all waters of the Isaac River Sub-basin (including Connors River), Zone 34-deep (80th percentile).

E16	Groundwater Standing Water Level (SWL) By 30 June 2025, or another timeframe agreed to by the administering authority, the holder must submit a report to the administering authority that assesses and provides for the following: a) an assessment determining if the groundwater monitoring network is fit for purpose including frequency of monitoring; and b) monitoring results of the baseline site-specific groundwater SWLs, containing a minimum of twelve (12) samples; and c) a review of the SWL trigger threshold identified in Table E3 – Groundwater SWL trigger threshold is sufficient to detect any changes to groundwater level due to the authorised activities and is consistent with the negligible drawdown prediction by the <i>Vulcan South: Groundwater Impact Assessment</i> prepared by hydrogeologist.com.au dated 14/03/2022 (ref. 4027_Metserve_Vulcan South GIA_v1). d) identify and interpret any trends in the groundwater network monitoring data.
E17	Groundwater SWL when measured at the groundwater monitoring bores specified in Table E1 – Groundwater monitoring locations and frequency and must not exceed the level trigger thresholds specified in Table E3 – Groundwater SWL trigger threshold.

E18	If the Level Trigger Thresholds of groundwater measured at monitoring bores specified in Table E1 – Groundwater monitoring locations and frequency exceeds any of the corresponding SWL trigger thresholds specified in Table E3 – Groundwater SWL trigger threshold, the holder of the environmental authority must: a) notify the administering authority within twenty-four (24) hours of becoming aware of the exceedance; and b) complete an investigation into the cause of the exceedance within ten (10) business days of becoming aware of the exceedance; and c) if the investigation carried out under E18(b) determines that the authorised activities are a potential cause or contributor to the exceedance, i. notify the administering authority within twenty-four (24) hours of making the determination; and ii. take immediate action to ensure compliance with condition E17 of this environmental authority and notify the administering authority of when action has been completed.
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Table E3 - Groundwater SWL trigger thresholds

Monitoring location	Hydrogeological unit	Baseline water level	SWL trigger threshold (mAHD)
MB01R	DLL coal seam	TBD	TBD
MB08R	Weather Permian	TBD	TBD
MB11R	DLL coal seam	TBD	TBD
MB12	Back Creek Group	215.83	213.14
MB17	TBD	TBD	TBD

E19	Groundwater Dependent Ecosystems The activities authorised under this environmental authority must not cause environmental harm to any groundwater dependant ecosystems located within EPC 1233.
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Agency interest: Land	
Condition number	Condition
F1	When carrying out the authorised activities, the environmental authority holder must ensure that the area and duration of disturbance to land and vegetation is minimised.
F2	Exploration activities disturbance For all exploration activities, the environmental authority holder must implement the following measures: a) Existing access and fence line tracks must be used wherever possible and any new tracks are to be constructed by linking naturally cleared or disturbed areas; b) Use Global Positioning Systems, or other techniques, to reduce the need for line of sight clearing; c) Limit the width of all lines / tracks to no more than five (5) metres; d) Retain fallen timber and cleared vegetation and leave in-situ to create micro-habitat; e) Drill holes are to be located as far as practicable in previously cleared areas; f) Minimise clearing of mature trees and standing dead trees and avoid clearing large trees that have a trunk with a circumference of more than 95cm at 1.3m above the ground; g) All lines / tracks are constructed and maintained with adequate drainage to avoid accelerated erosion; and, h) All vehicles and equipment must be used in a manner which prevents the spread of weeds.
F3	The operational area of each individual exploration drill pad must not exceed 1,000 m ² .
F4	Exploration drill holes are limited to less than 250 mm in diameter.
F5	The construction of sumps associated with the drilling activities must not exceed 10 m ² .
F6	All exploration drill holes must be constructed to prevent the ingress of any contaminant.
F7	Topsoil The holder of the environmental authority must ensure that: a) topsoil is removed from areas to be disturbed by the authorised activities and stockpiled to a maximum height of 2m in a manner that will minimise erosion; b) measures are implemented to ensure that the mixing and erosion of topsoil and overburden stockpiles is prevented; and c) a topsoil inventory is maintained and provided to the administering authority on request.

F8	Topsoil stockpiles must: a) be located away from drainage areas, roads, machinery, transport corridors, and stock grazing areas; and b) seeded or covered with a water-shedding lining to prevent unnecessary erosion of topsoil.
F9	Measures to prevent fauna being harmed from entrapment must be implemented during the construction and operation of the authorised activities.
F10	Campsites This environmental authority does not authorise a camp on EPC1233.
F11	Acid forming material The holder of the environmental authority must take all reasonable and practicable measures to leave potentially acid-forming rock, soil and sediments undisturbed.
F12	The holder of the environmental authority must ensure that actual acid-forming rock, soil and sediments are managed in such a way that: a) the material is not exposed to air or water, wherever possible; b) leachate does not contaminate the receiving environment; c) if acid-forming rock, soil or sediments are disposed of, the disposal method implemented must prevent leachate or acid drainage.
F13	Hazardous contaminants The holder of the environmental authority must plan and conduct activities on site to prevent any potential or actual release of a hazardous contaminant.
F14	The holder of the environmental authority must ensure that spills of hazardous contaminants are cleaned up as quickly as practicable. Such spillage must not be cleaned up by hosing, sweeping or otherwise releasing such contaminants to any watercourse, waterway, groundwater, wetland or lake.
F15	All flammable and combustible liquids must be contained within an on-site containment system and controlled in a manner that prevents environmental harm and maintained in accordance with the current edition of AS1940 – Storage and Handling of Flammable and Combustible Liquids.
F16	All chemicals and flammable or combustible liquids stored on site that have the potential to cause environmental harm must be stored in or serviced by an effective containment system that is impervious to the materials stored and managed to prevent the release of liquids to waters or land. Where no relevant Australian standard exists, store such materials within an effective on-site containment system. The environmental authority holder must minimise the potential for contamination of land and water by diverting stormwater around contaminated areas and facilities used for the storage of chemicals and flammable or combustible liquids.

F17	Weed Management A weed management plan must be developed prior to the commencement of the bulk sample activities authorised under condition A8, and implemented for the duration of authorised activities and must outline: a) areas of control priority and the methods used to determine such areas; and b) strategies to promote dense pasture cover (to decrease weeds establishment) through reduced disturbance; and c) monitoring methodologies that document the spread of weeds and any new outbreaks; and d) methods for the control of weeds that include best practice management; and e) stringent wash-down and inspection procedures for both machinery involved in clearing/construction activities and those operating outside of designated roads during mine operation; and f) truck wash procedure to reduce weed infestations; and g) protocol for an annual weed inspection; and h) promotion of the awareness of weed management issues at the site.
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Agency Interest: Biodiversity	
Condition number	Condition
G1	Impacts to Prescribed Environmental Matters Impacts to prescribed environmental matters are not authorised under this environmental authority or the <i>Environmental Offsets Act 2014</i> unless the impact(s) is specified in Table G1 - Significant residual impacts to prescribed environmental matters .
G2	From 22 March 2024 , records demonstrating that each impact to a prescribed environmental matter listed in Table G1 – Significant residual impacts to prescribed environmental matters did not, or is not likely to, result in a significant residual impact to that matter must be: a) completed by an appropriately qualified person; and b) kept for the life of the environmental authority.
G3	Pre-clearing surveys must be undertaken by an appropriately qualified person prior to any disturbance to ensure the area to be disturbed is minimised and avoids any impacts to prescribed environmental matters unless the impact(s) are specified in Table G1 - Significant residual impacts to prescribed environmental matters .
G4	Koala management The environmental authority holder must identify and implement management measures with consideration of the <i>Koala-sensitive design guideline</i> (DES 2022) in high-risk areas for koala movement throughout the duration of authorised activities. Management measures must include, but are not limited to, the following: a) the identification of high-risk management areas for koala movement on site, in particular vehicle corridors; and b) establish vehicle management protocols on site that reduce the likelihood of vehicles intercepting koalas; and c) the design and construction of koala exclusion fencing, which includes a fauna detection system, around higher risk areas such as heavy vehicle routes that cross riparian vegetation with high value koala habitat and where these intersect with operational mining areas.

Table G1 - Significant residual impacts to prescribed environmental matters

Prescribed Environmental Matter (PEM)	Maximum extent of impact (ha) ¹	Significant residual impact (Yes/No) ²	Location
Endangered Regional Ecosystems (ERE)			
ERE 11.4.8 <i>Eucalyptus cambageana</i> woodland to open forest with <i>Acacia harpophylla</i> or <i>A. argyrodendron</i> on Cainozoic clay plains	0.43	No	Figure G1.1 -Locations of Regional Ecosystems Figure G1.2 -Locations of Regional Ecosystems

Prescribed Environmental Matter (PEM)	Maximum extent of impact (ha) ¹	Significant residual impact (Yes/No) ²	Location
Of Concern Regional Ecosystems (RE)			
RE 11.3.2 E. populnea woodland on alluvial plains	0.01	No	Figure G1.1 -Locations of Regional Ecosystems Figure G1.2 -Locations of Regional Ecosystems
Vegetation Management Watercourse REs ³			
RE 11.5.9b E. crebra and other Eucalyptus spp. and Corymbia spp. woodland on Cainozoic sand plains and/or remnant surfaces	0.37	No	Figure G2.1 - Vegetation Management Watercourse Regional Ecosystems
RE 11.10.1 Corymbia citriodora woodland on coarse-grained sedimentary rocks	0.01	No	Figure G2.2 - Vegetation Management Watercourse Regional Ecosystems
RE 11.10.3 A. shirleyi or A. catenulata open forest on coarse-grained sedimentary rocks. Crests and scarps	0.24	No	
RE 11.3.2 E. populnea woodland on alluvial plains	0.11	No	
RE 11.3.25 E. tereticornis or E. camaldulensis woodland fringing drainage lines	0.06	No	
RE 11.5.3 – E. populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	0.05	No	
Threatened and Special Least Concern Species			
Koala (Phascolarctos cinereus)	0.04 (high-quality habitat) 32.61 (moderate-quality habitat) 14.8 (low-quality habitat)	No	Figure G3.1 - Location of Koala habitat Figure G3.2 - Location of Koala habitat
Greater Glider (Petauroides Volans sensu lato)	0.1	No	Figure G4.1 - Location of Greater Glider habitat Figure G4.2 - Location of Greater Glider habitat

Prescribed Environmental Matter (PEM)	Maximum extent of impact (ha) ¹	Significant residual impact (Yes/No) ²	Location
Squatter Pigeon (southern) (<i>Geophaps scripta scripta</i>)	5.93 (foraging habitat) 16.09 (dispersal habitat) 32.3 (breeding and foraging habitat)	No	Figure G5.1 - Location of Squatter Pigeon habitat Figure G5.2 - Location of Squatter Pigeon habitat
Glossy Black Cockatoo (<i>Calyptorhynchus lathami erebus</i>)	0.09	No	Figure G6.1 - Location of Glossy Black Cockatoo habitat Figure G6.2 - Location of Glossy Black Cockatoo habitat
Ornamental Snake (<i>Denisonia maculate</i>)	1.9	No	Figure G7.1 - Location of Ornamental Snake habitat Figure G7.2 - Location of Ornamental Snake habitat
Common Death Adder (<i>Acanthophis antarticus</i>)	1.8	No	Figure G8.1 - Location of Common Death Adder habitat Figure G8.2 - Location of Common Death Adder habitat
Short-beaked Echidna (<i>Tachyglossus aculeatus</i>)	95.22	No	Figure G9.1 - Location of Short-Beaked Echidna habitat Figure G9.2 - Location of Short-Beaked Echidna habitat
Rufous Fantail (<i>Rhipidura rufifrons</i>)	23.8	No	Figure G10.1 - Location of Rufous Fantail habitat Figure G10.2 - Location of Rufous Fantail habitat

Prescribed Environmental Matter (PEM)	Maximum extent of impact (ha) ¹	Significant residual impact (Yes/No) ²	Location
Northern Quoll (<i>Dasyurus hallucatus</i>)	3.02	No	Figure G11.1 - Location of Northern Quoll habitat Figure G11.2 - Location of Northern Quoll habitat
Connectivity areas			
Connectivity areas	34.02	No	Figure G1.1 -Locations of Regional Ecosystems Figure G1.2 -Locations of Regional Ecosystems

¹ Total impact areas should not be combined, as impact areas may overlap for different PEMs.

² Where there is 'No' significant residual impact, an environmental offset is not required.

³ Regional ecosystem within a defined distance from the defining banks of a watercourse.

Agency interest: Rehabilitation	
Condition number	Condition
H1	Land disturbed by the bulk sample activities authorised under condition A8 must be rehabilitated in accordance with Appendix 1 - Rehabilitation requirements .
H2	Rehabilitation required under condition H1 must commence progressively on all areas disturbed by activities authorised under condition A8 , as soon as practicable.
H3	Rehabilitation must be completed no later than twenty (20) months following completion of bulk sample activities in each disturbance domain identified in Table A1 – Maximum disturbance area for each bulk sample disturbance domain .
H4	For any infrastructure to remain after the authorised activity has ceased, the environmental authority holder must obtain the written agreement of the landowner stating they will take over responsibility for that infrastructure.
H5	Exploration rehabilitation Unless otherwise stated by a condition of this environmental authority, rehabilitation of exploration activities within the maximum extent of areas identified in Table G1 - Significant residual impacts to prescribed environmental matters must be completed as soon as practicable but no longer than three (3) months after completion of the activity.
H6	Rehabilitation processes on all other areas disturbed by the exploration activities must be completed as soon as practical but no longer than six (6) months after completion of the exploration activities.
H7	Rehabilitation of riverine areas disturbed by exploration activities must be completed as soon as practical after completion of exploration activities and prior to the onset of the wet season.
H8	The environmental authority holder must backfill all excavations, drill holes and sampling sites as soon as practical following the completion of the exploration activities.
H9	The environmental authority holder must rehabilitate areas disturbed by the exploration activity to a safe, stable, non-polluting and self-sustaining land use similar to that of surrounding undisturbed areas.
H10	The environmental authority holder must spread seeds or plant tubestock consistent with the pre-disturbance Regional Ecosystem species that will promote same vegetation type and density of cover to that of the surrounding undisturbed vegetation category.

Agency interest: Waste	
Condition number	Condition
I1	The holder of the environmental authority must not directly or indirectly release wastewater from the project area to any watercourse, waterway, groundwater, wetland or lake.
I2	All waste generated by activities must be removed to a licenced waste facility that is lawfully able to accept the waste under the <i>Environmental Protection Act 1994</i> .
I3	Unless otherwise permitted by the conditions of this environmental authority or with prior approval from the administering authority and in accordance with a relevant standard operating procedure, waste must not be burnt.
I4	The holder of this environmental authority must not burn vegetation cleared in the course of carrying out the authorised activities.
I5	Waste must not be released directly or indirectly to waters.
I6	Unless otherwise authorised by the conditions of this environmental authority, non-mineral waste must not be disposed of within the area of authorised disturbance defined under condition A8 .
I7	Non-mineral waste management program The holder of this environmental authority must develop, document and implement a non-mineral waste management program for all authorised activities.

I8	The program required under condition I7 must include: a) a description of each waste stream generated by the authorised activity; and b) a description of the authorised activity that may generate waste; and c) waste management control strategies including: i. recording of the types and amounts of wastes generated by the authorised activity; ii. segregation of the wastes; iii. storage of the wastes; iv. transport of the wastes; v. disposal of waste including leachate management; and vi. monitoring and reporting matters concerning the waste; and d) the hazard characteristics of the wastes generated including disposal procedures for regulated wastes; and e) a program for reusing, recycling or disposing of all wastes; and f) how the waste will be dealt with in accordance with the waste and resource management hierarchy, including a description of the types and amounts of waste that will be dealt with under each of the waste management practices in the waste management hierarchy (i.e. avoidance, reuse, recycling, energy recovery, disposal); and g) how the waste will be stored, handled and transferred in a proper and effective manner; and h) procedures for identifying and implementing opportunities to minimise the amount of waste generated, promote efficiency in the use of resources and improve the waste management practices employed; and i) procedures for dealing with accidents, spills, and other incidents that may impact on waste management; and j) details of any accredited management system employed, or planned to be employed, to deal with the waste; and k) how often the performance of the waste management practices will be assessed; and l) indicators or other criteria on which the performance of the waste management practices will be assessed; and m) staff training and induction to the waste management program; and n) a system for regular review.
I9	The program required under condition I7 must be regularly reviewed and updated at intervals of no greater than five (5) years.
I10	Mineral Waste Management Plan A Mineral Waste Management Plan must: a) be developed and implemented prior to the commencement of the bulk sample activities authorised under condition A8; and b) be reviewed and updated at regular intervals, not exceeding two (2) years.

I11	The Mineral Waste Management Plan required by condition I10 must include at least: a) a program for the effective characterisation of mineral waste to predict, under the proposed placement and disposal strategy, the quality of runoff and seepage generated concerning salinity, acidity, alkalinity and dissolved metals, metalloids, and non-metallic inorganic substances; b) a program of progressive sampling and characterisation to identify dispersive and non-dispersive spoil, the salinity and metal/metalloid concentrations of waste rock and the salinity, sulfate, acid and alkali producing potential; c) a materials balance and disposal plan demonstrating how potentially acid forming and acid-forming waste rock and coal rejects will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage; d) a disposal plan demonstrating how highly sodic and dispersive waste rock is identified and selectively placed and/or encapsulated to ensure that it will not report to final landform surfaces and will not be used for construction activities; e) where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste; f) details regarding the management of seepage and leachates; and g) monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of waste rock, including the prevention and management of acid mine drainage, saline drainage, erosion minimisation and establishment of vegetation cover.
I12	Waste rock identified as being Potentially Acid Forming (PAF) material must be disposed of in accordance with the plan required by conditions I10 and I11.
I13	Tailings and coarse rejects must not be disposed of within EPC 1233.

Agency interest: Structures	
Condition number	Condition
J1	Assessment of consequence category The consequence category of any structure must be assessed by a suitably qualified and experienced person in accordance with the latest version of the <i>Manual for assessing consequence categories and hydraulic performance of structures</i> (ESR/2016/1933) at the following times: a) prior to the design and construction of the structure; or b) prior to any change in its purpose or the nature of its stored contents.
J2	A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence assessment for more than one structure.
J3	Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the latest version of the <i>Manual for assessing consequence categories and hydraulic performance of structures</i> (ESR/2016/1933).
J4	Design and construction of a regulated structure All regulated structures must be designed by, and constructed under the supervision of, a suitably qualified and experienced person in accordance with the requirements of the latest version of the <i>Manual for assessing consequence categories and hydraulic performance of structures</i> (ESR/2016/1933). NOTE: Certification of design and construction may be undertaken by different persons.
J5	Construction of a regulated structure is prohibited unless: a) the environmental authority holder has submitted a consequence category assessment report and certification to the administering authority; and b) certification for the design, design plan and the associated operating procedures has been certified by a suitably qualified and experienced person in compliance with the relevant condition of this environmental authority.
J6	Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan in the form set out in the latest version of the <i>Manual for assessing consequence categories and hydraulic performance of structures</i> (ESR/2016/1933), and must be recorded in the Register of Regulated Structures.

J7	Regulated structures must: a) be designed and constructed in compliance with the latest version of the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933); b) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of: i. floodwaters from entering the regulated dam from any watercourse or drainage line; and ii. wall failure due to erosion by floodwaters arising from any watercourse or drainage line. c) have the floor and sides of the dam designed and constructed to prevent or minimise the passage of the wetting front and any entrained contaminants through either the floor or sides of the dam during the operational life of the dam and for any period of decommissioning and rehabilitation of the dam.
J8	Certification by the suitably qualified and experienced person who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure, and state that: a) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure; and b) construction of the regulated structure is in accordance with the design plan.
J9	Notification of affected persons All affected persons must be provided with a copy of the emergency action plan in place for each regulated structure for each of the following: a) prior to the operation of the new regulated structure; and b) if the emergency action plan is amended, within five (5) business days of it being amended.

J10	Operation of a regulated structure Operation of a regulated structure is prohibited unless the holder has submitted to the administering authority in respect of regulated structure, all of the following: a) One electronic copy of the design plan and certification of the 'design plan' in accordance with condition J5; b) a set of 'as constructed' drawings and specifications; c) certification of the 'as constructed drawings and specifications' in accordance with condition J8; d) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the Design Storage Allowance (DSA) volume across the system, a copy of the certified system design plan; e) the requirements of this environmental authority relating to the construction of the regulated structure have been met; f) the holder has entered the details required under this environmental authority, into a Register of Regulated Structures; and g) there is a current operational plan for the regulated structure.
J11	Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in compliance with the current operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.
J12	Mandatory reporting level Conditions J13 to J16 (inclusive) only apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.
J13	The Mandatory Reporting Level (the MRL) must be marked on a regulated dam in such a way that during routine inspections of that dam, it is clearly observable.
J14	The holder must, as soon as practicable but within forty-eight (48) hours of becoming aware, notify the administering authority when the level of the contents of a regulated dam reaches the MRL.
J15	The holder must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated dam.
J16	The holder must record any changes to the MRL in the Register of Regulated Structures.
J17	Design storage allowance The holder must assess the performance of each regulated dam or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated dam or linked containment system taken prior to 1 July of each year.

J18	By 1 November of each year, storage capacity must be available in each regulated dam (or network of linked containment systems with a shared DSA volume), to meet the DSA volume for the dam (or network of linked containment systems).
J19	The holder must, as soon as practicable but within forty-eight (48) hours of becoming aware that the regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, notify the administering authority.
J20	The holder must, immediately on becoming aware that a regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated dam or linked containment systems.
J21	Annual inspection report Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
J22	At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably qualified and experienced person must prepare an annual inspection report containing details of the assessment and include a recommendations section, with any recommended actions to ensure the integrity of the regulated structure or a positive statement that no recommendations are required.
J23	The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the latest version of the <i>Manual for assessing consequence categories and hydraulic performance of structures</i> (ESR/2016/1933).
J24	The holder must within twenty (20) business days of receipt of the annual inspection report, provide to the administering authority: a) The recommendations section of the annual inspection report; and b) If applicable, any actions being taken in response to those recommendations; and c) If, following receipt of the recommendations and (if applicable) recommended actions, the administering authority requests a copy of the annual inspection report from the holder, provide this to the administering authority within ten (10) business days of receipt of the request.
J25	Transfer arrangements The holder must provide a copy of any reports, documentation and certifications prepared under this environmental authority, including but not limited to any Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this environmental authority.
J26	Register of Regulated Structures A Register of Regulated Structures must be established and maintained by the holder for each regulated structure.

J27	The holder must provisionally enter the required information in the Register of Regulated Structures when a design plan for a regulated dam is submitted to the administering authority.
J28	The holder must make a final entry of the required information in the Register of Regulated Structures once compliance with condition J10 has been achieved.
J29	The holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.
J30	All entries in the Register of Regulated Structures must be approved by the chief executive officer for the holder of this environmental authority, or their delegate, as being accurate and correct.
J31	The holder must, at the same time as providing the annual return, supply to the administering authority a copy of the records contained in the Register of Regulated Structures, in the electronic format required by the administering authority.

Definitions

Key terms and/or phrases used in this document are defined in this section. Where a term is not defined, the definition in the *Environmental Protection Act 1994*, its regulations or environmental protection policies must be used. If a word remains undefined it has its ordinary meaning.

“Administering authority” means the Department of Environment and Heritage Protection or its successor.

“Airblast overpressure” means energy transmitted from the blast site within the atmosphere in the form of pressure waves. The maximum excess pressure in this wave, above ambient pressure is the peak airblast overpressure measured in decibels linear (dBL).

“ANZG 2018” means ANZG 2018; Australian and New Zealand Guidelines for Fresh and Marine Water Quality. This is available at <https://www.waterquality.gov.au/anz-guidelines>.

“Appropriately qualified person” or “AQP” means a person who:

- a) has qualifications and experience relevant to performing the function, including but not limited to:
 - i. a bachelor’s degree in science or engineering; and
 - ii. at least 3 years’ experience relevant to evaluating compliance with the requirements of the environmental authority conditions being audited; and
- b) has an ability to give authoritative assessment, advice and analysis on performance relating to the subject matter using the relevant protocols, standards, methods, or literature; and
- c) is a member of at least one organisation prescribed in Schedule 14 of the Environmental Protection Regulation 2019; and
- d) is not an employee of, nor have a financial interest in, the holder(s), or person acting under the environmental authority, or any involvement with the holder(s) of the environmental authority which could lead to a conflict of interest.

“Authority” means environmental authority under the *Environmental Protection Act 1994*.

“Authorised activities” means the activities conducted under this environmental authority including but not limited to:

- a) authorised as per the definition in section 110 of the Environmental Protection Act 1994;
- b) all environmentally relevant activities authorised under this environmental authority;
- c) all mining disturbance including land clearing, construction of infrastructure, overburden removal and active bulk sampling, and the ancillary activities that support these activities, for example, but no limited to access and use of tracks and roads within the mining lease a.
- d) all activities referenced in a condition of the environmental authority.
- e) all care and maintenance activities; and
- f) rehabilitation.

“Background”, with reference to the water or groundwater schedule, means the average of samples taken prior to the commencement of the authorised activities from the same receiving environment that the current sample has been taken.

“Banks” means the feature which confines major flows within a watercourse.

“Blasting” means the use of explosive materials to fracture:

- a) Rock, coal and other minerals for later recovery, or
- b) Structural components or other items to facilitate removal from a site or for reuse.

“Bund” means:

- a) an earth mound or similar structure (e.g. a concrete block wall), whether impervious or not, constructed to contain spilled material (e.g. petrol, diesel, oil etc); or
- b) a structure to prevent or reduce soil erosion.

“Campsite” the area encompassing any dwelling, amenities (e.g. toilet block, power generator), sewage or general waste disposal facility and includes the office area and vehicle parking areas associated with a temporary or permanent camp.

“Certified or certification” means a Statutory Declaration by an appropriately qualified person accompanying the written document stating:

- the person's qualifications and experience relevant to the function
- that the person has not knowingly included false, misleading or incomplete information in the document
- that the person has not knowingly failed to reveal any relevant information or document to the administering authority
- that the document addresses the relevant matters for the function and is factually correct; and
- that the opinions expressed in the document are honestly and reasonably held.

“Chemical” means:

- a) an agricultural chemical product or veterinary chemical product within the meaning of the *Agricultural and Veterinary Chemicals Code Act 1994* (Commonwealth), or
- b) a dangerous good under the Australian Code for the Transport of Dangerous Goods by Road and Rail approved by the Australian Transport Council, or
- c) a lead hazardous substance within the meaning of the *Workplace Health and Safety Regulation 1997*, or
- d) a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers' Advisory Council and published by the Commonwealth, or
- e) any substance used as, or intended for use as:
 - i. a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product, or
 - ii. a surface active agent, including, for example, soap or related detergent, or
 - iii. a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide, or
 - iv. a fertiliser for agricultural, horticultural or garden use, or
 - v. a substance used for, or intended for use for mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater, or
 - vi. manufacture of plastic or synthetic rubber.

“Consequence category” means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/193313).

“Construction” or **“Constructed”**, in relation to a regulated structure, includes building a new regulated structure and lifting or otherwise modifying an existing regulated structure, but does not include investigations and testing necessary for the purpose of preparing a design plan.

“Contaminant” the *Environmental Protection Act 1994* defines, under Section 11, a contaminant as:

- a) a gas, liquid or solid; or
- b) an odour; or
- c) an organism (whether alive or dead), including a virus; or
- d) energy, including noise, heat, radioactivity and electromagnetic radiation; or
- e) a combination of contaminants.

“Contamination” Section 10 of the *Environmental Protection Act 1994* defines contamination of the environment as the release (whether by act or omission) of a contaminant into the environment.

“Costeaning” means the digging of a trench or pit across the seam or ore body for exposing, sampling and mapping of the ore body.

“Density of cover” in reference to trees and/or shrubs, it means the number of trees or shrubs in a specified area (e.g. 50 trees per square kilometre). With reference to understorey plant species (e.g. grasses and forbs), it means the percentage of surface area covered by a particular species.

“Disturbance” of land includes:

- a) bulk sample activities including disturbance domains Bulk Sample Pit (pit and pit stand-off), Out-of-pit Dump, MIA Complex, Water infrastructure at BSP, Water infrastructure at OOPD/MIA, Haul Road and Saraji Road access authorised under condition **A8** of this environmental authority.
- b) roads, tracks, lines, drilling, excavating, sampling, seismic activities, gridlines, geophysical surveys;
- c) compacting, removing, covering, exposing, or stockpiling of earth;
- d) removal or destruction of vegetation or topsoil or both to an extent where the land has been made susceptible to erosion;
- e) the submersion of areas by tailings or hazardous contaminant storage and dam/structure walls;
- f) permanent and temporary infrastructure, including any infrastructure (roads, tracks, bridges, culverts, dams/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc.);
- g) releasing of contaminants into the soil or underlying geological strata; or,
- h) any area that has had its natural state altered by the action or interference of carrying out an activity associated with the project

“Disturbed” means any area that has had its natural state altered by the action or interference of carrying out an activity associated with the resource project.

“EC” means electrical conductivity.

“Environmental authority” means an environmental authority (resource activity) issued by the administering authority under the *Environmental Protection Act 1994*.

“Environmental nuisance” section 15 of the *Environmental Protection Act 1994* defines environmental nuisance as “unreasonable interference or likely interference with an environmental value” caused by:

- a) aerosols, fumes, light, noise, odour, particles or smoke; or
- b) an unhealthy, offensive or unsightly condition because of contamination; or
- c) another way prescribed by regulation.

“Environmental offset” has the meaning in section 7 of the *Environmental Offsets Act 2014*.

“Exploration activity” means tracks, lines, drill holes, drilling and sampling inclusive of Limit of Oxidation (LOX) drilling for the purposes of exploring the coal resource or conducting geological surveying;

“Holder”, for a mining tenement, means a holder of the tenement under the *Mineral Resources Act 1989*, and the holder of the associated environmental authority under the *Environmental Protection Act 1994*.

“Hazardous contaminant” means hazardous contaminant means a contaminant, other than an item of explosive ordnance, that, if improperly treated, stored, disposed of or otherwise managed, is likely to cause serious or material environmental harm because of—

- a) its quantity, concentration, acute or chronic toxic effects, carcinogenicity, teratogenicity, mutagenicity, corrosiveness, explosiveness, radioactivity or flammability; or
- b) its physical, chemical or infectious characteristics.

“Hydrogeological unit” is any soil or rock unit or zone that by virtue of its hydraulic properties has a distinct influence on the storage or movement of groundwater.

“Infrastructure” means water storage dams, levees, roads and tracks, buildings and other structures built for the purpose of the mining activity.

“Lake” means a natural or artificial body of water, either permanent or intermittent.

“Land” means land excluding waters and the atmosphere, that is, the term has a different meaning from the term as defined in the *Environmental Protection Act 1994*. For the purposes of the *Acts Interpretation Act 1954*, it is expressly noted that the term 'land' in this environmental authority relates to physical land and not to interests in land.

“Land use” means the selected post mining use of the land, which is planned to occur after the cessation of mining operations.

“Mature trees” means any tree that is:

- a) is more than 4m high; or
- b) has a trunk with a circumference of more than 31.5cm at 1.3m above the ground.

“Maximum extent of impact” means the total, cumulative, residual extent and duration of impact to a prescribed environmental matter that will occur over a project's life after all reasonable avoidance and reasonable on-site mitigation measures have been, or will be, undertaken.

“Mine affected water”:

- a) means the following types of water:
 - i. bulk sample pit water.
 - ii. water contaminated by a mining activity which would have been an environmentally relevant activity under Schedule 2 of the *Environmental Protection Regulation 2008* if it had not formed part of the mining activity
 - iii. rainfall runoff which has been in contact with any areas disturbed by authorised activities which have not yet been rehabilitated, excluding rainfall runoff discharging through release points associated with erosion and sediment control structures that have been installed in accordance with the standards and requirements of an Erosion and Sediment Control Plan to manage such runoff, provided that this water has not been mixed with pit water, tailings dam water, processing plant water or workshop water

- iv. groundwater which has been in contact with any areas disturbed by authorised activities which have not yet been rehabilitated
 - v. a mix of mine affected water (under any of paragraphs i)-iv) and other water.
- b) does not include surface water runoff which, to the extent that it has been in contact with areas disturbed by authorised activities that have not yet been completely rehabilitated, has only been in contact with:
- i. land that has been rehabilitated to a stable landform and either capped or revegetated in accordance with the acceptance criteria set out in the environmental authority but only still awaiting maintenance and monitoring of the rehabilitation over a specified period of time to demonstrate rehabilitation success, or
 - ii. land that has partially been rehabilitated and monitoring demonstrates the relevant part of the landform with which the water has been in contact does not cause environmental harm to waters or groundwater, for example:
 - a. areas that are been capped and have monitoring data demonstrating hazardous material adequately contained with the site
 - b. evidence provided through monitoring that the relevant surface water would have met the water quality parameters for mine affected water release limits in this environmental authority, if those parameters had been applicable to the surface water runoff, or
 - c. both.

“Mineral waste” means waste materials resulting from the extraction of coal including overburden, interburden, waste rock and rejects (including coarse and fine).

“Minimise” is to reduce to the smallest possible amount or degree.

“Monitoring bore” means a groundwater bore that provides access to groundwater for measuring its quality and level; and allows groundwater samples to be withdrawn for laboratory analysis.

“Non-mineral waste” all other waste generated by the authorised activities not identified in the definition for ‘mineral waste’

“Non-polluting” means having no adverse impacts upon the receiving environment.

“Nuisance sensitive place” includes:

- a) within or outside of a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises;
- b) within or outside of a motel, hotel or hostel;
- c) within or outside of a kindergarten, school, university or other educational institution;
- d) within or outside of a medical centre or hospital;
- e) within a protected area under the *Nature Conservation Act 1992*, within a marine park under the *Marine Parks Act 1992* or a World Heritage Area;
- f) within a public thoroughfare, park or gardens; and
- g) within or outside of a place used as a workplace, an office or for business or commercial purposes and includes a place within the curtilage of such a place reasonably used by persons at that place.

“Peak particle velocity (ppv)” means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mm/s).

“PMLU” means Post-Mining Land Use.

“Prescribed environmental matters” has the meaning in section 10 of the *Environmental Offsets Act 2014*, limited to the matters of State environmental significance listed in schedule 2 of the Environmental Offsets Regulation 2014.

“Receiving environment” in relation to an activity that causes or may cause environmental harm, means the part of the environment to which the harm is, or may be, caused. The receiving environment includes (but is not limited to):

- a) a watercourse
- b) groundwater.
- c) an area of land that is not specified in **Figure A1 – Project Layout** of this environmental authority.

“Regional ecosystem” the *Vegetation Management Act 1999* defines a regional ecosystem as a vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil.

“Register of Regulated Structures” includes:

- a) Date of entry in the register;
- b) Name of the structure, its purpose and intended/actual contents;
- c) The consequence category of the dam as assessed using the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933);
- d) Dates, names, and reference for the design plan plus dates, names, and reference numbers of all document(s) lodged as part of a design plan for the dam;
- e) Name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings;
- f) For the regulated dam, other than in relation to any levees –
 - i. The dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam;
 - ii. Coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area;
 - iii. Dam crest volume (megalitres);
 - iv. Spillway crest level (metres AHD);
 - v. Maximum operating level (metres AHD);
 - vi. Storage rating table of stored volume versus level (metres AHD);
 - vii. Design storage allowance (megalitres) and associated level of the dam (metres AHD);
 - viii. Mandatory reporting level (metres AHD);
- g) The design plan title and reference relevant to the dam;
- h) The date construction was certified as compliant with the design plan;

- i) The name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan;
- j) Details of the composition and construction of any liner;
- k) The system for the detection of any leakage through the floor and sides of the dam;
- l) Dates when the regulated dam underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of any year;
- m) Dates when recommendations and actions arising from the annual inspection were provided to the administering authority;
- n) Dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.

“Regulated structures” means any structure in the significant or high consequence category as assessed using the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933) published by the administering authority. A regulated structure does not include:

- a) a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container;
- b) a sump or earthen pit used to store residual drilling material and drilling fluid only for the duration of drilling and well completion activities.

“Regulated vegetation” means vegetation as defined under the *Environmental Offsets Regulation 2014*.

“Rehabilitation” the process of reshaping and revegetating land to restore it to a stable landform.

“RL” means reduced level, relative to mean sea level as distinct from depths to water.

“Self-sustaining” means not requiring on-going intervention and maintenance to maintain functional riverine processes and characteristics.

“Sensitive place” includes the following and includes a place within the curtilage of such a place reasonably used by persons at that place:

- a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
- b) a motel, hotel or hostel; or
- c) a kindergarten, school, university or other educational institution; or
- d) a medical centre or hospital; or
- e) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 2004* or a World Heritage Area; or
- f) a public park or garden; or
- g) for noise, a place defined as a sensitive receptor for the purposes of the *Environmental Protection (Noise) Policy 2019*, with the exception of commercial and retail activity areas.

“Significant residual impact” has the meaning in section 8 *Environmental Offsets Act 2014*.

“Suitably qualified and experienced person” means a person who is a Registered Professional Engineer of Queensland under the provisions of the Professional Engineers Act 2002, who has an appropriate level of expertise in the structures, geomechanics, hydrology, hydraulics and environmental impact of watercourse diversions.

An appropriate level of expertise includes:

- a) demonstrable competency, experience and expertise in:
 - i. investigation, design or construction of watercourses diversions
 - ii. operation and maintenance of watercourse diversions
 - iii. geomechanics with particular emphasis on channel equilibrium, geology and geochemistry
 - iv. hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology
 - v. hydraulics with particular reference to sediment transport and deposition and erosion control
 - vi. hydrogeology with particular reference to seepage and groundwater
 - vii. solute transport processes and monitoring thereof, or
- b) sufficient knowledge and experience to certify that where the suitably qualified and experienced person has relied on advice and information provided by other persons with relevant expertise*:
 - i. they consider it reasonable to rely on that advice and information
 - ii. the expert providing the advice and information has knowledge, competency, suitable experience and demonstrated expertise in the matters related to watercourse diversions.

*Persons with relevant expertise include:

- a) Geomorphologist: person who has demonstrated competency and relevant experience in stream geomorphology and watercourse diversions.
- b) Geotechnical Expert: person who has demonstrated competency and relevant experience in geotechnical assessment of soil characteristics suitable for watercourse diversions.
- c) Vegetation Expert: person who has demonstrated competency and relevant experience in the identification, role and function of vegetation with watercourses and adjoining floodplains, and has demonstrated competency and relevant experience in revegetation of watercourse diversions and adjoining floodplains.
- d) Groundwater Expert: person who has demonstrated competency and relevant experience in groundwater systems.
- e) Surface Water Expert: person who has demonstrated competency and relevant experience in hydrology.
- f) Engineer: person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Persons Act 2002* or has similar qualifications under a respected professional registration association, and has demonstrated competency and relevant experience in design and construction of watercourse diversions.
- g) Soils Expert: person who has demonstrated competency and relevant experience in soil classification including the physical, chemical and hydrologic analysis of soil.

“Topsoil” means the surface layer of a soil profile, which is usually more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300mm in depth from natural.

“µS/cm” means micro siemens per centimetre.

“Watercourse” has the meaning in Schedule 4 of the *Environmental Protection Act 1994* and means:

- 1) a river, creek or stream in which water flows permanently or intermittently:
 - a. in a natural channel, whether artificially improved or not; or
 - b. in an artificial channel that has changed the course of the watercourse.
- 2) watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.

“Waters” includes all or part of a river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), storm water channel, storm water drain, and groundwater and any part thereof.

“Waterway” means a naturally occurring feature where surface water runoff normally collects, such as a clearly defined swale or gully, but only flows in response to a local rainfall event.

“Wetland” means areas of permanent or periodic/intermittent inundation, whether natural or artificial, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6m. Wetlands typically include areas such as lakes, swamps, marshes, estuaries or mudflats.

“Water Quality objective (WQO)” - A numerical concentration limit or narrative statement that has been established to support and protect the designated uses of water at a specified site. It is based on scientific criteria or water quality guidelines but may be modified by other inputs such as social, cultural or economic constraints. WQOs are specified in the EPP Water and Wetland Biodiversity (Part 4, Section 11).

Appendices

Appendix 1 – Rehabilitation Requirements

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria
Bulk Sample Pit	Native Ecosystem	Safe for humans and animals and stable on decommissioning and into the foreseeable future	BSP1 All rehabilitation and associated works are to have 'as-constructed' plans prepared. BSP2 The final landform surveyed is to be constructed as per the 'as-constructed' plans. BSP3 Batters do not exceed a maximum slope of 15% and are stable as demonstrated by erosion modelling. BSP4 Bulk sample pit is backfilled and landform certified as geotechnically stable by an AQP¹. BSP5 Subsoil of a suitable quality, as signed-off by an AQP, has been applied, spread and compacted to design specifications. BSP6 All erosion and sediment control systems have been installed as per the design and are functioning properly as verified by an AQP. BSP7 Areas of surface ponding are remediated by re-profiling and ripping to be free draining. BSP8 Any erosion classified as 'moderate' or 'severe' as defined in Appendix 2 - Erosion classification framework has been remediated. BSP9 Erosion monitoring has been completed and the average erosion rate is <5 t/ha/year. BSP10 Permanent drainage channels to be designed in accordance with the <i>Guideline: Works that interfere with water in a watercourse for a resource activity— watercourse diversions authorised under the Water Act 2000</i>.
		Not a source of environmental harm to the surrounding environment. Native communities endemic to the surrounding area	BSP11 Soil health and suitability is assessed and documented by an AQP to confirm topsoil is suitable for the PMLU² and target vegetation establishment. BSP12 The need for soil amelioration has been investigated and soil ameliorants such as fertiliser, gypsum and/or organic matter have been applied at rates determined by an AQP. BSP13 Topsoil is applied to a minimum depth of 0.25m. BSP14 Organic mulch is applied at a rate of at least 5t/ha of hay or organic material on all slopes. BSP15 Topsoil to meet the following suitability targets:

¹ AQP (Appropriately Qualified Person) means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relating to the subject matter using the relevant protocols, standards, methods or literature

² 'PMLU' means Post-Mining Land Use.

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria
		established (similar to RE11.5.9).	a. pH in the range of 5.5 - 8.5 (average); b. Electrical Conductivity (EC) ≤ 1.5 dS/m (1,500 μS/cm); and c. Exchangeable sodium percentage (ESP) $< 6\%$. BSP16 Seeding is completed at an average rate of 2-3 kg/ha for trees and shrubs, 9-11 kg/ha for grasses and 8-10 kg/ha for sterile cover crops. BSP17 With the exception of a non-permanent cover crop species, the seed mix contains only those species listed in Appendix 3 – Seed Mix Species List for the relevant PMLU and reflect the pre-disturbance regional ecosystem distribution. BSP18 Supplementary seeding and tubestock planting are completed within one year of sites failing to achieve vegetation establishment. BSP19 Vegetation groundcover $> 80\%$ on all slopes with gradient $> 10\%$ and groundcover $> 50\%$ on slopes with gradient $< 10\%$ is achieved. BSP20 An assessment of rehabilitation performance is undertaken by an AQP using the methodology outlined in the latest version of the Queensland Herbarium's 'BioCondition Assessment Manual'. BSP21 A rehabilitation performance assessment completed achieves a score of 60/80 based on the benchmark criteria in Appendix 4 – BioCondition Benchmark Criteria for the relevant PMLU. BSP22 Rehabilitated areas have less than 0.2% cover of <i>Parthenium hysterophorus</i> AND rehabilitated areas are to have less than 0.1% cover of <i>Harrisia martinii</i> AND any invasive plants listed under the <i>Biosecurity Act 2014</i> are not to exceed densities of 1 individual per hectare, as confirmed by an AQP from annual monitoring. BSP23 At least 60% of established target tree species show natural recruitment. BSP24 Surface water quality results monitored monthly during flow at, but not limited to, downstream locations specified in Table D3 – Surface waters monitoring locations, must not exceed the values specified in Table D2 – Surface water quality objectives for a minimum of five (5) consecutive years. BSP25 If the surface water quality exceeds criteria specified in Table D3 – Surface water quality objectives, the applicable upstream/reference site must be compared to the downstream site result; and quality result measured at a downstream site must be equal to or less than the quality result measured at the applicable upstream/reference site.

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria
			BSP26 Groundwater monitoring must demonstrate the groundwater quality is within the trigger values listed in Table E2 – Groundwater quality limits at the locations listed in Table E1 – Groundwater monitoring locations and frequency for a minimum of five (5) consecutive years after achievement of the final rehabilitation completion criteria.
Out-of-pit waste rock dump (OOPD)	Low-intensity cattle grazing	Safe for humans and animals and stable on decommissioning and into the foreseeable future.	OOPD1 All rehabilitation and associated works are to have 'as-constructed' plans prepared. OOPD2 The final landform surveyed is to be constructed as per the 'as-constructed' plans. OOPD3 Final landform certified as geotechnically stable by an AQP. OOPD4 Batters do not exceed a maximum slope of 15% and are stable as demonstrated by erosion modelling. OOPD5 Subsoil of a suitable quality, as signed-off by an AQP, has been applied, spread and compacted to design specifications. OOPD6 All erosion and sediment control systems have been installed as per the construction design and are functioning properly as verified by an AQP. OOPD7 Areas of surface ponding are remediated by re-profiling and ripping to be free draining. OOPD8 Any erosion classified as 'moderate' or 'severe' as defined in Appendix 2 - Erosion classification framework has been remediated. OOPD9 Erosion monitoring has been completed and the average erosion rate is <5 t/ha/year.
		Not a source of environmental harm to the surrounding environment. Native communities capable of supporting low intensity grazing	OOPD10 Soil health and suitability is assessed and documented by an AQP to confirm topsoil is suitable for the PMLU and target vegetation establishment. OOPD11 The need for soil amelioration has been investigated and soil ameliorants such as fertiliser, gypsum and/or organic matter have been applied at rates determined by an AQP. OOPD12 Topsoil is applied to a minimum depth of 0.25m. OOPD13 Organic mulch is applied at a rate of at least 5t/ha of hay or organic material on all slopes. OOPD14 Topsoil to meet the following suitability targets: - pH in the range of 5.5 - 8.5 (average); - Electrical Conductivity (EC) ≤ 1.5 dS/m (1,500 μS/cm); and

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria
			c. Exchangeable sodium percentage (ESP) <6%. OOPD15 Seeding is completed at an average rate of 0.25 kg/ha for trees and shrubs, 13-15 kg/ha for grasses and 13-15 kg/ha for sterile cover crops. OOPD16 With the exception of a non-permanent cover crop species, the seed mix contains only those species listed in Appendix 3 – Seed Mix Species List for the relevant PMLU. OOPD17 More than six (6) species of perennial pasture species is present and perennial grass cover is >30%. OOPD18 Groundcover is above 80% on all slopes with a gradient higher than 10%, and 70% on slopes with a gradient lower than 10% OOPD19 Supplementary seeding is completed within one year of sites failing to achieve vegetation establishment. OOPD20 Rehabilitated areas have less than 0.2% cover of <i>Parthenium hysterophorus</i> AND rehabilitated areas are to have less than 0.1% cover of <i>Harrisia martinii</i> AND any invasive plants listed under the <i>Biosecurity Act 2014</i> are not to exceed densities of one (1) individual per hectare, as confirmed by an AQP from annual monitoring. OOPD21 The land suitability class of rehabilitated land is to be 3 or better for cattle grazing. OOPD22 Surface water quality results monitored monthly during flow at, but not limited to, downstream locations specified in Table D3 – Surface waters monitoring locations, must not exceed the values specified in Table D2 – Surface water quality objectives for a minimum of five (5) consecutive years. OOPD23 If the surface water quality exceeds criteria specified in Table D2 – Surface water quality objectives, the applicable upstream/reference site must be compared to the downstream site result; and quality result measured at a downstream site must be equal to or less than the quality result measured at the applicable upstream/reference site. OOPD24 Groundwater monitoring must demonstrate the groundwater quality is within the trigger values listed in Table E2 – Groundwater quality limits at the locations listed in Table E1 – Groundwater monitoring locations and frequency for a minimum

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria
			of five (5) consecutive years after achievement of the final rehabilitation completion criteria.
MIA Complex	Low-intensity cattle grazing	Safe for humans and animals and stable on decommissioning and into the foreseeable future.	MIA1 All services are disconnected, terminated and removed, and all infrastructure, buildings, hardstand, and machinery/equipment removed with the exception of any infrastructure to remain as part of the PMLU or where infrastructure is agreed to be retained by the landholder as evidenced by a signed landholder agreement. MIA2 Reshaping and earthworks are certified as geotechnically stable by an AQP. MIA3 All erosion and sediment control systems have been installed as per the design and are functioning properly as verified by an AQP. MIA4 Areas of surface ponding are re-profiled and ripped to be free draining. MIA5 Any erosion classified as 'moderate' or 'severe' as defined in Appendix 2 - Erosion classification framework has been remediated. MIA6 Erosion monitoring has been completed and the average erosion rate is <5 t/ha/year.
		Not a source of environmental harm to the surrounding environment. Native communities capable of supporting low intensity grazing	MIA7 Detailed site investigation report, as required under the <i>Environmental Protection Act 1994 (EP Act)</i>, completed. MIA8 All contamination is remediated or removed from site. MIA9 Any contamination removed from site has been removed in accordance with relevant regulations. MIA10 A contaminated land investigation document has been prepared by an approved auditor, containing a site suitability statement that states that land is not contaminated and is suitable to achieve the PMLU. MIA11 Soil health and suitability is assessed and documented by an AQP to confirm topsoil is suitable for the PMLU and target vegetation establishment. MIA12 The need for soil amelioration has been investigated and soil ameliorants such as fertiliser, gypsum and/or organic matter have been applied at rates determined by an AQP. MIA13 Topsoil is applied to a minimum depth of 0.25m. MIA14 Organic mulch is applied at a rate of at least 5t/ha of hay or organic material on all slopes. MIA15 Topsoil to meet the following suitability targets: - pH in the range of 5.5 - 8.5 (average); - Electrical Conductivity (EC) ≤ 1.5 dS/m (1,500 μS/cm); and

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria
			c. Exchangeable sodium percentage (ESP) <6%. MIA16 Seeding is completed at an average rate of 0.25 kg/ha for trees and shrubs, 13-15 kg/ha for grasses and 13-15 kg/ha for sterile cover crops. MIA17 With the exception of a non-permanent cover crop species, the seed mix contains only those species listed in Appendix 3 – Seed Mix Species List for the relevant PMLU. MIA18 More than six (6) species of perennial pasture species is present and perennial grass cover is >30%. MIA19 Groundcover is above 80% on all slopes with a gradient higher than 10%, and 70% on slopes with a gradient lower than 10%. MIA20 Supplementary seeding is completed within one year of sites failing to achieve vegetation establishment. MIA21 Rehabilitated areas have less than 0.2% cover of <i>Parthenium hysterophorus</i> AND rehabilitated areas are to have less than 0.1% cover of <i>Harrisia martinii</i> AND any invasive plants listed under the <i>Biosecurity Act 2014</i> are not to exceed densities of 1 individual per hectare, as confirmed by an AQP from annual monitoring. MIA22 The land suitability class of rehabilitated land is to be 3 or lower for cattle grazing. MIA23 Surface water quality results monitored monthly during flow at, but not limited to, downstream locations specified in Table D3 – Surface waters monitoring locations, must not exceed the values specified in Table D2 – Surface water quality objectives for a minimum of five (5) consecutive years. MIA24 If the surface water quality exceeds criteria specified in Table D2 – Surface water quality objectives, the applicable upstream/reference site must be compared to the downstream site result; and quality result measured at a downstream site must be equal to or less than the quality result measured at the applicable upstream/reference site. MIA25 Groundwater monitoring must demonstrate the groundwater quality is within the trigger values listed in Table E2 – Groundwater quality limits at the locations listed in Table E1 – Groundwater monitoring locations and frequency for a minimum of five (5) consecutive years after achievement of the final rehabilitation completion criteria.

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria	
Haul Road	Native Ecosystem	Safe for humans and animals and stable on decommissioning and into the foreseeable future.	HR1	All hardstand, concrete areas and road materials (bitumen, gravel) removed with the exception of any infrastructure to remain as part of the PMLU or where infrastructure is agreed to be retained by the landholder as evidenced by a signed landholder agreement.
			HR2	All erosion and sediment control systems have been installed as per the design and are functioning properly as verified by an AQP.
			HR3	Areas of surface ponding are re-profiled and ripped to be free draining.
			HR4	Any erosion classified as 'moderate' or 'severe' as defined in Appendix 2 - Erosion classification framework has been remediated.
			HR5	Erosion monitoring has been completed and the average erosion rate is <5 t/ha/year.
	Not a source of environmental harm to the surrounding environment. Native communities endemic to the surrounding area established (similar to RE11.5.9, 11.5.3, 11.9.2)		HR6	Detailed site investigation report, as required under the EP Act, completed.
			HR7	All contamination is remediated or removed from site.
			HR8	Any contamination removed from site has been removed in accordance with relevant regulations.
			HR9	A contaminated land investigation document has been prepared by an approved auditor, containing a site suitability statement that states that land is not contaminated and is suitable to achieve the PMLU.
			HR10	Soil health and suitability is assessed and documented by an AQP to confirm topsoil is suitable for the PMLU and target vegetation establishment.
			HR11	The need for soil amelioration has been investigated and soil ameliorants such as fertiliser, gypsum and/or organic matter have been applied at rates determined by an AQP.
			HR12	Topsoil is applied to a minimum depth of 0.25m.
			HR13	Organic mulch is applied at a rate of at least 5t/ha of hay or organic material on all slopes.
			HR14	Topsoil to meet the following suitability targets: a. pH in the range of 5.5 - 8.5 (average); b. Electrical Conductivity (EC) ≤1.5 dS/m (1,500 µS/cm); and c. Exchangeable sodium percentage (ESP) <6%.
			HR15	Seeding is completed at an average rate of 2-3 kg/ha for trees and shrubs, 9-11 kg/ha for grasses and 8-10 kg/ha for sterile cover crops.

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria
			HR16 With the exception of a non-permanent cover crop species, the seed mix contains only those species listed in Appendix 3 – Seed Mix Species List for the relevant PMLU and reflect the pre-disturbance regional ecosystem distribution. HR17 Supplementary seeding and tubestock planting are completed within one year of sites failing to achieve vegetation establishment. HR18 Vegetation groundcover >80% on all slopes with gradient >10% and groundcover >50% on slopes with gradient <10% is achieved. HR19 An assessment of rehabilitation performance is undertaken by an AQP using the methodology outlined in the latest version of the Queensland Herbarium's 'BioCondition Assessment Manual'. HR20 A rehabilitation performance assessment completed achieves a score of 60/80 based on the benchmark criteria in Appendix 4 – BioCondition Benchmark Criteria for the relevant PMLU. HR21 Rehabilitated areas have less than 0.2% cover of <i>Parthenium hysterophorus</i> AND rehabilitated areas are to have less than 0.1% cover of <i>Harrisia martinii</i> AND any invasive plants listed under the <i>Biosecurity Act 2014</i> are not to exceed densities of 1 individual per hectare, as confirmed by an AQP from annual monitoring. HR22 At least 60% of established target tree species show natural recruitment. HR23 Surface water quality results monitored monthly during flow at, but not limited to, downstream locations specified in Table D3 – Surface waters monitoring locations, must not exceed the values specified in Table D2 – Surface water quality objectives for a minimum of five (5) consecutive years. HR24 If the surface water quality exceeds criteria specified in Table D2 – Surface water quality objectives, the applicable upstream/reference site must be compared to the downstream site result; and quality result measured at a downstream site must be equal to or less than the quality result measured at the applicable upstream/reference site. HR25 Groundwater monitoring must demonstrate the groundwater quality is within the trigger values listed in Table E2 – Groundwater quality limits at the locations listed in Table E1 – Groundwater monitoring locations and frequency for a minimum of five (5) consecutive years after achievement of the final rehabilitation completion criteria.

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria	
Access Road	Native Ecosystem	Safe for humans and animals and stable on decommissioning and into the foreseeable future	AR1	All hardstand, concrete areas and road materials (bitumen, gravel) removed with the exception of any infrastructure to remain as part of the PMLU or where infrastructure is agreed to be retained by the landholder as evidenced by a signed landholder agreement.
			AR2	All erosion and sediment control systems have been installed as per the design and are functioning properly as verified by an AQP.
			AR3	Areas of surface ponding are re-profiled and ripped to be free draining.
			AR4	Any erosion classified as 'moderate' or 'severe' as defined in Appendix 2 - Erosion classification framework has been remediated.
			AR5	Erosion monitoring has been completed and the average erosion rate is <5 t/ha/year.
	Not a source of environmental harm to the surrounding environment. Native communities endemic to the surrounding area established (similar to RE11.9.2).		AR6	Detailed site investigation report, as required under the EP Act, completed.
			AR7	All contamination is remediated or removed from site.
			AR8	Any contamination removed from site has been removed in accordance with relevant regulations.
			AR9	A contaminated land investigation document has been prepared by an approved auditor, containing a site suitability statement that states that land is not contaminated and is suitable to achieve the PMLU.
			AR10	Soil health and suitability is assessed and documented by an AQP to confirm topsoil is suitable for the PMLU and target vegetation establishment.
			AR11	The need for soil amelioration has been investigated and soil ameliorants such as fertiliser, gypsum and/or organic matter have been applied at rates determined by an AQP.
			AR12	Topsoil is applied to a minimum depth of 0.25m.
			AR13	Organic mulch is applied at a rate of at least 5t/ha of hay or organic material on all slopes.
			AR14	Topsoil to meet the following suitability targets: a. pH in the range of 5.5 - 8.5 (average); b. Electrical Conductivity (EC) ≤1.5 dS/m (1,500 µS/cm); and c. Exchangeable sodium percentage (ESP) <6%.
			AR15	Seeding is completed at an average rate of 2-3 kg/ha for trees and shrubs, 9-11 kg/ha for grasses and 8-10 kg/ha for sterile cover crops.

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria
			AR16 With the exception of a non-permanent cover crop species, the seed mix contains only those species listed in Appendix 3 – Seed Mix Species List for the relevant PMLU and reflect the pre-disturbance regional ecosystem distribution. AR17 Supplementary seeding and tubestock planting are completed within one year of sites failing to achieve vegetation establishment. AR18 Vegetation groundcover >80% on all slopes with gradient >10% and groundcover >50% on slopes with gradient. AR19 An assessment of rehabilitation performance is undertaken by an AQP using the methodology outlined in the latest version of the Queensland Herbarium's 'BioCondition Assessment Manual'. AR20 A rehabilitation performance assessment completed achieves a score of 60/80 based on the benchmark criteria in Appendix 4 – BioCondition Benchmark Criteria for the relevant PMLU. AR21 Rehabilitated areas have less than 0.2% cover of <i>Parthenium hysterophorus</i> AND rehabilitated areas are to have less than 0.1% cover of <i>Harrisia martinii</i> AND any invasive plants listed under the <i>Biosecurity Act 2014</i> are not to exceed densities of 1 individual per hectare, as confirmed by an AQP from annual monitoring. AR22 At least 60% of established target tree species show natural recruitment. AR23 Surface water quality results monitored monthly during flow at, but not limited to, downstream locations specified in Table D3 – Surface waters monitoring locations, must not exceed the values specified in Table D2 – Surface water quality objectives for a minimum of five (5) consecutive years. AR24 If the surface water quality exceeds criteria specified in Table D2 – Surface water quality objectives, the applicable upstream/reference site must be compared to the downstream site result; and quality result measured at a downstream site must be equal to or less than the quality result measured at the applicable upstream/reference site. AR25 Groundwater monitoring must demonstrate the groundwater quality is within the trigger values listed in Table E2 – Groundwater quality limits at the locations listed in Table E1 – Groundwater monitoring locations and frequency for a minimum of five (5) consecutive years after achievement of the final rehabilitation completion criteria.

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria
Water infrastructure at bulk sample pit	Native Ecosystem	Safe for humans and animals and stable on decommissioning and into the foreseeable future.	MP1 All surface water drainage infrastructure that is not required in the PMLU is removed. MP2 Reshaping and earthworks are certified as geotechnically stable by an AQP. MP3 All erosion and sediment control systems have been installed as per the design and are functioning properly as verified by an AQP. MP4 All areas of substantial surface cracking or subsidence are remediated and no associated effects of erosion or changed surface water flow paths are evident. MP5 Any erosion classified as 'moderate' or 'severe' as defined in Appendix 2 - Erosion classification framework has been remediated. MP6 Erosion monitoring has been completed and the average erosion rate is <5 t/ha/year. MP7 All areas of substantial surface cracking or subsidence are remediated and no associated effects of erosion or changed surface water flow paths are evident. MP8 .
		Not a source of environmental harm to the surrounding environment. Native communities endemic to the surrounding area established (similar to RE11.5.9).	MP9 Detailed site investigation report, as required under the EP Act, completed. MP10 All contamination is remediated or removed from site. MP11 Any contamination removed from site has been removed in accordance with relevant regulations. MP12 A contaminated land investigation document has been prepared by an approved auditor, containing a site suitability statement that states that land is not contaminated and is suitable to achieve the PMLU. MP13 Soil health and suitability is assessed and documented by an AQP to confirm topsoil is suitable for the PMLU and target vegetation establishment. MP14 The need for soil amelioration has been investigated and soil ameliorants such as fertiliser, gypsum and/or organic matter have been applied at rates determined by an AQP. MP15 Topsoil is applied to a minimum depth of 0.25m. MP16 Organic mulch is applied at a rate of at least 5t/ha of hay or organic material on all slopes. MP17 Topsoil to meet the following suitability targets: a. pH in the range of 5.5 - 8.5 (average); b. Electrical Conductivity (EC) ≤1.5 dS/m (1,500 µS/cm); and c. Exchangeable sodium percentage (ESP) <6%. MP18 Seeding is completed at an average rate of 2-3 kg/ha for trees and shrubs, 9-11 kg/ha for grasses and 8-10 kg/ha for sterile cover crops.

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria
			MP19 With the exception of a non-permanent cover crop species, the seed mix contains only those species listed in Appendix 3 – Seed Mix Species List for the relevant PMLU and reflect the pre-disturbance regional ecosystem distribution. MP20 Supplementary seeding and tubestock planting are completed within one year of sites failing to achieve vegetation establishment. MP21 Vegetation groundcover >80% on all slopes with gradient >10% and groundcover >50% on slopes with gradient <10% is achieved. MP22 An assessment of rehabilitation performance is undertaken by an AQP using the methodology outlined in the latest version of the Queensland Herbarium's 'BioCondition Assessment Manual'. MP23 A rehabilitation performance assessment completed achieves a score of 60/80 based on the benchmark criteria in Appendix 4 – BioCondition Benchmark Criteria for the relevant PMLU. MP24 Rehabilitated areas have less than 0.2% cover of <i>Parthenium hysterophorus</i> AND rehabilitated areas are to have less than 0.1% cover of <i>Harrisia martinii</i> AND any invasive plants listed under the <i>Biosecurity Act 2014</i> are not to exceed densities of one (1) individual per hectare, as confirmed by an AQP from annual monitoring. MP25 At least 60% of established target tree species show natural recruitment. MP26 Surface water quality results monitored monthly during flow at, but not limited to, downstream locations specified in Table D3 – Surface waters monitoring locations, must not exceed the values specified in Table D2 – Surface water quality objectives for a minimum of five (5) consecutive years. MP27 If the surface water quality exceeds criteria specified in Table D2 – Surface water quality objectives, the applicable upstream/reference site must be compared to the downstream site result; and quality result measured at a downstream site must be equal to or less than the quality result measured at the applicable upstream/reference site. MP28 Groundwater monitoring must demonstrate the groundwater quality is within the trigger values listed in Table E2 – Groundwater quality limits at the locations listed in Table E1 – Groundwater monitoring locations and frequency for a minimum of five (5) consecutive years after achievement of the final rehabilitation completion criteria.

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria
Water infrastructure at MIA complex	Low-intensity cattle grazing	Safe for humans and animals and stable on decommissioning and into the foreseeable future.	WM1 All surface water drainage infrastructure that is not required in the PMLU is removed. WM2 Reshaping and earthworks are certified as geotechnically stable by an AQP. WM3 All erosion and sediment control systems have been installed as per the design and are functioning properly as verified by an AQP. WM4 Areas of surface ponding are re-profiled and ripped to be free draining. WM5 Any erosion classified as 'moderate' or 'severe' as defined in Appendix 2 - Erosion classification framework has been remediated. WM6 Erosion monitoring has been completed and the average erosion rate is <5 t/ha/year. WM7 All areas of substantial surface cracking or subsidence are remediated and no associated effects of erosion or changed surface water flow paths are evident.
		Not a source of environmental harm to the surrounding environment.	WM8 Detailed site investigation report, as required under the EP Act, completed. WM9 All contamination is remediated or removed from site. WM10 Any contamination removed from site has been removed in accordance with relevant regulations. WM11 A contaminated land investigation document has been prepared by an approved auditor, containing a site suitability statement that states that land is not contaminated and is suitable to achieve the PMLU. WM12 Soil health and suitability is assessed and documented by an AQP to confirm topsoil is suitable for the PMLU and target vegetation establishment. WM13 The need for soil amelioration has been investigated and soil ameliorants such as fertiliser, gypsum and/or organic matter have been applied at rates determined by an AQP. WM14 Topsoil is applied to a minimum depth of 0.25m. WM15 Organic mulch is applied at a rate of at least 5t/ha of hay or organic material on all slopes. WM16 Topsoil to meet the following suitability targets: a. pH in the range of 5.5 - 8.5 (average); b. Electrical Conductivity (EC) ≤1.5 dS/m (1,500 µS/cm); and c. Exchangeable sodium percentage (ESP) <6%. WM17 Seeding is completed at an average rate of 0.25 kg/ha for trees and shrubs, 13-15 kg/ha for grasses and 13-15 kg/ha for sterile cover crops. WM18 With the exception of a non-permanent cover crop species, the seed mix contains only those species listed in Appendix 3 – Seed Mix Species List for the relevant PMLU..

Domain	Post-Mining Land Use	Rehabilitation Objectives	Completion Criteria
			WM19 More than 6 species of perennial pasture species is present and perennial grass cover is >30%. WM20 Groundcover is above 80% on all slopes with a gradient higher than 10%, and 70% on slopes with a gradient lower than 10% WM21 Supplementary seeding is completed within one year of sites failing to achieve vegetation establishment. WM22 Rehabilitated areas have less than 0.2% cover of <i>Parthenium hysterophorus</i> AND rehabilitated areas are to have less than 0.1% cover of <i>Harrisia martinii</i> AND any invasive plants listed under the <i>Biosecurity Act 2014</i> are not to exceed densities of 1 individual per hectare, as confirmed by an AQP from annual monitoring. WM23 The land suitability class of rehabilitated land is to be 3 or lower for cattle grazing. WM24 Surface water quality results monitored monthly during flow at, but not limited to, downstream locations specified in Table D3 – Surface waters monitoring locations, must not exceed the values specified in Table D2 – Surface water quality objectives for a minimum of five (5) consecutive years. WM25 If the surface water quality exceeds criteria specified in Table D2 – Surface water quality objectives, the applicable upstream/reference site must be compared to the downstream site result; and quality result measured at a downstream site must be equal to or less than the quality result measured at the applicable upstream/reference site. WM26 Groundwater monitoring must demonstrate the groundwater quality is within the trigger values listed in Table E2 – Groundwater quality limits at the locations listed in Table E1 – Groundwater monitoring locations and frequency for a minimum of five (5) consecutive years after achievement of the final rehabilitation completion criteria.

Appendix 2 - Erosion classification framework

Erosion classification	Minor	Moderate	Severe
Sheet erosion	Shallow soil deposits downslope.	Partial exposure of roots; moderate soil deposits downslope.	Loss of surface horizon; subsoil exposure; root exposure; substantial soil deposits downslope.
Rill/gully erosion	<15 rills and <0.3m deep	15-30 rills and <0.3m deep	>30 rills and/or any >0.3m deep
Tunnel erosion	Absent	Absent	Present
Mass movement	Absent	Absent	Present

Source: NCST (2009) *Australian Soil and Land Survey Field Handbook, 3rd edition*. The National Committee on Soil and Terrain. CSIRO Publishing, Collingwood, Australia

Appendix 3 – Seed Mix Species List

This attachment articulates the list of species which are permitted to be included in the seed mix for the PMLU to be achieved.

The seed mix should be selected and apportioned with appreciation for the BioCondition benchmarks at later milestones. Hence, the proportion of each species (kg/ha) within the seed mix should reflect the relative cover and frequency of the relevant Regional Ecosystems (REs) Technical Description

(<https://publications.qld.gov.au/dataset/re-technical-descriptions>).

Despite introduced species occurring in the RE Technical Descriptions (due to data being collected at disturbed sites or poor condition sites), introduced species must not be included in the seed mix. Finally, the seed mix must not include Indian Couch *Bothriochloa pertusa* or *Seca Stylosanthes* spp, both of which have significant impacts on surrounding native remnant vegetation.

Table 1. Seed Mix Species List

Native Ecosystem
11.5.3 - Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces
<u>Trees</u> <i>Dominant: Eucalyptus populnea, Eucalyptus melanophloia</i> <i>Frequent: Eucalyptus populnea Eucalyptus melanophloia Eucalyptus brownii, Corymbia clarksoniana, Eucalyptus crebra, Ventilago viminalis, Eremophila mitchellii</i> <u>Shrubs</u> <i>Dominant: Eremophila mitchellii Erythroxylum australe, Grewia latifolia</i> <i>Frequent: Eremophila mitchellii, Erythroxylum australe, Grewia latifolia, Acacia excelsa, Atalaya hemiglauca, Carissa ovata, Eucalyptus populnea, Acacia sericophylla, Archidendropsis basaltica, Capparis lasiantha, Cassia brewsteri, Denhamia cunninghamii, Eucalyptus brownii, Eucalyptus melanophloia, Flindersia dissosperma, Lysiphyllum carronii, Psydrax oleifolia, Carissa lanceolata</i> <u>Ground</u> <i>Dominant: Themeda triandra, Aristida calycina, Chrysopogon fallax, Fimbristylis dichotoma</i> <i>Frequent Grasses: Chrysopogon fallax, Fimbristylis dichotoma, Heteropogon contortus, Aristida calycina, Digitaria brownii, Panicum effusum, Themeda triandra, Cyperus fulvus, Dichanthium sericeum, Eragrostis lacunaria, Eragrostis sororia, Aristida jerichoensis, Bothriochloa decipiens, Bothriochloa decipiens var. decipiens, Cymbopogon bombycinus, Cyperus gracilis, Digitaria ammophila, Enneapogon lindleyanus, Enneapogon virens, Eragrostis brownii, Eragrostis leptostachya, Eulalia aurea, Sporobolus caroli, Tragus australianus, Triodia pungens</i>
11.5.9 - Eucalyptus crebra and other Eucalyptus spp. and Corymbia spp. woodland on Cainozoic sand plains and/or remnant surfaces
<u>Trees</u> <i>Dominant: Eucalyptus crebra, Corymbia clarksoniana, Acacia leptostachya, Bursaria incana, Petalostigma banksii</i>

Frequent: *Eucalyptus crebra*, *Corymbia clarksoniana*, *Casuarina cristata*³, *Petalostigma pubescens*, *Acacia cowleana*, *Acacia leptostachya*, *Alphitonia pomaderroides*, *Antidesma parvifolium*, *Bursaria incana*, *Gardenia indet.*, *Geijera salicifolia*, *Grevillea glauca*, *Larsenaikia ochreatea*, *Petalostigma banksii*, *Siphonodon indet.*

Shrubs

Dominant: *Acacia conferta*, *Acacia disparrima* subsp. *Calidestris*, *Acacia cowleana*, *Gardenia indet.*, *Petalostigma pubescens*, *Grewia retusifolia*, *Petalostigma banksia*, *Eucalyptus crebra*, *Persoonia falcata*

Frequent: *Erythroxylum austral*, *Acacia conferta*, *Acacia cowleana*, *Acacia disparrima* subsp. *calidestris*, *Acacia holosericea*, *Alphitonia pomaderroides*, *Breynia oblongifolia*, *Coelospermum reticulatum*, *Gardenia indet.*, *Grevillea parallela*, *Petalostigma pubescens*, *Eucalyptus crebra*, *Grewia retusifolia*, *Acacia leptostachya*, *Corymbia clarksoniana*, *Indigofera australis*, *Persoonia falcata*, *Petalostigma banksia*

Ground

Dominant: *Eremochloa bimaclate*, *Brunoniella acaulis*, *Desmodium brachypodum*, *Aristida holathera* var. *holathera*

Frequent Grasses: *Alloteropsis semialata*, *Aristida calycina* var. *calycina*, *Chrysopogon fallax*, *Eragrostis spartinoide*, *Eremochloa bimaclata*, *Panicum effusum*, *Ancistrachne uncinulata*, *Aristida holathera* var. *holathera*, *Calyptochloa cylindrosperma*, *Ectrosia indet.*, *Heteropogon contortus*, *Mnesithea Formosa*, *Paspalidium indet.*, *Scleria brownii*, *Themeda triandra*

11.9.2 - Eucalyptus melanophloia +/- E. orgadophila woodland on fine-grained sedimentary rocks

Trees

Dominant: *Eucalyptus orgadophila*, *Eucalyptus melanophloia*

Frequent: *Eucalyptus melanophloia*, *Eucalyptus orgadophila*, *Acacia excelsa*, *Angophora subvelutina*, *Brachychiton populneus*, *Brachychiton populneus* subsp. *Populneus*, *Corymbia citriodora*, *Corymbia erythrophloia*, *Corymbia trachyphloia*, *Eremophila mitchellii*, *Eucalyptus populnea*, *Lysiphyllum carronii*

Shrubs

Dominant: *Carissa ovata*, *Archidendropsis basaltica*, *Alectryon diversifolius*, *Ehretia membranifolia*

Frequent: *Alectryon diversifolius*, *Archidendropsis basaltica*, *Carissa ovata*, *Ehretia membranifolia*, *Atalaya hemiglauc*, *Breynia oblongifolia*, *Denhamia cunninghamii*, *Dodonaea filifolia*, *Eremophila mitchellii*, *Erythroxylum austral*, *Eucalyptus melanophloia*, *Geijera parviflora*, *Hovea longipes*, *Petalostigma pubescens*, *Senna indet.*, *Xanthorrhoea glauca* subsp. *glauca*

Ground

Dominant: *Aristida calycina* var. *calycina*, *Enneapogon lindleyanus*, *Bothriochloa bladhii*, *Aristida indet.*

Frequent Grasses: *Enneapogon lindleyanus*, *Heteropogon contortus*, *Cymbopogon refractus*, *Themeda triandra*, *Ancistrachne uncinulata*, *Aristida calycina* var. *calycina*, *Aristida indet.*, *Bothriochloa bladhii*, *Bothriochloa decipiens* var. *decipiens*, *Chloris ventricose*, *Cyperus indet.*, *Enneapogon virens*, *Eragrostis lacunaria*, *Eulalia aurea*, *Panicum effusum*, *Paspalidium indet.*, *Abildgaardia ovata*, *Aristida acuta*, *Aristida caput-medusae*, *Aristida holathera* var. *holathera*, *Aristida latifolia*, *Aristida leptopoda*, *Aristida personata*, *Bothriochloa bladhii* subsp. *bladhii*, *Bothriochloa ewartiana*, *Bulbostylis barbata*, *Chloris divaricate*, *Cyperus bifax*, *Cyperus gilesii*, *Cyperus gracilis*, *Dactyloctenium radulans*, *Dichanthium sericeum* subsp. *sericeum*,

³ *Casuarina cristata* is not listed in the technical description for 11.5.9; however, it has been included as it occurs locally and is an important species for the Glossy Black-cockatoo.

Digitaria indet., *Enneapogon indet.*, *Enneapogon polyphyllus*, *Enteropogon acicularis*, *Eragrostis indet.*, *Eragrostis sororia*, *Eriochloa crebra*, *Eriochloa pseudoacrotricha*, *Heteropogon indet.*, *Imperata cylindrica*, *Microlaena stipoides*, *Panicum decompositum*, *Paspalidium criniforme*, *Paspalidium distans*, *Paspalidium globoideum*, *Paspalidium gracile*, *Sarga leiocladum*, *Scleria brownii*, *Sporobolus caroli*, *Sporobolus creber*, *Themeda avenacea*, *Tragus australianus*, *Urochloa foliosa*, *Urochloa indet.*

Low-intensity cattle grazing

Grasses

Ancistrachne uncinata

Bothriochloa ewartiana

Chloris divaricate

Chloris ventricose

Cymbopogon refractus

Dichanthium sericeum

Themeda triandra

Japanese Millet - sterile hybrid

Silk Sorghum

Appendix 4 – BioCondition Benchmark Criteria

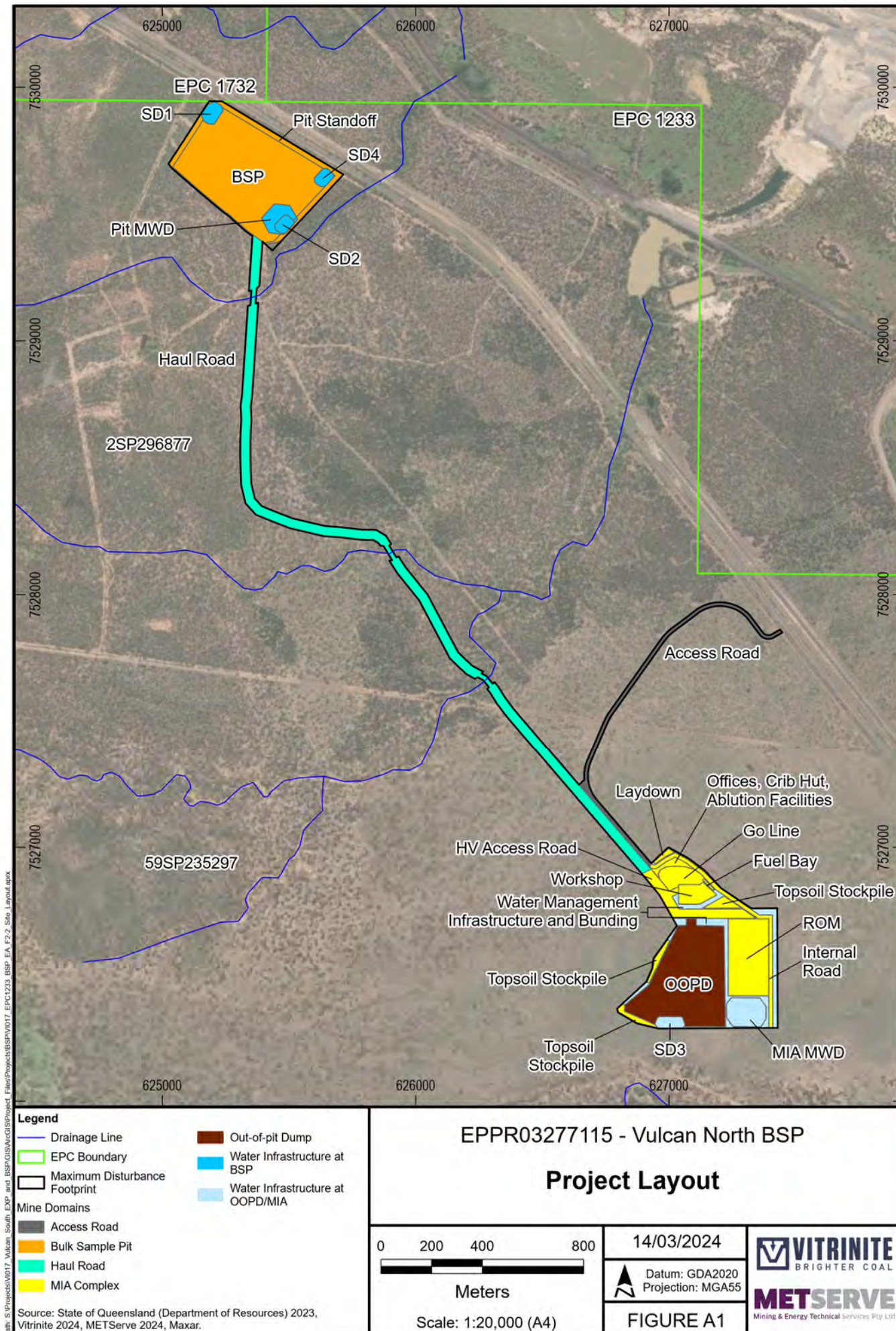
This appendix articulates the benchmark criteria to be achieved for each assessable attribute. The benchmark criteria for each RE is determined by the corresponding PMLU. Benchmark criteria and assessable attributes are derived from the Queensland Government's BioCondition benchmark database⁴.

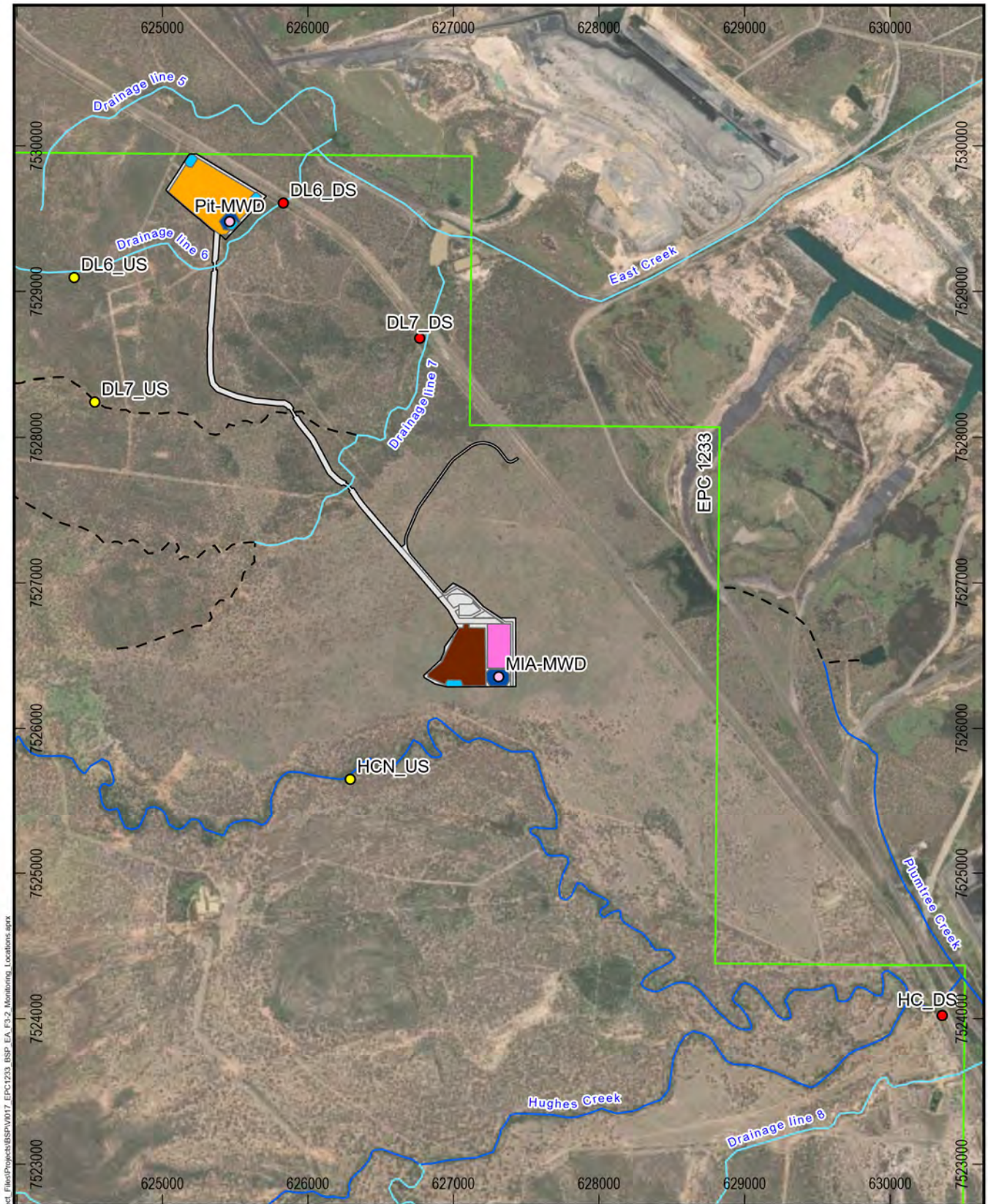
Table 1. Pre-mining Regional ecosystems references – Native ecosystem

Relevant PMLU	Native Ecosystem					
Regional Ecosystem (RE)	11.5.3		11.9.2		11.5.9	
BioCondition Assessable Attributes	60/80	80/80	60/80	80/80	60/80	80/80
Recruitment (tree species)	4	6	1	2	2	3
Non-native plant cover (%)	max. 5	0	max. 5	0	max. 5	0
Tree (native) species richness*	4	6	1	2	2	3
Shrub (native) species richness*	4	6	7	10	4	6
Grass (native) species richness*	4	6	5	7	7	9
Forb/other (native) species richness	7	10	9	12	8	11
Tree canopy cover (%)	12	16	11	15	19	25
Native perennial grass cover (%)	14	19	13	18	19	26
Litter and other vegetation cover (%)	15	20	22	30	22	30

*Species richness must be based on species that occur in the RE technical description (refer **Appendix 3**).

⁴ Source: <https://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks>





Legend

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> ○ Mine Water Dam Monitoring Site ● Downstream Surface Water Monitoring Site ● Upstream Surface Water Monitoring Site | <ul style="list-style-type: none"> --- Local Drainage Features --- Minor Drainage Features --- Drainage Features --- Watercourse | <ul style="list-style-type: none"> EPC 1233 Maximum Disturbance Footprint Infrastructure Out of Pit Dump Pit ROM Sediment Dam Mine Affected Water Dam |
|---|--|---|

Source: WRM 2024, State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2024, Maxar.

EPPR03277115 - Vulcan North BSP

Surface Water Monitoring Locations

0 0.5 1 1.5



Kilometers

Scale: 1:38,000 (A4)

14/03/2024

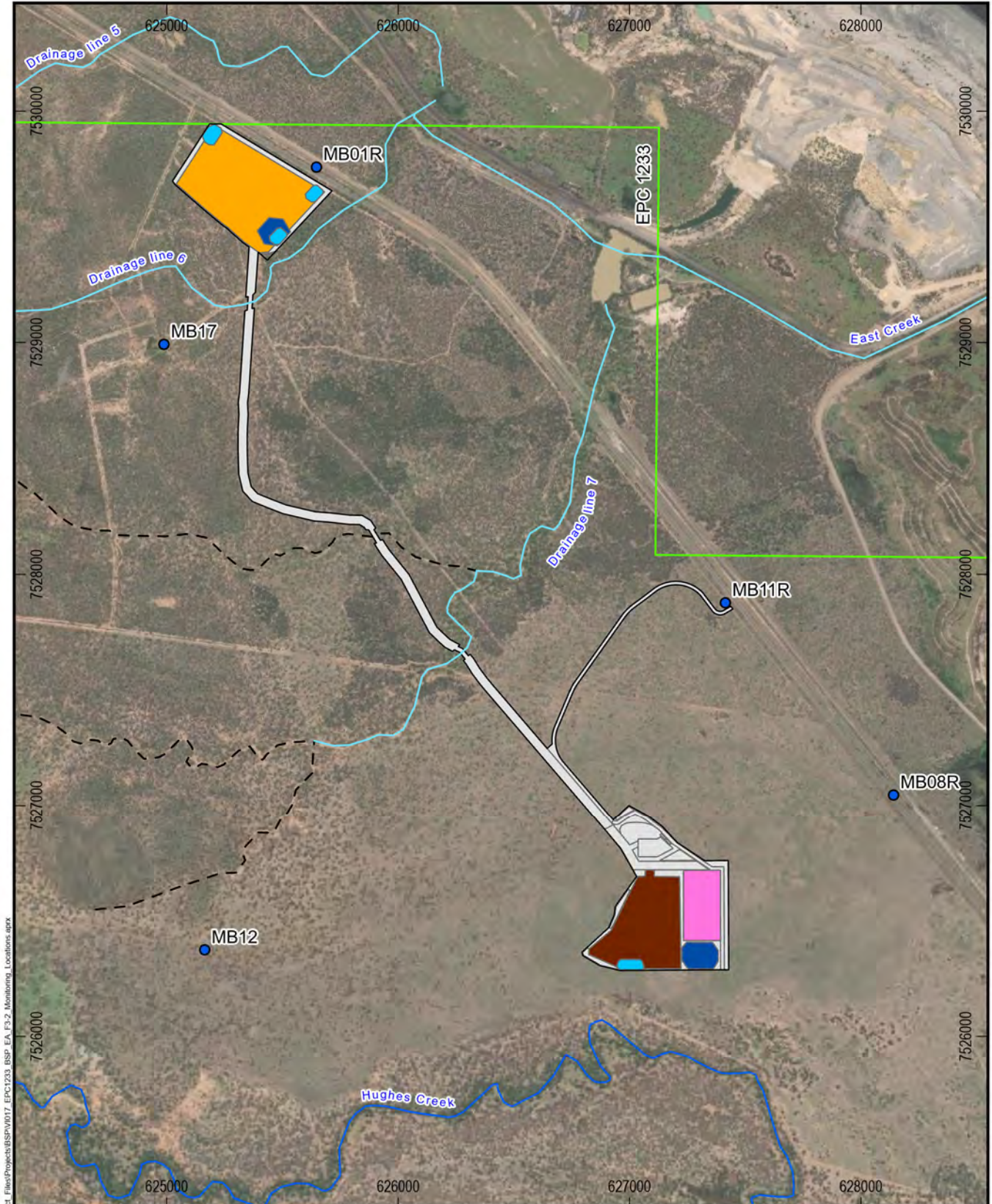


Datum: GDA2020
Projection: MGA55

FIGURE D1

VITRINITE
BRIGHTER COAL

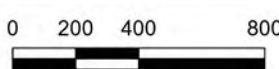
METSERVE
Mining & Energy Technical Services Pty Ltd



- Legend**
- Groundwater Monitoring Bores
 - Local Drainage Features
 - - Minor Drainage Features
 - - Drainage Features
 - - Watercourse
 - EPC 1233
 - Maximum Disturbance Footprint
 - Infrastructure
 - Out of Pit Dump
 - Pit
 - ROM
 - Sediment Dam
 - Mine Affected Water Dam

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Groundwater Monitoring Bore Locations



Scale: 1:24,000 (A4)

14/03/2024

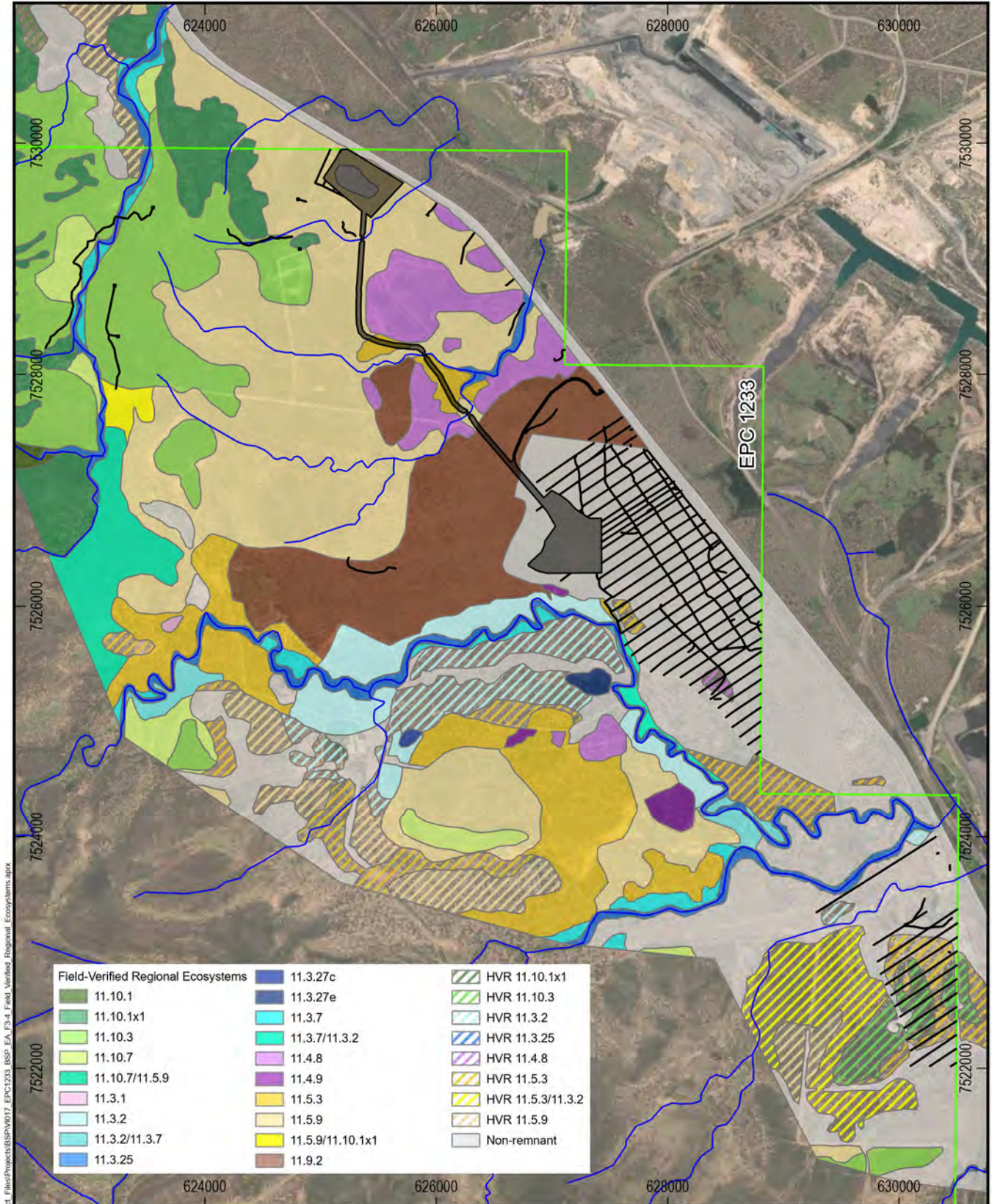
Datum: GDA2020
Projection: MGA55

FIGURE E1



Path: S:\Projects\0017 - Vulcan North BSP\GIS\MapGIS\Project Files\Projects\BSP\0017 - EPC1233 BSP EA F3.2 Monitoring Locations.aprx

Source: WRM 2024, State of Queensland (Department of Resources) 2023, Vitrinite 2024, METSERVE 2024, Maxar.



Legend

- Drainage Line
- EPC 1233
- Cumulative Disturbance Footprint

EPPR03277115 - Vulcan North BSP

Locations of Regional Ecosystems

0 0.5 1 1.5



Kilometers

Scale: 1:48,000 (A4)

14/03/2024



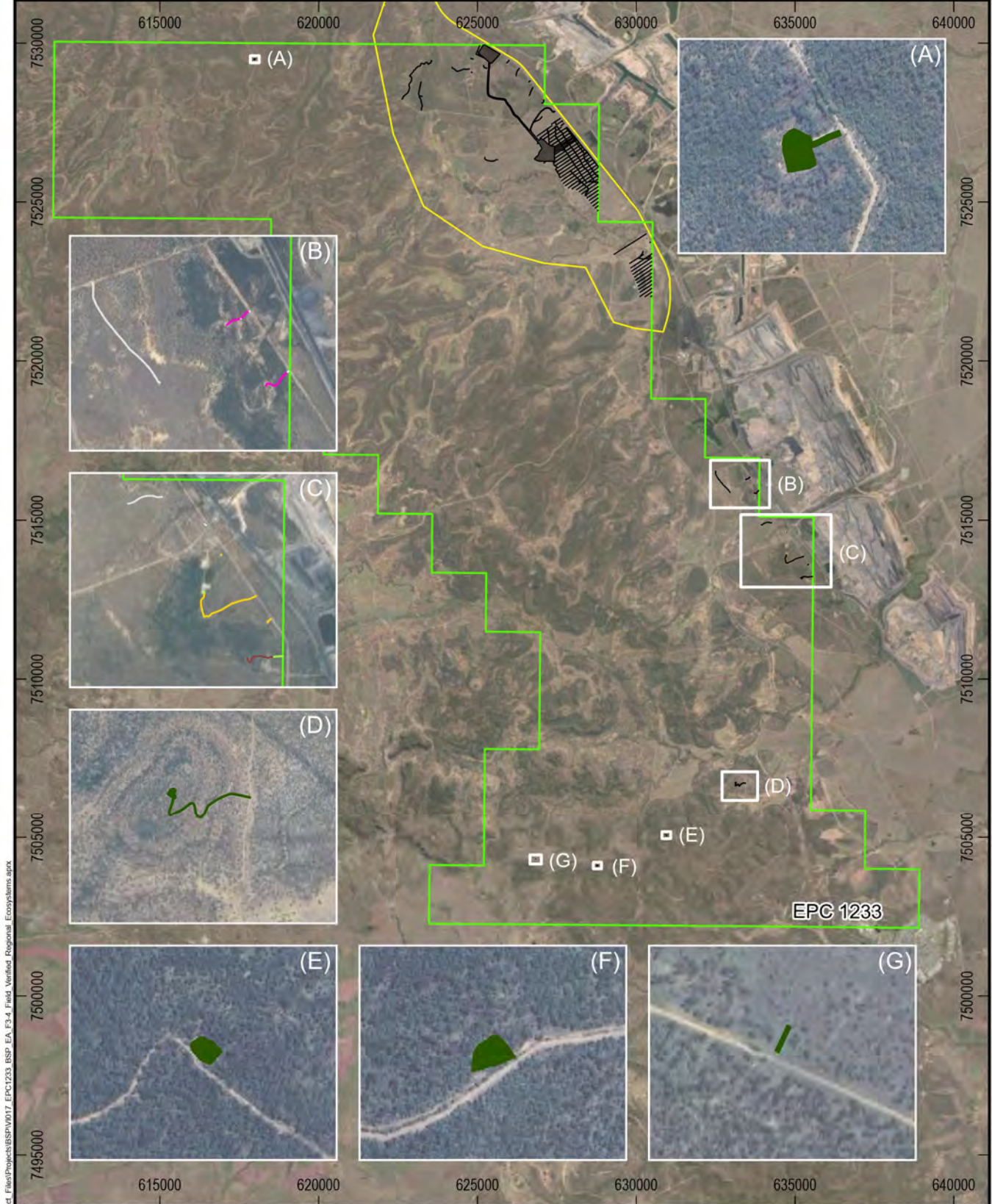
Datum: GDA2020
Projection: MGA55

FIGURE G1.1

VITRINITE
BRIGHTER COAL

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Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024, Maxar



Legend

- | | |
|---|---|
| EPC 1233 | 11.10.3 |
| Field Survey Area | 11.5.3 |
| Cumulative Disturbance Footprint | 11.5.3/11.5.9b/11.3.25 |
| Certified Regional Ecosystems | HVR 11.10.3 |
| 11.10.1 | HVR 11.5.3/11.5.9b/11.3.25 |
| | Non-remnant |

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024. Imagery - Maxar, © OpenStreetMap and contributors.

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Locations of Regional Ecosystems

0 1.5 3 6



Kilometers

Scale: 1:175,000 (A4)

15/03/2024

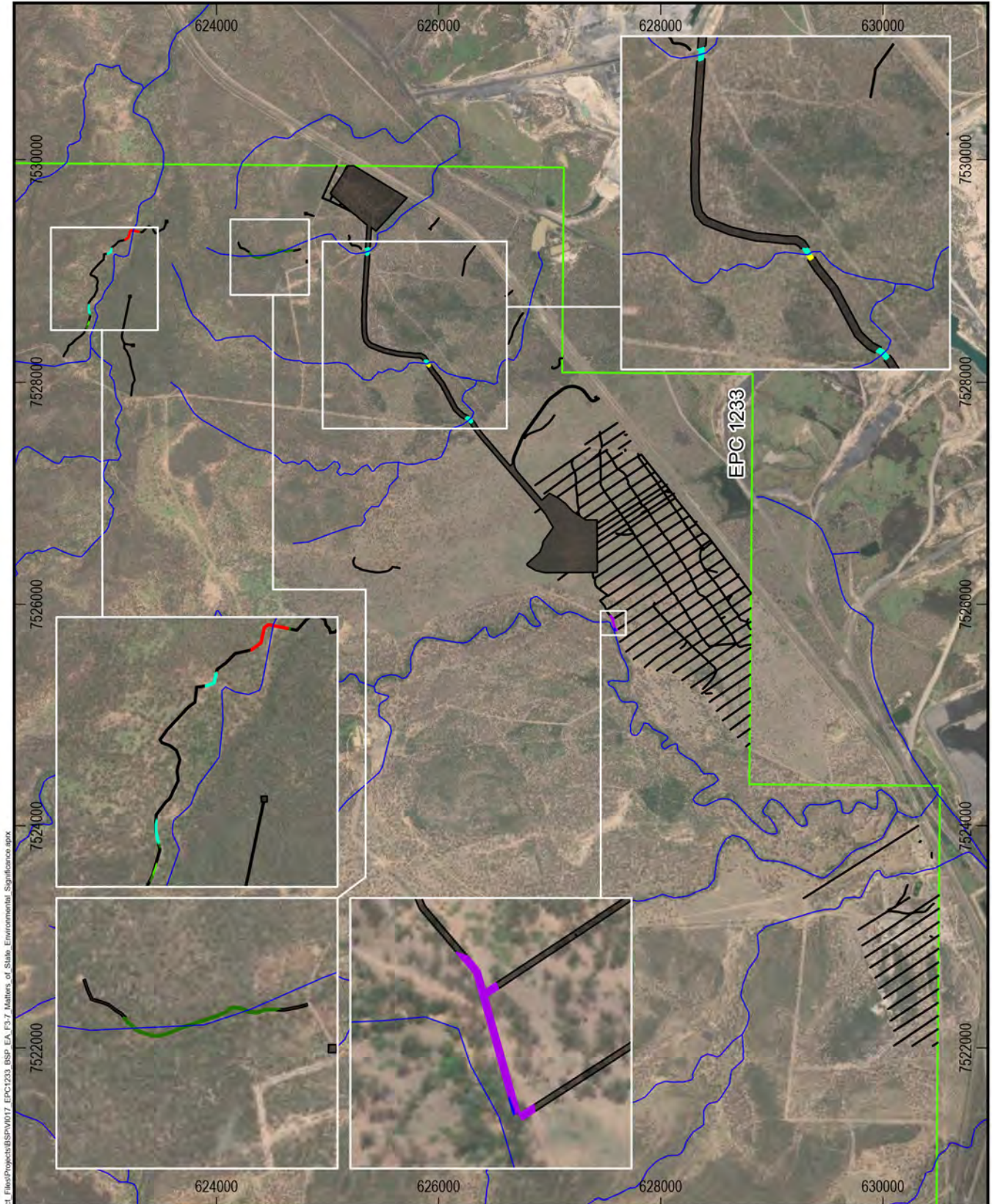


Datum: GDA2020
Projection: MGA55

VITRINITE
BRIGHTER COAL

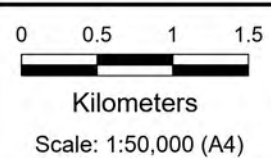
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FIGURE G1.2



- Legend**
- Drainage Line
 - EPC 1233
 - Cumulative Disturbance Footprint
 - Vegetation Management Watercourse Regional Ecosystems**
 - 11.10.1/11.5.9b
 - 11.10.3
 - 11.3.2
 - 11.3.25
 - 11.3.25/11.3.2
 - 11.5.3
 - 11.5.9b

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Vegetation Management Watercourse
Regional Ecosystems



14/03/2024

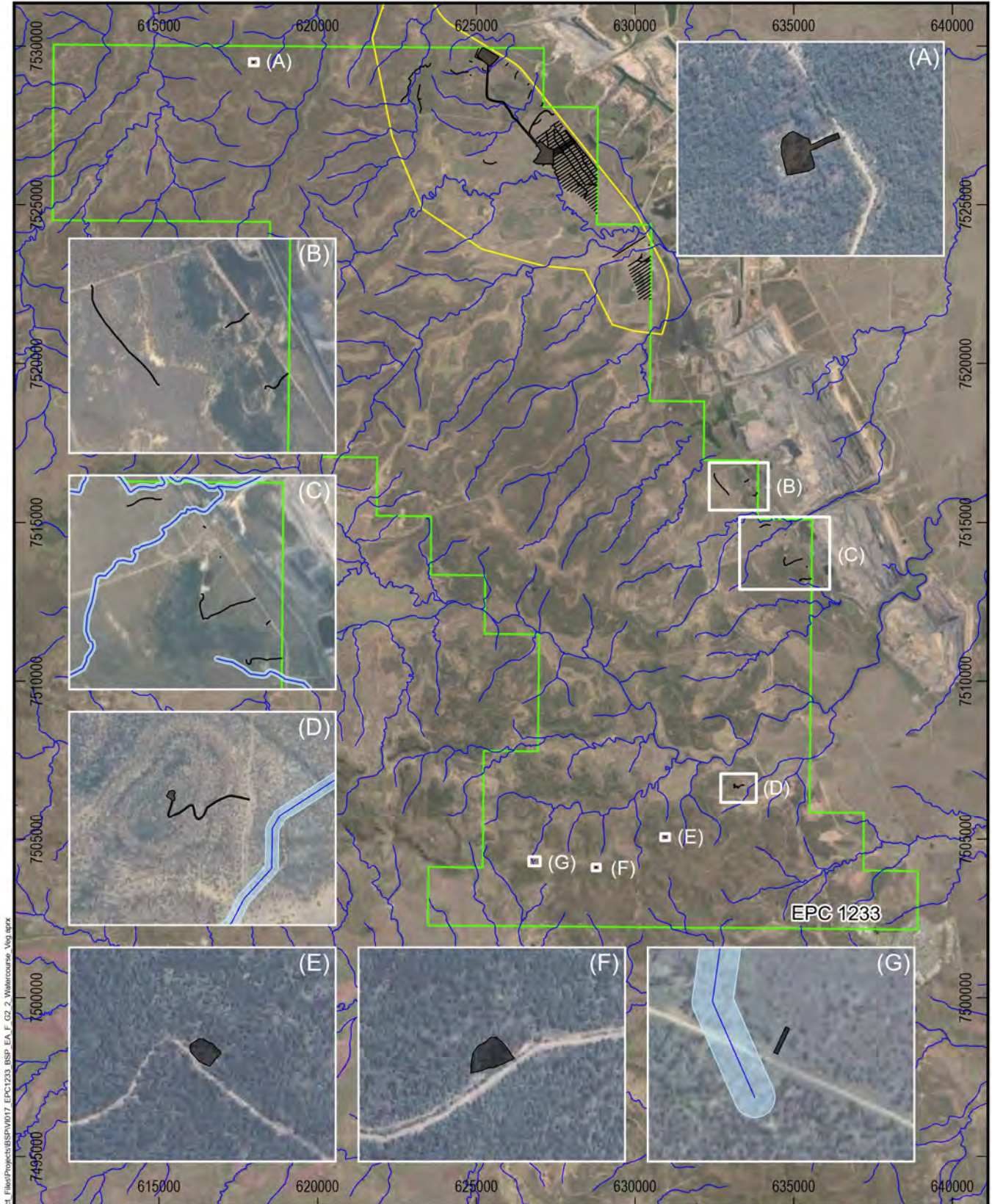
Datum: GDA2020
 Projection: MGA55

FIGURE G2.1



Path: S:\Projects\0017 - Vulcan North BSP\GIS\MapGIS\Project Files\Projects\BSP\0017 - EPC1233 BSP EA V3.7 Matters of State Environmental Significance.aprx

Source: State of Queensland (Department of Resources) 2024, Vitrinite 2024, METServe 2020-2024, Maxar. *Insets at different scale.*

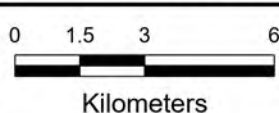


Legend

- Drainage Line
- EPC 1233
- Field Survey Area
- Defined Watercourse Areas
- Cumulative Disturbance Footprint

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024. Imagery - Maxar, © OpenStreetMap and contributors.

EPPR03277115 - Vulcan North BSP Vegetation Management Watercourse Regional Ecosystems



Scale: 1:175,000 (A4)

15/03/2024

Datum: GDA2020
Projection: MGA55

FIGURE G2.2

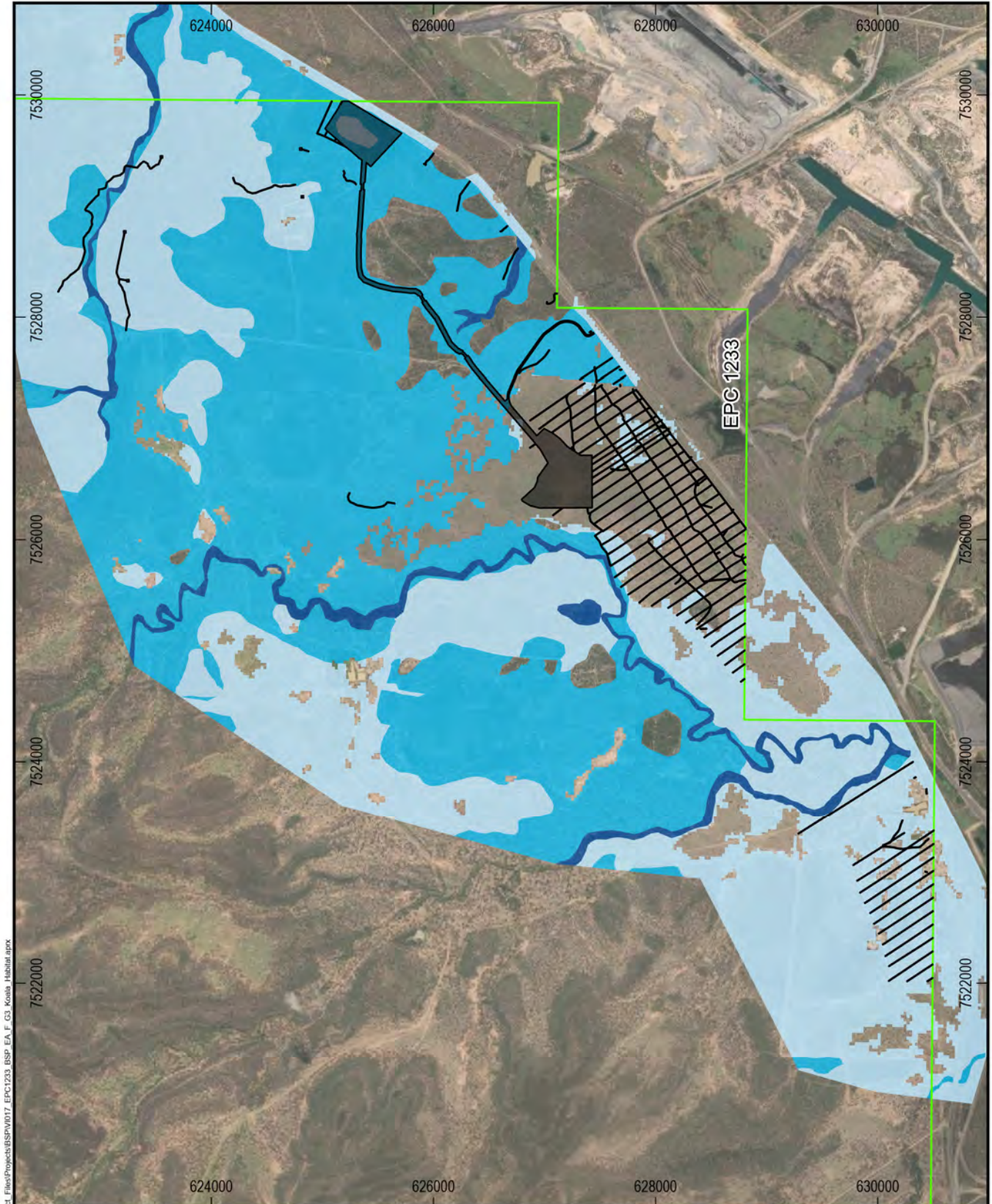
VITRINITE

BRIGHTER COAL

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Path: S:\Projects\0017 Vulcan North BSP and BSP\GIS\MapGIS\Project Files\Projects\BSP\0017 EPC1233 BSP EA_F_G2_2 Watercourse_Veg.aprx



- Legend**
- EPC 1233
 - Cumulative Disturbance Footprint
 - Koala Habitat High value
 - Koala Habitat Moderate value
 - Koala Habitat Low value

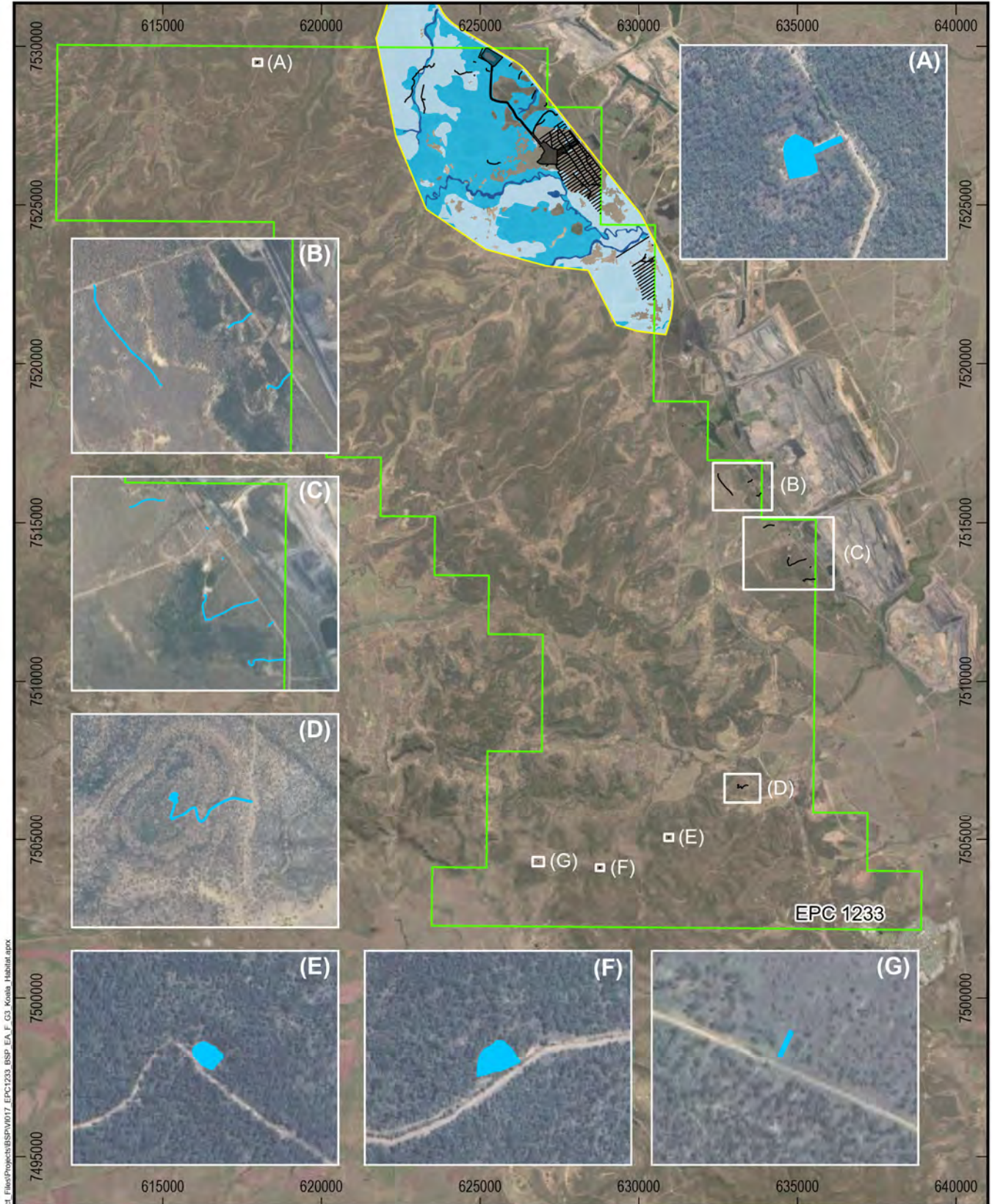
EPPR03277115 - Vulcan North BSP

Location of Koala Habitat

0 0.5 1 1.5 Kilometers Scale: 1:50,000 (A4)	14/03/2024 Datum: GDA2020 Projection: MGA55	VITRINITE BRIGHTER COAL METSERVE Mining & Energy Technical Services Pty Ltd
FIGURE G3.1		

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024, Maxar.

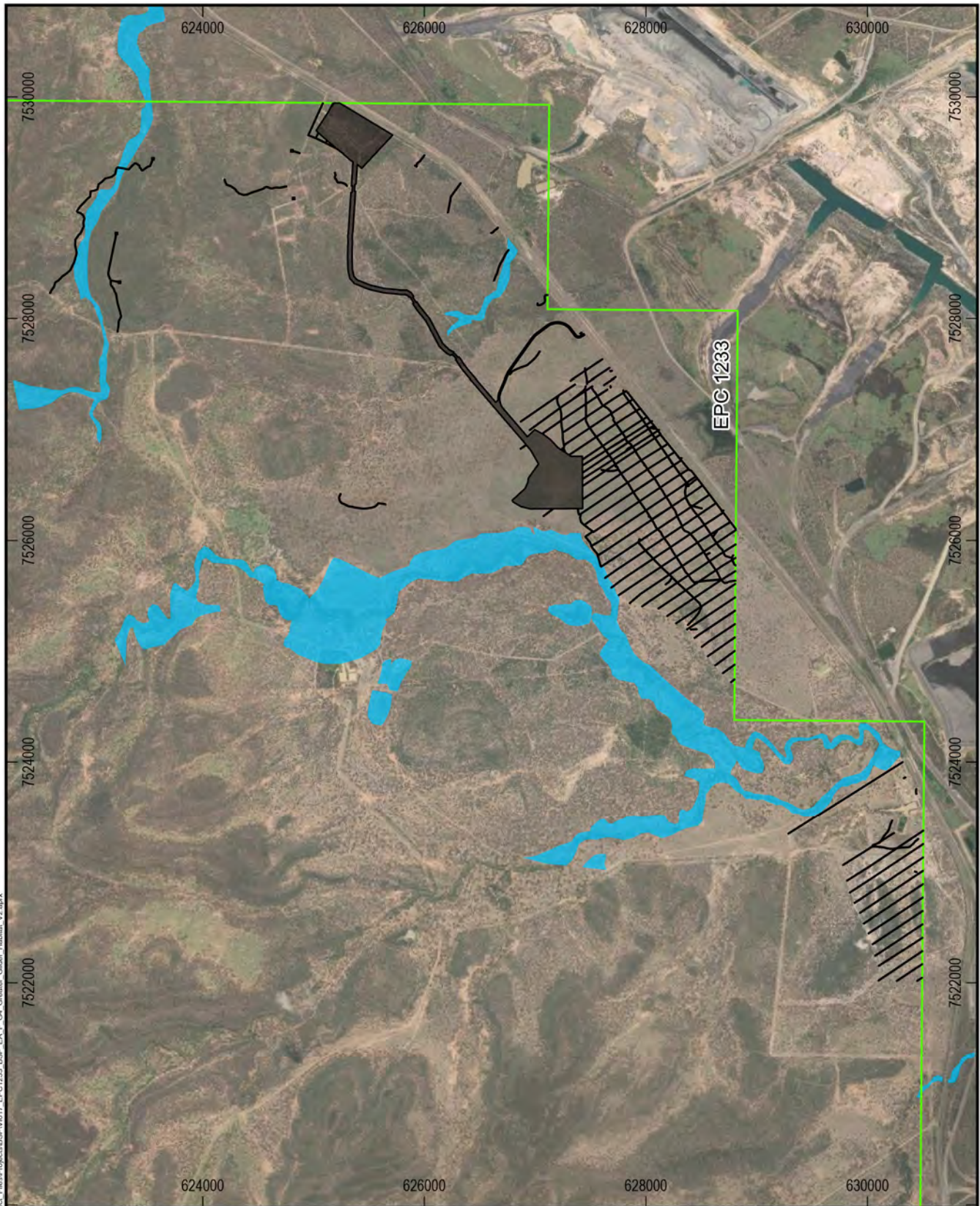
Path: S:\Projects\0171 Vulcan North BSP\GIS\MapGIS\Project Files\Projects\BSP\0171 EPC1233 BSP EA_F G3 Koala Habitat.aprx



Path: S:\Projects\2017 Vulcan South EXP and BSP\GIS\MapGIS\Project Files\Projects\BSP\017 EPC1233 BSP EA_F G3 Koala Habitat.aprx
 Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024. Imagery - Maxar, © OpenStreetMap and contributors.

Legend EPC 1233 Field Survey Area Cumulative Disturbance Footprint Koala Habitat High value Moderate value Low value		EPPR03277115 - Vulcan North BSP Location of Koala Habitat	
 Kilometers Scale: 1:175,000 (A4)		15/03/2024 Datum: GDA2020 Projection: MGA55 	
		FIGURE G3.2	

Path: S:\Projects\01717 Vulcan North BSP and BSP\GIS\MapGIS\Project Files\Projects\BSP\01717 EPC1233 BSP EA F C4 Greater Glider Habitat V2.aprx



Legend

-  Cumulative Disturbance Footprint
-  EPC 1233
-  Central Greater Glider Habitat

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024, Maxar.

EPPR03277115 - Vulcan North BSP

Location of Greater Glider Habitat

0 0.5 1 1.5



Kilometers

Scale: 1:50,000 (A4)

14/03/2024



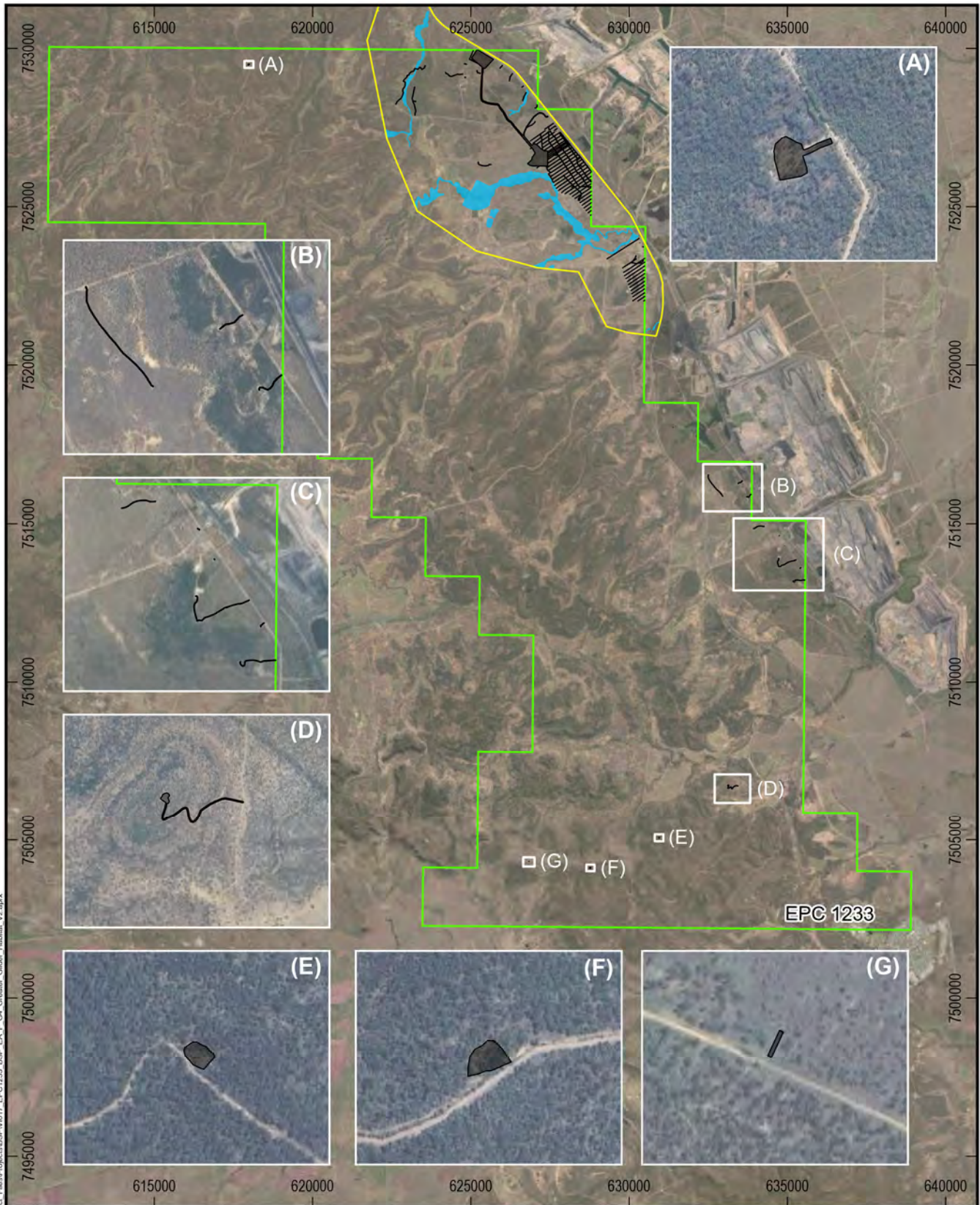
Datum: GDA2020
Projection: MGA55

FIGURE G4.1

 **VITRINITE**
BRIGHTER COAL

 **METSERVE**
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Path: S:\Projects\01717 Vulcan North BSP and BSPGIS\MapGIS\Project Files\Projects\BSP\017 EPC1233 BSP EA_F_C4 Greater Glider Habitat_V2.aprx



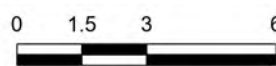
Legend

- EPC 1233
- Field Survey Area
- Cumulative Disturbance Footprint
- Central Greater Glider Habitat

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024. Imagery - Maxar, © OpenStreetMap and contributors.

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Location of Greater Glider Habitat



Kilometers

Scale: 1:175,000 (A4)

15/03/2024

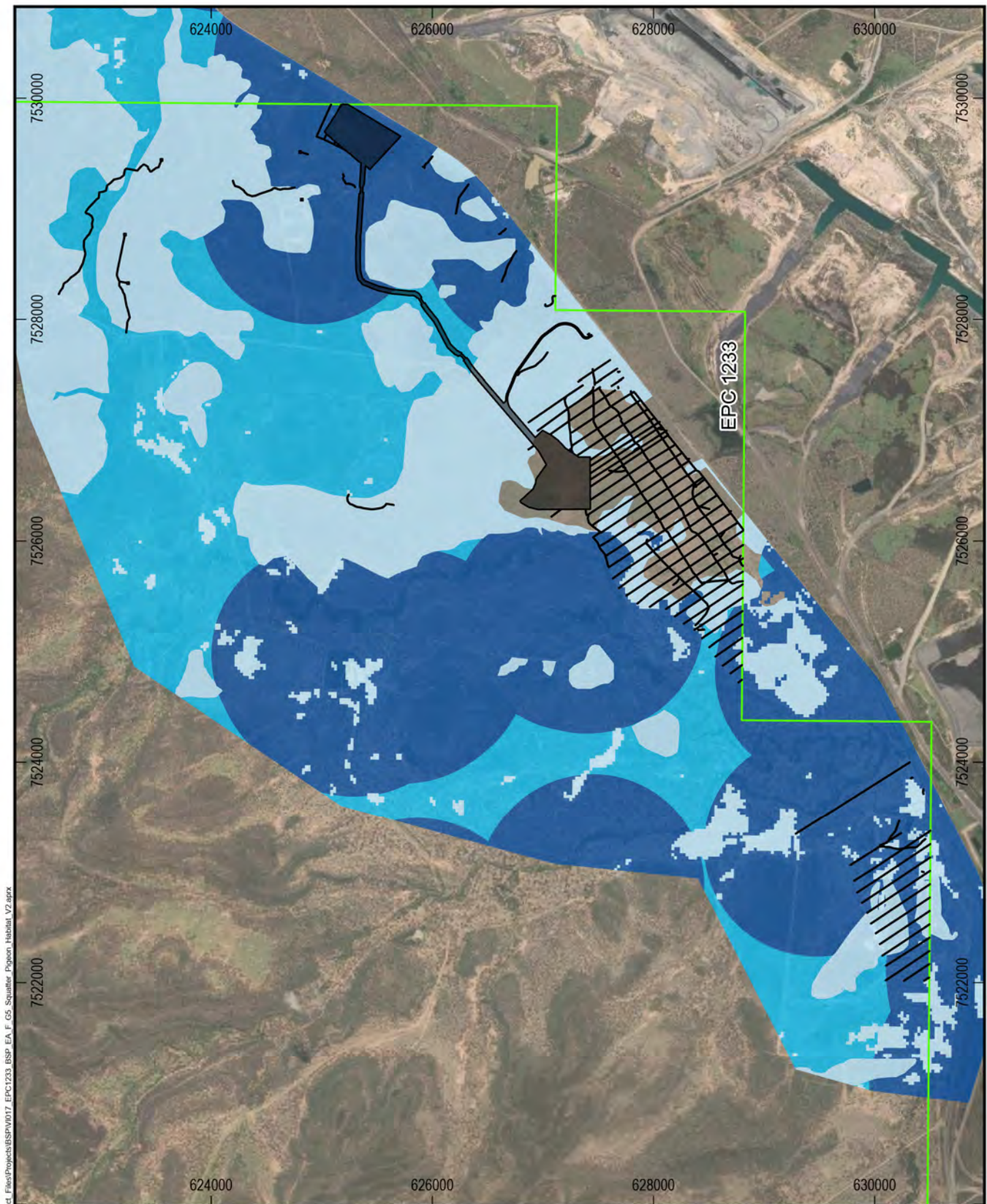


Datum: GDA2020
Projection: MGA55

FIGURE G4.2

VITRINITE
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Legend

- Cumulative Disturbance Footprint
- EPC 1233
- Squatter Pigeon Habitat**
 - Breeding and foraging habitat
 - Foraging habitat
 - Dispersal habitat

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024, Maxar.

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Location of Squatter Pigeon Habitat

0 0.5 1 1.5



Kilometers

Scale: 1:50,000 (A4)

14/03/2024

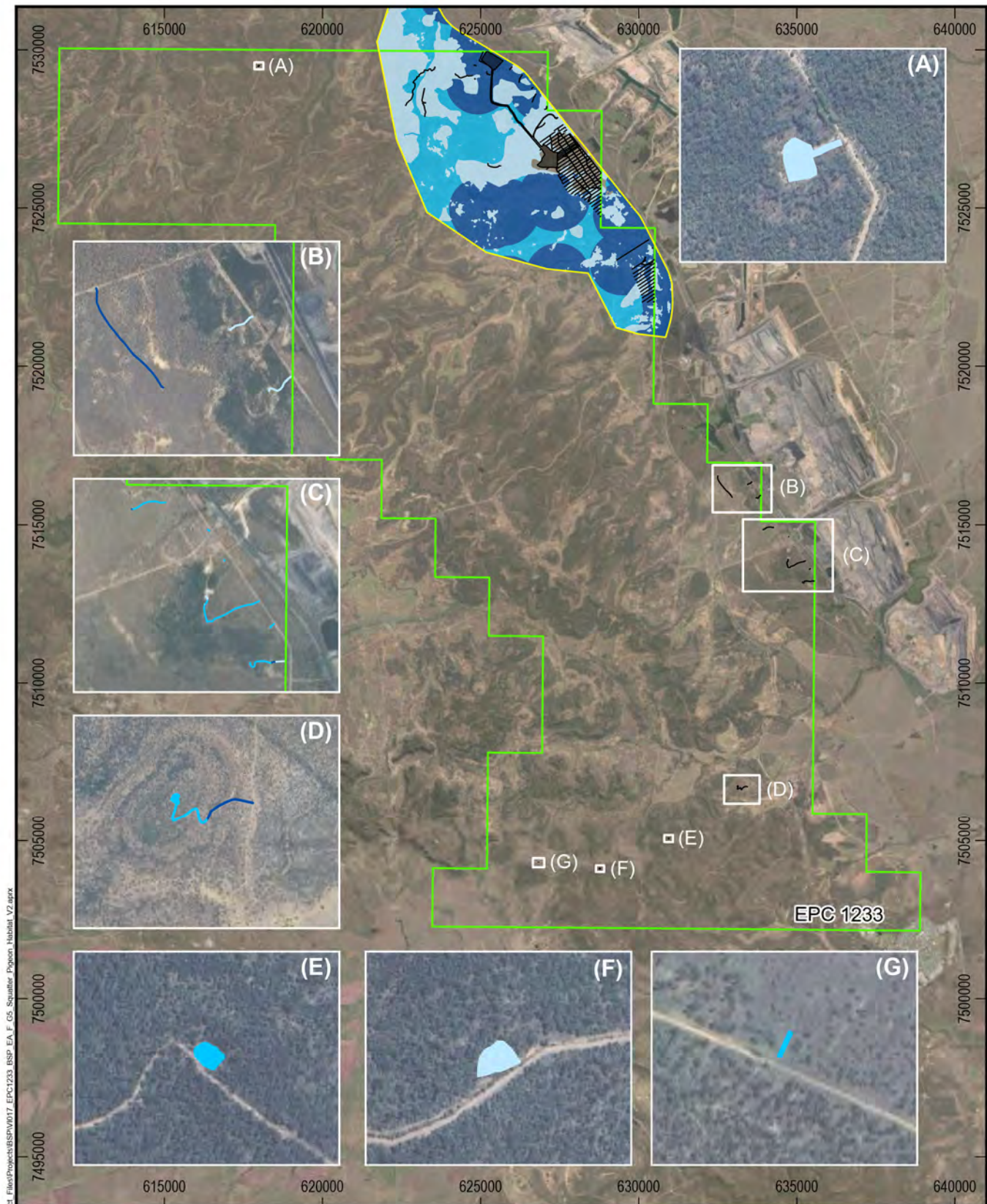


Datum: GDA2020
Projection: MGA55

FIGURE G5.1

VITRINITE
BRIGHTER COAL

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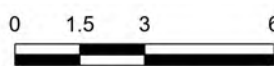
Legend

- | | |
|---|--|
| EPC 1233 | Squatter Pigeon Habitat |
| Field Survey Area | Breeding and foraging habitat |
| Cumulative Disturbance Footprint | Foraging habitat |
| | Dispersal habitat |

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024. Imagery - Maxar, © OpenStreetMap and contributors.

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Location of Squatter Pigeon Habitat



Kilometers

Scale: 1:175,000 (A4)

15/03/2024

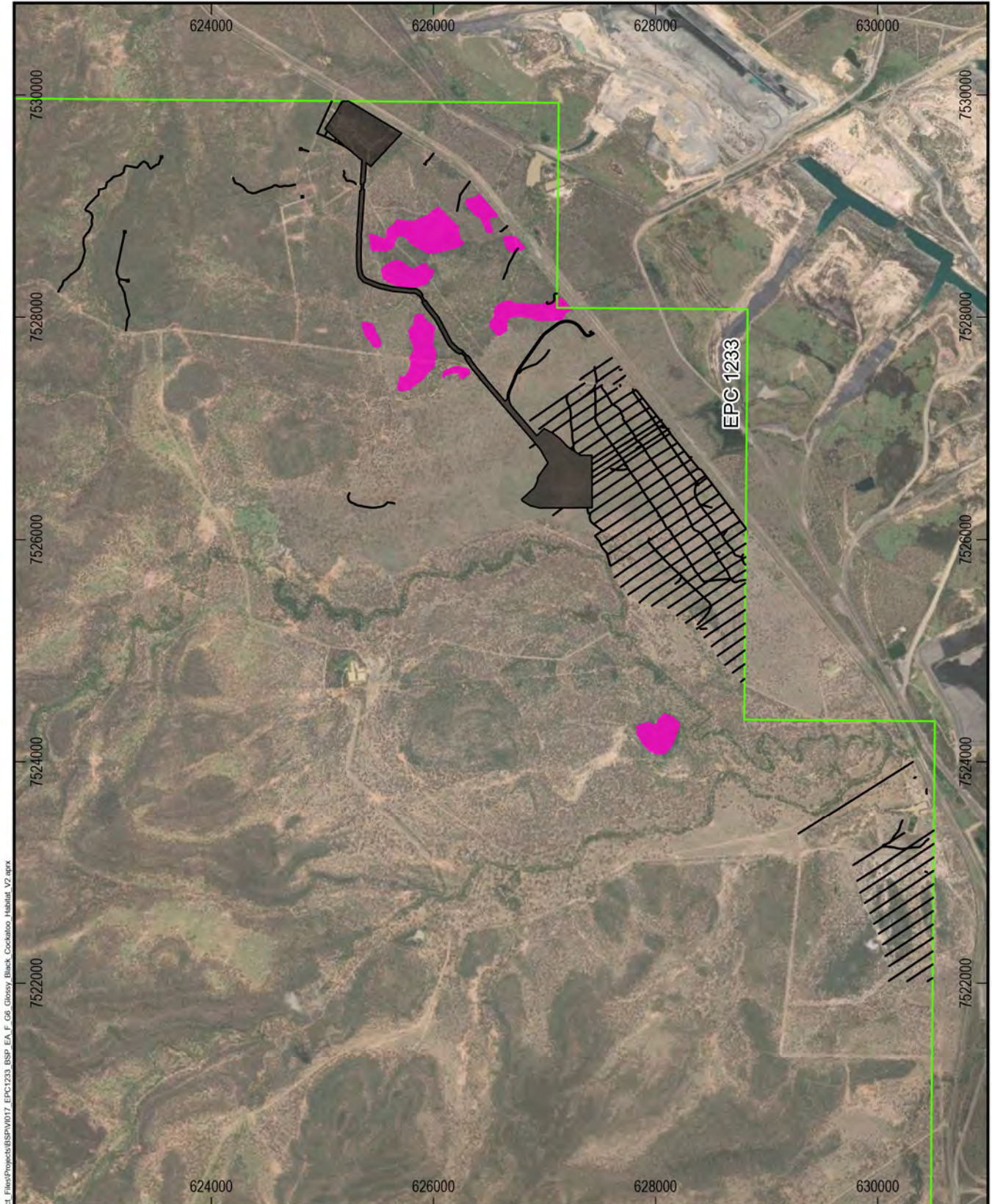


Datum: GDA2020
Projection: MGA55

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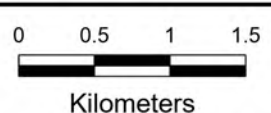
FIGURE G5.2



Legend

- Cumulative Disturbance Footprint
- EPC 1233
- Glossy Black Cockatoo Habitat

EPPR03277115 - Vulcan North BSP
Location of Glossy Black Cockatoo Habitat



14/03/2024

Datum: GDA2020
Projection: MGA55

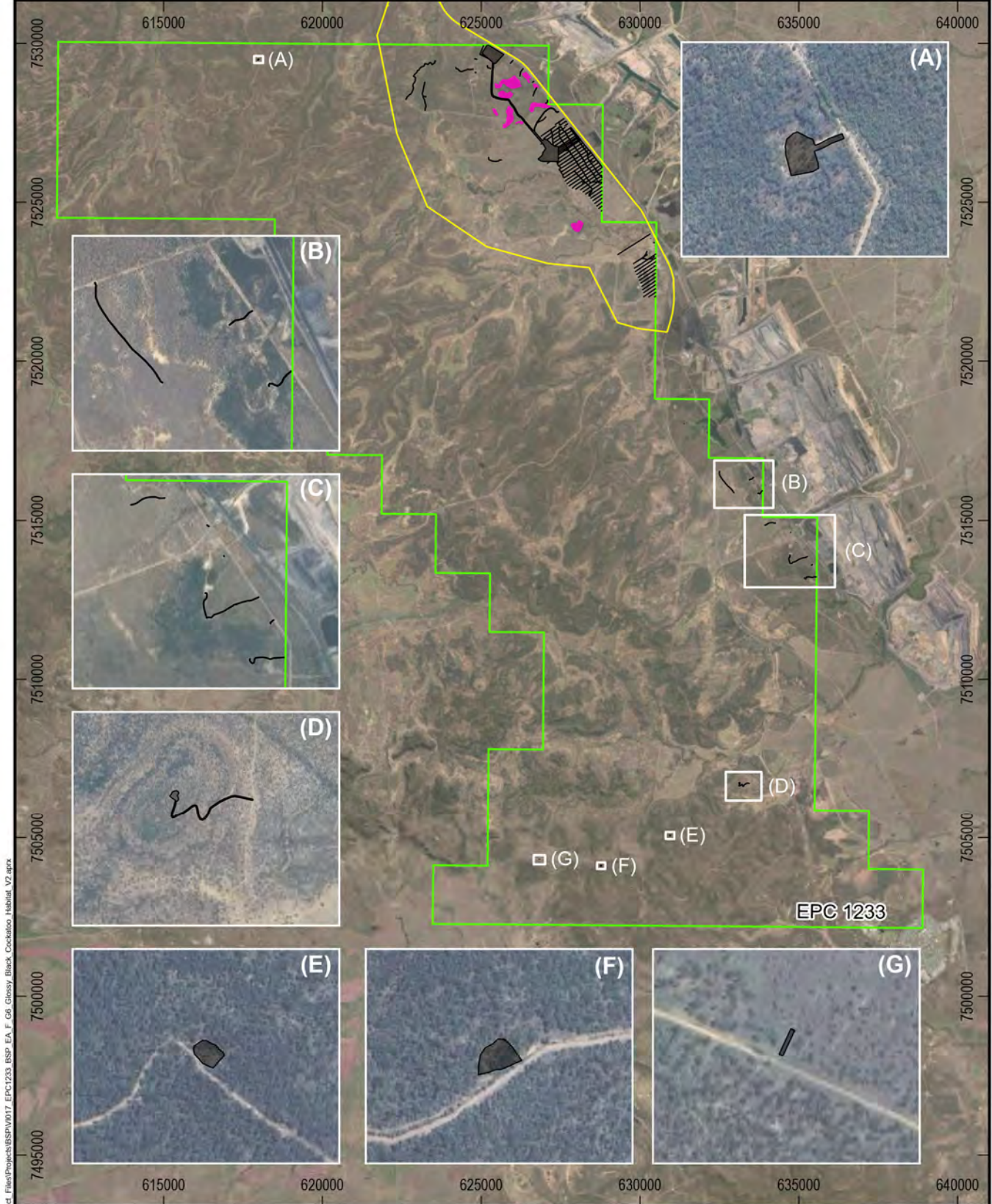


Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METSERVE 2020-2024, Maxar.

Scale: 1:50,000 (A4)

FIGURE G6.1

Path: S:\Projects\03277115 - Vulcan North BSP\GIS\MapGIS\Project Files\Projects\BSP\03277115 - EPPR03277115 - EPC1233 BSP EA.F G6 Glossy Black Cockatoo Habitat V2.aprx



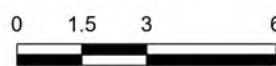
Legend

- EPC 1233
- Field Survey Area
- Cumulative Disturbance Footprint
- Glossy Black Cockatoo Habitat

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024. Imagery - Maxar, © OpenStreetMap and contributors.

EPPR03277115 - Vulcan North BSP

Location of Glossy Black Cockatoo Habitat



Kilometers

Scale: 1:175,000 (A4)

15/03/2024

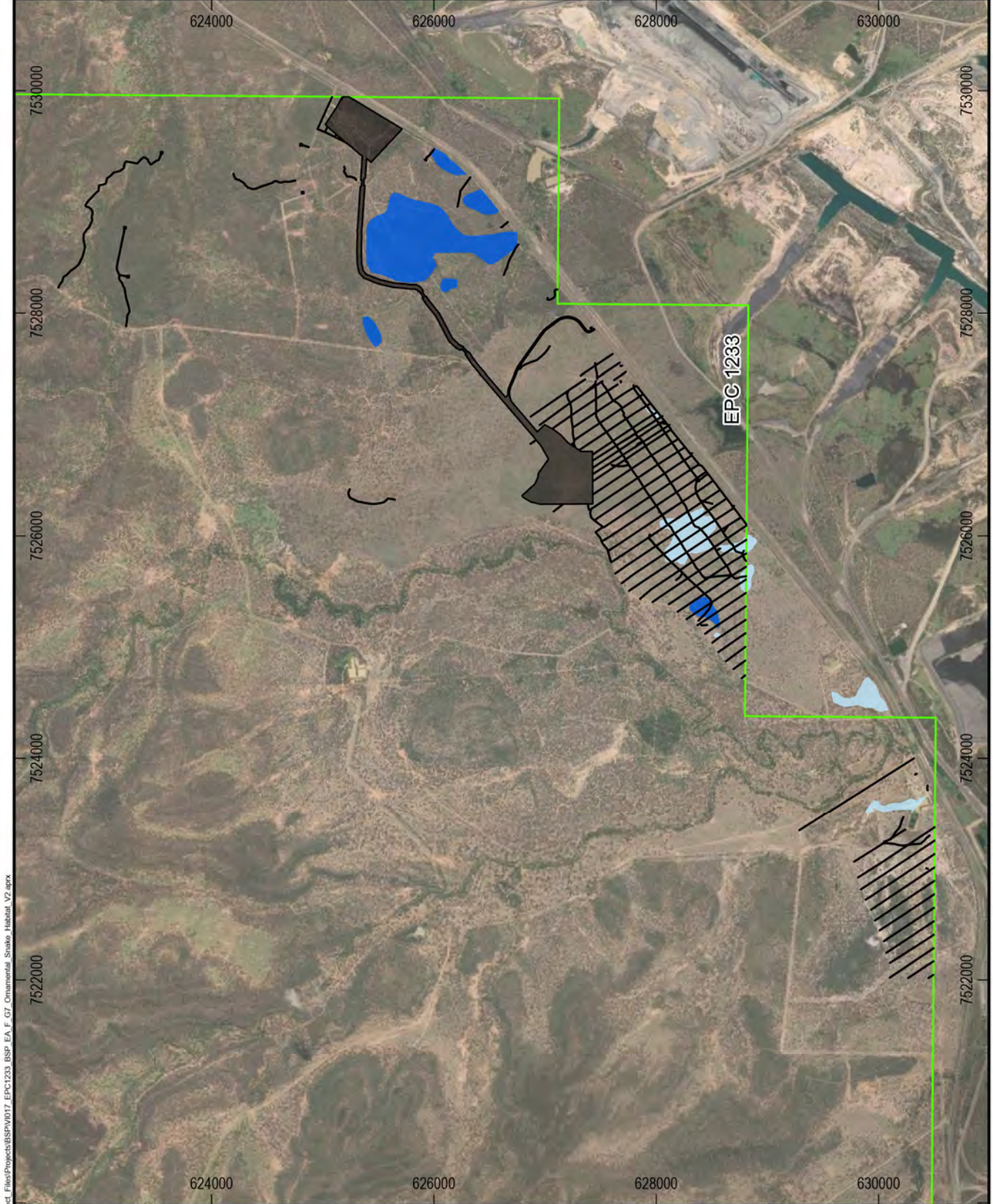


Datum: GDA2020
Projection: MGA55

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FIGURE G6.2



Legend

-  Cumulative Disturbance Footprint
-  EPC 1233
- Potential Ornamental Snake Habitat
 -  Core
 -  Non-core

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024, Maxar.

EPPR03277115 - Vulcan North BSP

Location of Ornamental Snake Habitat

0 0.5 1 1.5



Kilometers

Scale: 1:50,000 (A4)

14/03/2024



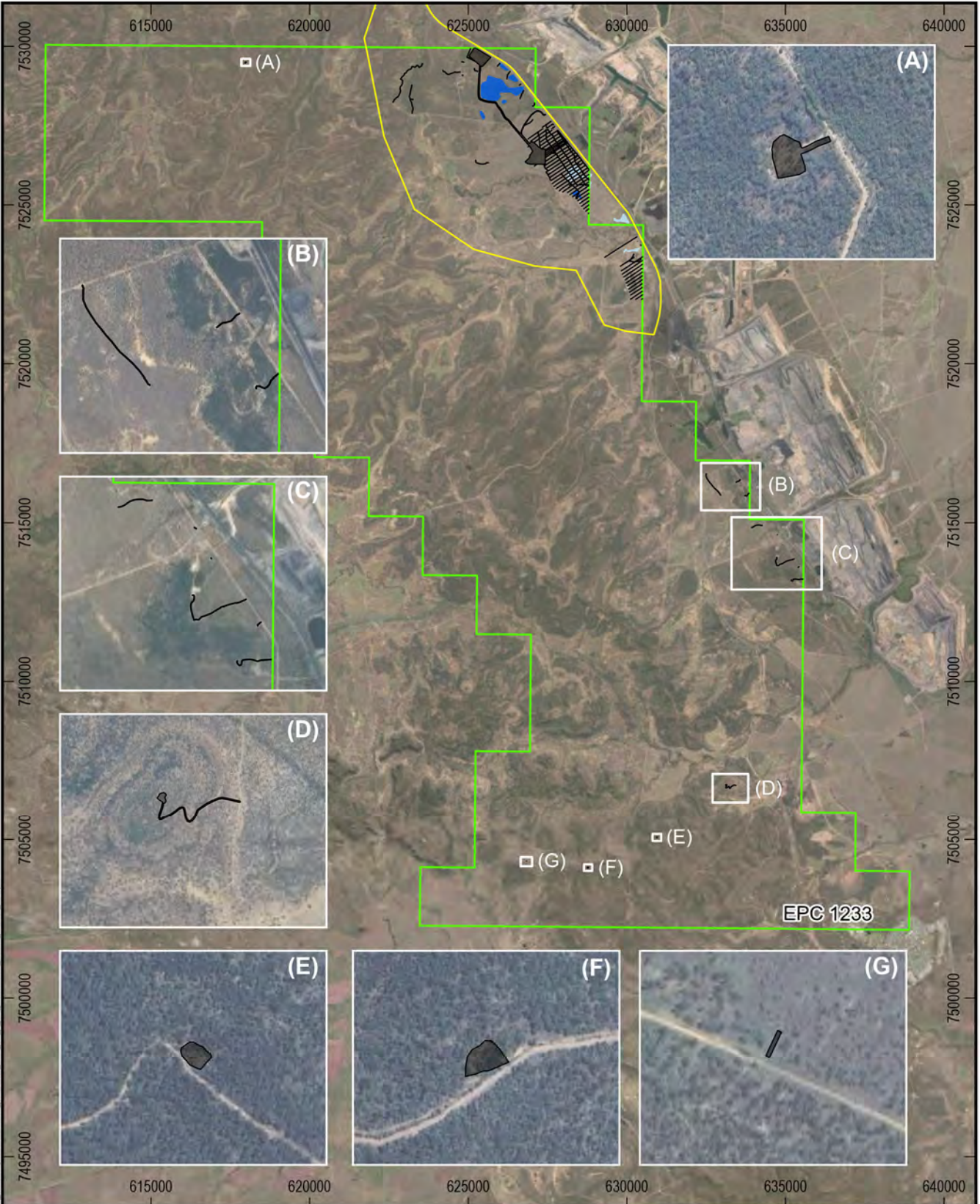
Datum: GDA2020
Projection: MGA55

FIGURE G7.1

VITRINITE
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Path: S:\Projects\01717 Vulcan South EXP and BSP\GIS\MapGIS\Project Files\Projects\BSP\017 EPC1233 BSP EA.F G7 Ornamental Snake Habitat V2.aprx



Legend

 EPC 1233	 Core
 Field Survey Area	 Non-core
 Cumulative Disturbance Footprint	

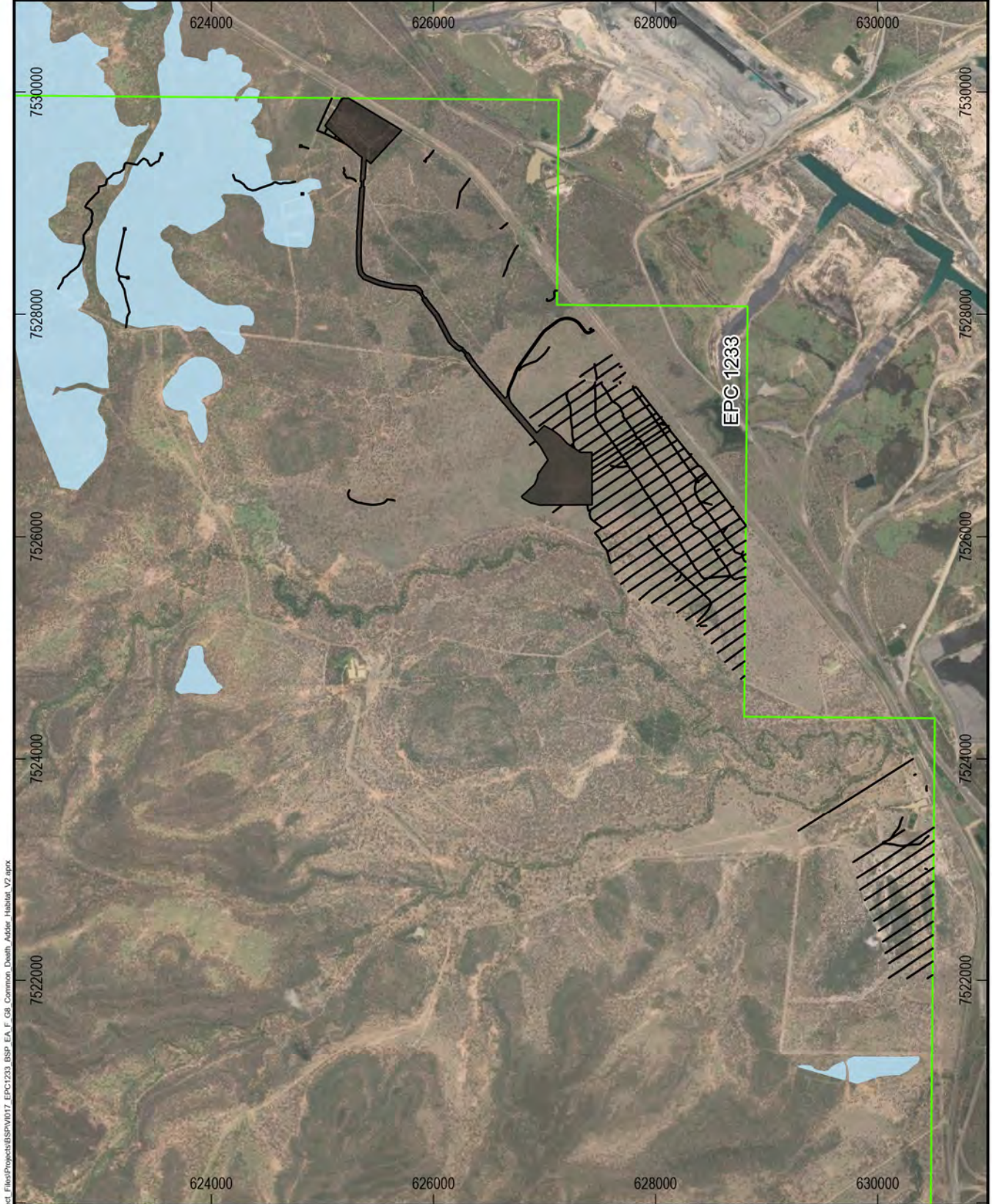
Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024. Imagery - Maxar, © OpenStreetMap and contributors.

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Location of Ornamental Snake Habitat

 Kilometers Scale: 1:175,000 (A4)	15/03/2024	 BRIGHTER COAL
	 Datum: GDA2020 Projection: MGA55	

FIGURE G7.2



Legend

- Cumulative Disturbance Footprint
- EPC 1233
- Common Death Adder Habitat

EPPR03277115 - Vulcan North BSP

Location of Common Death Adder Habitat

0 0.5 1 1.5



Kilometers

Scale: 1:50,000 (A4)

14/03/2024



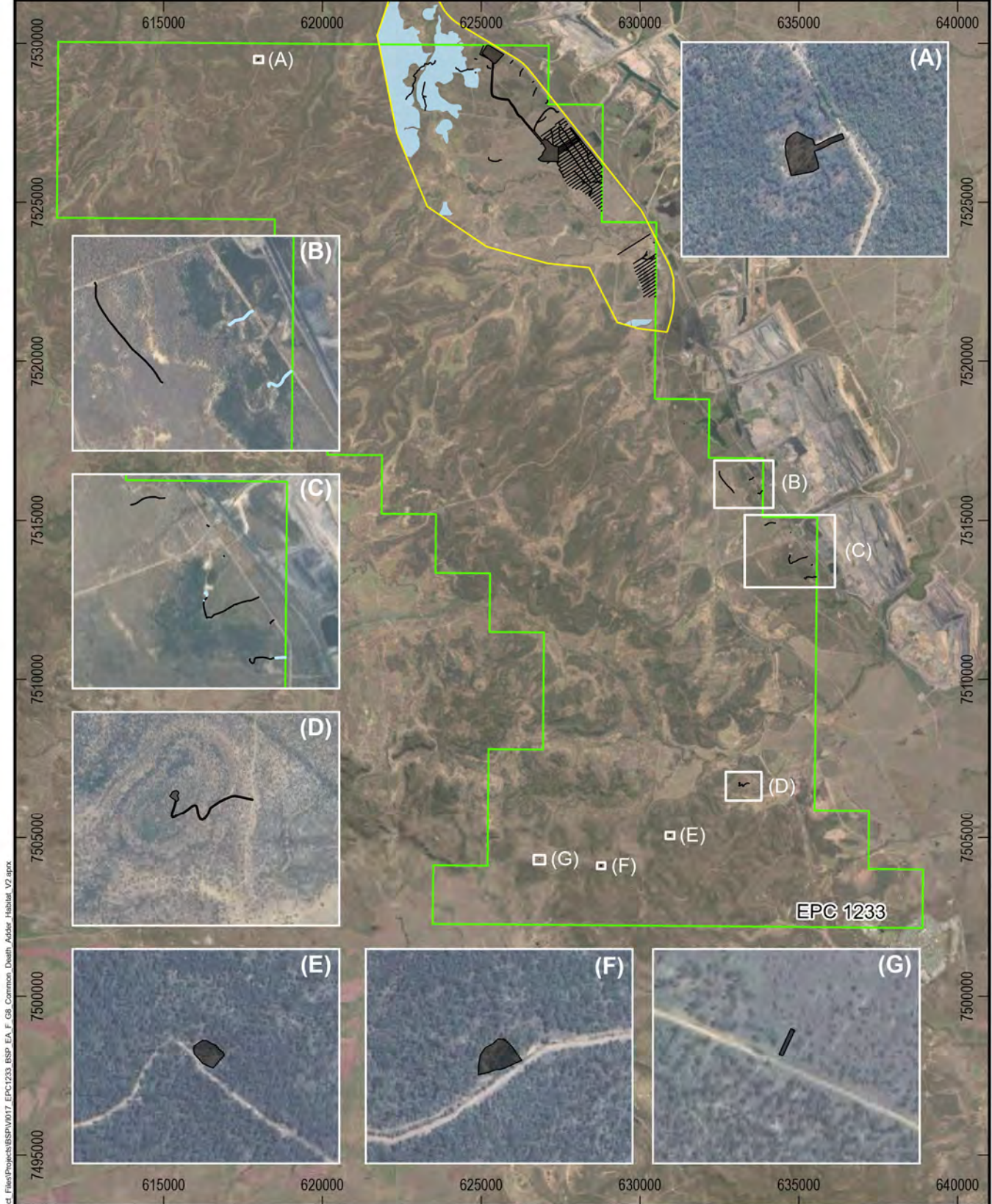
Datum: GDA2020
Projection: MGA55

VITRINITE
BRIGHTER COAL

METSERVE
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FIGURE G8.1

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024, Maxar.



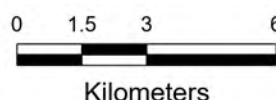
Legend

- EPC 1233
- Field Survey Area
- Cumulative Disturbance Footprint
- Common Death Adder Habitat

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024. Imagery - Maxar, © OpenStreetMap and contributors.

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Location of Common Death Adder Habitat



Scale: 1:175,000 (A4)

15/03/2024

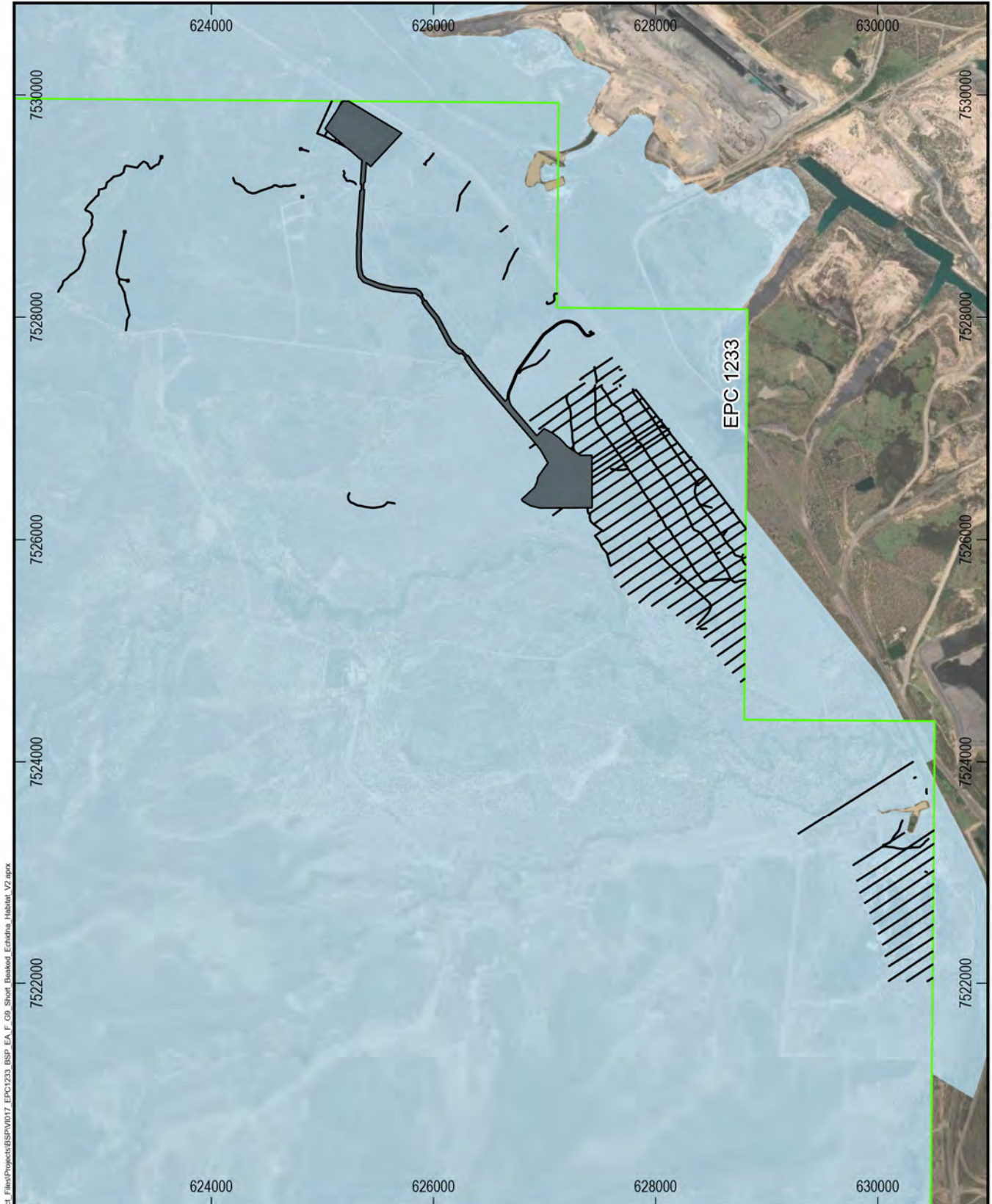


Datum: GDA2020
Projection: MGA55

VITRINITE
BRIGHTER COAL

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FIGURE G8.2



- Legend**
- Cumulative Disturbance Footprint
 - EPC 1233
 - Short Beaked Echidna Habitat

EPPR03277115 - Vulcan North BSP

Location of Short-Beaked Echidna Habitat



14/03/2024

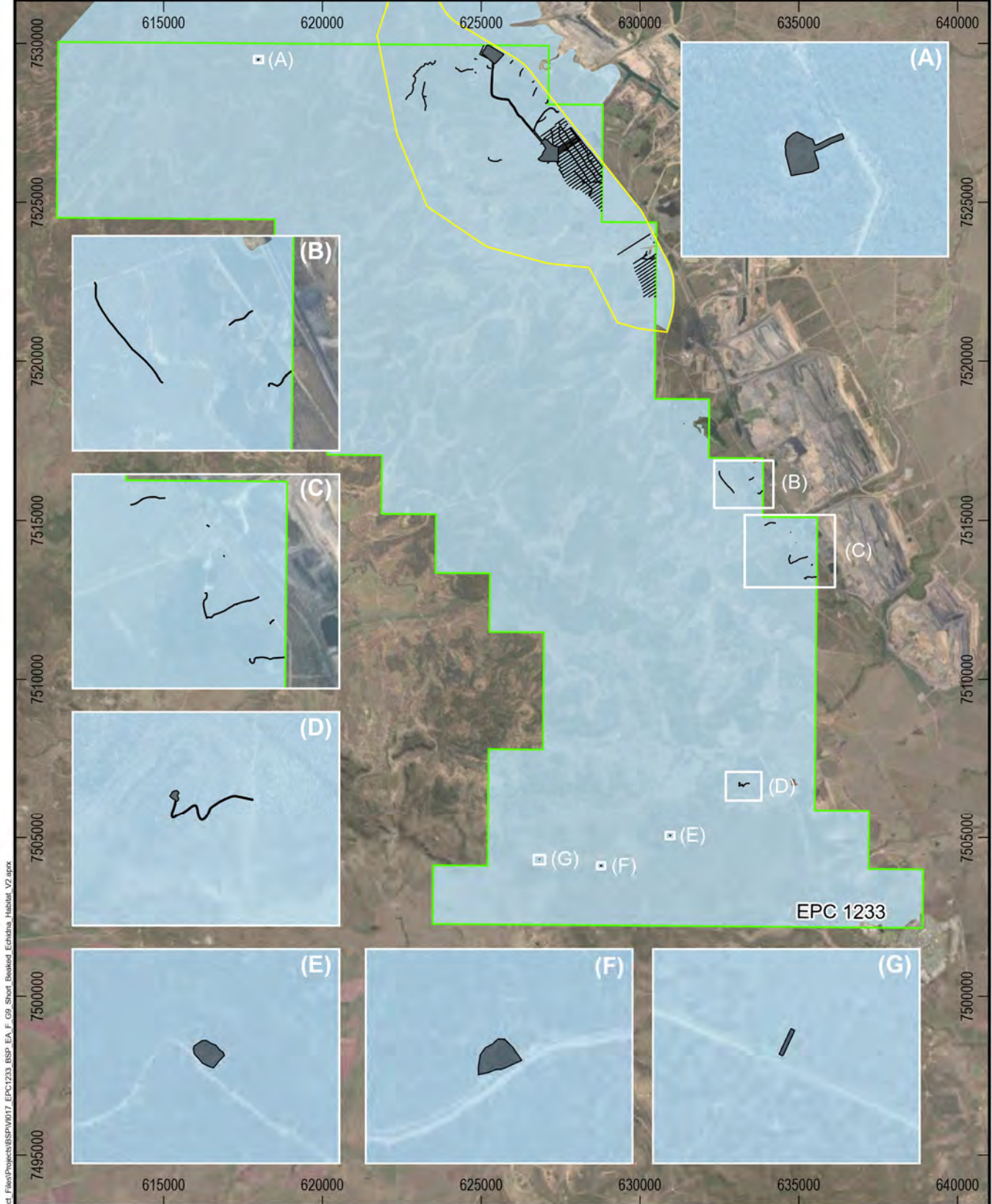
Datum: GDA2020
Projection: MGA55



FIGURE G9.1

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METSERVE 2020-2024, Maxar.

Path: S:\Projects\0171 Vulcan North BSP and BSP\GIS\MapGIS\Project Files\Projects\BSP\0171 EPC1233 BSP EA.F G9 Short Beaked Echidna Habitat V2.aprx



Legend

- EPC 1233
- Field Survey Area
- Cumulative Disturbance Footprint
- Short Beaked Echidna Habitat

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024. Imagery - Maxar, © OpenStreetMap and contributors.

EPPR03277115 - Vulcan North BSP

Location of Short-Beaked Echidna Habitat



Kilometers

Scale: 1:175,000 (A4)

15/03/2024

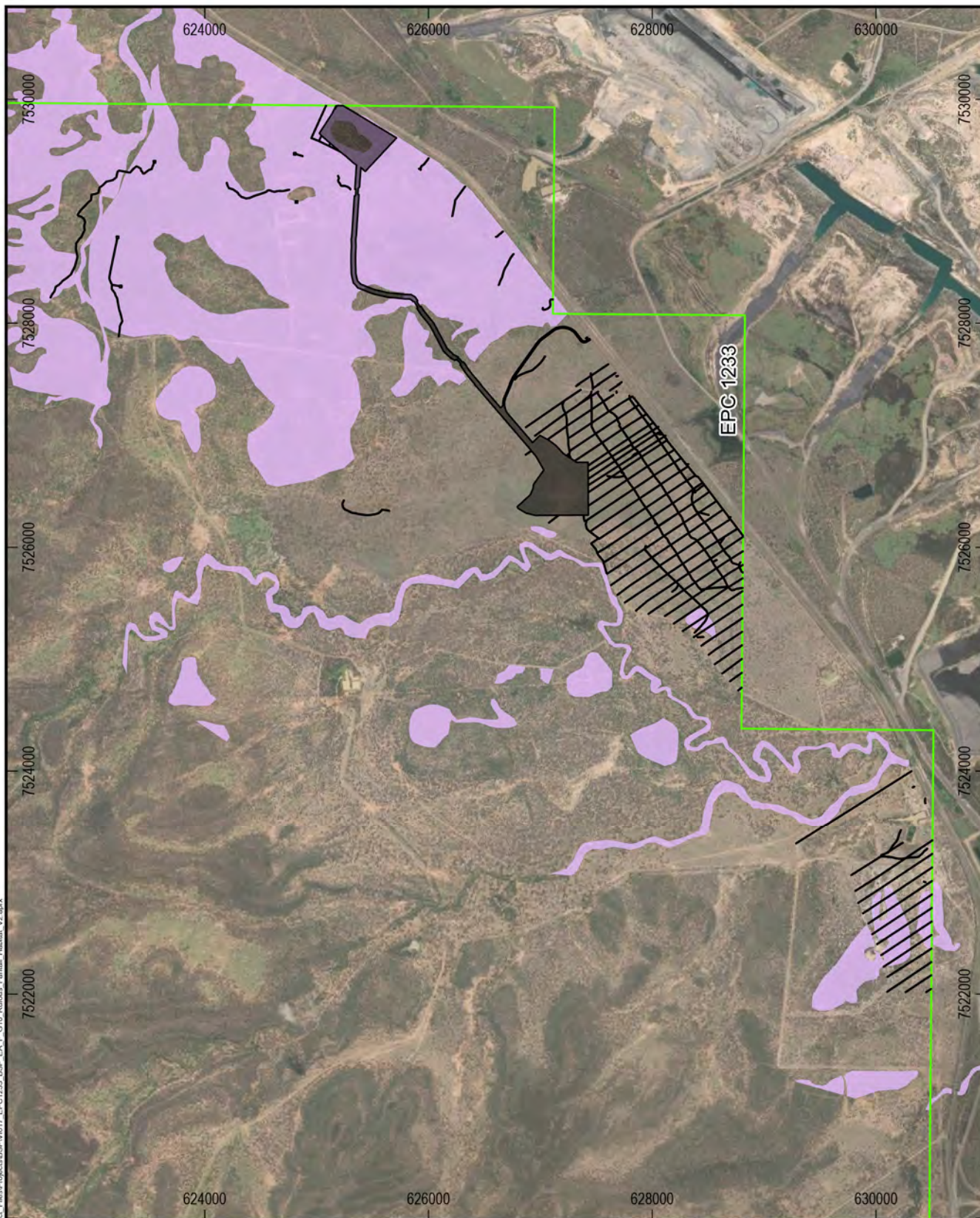


Datum: GDA2020
Projection: MGA55

FIGURE G9.2

VITRINITE
BRIGHTER COAL

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Legend

- Cumulative Disturbance Footprint
- EPC 1233
- Rufous Fantail Habitat

EPPR03277115 - Vulcan North BSP

Location of Rufous Fantail Habitat

0 0.5 1 1.5



Kilometers

Scale: 1:50,000 (A4)

14/03/2024

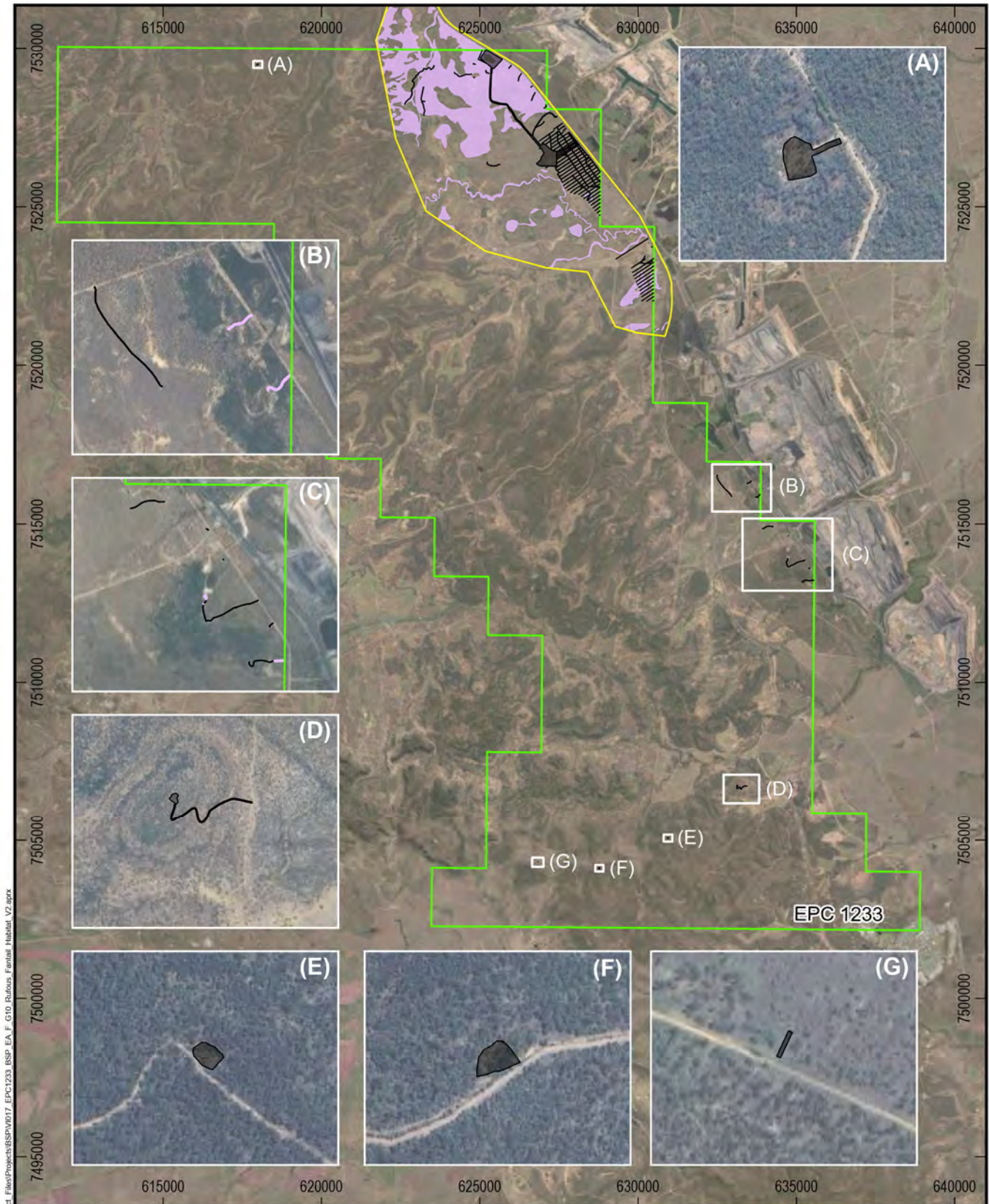


Datum: GDA2020
Projection: MGA55

FIGURE G10.1



Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METSERVE 2020-2024, Maxar.



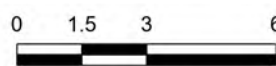
Legend

- EPC 1233
- Field Survey Area
- Cumulative Disturbance Footprint
- Rufous Fantail Habitat

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024. Imagery - Maxar, © OpenStreetMap and contributors.

EPPR03277115 - Vulcan North BSP

Location of Rufous Fantail Habitat



Kilometers

Scale: 1:175,000 (A4)

15/03/2024

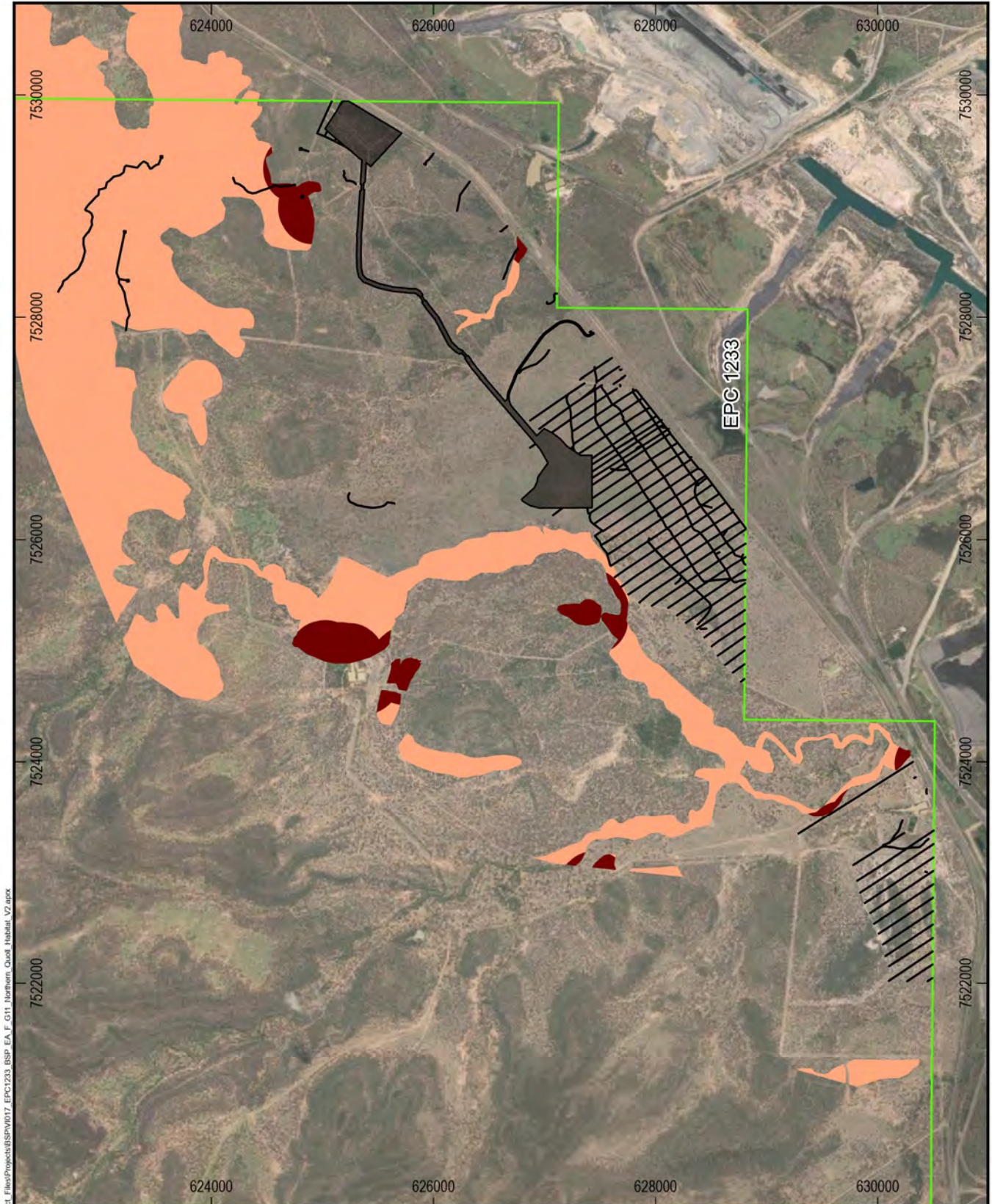


Datum: GDA2020
Projection: MGA55

FIGURE G10.2

VITRINITE
BRIGHTER COAL

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Legend

- Cumulative Disturbance Footprint
- EPC 1233
- Potential Northern Quoll Habitat**
- Habitat Within 300m of Water
- Landzone 3 and 10

Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024, Maxar.

EPPR03277115 - Vulcan North BSP
Location of Northern Quoll Habitat



Scale: 1:50,000 (A4)

14/03/2024

Datum: GDA2020
Projection: MGA55

FIGURE G11.1

VITRINITE

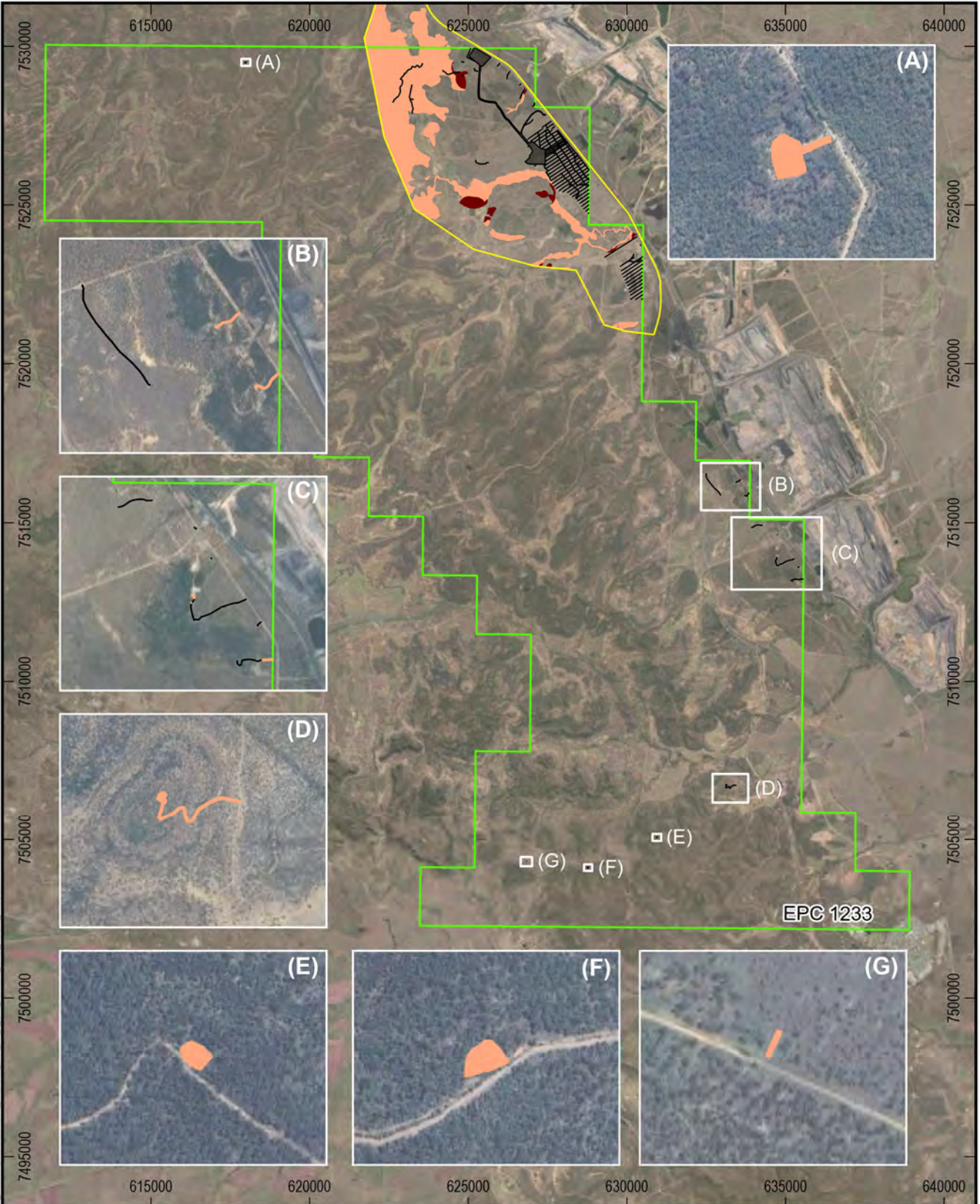
BRIGHTER COAL

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Path: S:\Projects\0017 Vulcan North BSP and BSPGIS\GIS\Project Files\Projects\BSP\0017 EPC1233 BSP EA_F G11 Northern Quoll Habitat_V2.aprx

Path: S:\Projects\2017_Vulcan_South_EXP_and_BSP\GIS\MapGIS\Project_Files\Projects\BSP\017_EPC1233_BSP_EA_F_G11_Northern_Quoll_Habitat_V2.aprx



Legend - EPC 1233 - Field Survey Area - Cumulative Disturbance Footprint - Potential Northern Quoll Habitat - Habitat Within 300m of Water - Landzone 3 and 10 Source: State of Queensland (Department of Resources) 2023, Vitrinite 2024, METServe 2020-2024. Imagery - Maxar, © OpenStreetMap and contributors.	EPPR03277115 - Vulcan North BSP Location of Northern Quoll Habitat 0 1.5 3 6 Kilometers Scale: 1:175,000 (A4) 15/03/2024 Datum: GDA2020 Projection: MGA55 FIGURE G11.2 VITRINITE BRIGHTER COAL METSERVE Mining & Energy Technical Services Pty Ltd
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END OF ENVIRONMENTAL AUTHORITY