Permit

Environmental Protection Act 1994

Environmental authority EA0001976 – Olive Downs Coal Mine

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

Environmental authority number: EA0001976

Environmental authority takes effect on 19 August 2022.

Environmental authority holder(s)

Name(s)	Registered address
PEMBROKE OLIVE DOWNS PTY LTD	Level 19 1 Macquarie Pl SYDNEY NSW 2000 Australia

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Resource Activity, Schedule 3, 13 - Mining black coal	ML700032 ML700033 ML700034 ML700035 ML700036
Resource Activity, Ancillary 08 - Chemical Storage, 3: Storing more than 500 cubic metres of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c)	ML700032 ML700033 ML700034 ML700035 ML700036
Resource Activity, Ancillary 31 - Mineral processing, 2: Processing, in a year, the following quantities of mineral products, other than coke, (b) more than 100,000t	ML700032 ML700033 ML700034 ML700035 ML700036
Resource Activity, Ancillary 63 - Sewage Treatment, 1: Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of, (b-i) more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	ML700032 ML700033 ML700034 ML700035 ML700036

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).

Contaminated land

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

- the happening of an event involving a hazardous contaminant on the contaminated land (notice must be given within 24 hours); or
- a change in the condition of the contaminated land (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 contaminated land (notice must be given within 20 business days)

that is causing, or is reasonably likely to cause, serious or material environmental harm.

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- one 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.

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.



Alisha Stewart
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

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Date Issued*:* 19 August 2022

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 Natural Resources, Mines and Energy (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

The environmentally relevant activity(ies) conducted at the location as described above must be conducted in accordance with the following site-specific conditions of approval. This environmental authority consists of the following Schedules and Appendices:

Schedule A	General
Schedule B	Air
Schedule C	Waste
Schedule D	Noise
Schedule E	Groundwater
Schedule F	Water
Schedule G	Sewage Treatment
Schedule H	Land and Rehabilitation
Schedule I	Watercourse Diversions
Schedule J	Regulated Structures
Appendix 1	Definitions
Appendix 2	Figures, consisting of:
Figure 1	Authorised disturbance
Figure 2	Groundwater bore monitoring locations
Figure 3	Locations of sewage treatment disposal areas
Figure 4(a) – Figure 4(l)	Location of significant residual impact of prescribed environmental matters
Appendix 3	Rehabilitation Requirements

SCHEDULE A: GENERAL	
Condition Number	**Condition**
A1	This environmental authority authorises environmental harm referred to in the conditions. Where there is no condition or this environmental authority is silent on a matter, the lack of a condition or silence does not authorise environmental harm.
A2	The holder of this environmental authority is approved for an extraction rate of up to **20Mtpa** (million tonnes per annum) of ROM (run-of-mine) coal.
A3	In carrying out the mining activity, **disturbance**: (a) can only occur in the areas marked 'A'; and (b) must not occur in the areas marked 'B' in the map that is **Figure 1: Authorised Disturbance.**
A4	The holder of this environmental authority 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 measures, plant and equipment in a proper and efficient manner; and (d) ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.
A5	**Monitoring** All monitoring records or reports required by this environmental authority must be kept for a period of not less than **five (5) years** and provided upon request to the administering authority, in the format requested.
A6	Monitoring, and determinations required under any condition of this environmental authority must be conducted by an appropriately qualified person.
A7	**Management Plans, Monitoring Programs and Reports** Management plans, monitoring programs and reports required under any condition of this environmental authority must be developed by an appropriately qualified person.
A8	Upon request from the administering authority, copies of monitoring results, records, registers, monitoring programs, management plans and reports 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.

A9	**Risk management** The holder of this environmental authority must develop and implement a risk management system for the mining activity which mirrors the content requirement of the Standard for Risk Management (ISO 31000:2009).
A10	**Notification of emergencies, incidents and exceptions** 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 with the conditions of this environmental authority.
A11	Within **ten (10) business days** following the initial notification of an emergency or incident, or receipt of monitoring results, whichever is the latter, 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.
A12	**Complaints** The holder of this environmental authority must record all environmental complaints received about the mining activity 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.
A13	The holder of this environmental authority must, when requested by the administering authority, undertake relevant specified monitoring within a reasonable timeframe nominated or agreed to by the administering authority to investigate any complaint of environmental harm. The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures, where implemented, must be provided to the administering authority 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.

A14	**Third-party Reporting** The holder of this environmental authority must: (a) within **one (1) year** of the commencement of this authority, obtain from a suitably qualified and experienced third party a report on compliance with the conditions of this environmental authority; (b) obtain further such reports at regular intervals not exceeding **three (3) years** from the completion of the report referred to above; and (c) provide each report to the administering authority within **ninety (90) days** of its completion.
A15	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; or (b) where the amendment or change relates specifically to regulated structures referred to in **Condition J26** the time specified in that condition 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.
A16	**Analyses** All analyses required under this environmental authority must be carried out by a laboratory that has National Association of Testing Authorities (NATA) certification, or an equivalent certification, for such analyses.
A17	**Commencement of pre-development activities** The holder of this environmental authority must provide the administering authority with a date in writing for when pre-development activities commence under this environmental authority.
A18	**Commencement of mining activities** The holder of this environmental authority must provide the administering authority with a date in writing for when mining activities commence under this environmental authority.

SCHEDULE B: AIR	
Condition Number	**Condition**

B1	**Dust nuisance** The holder of this environmental authority must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust and particulate matter emissions generated by the mining activity 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 Methods for sampling and analysis of ambient air—Determination of particulate matter—Deposited matter – Gravimetric method. (b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM_{10}) suspended in the atmosphere of 50 micrograms per cubic metre over a 24-hour averaging time, when monitored in accordance with the most recent version of either: (i) Australian Standard AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM_{10} high volume sampler with size-selective inlet – Gravimetric method; or (ii) Australian Standard AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM_{10} low volume sampler—Gravimetric method. (c) A concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres ($PM_{2.5}$) suspended in the atmosphere of 25 micrograms per cubic metre over a 24-hour averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.10 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—$PM_{2.5}$ low volume sampler—Gravimetric method. (d) A concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a 1 year averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.3:2003 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—Total suspended particulate matter (TSP)—High volume sampler gravimetric method. Note: Any exceedance of 50 $\mu g/m^3$ (24-hour average) is not considered as a breach of this condition if the holder of this environmental authority demonstrates that it is caused by natural events such as bushfires and dust storm.
B2	When requested by the administering authority or as a result of a complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer), dust and particulate monitoring (including dust deposition, total suspended particles (TSP), PM_{10} and $PM_{2.5}$) must be undertaken, and the results thereof must be notified to the administering authority within **fourteen (14) days** following completion of monitoring. This includes providing interim reports if the monitoring lasts for more than **one (1) month**.

B3	Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place. Monitoring must be conducted in accordance with the appropriate standards.
B4	If the monitoring which is carried out in accordance with **Condition B2** indicates an exceedance of the relevant limits in **Condition B1**, then the holder of this environmental authority must investigate whether the exceedance is due to emissions from the activity. If the mining activity is found to be the cause of the exceedance then the holder of this environmental authority must: (a) address the complaint including the use of appropriate dispute resolution if required; and (b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.
B5	The holder of this environmental authority must notify the administering authority within **seven (7) days** of an exceedance identified under **Condition B4** and in accordance with the relevant limits in **Condition B1**.
B6	**Dust Management Plan** The Dust Management Plan entitled "Olive Downs Coking Coal Project Air Quality Management Plan" and submitted on 29 November 2019 must be implemented prior to pre-development activities.
B7	Subsequent revisions of the Dust Management Plan required by **Condition B6** must include: (a) a preventative management system for dust control; (b) a Trigger Action Response Program; (c) site background (contextual information); (d) proposed works and potential impacts and impact analysis; (e) a risk assessment of mining activities; (f) design of an internal operational monitoring program including objectives, separate from any compliance monitoring or limits/levels required by **Condition B2**; (g) performance criteria and monitoring methods; (h) number and location of monitoring sites; (i) quality assurance/quality control (QA/QC) requirements; (j) stakeholder consultation; (k) roles and responsibilities; and (l) reporting.

B8	The holder of this environmental authority must monitor air quality for the activity, which must include, but not be limited to: (a) continuous monitoring of PM_{10} at one location and dust deposition at **four (4) locations** (representative of the worst affected receptors) during the operation of the activity; (b) meteorological monitoring (including at least temperature, wind speed and direction) at a single location representative of the approved place; (c) the monitoring locations must comply with the Australian Standard AS/NZS 3580.1.1:2016 "*Methods for siting and analysis of ambient air. Part 1.1: Guide to siting air monitoring equipment*"; (d) regular reporting of the measured dust deposition rates and PM_{10} concentrations; and (e) investigation of all measured exceedances to determine the influence of emissions from the mining site.
B9	To ensure that the air quality monitoring program remains effective and well-targeted through the life of the project, the monitoring locations must be reviewed annually. The annual review should consider: (a) the frequency and cause of any exceedances of air quality objectives measured by the monitoring program over a period of at least **two (2) years**; (b) dust complaints; (c) future progression of the mining activity; (d) locations of sensitive receptors relative to the mining activity; and (e) mining activity modes.

SCHEDULE C: WASTE	
Condition Number	**Condition**
C1	**Tailings Management Plan** A Tailings Management Plan must be developed by **30 January 2023** and implemented for the duration of mining activities.
C2	All tailings must be managed in accordance with procedures contained within the Tailings Management Plan. This plan must include details of: (a) the containment of tailings; (b) the management of seepage and leachates both during operation and the foreseeable future; (c) the control of fugitive emissions to air; (d) a program of progressive sampling and characterisation to identify acid producing potential and metal concentrations of tailings; (e) maintaining records of the relative locations of any other waste stored within the tailings; and (f) monitoring to verify methods for tailings, including the prevention and management of acid mine drainage, erosion minimisation and establishment of vegetation cover are effective.
C3	**Waste Rock and Coal Reject Management Plan** A Waste Rock and Coal Reject Management Plan must be developed by **30 January 2023** and implemented for the duration of mining activities.

C4	The Waste Rock and Coal Reject Management Plan required by **Condition C3** must include at least: (a) effective characterisation of the waste rock and coal rejects to predict under the proposed placement and disposal strategy the quality of runoff and seepage generated concerning potentially environmentally significant effects including 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 and the salinity, acid and alkali producing potential and metal concentrations of waste rock; (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 or contaminated leachate; (d) where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming waste rock and coal rejects; (e) how often the performance of the plan will be assessed; and (f) the indicators or other criteria on which the performance of the plan will be assessed.
C5	**Storage of tyres** Tyres must be stored and disposed of in accordance with the Operational policy - Disposal and storage of scrap tyres at mine sites ESR/2016/2380 Version 2.02, or the most recent revision available.

SCHEDULE D: NOISE	
Condition Number	**Condition**
D1	Noise resulting from the mining activity must not cause an environmental nuisance at any sensitive or commercial place.
D2	When requested by the administering authority, or as a result of a complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the administering authority) noise monitoring must be undertaken and the results must be notified within **fourteen (14) days** to the administering authority following completion of monitoring.
D3	Subject to **Condition D2**, monitoring must be carried out at a place or places relevant to the potentially affected noise sensitive place as agreed upon with the administering authority.
D4	All noise monitoring which is conducted as per **Condition D2** must be completed in accordance with the following noise monitoring requirements: (a) all noise monitoring must be conducted in accordance with the administering authority's most recent version of the Noise Measurement Manual; (b) source noise levels must be expressed as component noise levels for the purposes of comparison with noise limits; and (c) all noise monitoring devices must be calibrated in accordance with AS IEC 61672.1-2004.
D5	If the administering authority request for noise monitoring is in relation to a complaint and results exceed the limits in **Table D1: Noise limits**, then the holder of this environmental authority must: (a) address the complaint including the use of appropriate dispute resolution if required; and (b) implement noise abatement measures so that emissions of noise from the activity do not result in further environmental nuisance.
D6	**Low frequency noise** Noise emissions from the activity, when including **substantial low frequency noise**, must not cause an overall sound pressure level at a noise sensitive place exceeding 55 dB(Z).
D7	The holder of this environmental authority must develop and implement a blast monitoring program to monitor compliance with **Table D2: Blasting noise limits** for: (a) at least 50% of all blasts undertaken on this site in each month at the nearest sensitive place; and (b) all blasts conducted during any time period specified by the administering authority at the nearest and most affected sensitive place(s) or commercial place(s) or another such place to investigate an allegation of environmental nuisance caused by blasting.

D8	The holder of this environmental authority must ensure that blasting does not cause the limits for peak particle velocity and air blast overpressure in **Table D2: Blasting noise limits** to be exceeded at a sensitive place or commercial place.

Table D1: Noise Limits

Noise measured at a **sensitive** or **commercial place**						
Noise level dB(A) measured as:	**Monday to Saturday**			**Sunday and Public Holidays**		
	7am – 6pm	**6pm – 10pm**	**10pm – 7am**	**9am – 6pm**	**6pm – 10pm**	**10pm – 9am**
$L_{Aeq, adj, 15 mins}$	35	35	35	35	35	35
$L_{A1 adj, 15 mins}$	40	40	40	40	40	40

Table D2: Blasting Noise Limits

Blasting noise limits	**Sensitive or commercial place blasting noise limits**	
	7am to 6pm	**6pm to 7am**
Airblast overpressure	115 dB (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

SCHEDULE E: GROUNDWATER	
Condition Number	**Condition**
E1	The holder of this environmental authority must not release contaminants to groundwater.
E2	**Groundwater Monitoring Program** The holder of this environmental authority must develop a groundwater monitoring program by **30 June 2021** and implement the program for the duration of mining activities.
E3	The groundwater monitoring program must: (a) be in accordance with **Table E1: Groundwater monitoring locations and frequency**; (b) identify potential sources of contamination to groundwater from the activity; (c) ensure that all potential groundwater impacts due to the activity are identified, monitored and mitigated; (d) document sampling and monitoring methodology; (e) ensure that adequate groundwater monitoring and data analysis is undertaken to achieve the following objectives: (i) establish baseline datasets from existing monitoring bores; (ii) detect any impacts to groundwater levels due to the mining activity; (iii) detect any impacts to groundwater quality due to the mining activity; (iv) determine trends in groundwater quality; and (v) determine trends in groundwater level; (f) before commencing mining activities in ML700033 and ML700034 the holder of this environmental authority must demonstrate that drawdown associated with existing mining activities has not influenced that area; (g) include an appropriate quality assurance and quality control program; (h) include a conceptual numerical groundwater model; and (i) include a review process to improve the program.
E4	The **baseline** datasets, as referred to in **Condition E3**, are to consist of at least **eight (8)** values collected over a minimum of at least **twelve (12) months** prior to submitting the notification required by condition A18.
E5	**Groundwater quality** Groundwater quality must be monitored at the locations and frequencies defined in **Table E1: Groundwater monitoring locations and frequency** and shown in **Figure 2: Groundwater Bore Monitoring Locations** (to be provided by proponent), for quality characteristics identified in **Table E2: Groundwater Quality Limits**.

E6	Groundwater quality measured at monitoring bores identified in **Table E1: Groundwater monitoring locations and frequency** must not exceed the limit for each quality characteristic specified in **Table E2: Groundwater quality limits** on any **three (3)** consecutive sampling occasions. If groundwater quality measured at any monitoring bore exceeds the corresponding limit specified in **Table E2: Groundwater quality limits** on any single sampling occasion, the holder of this environmental authority must resample the underground water within the monitoring bore for the parameter exceeded, within **ten (10) business days** of receipt of the results. Whether the results of the resampling event exceeds for the same parameter or not, a further resample is not required for that sampling occasion.
E7	In the event that groundwater quality exceedance results are confirmed by resampling, as specified in **Condition E6**, the holder of this environmental authority must: (a) notify the administering authority via WaTERS within **fourteen (14) days** of receiving the resampling result; and (b) within **three (3) months** of receiving the result, complete, and submit via WaTERS, an investigation undertaken by a suitably qualified person outlining: (i) details of the investigations carried out; (ii) whether the result is directly associated with mining activities, and, if so; (iii) whether environmental harm has occurred; and (iv) any action required to mitigate environmental harm.
E8	**Groundwater levels** Groundwater levels when measured at the monitoring locations and frequency specified in **Table E3: Groundwater Level Monitoring** must not exceed the groundwater level trigger thresholds specified in **Table E3: Groundwater Level Monitoring**, unless otherwise agreed in writing with the administering authority.
E9	In the event that groundwater fluctuations in excess of groundwater level trigger thresholds specified in **Table E3: Groundwater Level Monitoring** are detected, the holder of this environmental authority must: (a) notify the administering authority via WaTERS within **twenty-four (24) hours**; and (b) undertake an investigation within **fourteen (14) days** of detection to determine the cause of fluctuations.
E10	In the event that groundwater fluctuations are deemed to have been influenced by mining activities the holder of this environmental authority must meet the notification requirement of **Condition E9** of this environmental authority.
E11	The exceedance investigation under **Condition E9** must be completed and submitted to the administering authority via WaTERS within **three (3) months** of notifying the administering authority.

E12	The location of bores in **Table E3: Groundwater Level Monitoring** that are present on mining leases MLA700033 and MLA700034, as per **Table E1: Groundwater Monitoring Locations and Frequency**, must be confirmed and provided to the administering authority within **ninety (90) days** upon grant of MLA700033 and MLA700034.
E13	**Groundwater monitoring** Results of groundwater quality and level monitoring must be submitted to the administering authority via WaTERS by **1 August** each calendar year.
E14	The groundwater monitoring program must be reviewed on an annual basis by an appropriately qualified person to determine if it continues to meet the requirements stated in **Condition E3**.
E15	The groundwater numerical model must be reviewed and validated (including boundary and recharge conditions) to incorporate groundwater monitoring data and measured mine dewatering volumes from the groundwater monitoring program in **Condition E3**. The review must be conducted within **two (2) years** of commencement of any mining activities and at least every **five (5) years** thereafter, or at other intervals specified by the administering authority in writing.
E16	**Bore construction and maintenance and decommissioning** The construction, maintenance, management and decommissioning of groundwater bores (including groundwater monitoring bores) must be undertaken in a manner that prevents or minimises impacts to the environment and ensures the integrity of the bores to obtain accurate and reliable data collection.
E17	Where the removal of a bore will result as a direct result of the mining activity, the impact on the monitoring program must be evaluated and a replacement bore constructed prior to its removal for continuity and to ensure that groundwater monitoring continues to meet the requirements in **Condition E3**.
E18	**Groundwater Dependent Ecosystems and Wetland Monitoring Program** The proponent must develop and implement a Groundwater Dependent Ecosystems and Wetland Monitoring Program (GDEWMP) to detail the management of threats to defined environmental values and to report results and corrective actions for each GDE and wetland over the full period of mining activities and for a period of five years post mining rehabilitation.
E19	The GDEWMP must be submitted to the administering authority within **thirty (30) days** of receiving approval of the Groundwater Dependent Ecosystems Management Plan from the Department of Agriculture, Water and the Environment.

E20	The GDEWMP must include detailed information of: (a) the nature and ecological values of each affected GDE and wetland; (b) the nature and ecological values of GDEs and wetlands of comparable reference sites that are not affected by project activities or the drawdown from groundwater; (c) a field validation survey and baseline description of the current condition of affected GDEs and wetlands as well as reference sites, including wet and dry conditions, to record pre-impact ecosystem health; (d) a map and coordinates of the location of the GDEs and wetlands subject to the monitoring program, including justification for the selected locations; (e) sampling and reporting frequency; (f) sampling, analysis and quality assurance methodologies for detecting impacts associated with the project including information on how cumulative impacts will be managed and monitored; (g) indicators that would be monitored to assess the health and integrity of the wetlands and GDEs being monitored and that can show the success of proposed mitigation measures; (h) impact thresholds and triggers for groundwater quality and ecological values of GDEs and wetlands that are able to provide an indication of potential and actual impacts within a relevant timescale; and (i) corrective actions and timing to address impacts associated with mining activities, including cumulative impacts.
E21	A report of the findings of the GDEWMP, including all monitoring results and interpretations, must be prepared by **30 September** each year and made available on request to the administering authority. The report must include: (a) an assessment of baseline groundwater levels (see **Condition E4**); (b) the condition of each GDE and wetland compared with previous monitoring results; (c) any exceedances of impact thresholds and triggers for groundwater quality and ecological values; (d) the suitability of current groundwater level trigger thresholds; (e) detail on the effectiveness of avoidance, mitigation and management actions in curtailing adverse impacts on GDE ecosystems; (f) a description of any adaptive management initiatives implemented; and (g) any offsets required for residual impacts.

Table E1: Groundwater Monitoring Locations and Frequency

Monitoring point[1]		Location		Surface RL (mAHD)[2]	Monitoring frequency	Screen depth (mbgl)	Target aquifer
		Latitude#	Longitude#				
Existing baseline network bores[$]							
GW01d^	VWP1	-22.171957	148.381907	181.58	D	402	Vermont Upper Seam
	VWP2					352	Leichhardt Seam
	VWP3					222	Rewan
	VWP4					63	Rewan
GW01s		-22.171957	148.381926	180.65	D/Q	13 – 19	Alluvium
GW02s		-22.180863	148.369124	179.11	D/Q	7 – 19	Alluvium
GW02d		-22.180954	148.369019	179.11	D/Q	119 – 128	Vermont Upper Seam
GW04		-22.194624	148.390945	178.23	D/Q	6 – 15	Alluvium
GW06d^		-22.221735	148.351884	192.86	D	191	Fort Cooper
						137	Fort Cooper
						118	Fort Cooper
						38	Tertiary
GW06s		-22.221762	148.351836	191.77	D/Q	4 – 10	Regolith
GW08d		-22.240769	148.410068	172.18	D	177	Leichhardt
						137	Rangal Overburden
						94	Rewan
						70	Rewan
GW08s		-22.240832	148.410068	172.27	D/Q	6 – 12	Alluvium
S2		-22.170909	148.371297	176.97	D/Q	12 – 18	Alluvium
S4		-22.177867	148.373120	178.85	D/Q	12 – 18	Alluvium
S5		-22.173413	148.379594	179.26	D/Q	12 – 18	Alluvium
S8		-22.182337	148.380660	177.84	D/Q	9 – 15	Alluvium
S11		-22.191459	148.381865	178.45	D/Q	8 – 14	Alluvium
GW12d^	VWP1	-22.304768	148.373659	176.89	D	505	Leichhardt Seam
	VWP2					485	Leichhardt Seam
	VWP3					485	Leichhardt Seam
	VWP4					108	Rewan
GW12s		-22.304830	148.373747	175.84	D/Q	30 – 42	Regolith
GW21d		-22.403602	148.569770	162.09	D/Q	148 – 157	Rangal Interburden
GW21s		-22.403593	148.569819	162.07	D/Q	3 – 9	Regolith
Bores to be installed a minimum of 24 months prior to the commencement of mining operations within ML700032							
GW22		-22.1706885	148.360100	182.00	Q	TBA	TBA
GW25		-22.2403673	148.360903	185.97	D/Q	TBA	TBA
GW26		-22.5137053	148.351907	192.71	D/Q	TBA	TBA
Bores to be installed a minimum of 24 months prior to the commencement of mining operations within ML700033*							
GW23		-22.2662755	148.425685	169.09	D/Q	TBA	TBA
GW24		-22.2950609	148.441069	166.00	D/Q	TBA	TBA
GW27		-22.2846328	148.353093	178.00	D/Q	TBA	TBA
GW28		-22.2968869	148.391362	172.01	D/Q	TBA	TBA
Bores to be installed a minimum of 24 months prior to the commencement of mining operations within ML700034*							
GW29		-22.3321256	148.567891	TBA	TBA	TBA	TBA
GW31		-22.3774639	148.518191	TBA	TBA	TBA	TBA
GW32		-22.3410680	148.520900	TBA	TBA	TBA	TBA

Notes:

$ Once there is a sufficient number of data records (minimum 8 representative samples over 12-24 months of recorded and quality assured/ quality controlled data) baseline bores will be used to form the baseline dataset for the site. Water quality from any other reference site bores will be compared to the baseline data to ensure homogeneity between the bores prior to derivation of the Limit type A and B after a sufficient number of data records have been collected for the analysis. Data will be continued to be monitored until the end of the mining operations. Trigger levels for these bores are to be included in **Table E2**.

* Approximate location only, to be confirmed and the environmental authority updated prior to commencement of mining activities. Bores must have guaranteed access. Alternative bores must be selected/constructed.

^ Bores include vibrating wire piezometers (VWP1, VWP2, VWP3, VWP4).

[1] Additional bores not included within **Table E1** must be provided and the environmental authority updated by **1 August 2023**, unless otherwise agreed in writing with the administering authority.

[2] RL must be measured to the nearest 5cm from the top of the bore casing.

D = Daily monitoring frequency using automatic logger. (Parameters include: water level, temperature, EC)

Q = Quarterly monitoring frequency (i.e. dipped (SWL) and sampled). (Parameters include: pH, EC, Al, As, B, Cd, Cr, Cu, Hg, Pb, Mo, Ni, Se, U, Zn)

D/Q = Daily monitoring frequency (SWL and temperature) using automatic logger and manually dipped (SWL) and sampled on a quarterly basis.

Table E2: Groundwater Quality Limits

Aquifer	Monitoring Point	pH	EC (µS/cm)	Al (mg/L) - dissolved	As (mg/L) - dissolved	B (mg/L) - dissolved	Cd (mg/L) - dissolved	Cr (mg/L) - dissolved	Cu (mg/L) - dissolved	Pb (mg/L) - dissolved	Hg (mg/L) - dissolved	Mo (mg/L) - dissolved	Ni (mg/L) - dissolved	Se (mg/L) - dissolved	U (mg/L) - dissolved	Zn (mg/L) - dissolved
Alluvium	GW01s	6.0-7.5[A]	433			0.37[D]			0.056			0.034[D]	0.02	0.011[D]		0.06[B]
Permian (VS)	GW02d	6.0-8.5	17400			0.29	0.0002[D]	0.001[D]	0.03[C]			0.005	0.007	0.011[D]	0.0005[D]	0.042
Alluvium	GW02s		44846			0.79	0.0008	0.005	1.84				0.029	0.05	0.037	
Alluvium	GW04		8910[B]			0.37[D]	0.0002[D]	0.001[D]	0.0014[D]				0.025[E]	0.011[D]		
Regolith	GW12s	6.0-7.5[A]	28365	0.055[D]		1.69	0.0003	0.012	0.7				0.033	0.03	0.01[G]	0.06[B]
Permian (Int)	GW21d		31104			0.47		0.005	0.0014[D]				0.014			0.015
Regolith	GW21s		8910[B]			1.65[F]			0.03[C]				0.2[G]	0.011[D]		
Alluvium	GW22	6.8-8.2	1646						0.0014[D]				0.0086		0.0005[D]	
Alluvium	S4	6.6-7.8	11690		0.013[D]	0.37[D]				0.0034[D]	0.0006[D]		0.025[E]	0.005[E]	0.001	
Alluvium	S8	4.3-5.8*	9862	0.474		0.43			0.0036			0.034[D]	0.0417	0.005[E]	0.0005[D]	0.06[B]
Alluvium	S2						0.0002[D]	0.001[D]								
Alluvium	S5															
Alluvium	S11		8910[B]			0.61[E]							0.025[E]	0.005[E]	0.028[E]	0.046[E]
Alluvium	GW08s	6.0-7.5[A]		0.055[D]												
Alluvium	GW25															
Alluvium	GW26								0.69[E]							
Regolith	GW06s		27440[F]			1.65[F]		0.01[F]	0.29[F]				0.03[F]	0.011[D]	0.01[F]	0.027[F]

Notes
All values are derived from the 95th percentile (and 5th percentile for pH) value of site specific data unless stated otherwise (see notes below)
A ANZECC 2000 Guidelines - Freshwater Upland river Table 3.3.4
B Fitzroy Water Plan , WQ1310, Zone 34 Shallow 80th percentile
C Fitzroy Water Plan, WQ1310, Zone 34 Deep 80th percentile
D ANZECC Aquatic Ecosystem (95%) Protection Guideline (ANZG 2018)
E 80th percentile of grouped Alluvium bores for dry alluvium bores
F 80th percentile of grouped Regolith bores for dry regolith bores
G ANZECC 2000 Guidelines - Irrigation long-term
*Further investigation required to explain low value range

Table E3: Groundwater Level Monitoring

Monitoring Point	Location		Level trigger threshold
	Latitude	Longitude	
GW22	-22.170688*	148.360100*	> 4.6 metres beyond baseline data ranges
GW23	-22.266275*	148.425685*	> 5.2 metres beyond baseline data ranges
GW24	-22.295060*	148.441069*	> 11.5 metres beyond baseline data ranges
GW26	-22.513705	148.351907*	> 6.3 metres beyond baseline data ranges
GW27	-22.284632*	148.353093*	> 25.5 metres beyond baseline data ranges
GW29	-22.332125*	148.567891*	> 2.2 metres beyond baseline data ranges
GW31	-22.377463*	148.518191*	> 3.9 metres beyond baseline data ranges
GW32	-22.341068*	148.520900*	> 14.7 metres beyond baseline data ranges
GW01s	-22.171957	148.381926	> 2 metres beyond baseline data ranges
GW21s	-22.403593	148.569819	> 2 metres beyond baseline data ranges
GW21d	-22.403602	148.569770	> 14.7 metres beyond baseline data ranges
GW01d^	-22.171957	148.381907	VWP1 and VWP2 > 37.8 metres beyond baseline data ranges VWP3 and VWP4 > 13.4 metres beyond baseline data ranges
GW06d^	-22.221735	148.351884	VWP1 and VWP2 > 2.8 metres beyond baseline data ranges VWP3 and VWP4 > 2 metres beyond baseline data ranges
GW12d^	-22.304768	148.373659	VWP1 and VWP2 > 16.6 metres beyond baseline data ranges VWP3 and VWP4 > 14.2 metres beyond baseline data ranges

Notes:

* Approximate location only, to be confirmed and the environmental authority updated prior to the commencement of mining activities. Bores must have guaranteed access. Alternative bores must be selected/constructed.

^ Bores include vibrating wire piezometers (VWP1, VWP2, VWP3, VWP4).

SCHEDULE F: WATER	
Condition Number	**Condition**
F1	**Contaminant release** Contaminants must not be released directly or indirectly to any waters as a result of the mining activities, except as permitted under the conditions of Schedule F Water of this environmental authority.
F2	The release of mine affected water to waters must only occur from the release points specified in **Table F1: Mine affected water release points, sources and receiving waters**. The holder of this environmental authority must advise the administering authority of the location of mine affected water release points, sources and receiving waters at least **twelve (12) months** prior to the commencement of releasing mine affected water from locations other than those listed in **Table F1: Mine affected water release points, sources and receiving waters**.
F3	The release of mine affected water to waters in accordance with **Condition F2** must not exceed the release limits stated in **Table F2: Mine affected water release limits** when measured at the monitoring points specified in **Table F1: Mine affected water release points, sources and receiving waters** for each quality characteristic.
F4	The release of mine affected water to waters from the release points must be monitored at the locations specified in T**able F1: Mine affected water release points, sources and receiving waters** for each quality characteristics and at the frequency specified in **Table F2: Mine affected water release limits** and **Table F3: Release contaminant trigger investigation levels**. Note: The administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response, in the event **Condition F4** is contravened due to a temporary lack of safe or practical access. The administering authority expects the holder of this environmental authority to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.

Table F1: Mine Affected Water Release Points, Sources and Receiving Waters

Release point	Latitude	Longitude	Mine affected water source location	Monitoring point	Receiving waters description
RP1	-22.180893	148.378217	P9	Pipe Outlet	Isaac River via unnamed drainage line
RP2	-22.207487	148.390030	P20	Pipe Outlet	Isaac River via unnamed drainage line
RP3	-22.248724	148.402340	P33	Pipe Outlet	Isaac River via unnamed drainage line
RP4	-22.260291	148.411143	P46	Pipe Outlet	Isaac River via unnamed drainage line
RP5	-22.340264	148.502564	WROM	Pipe Outlet	Isaac River via unnamed drainage line

Table F2: Mine Affected Water Release Limits

Quality characteristic	Release limit[1]	Monitoring frequency
Electrical conductivity (µS/cm)	Release limits specified in **Table F4: Mine Affected Water Release during Flow Events** during flow events for variable flow criteria.	Continuous (minimum hourly average); or daily manual sample when continuous monitoring systems are not available.
pH (pH unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within two hours of commencement of release).
Turbidity (NTU)	300 NTU or unless the upstream turbidity is higher[1]	Daily during release (the first sample must be taken within two hours of commencement of release).
Sulfate (mg/L)	1,000	Daily during release (the first sample must be taken within two hours of commencement of release).

Notes:

1. For releases of mine affected water with turbidity levels above 300NTU the upstream turbidity must be monitored on a minimum frequency of daily to provide sufficient compliance evidence.

Table F3: Release Contaminant Trigger Investigation Levels

Quality characteristic[1]	Trigger levels (µg/L)	Comment on trigger level[2,3]	Monitoring frequency
Aluminium	55	For aquatic ecosystem protection, based on SMD guideline	Commencement of release and thereafter weekly during release.
Arsenic (total)	13	For aquatic ecosystem protection, based on SMD guideline	
Cadmium (total)	0.2	For aquatic ecosystem protection, based on SMD guideline	
Chromium	1	For aquatic ecosystem protection, based on SMD guideline	
Copper	1.2	For aquatic ecosystem protection, based on LOR for ICPMS	
Iron	700	For aquatic ecosystem protection, based on low reliability guideline	
Lead	4	For aquatic ecosystem protection, based on SMD guideline	
Mercury	0.2	For aquatic ecosystem protection, based on LOR for ICPMS[4]	
Nickel	11	For aquatic ecosystem protection, based on SMD guideline	
Zinc	8	For aquatic ecosystem protection, based on SMD guideline	
Boron	830	For aquatic ecosystem protection, based on SMD guideline	
Cobalt	90	For aquatic ecosystem protection, based on low reliability guideline	
Manganese	1,900	For aquatic ecosystem protection, based on SMD guideline	
Molybdenum	34	For aquatic ecosystem protection, based on low reliability guideline	
Selenium	10	For aquatic ecosystem protection, based on LOR for ICPMS	
Silver	1	For aquatic ecosystem protection, based on LOR for ICPMS	
Uranium	1	For aquatic ecosystem protection, based on LOR for ICPMS	
Vanadium	10	For aquatic ecosystem protection, based on LOR for ICPMS	
Ammonia	900	For aquatic ecosystem protection, based on SMD guideline	
Nitrate	1,100	For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN	
Petroleum hydrocarbons (C6-C9)	20	For aquatic ecosystem protection, based on LOR for GCMS	
Petroleum hydrocarbons (C10-C36)	100	For aquatic ecosystem protection, based on LOR for GCMS	
Fluoride (total)	2,000	Protection of livestock and short-term irrigation guideline	

Notes:

1. All metals and metalloids must be measured as total (unfiltered) and dissolved (<0.45 µm filtered). Contaminant limits for metals and metalloids are only considered to be exceeded if the results for dissolved metal or metalloid exceed the trigger level.
2. SMD – slightly moderately disturbed level of protection, guideline refers ANZECC & ARMCANZ (2000).
3. LOR (limit of reporting) – typical reporting for method stated.
4. ICPMS/CV FIMS/GCMS – analytical method required to achieve LOR.

F5	If quality characteristics of the release exceed any of the trigger levels specified in **Table F3: Release contaminant trigger investigation levels**, the holder of this environmental authority must compare the downstream results in the receiving waters to the trigger values specified in **Table F3: Release contaminant trigger investigation levels** and: (a) where the trigger values are not exceeded then no action is to be taken; or (b) where the downstream results exceed the trigger values specified in **Table F3: Release contaminant trigger investigation levels** for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites, and: (i) if the result is less than the background monitoring site data, then no action is to be taken; or (ii) if the result is greater than the background monitoring site data, complete an investigation into the potential for environmental harm and provide a written report to the administering authority within **three (3) months** of receiving the result, outlining: (i) details of the investigations carried out; and (ii) actions taken to prevent environmental harm. Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with **Condition F5 (b)(ii)**, no further reporting is required for subsequent trigger events for that quality characteristic.
F6	If an exceedance in accordance with **Condition F5 (b)(ii)** is identified, the holder of this environmental authority must notify the administering authority via WaTERS within **fourteen (14) days** of receiving the result.
F7	**Mine affected water release events** The holder of this environmental authority must ensure stream flow is determined at the locations specified in **Table F4: Mine affected water release during flow events** prior to and during releases.
F8	In the event that the data from the 130410A Isaac River at Deverill becomes unavailable, the holder of this environmental authority must ensure that a new stream flow gauging station(s) is installed, operated and maintained to determine and record stream flows prior to and during releases.
F9	The release of mine affected water to waters in accordance with **Condition F2** must only take place during periods of natural flow events in accordance with the receiving water flow criteria for discharge specified in **Table F4: Mine affected water release during flow events** for the release point(s) specified in **Table F1: Mine affected water release points, sources and receiving waters.**

F10	The release of mine affected water to waters in accordance with **Condition F2** must not exceed the electrical conductivity, sulfate release limits or the maximum release rate (for all combined release point flows) for each receiving water flow criteria for discharge specified in **Table F4: Mine affected water release during flow events** when measured at the monitoring points specified in **Table F1: Mine affected water release points, sources and receiving waters**.
F11	The sulfate release limit in **Table F4: Mine Affected Water Release during Flow Events** must be submitted to the administering authority for approval and inclusion in the environmental authority by **30 June 2023**.

Table F4: Mine Affected Water Release during Flow Events

Receiving water	Release points (RP)	Gauging station	Gauging station Latitude	Gauging station Longitude	Receiving water flow recording frequency	Receiving water flow criteria for discharge (m^3/s)	Maximum release rate (for all combined RP flows)	Electrical conductivity and sulfate release limits
Isaac River	RP1 RP2	130410A Isaac River at Deverill	-22.164296	148.350830	Continuous (minimum daily)	Medium Flow after natural flow events that exceed 4 m^3/s	0.5 m^3/s	1,000 µS/cm SO_4^{2-} mg/l TBD[1]
						Medium Flow after natural flow events that exceed 10 m^3/s	1.0 m^3/s	1,200 µS/cm SO_4^{2-} mg/l TBD[1]
						High Flow after natural flow events that exceed 50 m^3/s	2.0 m^3/s	4,000 µS/cm SO_4^{2-} mg/l TBD[1]
						High Flow after natural flow events that exceed 100 m^3/s	3.0 m^3/s	6,000 µS/cm SO_4^{2-} mg/l TBD[1]
						Very high Flow after natural flow events that exceed 300 m^3/s	5.0 m^3/s	10,000 µS/cm SO_4^{2-} mg/l TBD[1]

F12	The daily quantity of mine affected water released from each release point must be measured and recorded.
F13	All continuous environmental monitoring systems required by this environmental authority must have an instrument availability of at least 80% except for the continuous monitoring of release points specified in **Table F1: Mine affected water release points, sources and receiving waters** which must have an instrument availability of at least 90%.
F14	Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters or cause a material build-up of sediment in such waters.
F15	**Notification of release event** The holder of this environmental authority must notify the administering authority as soon as practicable and no later than **twenty-four (24) hours**, via WaTERS, after commencing to release mine affected water to the receiving environment. Notification must include the submission of written advice to the administering authority of the following information: (a) release commencement date/time; (b) expected release cessation date/time; (c) release point(s); (d) release volume (estimated); (e) receiving water(s) including the natural flow rate; and (f) any details (including available data) regarding likely impacts on the receiving water(s).
F16	The holder of this environmental authority must notify the administering authority, via WaTERS, as soon as practicable and within **twenty-four (24) hours** after cessation of a release notified under **Condition F15**. The cessation notification must include the following information: (a) release cessation date/time; (b) release points; (c) release rates; (d) water quality of release; (e) total volume of water released; (f) natural flow rate in the receiving water; and (g) details regarding the compliance of the release with the conditions of Schedule F Water of this environmental authority. Note: Successive or intermittent releases occurring within **twenty-four (24) hours** of the cessation of any individual release can be considered part of a single release event and do not require individual notification for the purpose of compliance with **Conditions F14**, **F15** and **F16**, provided the relevant details of the release are included within the notification provided in accordance with **Conditions F14, F15** and **F16**.

F17	The holder of this environmental authority must within **twenty-eight (28) days** after cessation of a release event notified under **Condition F16** provide a report and supporting raw data to the administering authority via WaTERS, which must include the following information: (a) all continuous and in-situ water quality monitoring results (including laboratory analyses); and (b) any further matters pertinent to the water release event.
F18	**Notification of release event exceedance** If the release limits defined in **Table F2: Mine affected water release limits,** when measured at the monitoring points in **Table F1: Mine Affected Water Release Points, Sources and Receiving Waters,** are exceeded, the holder of this environmental authority must notify the administering authority, via WaTERS, within **twenty-four (24) hours** of receiving the results.
F19	The holder of this environmental authority must, within **twenty-eight (28) days** of a release that exceeds the conditions of this authority, provide a report to the administering authority, via WaTERS, detailing: (a) the reason for the release; (b) the location of the release; (c) all water quality monitoring results; (d) any general observations; (e) all calculations; and (f) any other matters pertinent to the water release event.
F20	**Receiving environment monitoring and contaminant trigger levels** The quality of the receiving waters must be monitored at the locations specified in **Table F6: - Receiving Water Upstream Background Sites and Downstream Monitoring Points** for each quality characteristic and at the monitoring frequency stated in **Table F5: - Receiving Waters Contaminant Trigger Levels**.
F21	The holder of this environmental authority must determine and submit to the administering authority via an amendment to the environmental authority that is deemed to be a valid application, by **30 June 2023** trigger levels for total suspended solids and turbidity specified in **Table F5: Receiving Waters Contaminant Trigger Levels.**
F22	The holder of this environmental authority must determine and submit to the administering authority, via an amendment to the environmental authority that is deemed to be a valid application, by **30 June 2023** the monitoring locations specified in **Table F6: Receiving Water Upstream Background Sites and Downstream Monitoring Points**.

Table F5: Receiving Waters Contaminant Trigger Levels

Quality characteristic	Trigger level	Monitoring frequency
Electrical conductivity (µS/cm)	2,000	Continuous (minimum hourly average); or daily manual sample when continuous monitoring systems are not available
pH	6.5 – 9.0	Daily manual sample during the release
Total suspended solids (mg/L)	TBA	
Turbidity (NTU)	TBA	
Sulfate (SO_4^{2-}) (mg/L)	545	

Table F6: Receiving Water Upstream Background Sites and Downstream Monitoring Points

Monitoring points	Receiving waters location description	Latitude	Longitude
Upstream background monitoring points			
Monitoring point at Gauge No. 130410A 'Deverill', Isaac River	Isaac River - upstream of RP1 and RP2	-22.164296	148.350830
TBA alternative upstream monitoring point when there is no access to 130410A gauging station	Isaac River - upstream of RP1 and RP2	TBA	TBA
Downstream monitoring points			
TBA	Isaac River - downstream of RP1 and RP2, upstream of Boomerang Creek confluence.	TBA	TBA
TBA	Isaac River upstream of Phillips Creek confluence.	TBA	TBA
TBA	Isaac River at Fitzroy Development Road	TBA	TBA

F23	If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in **Table F5: Receiving Waters Contaminant Trigger Levels** during a release event the holder of this environmental authority must compare the downstream results to the upstream results in the receiving waters and: (a) where the downstream result is the same or a lower value than the upstream value for the quality characteristic, then no action is to be taken; or (b) where the downstream results exceed the upstream results, complete an investigation into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining: (i) details of the investigations carried out; and (ii) actions taken to prevent environmental harm. Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with **Condition F23(b)**, no further reporting is required for subsequent trigger events for that quality characteristic.

F24	All determinations of water quality monitoring must be: (a) made in accordance with the methods prescribed in the latest edition of the administering authority's Water Quality Sampling Manual; and (b) laboratory testing must be undertaken using a laboratory accredited for the method of analysis being used.
F25	**Receiving environment monitoring program (REMP)** The holder of this environmental authority must develop and implement a REMP to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site. For the purposes of the REMP, the receiving environment is the waters of the Isaac River and connected or surrounding waterways within 15 km downstream of the release points. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.

F26	The REMP must: (a) assess the condition or state of receiving waters, including upstream conditions, spatially within the REMP area, considering background water quality characteristics based on accurate and reliable monitoring data that takes into consideration temporal variation (e.g. seasonality); (b) description of applicable environmental values and water quality objectives to be achieved (i.e. as scheduled pursuant to the Environmental Protection (Water and Wetland Biodiversity) Policy 2019); (c) be designed to facilitate assessment against water quality objectives for the relevant environmental values that need to be protected; (d) include monitoring from background reference sites (e.g. upstream or background) and downstream sites from the release (as a minimum, the locations specified in **Table F6: Receiving Water Upstream Background Sites and Downstream Monitoring Points**); (e) specify the frequency and timing of sampling required in order to reliably assess ambient conditions and to provide sufficient data to derive site specific background reference values in accordance with the Queensland Water Quality Guidelines 2009. This should include monitoring during periods of natural flow irrespective of mine or other discharges; (f) include monitoring and assessment of dissolved oxygen saturation, temperature and all water quality parameters listed in **Table F2: Mine Affected Water Release Limits** and **Table F3: Release contaminant trigger investigation levels**; (g) include, where appropriate, monitoring of metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of AS5667.1 Guidance on Sampling of Bottom Sediments) and include a comparison with trigger values determined in accordance with these methods; (h) include, where appropriate, monitoring of macroinvertebrates in accordance with the AusRivas methodology and comparison with the EPP (Water) Fitzroy Basin macroinvertebrate water quality objective triggers (including taxa richness, PET taxa richness, SIGNAL index and % tolerant taxa); (i) apply procedures and/or guidelines from ANZECC and ARMCANZ 2000 and other relevant guideline documents; (j) describe sampling and analysis methods and quality assurance and control; and (k) incorporate stream flow and hydrological information in the interpretations of water quality and biological data.
F27	A REMP Design Document that addresses each criterion presented in **Conditions F25** and **F26** must be prepared and submitted to the administering authority by **30 June 2021**. Due consideration must be given to any comments made by the administering authority on the REMP Design Document and subsequent implementation of the program.

F28	A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with **Conditions F25** and **F26**, must be prepared annually and submitted to the administrating authority by **31 December** for the previous year. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values. Where no releases are made from the release points in any given year (**1 November** to **31 October**), a summary report of the findings of the REMP must be prepared and submitted to the administering authority. The summary report must include the following: (a) introduction; (b) rainfall data; (c) water course flow data; and (d) water course electrical conductivity.
F29	**Water reuse** Mine affected water released for the purpose of reuse by a third party, at locations other than those stated in **Condition F2** must: (a) be released through mine water infrastructure that is installed and operated in accordance with **Condition F32**; and (b) have the written consent from the third party for the release of mine affected water.
F30	**Annual water monitoring data submission** The following information must be recorded in relation to all water monitoring required under the conditions of Schedules E, F and G of this environmental authority and submitted to the administering authority via WaTERS: (a) the date on which the sample was taken; (b) the time at which the sample was taken; (c) the monitoring point at which the sample was taken; (d) the measured or estimated daily quantity of mine affected water released from all release points; (e) the release flow rate at the time of sampling for each release point; and (f) the results of all monitoring and details of any exceedances of the conditions in Schedules E, F and G of this environmental authority.
F31	**Water Management Plan** A Water Management Plan must be developed by **30 June 2021** and implemented for the duration of pre-development activities and mining activities.

F32	The Water Management Plan must: (a) provide for effective water management of actual and potential environmental impacts resulting from water management associated with the mining activities carried out under this environmental authority; and (b) be developed in accordance with the administering authority's most recent version of the guideline for 'Preparation of water management plans for mining activities' (EM324) or any updates that become available from time to time and must include at least the following components: (i) study of the source on contaminants; (ii) a water balance model for the site; (iii) details of catchment areas and environmental values; (iv) a water management system for the site; (v) details of locations and design standard of water management infrastructure; (vi) measures to manage and prevent saline drainage; (vii) measures to manage and prevent acid rock; (viii) contingency procedures for incidents and emergencies; and (ix) a program for monitoring and review of the effectiveness of the water management plan.
F33	A written review of the Water Management Plan must be undertaken by **1 August** each calendar year. The review must: (a) include a statement that the Water Management Plan has been prepared by an appropriately qualified person; (b) assess the plan against the requirements under **Condition F32**; (c) include recommended actions to ensure actual and potential environmental impacts are effectively managed; (d) provide details and timelines of the actions to be taken; and (e) identify any amendments made to the Water Management Plan.
F34	A copy of the Water Management Plan must be provided to the administering authority on request.
F35	**Stormwater and water sediment controls** An Erosion and Sediment Control Plan must be developed by **30 June 2021** and implemented for the duration of pre-development activities and mining activities on site, to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.

F36	The Erosion and Sediment Control (ESC) Plan must: (a) demonstrate how ESC control measures adequately minimise the release of sediment to receiving waters and must include at least the following: (i) assessment of all catchment areas; (ii) assessment of soil types, including sodic dispersive soils; and (iii) specify design criteria for ESC structures; (b) detail the locations and descriptions of all ESC measures; and (c) provide an audit schedule to ensure ESC controls are being maintained.
F37	A written review of the Erosion and Sediment Control Plan must be undertaken by **1 August** for each calendar year. The review must: (a) include a statement that the Erosion and Sediment Control Plan has been prepared by an appropriately qualified person; (b) assess the plan against the requirements under **Condition F36**; (c) include recommended actions to ensure actual and potential environmental impacts are effectively managed; (d) provide details and timelines of the actions to be taken; and (e) identify any amendments made to the Erosion and Sediment Control Plan.
F38	A copy of the Erosion and Sediment Control Plan must be provided to the administering authority on request.
F39	Stormwater, other than mine affected water, is permitted to be released to waters from: (a) erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by **Conditions F35** to **F38**; and (b) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with **Conditions F31** to **F34**, for the purpose of ensuring water does not become mine affected water.
F40	**Monitoring of Water Storage Quality** Water storages must be monitored at the locations and frequency specified in **Table F7: Water storage monitoring** for the water quality characteristics specified in **Table F2: Mine Affected Water Release Limits**, and **Table F3: Release Contaminant Trigger Investigation Levels**, following construction of the water storage.

Table F7: Water Storage Monitoring

Water storage description	Latitude	Longitude	Monitoring location	Monitoring frequency
P9	-22.180893	148.378217	Adjacent to release point pipe	Quarterly
P20	-22.207487	148.390030	Adjacent to release point pipe	Quarterly
P33	-22.248724	148.402340	Adjacent to release point pipe	Quarterly
P46	-22.260291	148.411143	Adjacent to release point pipe	Quarterly
WROM	-22.340264	148.502564	Adjacent to release point pipe	Quarterly

SCHEDULE G: SEWAGE TREATMENT	
Condition Number	**Condition**
G1	The only contaminant permitted to be released to land is treated sewage in compliance with the release limits stated in **Table G1: Contaminant release limits to land** and the following requirements: (a) the irrigation areas must be in accordance with **Figure 3: Locations of sewage treatment disposal areas**; (b) monitoring must be in accordance with the administering authority's Water Quality Sampling Manual and all monitoring devices must be effectively calibrated and maintained; (c) releases of treated sewage must not be outside of the treated sewage areas indicated on **Figure 3: Locations of sewage treatment disposal areas**; (d) monitoring must be undertaken when treated sewage is being irrigated, unless irrigation has ceased for longer than the relevant parameters specified minimum frequency; and (e) volume of release must be calculated based on the total irrigation area when irrigating the maximum volume or worked out for the area of application based on the actual volume irrigated; (f) the daily volume of sewage treated from STP1 (Olive Downs South) and STP2 (Willunga) must be measured and records kept of the volume of sewage treated; and (g) the daily volume of treated sewage released to land from STP1 (Olive Downs South) and STP2 (Willunga) must be measured and records kept of the volumes of treated sewage released.
G2	Inflows to on-site sewage treatment plants must not exceed the peak design capacity of **three (3) times** the Design Average Dry Weather Flow (DADWF) of 340 kL/day on any day unless the standard treatment processes of the plant are bypassed.

Table G1: Contaminant Release Limits to Land

Release point	Quality characteristic (units)	Minimum	Median	Maximum	Minimum frequency
RP1[1], RP2[2]	Irrigation volume (ML)			40	Annually
RP1[1], RP2[2]	Total nitrogen (mg/L as nitrogen)			50	Monthly
RP1[1], RP2[2]	Total phosphorous (mg/L as phosphorous)			16	Monthly
RP1[1], RP2[2]	pH (pH units)	6.0		9.0	Monthly
RP1[1], RP2[2]	Electrical conductivity (µS/cm)			1,600	Monthly
RP1[1], RP2[2]	Total dissolved solids ~~salts~~ (mg/L)			1,000	Monthly
RP1[1], RP2[2]	*E. coli* (cfu/100mL)		1,000	1,500	Monthly

1. Release Point 1 = sampling point being released from the enclosed wet weather storage at STP1 (Olive Downs South)
2. Release Point 2 = sampling point being released from the enclosed wet weather storage at STP2 (Willunga)

G3	Treated sewage released to land must be done in accordance with the Treated Sewage Irrigation Management Plan as well as carried out in a manner which ensures: (a) drainage to groundwater is minimised and subsurface flows of contaminants to surface waters are prevented; (b) the irrigation water must be distributed evenly across designated irrigation areas identified in **Figure 3: Locations of sewage treatment disposal areas**; (c) surface pondage and run-off of treated sewage within or beyond the boundary of any designated irrigation area and or areas is prevented; (d) degradation of soil structure is minimised; (e) soil sodicity and the build-up of nutrients and heavy metals in the soil and subsoil are minimised; (f) spray drift or overspray does not carry beyond treated sewage disposal area or areas; (g) treated sewage disposal area and or areas are maintained with an appropriate crop in a viable state for transpiration and nutrient uptake; (h) sufficient buffer zones are maintained between irrigation sites and sensitive environmental receptors; (i) when circumstances prevent the irrigation or beneficial reuse of treated sewage such as during or following rain events, waters must be directed to an enclosed wet weather storage or alternative measures must be taken to store/lawfully dispose of treated sewage;

	(j) a minimum area of 5.5ha of land, excluding any necessary buffer zones, must be utilised for the irrigation and/or beneficial reuse of treated sewage; (k) the volume provided for the storage of treated sewage is to be not less than 340,000 litres via an enclosed wet weather storage tank or tanks; and (l) all treated sewage irrigation areas must be planted with kikuyu grass or similar pastures.
G4	Potable water and or alternative irrigation water may be released to the designated irrigation area and or areas identified in **Figure 3: Locations of sewage treatment disposal areas**, provided it is treated in accordance with all other conditions of this environmental authority as if it were treated sewage.
G5	If areas irrigated with treated sewage are accessible to employees or the general public, prominent fencing and signage must be provided advising that treated sewage is present and care should be taken to avoid consuming or otherwise coming into unprotected contact with the treated sewage.
G6	All treated sewage released to land must be monitored at the frequency and for the parameters specified in **Table G1: Contaminant release limits to land**.
G7	A receiving environment monitoring program must be designed and implemented to monitor the effects of the activity on soils within irrigation area and or areas.
G8	The receiving environment monitoring program required by **Condition G7** must include, but not necessarily be limited to, the following: (a) soil and sub-soil analysis, including an assessment of the irrigation of treated sewage on the soils from representative locations, including type, structure, pH, phosphorus adsorption level and capacity, nutrient status, salinity and sodicity, and cation exchange capacity of the designated treated wastewater irrigation areas identified in **Figure 3: Locations of sewage treatment disposal areas**; (b) determination of the quantity and quality of contaminants applied to the soils in the designated treated sewage irrigation area and/or areas identified in **Figure 3: Locations of sewage treatment disposal areas**; (c) an annual (minimum) assessment of the impact of the releases on the designated treated sewage irrigation area and or areas identified in **Figure 3: Locations of sewage treatment disposal areas** by an appropriately qualified person; (d) following each assessment undertaken as part of **Condition G8(c)**, an assessment by an appropriately qualified person as to whether the impact(s) of the releases on the designated treated sewage irrigation are and or areas warrant MEDLI remodelling; (e) if MEDLI re-modelling is recommended as per **Condition G14(d)**, a re-assessment including modelling of the water, nutrient and salt balances and irrigation rate and return period to ensure sustainable use of the designated treated sewage irrigation area and or areas identified in **Figure 3: Locations of sewage treatment disposal areas**; and

	(f) a report must be provided to the administering authority within **twenty (20) business days** on completion of the revised MEDLI report referred to in **Condition G14(5)**.
G9	A Treated Sewage Irrigation Management Plan must be developed and implemented upon commencement of the irrigation of treated sewage.
G10	The Treated Sewage Irrigation Management Plan referred to in **Condition G9** must include, but not be limited to the following: (a) method of irrigation and details on how irrigation hardware is operated and maintained; (b) irrigation scheduling - how irrigation is initiated and terminated; (c) monitoring local climatic conditions for irrigation management; (d) soil monitoring and management; (e) crop monitoring, harvesting and management; (f) contingency plan for unexpected events such as extreme weather conditions or irrigation hardware failures; and (g) wet weather storage overflow management plan.
G11	Treated sewage must only be supplied to another person or organisation that has a written plan detailing how the user of the treated sewage will comply with their general environmental duty under section 319 of the *Environmental Protection Act 1994* whilst using the treated sewage.

SCHEDULE H: LAND AND REHABILITATION	
Condition Number	**Condition**
H1	All land disturbed by pre-development activities and mining activities must be rehabilitated in accordance with: (a) **Appendix 3: Rehabilitation Requirements**, attached to this environmental authority; and (b) **Table H1: Rehabilitation Domains and Post-mining Land Use**.
H2	Only the residual voids shown in **Figure 1: Authorised disturbance** and specified in **Table H2: Residual Void Design** are permitted.

Table H1 Rehabilitation Domains and Post-mining Land Use

Rehabilitation domain	Post mining land use		
	Agriculture (low intensity cattle grazing)	Native vegetation (woodland)	Fauna habitat
Waste rock emplacements	✓	✓	
Residual voids			✓
Infrastructure areas	✓	✓	
Water management infrastructure	✓	✓	
ILF cells	✓		
Ripstone Creek diversion		✓	

H3	A Rehabilitation Monitoring Program must be developed and certified by an appropriately qualified person and submitted to the administering authority for consideration prior to commencement of mining activities for Stage 1 mining operations. The monitoring program must contain a schedule for gathering baseline data from agreed reference sites and conducting rehabilitation trials to support the rehabilitation outcomes detailed in **Appendix 3 – Rehabilitation Requirements**. Baseline monitoring and rehabilitation trials under this plan must be undertaken at a suitable frequency to ensure that the holder of this environmental authority has a representative dataset to enable: (a) Progressive certification of rehabilitation under chapter 5A of the *Environmental Protection Act 1994*; and (b) Surrender of the Environmental Authority under Chapter 5 of the *Environmental Protection Act 1994*. A copy of the Rehabilitation Monitoring Program must be made available to the administering authority upon request.

H4	**Residual Voids** Residual voids must comply with the following outcomes: (a) residual voids must not cause any serious environmental harm to land, surface waters or any recognised ground water aquifer, other than the environmental harm constituted by the existence of the residual void itself, and subject to any other condition within this environmental authority; (b) be left as stable structures with the competency certified by an appropriately qualified third party (e.g. an engineer listed on the National Professional Engineers Register); (c) be fenced or bunded appropriately to restrict human, stock and other fauna in areas representing a potential hazard; (d) residual voids must comply with **Table H2: Residual void design**; (e) the environmental authority holder must provide the administering authority a map that shows the aerial extent and topography of final landforms including residual voids. If amendments to the map are required then the environmental authority holder must provide the administering authority with the amended map; (f) **five (5) years** prior to the establishment of a final void the holder of this environmental authority must submit a Final Void Geotechnical Report prepared by a suitably qualified and experienced professional to the administering authority that includes: (i) proposed slope criteria for pit walls with competent and incompetent rock; and (ii) proposed final surface area of the void; (g) **three (3) years** prior to the establishment of residual voids the holder of the environment authority must submit to the administering authority a Final Void Water Quality Management Plan that includes: (i) modelling and assessment of the quality of void water between cessation of mining and the post mining equilibrium level; (ii) modelling and assessment of practicable management measures (including flushing) to mitigate salinity increases; and (iii) a monitoring program both during and after mining, to assess the performance of any management measures required; and (h) a report must be provided to the administering authority regarding the effect of the operation and the residual voids on groundwater every **three (3) years** until surrender of the environmental authority.

Table H2: Residual Void Design

Void identification	Void volume (Mm^3)	Depth to waterbody (mbgl)	Overall highwall angle		Void maximum surface area (ha)
			Cenozoic overburden	Weathered/fresh Permian	
ODS3	360	100	20°	45°	317
ODS7/8	670	145	20°	45° to 55°	671
WIL5	720	90	20°	55°	660

H5	**Contaminated land** Before applying for surrender, including partial surrender, of the environmental authority, the holder must (if applicable) provide to the administering authority a site investigation report under the *Environmental Protection Act 1994*, in relation to any part of the mining lease which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use.
H6	Before applying for progressive rehabilitation certification for an area, the holder must (if applicable) provide to the administering authority a site investigation report under the *Environmental Protection Act 1994*, in relation to any part of the area the subject of the application which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use under **Condition H1**.
H7	**Impacts to Prescribed Environmental Matters** Significant residual impacts to prescribed environmental matters are not authorised under this environmental authority or the *Environmental Offsets Act 2014* unless the impact(s) is specified in **Table H3: Significant residual impacts to prescribed environmental matters** and depicted in: Figure 4(a) Location of significant residual impact of Endangered Regional Ecosystem (ERE); Figure 4(b) Location of significant residual impact of Of Concern Regional Ecosystem (RE); Figure 4(c) Location of significant residual impact of Regional ecosystems (not within an urban area) that intersect a wetland on the vegetation management wetlands map; Figure 4(d) Location of significant residual impact of Regional ecosystems (not within an urban area) within the defined distance from the defining banks of a relevant watercourse on the vegetation management watercourse map; Figure 4(e) Location of significant residual impact of Essential habitat (not in an urban area) for vulnerable wildlife; Figure 4(f) Location of significant residual impact of Connectivity area that is a regional ecosystem (not in urban area); Figure 4(g) Location of significant residual impact of A wetland in a wetland protection area shown on the Map of referable wetlands (HES wetlands in GBR); Figure 4(h) Location of significant residual impact of Habitat for Ornamental Snake; Figure 4(i) Location of significant residual impact of Habitat for Koala; Figure 4(j) Location of significant residual impact of Habitat for Greater Gilder; Figure 4(k) Location of significant residual impact of Habitat for Australian Painted Snipe; and Figure 4(l) Location of significant residual impact of Habitat for Squatter Pigeon (southern).

H8	Records demonstrating that each impact to a prescribed environmental matter not listed in **Table H3: 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.
H9	An environmental offset made in accordance with the *Environmental Offsets Act 2014* and Queensland Environmental Offsets Policy, as amended from time to time, must be undertaken for the maximum extent of impact to each prescribed environmental matter authorised in **Table H3: Significant residual impacts to prescribed environmental matters**, unless a lesser extent of the impact has been approved in accordance with **Condition H10** (for staged offsets).
H10	The significant residual impacts to a prescribed environmental matter authorised in **Condition H7** for which an environmental offset is required by **Condition H9** may be carried out in stages. An environmental offset can be delivered for each stage of the impacts to prescribed environmental matters.
H11	Prior to the commencement of each stage, a report completed by an appropriately qualified person, that includes an analysis of the following must be provided to the administering authority: (a) for the forthcoming stage—the estimated significant residual impacts to each prescribed environmental matter; and (b) for the previous stage, if applicable—the actual significant residual impacts to each prescribed environmental matter, to date.
H12	The report required by **Condition H11** must be approved by the administering authority before a notice of election for the forthcoming stage, if applicable, is given to the administering authority.
H13	A notice of election for the staged environmental offset referred to in **Condition H12**, if applicable, must be provided to the administering authority no less than **three (3) months** before the proposed commencement of that stage, unless a lesser timeframe has been agreed to by the administering authority.
H14	Within **six (6) months** from the completion of the final stage of the project, a report completed by an appropriately qualified person, that includes the following matters must be provided to the administering authority: (a) an analysis of the actual impacts on prescribed environmental matters resulting from the final stage; and (b) if applicable, a notice of election to address any outstanding offset debits for the authorised impacts.
H15	**Flood Protection Landforms** The flood protection landforms must be permanent landforms and must be designed to ensure their suitability as permanent structures including:

	(a) consideration of predicted flood levels and the erosion potential from flood waters; and (b) consideration of landform stability and erosion risk.
H16	A design plan for the flood protection landforms must include: (a) drawings describing the location and dimensions of the flood protection landforms, including confirmation that they meet the specified design requirements; and (b) a documented procedure for surveillance of the permanent landform to detect and report to the administering authority any ground movement that compromises or may compromise the integrity of the landforms.
H17	Design requirements for the flood protection landforms include: (a) the design level of the landform crest shall be 0.5m above the estimated AEP 1 in 1,000 flood event for the adjacent watercourses; (b) mining excavation slopes adjacent to the flood protection landforms must remain stable and are to be designed with a factor of safety of 1.5 or above based on an accepted stability analysis procedure; and (c) incorporate scour protection on the creek side lower embankment.
H18	The condition of constructed flood protection landforms including the surface area between the non-creek side of the toe of the flood protection landform and the end wall crest of the open-cut mining pit should be monitored for surface cracks and must at a minimum be inspected and assessed by a suitably qualified and experienced person at least once per year between the months of May and October inclusive (i.e. during the 'dry' season and before the onset of the 'wet' season), and at any time if alarming, unusual or otherwise unsatisfactory conditions are observed.
H19	Remedial works identified as being required for the flood protection landforms during any inspections and assessments conducted, must be notified in writing to the administering authority within **five (5) business days** of the completion of the inspections, and commenced within **twenty (20) business days** unless otherwise agreed in writing by the administering authority.
H20	The annual inspection report for this environmental authority shall include a certification that the documented procedure for surveillance of the landform has been applied, and report on whether there has been any erosion, cracking or vertical or horizontal deformation that has impacted on the integrity of the permanent flood protection landform, and whether the permanent flood protection landform has been maintained in accordance with the certified design plan.

Table H3: Significant Residual Impacts to Prescribed Environmental Matters

Prescribed Environmental Matter	Impacts
Endangered regional ecosystem (ERE)	Mine site footprint, consisting of: • ERE 11.3.1 Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains – 14ha • ERE 11.4.8 Eucalyptus cambageana woodland to open forest with Acacia harpophylla or A. argyrodendron on Cainozoic clay plains – 4.5ha • ERE 11.4.9 Acacia harpophylla shrubby woodland with Terminalia oblongata on Cainozoic clay plains – 59ha • ERE 11.5.17 Eucalyptus tereticornis woodland in depressions on Cainozoic sand plains and remnant surfaces – 62ha **Total: 135ha**
Of concern regional ecosystem (not within an urban area)	• RE 11.3.2 Eucalyptus populnea woodland on alluvial plains – 859.5 • RE 11.3.3 Eucalyptus coolabah woodland on alluvial plains – 5ha • RE 11.3.4 Eucalyptus tereticornis and/or Eucalyptus spp. woodland on alluvial plains – 1ha **Total: 865.5ha**
Regional ecosystems (not within an urban area) that intersect a wetland on the vegetation management wetlands map	Mine site footprint **Total: 238ha**
Regional ecosystems (not within an urban area) within the defined distance from the defining banks of a relevant watercourse on the vegetation management watercourse map	• 11km Ripstone Creek (SO3 = 50m buffer); RE 11.3.25 Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines – 110ha • 5.6km unnamed (SO1 = 25m buffer); RE 11.5.3 Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces – 28ha • 5.5km unnamed (SO1 = 25m buffer); RE 11.3.27b Freshwater wetlands – 28 ha • 0.5km unnamed (SO1 = 25m buffer) RE 11.3.25 Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines – 2.5ha • 0.8km unnamed (SO1 = 25m buffer) RE11.3.25 Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines – 4ha **Total: 172.5ha**
Essential habitat (not in an urban area) for vulnerable wildlife	Essential habitat for vulnerable wildlife#*: **Total: 968ha**
Connectivity area that is a regional ecosystem (not in urban area)	**Total: 5,661ha**
A wetland in a wetland protection area shown on the Map of referable wetlands (HES wetlands in GBR)	Mine site footprint: **Total: 61ha**
Habitat for an animal that is vulnerable wildlife	Ornamental Snake#*: **Total: 7,746ha**
Habitat for an animal that is vulnerable wildlife – MDL footprint	Koala#*: **Total: 5,771.50ha**
Habitat for an animal that is vulnerable wildlife – MDL footprint	Greater glider#*: **Total: 5,607.50ha**
Habitat for an animal that is vulnerable wildlife – MDL footprint	Australian painted snipe#*: **Total: 114ha**
Habitat for an animal that is vulnerable wildlife – MDL footprint	Squatter pigeon (southern)#*: **Total: 5,360ha**

this species is also listed under the *Environment Protection and Biodiversity Conservation Act 1999.*
* the REs and species habitats overlap (i.e. the REs and habitats are not mutually exclusive).

H21	**Weed Management** A weed management plan must be developed and implemented for this site outlining: (a) areas of control priority and the methods used to determine such areas; (b) strategies to promote dense grass growth (which out-competes weeds) through reduced disturbance; (c) monitoring methodologies that document the spread of weeds and any new outbreaks; (d) methods for the control of weeds. These methods should include best practice management; 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 (e) promotion of the awareness of weed management issues at the site.
H22	**Exploration** Land subject to exploration activities must be rehabilitated in accordance with the Eligibility criteria and standard conditions for exploration and mineral development projects—Version 2 (ESR/2016/1985) (formerly EM586).

SCHEDULE I: WATERCOURSE DIVERSIONS	
Condition Number	**Condition**
I1	**Permanent watercourse diversions at Ripstone Creek** Permanent watercourse diversions at Ripstone Creek must be designed and constructed to: (a) incorporate natural features (including geomorphic and vegetation) present at the location of the diversion; (b) maintain the pre-existing hydrologic characteristics of surface water and groundwater systems for the area in which the watercourse diversion is located; (c) maintain the hydraulic characteristics of the permanent watercourse diversion that are equivalent to other local watercourses and are suitable for the area in which the diversion is located without using artificial structures that require ongoing maintenance; (d) maintain sediment transport and water quality regimes that allow the diversion to be self-sustaining, while minimising any impacts to upstream and downstream water quality, geomorphology or vegetation; (e) maintain equilibrium and functionality in all substrate conditions at the location of the diversion; and (f) allow the free passage of fish both upstream and downstream in a safe manner.
I2	**Design plan – all diversions** A certified Design Plan that achieves **Condition I1** for permanent watercourse diversions must be submitted to the administering authority at least **ten (10) business days** before commencing construction of the diversion.
I3	The certified design plan for any temporary or permanent watercourse diversion must be consistent with the functional design/s that formed a part of the application documents for this authority.
I4	**Construction and operation – all diversions** A certified set of ‘as constructed’ drawings and specifications must be submitted to the administering authority within **sixty (60) business days** from the completion of construction of the temporary or permanent watercourse diversion, or re-establishment of the pre-existing watercourse. These drawings and specifications must state: (a) that the 'as constructed' drawings and specifications meet the original intent of the design plan for the watercourse diversion; and (b) construction of the watercourse diversion is in accordance with the design plan.

I5	**Register – all diversions** The details of watercourse diversions planned and constructed under an environmental authority must be accurately recorded on the Register of Watercourse Diversions kept by the holder of this environmental authority. An electronic copy must be provided to the administering authority on request.

SCHEDULE J: REGULATED 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 Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933), at the following times: (a) prior to the design and construction of the structure, if it is not an existing structure; and (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 experienced and qualified person who undertook the assessment, in the form set out in the Manual for assessing consequence categories and hydraulic performance of structures (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 experienced and qualified person in accordance with the requirements of the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933).
J5	Construction of a regulated structure is prohibited unless: (a) the holder of this environmental authority 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 have been certified by a suitably experienced and qualified person in compliance with the relevant condition of this authority.
J6	Certification must be provided by the suitably experienced and qualified person who oversees the preparation of the design plan in the form set out in the Manual for assessing consequence categories and hydraulic performance of structures (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 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; and (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	All affected persons must be provided with a copy of the emergency action plan in place for each regulated structure: (a) for existing structures that are regulated structures, within **ten (10) business days** of this condition taking effect; (b) prior to the operation of the new regulated structure; and (c) 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, except for an existing structure, is prohibited unless the holder of this environmental authority has submitted to the administering authority in respect of regulated structure, all of the following: (a) one paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with **Condition J4**; (b) a set of 'as constructed' drawings and specifications; (c) certification of the 'as constructed drawings and specifications' in accordance with **Condition J6**; (d) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, a copy of the certified system design plan; (e) the requirements of this authority relating to the construction of the regulated structure have been met; (f) the holder of this environmental authority has entered the details required under this 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 of this environmental authority must, as soon as practical and 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 of this environmental authority 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 of this environmental authority must record any changes to the MRL in the Register of Regulated Structures.
J17	**Design storage allowance** The holder of this environmental authority 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 Design Storage Allowance (DSA) volume for the dam (or network of linked containment systems).
J19	The holder of this environmental authority must, as soon as possible and 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 of this environmental authority 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 experienced and qualified 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 Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933).
J24	The holder of this environmental authority 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; (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 of this environmental authority, provide this to the administering authority within **ten (10) business days** of receipt of the request.
J25	The holder of this environmental authority must provide a copy of any reports, documentation and certifications prepared under this 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 authority.
J26	**Register of regulated structures** A Register of Regulated Structures must be established and maintained by the holder of this environmental authority for each regulated structure.

J27	The holder of this environmental authority 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 of this environmental authority 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 of this environmental authority 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 an appropriately qualified person for the holder of this environmental authority, or their delegate, as being accurate and correct.
J31	The holder of this environmental authority 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.

Appendix 1 – Definitions

Words and phrases used throughout this document are defined below. Where a definition for a term used in this document is not provided within this environmental authority, but is provided in the *Environmental Protection Act 1994* or subordinate legislation, the definition in the *Environmental Protection Act 1994* or subordinate legislation must be used.

'**acid mine drainage**' means any contaminated discharge emanating from a mining activity formed through a series of chemical and biological reactions, when geological strata are disturbed and exposed to oxygen and moisture.

'**administering authority**' is the agency or department that administers the environmental authority provisions under the *Environmental Protection Act 1994*.

'**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).

'**annual exceedance probability or AEP**' the probability that at least one event in excess of a particular magnitude will occur in any given year.

'**annual inspection report**' means an assessment prepared by a 'suitably qualified and experienced person' containing details of the assessment against the most recent consequence assessment report and design plan (or system design plan);

1. against recommendations contained in previous annual inspections reports;
2. against recognised dam safety deficiency indicators;
3. for changes in circumstances potentially leading to a change in consequence category;
4. for conformance with the conditions of this authority;
5. for conformance with the 'as constructed' drawings;
6. for the adequacy of the available storage in each regulated dam, based on an actual observation or observations taken after 31 May each year but prior to 1 November of that year, of accumulated sediment, state of the containment barrier and the level of liquids in the dam (or network of linked containment systems);
7. for evidence of conformance with the current operational plan.

'**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.

'**assessed or assessment**' by a 'suitably qualified and experienced person' in relation to a consequence assessment of a dam, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit of the assessment:

1. exactly what has been assessed and the precise nature of that determination;
2. the relevant legislative, regulatory and technical criteria on which the assessment has been based;
3. the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and
4. the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.

'**associated works**' in relation to a dam, means:

1. operations of any kind and all things constructed, erected or installed for that dam; and
2. any land used for those operations.

'**background**', with reference to the water schedule means the average of samples taken prior to the commencement of mining from the same waterway that the current sample has been taken.

'baseline', with reference to the groundwater schedule, means the average of samples taken prior to the commencement of mining from the same groundwater monitoring bores.

'**blasting**' means the use of explosive materials to fracture:

1. rock, coal and other minerals for later recovery; or
2. structural components or other items to facilitate removal from a site or for reuse.

'**certified**', with respect to watercourse diversions, means assessed and approved by a suitably qualified and experienced person. In relation to 'as constructed' drawings and specifications, the certification must be by the suitably qualified person who supervised the construction of the watercourse diversion, or re-establishment of the watercourse.

'**certification**' means assessment and approval must be undertaken by a suitably qualified and experienced person in relation to any assessment or documentation required by the *Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*, including design plans, 'as constructed' drawings and specifications, construction, operation or an annual report regarding regulated structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy Certification by RPEQs (ID: 1.4 (2A)).

'**certification**', 'certifying' or 'certified' by an appropriately qualified and experienced person in relation to a design plan or an annual report regarding dams/structures, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:

1. exactly what is being certified and the precise nature of that certification;
2. the relevant legislative, regulatory and technical criteria on which the certification has been based;
3. the relevant data and facts on which the certification has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and
4. the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.

'**commercial place**' means a workplace used as an office or for business or commercial purposes, which is not part of the mining activity and does not include employees' accommodation or public roads.

'**consequence**' in relation to a structure as defined, means the potential for environmental harm resulting from the collapse or failure of the structure to perform its primary purpose of containing, diverting or controlling flowable substances.

'**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/2016/1933).

'**consecutive sampling occasion**' means consecutive sequential sampling occasions regardless of frequency.

'**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.

'**dam**' means a land-based structure or a void that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works.

'**dam crest volume**' means the volume of material (liquids and/or solids) that could be within the walls of a dam at any time when the upper level of that material is at the crest level of that dam. That is, the instantaneous maximum volume within the walls, without regard to flows entering or leaving (for example, via spillway).

'**design plan**' is a document setting out how all identified consequence scenarios are addressed in the planned design and operation of a regulated structure.

'**design plan**' in relation to a watercourse diversion is a document that contains the design, operation, monitoring and revegetation criteria of a watercourse diversion that addresses the outcomes stated in conditions on the environmental authority relating to the diversion. The document should include, but not be limited to:

1. required information under a functional design
2. the location, function and description of geomorphic and riparian vegetation features within the proposed watercourse diversion
3. results from hydrologic, hydraulic and sediment transportation modelling used in the design of the diversion
4. a revegetation and vegetation management plan (a revegetation plan) for the diversion
5. engineering drawings depicting the physical attributes and dimensions of the diversion
6. (if relevant) the staged development of a permanent watercourse diversion including the proposed use of temporary watercourse diversions with identified lifespans
7. all investigation and other reports relied on by the design
8. plans and specifications sufficient to complete construction and revegetation in accordance with the design.

'**design storage allowance or DSA**' means an available volume, estimated in accordance with the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933) published by the administering authority, must be provided in a dam as at 1 November each year in order to prevent a discharge from that dam to an annual exceedance probability (AEP) specified in that manual.

'**designer**' for the purposes of a regulated dam, means the certifier of the design plan for the regulated dam.

'digital platform' means the collection of tools and services an organisation uses to deliver its digital strategy, for example websites, databases etc.

'disturbance' means disturbed land as defined in the Environmental Protection Regulations 2008.

'**emergency action plan**' means documentation forming part of the operational plan held by the holder of this environmental authority or a nominated responsible officer, that identifies emergency conditions that sets out procedures and actions that will be followed and taken by the dam owner and operating personnel in the event of an emergency. The actions are to minimise the risk and consequences of failure, and ensure timely warning to downstream communities and the implementation of protection measures. The plan must require dam owners to annually update contact information.

'EP Act' means *Environmental Protection Act 1994*.

'**existing structure**' means a structure that prior to 18 September 2014 meets any or both of the following, a structure:

1. with a design that is in accordance with the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)and that is considerably in progress;
2. that is under considerable construction or that is constructed.

'**extreme storm storage**' means a storm storage allowance determined in accordance with the criteria in the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)published by the administering authority.

'final rehabilitation report' means a final rehabilitation report required with a surrender application and prepared under chapter 5, part 10, division 3 of the *Environmental Protection Act 1994*.

'**flowable substance**' means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.

'**hazard 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 'Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)'.

'**holder of this environmental authority**' means:

1. where this document is an environmental authority, any person who is the holder of, or is acting under, that environmental authority; or
2. where this document is a development approval, any person who is the registered operator for that development approval.

'**hydraulic performance**' means the capacity of a regulated dam to contain or safely pass flowable substances based on the design criteria specified for the relevant consequence category in the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams.

'**infrastructure**' means water storage dams, levees, roads and tracks, buildings and other structures built for the purpose of the mining activity.

'$L_{A1\ adj,15\ mins}$' means the A-weighted sound pressure level, adjusted for noise character, measured in the presence of the noise under investigation and exceeded for one per cent of the time period of fifteen minutes, using Fast response.

'$L_{Aeq\ adj,15\ mins}$' means the equivalent continuous A-weighted sound pressure level, adjusted for noise character, measured in the presence of the noise under investigation over a time period of fifteen minutes, using Fast response.

'**leachate**' means a liquid that has passed through or emerged from, or is likely to have passed through or emerged from, a material stored, processed or disposed of at the operational land which contains soluble, suspended or miscible contaminants likely to have been derived from the said material.

'**low consequence dam**' means any dam that is not a high or significant consequence category as assessed using the Manual for assessing consequence categories and hydraulic performance of structures.

'**median**' means the middle value, where half the data are smaller and half the data are larger. If the number of samples is even, the median is the arithmetic average of the two middle values.

'**m**' means metres.

'**mandatory reporting level**' or '**MRL**' means a warning and reporting level determined in accordance with the criteria in the Manual for assessing consequence categories and hydraulic performance of structures published by the administering authority.

'**manual**' means the Manual for assessing consequence categories and hydraulic performance of structures published by the administering authority.

'**measures**' includes any measures to prevent or minimise environmental impacts of the mining activity such as bunds, silt fences, diversion drains, capping, and containment systems.

'milestones' means criteria to ensure progressive rehabilitation and closure activities are completed.

'**mine affected water**':

1. means the following types of water:
    a) pit water, tailings dam water, processing plant water;
    b) 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;
    c) rainfall runoff which has been in contact with any areas disturbed by mining 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;
    d) groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated;
    e) groundwater from the mine's dewatering activities;
    f) a mix of mine affected water (under any of paragraphs i)-v) and other water.
2. does not include surface water runoff which, to the extent that it has been in contact with areas disturbed by mining activities that have not yet been completely rehabilitated, has only been in contact with:
    a) 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
    b) 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:
        i. areas that are been capped and have monitoring data demonstrating hazardous material adequately contained with the site;
        ii. 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
        iii. both.

'mining activity' or **'mining activities'** means mining coal from the coal measures, including the removal of overburden and dependent water-related activities from the mining of coal, and rehabilitation activities, on the mining tenures stated in Environmentally Relevant Activity and location details of this environmental authority.

'**mining waste**' means waste rock, spoil, overburden and interburden.

'**modification**' or '**modifying**' (see definition of 'construction').

'**NATA**' means National Association of Testing Authorities.

'**natural flow**' means the flow of water through waters caused by nature.

'NEPM' means National Environment Protection Measures that are detailed on the website: http://nepc.gov.au/nepms.

'**non-polluting**' means having no adverse impacts upon the receiving environment.

'**operational plan**' includes:

1. normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA);
2. contingency and emergency action plans including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the regulated structure.

'**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).

'**protected area**' means – a protected area under the *Nature Conservation Act 1992*; or

1. a marine park under the *Marine Parks Act 1992*; or
2. a World Heritage Area.

'**permanent watercourse diversion**' is a man-made structure that incorporates the geomorphologic, hydraulic, hydrologic and ecological components of a local watercourse and is designed, constructed, operated and maintained according to an engineering standard that ultimately achieves a self-sustaining watercourse able to function without features or characteristics that rely on ongoing maintenance or that impose a financial or other burden on the proponent, government or the community.

'pre-development activities' means exploration and construction activities on the mining tenures stated in Environmentally Relevant Activity and location details of this environmental authority.

'reference sites' means sites that must:

(a) have a similar hydrology regime;
(b) be from the same bio-geographic region;
(c) have similar biodiversity, soil types and topography; and
(d) not be so close to the affected sites that any disturbance to monitoring sites also results in a change at the reference site.

'**register of regulated structure**' includes:

1. date of entry in the register;
2. name of the structure, its purpose and intended/actual contents;
3. the consequence category of the dam as assessed using the 'Manual for assessing consequence categories and hydraulic performance of structures';
4. 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;
5. name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings;
6. for the regulated dam, other than in relation to any levees –
7. the dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam;
    a) coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area;
    b) dam crest volume (megalitres);
    c) spillway crest level (metres AHD).
    d) maximum operating level (metres AHD); vi) storage rating table of stored volume versus level (metres AHD);
    e) design storage allowance (megalitres) and associated level of the dam (metres AHD); and
    f) mandatory reporting level (metres AHD);
8. the design plan title and reference relevant to the dam;
9. the date construction was certified as compliant with the design plan;
10. the name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan;
11. details of the composition and construction of any liner;
12. the system for the detection of any leakage through the floor and sides of the dam;
13. 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;
14. dates when recommendations and actions arising from the annual inspection were provided to the administering authority; and
15. dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.

'**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):

1. a watercourse;
2. groundwater; and
3. an area of land that is not specified in this environmental authority.

The term does not include land that is specified in Authorised Activities of this environmental authority.

'**receiving waters**' means the waters into which this environmental authority authorises releases of mine affected water.

'**receiving environment monitoring program (REMP)**' means a monitoring program designed to monitor and assess the potential impacts of controlled and/or uncontrolled releases of contaminants to the environment from the activity.

'**regulated structure**' means any structure in the significant or high consequence category as assessed using the Manual for assessing consequence categories and hydraulic performance of structures published by the administering authority. A regulated structure does not include:

1. 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;
2. a sump or earthen pit used to store residual drilling material and drilling fluid only for the duration of drilling and well completion activities;
3. a flare pit.

'**rehabilitation**' the process of reshaping and revegetating land to restore it to a stable landform.

'**release event**' means a surface water discharge from mine affected water storages or contaminated areas on the licensed place meaning the mining activities carried out at the mining tenements detailed in Figure 1 – Site map, domains and groundwater monitoring locations of this environmental authority.

'**resample**' means the resampling that is required to take place within 10 business days of the exceedance of a sampling occasion to verify the result.

'**residual drilling material**' means waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.

'**RL**' means reduced level, relative to mean sea level as distinct from depths to water.

'**representative**' means a sample set which covers the variance in monitoring or other data either due to natural changes or operational phases of the mining activities.

'**saline drainage**' means the movement of waters, contaminated with salts, as a result of the mining activity.

'**sampling occasion**' means the collection of a sample undertaken in accordance with the sampling frequency specified, and where an exceedance is recorded the sampling occasion together with the resample.

'**self-sustaining**' means not requiring on-going intervention and maintenance to maintain functional riverine processes and characteristics

'**sensitive place**' means:

1. a dwelling, residential allotment, mobile home or caravan park, residential marina or other occupied residential premises; or
2. a motel, hotel or hostel; or
3. an educational institution; or
4. a medical centre or hospital; or
5. a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 1992* or a World Heritage Area; or
6. a public park or gardens.

Note: The definition of 'sensitive place' and 'commercial place' is based on Schedule 1 of EPP Noise. That is, a sensitive place is inside or outside on a dwelling; library;, educational institution; childcare; kindergarten; school; playground; hospital, surgery or other medical institution; commercial and retail activities; protected area or an area identified under a conservation plan under *Nature Conservation Act 1992* as a critical habitat or an area of major interest; marine park under *Marine Parks Act 2004*; park or garden that is outside of the mining lease and open to the public for the use other than for sport or organised entertainment. A commercial place is inside or outside a commercial or retail activity.

A mining camp (i.e., accommodation and ancillary facilities for mine employees or contractors or both, associated with the mine the subject of the environmental authority) is not a sensitive place for that mine or mining project, whether or not the mining camp is located within a mining tenement that is part of the mining project the subject of the environmental authority. For example, the mining camp might be located on neighbouring land owned or leased by the same company as one of the holders of the environmental authority for the mining project, or a related company. Accommodation for mine employees or contractors is not a sensitive place if the land is held by a mining company or related company, and if occupation is restricted to the employees, contractors and their families for the particular mine or mines which are held by the same company or a related company.

An unoccupied residence or dwelling located on the mining tenement is not a sensitive place.

A township (occupied by the mine employees, contractors and their families for multiple mines that are held by different companies) would be a sensitive place, even if part or all of the township is constructed on land owned by one or more of the companies.

'**significant residual impact**' has the meaning in section 8 of the *Environmental Offsets Act 2014*.

'SMART principles' means:

1. Specific – it is clear what must be done
2. Measurable – it must be possible to know when it has been achieved
3. Achievable – it is capable of being achieved
4. Reasonable/relevant – there is a clear connection between the milestone and the desired outcomes. The requirement is reasonable
5. Time specific – it is clear when the milestone must be completed by.

'**spillway**' means a weir, channel, conduit, tunnel, gate or other structure designed to permit discharges form the dam, normally under flood conditions or in anticipation of flood conditions.

'**structure**' means dam or levee.

'**substantial low frequency noise**' means a noise emission that has an unbalanced frequency spectrum shown in a one-third octave band measurements, with a predominant component located within the frequency range 10 to 200 Hz.

'**suitably qualified and experienced person**' in relation to regulated structures means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act 2002*, and has demonstrated competency and relevant experience:

1. for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design.
2. for regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments.

Note: It is permissible that a suitably qualified and experienced person obtain subsidiary certification from an RPEQ who has demonstrated competence and relevant experience in either geomechanics, hydraulic design or engineering hydrology.

'**system design plan**' means a plan that manages an integrated containment system that shares the required DSA and/or ESS volume across the integrated containment system.

'**Total Dissolved Solids**' means the total concentration of dissolved substances in water and is to be determined using the "gravimetric" method of analysis.

'**Total Nitrogen (TN)**' means the sum of Organic Nitrogen, Ammonia Nitrogen, Nitrite plus Nitrate Nitrogen, expressed as mg/L as Nitrogen. This includes both the inorganic and organic fraction of nitrogen.

'**Total Phosphorus (TP)**' means the sum of the reactive phosphorus, acid-hydrolysable phosphorus and organic phosphorus, as mg/L of Phosphorus. This includes both the inorganic and organic fraction of phosphorus.

'**treated sewage**' means treated sewage released from sewage treatment plants.

'**µS/cm**' means micro siemens per centimetre.

'**void**' means an area of land to be excavated in the carrying out of a mining activity.

'**waste rock emplacements'** means elevated landforms (i.e. Permanent Highwall Emplacement) made up of waste rock material as depicted in **Figure 1 – Authorised Disturbance**.

'**water**' is defined under Schedule 4 of the *Water Act 2000*.

'**watercourse**' has the same meaning given in the *Water Act 2000*.

'**water quality**' means the chemical, physical and biological condition of water.

'**water year**' means the 12-month period from 1 July to 30 June.

'**waters**' includes 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.

'**WaTERS**' means Water Tracking and Electronic Reporting System or subsequent updated system, used to submit monitoring data and notify the Queensland Government.[https://waters.ehp.qld.gov.au/] or psd.help@qld.gov.au.

'**wet season**' means the time of year, covering one or more months, when most of the average annual rainfall in a region occurs. For the purposes of DSA determination this time of year is deemed to extend from 1 November in one year to 31 May in the following year inclusive.

Appendix 2 – Figures

Figure 1 – Authorised disturbance

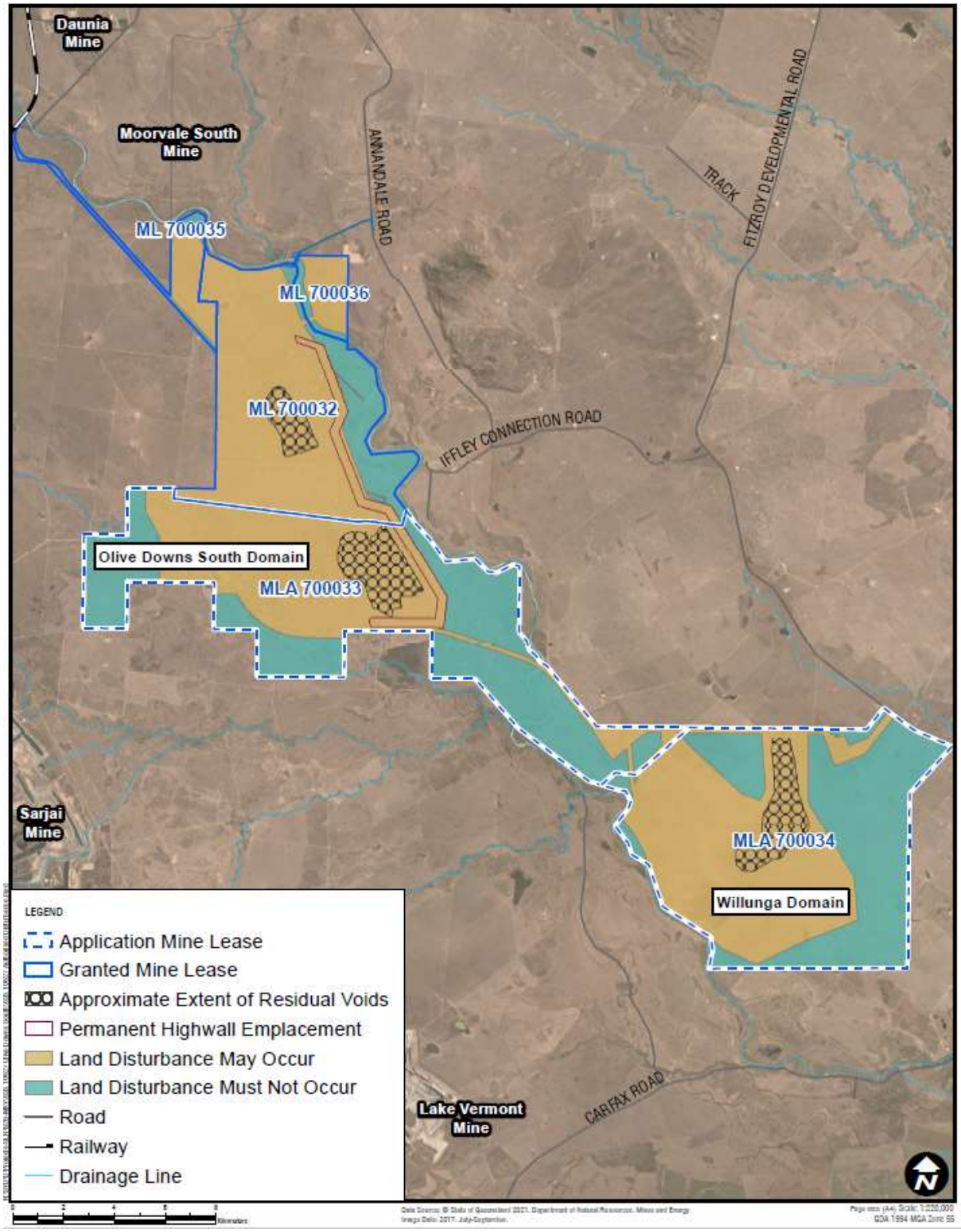


Figure 2 – Groundwater bore monitoring locations

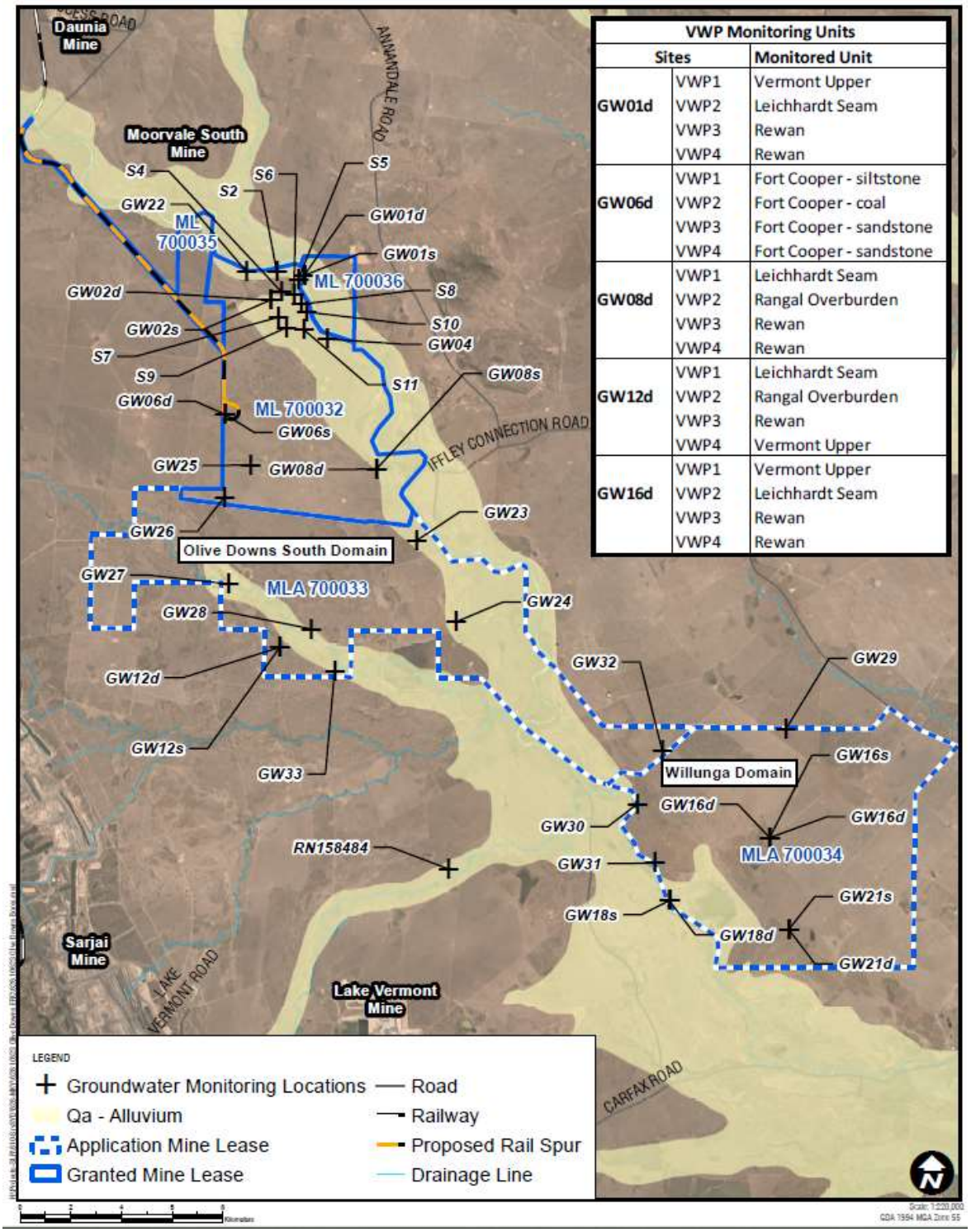
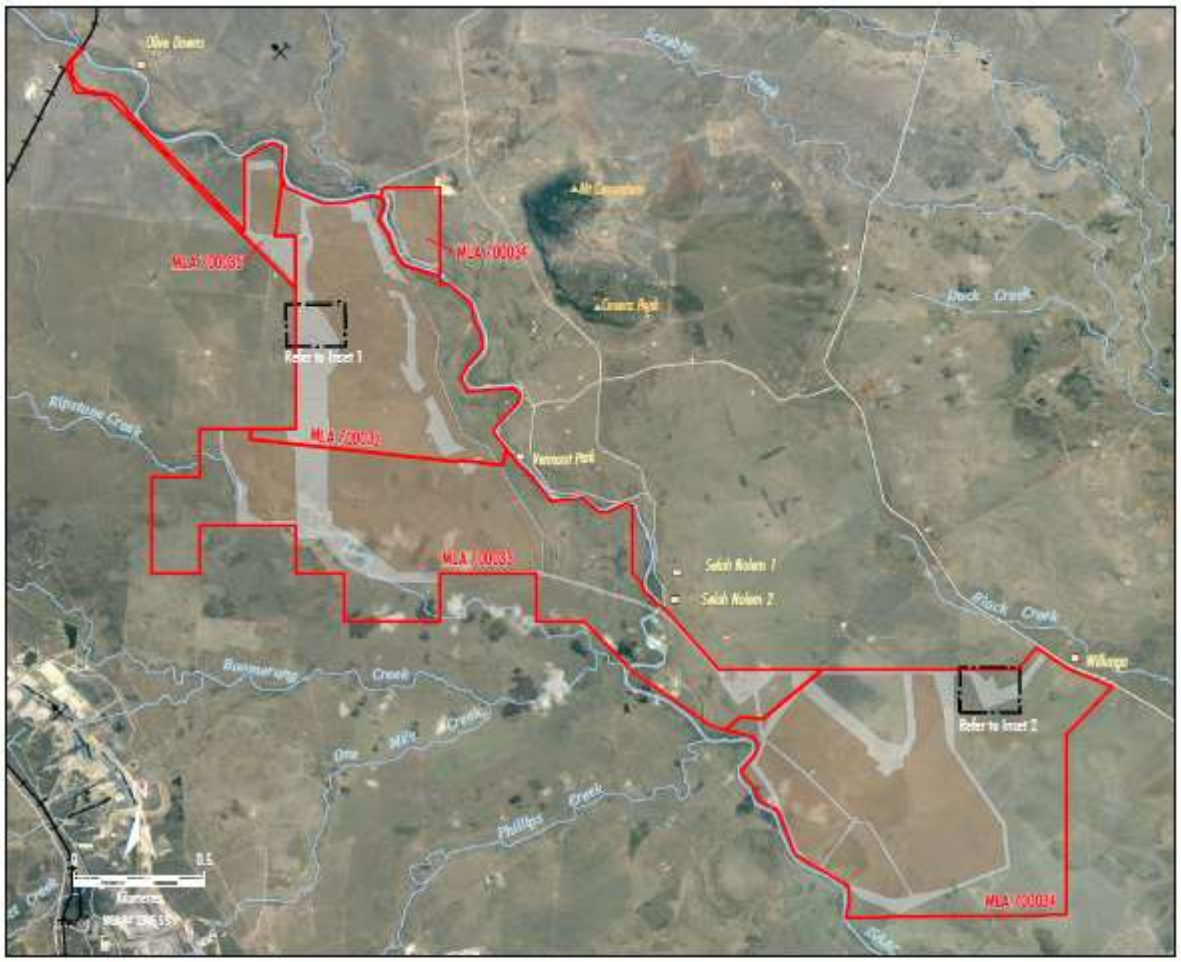
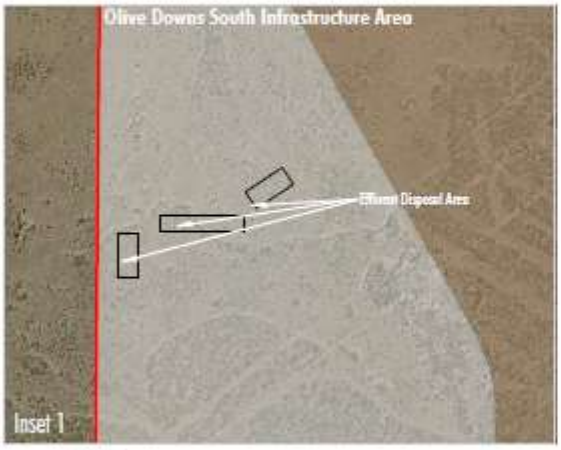


Figure 3 – Locations of sewage treatment disposal areas







LEGEND
Mining Lease Application Boundary
Effluent Disposal Area
Mine Infrastructure Area
Out-of-Pit and In-Pit Waste Rock Emplacement

Source: Pembroke (2018); Phronic (2018); Department of Natural Resources and Mines (2018) Orthophotography: Google Image (2016)

Figure 4a – Location of the significant residual impact areas of Endangered Regional Ecosystems (ERE)

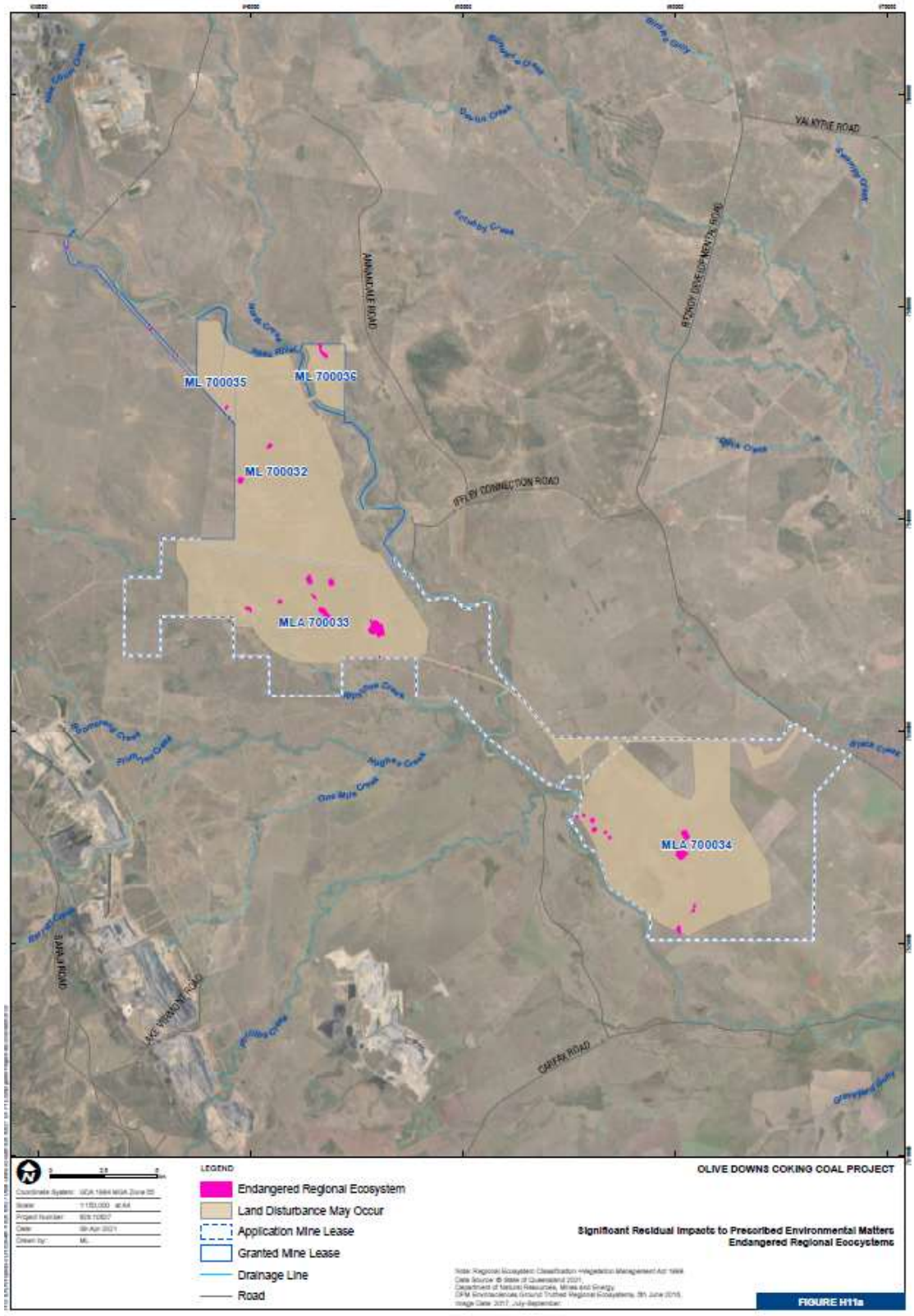


Figure 4b – Location of the significant residual impact areas of Of Concern Regional Ecosystems (RE)

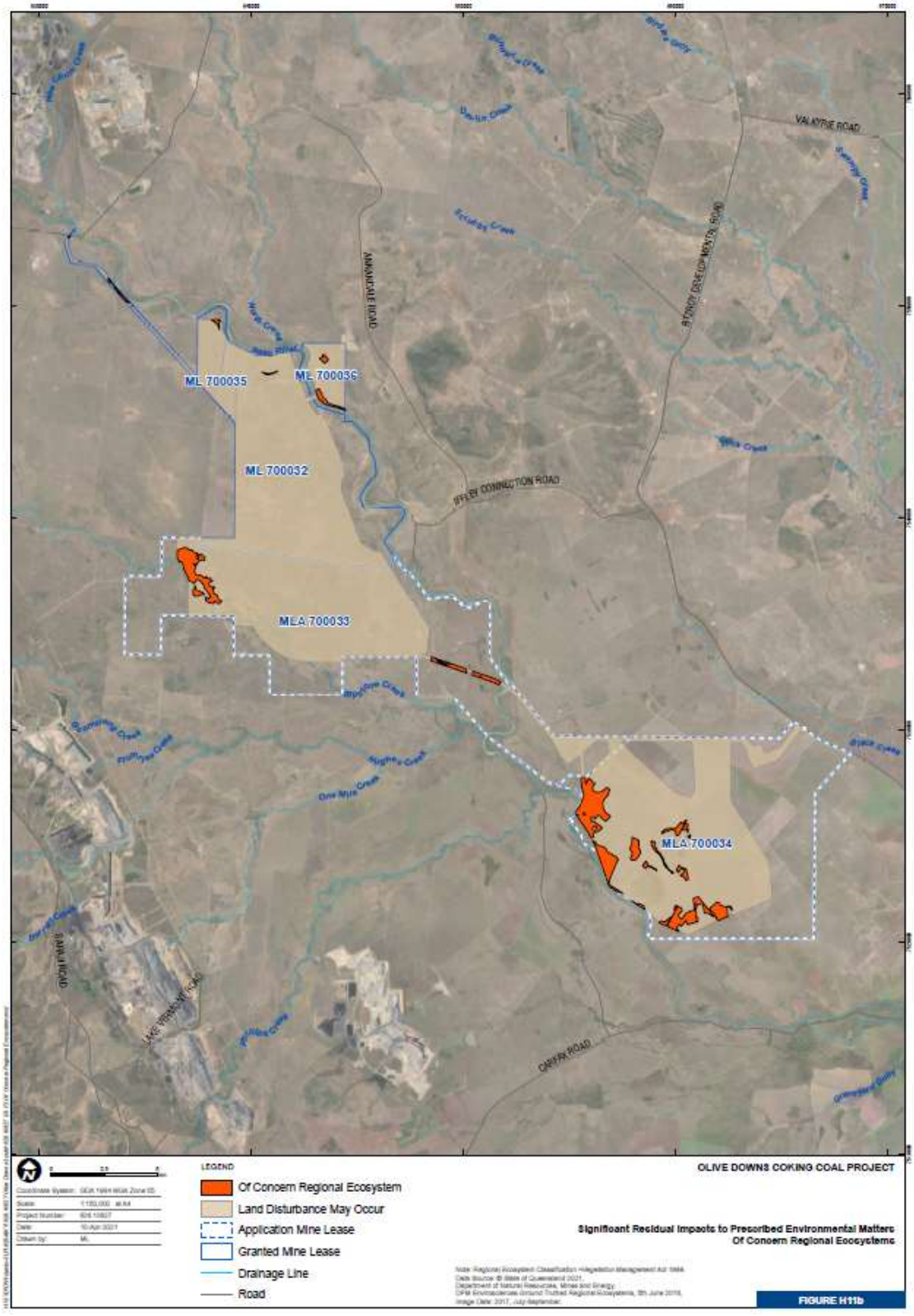


Figure 4c – Location of the significant residual impact areas of Regional ecosystems (not within an urban area) that intersect a wetland on the vegetation management wetlands map

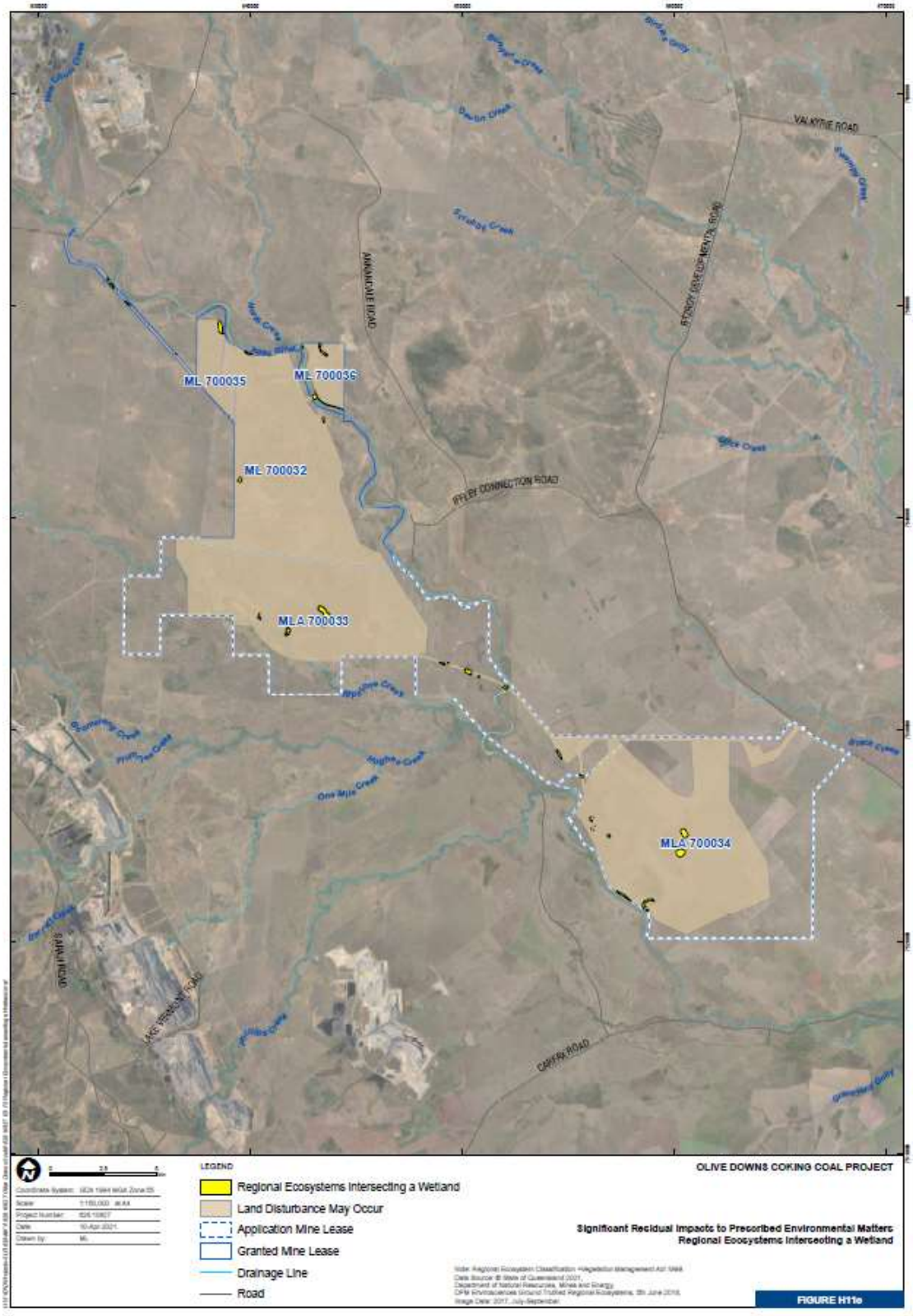


Figure 4d – Location of the significant residual impact areas of Regional ecosystems (not within an urban area) within the defined distance from the defining banks of a relevant watercourse on the vegetation management watercourse map

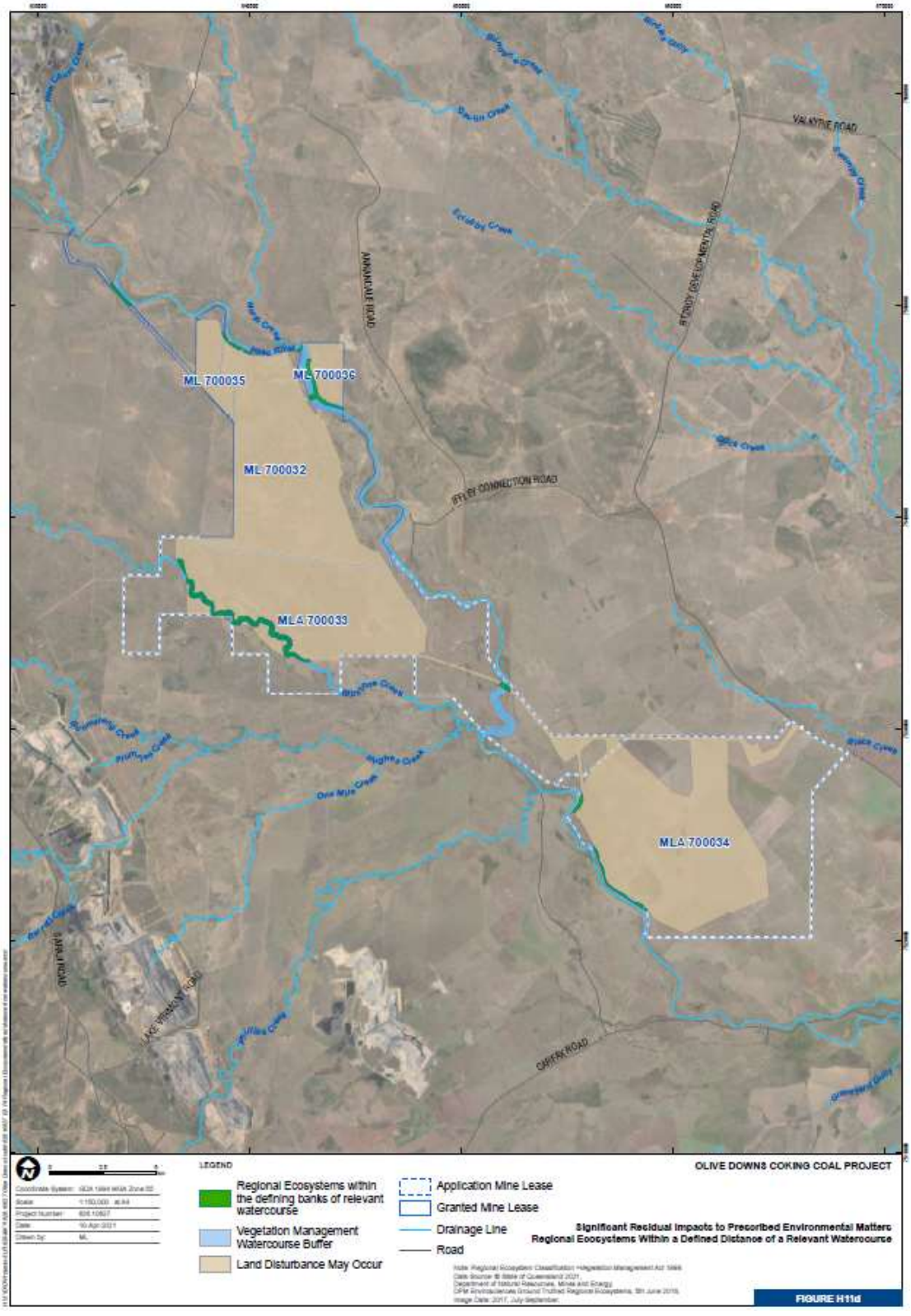


Figure 4e – Location of the significant residual impact areas of Essential habitat (not in an urban area) for vulnerable wildlife

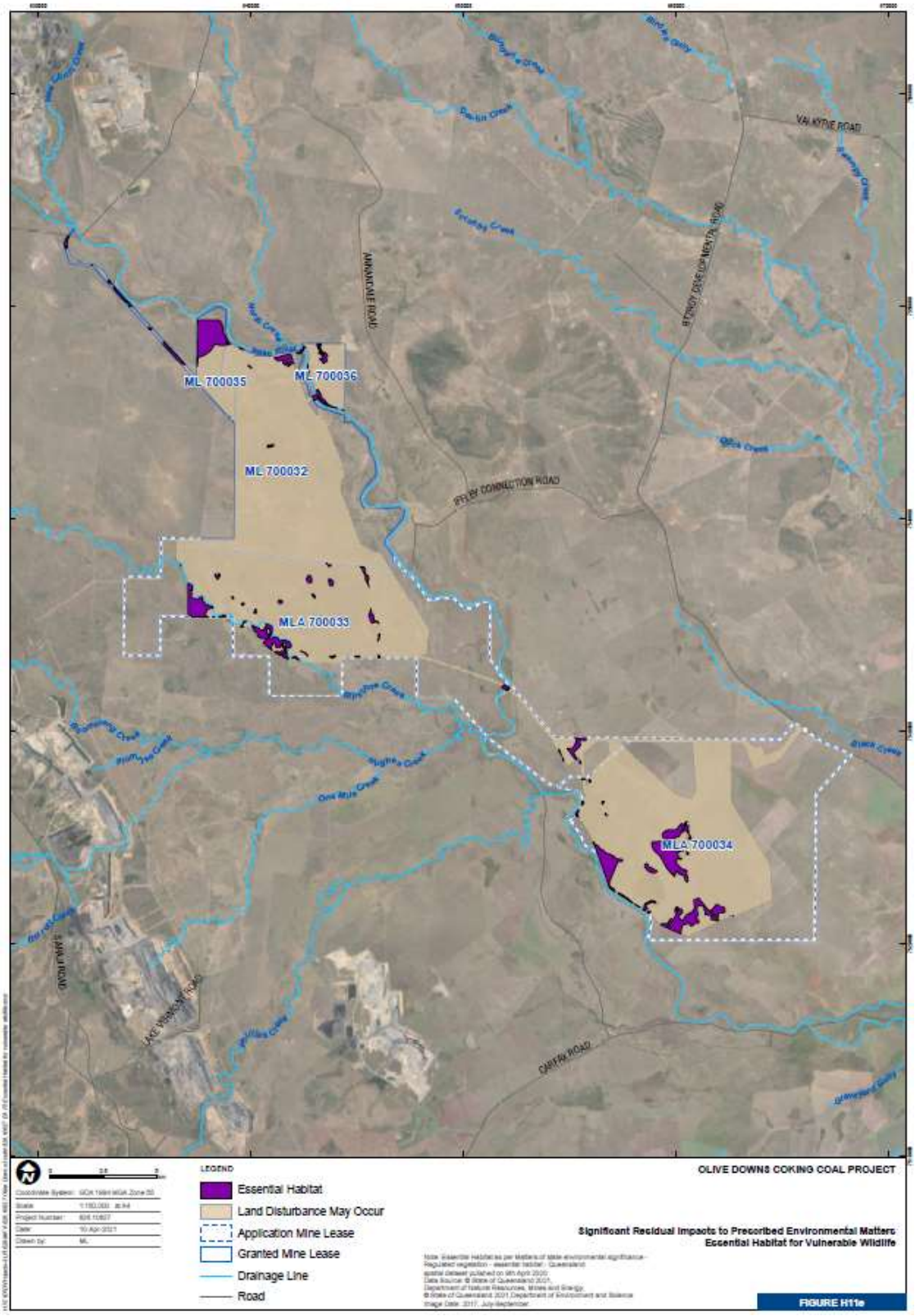


Figure 4f – Location of the significant residual impact areas of Connectivity area that is a regional ecosystem (not in urban area)

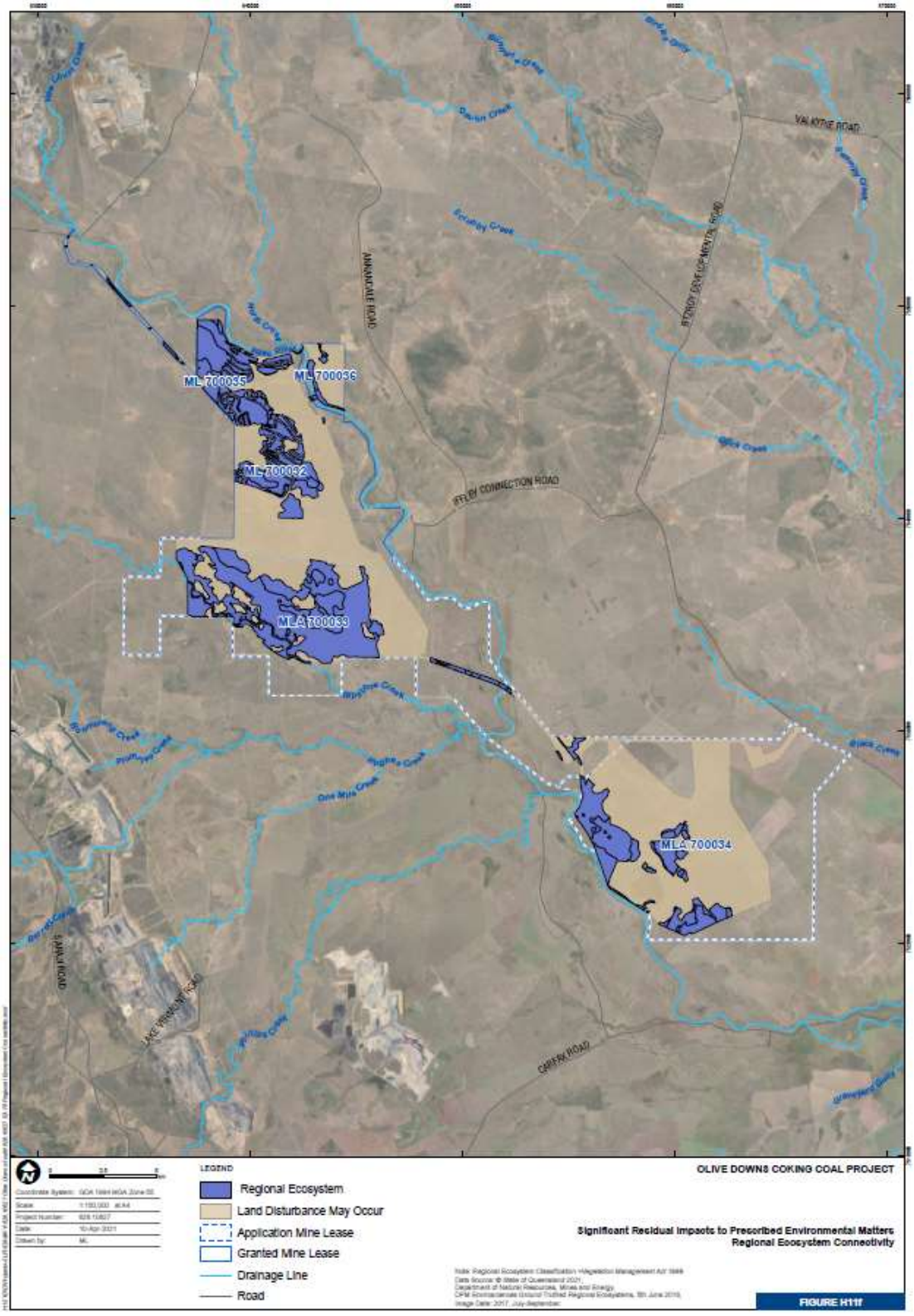


Figure 4g – Location of the significant residual impact areas of A wetland in a wetland protection area shown on the Map of referable wetlands (HES wetlands in GBR)

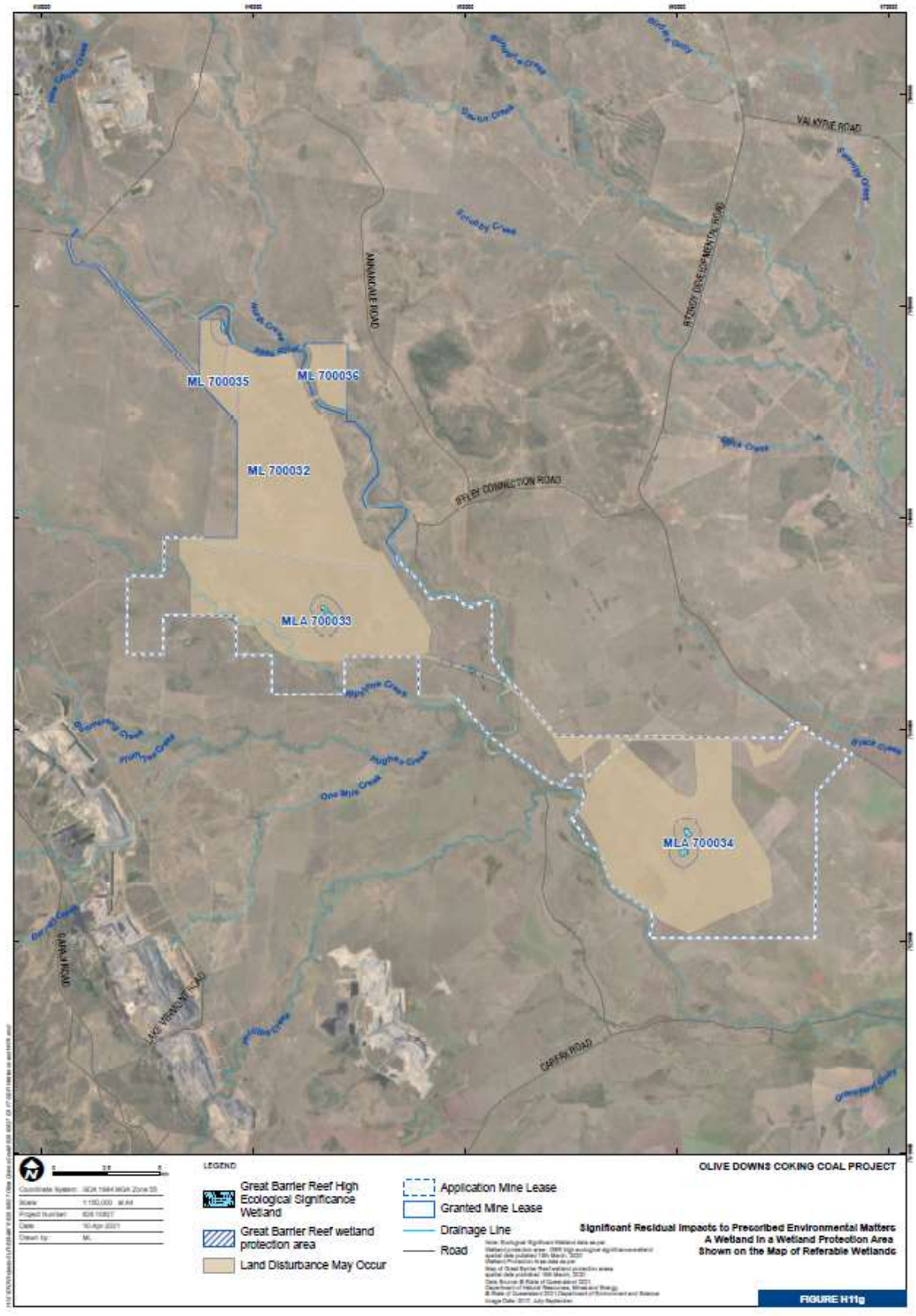


Figure 4h – Location of the significant residual impact areas of Habitat for the Ornamental Snake

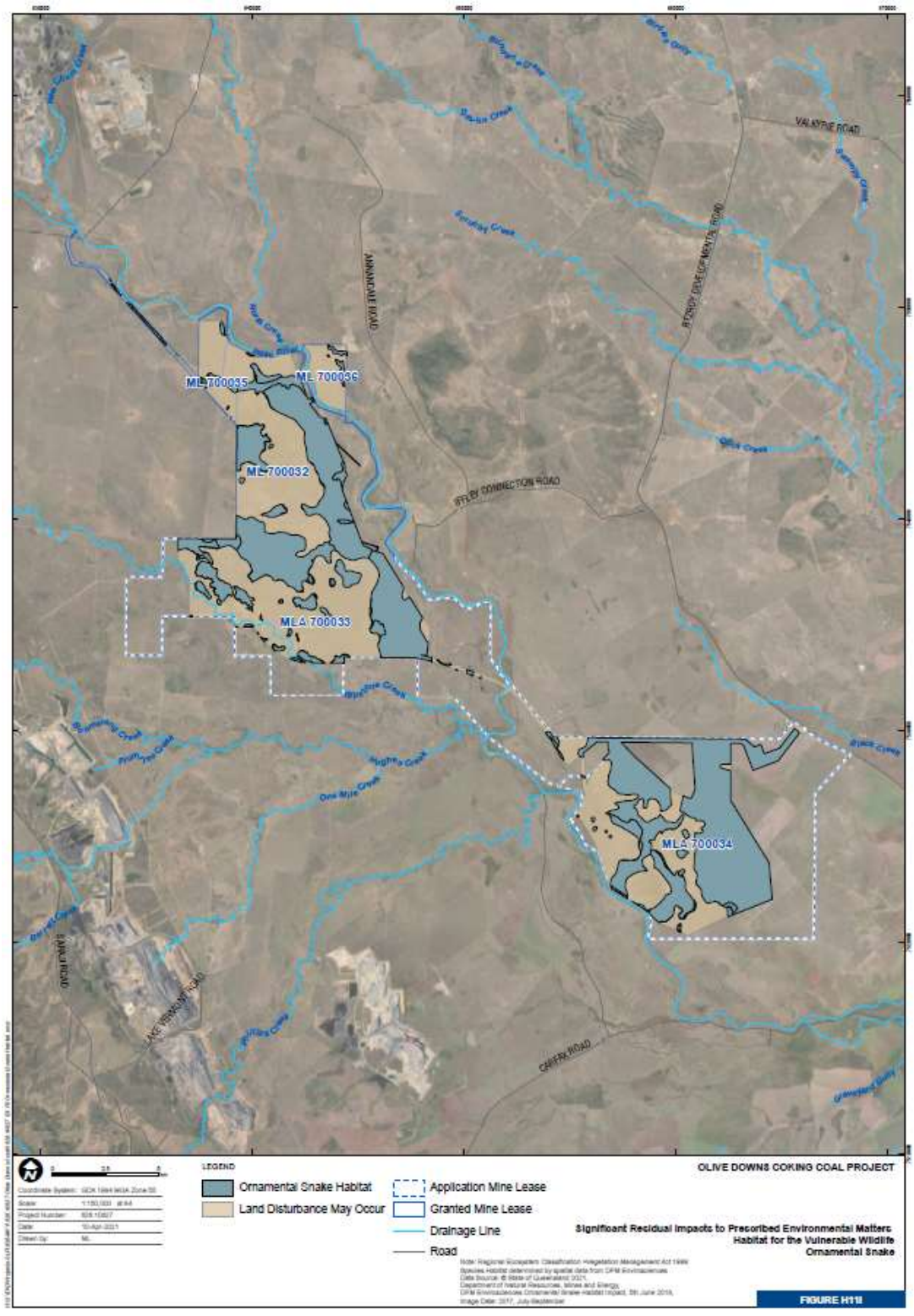


Figure 4i – Location of the significant residual impact areas of Habitat for Koala

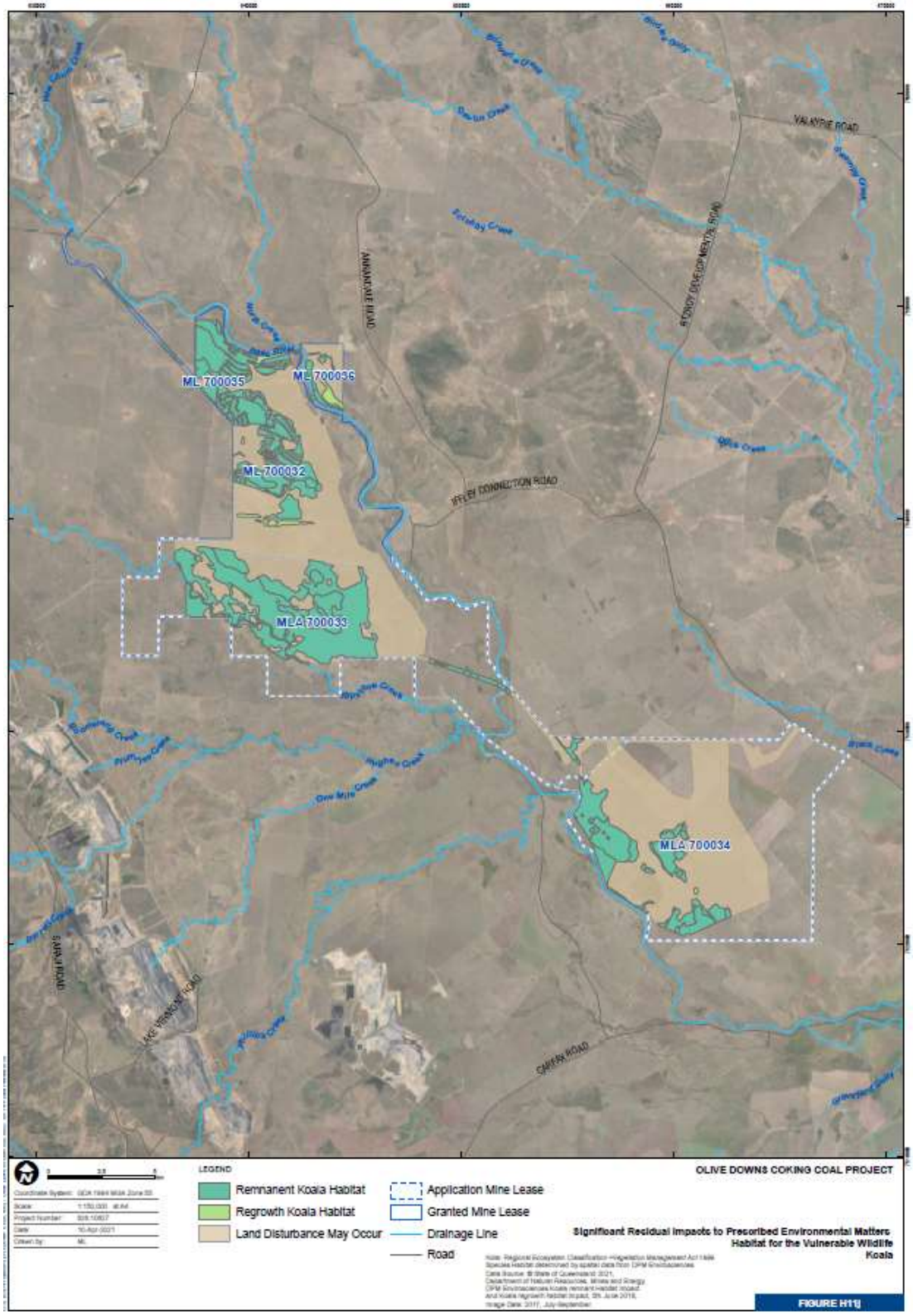


Figure 4j – Location of the significant residual impact areas of Habitat for Greater Glider

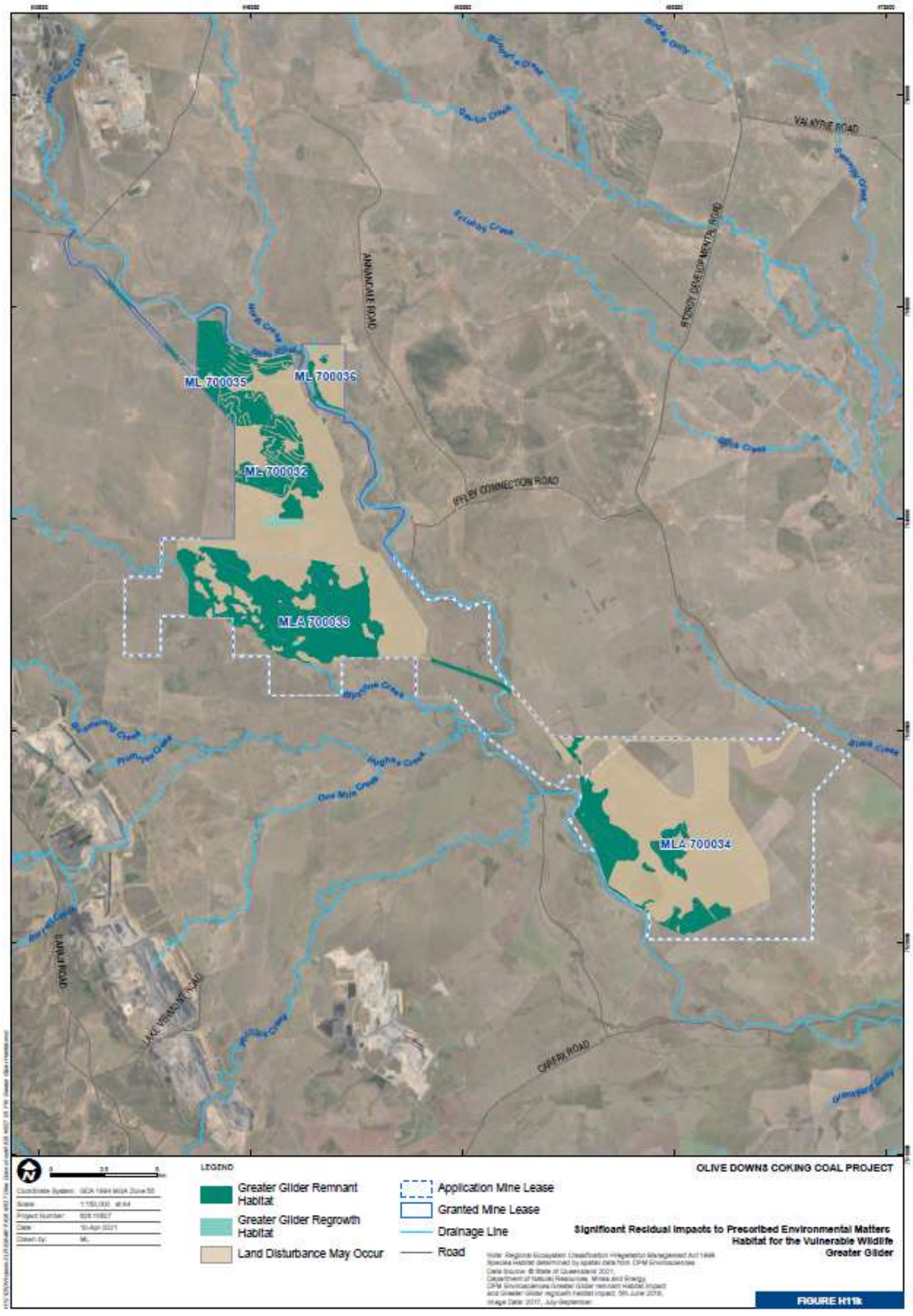


Figure 4k – Location of the significant residual impact areas of Habitat for Australian Painted Snipe

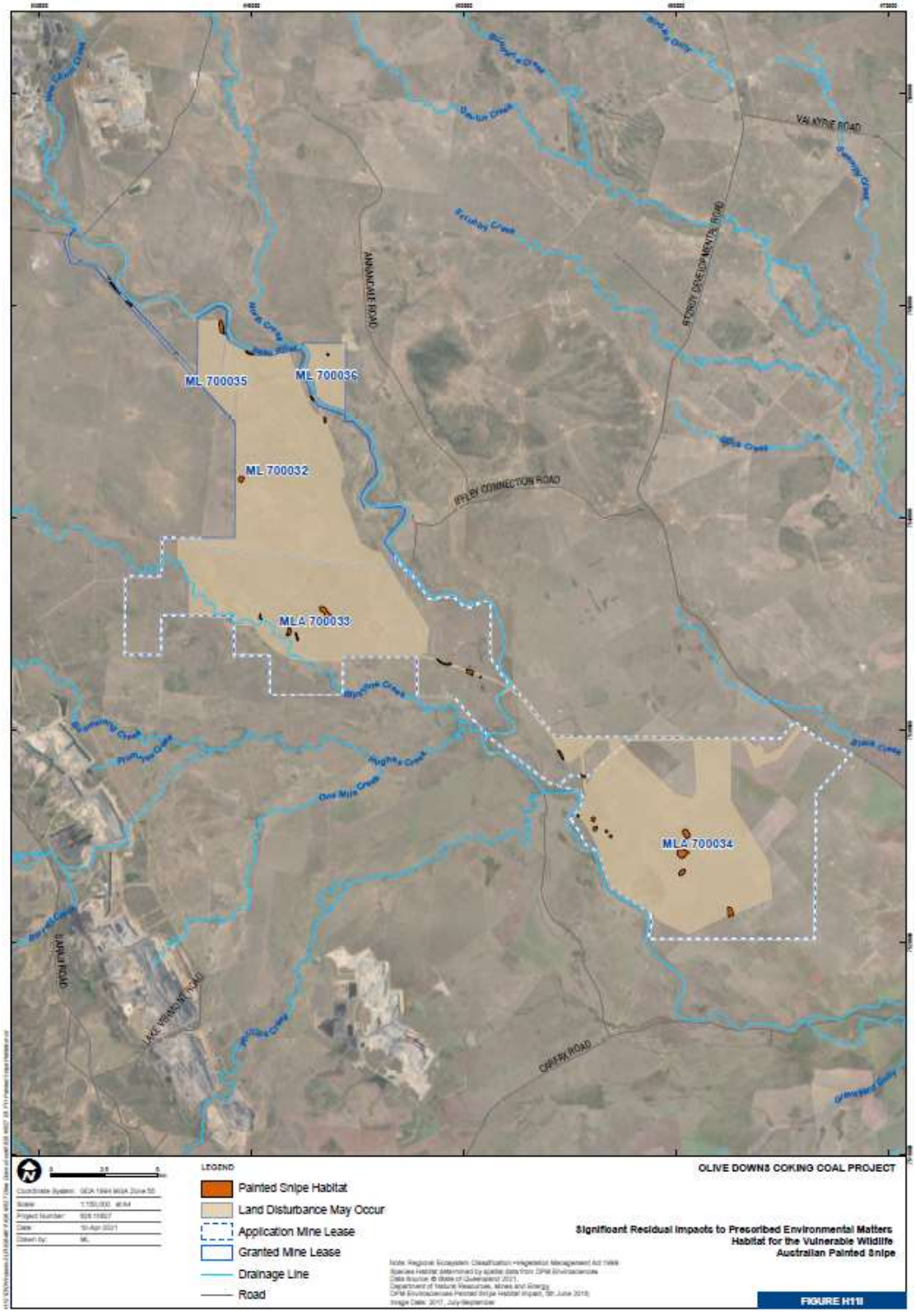
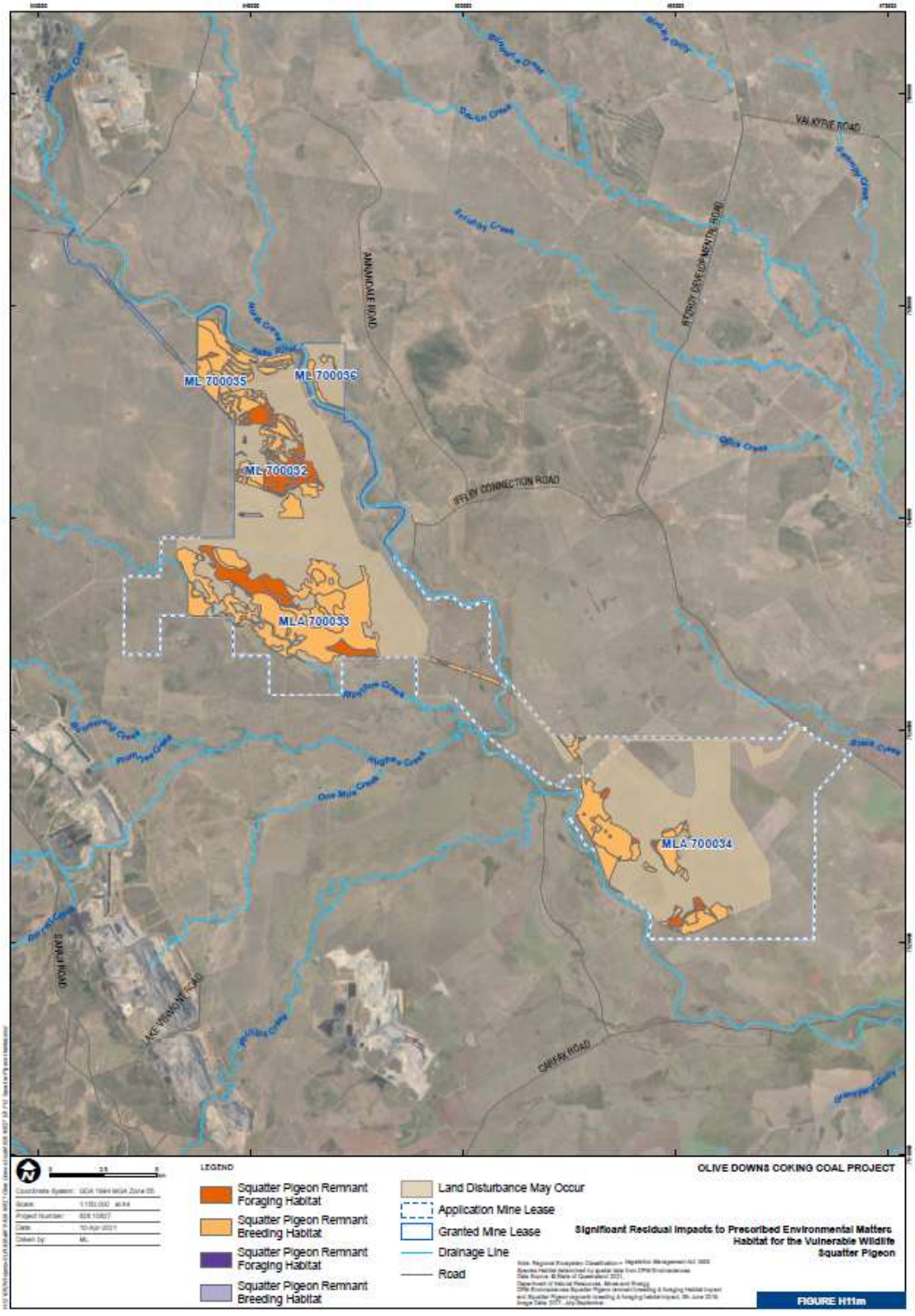


Figure 4l – Location of the significant residual impact areas of Habitat for Squatter Pigeon (southern)



Appendix 3 – Rehabilitation Requirements

Domain	Goals	Objectives	Performance indicators	Selection of performance indicator	Completion criteria
Waste rock emplacements	Long-term safety	Waste rock emplacement final landforms are geotechnically stable and safe.	Final landforms are designed and constructed in accordance with sound geotechnical engineering principles. The geotechnical assessment is informed by site specific geotechnical studies. Geotechnical assessment of the waste rock emplacement final landforms are prepared by a suitably qualified and experienced person. The geotechnical assessment would be reported and interpreted in the Final Rehabilitation Report.	Geotechnical assessments of final landforms are recommended by the Planning for Integrated Min Closure: Toolkit (International Council on Mining and Metals, 2008).	Final landforms are designed and constructed to the following specifications: • Waste rock emplacement final landform slopes are approximately 7 degrees (1V:8H) or lower. • The toe of out-of-pit waste rock emplacements standoff the crest of the residual voids by at least 50 metres (m). • Materials prone to spontaneous combustion have been covered and/or appropriately managed. The geotechnical assessment concludes the waste rock emplacement final landforms are stable and safe.
		Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the Queensland auditor handbook for contaminated land (DES, 2018b) by a suitably qualified and experienced person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the requirements of Chapter 7, Part 8 of the EP Act, subordinate legislation and NEPM.	The contaminated land assessment concludes that the domain site is suitable for the proposed post-mining land use.
		Other potential safety risks to humans and fauna (e.g. falls from height) are identified and appropriately	Safety assessment (including risk assessment) prepared by a suitably qualified and experienced person.	Post-mining safety assessment is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline	The safety assessment concludes that the risks associated with other potential safety risks are low.

		addressed so the site is safe.	The safety assessment would be reported and interpreted in the Final Rehabilitation Report.	(ESR/2016/1875) (DEHP, 2014).	The safety assessment identifies ongoing maintenance and risk management requirements for the post-mining land use.
	Non-polluting	Runoff and seepage from waste rock emplacements are a low risk of causing environmental harm.	Surface and groundwater quality (e.g. sediment load, pH, heavy metal content, etc.) monitoring data. Surface and groundwater quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Water quality monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (ESR/2016/1875) (DEHP, 2014).	Receiving water quality monitoring results comply with the EA surface and groundwater quality criteria, for a period of at least **five years** post-mining.
			Environmental risk assessment prepared by a suitably qualified team. The environmental risk assessment would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the requirements of Chapter 5, Part 10 of the EP Act.	The environmental risk assessment concludes that there is a low risk of environmental harm.
	Stable	Waste rock emplacement final landforms are geotechnically stable.	Final landforms are designed and constructed in accordance with sound geotechnical engineering principles, and the geotechnical assessment of the waste rock emplacement final landforms are prepared by a suitably qualified and experienced person. The geotechnical assessment is informed by site specific geotechnical studies. Geotechnical assessment of the waste rock emplacement final landforms are prepared by a suitably qualified and experienced person. The geotechnical assessment would be reported and interpreted in the Final Rehabilitation Report.	Geotechnical assessments of final landforms are recommended by the Planning for Integrated Min Closure: Toolkit (International Council on Mining and Metals, 2008).	Final landforms are designed and constructed to the following specifications: • Waste rock emplacement final landform slopes are approximately 7 degrees (1V:8H) or lower. • The toe of out-of-pit waste rock emplacements standoff the crest of the residual voids by at least 50 metres (m). • Materials prone to spontaneous combustion have been covered and/or appropriately managed. The geotechnical assessment concludes the waste rock emplacement final landforms are stable and safe.

		Landform achieves appropriate erosion rates.	Erosion (erosion rates and sheets, rills and gully formation) monitoring data. Erosion monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Erosion monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	Erosion monitoring data demonstrates the following for five years post-mining: • No active rill or gully erosion observed. • Erosion maintenance requirements are comparable to relevant rehabilitation monitoring reference sites. • Soil loss rates are similar to corresponding relevant reference sites or do not exceed initial landform design expectations. • Evidence that the landform is stable under regular and irregular climatic events.
		Self-sustaining vegetative cover established.	Landscape function analysis (LFA) (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	LFA monitoring demonstrates that the following characteristics are comparable to relevant rehabilitation monitoring reference sites, for a period of at least five years post-mining: • vegetation cover, types and densities • nutrient cycling/ accumulation • infiltration • stability Evidence of generational succession of trees and shrubs (for example presence of reproductive structures, lignotubers).
	Sustainable Land Use	Establish agriculture (low intensity cattle grazing) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring.	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the	• LFA monitoring demonstrates: Physical, chemical and biological properties of the growth media are similar to relevant rehabilitation monitoring reference sites. • Vegetation consistent with grass species suitable for grazing (e.g. including Buffel Grass (*Cenchrus*

			LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	*ciliaris*), Wiregrass (*Aristida* sp.) and Kangaroo Grass (*Themeda triandra*) comparable to relevant rehabilitation monitoring reference sites. • Vegetation cover and densities are comparable to relevant rehabilitation monitoring reference sites, for a period of at least five years post-mining. • Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. • Pests do not occur in substantial numbers or visibly affect the development of pasture grass species.
			Cattle stocking rate. Area safe for cattle access. Landform stability when grazed. Stock access to water sources. Pasture cover per square meter. Cattle stocking rate monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Agricultural productivity is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014). • Stocktake is a paddock scale land condition monitoring and management package (The State of Qld. DPI&F, 2004). • GRASP is a pasture growth model (Meat & Livestock Australia Ltd, Project Code NBP.338)	Grazing trials, land condition monitoring and/or modelling demonstrates: • Landform is stable when grazed during a variety of climatic conditions • Cattle stocking rate monitoring demonstrates the long-term carrying capacity of a stocking rate of 0.22 adult equivalents per hectare is achievable. • Evidence that stock have access to water sources. • Evidence that the area is safe for cattle access and use.

		Establish self-sustaining nature conservation (woodland) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report. Habitat indicators: width, continuity, extent of shading and species composition; native species; and weed and pest abundance.	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	LFA monitoring demonstrates that the following characteristics are comparable to relevant rehabilitation monitoring reference sites, for a period of at least five years post-mining: • vegetation cover, types and densities • nutrient cycling/ accumulation • infiltration • stability Woodland vegetation contains a species diversity comparable to relevant rehabilitation monitoring reference sites (e.g. Poplar Box [*Eucalyptus populnea*] +/- Silver-leaved Ironbark [*E. melanophloia*] +/- Clarkson's Bloodwood [*Corymbia clarksoniana*]). Evidence of generational succession of trees and shrubs (for example presence of reproductive structures, lignotubers). Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. No restrictive matter (plants) as prescribed by the *Biosecurity Act 2014* are present. Pests do not occur in substantial numbers or visibly affect the development of native plant species.
Residual voids	Long-term safety	Final void final landforms are geotechnically stable and safe.	Final void final landforms are designed and constructed in accordance with sound geotechnical engineering principles. The geotechnical assessment is informed by site specific geotechnical studies.	Geotechnical assessments of final landforms are recommended by the Planning for Integrated Min Closure: Toolkit	Final void final landforms are designed and constructed to the following specifications: • Final void highwalls slopes are 20º or lower where located within alluvium and tertiary clays (known as the Cenozoic

			Geotechnical assessment of the final void final landforms (slope angle and length) prepared by a suitably qualified and experienced person. The geotechnical assessment would be reported and interpreted in the Final Rehabilitation Report.	(International Council on Mining and Metals, 2008).	overburden) to achieve a factor of safety of 1.5. • Final void highwall slopes are 45º or lower where located within a fault fractured zone, and 55º where they are located away from fault zones. An overall angle of 55º is achieved by 50m high batters at 65º incorporating 10m wide intermediate benches. • Low wall slopes are stable. • The toe of out-of-pit waste rock emplacements standoff the crest of the residual voids by at least 50m. • Perimeter bunding formed and security fencing installed. • The final void final landforms are stable and safe.
		Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the Queensland auditor handbook for contaminated land (DES, 2018b) by a suitably qualified and experienced person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the requirements of Chapter 7, Part 8 of the EP Act, subordinate legislation and NEPM.	The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
		Other potential safety risks to humans and fauna (e.g. falls from height) are identified and appropriately	Safety assessment (including risk assessment) prepared by a suitably qualified and experienced person. The safety assessment would be reported and interpreted in the Final Rehabilitation Report.	Post-mining safety assessment is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	The safety assessment concludes that the risks associated with other potential safety risks are low. The safety assessment identifies ongoing maintenance and risk management requirements for the post-mining land use.

		addressed so the site is safe.			
	Non-polluting	Residual voids are isolated from the Isaac River.	Flood assessment prepared by a suitably qualified and experienced person. The flood assessment would be reported and interpreted in the Final Rehabilitation Report.	Hydrological studies are recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	The flood assessment concludes that the residual voids are isolated from all flood events, up to and including a PMF event.
		Residual voids are a low risk of causing environmental harm.	Groundwater assessment prepared by a suitably qualified and experienced person. The groundwater assessment would be reported and interpreted in the Final Rehabilitation Report.		The groundwater assessment concludes that the residual voids are acting as groundwater sinks, preventing the migration of potentially saline water into adjacent aquifers and watercourses.
			Final void balance prepared by a suitably qualified and experienced person. The final void balance would be reported and interpreted in the Final Rehabilitation Report.		The final void balance concludes that the final void water bodies would equilibrate well below the point at which they would spill to the surrounding environment.
			Surface and groundwater quality (e.g. pH, heavy metal content, etc.) monitoring data. Surface and groundwater quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Water quality monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	Receiving water quality monitoring results comply with Environmental Authority surface and groundwater quality criteria, for a period of at least five years post-mining.
			Environmental risk assessment prepared by a suitably qualified team. The environmental risk assessment would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the requirements of Chapter 5, Part 10 of the EP Act.	The environmental risk assessment concludes that there is a low risk of environmental harm.
	Stable	Final void final landforms are	Final void final landforms are designed and constructed in accordance with sound geotechnical engineering principles.	Geotechnical assessments of final landforms are recommended by the	Final void final landforms are designed and constructed to the following specifications:

		geotechnically stable and safe.	The geotechnical assessment is informed by site specific geotechnical studies. Geotechnical assessment of the final void final landforms are prepared by a suitably qualified and experienced person. The geotechnical assessment would be reported and interpreted in the Final Rehabilitation Report.	Planning for Integrated Min Closure: Toolkit (International Council on Mining and Metals, 2008).	• Final void highwalls slopes are 20º or lower where located within alluvium and tertiary clays (known as the Cenozoic overburden) to achieve a factor of safety of 1.5. • Final void highwall slopes are 45º or lower where located within a fault fractured zone, and 55º where they are located away from fault zones. An overall angle of 55º is achieved by 50m high batters at 65º incorporating 10m wide intermediate benches. • The toe of out-of-pit waste rock emplacements standoff the crest of the residual voids by at least 50m. • Perimeter bunding formed and security fencing installed. The geotechnical assessment concludes the final void final landforms are stable and safe.
	Sustainable Land Use	Establish self-sustaining (fauna habitat) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	LFA monitoring demonstrates: • Sustainable fauna usage (e.g. Stripe-faced Dunnart, Hoary Wattled Bat and Australian Grey Teal) of the residual voids. • Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. • No restrictive matter (plants) as prescribed by the *Biosecurity Act 2014* are present. • Pests do not occur in substantial numbers.

Infrastructure areas	Long-term safety	Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the Queensland auditor handbook for contaminated land (DES, 2018b) by a suitably qualified and experienced person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the requirements of Chapter 7, Part 8 of the EP Act, subordinate legislation and NEPM.	The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
		Other potential safety risks (e.g. risks associated with retained infrastructure) are identified and appropriately addressed so the site is safe.	Safety assessment (including risk assessment) prepared by a suitably qualified and experienced person. The assessment considers the structural integrity of retained infrastructure. The safety assessment would be reported and interpreted in the Final Rehabilitation Report.	Post-mining safety assessment is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	The safety assessment concludes that the risks associated with other potential safety risks are low. The safety assessment identifies ongoing maintenance and risk management requirements for the post-mining land use.
	Non-polluting	Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the Queensland auditor handbook for contaminated land (DES, 2018b) by a suitably qualified and experienced person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the requirements of Chapter 7, Part 8 of the EP Act, subordinate legislation and NEPM.	The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use. Evidence that all waste and hazardous material has been removed.
	Stable	Landform achieves appropriate erosion rates.	Erosion (erosion rates and sheets, rills and gully formation) monitoring data. Erosion monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Erosion monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	Erosion monitoring data demonstrates the following for a minimum of five years post-mining: • Limited erosion (presence of sheets, rills and gullies) observed. • Soil loss rates are comparable to relevant rehabilitation monitoring reference sites.

					• Evidence that the landform is stable under regular and irregular climatic events. • Erosion maintenance requirements are comparable to relevant rehabilitation monitoring reference sites.
			Surface water quality (e.g. pH, heavy metal content, etc.) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Water quality monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least five years post-mining.
		Self-sustaining vegetative cover established.	Landscape function analysis (LFA) (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	LFA monitoring demonstrates that that the following characteristics are comparable to relevant rehabilitation monitoring reference sites, for a period of at least five years post-mining. • vegetation cover, types and densities • nutrient cycling/ accumulation • infiltration • stability Evidence of generational succession of trees and shrubs (for example presence of reproductive structures, lignotubers).
	Sustainable Land Use	Establish agriculture (low intensity cattle grazing) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the	LFA monitoring demonstrates that the following characteristics are comparable to relevant rehabilitation monitoring reference sites, for a period of at least five years post mining: • vegetation cover, types and densities • nutrient cycling/ accumulation • infiltration

				progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	• stability Vegetation consistent with grass species suitable for grazing (e.g. including Buffel Grass (*Cenchrus ciliaris*), Wiregrass (*Aristida* sp.) and Kangaroo Grass (*Themeda triandra*) comparable to relevant rehabilitation monitoring reference sites. Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. No restrictive matter (plants) as prescribed by the *Biosecurity Act 2014* are present. Pests do not occur in substantial numbers or visibly affect the development of pasture grass species.
			Cattle stocking rate. Area safe for cattle access. Landform stability when grazed. Stock access to water sources. Pasture cover per square meter. Cattle stocking rate monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Agricultural productivity is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014). • Stocktake is a paddock scale land condition monitoring and management package (The State of Qld. DPI&F, 2004) • GRASP is a pasture growth model (Meat & Livestock Australia Ltd, Project Code NBP.338)	Grazing trials, land condition monitoring and/or modelling demonstrates: • Landform is stable when grazed during a variety of climatic conditions • Cattle stocking rate monitoring demonstrates the long-term carrying capacity of a stocking rate of 0.22 adult equivalents per hectare is achievable. • Evidence that stock have access to water sources. Evidence that the area is safe for cattle access and use.

		Establish self-sustaining nature conservation (woodland) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report. Habitat indicators: width, continuity, extent of shading and species composition; native species; and weed and pest abundance.	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	LFA monitoring demonstrates that the following characteristics are comparable to relevant rehabilitation monitoring reference sites, for a period of at least five years post mining: • vegetation cover, types and densities • nutrient cycling/ accumulation • infiltration • stability Woodland vegetation contains a species diversity comparable to relevant rehabilitation monitoring reference sites (e.g. Poplar Box [*Eucalyptus populnea*] +/- Silver-leaved Ironbark [*E. melanophloia*] +/- Clarkson's Bloodwood [*Corymbia clarksoniana*]). Evidence of generational succession of trees and shrubs (for example presence of reproductive structures, lignotubers). Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. No restrictive matter (plants) as prescribed by the *Biosecurity Act 2014* are present. Pests do not occur in substantial numbers or visibly affect the development of native plant species.
Water management infrastructure	Long-term safety	Retained management infrastructure is appropriately designed and in	Geotechnical assessment of retained water infrastructure prepared by a suitably qualified and experienced person. The geotechnical assessment would be reported and interpreted in the Final Rehabilitation Report.	Geotechnical assessments of final landforms are recommended by the Planning for Integrated Min Closure: Toolkit	A geotechnical assessment concludes that the retained water management infrastructure is stable and safe and in an operable state.

		a safe and operable state.		(International Council on Mining and Metals, 2008).	
		Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the Queensland auditor handbook for contaminated land (DES, 2018b) by a suitably qualified and experienced person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the requirements of Chapter 7, Part 8 of the EP Act, subordinate legislation and NEPM.	The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
		Other potential safety risks for humans and fauna (e.g. risks associated with retained infrastructure) are identified and appropriately addressed so the site is safe.	Safety assessment (including risk assessment) prepared by a suitably qualified and experienced person. The safety assessment would be reported and interpreted in the Final Rehabilitation Report.	Post-mining safety assessment is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	The safety assessment concludes that the risks associated with other potential safety risks are low. The safety assessment identifies ongoing maintenance and risk management requirements for the post-mining land use.
	Non-polluting	Retained water infrastructure is a low risk of causing environmental harm.	Surface water quality (e.g. pH, heavy metal content, etc.) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Water quality monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least five years post-mining.
			Environmental risk assessment prepared by a suitably qualified and experienced person.	Consistent with the requirements of Chapter 5, Part 10 of the EP Act.	The environmental risk assessment concludes that there is a low risk of environmental harm.

			The environmental risk assessment would be reported and interpreted in the Final Rehabilitation Report.		
		Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the Queensland auditor handbook for contaminated land (DES, 2018b) by a suitably qualified and experienced person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the requirements of Chapter 7, Part 8 of the EP Act, subordinate legislation and NEPM.	The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
	Stable	Landform achieves appropriate erosion rates.	Erosion (erosion rates and sheets, rills and gully formation) monitoring data. Erosion monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Erosion monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	Erosion monitoring data demonstrates the following for five years post-mining: • Limited erosion (presence of sheets, rills and gullies) observed. • Soil loss rates are comparable to relevant rehabilitation monitoring reference sites. • Evidence that the landform is stable under regular and irregular climatic events. • Erosion maintenance requirements are comparable to relevant rehabilitation monitoring reference sites.
			Surface water quality (e.g. pH, heavy metal content, etc.) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Water quality monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least five years post-mining.
		Self-sustaining vegetative cover established.	Landscape function analysis (LFA) (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling,	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method	LFA monitoring demonstrates that that the following characteristics are comparable to relevant rehabilitation monitoring reference

			vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	sites, for a period of at least five years post-mining: • vegetation cover, types and densities • nutrient cycling/ accumulation • infiltration • stability Evidence of generational succession of trees and shrubs (for example presence of reproductive structures, lignotubers).
	Sustainable Land Use	Establish agriculture (low intensity cattle grazing) land use.	Surface water quality (e.g. pH, heavy metal content, etc.) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Water quality monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least five years post-mining.
			LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	LFA monitoring demonstrates that the following characteristics are comparable to relevant rehabilitation monitoring reference sites, for a period of at least five years post-mining: • vegetation cover, types and densities • nutrient cycling/ accumulation • infiltration • stability Vegetation consistent with grass species suitable for grazing (e.g. including Buffel Grass (*Cenchrus ciliaris*), Wiregrass (*Aristida* spp.) and Kangaroo Grass (*Themeda triandra*) comparable to relevant rehabilitation monitoring reference sites.

					Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. No restrictive matter (plants) as prescribed by the *Biosecurity Act 2014* are present. Pests do not occur in substantial numbers or visibly affect the development of pasture grass species.
		Establish self-sustaining nature conservation (woodland) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report. Habitat indicators: width, continuity, extent of shading and species composition; native species; and weed and pest abundance.	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	LFA monitoring demonstrates that the following characteristics are comparable to relevant rehabilitation monitoring reference sites, for a period of at least five years post-mining: • vegetation cover, types and densities • nutrient cycling/ accumulation • infiltration • stability • Woodland vegetation contains a species diversity comparable to relevant rehabilitation monitoring reference sites (e.g. Poplar Box [*Eucalyptus populnea*] +/- Silver-leaved Ironbark [*E. melanophloia*] +/- Clarkson's Bloodwood [*Corymbia clarksoniana*]). • Evidence of generational succession of trees and shrubs (for example presence of reproductive structures, lignotubers). • Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. • No restrictive matter (plants) as prescribed by the *Biosecurity Act 2014* are present.

					• Pests do not occur in substantial numbers or visibly affect the development of native plant species.
In-line flocculation cells	Long-term safety	Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the Queensland auditor handbook for contaminated land (DES, 2018b) by a suitably qualified and experienced person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the requirements of Chapter 7, Part 8 of the EP Act, subordinate legislation and NEPM.	The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
		Other potential safety risks to humans and fauna (e.g. risks associated with retained infrastructure) are identified and appropriately addressed so the site is safe.	Safety assessment (including risk assessment) prepared by a suitably qualified and experienced person. The safety assessment would be reported and interpreted in the Final Rehabilitation Report.	Post-mining safety assessment is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	The safety assessment concludes that the risks associated with other potential safety risks are low. The safety assessment identifies ongoing maintenance and risk management requirements for the post-mining land use.
	Non-polluting	Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the Queensland auditor handbook for contaminated land (DES, 2018b) by a suitably qualified and experienced person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the requirements of Chapter 7, Part 8 of the EP Act, subordinate legislation and NEPM.	The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
	Stable	Landform achieves	Erosion (erosion rates and sheets, rills and gully formation) monitoring data.	Erosion monitoring is recommended by Rehabilitation Requirements	Erosion monitoring data demonstrates the following for five years post-mining:

		appropriate erosion rates.	Erosion monitoring data would be reported and interpreted in the Final Rehabilitation Report.	for Mining Resource Activities Guideline (DEHP, 2014).	• Limited erosion (presence of sheets, rills and gullies) observed. • Soil loss rates are comparable to relevant rehabilitation monitoring reference sites. • Evidence that the landform is stable under regular and irregular climatic events. • Erosion maintenance requirements are comparable to relevant rehabilitation monitoring reference sites.
			Surface water quality (e.g. pH, heavy metal content, etc.) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Water quality monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least five years post-mining.
		Self-sustaining vegetative cover established.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	LFA monitoring demonstrates that that the following characteristics are comparable to relevant rehabilitation monitoring reference sites, for a period of at least five years post-mining: • vegetation cover, types and densities • nutrient cycling/ accumulation • infiltration • stability Evidence of generational succession of trees and shrubs (for example presence of reproductive structures, lignotubers).
	Sustainable land use	Establish agriculture (low intensity cattle	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics,	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method	LFA monitoring demonstrates that the following characteristics are comparable to relevant rehabilitation monitoring reference sites, for a period of at least five years post-mining:

		grazing) land use.	habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report. Habitat indicators: width, continuity, extent of shading and species composition; native species; and weed and pest abundance.	used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	• vegetation cover, types and densities • nutrient cycling/ accumulation • infiltration • stability Vegetation consistent with grass species suitable for grazing (e.g. including Buffel Grass (*Cenchrus ciliaris*), Wiregrass (*Aristida* sp) and Kangaroo Grass (*Themeda triandra*) comparable to relevant rehabilitation monitoring reference sites. Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. No restrictive matter (plants) as prescribed by the *Biosecurity Act 2014* are present. Pests do not occur in substantial numbers or visibly affect the development of pasture grass species.
			Cattle stocking rate. Area safe for cattle access. Landform stability when grazed. Stock access to water sources. Pasture cover per square meter. Cattle stocking rate monitoring data would be reported and interpreted in the Final Rehabilitation Report.	• Agricultural productivity is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014). • Stocktake is a paddock scale land condition monitoring and management package (The State of Qld. DPI&F, 2004)	Grazing trials, land condition monitoring and/or modelling demonstrates: • Landform is stable when grazed during a variety of climatic conditions • Cattle stocking rate monitoring demonstrates the long-term carrying capacity of a stocking rate of 0.22 adult equivalents per hectare is achievable. • Evidence that stock have access to water sources. • Evidence that the area is safe for cattle access and use.

				• GRASP is a pasture growth model (Meat & Livestock Australia Ltd, Project Code NBP.338)	
Ripstone Creek diversion	Long-term safety	Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the Queensland auditor handbook for contaminated land (DES, 2018b) by a suitably qualified and experienced person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the requirements of Chapter 7, Part 8 of the EP Act, subordinate legislation and NEPM.	The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
		Other potential safety risks to humans and fauna (e.g. risks associated with retained infrastructure) are identified and appropriately addressed so the site is safe.	Safety assessment (including risk assessment) prepared by a suitably qualified and experienced person. The safety assessment would be reported and interpreted in the Final Rehabilitation Report.	Post-mining safety assessment is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	The safety assessment concludes that the risks associated with other potential safety risks are low.
	Non-polluting	Ripstone Creek diversion is a low risk of causing environmental harm.	Surface water quality (e.g. pH, heavy metal content, etc.) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Water quality monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least five years post-mining.
			Environmental risk assessment prepared by a suitably qualified and experienced person.	Consistent with the requirements of Chapter 5, Part 10 of the EP Act.	The environmental risk assessment concludes that there is a low risk of environmental harm.

			The environmental risk assessment would be reported and interpreted in the Final Rehabilitation Report.		
		Potentially contaminated areas are remediated and are safe.	Contaminated land assessment prepared in accordance with the Queensland auditor handbook for contaminated land (DES, 2018b) by a suitably qualified and experienced person. The contaminated land assessment would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the requirements of Chapter 7, Part 8 of the EP Act, subordinate legislation and NEPM.	The contaminated land assessment concludes that the Project site is suitable for the proposed post-mining land use.
	Stable	Ripstone Creek diversion is appropriately designed and constructed.	Detailed Design Plan for the Ripstone Creek diversion prepared by a suitably qualified and experienced person. The Detailed Design Plan would be reported and interpreted in the Final Rehabilitation Report.	Consistent with the Guideline: Works that Interfere with Water with Water in a Watercourse – Watercourse Diversions (Department of Natural Resources and Mines, 2019).	The Ripstone Creek diversion has been constructed and rehabilitated in accordance with the Detailed Design Plan.
		Landform achieves appropriate erosion rates.	Erosion (erosion rates and sheets, rills and gully formation) monitoring data. Erosion monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Erosion monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	Erosion monitoring data demonstrates the following for a minimum of five years post-mining: • Limited erosion (presence of sheets, rills and gullies) observed. • Soil loss rates are comparable to relevant rehabilitation monitoring reference sites. • Evidence that the landform is stable under regular and irregular climatic events. • Erosion maintenance requirements are comparable to relevant rehabilitation monitoring reference sites.

			Surface water quality (e.g. pH, heavy metal content, etc.) monitoring data. Surface water quality monitoring data would be reported and interpreted in the Final Rehabilitation Report.	Water quality monitoring is recommended by Rehabilitation Requirements for Mining Resource Activities Guideline (DEHP, 2014).	Receiving water quality monitoring results comply with Environmental Authority surface water quality criteria, for a period of at least five years post-mining.
		Self-sustaining vegetative cover established.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report.	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	LFA monitoring demonstrates that the following characteristics are comparable to relevant rehabilitation monitoring reference sites, for a period of at least five years post-mining: • vegetation cover, types and densities • nutrient cycling/ accumulation • infiltration • stability Evidence of generational succession of trees and shrubs (for example presence of reproductive structures, lignotubers).
	Sustainable Land Use	Establish self-sustaining nature conservation (woodland) land use.	LFA (e.g. erosion, soil physical parameters, organic matter and nutrient content and cycling, vegetation dynamics, habitat complexity and habitat quality) monitoring. LFA monitoring data would be reported and interpreted in the Final Rehabilitation Report. Habitat indicators: width, continuity, extent of shading and species composition; native species; and weed and pest abundance.	LFA is a Commonwealth Scientific and Industrial Research Organisation (CSIRO) developed method used to provide indicators of rehabilitation success and allows the assessment of landscape processes. LFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function.	LFA monitoring demonstrates that the following characteristics are comparable to relevant rehabilitation monitoring reference sites, for a period of at least five years post-mining: • vegetation cover, types and densities • nutrient cycling/ accumulation • infiltration • stability Woodland vegetation contains a species diversity comparable to relevant rehabilitation monitoring reference sites (e.g. Poplar Box [*Eucalyptus populnea*] +/- Silver-leaved

					Ironbark [*E. melanophloia*] +/- Clarkson's Bloodwood [*Corymbia clarksoniana*]). Evidence of generational succession of trees and shrubs (for example presence of reproductive structures, lignotubers). Weed diversity and abundance is comparable to relevant rehabilitation monitoring reference sites. No restrictive matter (plants) as prescribed by the *Biosecurity Act 2014* are present. Pests do not occur in substantial numbers or visibly affect the development of native plant species.

END OF ENVIRONMENTAL AUTHORITY