EIS Assessment Report
for the Lake Vermont Meadowbrook Project

Queensland Government

Prepared by Environmental Impact Assessment, Department of Environment, Science and Innovation

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April 2024

Contents

List of acronyms and abbreviations

ACCUs	Australian carbon credit units
AHD	Australian Height Datum
CHPP	Coal handling and preparation plant
CHMP	Cultural heritage management plan
DCCEEW	Department of Climate Change, Energy, the Environment, and Water
DES	former Department of Environment and Science (now DESI)
DESI	Department of Environment, Science and Innovation (former DES)
DSDI	Department of State Development and Infrastructure
EA	Environmental authority
EIS	Environmental impact statement
EO Act	*Environmental Offsets Act 2014*
EP Act	*Environmental Protection Act 1994*
EP Regulation	Environmental Protection Regulation 2019
EPP (Noise)	Environmental Protection (Noise) Policy 2019
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ERA	Environmentally relevant activities
ESCP	Erosion and sediment control plan
EVs	Environmental values
FIFO	Fly-in, fly-out
GDE	Groundwater dependant ecosystem
GDEMMP	GDE monitoring and management plan
GES	General ecological significance
GHG	Greenhouse gas
HES	High ecological significance
HR Act	*Human Rights Act 2019*
HVR	High-value regrowth
IESC	Independent Expert Scientific Committee
MAW	Mine affected water
MDL	Mineral development lease
MIA	Mine infrastructure area
ML	Mining lease
MLA	Mining lease application
MNES	Matters of national environmental significance
MSES	Matters of state environmental significance
Mtpa	Million tonnes per annum
NUMA	Non-use management areas
NGER Act	*National Greenhouse and Energy Reporting Act 2007*
OAMP	Offset area management plan
OSMP	Ornamental snake management plan
PMLU	Post-mining land use
PRC plan	Progressive rehabilitation and closure plan
PRCP schedule	Progressive rehabilitation and closure plan schedule
QHR	Queensland Heritage Register
QMRC	Queensland Mine Rehabilitation Commissioner
REMP	Receiving environment monitoring program
REs	Regional ecosystems

Resources	Department of Resources
RIDA	Regional interests development approval
ROM	Run-of-mine
RPI Act	*Regional Planning Interests Act 2014*
RTO	Regenerative thermal oxidation
RUSLE	Revised universal soil loss equation
SCL	Strategic cropping land
SIA	Social impact assessment
SIMP	Social impact management plan
SSRC Act	*Strong and Sustainable Resource Communities Act 2017*
SMP	Subsidence management plan
SSI	Sustainable shipping initiative
STP	Sewage treatment plant
TECs	Threatened Ecological Communities
the project	Lake Vermont Meadowbrook Project
the proponent	Bowen Basin Coal Pty Ltd.
TOR	Terms of reference
UWIR	Underground water impact report
VAM	Ventilation air methane
VM Act	*Vegetation Management Act 1999*
WMP	Water management plan
WWTP	Wastewater treatment plant
WAVs	Workforce accommodation villages

1 Introduction

This environmental impact statement (EIS) assessment report evaluates the EIS pursuant to Chapter 3 of the *Environmental Protection Act 1994* (EP Act) for the Lake Vermont Meadowbrook Project (the project) proposed by Bowen Basin Coal Pty Ltd. (the proponent). The Department of Environment, Science and Innovation (DESI), as the administering authority of the EP Act, coordinated the EIS process. This assessment report has been prepared pursuant to ss. 57 to 59 of the EP Act.

The objectives of this assessment report are to:

- address the adequacy of the EIS in addressing the final terms of reference (TOR)
- make recommendations about the suitability of the project
- recommend any conditions for any approval required for the project
- address the matters prescribed in the Environmental Protection Regulation 2019 (EP Regulation).

This report provides a summary of the key matters identified through the EIS process and discusses in more detail those issues of particular concern that were not resolved or require specific conditions for the project to proceed.

The project is a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The controlling provisions are listed in section 4.1 of this report and addressed in detail in section 6.19.

The state's EIS process was accredited by the Commonwealth for the assessment of impacts on matters of national environmental significance (MNES). Consequently, this report assesses whether the EIS adequately addressed the matters prescribed in Schedule 1 of the EP Regulation. Additionally, this report must contain the matters prescribed in s. 9 of the EP Regulation.

The giving of this EIS assessment report to the proponent completes the EIS process under the EP Act. The Commonwealth's assessment stage under Part 8 of the EPBC Act ends when the Commonwealth Environment Minister receives a copy of this EIS assessment report.

2 Project description

A detailed project description is provided in Chapter 3 of the EIS and highlights that the project provides a continuation of current production rates for a period of approximately 18 years. Figure 1 (below) demonstrates the project's projected production (orange and gold) in addition to the existing Lake Vermont Mine production. The project proposes underground longwall mining and an open-cut satellite pit to mine coal seams to the immediate north of the existing Lake Vermont Mine. The project proposes extraction of approximately 122 million tonnes of run-of-mine (ROM) coal over the 30 year life of the project. Annually, extraction is estimated at up to 7 million tonnes per annum (Mtpa) of ROM coal, equivalent to approximately 5.5Mtpa of metallurgical product coal, for the export market.

Infrastructure for the project includes a mine infrastructure area (MIA), an electrical substation, underground portal, drifts and shafts, boreholes to deliver material to the underground workings, and gas drainage bores. An infrastructure corridor linking the new mining area to existing infrastructure at the Lake Vermont Mine will provide for access, coal haulage, power and water supply, and telecommunications infrastructure for the new mining facilities. The project will utilise existing coal processing infrastructure at the Lake Vermont Mine to minimise project impact and maximise efficiencies.

Direct disturbance will impact an area of 827.8ha, primarily comprising development of the infrastructure corridor, the MIA and the open-cut mining area. The open-cut mining area accounts for 666.4ha of the direct disturbance. A further 15.3ha of the direct disturbance is proposed within the existing Lake Vermont leases to support the southern connection of the infrastructure corridor to the existing Lake Vermont Mine infrastructure area. The area expected to be indirectly disturbed (through subsidence-induced ponding impacts and associated mitigation measures) is 214.0ha. Figure 2 depicts the project impact area.

ROM coal will be transported using road trains via a sealed haul road to the existing Lake Vermont coal handling and preparation plant (CHPP) for processing. Product coal will be railed via the Goonyella and Blackwater Rail System to the RG Tanna Coal Terminal in Gladstone, the Abbot Point Coal Terminal in Bowen or the Dalrymple Bay Coal Terminal in Mackay for sale to export markets.

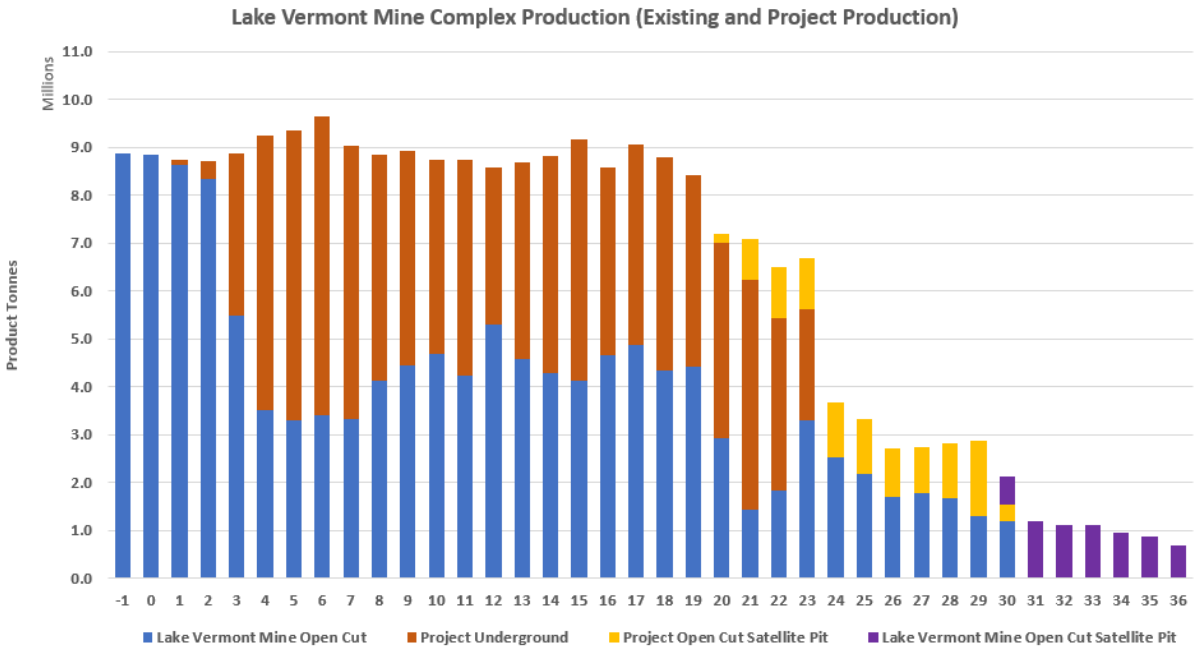

Figure 1 Project Production (source: Figure 3.28 of the EIS)

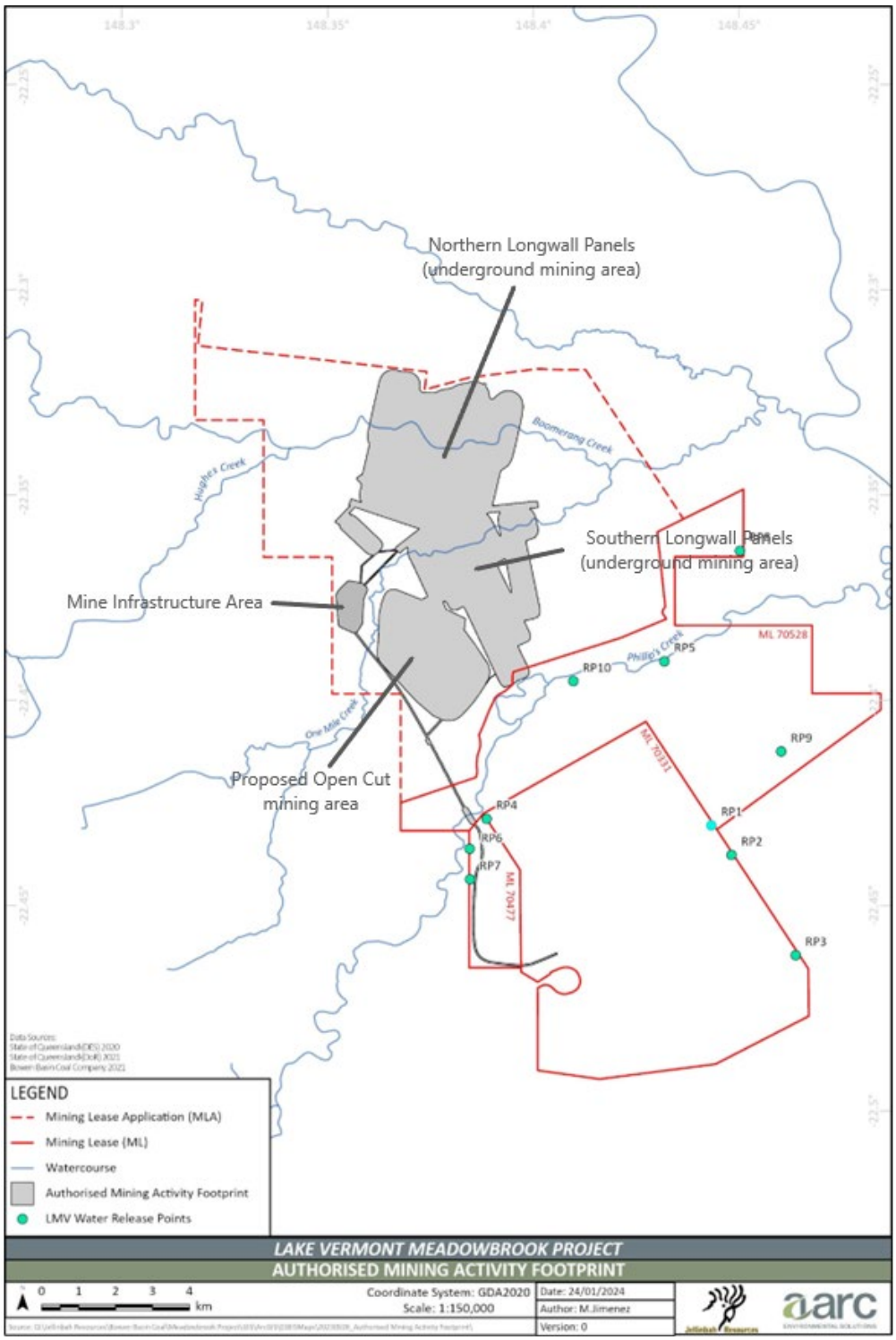

Figure 2 Project Impact Area (source: Chapter 23, Attachment 2: Authorised Disturbance Footprint)

2.1 Places affected by the project

The project is located approximately 25km north-east of Dysart and approximately 160km south-west of Mackay, within the Isaac Regional Council local government area (Figure 3). The project is an extension to the immediate north of the existing Lake Vermont Mine, which operates within Mining Lease (ML) 70331, ML 70477 and ML 70528 under Environmental Authority (EA) EPML00659513. The project footprint lies within Mineral Development Lease (MDL) 303 and MDL 429. All of these tenements are held by the proponent who will submit a Mining Lease Application (MLA) over MDL 303 and MDL 429 as part of the approvals to be sought for this project.

The project is located within Queensland's highly productive Bowen Basin, an area rich in coal and gas deposits. Existing and proposed nearby coal mining operations include BHP Mitsubishi Alliance's Saraji Mine and proposed

Saraji East project to the immediate west of the project, Pembroke's Olive Downs Mine to the north, and Whitehaven Coal's Winchester South project to the north-west. Petroleum tenements for the Arrow Bowen Gas project overlap the project, with further detail available in section 3.2.1.3 of the EIS.

The land within the project footprint is currently used for beef cattle grazing and resource exploration activities. A number of ephemeral watercourses, including Boomerang Creek, One Mile Creek and Phillips Creek, flow in an easterly direction across the project site towards the Isaac River.

The project is located within the Brigalow Belt North Bioregion, as defined by the 'Interim Biogeographic Regionalisation for Australia' (DoEE 2016). It is approximately 50km to the north-east of the Peak Range National Park. Protected areas, such as national parks and nature refuges, near the project are shown in Figure **3**3.

The project is within the Isaac-Connors Sub-catchment of the Fitzroy Basin, the Isaac-Connors Groundwater Management Area and a portion of the project is within the Isaac-Connors Alluvium Groundwater Sub-area, as declared under the 'Water Plan (Fitzroy Basin) 2011'. The project is not within or proximate to the Great Artesian Basin.

The project is outside of zones mapped as Priority Living Areas, Priority Agricultural Areas, Priority Development Areas and Strategic Environmental Areas, however, the project infrastructure corridor would disturb a small area mapped as potential Strategic Cropping Land (SCL) under the *Regional Planning Interests Act 2014* (RPI Act).

The project is within land zoned as 'Rural' under the *Isaac Regional Planning Scheme* (IRC, 2021) and land zoned as 'Regional Landscape and Rural Production Area' under the *Mackay, Isaac and Whitsunday Regional Plan* (DLGP 2012). A small area of the project is on land mapped as 'good quality agricultural land' in the *Mackay, Isaac and Whitsunday Regional Plan* (DLGP 2012) and as an 'Important Agricultural Area' by the *Queensland Agricultural Land Audit* (DAF 2018). The area mapped as 'good quality agricultural land' is consistent with the SCL trigger area mapped under the RPI Act at the proposed infrastructure corridor.

The project is within the Barada Barna People (QC2012/007) Native Title application area but not within the Barada Barna People's Native Title Determination. The Barada Barna People are the native title holders of the general project region. Native title has been extinguished over all land within project area.

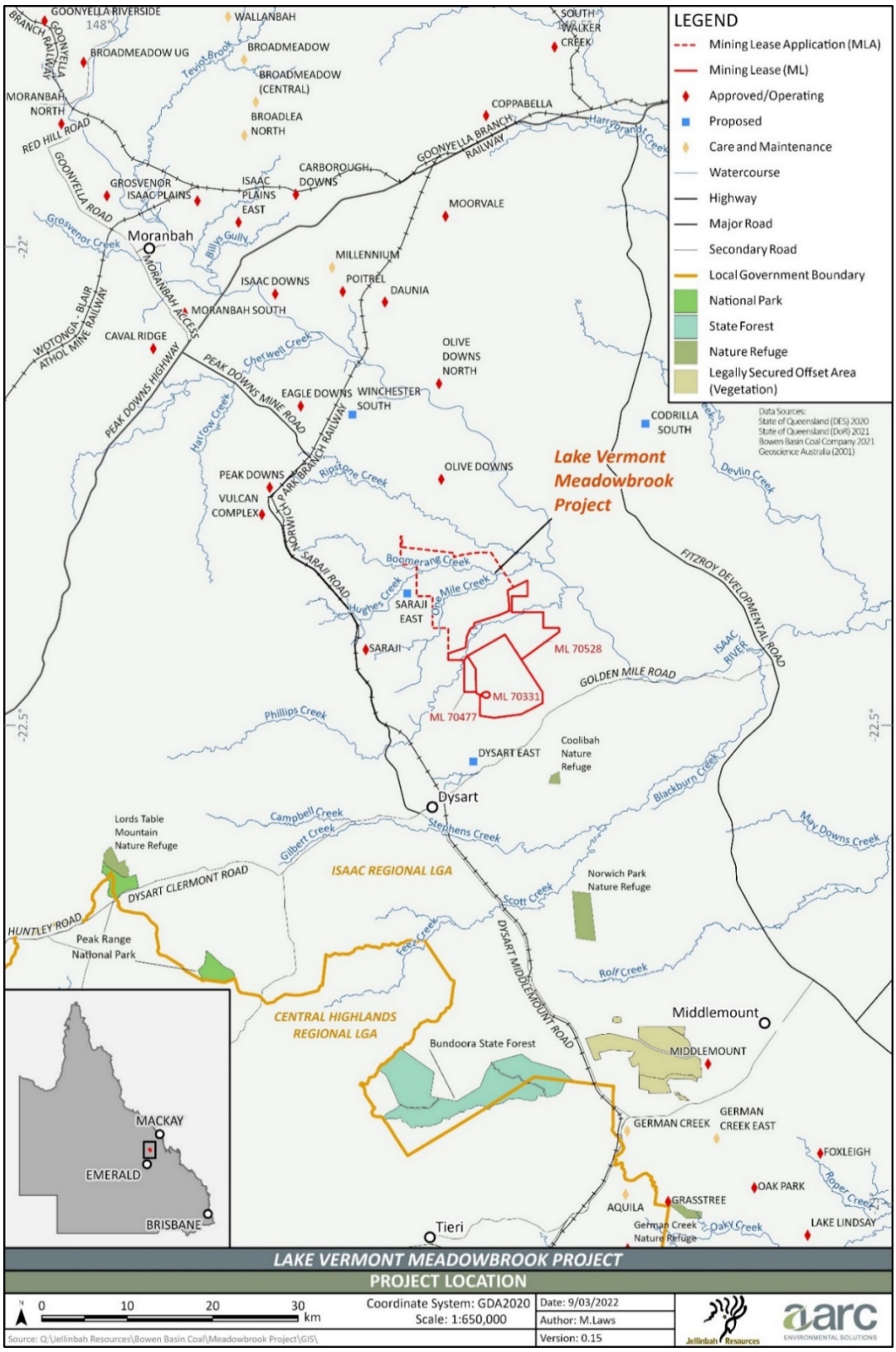

Figure 3 Project Location (source: Figure 3.1 of the EIS)

3 Statutory requirements

This section of the report describes the statutory requirements that apply to the project and its EIS process, including:

- the approvals the project would need to operate
- the matters the EIS needed to adequately address

- the matters DESI needed to consider when preparing this EIS assessment report
- the content requirements for this EIS assessment report.

3.1 Project approvals

The necessary approvals for the project are summarised in Table 1. There may be additional approval requirements that are not included in this table. Recommended conditions for key approvals are included in section 7.

Table 1 Approvals required for the Lake Vermont Meadowbrook Project

Approval	Legislation (Administering Authority)	Detail
Environmental authority granted by Queensland Government		
Environmental authority	EP Act (DESI)	The project proposes an amendment of the existing Lake Vermont Mine EA for mining black coal. The new mining lease tenure would be added to the EA. The EA would also cover the following environmentally relevant activities (ERAs) that are directly associated with, or facilitate or support, the mining activities, and which would otherwise require approval under the EP Act as 'prescribed ERAs', listed under schedule 2 of the EP Regulation: ERA 8(3) – Chemical storage – storing 500m^3 or more of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3. ERA 16 – Extraction and Screening - Extracting, other than by dredging, in a year, the following quantity of material (a) 5,000t to 100, 000t. ERA 31(2) Mineral Processing - Processing, in a year, a quantity of more than 100,000 t of mineral products, other than coke. ERA 33 – Crushing, milling, grinding or screening more than 5000t of material in a year. ERA 38 – Surface Coating, using more than 100t of surface coating materials for coating or painting or powder coating in a year. ERA 56 – Regulated Waste Storage – receiving and storing regulated waste (this is noted as being an ERA in the existing Lake Vermont Mine EA, albeit no longer an ERA under Schedule 2 of the EP Reg). ERA 60(1)(a) – Waste disposal - operating a facility for disposing of less than 50,000t of waste in a year ERA 63(1)(b) – Sewage treatment - operating a sewage treatment works at a site that has a total daily peak design capacity of more than 100 but not more than 1500 equivalent persons, if treated effluent is discharged to an infiltration trench or through an irrigation scheme. The following notifiable activities prescribed under schedule 3 of the EP Act would also be authorised under the EA as part of the

Approval	Legislation (Administering Authority)	Detail
		project: notifiable activity 1 – abrasive blasting notifiable activity 7 – chemical storage notifiable activity 15 – explosives production or storage notifiable activity 24 – mine wastes notifiable activity 29 – petroleum product or oil storage notifiable activity 37 –waste storage, treatment or disposal. The EIS assessment report for the project contains recommended draft conditions for the amended EA. Offsets would be required for matters of state environmental significance (MSES). However, under the *Environmental Offsets Act 2014* (Qld) (EO Act) an offset condition cannot be required by the state if the Commonwealth has imposed a condition for the same, or substantially the same, impact on the same matter OR if the Commonwealth has decided an offset is not required.
Other approvals granted by Queensland Government or local government		
Development Approval	*Local Government Act 2009* (Isaac Regional Council)	Development Approval for the proposed upgrade / extension of the existing Lake Vermont Accommodation Village in Dysart is required.
Grant of mining lease (ML)	*Mineral Resources Act 1989* (Department of Resources, Resources)	Should DESI decide to approve an amended EA for the project and issue an EA to the proponent, Resources would decide whether to grant a mining lease for the project.
Riverine protection permit—for the excavation or placement of fill in a watercourse (applies to non-tidal watercourses, lakes and springs)	*Water Act 2000* (Resources and DESI)	Following completion of the EIS process, the proponent would apply to the Resources for a riverine protection permit. Exemptions may apply. An Underground Water Impact Report (UWIR) will be prepared for the project (prior to commencing any take of underground water) to meet statutory obligations of Chapter 3 of the *Water Act 2000* (Qld) and the underground water management framework, administered by DESI.
Cultural heritage management plan (CHMP)	*Aboriginal Cultural Heritage Act 2003* (Department of Treaty, Aboriginal and Torres Strait Islander Partnerships, Communities and the Arts, DSDATSIP)	Bowen Basin Coal entered into a CHMP with the Barada Barna Kabalbara and Yetimarla People on 5 March 2007. The CHMP was created for the “life of the Vermont Coal Project” and remains valid with the Barada Barna People entity (updated circa 2016). The CHMP extends across all Bowen Basin Coal tenements relevant to the Lake Vermont Mine (inclusive of the project site).

Approvals granted by Australian Government		
Approval to undertake an action that may impact on MNES, including listed threatened species and communities, listed migratory species and water resources in relation to large coal mining development	Commonwealth *EPBC Act* (Department of Climate Change, Energy, the Environment, and Water, DCCEEW)	This assessment will be provided to the Commonwealth Environment Minister to inform decision-making about whether to approve the proposed action and any conditions that should be applied under part 9 of the EPBC Act. This assessment report also includes DESI's recommended conditions of approval for the project to manage and offset impacts to MNES identified in section 7.
Offset requirements for MNES and MSES	Commonwealth *EPBC Act;* Environmental Offsets Policy 2012 (DCCEEW) Queensland *Environmental Offsets Act 2014*, Environmental Offsets Regulation 2014, Queensland Environmental Offsets Policy (DESI)	Offsets would be required under State and Commonwealth legislation. However, under the EO Act an offset condition cannot be required by the state if the Commonwealth has imposed a condition for the same, or substantially the same, impact on the same matter OR if the Commonwealth has decided an offset is not required. Consequently, any necessary conditions for offsets that overlap state and Commonwealth jurisdictions would be placed on the Australian Government's approval.

3.2 Criteria considered when preparing this report

Section 58 of the EP Act lists the criteria that DESI must consider when preparing the EIS assessment report. All those criteria were considered when preparing this report. The criteria are:

(a) the final TOR for the EIS
(b) the submitted EIS
(c) all properly made submissions and any submissions accepted by the chief executive
(d) the standard criteria (as set out in Schedule 4 of the EP Act)
(e) another matter prescribed under a regulation.

For criterion (a), the final TOR were issued to the proponent on 30 April 2020. The final TOR have been considered when preparing this EIS assessment report.

For criterion (e), this EIS assessment report has considered whether the EIS adequately addressed the matters prescribed in Schedule 1 of the EP Regulation.

For criterion (d), I have considered the criteria set out in Schedule 4 of the EP Act in preparing this EIS assessment report and forming my recommendations.

The documents considered for criteria (b) and (c) are described below.

3.2.1 The submitted EIS

The "submitted EIS" was considered when preparing this EIS assessment report. The "submitted EIS" comprised the following documents:

- the original EIS
  - version 1 received by DESI on 20 July 2022
  - version 2 received by DESI on 30 November 2022
  - version 3 received by DESI on 8 February 2022 and made available for public submissions from 3 April 2023 to 18 May 2023
- the amended EIS (version 4) and Response to Public Submissions (version 1) received by DESI on 20 October 2023
- the amended EIS (version 5) and Response to Public Submissions (version 2) received by DESI on 31 January 2024
- the amended EIS (version 6) and Response to Public Submissions (version 3) received by DESI on 26 February 2024.

3.2.2 Properly made submissions

DESI received 260 properly made submissions and 78 not-properly made submissions. All 338 of the submissions were accepted under s. 55 of the EP Act. Those submissions were received from 314 members of the public and the following stakeholders:

- ArcelorMittal Sourcing
- Boyd Mining
- C&C Civil & Mining Construction
- Capricorn Conservation Council
- China Steel Corporation
- Coal Port Services
- Copper Fluid Systems
- Department of Agriculture and Fisheries
- Department of Children, Youth Justice and Multicultural Affairs
- Department of Climate Change, Energy, the Environment, and Water
- Department of Communities, Housing and Digital Economy
- Department of Employment, Small Business and Training
- Department of Regional Development, Manufacturing and Water
- Department of Resources
- Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships
- Department of State Development, Infrastructure, Local Government and Planning
- Department of Tourism, Innovation and Sport
- Department of Transport and Main Roads
- Energy Queensland
- Environment Council of Central Queensland
- Environmental Advocacy in Central Queensland
- Fraser-Lever Consulting Engineers
- Gladstone Ports Corporation
- Isaac Regional Council
- JCL Advisory
- Jellinbah Group
- Jemtec Civil Services
- JSW Steel
- Leichhardt Pastoral Company
- Lock the Gate Alliance
- Mackay Conservation Group
- Mackay Hospital and Health Service
- Mackay Regional Council
- Minco Tech Australia
- Mining & Energy Union Queensland District
- Mitsubishi Chemical Corporation
- MMD Australia
- Nippon Steel Corporation
- Powerlink Queensland
- Powerlink Queensland
- Queensland Ambulance Service
- Queensland Conservation Council
- Queensland Fire and Emergency Services.
- Queensland Government Accommodation Office
- Queensland Police Service
- RGS Environmental Consultants
- Sandbag Climate Campaign CIC (trading as Ember)
- Slingshot Consulting
- Sunwater
- Talisman Partners
- Tay Glen Pastoral Company
- The Australian Institute
- The Hydraulic Shop
- Thyssenkrupp Steel Europe AG

- Wel-Hunt Materials Enterprise

DESI also provided its own submission on the EIS to the proponent.

Advice was sought and received from the Independent Expert Scientific Committee (IESC) on the content and conclusions of the EIS in relation to:

- characterisation of, and impacts to, surface and groundwater resources and assets (including impacts from subsidence and cumulative impacts from other mines in the area)
- adequacy of the proposed monitoring, mitigation and management measures.

The proponent and their consultants responded both in writing and through face to face discussions, including with DCCEEW, to the issues raised by the IESC. Amendments were made to the EIS for clarity or to address IESC comments. Section 6 of this report addresses residual concerns relating to groundwater dependant ecosystem (GDE) characterisation, monitoring and management, and impacts on creek and floodplain hydrology from subsidence (see sections 6.7.1 Surface water resources, 6.9.2 Aquatic ecology, 6.18 Matters of national environmental significance).

The outcomes of several other detailed technical discussions between the proponent, State advisory bodies and DESI, together with the additional clarification provided at those meetings were captured in amendments to the EIS and considered when preparing the EIS assessment report.

In addition, there has been correspondence from stakeholders regarding the proponent's response to public submissions on the EIS and amendments to the EIS. All submissions and other comments made by stakeholders on the EIS documents were considered when preparing this EIS assessment report.

3.3 Required content of this report

Section 59 of the EP Act specifies the required content of the report, which must:

(a) address the adequacy of the EIS in addressing the final TOR (this is addressed in section 6 of this report)
(b) address the adequacy of any environmental management plan
(c) make recommendations about the suitability of the project (this is addressed in section 9 of this report)
(d) recommend any conditions on which any approval required for the project may be given (see section 7 of this report)
(e) contain another matter prescribed under a regulation.

With regard to item (e), r. 9 of the EP Regulation prescribes the matters that this EIS assessment report must contain. Specifically, this EIS assessment report must contain the following matters:

(a) a description of the following
    (i) the project
    (ii) the places affected by the project
    (iii) any MNES likely to be affected by the project
(b) a summary of the project's relevant impacts
(c) a summary of feasible mitigation measures or changes to the project or procedures to prevent or minimise the project's relevant impacts, proposed by the proponent or suggested in a relevant submission
(d) to the extent practicable, a summary of feasible alternatives to the project identified in the assessment process and the likely impact of the alternatives on MNES
(e) to the extent practicable, a recommendation for any conditions of approval for the project that may be imposed to address impacts identified in the assessment process on MNES.

Section 2 of this report describes the project and the places affected by the project. Section 6 includes information that summarises the project's relevant impacts and the matters listed immediately above in items (c) to (d) inclusive. Section 6.19 of this report specifically addresses the required content with regard to MNES likely to be affected by the project. Section 7.4 recommends, to the extent practicable, conditions of approval for the project that may be imposed to address impacts identified in the assessment process on MNES.

4 The EIS Process

The proponent applied to DESI to voluntarily prepare an EIS for the project using the process in Chapter 3 of the EP Act.

4.1 Controlling provisions (EPBC Act)

As noted in the Introduction, the Commonwealth Minister for the Environment determined the project to be a controlled action pursuant to section 75 of the EPBC Act. The referral number for the Lake Vermont Meadowbrook Project is 2019/8485. The relevant controlling provisions for the project are:

- sections 18 and 18A (Listed threatened species and communities)
- sections 20 and 20A (Listed migratory species).
- section 24D and 24E (A water resource, in relation to coal seam gas development and large coal mining development).

Queensland's EP Act EIS process was accredited for the assessment of impacts on the controlling provisions under the Bilateral Agreement between the Australian Government and the State of Queensland, made under s. 45 of the EPBC Act.

Section 6.19 of this report assesses whether the EIS adequately addressed the statutory content requirements of r. 9 of the EP Regulation. A copy of this report will be given to the Commonwealth Minister to assist with making a decision about the approval of the project and any conditions that should apply under Part 9 of the EPBC Act.

4.2 Timeline of the EIS process

Table 2 outlines the stages, timing and actions undertaken in the EIS assessment process for the project.

Table 2 The key steps undertaken by DESI and the proponent during the project EIS process

Step in the EIS process	Section of EP Act	Responsibility for taking step	Statutory due date	Date completed
Proponent submitted an application for a voluntary EIS for the project.	ss. 70 & 71	Proponent	N/A	4 July 2019
DESI approved the voluntary EIS application for the project, and issued a notice about the decision to the proponent.	s. 72	DESI	N/A	2 August 2019
The Australian Government declared the project to be a controlled action under the EPBC Act.	N/A	Australian Government	N/A	22 November 2019
EIS process commenced when the proponent submitted draft TOR for the project, accompanied by the fee prescribed under the EP Regulation.	ss. 41(1) & 41(2)	Proponent	N/A	4 December 2019
DESI gave the TOR notice to the proponent, which set the comment period at 30 business days.	ss. 42(1) & 42(2)	DESI	19 December 2019	19 December 2019
DESI published the TOR notice in the Daily Mercury on 10 January 2020 and in The Australian on 11 January 2020, to meet statutory publishing requirements.	s. 43(1)	DESI	13 January 2020	11 January 2020
The draft TOR comment period started on 13 January 2020 and ended on 24 February 2020.	s. 42(3)	DESI	N/A	24 February 2020
DESI gave the proponent 27 sets of comments received during the comment period, including comments from DESI and the Australian Government.	s. 44	DESI	6 March 2020	3 March 2020

Step in the EIS process	Section of EP Act	Responsibility for taking step	Statutory due date	Date completed
The proponent responded to the comments on the draft TOR.	s. 45 (and r. 11 of the EP Regulation)	Proponent	31 March 2020	31 March 2020
DESI considered the proponent's response, produced the final TOR, and gave a copy of the final TOR to the proponent on 30 April 2020.	s. 46	DESI	30 April 2020	30 April 2020
On 7 April 2022, the proponent requested a period longer than 2 years in which to submit the EIS to DESI. On 14 April 2022, the delegate of the chief executive decided to allow a longer period until 1 August 2022.	s. 47(1)(b)	Proponent and DESI	N/A	14 April 2022
The proponent submitted the EIS to DESI on 20 July 2022.	s. 47	Proponent	1 August 2022	20 July 2022
DESI advised the proponent that there were matters in the TOR that the EIS had not adequately addressed. On 23 August 2022, in order to give the proponent time to revise the EIS, the proponent agreed to a longer period for deciding whether the EIS was suitable to proceed. The new date for the decision was set at 31 March 2023.	s. 49(2)	DESI and proponent	N/A	23 August 2022
The proponent submitted an amended EIS on 30 November 2022 and then an amended EIS on 8 February 2023. On 3 March, DESI decided that the EIS (dated 8 February 2023) was suitable to proceed to public notification.	ss. 66(1) and 49(3)	DESI	8 March 2023	3 March 2023
DESI gave the proponent a notice of decision that the EIS was suitable to proceed to public notification, and that the submission period would be 30 business days.	s. 49(6)	DESI	17 March 2023	16 March 2023
The proponent gave a copy of the EIS notice to interested and affected persons.	s. 51(2)(a)	Proponent	17 April 2023	17 April 2023
The proponent published the EIS notice in the Daily Mercury and The Australian and DESI published the notice on the department's website.	s. 51(2)(b), (and r. 8 of the EP Regulation)	Proponent	17 April 2023	17 April 2023
The proponent gave DESI a declaration of compliance stating that a copy of the EIS notice had been given to interested and affected persons, and that the EIS notice had been published in appropriate newspapers.	s. 53	Proponent	17 April 2023	17 April 2023
The EIS submission period started on 4 April 2023 and ended on 18 May 2023.	s. 52(2)	DESI	18 May 2023	18 May 2023

Step in the EIS process	Section of EP Act	Responsibility for taking step	Statutory due date	Date completed
DESI forwarded to the proponent 338 submissions about the submitted EIS that were received and accepted during the submission period. DESI also provided a submission on the EIS to the proponent.	ss. 55 & 56(1)	DESI	1 June 2023	1 June 2023
On the 29 June 2023, the proponent and DESI agreed a longer period for submitting a response to submissions until 29 March 2024. On 20 October 2023, the proponent submitted a response to submissions and the amended EIS. DESI gave a copy of the documents to those government agencies who provided a submission on the EIS and the proponent published the documents on their website.	ss. 56(2) & 56(3)	Proponent	29 March 2024	20 October 2023
The proponent revised their response to submissions and submitted to DESI an amended EIS on 31 January 2024 and a further amended EIS on 26 February 2024. DESI gave the documents to relevant government agencies for their review and comment where necessary.	ss. 56(2)	Proponent	N/A	N/A
DESI considered the submitted EIS and the proponent's response to submissions and decided to allow the EIS to proceed under division 5 (EIS assessment report) and division 6 (completion of process).	s. 56A(2) and 56A(4)	DESI	29 March 2024	26 February 2024
DESI issued to the proponent a notice of the decision to proceed.	s. 56(A)(5)	DESI	13 March 2024	13 March 2024
DESI prepared the EIS assessment report	ss. 57 to 59	DESI	13 April 2024	29 April 2024
DESI completed the EIS assessment report and gave a copy to the Commonwealth Environment Minister	r. 10 of the EP Regulation	DESI	29 April 2024	29 April 2024
DESI completed the EIS assessment report and gave a copy to the proponent completing the EIS process	s. 60	DESI	29 April 2024	29 April 2024

5 Consultation program

5.1 Public consultation

In addition to the statutory requirements for advertising of the TOR and EIS notices and the mailing of the notices to interested and affected parties, the proponent undertook community consultation with members of the public and other stakeholders during the public submission period of the EIS. The number of submissions and submitters who responded to the public release of the EIS are outlined in section 3.2.2 of this report. The majority of submissions received were supportive of the project (see Appendix 1 of the EIS).

5.2 Advisory body

DESI invited the following organisations to assist in the development of the TOR and assessment of the EIS by participating as members of the advisory body for the project:

- Capricorn Conservation Council
- Department of Agriculture and Fisheries
- Department of Children, Youth Justice and Multicultural Affairs
- Department of Climate Change, Energy, the Environment, and Water
- Department of Communities, Housing and Digital Economy
- Department of Employment, Small Business and Training
- Department of Regional Development, Manufacturing and Water
- Department of Resources
- Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships
- Department of State Development, Infrastructure, Local Government and Planning
- Department of Tourism, Innovation and Sport
- Department of Transport and Main Roads
- Energy Queensland
- Isaac Regional Council
- Mackay Hospital and Health Service
- Mackay Regional Council
- Powerlink Queensland
- Powerlink Queensland
- Queensland Ambulance Service
- Queensland Fire and Emergency Services
- Queensland Government Accommodation Office
- Queensland Police Service
- Sunwater

5.3 Public notification

In accordance with the statutory requirements, advertisements were placed in The Daily Mercury (Mackay) and The Australian newspapers to notify the availability of the draft TOR and EIS for review and public comment. In addition, DESI's website displayed notices advising the availability of the draft TOR and submitted EIS for public comment.

The draft TOR and submitted EIS were made available at the following locations during their respective public comment and submission periods:

- DESI website (draft TOR, Initial advice statement)
- Proponent website (Initial advice statement, TOR, current EIS and previous EIS versions prior to submissions).

6 Adequacy of the EIS in addressing the final TOR

The submitted EIS adequately addressed all components of the final TOR, including cumulative impacts. Matters relevant to the EIS that require clarification or confirmation are discussed in detail in the following subsections of this assessment report. The subsections of this chapter discuss the findings of the EIS, summarise the relevant impacts, and outline those environmental protection commitments made by the proponent that are recommended as conditions. I have also included further recommended management measures and conditions.

6.1 Introduction to the EIS

The EIS provided an adequate introduction to the project, its objectives and scope. It adequately identified the necessary approvals required for the project and outlined the assessment and approval processes.

6.2 Project description

The EIS adequately described the location, scope and phases of the project. An outline of the project is provided in section 2 of this EIS assessment report.

6.3 Project need and alternatives

The EIS adequately addressed the commercial need for the project. It also addressed how its operations would contribute to the local, regional, state and national economies through royalties, taxes, charges, and wages. In addition, the EIS addressed how the project would help sustain employment and create opportunities for small business, regional development and investment.

6.3.1 Project alternatives

The EIS adequately addressed how there are no feasible alternatives to the location of the project, which is dictated by the location of the resource. The objective of the project to continue and extend the existing Lake Vermont Mine operation is further justification for no feasible alternatives to the location of the project.

The EIS adequately addressed feasible alternatives for the construction and operation of the project, including the likely impacts of the alternatives on MNES (see 6.3.1.7). The feasible alternatives are summarised in the following sections.

6.3.1.1 Mining methods

Both underground and open-cut mining methods are proposed for the project.

- Underground: both bord and pillar and longwall mining methods were assessed from a technical and economic standpoint. Bord and pillar methods were found to provide inadequate product volumes and result in very low resource recovery while potentially sterilising significant underground resources. Longwall mining methods result in an optimal, lowest operating cost mine layout and provide for a surface MIA located clear of floodplains and sensitive environmental constraints. Longwall methods are deemed technically and economically viable and enable maximum resource recovery and maximum mine life.
- Open-cut: three potential open-cut locations that could operate as ‘satellite’ pits to the main Lake Vermont Mine were considered. Two locations were deemed not viable due to their locations within floodplain areas and the cost to completely backfill the pits. The third location was considered viable as it is located largely outside of the floodplain and provides a longer-term extension to the existing Lake Vermont Mine. Due to the steeply dipping seams, dragline methods were considered unsuitable and terrace mining has been deemed the most applicable mining methodology for the open-cut pit.

6.3.1.2 Open-cut Mine layout and sequence

A number of design options were considered for the project. The preferred mine layout in the proposed mining lease has been designed to consider the potential impacts from the mining activity to surrounding sensitive receptors and reduce impacts to MNES, including:

- a reduction in the number of open-cut ‘satellite’ pits from three pits to just one pit, reducing the amount of remnant vegetation to be cleared
- amendments to the open-cut pit layout, to largely avoid clearing remnant and high-value regrowth (HVR) vegetation
- a combination of permanent out-of-pit mine waste rock emplacements and temporary out-of-pit mine waste rock emplacements together with open-cut backfilling, to minimise the disturbance footprint and allow for progressive rehabilitation of mine landforms.

6.3.1.3 Infrastructure corridor alignment

Various alignment options for the infrastructure corridor have been assessed in consideration of safety, environmental and existing Lake Vermont Mine operational requirements. The raw water and mine water pipelines, the electricity transmission line and telecommunications infrastructure have been co-located with site access to the MIA to reduce the cumulative surface disturbance that would occur with individual alignments.

6.3.1.4 MIA

The project maximises the use of existing infrastructure which reduced the overall footprint of the proposed extension and capital expenditure. The MIA is proposed to be located on the western boundary of the project site which will be proximate to mining activities, is an appropriate distance from blasting activities, minimises vegetation clearing and habitat disturbance of threatened species, minimises exposure of infrastructure to flooding and minimises earthworks due to existing flat topography.

6.3.1.5 Workforce accommodation

Bowen Basin Coal initially considered an expansion of the Lake Vermont Accommodation Village to accommodate both the construction and operational workforces. However, this would require a significantly higher number of rooms to be constructed than would ultimately be required for operational years. Instead, the project proposes to

utilise the existing commercial accommodation village facilities in Dysart for the construction workforce. The use of existing villages in Dysart for the construction workforce has been selected to minimise the potential environmental, social and economic impacts of the project.

6.3.1.6 Not proceeding with the project

In accordance with the TOR, an assessment of the consequences of not proceeding with the project has been conducted. Were the project not to proceed, the following consequences are inferred:

- The output from the existing Lake Vermont Mine would markedly decline beyond 2028 and result in direct loss of employment for approximately 410 workers over a period of 20 years. This would result in flow-on impacts (both direct and indirect) to the local Dysart community and the surrounding regional economy.
- Alterations to current land use practices would not occur.
- Approximately 122Mt of ROM coal would not be mined, resulting in a loss of mining royalties.
- There would be a loss of State and Federal tax revenue. Over its life, the project is estimated to provide approximately $1,919.4 million of additional tax revenue to the Australian Government, and approximately $1,334.5 million to the Queensland Government, as compared to what would occur without the project.
- A 6ha portion in the south-eastern corner of ML70477 is mapped as SCL, however, assessment against the guideline *How to demonstrate that land in the strategic cropping area does not meet the criteria for strategic cropping land* (DILGP 2017) determined the land does not meet Strategic Cropping Land criteria. Therefore, cropping is not considered a feasible alternative post-mining land use (PMLU).

6.3.1.7 Likely impacts of feasible alternatives on MNES

There is no feasible alternative to the general location of the project, and in particular the underground mine, which is dictated by the location of the target resource. The orientation of the underground longwall layout was chosen to minimise subsidence effects that may impact on watercourses. The chosen longwall mining method would maintain the existing production capacity of the Lake Vermont Mine while reducing the magnitude of surface impacts from multiple open-cut pits. The preferred option for the design and operation of the project would on balance provide the optimum means of avoiding or mitigating the project's impacts on MNES.

6.4 Climate

The EIS adequately described how climate could affect the potential for environmental impacts and the management of operations at the site.

The EIS identifies that the project region is classed as subtropical with a moderately dry winter using the Bureau of Meteorology modified Köppen *Climate Classification Maps* (BoM 2024). The EIS identifies that unmitigated climate change has the potential to impact the project primarily through temperature increase, more frequent or severe bushfires and minor decreases in average rainfall. Project vulnerability to natural and induced climate hazards has been assessed as medium to low after implementation of proven mitigation and management measures including:

- early detection/suppression of coal stockpile temperature/combustion
- temperature resilient occupational health and safety
- increased revegetation soil management and watering inputs for rehabilitation establishment
- increased dust suppression.

The review of the EIS by the IESC recommended that the effect of climate change on future recharge rates be considered in the groundwater modelling. However, the EIS considered that predicting effects of climate change on recharge rates at this site would only provide limited value, as it is subjective.

The IESC also noted that climate change scenarios were not incorporated into the assessment of potential cumulative impacts on GDEs and aquatic ecosystem. Although a GDE monitoring and Management Plan (GDEMMP) has been prepared with two years baseline monitoring, I recommend that climate change impacts need to be considered in longer-term monitoring under the GDEMMP including the use of control GDE monitoring sites. Control GDE monitoring sites must be located outside of impacts from the project or any other current or proposed mining, in order to provide long-term climate change reference sites.

Risks related to severe weather conditions, such as cyclone, flood, heatwave and bushfire risks, have been addressed in the Hazards and Safety chapter of the EIS, and are discussed further in section 6.13 Hazards and Safety of this assessment report.

6.5 Land

The EIS adequately described those aspects of the site and project related to the existing and proposed qualities and characteristics of the land. The EIS adequately addressed how those qualities and characteristics of the land

would interact with, and affect, the potential impacts of the project. The following subsections address those qualities and characteristics in more detail.

6.5.1 Topography

The EIS adequately described and illustrated the existing topography.

The topography of the project area is generally flat to gently undulating, with elevations ranging between 160m Australian Height Datum (AHD) and 190m AHD above sea level. The surface between Phillips Creek and Boomerang Creek is a broad, flat floodplain with the project generally draining west to east towards the Isaac River. The project will alter the topography and landforms within the project area. Some changes will be minor and temporary (e.g. sediment dams, bunds, levees and drains) and others will be permanent (e.g. the final rehabilitated spoil dumps and subsidence depressions). The maximum area proposed to be disturbed within the MLA footprint is 1,030ha.

Subsidence is predicted to occur over the underground mining areas to a maximum depth of 2.9m for the southern mining area and a maximum depth of 5m for the northern mining area. The maximum displacement in watercourse surface level modelled is approximately 4m for Boomerang Creek and 2.5m for One Mile Creek.

Spoil produced by the excavation of the open-cut satellite pit will be placed in two out-of-pit waste rock emplacements (one temporary, one permanent) adjacent to the pit, in addition to in-pit backfilling as operations progress. The permanent western out-of-pit waste rock emplacement will be rehabilitated to have maximum slope angles of 8.1° (14.5%), maximum uninterrupted slope lengths of 70m, and stable berms or bunds (minimum 5m wide) incorporated into the final landforms where necessary, to manage the flow of water downslope.

The final landform design was developed to ensure that even after the underlying groundwater level recovers to the maximum predicted level, the depression would remain a source of groundwater recharge, and would not receive sufficient seepage from the regional groundwater to concentrate salts. (Figure 6) The lowest part of the landform is to be 2m below the anticipated recovered mounded groundwater level, estimated to be 162m AHD. The north-west and south-east landform of the in-pit waste rock emplacement will have typical slopes of 1.2° (2%), blending with the surrounding land, while the regraded batter slopes of the rehabilitated pit will have grades of approximately 8.1 (14.5%).

The final, rehabilitated topography is relevant to water resources and post-mining land uses. The EIS adequately incorporated the topography of the void and waste rock dumps into its assessment of impacts on surface water and groundwater resources. Section 6.7 below provides more detail about the relationship between final topography of the site and water resources. The final, rehabilitated topography was satisfactorily incorporated into the EIS's assessment of visual amenity.

6.5.2 Geology and geomorphology

The EIS adequately described the geology and geomorphology of the site and its surrounding area.

The project is in the western limb of the Bowen Basin. Within the project area, the Permian and Triassic-age sediments of the Bowen Basin are overlain by a veneer of unconsolidated to poorly consolidated Tertiary and Quaternary sediments. The area surrounding the project is dominated by clastic sedimentary rocks of marine and lacustrine origin, including sandstones, mudstones, siltstones and coal. Faulting, notably the Isaac Fault has impacted geological structure as shown in Figure 4. The Vermont Lower Seam extends across the project underground mining area, while the Leichhardt Lower seam is limited to the northern half of the underground mining area. Open-cut mining of the satellite pit will target the Vermont Lower seam and Vermont seam where these subcrop to the west. As the coal seams tend to be the conduits for groundwater flow in the Permian sediments, where coal seems interact with faults, there is the potential to disrupt groundwater flow.

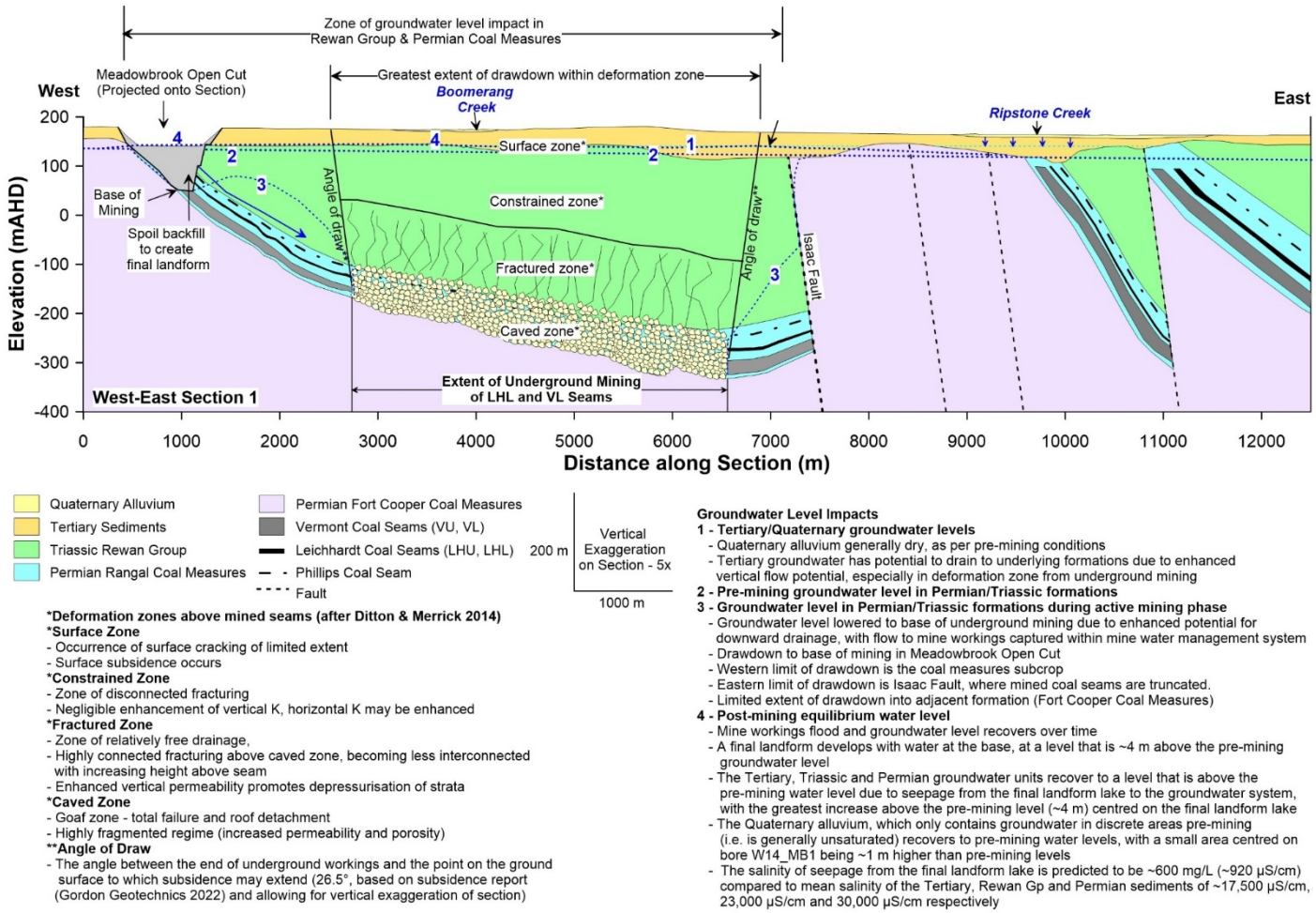

Figure 4 Post-Mining Conceptual Groundwater Model (source: Appendix E of the EIS Figure 5-15)

6.5.3 Soils

The EIS adequately described the soils of the site. The eight soil types that would be disturbed as a result of the project are as follows:

- Knockane: moderate clays on plains
- Norwich: deep brown cracking clay soils on plains
- Kirkcaldy: moderate to deep brown to red non-cracking clays on low rises
- Mayfair: moderate to deep red or brown texture contrast soils with clay loam topsoil on low rises
- Mayfair sodic variant: texture contrast clayey sands to clayey loams on plains
- Booroondarra: red non-sodic texture contrast soils on alluvial plains
- Moreton: fine red to brown loamy sand to clayey sand soils on low lying plains
- Parrot: texture contrast sandy to clay soils on plains.

Soil erodibility and the dispersion potential of soils have been assessed for Soil Mapping Units using: exchangeable sodium percentage that indicates soil sodicity; Calcium / Magnesium ratio to identify the dispersive nature of sodic clays; and Emerson aggregate test to identify the dispersivity of the soil and predisposition of the soil to becoming erosive under natural conditions.

Topsoils in the project area are generally suitable as seed surface material or root zone material, although some topsoils have been identified as having alkaline pH and are likely to require fertiliser to compensate for high pH and nitrogen deficiency. Soil fertility in the project area is generally poor to moderate, with soils typically having moderate cation exchange capacity and low concentrations of several essential nutrients, such as nitrogen and phosphorous. The topsoil balance indicates that sufficient topsoil material will be available for rehabilitation to meet the recommended topsoil depth of 0.2m, with a topsoil volume of approximately 1,462,800m^3. When potential exposure of sodic soils requires, the proponent proposed that erosion-prone soils will be ameliorated with gypsum to overcome dispersive properties. Soil ameliorants will also be utilised when necessary to bring topsoil pH values to within the range of 5.5–9.0 for nutrient availability. Soil quality management and in particular topsoil will be required to be further detailed and assessed in the Progressive Rehabilitation and Closure Plan (PRC plan) and

include milestone criteria to ensure the landform can achieve a stable condition. The PRC plan is discussed further in section 6.6 Rehabilitation.

Resources has identified concerns relating to soil drainage, permeability, erosion modelling and monitoring. This includes interpretation of soil characteristics, identifying preference for rainfall event-based erosion monitoring and the use of Revised Universal Soil Loss Equation (RUSLE) for erosion modelling. These concerns can be further investigated and assessed as part of the proponent's development of an Erosion and Sediment Control Plan (ESCP). To provide contemporary, clear and enforceable expectations for the ESCP, I recommend that ESCP requirements are conditioned in an amended EA for the project as per section 7.1 (C28 to C32) .

6.5.4 Subsidence

The EIS adequately assessed the potential for ground subsidence. The EIS used appropriate tools and techniques to predict the location, extent and depth of subsidence, and its effect over time on surface landforms. The EIS effectively applied the predictions for subsidence when assessing potential impacts on other matters such as the flow of surface water, infiltration or redirection of groundwater, and changes to ecology.

Subsidence is predicted to occur over the underground mining areas to a maximum depth of 2.9m for the southern mining area and a maximum depth of 5m for the northern mining area. (Figure 5) The maximum displacement in watercourse bed level is modelled to be approximately 4m for Boomerang Creek and 2.5m for One Mile Creek. Section 6.7.1 discusses related surface water impacts and mitigations including drainage and pumping of ponding.

Continuous vertical subsurface fracturing cracking up to 120m vertical height is predicted in the single seam extraction areas. This height may extend to a conservative 180m in areas where both the Leichhardt Lower and Vermont Lower seams are extracted. Predicted maximum surface cracking to a depth of 10-15m (majority <1m) with widths of 50-200mm are expected as a result of subsidence.

The EIS considers that should areas where the depth of cover to the extracted coal seam be less than the combined height of the continuous cracking and surface crack depth, continuous cracking to the surface could occur leading to significant inflows of potential water sources to the underground workings. In the southern part of the area, where only the Vermont Lower Seam is extracted, the depth of cover above the longwall panels is 125-330m, the extension of continuous cracking to the surface is not anticipated. Similarly, in the northern part of the area, the depth of cover is >270m where both seams are extracted. Even assuming a conservative 180m height for continuous cracking, significant water inflows from surface water bodies are not anticipated.

In the overlying zone of discontinuous cracking there may be an increase in horizontal permeability but this increase is not likely to result in significant inflows to the underground mine workings. Above the discontinuous cracking zone, the conductivities are predicted to be even lower. For completeness, these have been included in the groundwater model for the Meadowbrook underground area. In terms of surface watercourses, where Phillips Creek is located closest to the Vermont Lower Seam longwall panels, the depth of cover is >150m and the angle of draw is >26.5 degrees. In this area, no interconnection is anticipated. Similarly, where One Mile Creek flows over the southern Vermont Lower Seam longwall panels the depth of cover is 240–320m and again no significant interconnection with the underground workings is anticipated. In the northern part of the area, where longwall extraction is carried out in both seams below Boomerang Creek, the predicted 180m height of continuous cracking above the Leichhardt Lower Seam is located well below the minimum depth of 320m.

Surface subsidence cracks are likely develop in the proposed longwall mining areas. The areas with the highest potential for cracking are those located at the panel edges where the maximum tensile strain occurs. The widest of these cracks are predicted to extend to no more than 10–15m below ground level, with the majority <1m deep. Some reworking and widening of existing cracks is predicted where both seams are extracted. The depth of cover above the Meadowbrook longwall mining area indicates that subsurface subsidence cracking is not predicted to extend to the ground surface at Boomerang, One Mile or Phillips creeks.

Subsidence monitoring at other longwall mines, indicates that greater than 97% of the maximum subsidence will typically occur within six weeks after mining is completed, assuming an industry average retreat rate of 100m per week. Residual subsidence above the longwall panels is therefore not anticipated once the longwall goaf areas have compacted. To ensure these mitigation measures are managed, I recommend that subsidence impact area, requirements and a Subsidence Management Plan (SMP) are conditioned in an amended EA for the project as per section 7.1 (G20 to G26).

6.5.5 Land use and suitability

The EIS adequately addressed temporary and permanent changes to land uses of the project site and adjacent areas. In particular, the EIS assessed strategic cropping land and priority agricultural areas within the project area that require assessment under the RPI Act. See also section 6.6 below.

The EIS undertook an assessment of the land suitability for broadacre or dryland cropping, and cattle grazing on

improved pastures, for soils across the project area. The assessment was based on the *Regional Suitability Frameworks for Queensland* (DNRM and DSITIA 2013) and *Land Suitability Assessment Techniques* (DME 1995), following procedure for land evaluation that are described in the Queensland Government *Guidelines for agricultural land evaluation in Queensland* (DSITI & DNRM 2015).

The EIS determined that the project area consists of land suitable for cattle grazing with moderate limitations (Class 3) and marginal land (Class 4). The EIS advises current low-intensity grazing land use indicates that the project area can sustain grazing activities. However I recommend for the project (a greenfield expansion) that the expectation is that proposed areas for grazing PMLU will meet a land suitability Class 3 or better given that Class 4 is unsuitable for grazing as per DSITI 2015 and have slopes not exceeding 15%, as per the Queensland Mine Rehabilitation Commissioner (QMRC) technical papers (QMRC 2023-2024) regarding grazing as a PMLU.

The SCL trigger map identifies 6ha of likely strategic cropping land within the project area impacted by the infrastructure corridor. This land is located within the south-eastern corner of ML70477. A RIDA was to be sought by the proponent from Department of State Development and Infrastructure (DSDI) to address the Regional Planning Interest matter for this area. Resources have since advised DESI that a decision has recently been made to remove map units that are smaller than the minimum mapping unit of 10ha in the Western Cropping Zone of the SCL trigger map. When the new SCL trigger map is released, there will no longer by any requirement for the Strategic Cropping Area regional interest to be considered by the RPI Act.

The proposed PMLUs for the site include Class 3 and Class 4. The land is expected to retain its pre-mining land class suitability following rehabilitation, except for the following areas:

- areas of the out-of-pit waste rock emplacement that have slopes greater than 10% and develop water erosion limitations that result in Class 4 suitability
- areas of the in-pit waste rock emplacement that have slopes greater than 10% and develop water erosion limitations that result in Class 4 suitability
- the footprint of the mine infrastructure area, which may be subject to characteristics that limit plant growth (i.e. soil compaction and strongly alkaline subsoils), resulting in Class 4 suitability.

The proposed PMLUs aim to reinstate the existing land uses of low intensity grazing (‘Grazing Native Vegetation’ and ‘Grazing Modified Pastures’) by returning the land to similar vegetation type and land class suitability to that existing prior to mine disturbance and delivering a beneficial environmental outcome by restoring, as far as practicable, existing native vegetation communities. However, I consider that a dual PMLU (Grazing Native Vegetation) is not acceptable. I therefore recommend that the PMLU of the riparian areas is 'Native Ecosystem’, especially given that the EIS concludes that subsidence is not likely to have a significant impact on these riparian areas (e.g. limited vegetation dieback). As such, the PMLU should not differ from what is there currently (i.e. ‘Native Ecosystem’).

For non-riparian areas, if grazing is the proposed PMLU, as part of the EA amendment process the proponent will need to:

- assess slopes to demonstrate that the PMLU of grazing is appropriate and that the slopes will be suitable for cattle (i.e. <15%)
- for slopes created by subsidence, address the increased potential for localised erosion rates beyond the ‘normal’ subsidence erosion rates and associated consequences to water quality in subsidence ponding (e.g. for stock watering).
- define how Class 4 is suitable for grazing and provide a proportion breakdown of land that was assessed to be Class 3 and areas assessed as Class 4 noting that guidance (DSITI & DNRM 2015)(QMRC 2023-2024) states Class 4 is unsuitable for grazing, with severe limitations. The proponent must address these limitations.

I recommend that land that cannot achieve Class 3 should not have a PMLU of grazing.

To ensure these proposed mitigation measures are enforceable, I recommend that PLMU requirements are conditioned in an amended EA for the project as per section 7.1 (Table G2).

6.5.6 Landscape character and visual amenity

The EIS adequately described and assessed the potential impacts on the existing landscape character and visual amenity.

The local area is characterised by flat to gently undulating landscape. Coal mining operations are visible in the local and regional landscape alongside low-intensity grazing activities. The potential visual amenity and lighting impacts of the project to sensitive receptors has been assessed as insignificant, and no specific monitoring or adaptive management program is considered to be required beyond standard practices to minimise impacts.

6.6 Rehabilitation

The EIS provided a draft PRC plan, which addressed the following matters:

- proposed post-mining land uses and their locations
- rehabilitation milestones
- milestone criteria that would demonstrate when each milestone has been completed
- completion dates for each milestone to be achieved.

The changes between existing land uses and proposed post-mining land uses were discussed in section 6.5.6 above.

The EP Act requires land disturbed by mining activities to be progressively rehabilitated to a safe and stable landform that does not cause environmental harm and is able to sustain an approved PMLU. To deliver this, a PRC plan for the project must be prepared, inclusive of PMLUs, rehabilitation methods and techniques to deliver milestones, and applicable operational management plans. Non-use management areas (NUMA) have not been proposed for this project.

Revegetation activities will be scheduled during spring before the heavy wet season rainfall begins. Seeding may also occur during the summer months, depending on rainfall. Seeds will be sown using direct seeding or tube stock depending on the species, slope gradients and areas to be revegetated. The rehabilitation outcome for areas of native vegetation is to reinstate, as far as practicable, the vegetation communities existing pre-mining. Where vegetation impacts due to subsidence are identified, these areas will be infill-planted to replace lost species, with comparable vegetation to maintain ecosystem structure and function, and to stabilise soil and minimise erosion. Where impacts occur due to ponding, these areas will be revegetated with species better adapted to the changed hydrological conditions.

Post mining land use has been discussed in section 6.5.5. Clarification of singular PMLU vegetation types is yet to be defined. If 'Native Ecosystem' is determined to be a post mining land use, the PRC plan would need to be accompanied by revegetation methodologies that have not been provided in the EIS including but not limited to detailing the specific regional ecosystems (REs) that rehabilitation methods should be based on (i.e. seed mixes and BioCondition Benchmarking).

Subsidence is predicted to result in some pooling of water isolated from main drainage paths, forming ephemeral ponds. Drainage and pumping works are proposed to be implemented where possible, to provide a level of mitigation of these changes to surface water flow, reducing both the extent and the duration of ponding. The drainage channels will be a maximum depth of 2.8m and a base width of 5m in the northern underground area and a maximum depth of 3m and a base width of 5m in the southern underground area. The drainage works are expected to reduce the area subject to intermittent ponding from 370ha to 213ha, with an additional 4ha for the drainage channels. The rehabilitated pit landform will also be subject to ephemeral ponding, having a final catchment of 185ha. The ephemeral nature of the subsidence and final landform ponding areas mean the proponent anticipates retaining grazing as a land use. Where there is a PMLU of grazing for ponded areas, water quality modelling may be required to ensure that water can meet stock watering limits.

Fourteen rehabilitation milestones and accompanying rehabilitation criteria have been proposed as being applicable for the project. Rehabilitation will be monitored on an annual basis, with the survey period occurring post-wet season, as monitoring at this time will allow for more accurate identification of the species present and a clearer understanding of species richness on-site. I recommend that event (rainfall) based monitoring as identified by the Resources review, is also incorporated into the PRC plan and schedule to evaluate surface water and overland flow behaviour. The EIS commits to monitoring of areas predicted to be affected by subsidence prior to disturbance, to establish a baseline dataset for identifying areas where mitigation activities may be necessary earlier than the scheduled rehabilitation process nominates. Following monitoring events, areas of rehabilitation will be assessed for maintenance requirements.

The draft PRC plan provided with the EIS includes a PRCP schedule. As identified in the EIS, the proponent proposes to amend the Lake Vermont EA to include this project. As the Lake Vermont Mine EA pre-dates the requirement for the inclusion of a PRC plan with an EA application, the proponent is required to transition to a PRC plan. The decision due date by DESI for the Lake Vermont Mine PRC plan is 28 June 2024. As the project PRC plan will need to be developed as an amendment to the not yet approved Lake Vermont PRC plan, a draft PRC plan has not been included in this Assessment Report in order to prevent miscommunication.

In support of a yet-to-be completed PRC plan for Lake Vermont Mine and subsequent amendment for the project, I recommend that rehabilitation requirements are conditioned in an amended EA for the project as per section 7.1 (G1 to G9) and will be further developed during the major EA and PRC plan amendment post-EIS for the Meadowbrook project, based on the outcomes of the PRCP Schedule for the existing Lake Vermont Mine.

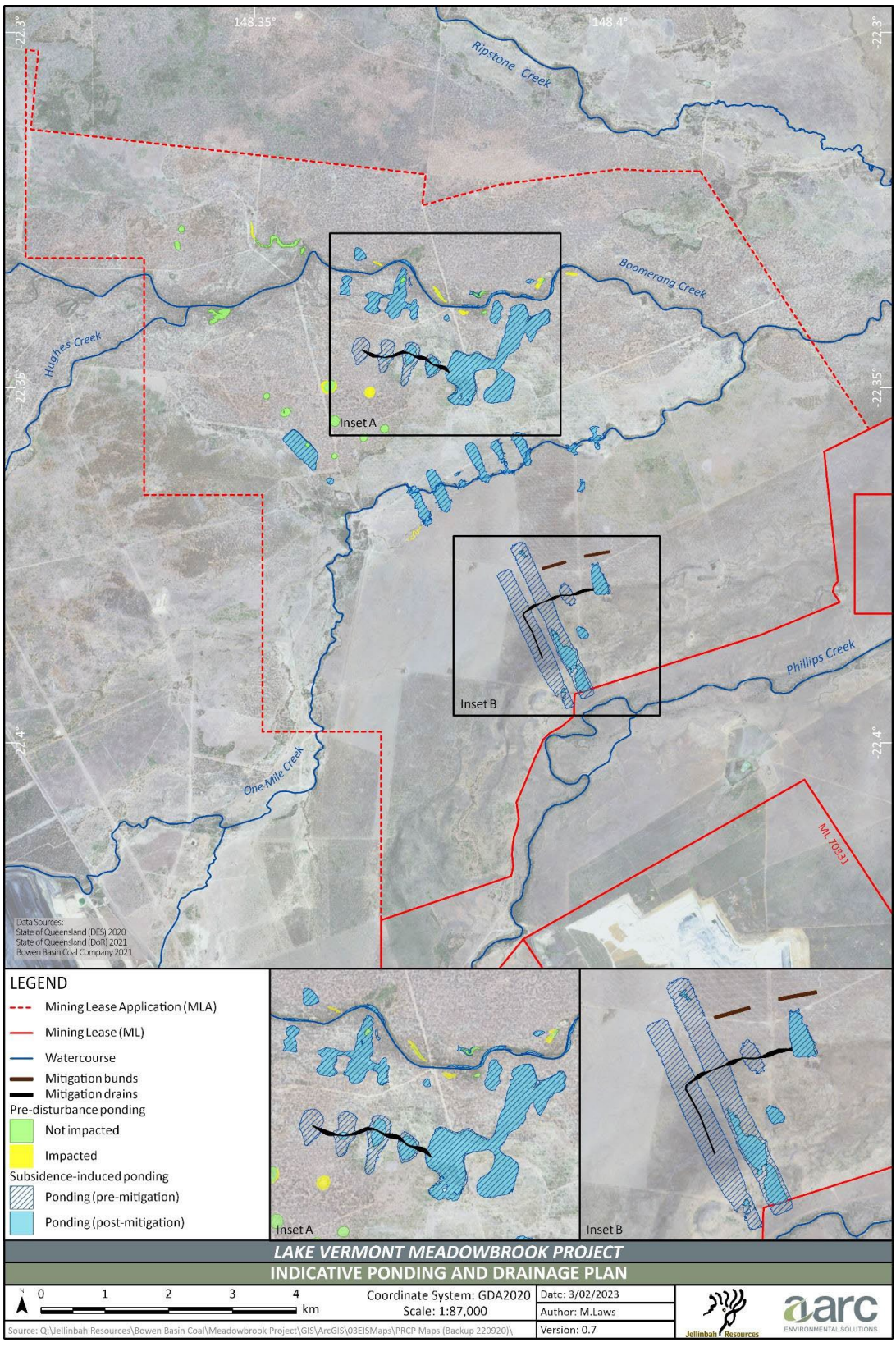

Figure 5 Indicative ponding and drainage plan: Source Figure 6.8 of the EIS

6.7 Water

6.7.1 Surface water resources

The EIS adequately addressed the final TOR with respect to water resources and investigated and assessed potential impacts in accordance with the relevant guidelines and the Environmental Protection (Water and Wetland Biodiversity) Policy 2019.

The EIS identified the relevant environmental values (EVs) to be protected for waters in the project area and the relevant water quality objectives. Specifically, these relate to:

- aquatic ecosystem protection (slightly to moderately disturbed ecosystems, QWQG 2009)
- irrigation, farm use and stock watering
- aquaculture (upland tributaries only)
- human consumption
- primary, secondary and visual recreation
- drinking water
- industrial use, and,
- cultural and spiritual values.

Water quality objectives and sediment quality objectives for relevant EVs have also been proposed.

A peer-reviewed water balance model for the project was developed, including for the rehabilitated landform depression. Effects of climate change have been accounted for. The water management system for the underground mine is effectively a closed system. The mine affected water (MAW) would be stored in one of two dams located at the MIA being the dewatering dam (20ML) and MIA dam (440ML capacity). The MIA dam would also capture all runoff from within the MIA, including from the ROM Stockpile, laydown and workshop areas and both MAW dams would be sized and operated to prevent overflows for the life of the project. In addition, the MIA would be surrounded by a levee built to exclude a 0.1% AEP flood and divert clean water runoff, as would the open pit. The proponent has committed to data collection for updating and validation of the water balance model and an annual review of the water management system, for the duration of the project.

During open-cut mining, runoff from overburden dumps will be captured on the site by three regulated sediment dams. These would be constructed to retain runoff up to and including a 24 hour storm event with an ARI of 1 in 10. The dams would improve water quality by assisting sediment to settle out and would retain water until it could be transferred to the MIA dam, when the MIA dam volume is less than 345ML. Modelled overflows are predicted in 10th percentile (or greater) wettest conditions, to One Mile and Philips Creek. The EIS concluded that overflow salinities under these conditions would have minimal impacts on downstream environmental values. The proponent did not consider this runoff to be MAW, however, because of its contact with the overburden, I recommend conditioning the amended EA to require monitoring of the quality of the water within the sediment dams against the quality characteristics of MAW as part of the water management plan (WMP). I further recommend implementation of appropriate water quality improvement strategies for the sediment dams and exclusion measures for stock and wildlife, should contaminant trigger levels be exceeded. The proponent has also committed to updating the Receiving Environment Monitoring Program (REMP) to include monitoring points in the receiving waters of One Mile Creek and Philips Creek, for detection of any impacts from sediment dam overflows. I recommend that this commitment is also reflected in the proposed amended EA conditions (section 7.1).

There are no proposed controlled water releases for the project. Excess MAW from the project would be piped to Lake Vermont Mine where it would be stored in existing dams, which have a combined capacity of 4.9GL. The project water balance model predicted an average annual volume of 1000ML per year project water transferred to Lake Vermont Mine, and this can be used to offset the project's take from the Lake Vermont raw water allocation. The EIS discusses contingencies for storage of excess project MAW at Lake Vermont in exceptionally wet years. Up to 15GL of project MAW is able to be stored without impacting current Lake Vermont Mine mining operations and up to 200GL emergency storage is available in Lake Vermont mine voids. Lake Vermont Mine is licensed to undertake controlled releases of MAW at release points on unnamed gullies of the Isaac River, the Isaac River and Philips Creek. The EIS states that the existing EA conditions are written to minimise potential impacts to Great Barrier Reef catchments from dissolved inorganic nitrogen and fine sediments, and that controlled releases are infrequent, with the last one in 2017, further minimising impacts on Great Barrier Reef receiving waters. I note that no changes to releases from Lake Vermont are proposed as a result of the project. Notwithstanding this, I recommend conditioning of the WMP to include water volume management strategies, including authorised releases, to actively avoid the accumulation of MAW contaminants in dams and pits at either mine site.

The project would use an average of 1,390ML of water per year, principally for underground operations, washdown and dust suppression. Water demand would reduce significantly during open-cut only operations. This would primarily be obtained from a raw water allocation held by Lake Vermont Mine and supplied by constructing a 12km pipeline to connect with the existing raw water pipeline, supplied by Sunwater's Eungella Pipeline Southern

Extension. Raw water will be stored in the raw water dam (20ML capacity). Groundwater inflows, rainfall and runoff will make up the balance of the water inputs to the project. Construction water needs will be met through capturing rainfall and runoff, and from water truck transfers from Lake Vermont Mine. MAW may be used for dust suppression underground and above-ground, although sealing of the main access and coal haulage roads will reduce its application.

The EIS adequately identified the site's catchments and hydrology and incorporated the modelled instream and floodplain subsidence, disturbance footprint, diversion drains, levees, and topography of the final landform into its assessment of impacts on water resources, including matters related to:

- capture of catchment runoff and impacts on streamflows
- channel hydraulics and longitudinal profiles
- creek bed and bank erosion, aggradation and channel avulsion
- flooding and floodplain drainage.

Subsidence troughs as a result of mining beneath the One Mile and Philips creek's floodplains will have an estimated total capacity of 1727ML. The greatest impact on stream flows as a result of subsidence ponding was predicted in a 4-6km reach on One Mile Creek with a 72% reduction in average annual runoff volumes. However, the Subsidence and the Water management plans include the mitigation measure of pumping water from subsidence ponds back onto overland flow paths once depths reach 0.5m, which would reduce that impact to 25%. Mitigation drains will also be constructed to gravity drain ponded water back to existing (natural) drainage lines (see section 6.6). I have some concerns about the construction and maintenance of significant lengths of drains at a site with dispersive soils and therefore recommend that mitigation drains must be constructed in accordance with criteria in the project PRC plan to ensure they are stable and non-polluting in perpetuity. Interception of overland flow by the open-cut pit operation and water management infrastructure would also reduce overland flows to One Mile and Philips Creek although this impact would be reduced to a total catchment loss for One Mile Creek of 8% at the completion of mining and rehabilitation of the site. Based on estimated sediment supply, the EIS stated it would take 15 to 45 years for the project subsidence depressions to refill with sediment (post-mining). However, this would be potentially doubled if the proposed Saraji East mine were operating concurrently, and it was noted that sediment supply to One Mile Creek may already be limited from upstream operations.

Both Boomerang and One Mile creeks are considered vulnerable to bed and bank erosion between subsidence troughs while aggradation in the subsided areas has the potential to promote channel avulsion by Boomerang Creek. There is evidence that Boomerang Creek already has a history of channel avulsion. The EIS predicted insignificant water losses from the project site alluvium as a result of subsurface or surface subsidence-induced cracking, with a maximum <10ML/a loss and this position was further justified in technical discussions with DESI, DCCEEW and the Australian Office of Water Science. However, there were no estimates provided of the potential quantities of enhanced downward drainage from the alluvium to the Tertiary as a result of groundwater drawdown. I recommend that the amended EA includes a condition that the project Subsidence Management Plan undertakes annual monitoring inspections and reporting of the geomorphic, flow, water quality and biotic status of subsided creeks and includes mitigation measures to address impacts that are detected on surface water resources as a result of the predicted subsidence.

The EIS modelled flooding at the site and assessed the impacts on flood levels and extents during and post-mining. The EIS concludes that changes in flood levels do not impact infrastructure outside the MLA although the developed mine and haul road do result in positive afflux in creeks reaches beyond the western boundary of the MLA. Flood levees providing protection against a 0.1% AEP event are proposed for the MIA and open-cut pit. However, the flood model assumptions for the EIS incorporated a diversion of Philips Creek and flood protection levee for Lake Vermont Mine, on the southern side of Philips Creek, which have not yet been installed. I therefore requested further modelling of the project's maximum flood extent without the Lake Vermont Mine, which showed increased flood levels beyond the MLA and within the proposed Lake Vermont Mine northern pit footprint. My recommendation to address flood impact risks to Lake Vermont Mine are discussed in section 6.8 below. The flood model also identified that floodwater in the subsided Philips Creek floodplain would flow north into One Mile Creek. Earthen mitigation bunds are proposed to minimise this flow reversal and I recommend including criteria in the project PRC plan to require construction and maintenance of stable and non-polluting bunds for the duration of their existence.

The EIS proposes to rerun the flood model to confirm flood levels once final designs are being developed, in particular to establish the height of the project levees and to minimise the risk of inundating the final landform. I recommend that the proponent makes the revised outcomes available to the administering authority as part of the PRC plan application for the project.

To ensure the proposed and suggested management, monitoring and mitigation measures for surface waters are

enforceable, I recommend that these requirements are conditioned in an amended EA for the project as per section 7.1 (Schedule C).

6.7.2 Groundwater

Groundwater within the project area was adequately characterised by the EIS, with hydrogeological units (and faults) presented, together with groundwater levels and quality from data sampled at a network of bores. The bore network comprises existing bores from the Lake Vermont Mine and project bores. The regional water table was located in Tertiary sediments below the level of alluvium and the EIS concluded that the recharge of Quaternary and Tertiary strata was direct from rainfall and creek flows, with preferential recharge to the Permian coal seams where they subcropped beneath Tertiary strata, particularly where this coincided with a creek. (Figure 5)

A peer-reviewed, 3-D numerical groundwater model was developed for the project. This model was developed ,to predict groundwater inflow rates to the underground component of the mine. Based on limited vertical fracturing above the long wall mining, up as far as the Tertiary, as a result of the mining (base case), the volume of total groundwater inflow was calculated as 5110ML for the operational life of the underground mine. This was further refined to quantify the relative contribution of each hydrogeological unit to the inflows. A fracture to surface scenario was also modelled, however, the vertical hydraulic conductivity adopted in this scenario was lower than in the base case and as a result the modelled fracture to surface inflows were actually less than those for the base case. The proponent has committed to re-running the groundwater model every five years and I therefore recommend that during this model re-run, the same vertical hydraulic conductivity should be used for both scenarios to enable a comparison.

Downward seepage from Tertiary sediments through mining-induced fractures was predicted to contribute the highest volume to underground mine inflows, from a combination of rainfall recharge and existing Tertiary groundwater. An open-cut pit is also proposed to operate for 10 years commencing year 20 of the project, towards the end of the underground mining operation. Dewatering of the operational pit was calculated to cause a total loss of 2086ML of groundwater during operation of the pit, primarily from the Tertiary sediments but also significant volumes from the interburden layer and the Vermont Coal seam. Groundwater inflows into the mine will be managed under the WMP, with groundwater transferred into a dewatering dam in the MIA and used for dust suppression and with excess water transferred to Lake Vermont Mine for use or disposal in environmental dams.

The numerical modelling results of groundwater drawdown from project underground and open-cut mining was presented for different stratigraphic units. Maximum drawdown in the Quaternary alluvium was predicted to be minor (2-5m) and seasonal, however, there were only two monitoring bores located within this strata. Drawdown predictions were confined to locations on Boomerang and Ripstone Creeks, which may reflect the limitations of the Quaternary alluvium sampling. The model predicted drawdowns of up to 20m below current groundwater levels in the Tertiary sediments, concentrated around the underground mine and beneath Boomerang Creek, with drawdown contours extending beyond the mining lease. Modelled project drawdown for all strata did not extend as far as the Isaac River and modelling did not predict increased rates of seepage or a decrease in rates of groundwater baseflows to the Isaac River.

The final landform at the open-cut site will be designed such that seepage from the out-of-pit spoil dump is directed away from the landform (Figure 6). The final landform will incorporate a central depression that will capture rainfall and limited runoff, with water levels predicted to be approximately 2.5m higher than the final predicted groundwater elevation. This should result in groundwater mounding and seepage away from, not into, the base of the landform, minimising the accumulation of water and salts in the depression. Electrical conductivity of the landform depression seepage was predicted to be an order of magnitude lower than receiving Tertiary groundwaters. The risk of impacts to water quality as a result of seepage through waste rock material in the landform and out-of-pit dumps was predicted to be low, based on the geochemistry of the waste rock. The EIS proposed ongoing monitoring of groundwater quality and levels under the project Groundwater Monitoring and Management Plan and I recommend that the amended EA conditions for the project incorporate relevant criteria for a groundwater monitoring program, reporting requirements and actions in the event of exceedances, or deviation from predicted outcomes. The EIS also commits to the replacement of destroyed bores and expansion of the monitoring bore network as the project progresses and I recommend that action should be incorporated into the groundwater monitoring program criteria.

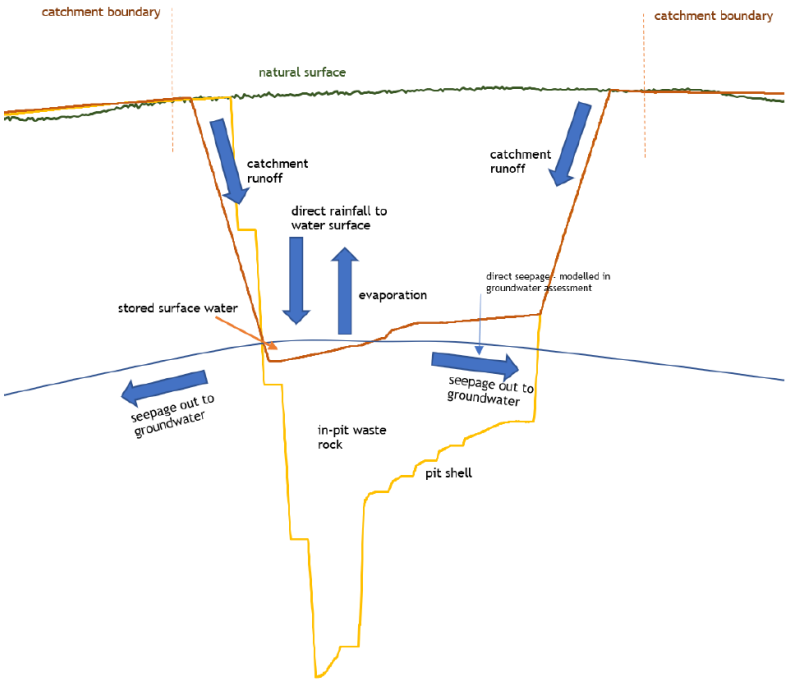

Figure 6 Conceptual surface water model of rehabilitated pit landform (typical cross-section) Source: Figure 3.2 of Appendix X of the EIS

Post-mining equilibrium (95%) of groundwater levels was predicted to take 270 years at the northern longwall panels and 135 years at the southern panels (where only a single coal seam will be mined). Post-mining equilibrium in all strata is predicted to result in groundwater above pre-mining levels in the vicinity of the rehabilitated pit landform and Boomerang Creek. The EIS also modelled cumulative impacts from other projects in the area, predicting an additional 2-10m of Tertiary drawdown at Boomerang Creek and 2-15m of Tertiary drawdown at Ripstone Creek at the end of mining, as a result of the Olive Downs South and Eagles Downs mines drawdown. Additional drawdown from cumulative impacts is predicted for all modelled layers.

The EIS adequately identified groundwater-related environmental values potentially affected by the project and the exercise of underground water rights, and proposed strategies to minimise and mitigate impacts. Aquatic and GDEs along Boomerang and Phillips creeks, together with high ecological significance (HES) wetlands were the key values vulnerable to groundwater level drawdown and mounding. While the model showed that the Quaternary alluvium was largely unaffected by drawdown, the EIS also identified that drawdown in the Tertiary sediments enhances the potential for downward seepage from the alluvium during recharge and flow events. This in turn had the potential to impact groundwater dependent riparian ecosystems within the Boomerang and Philips creeks alluvium and HES wetlands (wetlands 8 and 9, within the Ripstone Creek alluvium) during drier periods. However, the EIS proposed that the riparian (type 1) GDEs were facultative, and impacts were likely to be insignificant as alluvial groundwater is discontinuous and driven by surface recharge. The EIS also concluded that the aquifer beneath Wetland 9 was a perched aquifer above a clay aquitard. Wetland 8 appears to be more vulnerable to effects from groundwater drawdown. Monitoring and mitigation strategies and recommended conditions for impacts to GDEs are addressed in section 6.9.2 and section 6.18.

A survey of registered bores identified one bore owned by BHP Mitsubishi Alliance within the 2m Tertiary drawdown extent which may require a make good agreement under the *Water Act 2000*. All other registered bores are owned by the proponent or located beyond the drawdown triggers for unconsolidated and consolidated sediments. However, the cone of depression from the project extends beyond the mining lease to the north where there is the potential to impact unregistered bores. The proponent has contacted affected landholders to identify unregistered bores on potentially impacted properties but without any response.

The inflows of groundwater to the underground mine and open-cut pit would require the proponent to exercise their underground water rights. I consider that the EIS provided sufficient information to meet the underground water rights requirements under the EP Act, including identifying potential impacts on environmental values. I also consider that the EIS provided strategies for avoiding, mitigating and managing predicted impacts, and information to enable the drafting of any necessary or desirable conditions for an amended EA. To ensure the proposed and suggested management, monitoring and mitigation measures for groundwaters are enforceable, I recommend that

these requirements are conditioned in the an amended EA for the project as per section 7.1 (Schedule D).

6.8 Regulated structures

The EIS adequately described all proposed regulated structures, such as dams and levees in accordance with the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* (ESR/2016/1933).

The EIS consequence category assessment indicated that there are no regulated dams, however, the EIS proposed that a detailed groundwater assessment should be carried out to further inform the detailed design of seepage management measures for the dewatering and MIA dams that will contain MAW.

The EIS has identified two flood protection levees as regulated structures which are proposed to be constructed with 0.1% AEP design event flood protection. A flood protection levee would be constructed around the MIA at the start of the project to protect infrastructure. A second flood protection levee is proposed to be constructed around the open-cut mining area before commencing open-cut mining in year 20 of the operation.

The EIS adequately assessed the potential impacts of the regulated structures in accordance with the current relevant guidelines, including a consequence category assessment for each project dam or levee, and flood modelling results were presented for the project. Regulated structures have the following potential impacts:

- levees around the open-cut operation and MIA would reduce floodplain conveyance and storage, which would locally increase upstream flood levels and redistribute downstream flow to the opposite floodplains
- impacts would continue until the levees are decommissioned and the floodplain landform returned to pre-mining levels
- failure of levees was predicted to allow flood water inflows to the MIA and open-cut mining area during 0.1% AEP events.

As discussed in section 6.7.1 Surface water resources, the flood model assumptions for the EIS incorporated a diversion of Philips Creek and flood protection levee for Lake Vermont Mine, on the southern side of Philips Creek, which have not yet been installed. I was concerned that if the proposed Meadowbrook project was to proceed prior to the construction of the Philips Creek diversion and levee, there may be risks of flooding at the existing Lake Vermont Mine. In response to this concern, the proponent has undertaken additional flood modelling, assuming the maximum Meadowbrook project disturbance. The results showed that without the construction of the Philips Creek diversion and associated levee at the existing Lake Vermont Mine, the project would increase the 0.001% AEP flood levels on the southern Philips Creek floodplain by more than 0.5m, although due to the steepness of the adjacent topography, the additional flooding would not interact on current operations at the Lake Vermont Mine.

The EIS proposed measures to avoid, minimise or mitigate the risks associated with potential failure of the levees. The following measures would protect people, property and the environment:

- the EIS has committed to design, construct, operate and decommission the project levees in accordance with the departmental manuals ESR/2016/1933 and ESR/2016/1934. Specifically, the EIS committed to:
    - review flood levee crest levels and the design freeboard as part of detailed design works
    - develop and submit certified design drawings (and supporting documentation) prior to the commencement of levee construction in accordance with the requirements prescribed by DESI in 2016 for the Lake Vermont Mine project
    - use only non-dispersive, low permeable, engineered fill for levee construction
    - revegetate batters and surrounding areas with grasses to stabilise the structure and prevent sediment runoff, and
    - decommission and rehabilitate levees in accordance with the project PRC plan.
- a diversion drain to be developed during the construction phase to support the diversion of clean water around the southern extent of the MIA levee.
- an additional diversion drain to be constructed during the project operational phase (indicatively project Year 20) that would divert clean water around the southern extent of the open-cut pit levee.
- construction of the Lake Vermont Mine levee and Phillips Creek diversion prior to encroachment of the operations onto the Phillips Creek floodplain.

To ensure these mitigation measures are enforceable, I recommend that conditions as per section 7.1 (I1 to I38 and G26) are included in an amended EA for the project.

6.9 Ecology

The EIS adequately undertook and described desktop research into the project area's ecology using records within a 50km search area. The study area comprised the MLA within the MDL 303 and MDL 429 tenements, and a portion of land within the existing Lake Vermont Mine on ML 70477 and ML 70528.

The EIS also undertook adequate field surveys of the terrestrial and aquatic ecology of the project area and additional locations downstream that have the potential to be impacted by the project. Detailed terrestrial flora and fauna field surveys included:

- flora surveys of 54 secondary sites and 245 quaternary sites. Rapid surveys were conducted at 500 locations. Vegetation communities within the project area were surveyed in accordance with the Queensland Herbarium's survey methodology (Neldner et al., 2019). Conservation significant flora field observations were also conducted using the *Flora Survey Guidelines – Protected Plants* (DES 2019)
- fauna surveys in 11–21 March 2019 (autumn), 6v19 November 2019 (spring), 23v25 March and 1–8 April 2020 (autumn), 16v25 April 2021, and 6v10 September 2021 (spring).

Aquatic ecology was surveyed at 16 sites within, upstream and downstream of the project area over 20-23 March 2020 (late wet season) and 14–19 April 2021 (late wet season). The survey area extended into sites within the existing Lake Vermont mine.

Field surveys of GDEs were undertaken on 17 sites between 15–19 August 2021 and were informed by desktop assessment of BoM GDE Atlas mapping. This included sites on the major watercourses and floodplains of the site and downstream areas located offsite.

Stygofauna surveys were conducted on 26 May 2021 and 14 September 2021 from nine bores that were representative of major habitat and aquifer types.

The EIS adequately identified the ecological values of the project site and the surrounding area, and adequately assessed the potential impacts on those values. The following sections expand on the adequacy of the EIS's assessment of environmental values and impacts on ecology.

6.9.1 Terrestrial ecology

6.9.1.1 Existing environmental values

The project is located in the northern Brigalow Belt bioregion and is within the Isaac Connors sub-catchment of the Fitzroy Basin. Five ephemeral creeks and their catchments are located within the site and the watercourses run west to east draining to the Isaac River. Remnant vegetation consists of brigalow woodlands, eucalypt woodlands and vegetation associated with the watercourses and gilgai/ wetlands in the northern half of the MLA. The southern half of the site is dominated by cleared grazing land predominantly mapped as non-remnant vegetation.

The EIS identified the following 15 remnant regional ecosystems within the project area listed in Table 3.

Table 3 Remnant regional ecosystems within the study area

Regional ecosystem	Description	VM Act status	Biodiversity status	Extent (ha)
RE 11.3.1	*Acacia harpophylla* open forest on alluvial plains	Endangered	Endangered	106.2
RE 11.4.8	*Eucalyptus cambageana* woodland to open forest with *Acacia harpophylla* on Cainozoic clay plains	Endangered	Endangered	51.4
RE 11.4.9	*Acacia harpophylla* shrubby woodland with *Terminalia oblongata* on Cainozoic clay plains	Endangered	Endangered	19.4
RE 11.3.2	*Eucalyptus populnea* woodland on alluvial plains	Of concern	Of concern	960.2
RE 11.3.3	*Eucalyptus coolabah* woodland on alluvial plains	Of concern	Of concern	12.2
RE 11.3.4	*Eucalyptus tereticornis* and/or *Eucalyptus spp*. Woodland on alluvial plains	Of concern	Of concern	178.0
RE 11.3.9	*Eucalyptus platyphylla, Corymbia spp*. Woodland on alluvial plains	Least concern	No concern at present	22.8

RE 11.3.25	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines	Least concern	Of concern	135.8
RE 11.3.27b	Freshwater wetlands. Vegetation ranges from open water +/- aquatics and emergents such as *Potamogeton crispus, Myriophyllum verrucosum, Chara spp., Nitella spp. Nymphaea violacea, Ottelia ovalifolia, Nymphoides indica, N. crenata, Potamogeton tricarinatus, Cyperus difformis, Vallisneria caulescens* and *Hydrilla verticillata*.	Least concern	Of concern	10.6
RE 11.3.27f	*Eucalyptus coolabah* and/or *E. tereticornis* open woodland to woodland fringing swamps	Least concern	Of concern	11.1
RE 11.5.3	*Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana* woodland on Cainozoic sand plains and/or remnant surfaces	Least concern	No concern at present	1,593.8
RE 11.5.8c	*Eucalyptus platyphylla* woodland on white-yellow weathered sands, with grassy ground layers on Quaternary sediments	Least concern	No concern at present	126.5
RE 11.5.9c	*Eucalyptus crebra +/- Corymbia intermedia +/- E. moluccana +/- C. dallachiana* woodland on Cainozoic sandplains	Least concern	No concern at present	28.0
RE 11.5.12	*Corymbia clarksoniana* woodland and other *Corymbia spp*. And *Eucalyptus spp.* On Cainozoic sand plains and/or remnant surfaces	Least concern	No concern at present	94.5
RE 11.5.17	*Eucalyptus tereticornis* woodland in depressions on Cainozoic sand plains and remnant surfaces	Endangered	Endangered	21.3
Total area				**3,371.8**

Adapted from Chapter 10, Table 10-2 of the EIS.

Two threatened ecological communities (TECs) defined under the EPBC Act were identified, Brigalow TEC and Poplar Box TEC. These communities are discussed in the MNES section 6.18.

There is a large patch of HVR brigalow totalling approximately 110.3ha located in the north-east of the project site within the proposed offset area. Non-remnant cleared areas total approximately 5,446ha.

6.9.1.2 Impacts on terrestrial ecosystem values

The EIS states that only 12.2ha of remnant vegetation would be directly impacted by project clearing activities and a further 96.9ha would be significantly impacted due to subsidence-related ponding. An additional area of 801.7ha of cleared agricultural land would be cleared primarily for the MIA, the open-cut mining area, and the infrastructure corridor, some of which is fauna habitat for species such as the ornamental snake, *Dennisonia maculata*.

Underground mining will result in surface subsidence to a maximum depth of 2.9m below ground level for stage 2 and 5.0m for stage 3. This is modelled to result in increased areas of land on the floodplain being inundated for several months every few years. The lower-lying areas within the subsidence footprint are considered to result in areas of residual ponding. These areas are assumed likely to alter vegetation structure and may potentially lead to senescence and death of vegetation. Additionally, subsidence-induced impacts on watercourses are modelled to result in troughs that would also become areas of residual ponding.

Impacts to matters of state environmental significance (MSES) have been assessed against the *Queensland Environmental Offsets Policy Significant Residual Impact Guideline* (DEHP, 2014).

Protected wildlife habitat

Where areas of residual ponding intersect with the MSES protected wildlife habitat, the EIS has determined that a significant impact is likely to occur. Three protected wildlife species were recognised as being subject to significant residual impacts: the koala, *Phascolarctos cinereus*; greater glider, *Petauroides volans*; and the ornamental snake.

The EIS did not consider that residual ponding impacts would significantly impact the ornamental snake or the squatter pigeon, *Geophaps scripta scripta*. Additional areas of land subject to inundation were considered likely to

retain or exceed current ornamental snake habitat availability and quality. Similarly, predicted changes were considered by the EIS as likely to transform current squatter pigeon foraging habitat to breeding habitat.

However, I consider that the significant impact conclusions reached by the EIS do not adequately compensate for the loss of 15.8ha of breeding, foraging and dispersal habitat for the squatter pigeon.

As these four species are also listed as MNES, the impact and mitigation assessment is provided in section 6.18 of this Assessment Report.

One protected wildlife species that is not dual listed as MNES was the short-beaked echidna, *Tachyglossus aculeatus*. It was recorded in the study area but the loss of 12.2ha of remnant vegetation, additional clearing of agricultural land, and areas subject to residual ponding were not considered to result in a significant residual impact.

Regulated vegetation

MSES endangered regulated vegetation considered to be subject to significant residual impacts include some patches of brigalow (RE 11.3.1 and RE 11.4.8) that do not meet MNES TEC criteria. Other classes of MSES regulated vegetation subject to significant residual impacts include of concern vegetation, watercourse vegetation and wetland vegetation, see Table 4. The wetland vegetation combines the impacts of three patches of wetlands described as RE 11.5.17.

The EIS has appropriately recognised that impacts to these values would require offset conditions under the Queensland environmental offsets framework.

The Landscape Fragmentation and Connectivity Tool has been used to assess the significance of impact to the MSES connectivity areas. The core remnant areas in the project area would not be significantly impacted by project activities.

9.9.1.3 Proposed mitigation measures

The following measures are proposed to mitigate direct impacts from clearing vegetation:

- project design that has minimised the clearing of vegetation for project infrastructure such as gas drainage wells, the open-cut pit, waste rock disposal, and infrastructure corridor alignment
- using a suitably qualified and experienced person to undertake pre-clearance surveys
- the use of fauna spotter/ catchers to monitor clearance activities and attend to any injured wildlife, and to relocate wildlife to suitable habitat if required
- salvaging and relocating logs/ hollows for enhancing habitat for the ornamental snake
- undertaking clearance of any wildlife breeding areas in accordance with a Species Management Program under the *Nature Conservation Act 1992*
- revising the existing Lake Vermont Mine Pest and Weed Management Plan to incorporate weed monitoring and management measures, and feral animal control strategies.

Subsidence-induced residual ponding impacts are proposed to be mitigated via the construction of mitigation drains and mitigation bunds, and the pumping out of excess flood waters. The objective is to reduce the area and length of time of ponding such that vegetation and associated habitat is not adversely impacted. An SMP is proposed to monitor, manage and mitigate potential subsidence impacts.

An Ornamental Snake Management Plan (OSMP) requires targets, performance indicators and corrective actions relating to subsidence impact management to ensure that there is no resultant loss of ornamental snake habitat.

Additional management plans are proposed to reduce the risk of impacting terrestrial ecology values. This includes development of an Emergency Response Plan that would include measures to prevent and manage bushfires. Specific management measures to address impacts to GDEs, water quality and habitat for threatened species are discussed in the Aquatic ecology section 6.9.2 and MNES section 6.18 of this report.

To ensure these mitigation measures are enforceable, I recommend that conditions G1 to G26 in section 7.1 and conditions 1 to 7 in section 7.4 are included in an amended EA for the project. Additional conditions for MSES and MNES are discussed below.

6.9.2 Aquatic ecology

6.9.2.1 Existing environmental values

The MLA includes the watercourses and floodplains of Boomerang, Hughes, One Mile and Phillips creeks, with Ripstone Creek just to the north of the tenement, a tributary of Boomerang Creek. Several general ecological significance (GES) wetlands are located on the One Mile Creek floodplain and two HES wetlands within a wetland protection area are located near the confluence of Boomerang and Ripstone Creek but outside of the MLA. The

EIS surveyed and identified the following aquatic ecological values that have the potential to be impacted by the project:

- five ephemeral watercourses within the mining lease, which run into the Isaac River to the east of the site
- multiple GES and HES (wetland protection area) wetlands
- type 1 GDEs, associated with creeks and alluvial landforms
- type 2 GDEs associated with the HES wetlands to the east of the project area (Wetland 8 and possibly Wetland 9)
- aquatic habitats scored as fair to excellent condition against AusRivAS physical and biophysical criteria, minimal disturbance to condition from upstream impacts, with sediments within water quality guidelines, and water quality typical of a slightly to moderately disturbed aquatic ecosystem for the region
- limited aquatic flora (two species of emergent sedges)
- up to 37 taxa of aquatic macroinvertebrates, with only four taxa considered particularly sensitive to environmental change, likely reflective of the poor water quality and low habitat diversity of the ephemeral watercourses
- nine species of native fish (no threatened species or pest species were found), and five species of crustaceans
- no threatened species of freshwater turtles were recorded (Krefft's river turtle, *Emydura macquarii krefftii*, was the only turtle recorded at the site)
- no suitable habitat was observed at survey sites on the Isaac River for the platypus, *Ornithorhynchus anatinus*, and no records exist for this species in the Isaac River Sub-catchment of the Fitzroy River Basin
- stygofauna.

No conservation significant aquatic species were found on the site, although the number of macrofauna surveys and the sampling methods were limited, particularly for turtles. A likelihood of occurrence assessment was presented for four listed threatened aquatic species that have been recorded in the broader region. This included assessments for the Fitzroy River turtle, *Rheodytes leukops*, and the Southern snapping turtle, *Elseya albagula*, against the EPBC Significant Impact Guidelines (DoE 2013). I accept the EIS conclusion that these species are unlikely to occur in the project area or within the extent of project impacts. Considerations of the stygofauna communities and potential impacts can be found in section 6.18 of this report.

6.9.2.2 Impacts on aquatic ecosystem values

Most impacts to aquatic ecosystems are long-term or permanent, although the level of some impacts may diminish over the course of the project. The following impacts were considered by the EIS as likely to occur due to the project:

- direct disturbance to watercourses and GES wetlands from project infrastructure
- barriers to fish passage as a result of three waterway crossings installed for project infrastructure
- groundwater drawdown of:
    - >20m in the Tertiary sediments beneath Boomerang and One Mile creeks
    - 10-20m in the Tertiary sediments below Phillips Creek
    - 2-5m drawdown in the alluvium underlying HES Wetland's 8 and 9 and a small reach of Boomerang Creek resulting in potential impacts on GDEs. Groundwater levels are predicted to recover and reach equilibrium 270 years post-mining for the northern panels and 135 years post-mining for the southern panels
- subsidence of Boomerang and One Mile creek channels within the footprint of the underground mine
- changes to surface water flows as a result of:
    - loss of catchment area and surface runoff due to project surface infrastructure, subsidence and the final landform depression
    - redirection of overland flow from the One Mile floodplain to Phillips Creek
    - barrier effects of above-ground mine infrastructure and levees
- enhanced potential for downward drainage of surface water to groundwaters, either through cracking/ fracturing or as a result of drawdown in the Tertiary sediments, resulting in:
    - changes in flood levels
    - changes to flow velocities, volumes, duration and timing, potentially reducing aquatic habitat in these ephemeral systems
- bed and bank erosion, channel aggradation and possible avulsion (especially Boomerang Creek) in response to instream subsidence, resulting in riparian and instream habitat loss
- water quality changes potentially increasing turbidity and dissolved metals in aquatic habitats, as a result of:
    - erosion at levees and scouring within creeks
    - sediment dams overtopping and

    - runoff and seepage from the out-of-pit dumps and final landform
- cumulative impacts from the combined effect the project and of nearby mines on Tertiary groundwater drawdown beneath Ripstone Creek (additional 2-15m) and Boomerang Creek (2-10m).

I further consider that entrapment of aquatic fauna in subsided creek and floodplain troughs is a potential impact.

6.9.2.3 Proposed mitigation measures

The following measures are proposed to mitigate impacts:

- decommissioning of the levees and other above ground infrastructure at the completion of mining and rehabilitation in accordance with an approved PRC plan
- design and construction of the haul road crossings in alignment with the relevant Department of Agriculture and Fisheries waterway barrier works accepted development requirements, to minimise impacts on fish habitat and passage. However, the predicted afflux at smaller flow events (e.g. <50%AEP) at the Phillips Creek culvert crossing may impact the passage of small-bodied fish
- implementation of a GDEMMP and expanded bore network, and collection of an additional two years of baseline data on GDE function and condition to validate the EIS ecohydrological characterisation of riparian and wetland vegetation at the site
- implementation of an ESCP to minimise the release of sediment by the project
- final landform design that minimises impacts on water quality and minimises groundwater and surface water capture
- monitoring of water quality including:
    - within sediment dams
    - REMP monitoring and associated mitigation measures, with additional sites to detect impacts from sediment dam overflows and impacts to GDEs
    - monitoring of seepage to groundwaters from the out-of-pit dumps and final landform
- implementation of the SMP to monitor subsidence-induced impacts on aquatic ecosystems and implement management measures such as bank stabilisation, ponding drainage, floodplain bunds (for redirection of altered flows) and remediation of surface cracking
- implementation of a WMP for the management and containment of project MAW and monitoring and assessment of trends in groundwater and surface water.

The EIS has committed to all of the above mitigation measures. I recommend that in the case of the haul road culvert crossings, monitoring of fish passage across the crossings is implemented under a range of flow conditions to demonstrate that the fish community at the site is able to traverse the crossings, given the predicted afflux. I further recommend that monitoring under the SMP includes an evaluation of entrapment and mortality of aquatic fauna in subsided creek and floodplain habitats. Where entrapment as a result of subsidence is leading to aquatic fauna mortalities (including from pumping out of ponding), management measures should be employed under the SMP to minimise this impact and to meet the general environmental duty obligations under the EP Act. I also recommend that the GDEMMP includes monitoring of Wetland 9, as a minimum to confirm the EIS conclusions in relation to GDE status of this wetland.

Additionally, I recommend that the following conditions, C21 to C32, D20 to D22, G1 to G6, G20 to G26 in Section 7.1 are included in an amended EA for the project. Further conditions for MSES and MNES are discussed below.

6.9.3 Summary of the project's relevant impacts

The construction, operation (Stages 1-4), and decommissioning of the project would have the potential to cause the following significant impacts on MSES listed in Table 4.

Table 4. Summary of MSES impacts

Prescribed environmental matters		Total impact (ha)
Regulated vegetation		
Endangered RE	RE 11.3.1	4.8
	RE 11.4.8	3.3
Of Concern RE	RE 11.3.2	13.9
	RE 11.3.4	4.9

RE intersecting an area shown as a wetland on the vegetation management wetlands map	RE 11.5.17	4.7
An area of essential habitat on the essential habitat map for vulnerable wildlife	Prescribed REs associated with the ornamental snake	- [see under the Protected wildlife habitat category]
REs occurring within the defined distance from the defining banks of a relevant watercourse	RE 11.3.1	8.0
	RE 11.3.25	6.1
Protected wildlife habitat*		
Ornamental snake, *Denisonia maculata*, V		211.4
Squatter pigeon (southern), *Geophaps scripta scripta*, V		15.8
Koala, *Phascolarctos cinereus*, E		109.2
Greater glider, (southern and central) *Petauroides volans*		100.6

* The four species that are MSES Protected wildlife habitat are also MNES listed threatened species. See the assessment of MNES in section 6.18.

6.9.3.1 Proposed offsets

MSES offsets were assessed under the Queensland environmental offsets framework. The EO Act effectively restricts the state from imposing an offset condition if the same, or substantially the same, impact has been assessed under the EPBC Act. As the EIS for the project was accredited under the Bilateral Agreement, this section (s.15) of the EO Act applies.

Proposed MNES offsets for the Brigalow TEC and Poplar Box TEC partially acquit the impacts to these vegetation communities. Additional areas of brigalow that do not meet Brigalow TEC thresholds have been assessed to meet MSES thresholds for endangered regulated vegetation RE 11.3.1 and RE 11.4.8. Similarly, 13.9ha of RE 11.3.2, an of concern regulated vegetation MSES, does not meet the Poplar Box TEC thresholds.

Significant impacts to protected wildlife habitat MSES for ornamental snake, squatter pigeon, koala, and greater glider could be taken to offset impacts on the listed threatened species MNES. The EIS considered that a significant impact to the squatter pigeon was a cumulative impact to the existing MSES condition in the Lake Vermont Mine EA. However, I consider that the significant impact conclusions reached by the EIS should appropriately be offset as an MNES value. I have recommended conditions to meet this requirement in the MNES section 6.18 of this report.

Consequently, the offset conditions for the listed threatened species and communities MNES recommended in section 7.4 (Appendix C) of this report also address offsets for MSES (regulated vegetation and protected wildlife habitat) to the extent allowed by legislation.

An MNES Biodiversity Offsets Strategy for the project details the proposed offset site, offset outcomes, and quantifies significant impacts for MNES on the impact area, and the proposed conservation gains for staged offsets in the offset area. However, it does not explicitly address the additional impacts and offsets for MSES regulated vegetation, or for the squatter pigeon. The EIS provides figures and attachments for MSES authorised significant impact areas but does not provide equivalent figures detailing locations of the proposed offset areas.

I have recommended a condition for an updated MNES Biodiversity Offsets Strategy to address offsets for the squatter pigeon. I note that the proposed offset area likely has sufficient available habitat to acquit the MSES regulated vegetation offsets.

I recommend that conditions G9 to G19 in section 7.1, including a condition to address regulated vegetation offsets in an updated MNES Biodiversity Offsets Strategy and the Offset Area Management Plan, are applied to the amended EA for the project.

6.9.4 Biosecurity

The EIS adequately surveyed and describe the current distribution and abundance of pest animals, weeds, and disease vectors on the project site. It also adequately assessed the potential impacts the project's construction and

operation on the spread of pest animals, weed species and disease.

The terrestrial ecology assessment survey identified eight pest animal species listed as either a prohibited matter or a restricted matter under the *Biosecurity Act 2014.* No aquatic pest species were found. Of the thirty-five introduced flora species identified, seven are listed as restricted matters under the *Biosecurity Act 2014* and five are Weeds of National Significance. While a number of these species are also identified by the *Isaac Regional Council Biosecurity Plan 2020–2023*, this plan does not identify further pest species. Wildnet and Atlas of Living Australia records indicate that of the pest flora and fauna species identified on-site, only the red deer (two individuals sighted) appears to be at the edge of its distribution. Mosquitos, rats, mice and other animals prescribed under a regulation and identified as designated pests under the *Queensland Public Health Act 2005,* have the potential to act as vectors for disease.

The EIS identifies that introduced pest species are the cause of several EPBC Act 'Threatening Processes.' The project has potential to spread weeds via the movement of plant and equipment and by damaging or removing site vegetation that would otherwise provide competition for introduced weeds. Changes to land conditions, particularly subsidence-induced water ponding, may increase habitat suitability for the known presence of feral pigs, for aquatic weeds (only if introduced to the site) and for mosquitos.

A Pest and Weed Management Plan is proposed to enact identified mitigations and monitoring expectations. This includes: waste storage to minimise scavenging by pest species; minimising soil disturbance and undertaking revegetation progressively to minimise soil exposure; having trained site personnel to complete weed inspections and undertake weed treatment. The Lake Vermont Mine Pest and Weed Management Plan will be expanded and updated to ensure consistency with pest control strategies outlined by the Department of Agriculture and Fisheries and the *Isaac Regional Council Biosecurity Plan 2020–2023*. The EIS notes that the existing and post-subsidence landscape both contain substantial gilgai and temporary ponding areas which are considered comparable mosquito habitat. The EIS proposes that surveillance will continue and that management measures will be implemented in accordance with Queensland Health guidelines to prevent the spread of mosquito-borne disease on-site and to address infestation should it occur. The EIS does not specifically address pest fauna risks identified in the EIS such as the increase in potential feral pig habitat and risk to the expansion of red deer occupation. This will need to be considered by the proponent as part of their General Biosecurity Obligation under the *Biosecurity Act 2014* when updating the Pest and Weed Management Plan.

6.10 Air quality

The EIS adequately described the existing air environment for the project and the surrounding region. The EIS also adequately identified all potential sources of air emissions from the project. As required by the final TOR, this included point and diffuse sources and fugitive emissions. The EIS provides a satisfactory emissions inventory and described the characteristics of contaminants or materials that would be released. The EIS used appropriate modelling to assess contaminant dispersal and dust deposition from the project in accordance with the final TOR. It also identified the relevant environmental values and air quality objectives for human health and wellbeing and health and biodiversity of ecosystems from Schedule 1 of the EP Regulation, which for the project relate to indicators for total suspended particles, PM_{10} and $PM_{2.5}$.

Air quality modelling was reported in the EIS for year 7 (representative of a high production year for the underground operation) and year 22 (representative of a period of overlap between the underground and open-cut operations) of the project mining operations. Upset conditions (being periods of excessive dust emissions) have also been considered in the modelling. The modelling was adequate for assessing potential impacts on human health and wellbeing and health and biodiversity of ecosystems in the surrounding area. The potential impacts were assessed, as required by the final TOR, in accordance with relevant guidelines, Environmental Protection (Air) Policy 2019 (EPP (AIR)), EP Regulation, and the National Environmental Protection (Ambient Air Quality) Measure. Also, as required by the final TOR, the EIS adequately considered the sensitivity and assimilative capacity of the receiving environment and the cumulative impacts. The results of the modelling determined compliance with the Environmental Protection (Air) Policy 2019 objectives for both modelled years at all assessed project sensitive receptors in isolation and cumulatively, using standard mitigation measures for the project and the existing operation.

The proposed measures to mitigate air quality impacts are targeted to managing potential impacts from particulates and will also provide benefits to mitigate potential impacts from other pollutants. These mitigation measures include:

- application of water to haul roads
- watering during handling activities
- machine and vehicle maintenance
- vegetation establishment on recontoured/rehabilitated areas
- watering of stockpiles, and

- sealing of the ROM haul road from the project to the existing CHPP.

A reduction in dust-generating activities may also be proactively applied when necessary, typically during periods when meteorological conditions promote an increase in dust generation.

The modelling suggests that the project air quality impacts are unlikely to exceed the proposed limits and are expected to comply with the objectives of the Environmental Protection Policy (EPP) (Air). The project will be subject to reporting obligations in conjunction with the existing Lake Vermont Mine.

While only reactive monitoring was proposed as part of the EIS, I consider continuous air quality monitoring to be more appropriate. I note that reactive monitoring at any sensitive receptor, resultant from a complaint, is unlikely to be able to provide a reliable indication of best practice environmental management and ongoing compliance with air quality objectives. A dedicated monitoring requirement would also provide the proponent with the opportunity to demonstrate they are not the source of any exceedance or the cause of any environmental nuisance or harm while also providing reassurance to the public in this complex airshed. I have also recommended a condition with the requirement to seal the ROM haul road, as proposed by the proponent, to minimise dust generation.

Flaring has been identified as a potential mitigation option within the EIS to address methane releases in waste mine gas, however minimal information on its application has been provided. I have recommended EA conditions to regulate flaring but these may be removed as part of the EA amendment if found to be not applicable.

To ensure these mitigation measures are enforceable, I recommend that air quality requirements are included in an amended EA for the project as per section 7.1 (B1 to B13) and (A14 to A16 for flaring).

6.10.1 Greenhouse gas emissions

The EIS adequately addressed the TOR with regard to greenhouse gas (GHG) emissions. The EIS provided adequate estimates of scope 1 and 2 emissions associated with the project inclusive of the Lake Vermont Mine. Scope 3 emissions were not a requirement of the project TOR from April 2020.

TOR requirements were developed in keeping with the expectations of the Australia Governments Safeguard Mechanism, as project proposed emissions exceed the 100,000t CO2-e reporting threshold. The proponent proactively worked with DESI to develop a project decarbonisation plan as part of the proponent's response to submissions.

The decarbonisation plan outlines the total GHG emissions over the mine's lifespan, describing the methodology for estimation and emissions from both open-cut and underground operations. The breakdown provides clarity on emission sources, facilitating assessment of the project's environmental impact and mitigation potential. The breakdown of the total life of mine emissions are follows:

Open-cut operation: 10.99Mt CO2-e

- Diesel combustion: 6.28Mt CO2-e
- Fugitive emissions: 4.71Mt CO2-e

Underground operation: 32.81Mt CO2-e

- Diesel combustion: 1.27Mt CO2-e
- Fugitive emissions: 31.54Mt CO2-e

While it remains unclear if emissions from open-cut operations have been updated with the latest emissions factor (i.e. 0.031t CO2-e/t ROM coal), I am satisfied with the estimate of GHG emissions meeting TOR criteria, considering that the emissions from open-cut operations only represent a small proportion (i.e., <10%) of the total GHG emissions over the life of the project.

Compliance with Safeguard Mechanism before 2030

In the decarbonisation plan (section 1 and 2.2), the proponent acknowledges the project's obligation to report emissions under the *National Greenhouse and Energy Reporting Act 2007* (NGER Act) and manage emissions in line with the Australian Government's reformed Safeguard Mechanism. Responding to my request in November 2023, the proponent provided a baseline for the proposed facility up to 2050. However, there is ambiguity regarding the inputs used to calculate the facility baseline. I note that the calculation of baseline must comply with the Safeguard Mechanism and the selection of facility-specific emissions intensity must follow the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Amendment (Production Variables Update) Rules 2023* (the NGER Amendment Rules 2023). Additionally, I note that the baseline for 2030-2050 will be indicative only, as the ratio between the industry average emissions intensity and the facility-specific value, which is required for calculating the baseline, remains undetermined.

Before 2030, mitigation options for the proposed facility are limited. The most significant emission reduction is expected to be achieved by combusting the pre-drainage gas and goaf gas from the underground operation. As a result, estimated emissions, even after abatement, will exceed the calculated baseline before 2030. Based on the proponent's estimate (Figure 4.1 of Appendix A3 of the EIS), the proposed facility will need to buy 0.2–0.6Mt of carbon credits per annum between 2024 and 2030 to ensure compliance with the Safeguard Mechanism. This demand appears significantly higher than the amount of Australian carbon credit units (ACCUs) that could be generated through the carbon sequestration projects on land owned by Lake Vermont, as summarised in Table 5.2 of Appendix A3. The proponent has not addressed how and where additional carbon credits will be sourced.

Mitigation potential post 2030

The revised decarbonisation plan presents two mitigation scenarios, with a base case focusing on pre-drainage and goaf gas management, and a future abatement case considering ventilation air methane (VAM) abatement, biodiesel substitution for diesel, and replacing grid electricity with renewable energy after 2030. The proponent described those emissions reduction measures, and quantified emissions expected to be abated for each of those measures.

From an adequacy standpoint, the revised decarbonisation plan satisfies the TOR criteria. However, from a technical perspective, the risk of some of those emissions reduction measures not being commercially viable by 2030 has not been adequately determined. Regenerative thermal oxidation (RTO) is a technology capable of oxidising VAM into lower emissions components and concurrently using the VAM as an energy source to run the RTO system, with any excess to potentially generate electricity. While the proponent expresses optimism regarding the commercial viability of RTOs in Queensland by 2030, I note that globally, only two commercial RTO plants operate with VAM. Safety concerns associated with connecting RTOs to active underground coal mines in Australia remain unaddressed. Additionally, RTOs pose technical and commercial challenges for wider deployment, as they require VAM concentrations exceeding 0.3% and entail significant capital investment. Similarly, the practicality of biodiesel as a mitigation approach post-2030 depends on market availability, as highlighted in a 2021 report commissioned by the Sustainable Shipping Initiative (SSI). Considering the Scope 3 emissions associated with biodiesel, the mitigation potential of substituting diesel with biodiesel may be overestimated in the decarbonisation plan.

Should these emissions reduction measures prove commercially unviable by 2030, and the baseline continues to decline, the proposed facility may need to procure more carbon credits to comply with the Safeguard Mechanism.

To ensure GHG mitigation measures are enforceable, I recommend that a GHG abatement plan and associated requirements are included in an amended EA for the project as per section 7.1 (B15 to B18).

6.11 Noise and vibration

The EIS adequately identified all potential sources of noise and vibration from the project. As required by the final TOR, this included low-frequency noise, cumulative effects, and airblast overpressure from blasting. The project noise and vibration assessment was prepared in consideration of: the Queensland Environmental Protection (Noise) Policy 2019 (EPP (Noise)); the *EIS Guideline–noise and vibration* (DESI 2020); the guideline *Noise and Vibration from Blasting* (DESI 2020); and *Application requirements for activities with noise impacts* (DESI 2021).

The EIS adequately identified health and wellbeing and sensitive ecosystems as environmental values of the acoustic environment that might be impacted by the project. The EIS also adequately identified 18 sensitive receptors. Of the receptors identified, modelling was undertaken for seven with the remainder excluded based on location or where existing agreements are in place to acknowledge adjacent mining noise impacts.

Noise monitoring was undertaken at three locations in proximity (50m – 75m) to sensitive receptors. Background noise levels were predominantly influenced by mine-related noise from nearby mining operations, natural sources (such as frogs, insects and birds) and farm related sources (such as machinery, livestock and dogs). When filtered to remove insect noise (considered a seasonal influence) the background noise level at all locations was <30dBA L_{90}.

Noise modelling was undertaken using the CONCAWE algorithm which is widely used and accepted and approved by DESI. The SoundPLAN program was used to incorporate terrain data of the project and predict noise levels under neutral and adverse meteorological conditions. Mining noise emissions from the project have been predicted for year 7 and year 22 of the project, as these are considered worst case scenarios for underground (year 7) and open-cut (year 22) operations.

The proposed noise limits for the project are consistent with the existing EA noise criteria for the Lake Vermont Mine. However, the proponent has proposed to increase the L_{A1} noise criteria by 5dB to achieve a 10dBA difference between the L_{A1} and L_{Aeq} limits. This would be in line with the EPP (Noise) acoustic quality objectives.

A more conservative limit of L_{Aeq} +7dBA was recommended by DESI in the public notification period however the

proponent responded with reluctance to introduce the complexity of having different noise limits for different areas of the mine. Due to satisfactory performance of the Lake Vermont Mine within existing noise limits, with no history of noise challenges or complaints, I agree to the 10bdBA increase. The modelling predicts no exceedances as a result of the project, and it is noted that the predicted noise levels at sensitive receivers are well below the proposed noise criteria.

The project is predicted to generate low-frequency noise. Low frequency noise levels were not assessed specifically as a coal mining activity operating in compliance with the proposed “A-weighted” noise limits would generally result in compliance with any low-frequency noise limits which may be imposed. The existing Lake Vermont Mine is not subject to low frequency noise limits. Maintaining consistency with the EA conditions applicable to the existing activity has operational advantages for enforcement purposes.

The noise modelling reported in the EIS was adequate for assessing potential noise and vibration impacts. Noise and vibration mitigation measures for the project will be in accordance with the management hierarchy for noise under s. 8 of EPP (Noise). Noise and vibration mitigation measures are not expected to be required for the project due to the distance to sensitive receptors (closest sensitive receptor is located 4.6km from project) and low modelled noise and blasting outputs predicted.

Mitigation and management measures for the project will consist of complaint management, monitoring and responding to noise exceedances with appropriate corrective actions.

The EIS adequately modelled the potential impacts due to vibration and airblast overpressure, which could result from blasting within the open pit. The project blasting assessment and airblast overpressure assessment both predicted compliance of the project with the proposed blasting limits consistent with the existing Lake Vermont Mine EA. A blast monitoring and compliance program is currently in operation for the existing Lake Vermont Mine (condition F4 of the existing EA) and is proposed to be extended to include the Meadowbrook site to monitor and mitigate the potential impacts of vibration and overpressure.

The project is close to several existing and proposed mining operations which have the potential to contribute to noise levels experienced at sensitive receptors. The EIS considered cumulative impacts and concluded that the project is not expected to significantly contribute to cumulative noise impacts to sensitive receptors.

To ensure that the mitigation measures and limits for noise and vibration (including blasting) are enforceable, I recommend that conditions (F1 to F4) in section 7.1 are included in an amended EA for the project.

6.12 Waste

The EIS adequately identified the main waste streams that would be produced by the project. Those waste streams comprise:

- waste rock –186M bank cubic metres per annum
- rejects – 17.7Mt over the life of the project (14.8Mt from underground and 2.8Mt from open-cut)
- mine-affected water – average ~1375ML/yr
- wastewater – from onsite toilets, washing facilities, and canteen <13ML plus 3t of sludge during construction annually (offsite disposal) and <14.6ML plus 10t of sludge during operations annually of treated effluent from onsite wastewater treatment plant (WWTP)
- plant and equipment waste – including regulated wastes such as tyres, batteries and oil. (refer table 15.4 of Chapter 15 Waste, for various quantities)
- general waste – 900t annually during construction, 1200t annually during operations, including food scraps and used packaging.

The Waste schedule of the current Lake Vermont Mine EA is proposed to be amended, given the EA authorises ERA 56 and 60, and the proponent proposes to bury general waste at the existing Lake Vermont void. The proposed waste conditions have been contemporised, including general conditioning for a waste management plan and conditioning for the types of wastes permitted to be disposed of.

The following subsections detail the proposed methods for the disposal of wastes and the mitigation measures to avoid or minimise impacts from waste disposal.

6.12.1 Waste rock

As much waste rock as possible must be deposited in the open pit. The EIS stated the operator of the mine would maximise in-pit disposal, with excess material to be placed in above-ground waste rock dumps. The EIS undertook adequate preliminary sampling and analysis of the composition of waste rock. More detailed sampling and analysis of waste rock will be undertaken as overburden removal and mining progresses.

The non-acid forming waste rock is expected to generate slightly alkaline to alkaline and low-salinity runoff and/or

seepage with low-salinity characteristics. Metals and metalloids have low solubility at the pH of leachate expected from bulk non-acid forming waste rock, and dissolved metal concentrations in surface runoff are expected to be low and unlikely to pose significant risk to the quality of surface waters and groundwaters. Interburden and overburden materials are sodic and may be susceptible to dispersion and erosion. The dispersive characteristics of the interburden and overburden materials may require treatment with gypsum in addition to topsoil cover.

Due to the presence of dispersive and easily erodible waste rock, the EIS assessed that the maximum slope of the waste rock dumps should be 14.5% and that benches on slopes and diversion drainage would also be needed to minimise erosion. A minimum depth of 0.2m of topsoil over the surface with progressive revegetation has also been identified by the EIS.

The EIS adequately addresses impacts from waste rock and their management strategies. These have been further discussed in sections 6.7 Water, 6.6 Rehabilitation, and 6.5 Land.

6.12.2 Rejects

Coal and coal reject materials have been determined to have neutral to slightly alkaline pH values with low-salinity leachate values. All samples analysed had a negative net acid producing potential. Metal and metalloid concentrations in project coal and coal reject materials were also low, being below the National Environmental Protection Measure guideline values, with the minor exception of molybdenum in one sample at 2.2mg/kg (NEPM limit of 2mg/kg).

The existing Lake Vermont Mine co-disposal system (i.e. the simultaneous disposal of coarse and fine reject material) will be used to manage coal reject material from the project, 17.7Mt, in addition to reject material from the existing Lake Vermont Mine. Prior to reaching capacity, further approval will be sought to construct additional disposal dams adjacent to those already existing at Lake Vermont Mine. The current and future planned co-disposal dams at Lake Vermont Mine are managed as regulated structures. The co-disposal areas will be rehabilitated as a landform that sheds water, is topsoiled, shaped and profiled and revegetated. Sections 6.5.3 Soils, and 6.6 Rehabilitation provide further information.

The Lake Vermont Mine South Pit final void, a designated NUMA, will become available for rejects disposal in 2039 and will provide ample capacity for the remainder of the mine life. The area and location of residual voids in the final landform will remain consistent with that authorised in past versions of the EA (2015) and the EA amendment application for the Vermont North mining extension in 2015, with the EIS advising they are to be safe, stable and non-polluting.

6.12.3 Mine affected water

The proposed management of mine affected water is addressed in section 6.7 Water, of this report.

6.12.4 Wastewater and treated effluent

During the construction phase, sewage will require off-site treatment and disposal. The operational phase will require a sewage treatment plant (STP) for onsite treatment and irrigation to designated effluent areas. Treated effluent and sludge by-products will be routinely transported to existing sewage treatment facilities by suitably licensed contractors for processing and disposal. A package STP will be installed with supporting operational processes to support effluent management during the project's operational phase.

The STP will adequately cater for the maximum project workforce 200 workers at a time, expected to generate a total maximum of 40,000L of wastewater per day. The STP will have secondary treatment capability and the ability to produce Class C effluent for irrigation. Wet weather storage of 120m^3 will be located adjacent to the plant to ensure irrigation of saturated soil is avoided during wet weather periods.

MEDLI ML software was used to model the proposed irrigation of treated effluent to land. Modelling determined that the effluent could be irrigated at a maximum of 1.1mm/day over a proposed area of 3.6ha. This rate will prevent impacts from nutrient leaching, runoff or overflow. Release limits were derived from *Eligibility Criteria and Standard Conditions for Sewage Treatment Works (ERA 63)–Version 2* (DEHP, 2016) and the Australian Standard: *On-site domestic wastewater management* (AS/NZ 1547:2012a). A site-based irrigation management plan will be developed and implemented to manage risks associated with effluent irrigation (proposed condition E8). I have recommended conditions with water quality criteria for the discharge of treated effluent to land. I further recommend, based on MEDLI modelling inputs, that the contaminant release limits to land in the EA are amended to replace the total residual chlorine limit of 1mg/L with total chlorine limit of 5mg/L. I also recommended that the monitoring frequency for contaminant release limits to land be increased to 'monthly' as the proposed frequency of 'quarterly' is considered insufficient to appropriately monitor the performance of the on-site proposed 40kL/day sewage treatment plant and associated irrigation scheme. In addition, I recommend an EA condition that prevents the Class C effluent from the onsite sewage treatment plant being used for dust suppression.

I recommend that proposed conditions E1 to E8 inclusive in section 7.1 are included in an amended EA for the project to ensure the proper management of sewage.

6.12.5 Plant and equipment waste

Mining operations would produce a variety of wastes from the maintenance of plant and equipment, including vehicles. Some of those wastes (such as tyres, batteries, and used oil) are regulated wastes listed in Schedule 9 of the EP Regulation.

The proposed updated Mine Waste Management Plan will identify waste streams, monitor the quantities of waste generated, identify measures to minimise waste generation and ensure that waste is correctly stored, handled and disposed of. The most significant regulated waste stream generated by the project would be waste oil, which would be transported off-site by a regulated waste transporter to an authorised regulated waste facility for recycling. It is feasible for the project area to be serviced by authorised regulated waste transporters, as demonstrated by the existing servicing of the adjacent Lake Vermont Mine.

6.12.6 General waste

Non-recyclable general waste, including putrescible and non-recyclable/refurbishable wastes, will be collected in bins for transfer from the project MIA to the Lake Vermont Mine. This waste will be disposed of in a residual void at the Lake Vermont Mine, in accordance with existing approvals.

The EIS infers there is a waste management plan for the existing Lake Vermont Mine and that general waste produced by the project will be managed on-site (at the existing Lake Vermont Mine) under existing approvals. As part of the proposed EA amendment process, the proponent should provide clarification by specifying the existing approvals that apply to waste disposal and providing a copy of the existing waste management plan to assist in appropriate conditioning for the project.

The existing waste management plan from Lake Vermont should be updated to capture the Meadowbrook project, and should meet the requirements of the proposed EA conditions, such as detailing the waste type, amount and disposal. It is noted that only non-recyclable general waste is proposed to be disposed of in the void at the Lake Vermont mine with recyclable general waste to be recycled off-site (section 15.7.1 of the EIS). Recyclable waste, including paper, carboard, metal cans and some plastics, will be segregated from general waste on-site and placed into appropriate storage containers for transport. Collection and transport will be carried out by a licensed waste contractor for off-site recycling at Dysart or Moranbah waste management facilities.

To ensure disposal of project waste at the Lake Vermont Mine is contemporary, and that it is clear which types of wastes can be disposed of on-site, I recommend that waste management requirements are included in an amended EA for the project as per section 7.1 (H1 to H8).

6.13 Hazards and safety

The EIS adequately addressed the TOR regarding hazards and safety. Matters addressed in the EIS included:

- identification of potential hazards, particularly those that might impact on human health and safety
- hazard analysis and risk assessment in accordance with relevant standards and guidelines
- hazards and risks associated with climate change
- extreme weather and flooding, including events with at least a 1% annual exceedance probability
- natural disasters, such as bush fires
- seismic events
- factors that might promote the breeding of pest animals and disease vectors
- storage, transportation and use of hazardous materials, including explosives.

The EIS identified and assessed 60 unique risks. No Class IV (very high) risks were identified. Six Class III (high) risks were identified as follows:

- Safety: increased risk of motor vehicle incidents
- Operational: OHS hazards
- Hazardous materials: storage and use of explosives
- Land disturbance: clearing, topsoil removal and earthworks
- Air quality: dust impacts to sensitive receptors
- Impacts on fauna (wildlife interactions).

The EIS proposed adequate measures to address hazards and safety, including:

- reducing the risk of land contamination from project activities through design and construction of the

facilities and post-mining rehabilitation
- storing of waste hydrocarbons and miscellaneous chemicals in separate sealed and bunded areas to prevent soil contamination
- handling of waste hydrocarbons and miscellaneous chemicals in accordance with standard operating procedures to minimise potential for spillage and leakage
- training of key staff in spills prevention and clean up
- provision of oil spill clean-up kits at strategic locations as part of site emergency planning
- directing workshop and truck wash-down area contaminants to an oil separator and sump for containment and subsequent treatment or appropriate disposal
- undertaking abrasive blasting work in ways that prevent overspray from escaping the area
- using screens, enclosures, and/or an exclusion zone around the work area
- controlling fine coal material using engineering controls, such as the use of water sprays, machine and vehicle maintenance, vegetation establishment, and sealing the ROM haul road
- developing a detailed standard for emergency preparedness and response
- developing an Emergency Response Management Incident Plan addressing major emergencies and incidents that could impact upon surrounding land uses. This would include reference to disaster management techniques and the following preparedness measures:
  - emergency response plans
  - first response and mine rescue plan
  - risk assessments
  - detailed evacuation and site access plans
  - emergency drills and responses
  - fire management.

The EIS review by Queensland Fire and Emergency Services (QFES) recommended that the risk assessment is to be undertaken in accordance with relevant standards in reference to the *Queensland Emergency Risk Management Framework* (QFES, 2023), the *State Heatwave Risk Assessment* (QFES, 2019), the *Natural Hazard Risk and Resilience* spatial layer (DSDI, 2023), the *Special Climate Statements* (BoM, 2006–2023), and the *Changes to Fire Weather in Queensland* report (BoM, 2019). Although the EIS did not incorporate such standards, the proponent has committed to consult with the QFES to update the Bushfire management plan prior to each bushfire season.

Upon completion of further risk assessment and consultation, I recommend that hazards and safety risk management strategies and mitigations are integrated into relevant management plans.

6.14 Cultural heritage

6.14.1 Indigenous cultural heritage

The EIS adequately addressed the TOR with respect to Indigenous cultural heritage. A new Cultural Heritage Management Plan is not needed for the project as an existing agreement has been in place since 5 March 2007 with the Barada Barna people, which triggered exemption under s. 86, of the *Aboriginal Cultural Heritage Act 2003*. As part of this agreement, a Cultural Heritage Management Plan was created for the “life of the Vermont Coal Project” and remains valid with the Barada Barna people entity (updated circa 2016). This Cultural Heritage Management Plan extends across all Bowen Basin Coal tenements relevant to the Lake Vermont Mine (inclusive of the project site).

Cultural heritage surveys were conducted on the lease areas by ‘Winnaa Pty Ltd’ (the nominated cultural heritage body for the Barada Barna people) as part of the cultural heritage investigation and management agreement. The surveys identified several scar trees within the project area. The proponent has a commitment within the Cultural Heritage Management Plan to engage the Barada Barna People on the salvage of any potentially impacted scar trees, and other artefacts that may be identified, prior to commencing any planned ground disturbance activities.

6.14.2 Non-Indigenous cultural heritage

A search of the Queensland Heritage Register (QHR) found no listing of any heritage places within the project area.

Field surveys undertaken for the EIS found eight places of potential non-Indigenous cultural heritage significance in the project area and the immediate surrounds. Assessment of these places in accordance with *The Burra Charter of Australia International Council on Monuments and Sites* and the *Queensland Heritage Act 1992* determined that the places do not meet the threshold criteria for local heritage significance.

While no places of non-Indigenous cultural heritage significance were identified, there is still the potential for

unidentified sub-surface deposits to exist across the area. If any places or items of potential historical or archaeological significance are uncovered during construction, the EIS proposes that the following 'stop works' procedures should be undertaken:

- work would cease and the site would be secured (bunting, barriers or temporary fences would be erected as a buffer around the find)
- the identified material or site would not be removed or disturbed any further
- the find would be reported directly to DESI in accordance with sections 88–90 of the *Queensland Heritage Act 1992* by a site supervisor, manager, or cultural heritage specialist.

Site staff would be told how to identify historical cultural heritage through a cultural heritage induction factsheet or similar document, which would be provided to them during site induction. This document would be prepared and reviewed by a qualified heritage specialist, and would include the following content:

- familiarisation material for work crews, so that they are aware of what constitutes a cultural heritage find
- clear instructions on what to do if any material is found.

I consider that the proposed approaches and proponent commitments adequately address potential impacts to cultural heritage matters for the project.

6.15 Social

The EIS included a social impact assessment (SIA) for the project that was consistent with the requirements of the *Strong and Sustainable Resource Communities Act 2017* (SSRC Act) and the Coordinator-General's SIA guideline (DSDMIP 2018). The SIA was developed in consultation with the Office of the Coordinator-General, Department of State Development and Infrastructure.

The Coordinator-General has undertaken an evaluation of the social impacts of the project, which is available at: Social impact assessments for resource projects | State Development and Infrastructure.

As part of the evaluation, the Coordinator-General decided to state conditions under section 11 of the SSRC Act. Further, the Coordinator-General decided, under section 12 of the SSRC Act, to nominate the project as a large resource project for which the 100 per cent fly-in, fly-out (FIFO) prohibition and anti-discrimination provisions of the SSRC Act apply to the project's construction workforce. These decisions have been considered in the Coordinator-General's evaluation of the project.

The SIA has adequately addressed the impacts, and provided mitigation measures, to address the five key matters as defined by the SIA Guideline:

- community and stakeholder engagement
- workforce management
- housing and accommodation
- local business and industry procurement
- health and community wellbeing.

The SIA included a social impact management plan (SIMP) with management measures to mitigate the impacts and enhance the potential benefits of the project, including cumulative social impacts and benefits. The SIMP includes timeframes for implementation of management measures, key performance indicators, roles and responsibilities, stakeholders and potential partnerships. The SIMP establishes a requirement to regularly review the actual social impacts and the effectiveness of mitigation measures throughout the project lifecycle to ensure management measures continue to be effective, and if the stated outcomes are not achieved the SIMP would be amended to appropriately mitigate impacts.

The Coordinator General has stated:

- A condition that the SIMP be updated and submitted to the Coordinator-General for approval three months prior to the commencement of construction.
- A condition that a Social Impact Management Report be submitted annually for each year of construction and for the first five years of operation, and conditioned that a SIMP be prepared for the closure of the mine.

The SIA has adequately established a consultation and engagement framework and has engaged with a wide range of stakeholders that are representative of the community and their interests.

The proponent has committed to ongoing engagement with stakeholders, managed through the Engagement Action Plan, across construction, operation and rehabilitation phases.

6.15.1 Key Matters

The Lake Vermont Meadowbrook project is a continuation of the existing Lake Vermont Mine. It is the intention of the proponent to prioritise retraining and promote the transition of workers from the downsizing open-cut operations to the underground operation.

The SIA adequately addressed the intended workforce profile with respect to the estimated proportion of local and FIFO workers. The SIA indicates that a challenge for the project is the scarcity of available workers in Dysart that are skilled in underground mining, however the Local Recruitment Strategy has set aspirational targets of employing 5% of construction workers and 10 per cent of operational workers who reside in, or relocate to, Dysart. The SIA has also set targets for employment of women and Aboriginal and Torres Strait Islander people.

The SIA has adequately identified the proposed housing and accommodation strategies for both the construction and operational workforce. Due to the specialist, temporary and predominantly non-residential nature of the construction workforce, the SIA proposes to utilise two public commercial workforce accommodation villages (WAV's) as the housing solution. The existing Lake Vermont Accommodation Village – owned by the proponent – does not have the capacity to house the proposed construction workforce. However, the SIA indicates that the two proposed commercial WAV's were also at capacity.

With respect to the operational workforce, the SIA has adequately characterised the existing housing situation in Dysart, and identified a lack of available housing stock (both rentals and to purchase) in Dysart, with a rental vacancy of 1.4%. Conversely, the SIA reports a very high proportion of unoccupied dwellings (39.3%), which are reported to be in poor condition and require maintenance and upgrade. The proponent has committed to the purchase or construction of 15 dwellings comprising a mix of housing types to provide options for local workers. The non-resident operational workforce will be housed in the Lake Vermont Accommodation Village, which the proponent has committed to refurbishing and expanding. The SIMP will require an updated Housing and Accommodation Plan, which will provide an updated assessment on WAV availability, housing availability and stock, timeframes for construction or purchase of the committed dwellings and measures to mitigate impacts on the local housing market.

To minimise impact on social housing, the proponent has committed to the provision of $80,000 per annum for 20 years to the Issac Affordable Housing Trust, who is a social housing provider.

The SIA has adequately identified strategies to enable local business and industry involvement, including identification of indigenous owned business, through all supply chains for the project. The proponent has committed to a Local Contact Policy and Strategy to advance local business and industry participation outcomes, and to limit impacts on local and regional labour draw as a result of the project.

The SIA has adequately identified the impacts and benefits on health and wellbeing factors, including from changes in resident and non-resident populations (and perceived levels of safety) and subsequent change in demand for local services such as medical and childcare services. The proponent has identified a range of measures to improve community relations including supporting local community initiatives through in-kind support or financial support. The proponent has committed to the provision of $30,000 per annum to Hinterland Community Care who provides services and transport for vulnerable residents.

Dysart has one childcare centre – Lady Gowrie Childcare Centre - which is currently at capacity. With the project local employment target of 10%, there is likely to be an increased demand for childcare. To mitigate this impact, the proponent has committed to the provision of $50,000 towards an expansion of the centre, and an annual contribution of $20,000 to support employment of an additional diploma qualified childcare worker.

The Coordinator-General is satisfied the potential social impacts of the project can be adequately managed and minimised and has conditioned the proponent that all proposed management measures and proponent commitments are captured in the SIMP and implemented accordingly. If the stated outcomes are not achieved, the SIMP is to be amended to appropriately mitigate impacts. The Coordinator-General requires as per section 7.3 that conditions 1 to 8 in Appendix B are applied to the project to address social impacts.

6.16 Economic

The EIS adequately assessed the potential adverse and beneficial economic impacts of the project on the local and regional area and the state. The project was assessed in accordance with the Coordinator-General's *Economic impact assessment guideline* (DSD 2017).

As required by the TOR, the EIS addressed each stage of the project, including construction, operation and decommissioning. It also adequately analysed the project's contribution to climate change-related economic and financial risks and benefits to Queensland, based on best practice assessment frameworks.

The EIS adequately considered carbon cost in the cost-benefit analysis for the project. The EIS used the spot price

for ACCUs to value the cost of emissions. The March 2022 spot price of ACCUs per tonne of carbon dioxide equivalent (t CO2-e) was used in the assessment and applied to annual incremental t CO2-e to provide the total value of additional emissions resulting from the project each year.

The EIS assessed the total economic impacts and benefits of the project, including the flow-on or indirect effects at the regional, state and national level across a 40-year modelling timeframe. The modelling timeframe incorporated the construction period, the combined operational life of the Lake Vermont Mining Complex (i.e. the project plus the existing Lake Vermont Mine), as well as the decommissioning/rehabilitation period. The project would pay royalties of approximately $1,334.5 million to the state over the 40 years, assuming the price of metallurgical coal averages:

- $131 per metric tonne of hard coking coal
- $96 per metric tonne of pulverised coal injection coal
- $52 per metric tonne of industrial coal.

Also, the project is expected to contribute income and company tax to the Australian Government and payroll tax revenues to the Queensland Government. The EIS stated that the adverse economic impacts from the project would be minimal.

The EIS adequately analysed the economic costs to agricultural activities on the land including any impacts to supply chains. The project is located on/under land that is used for cattle grazing. As the project is primarily an underground mine, impacts on grazing production in the region will be minimal. The proponent intends to allow grazing to continue within the project site in areas that are not impacted by surface infrastructure. The land use assessment also indicated that the rural zoned land adjacent to the project area is unlikely to be significantly affected and identified that the mapped 6ha of strategic cropping land on lease is isolated and unlikely to be economically viable as a result. Therefore, the project will not have a significant impact on the economics of the land at the site.

The positive impacts resulting from the project include direct employment opportunities for an average of 434 people annually within the mining industry during operation, additional employment opportunities for contractors during construction and operation of the project, and direct and indirect contributions to the regional, state and national economies through supplies and services to the project. I consider that the potential positive economic impacts are significant due to the value added to the regional economy over the life of the project.

6.17 Transport

The EIS adequately described the total transport task for the project, including supplies, products, and workforce inputs and outputs, during the construction, operational and decommissioning phases of the project. The EIS also adequately assessed the choices for modes of transport that would ensure efficiency and minimise impacts on the community.

The EIS assessed the potential impacts in accordance with the following relevant guidelines:

- *Transport—EIS information guideline* (DES 2020)
- *Guide to traffic impact assessment* (DTMR 2018), with traffic data in Department of Transport and Main Roads (TMR)-suitable formats
- *Australian Level Crossing Assessment Model* (ALCAM 2020)

The EIS provided sufficient information to allow an independent assessment of how existing transport infrastructure would be affected by the proposed modes of transport at the local and regional level (e.g. local roads and state-controlled roads).

The EIS also provided mitigation measures. Mitigation would be achieved by the following measures:

- monitoring workforce hours and driver behaviours, and implementing standard operating procedures
- ensuring that the transport of hazardous and dangerous goods complies with the Australian Dangerous Goods Code

It is acknowledged that the existing Lake Vermont Mine has a continuing contribution agreement for the maintenance of a section of the council-controlled Golden Mile Road west of the site access road. Road maintenance contributions to the Isaac Regional Council are anticipated to be reviewed periodically, although no fundamental changes are anticipated.

The traffic impact assessment identified that traffic would not increase above the 5% background intervention threshold, in keeping with the EIS's assertion that this is a continuation project. TMR advised as part of review comments that they are satisfied with this conclusion and also noted that a Road Use Management Plan would be of little value.

TMR sought further assessment to clarify construction impacts to road safety and efficiency. Specifically, this

related to rail crossing assessment which needs to demonstrate that construction traffic will not worsen the safety risk at any level crossing affected by the project and show how affected crossings were identified. In response, the proponent provided a Technical Note 01 (Appendix A6) certified by a Registered Professional Engineer of Queensland that demonstrated a negligible 0.1% peak yearly increase from an increase of 3 vehicles a day at the Peak Downs Mine Road Rail Level Crossing. While the Technical Note 01 advised this crossing to be the only one impacted, further details of the routes considered were not provided. This Technical Note 01 was provided to TMR who confirmed that they had not identified other crossings of concern and that they needed no further information about the assessed crossing.

The Technical Note 01, identified for the first time in the EIS that concrete would be sourced locally, either from Moranbah or an on-site concrete batching plant. Clarification from the proponent confirmed if an onsite concrete batching plant was utilised, it would be located within the nominated MIA and that the MIA has sufficient unallocated area to accommodate it without alteration of clearing limits. I recommend that, if the option of an on-site concrete batching plant progresses, an investigation of potential noise and air quality impacts of this activity should be undertaken, and any required amendments to the operational EA for the project are sought by the proponent.

6.18 Matters of national environmental significance

This section of the EIS assessment report assesses the following requirements:

- a description of the environment
- MNES controlling provisions
- feasible alternatives for the project
- summary of the relevant impacts
- measures to avoid, mitigate or manage impacts
- environmental offsets
- recommended conditions of approval.

In accordance with the Bilateral Agreement, this section addresses the matters protected under the EPBC Act and prescribed in r.9 of the EP Regulation. The Bilateral Agreement enables the EIS to meet the impact assessment requirements of both the EP Act and EPBC Act.

This information has been prepared for the Australian Minister for the Environment to help the Minister make an informed decision about the identified and potential impacts on MNES from the project, whether the project should proceed, and if so, relevant conditions of approval.

6.18.1 Description of the environment

The project is located in the northern Brigalow Belt bioregion and is within the Isaac Connors sub-catchment of the Fitzroy Basin. Five ephemeral creeks and their catchments are located within the site and the watercourses run west to east draining to the Isaac River. Remnant vegetation consists of brigalow woodlands, eucalypt woodlands and vegetation associated with the watercourses and gilgai/ wetlands in the northern half of the MLA. The southern half of the site is dominated by cleared grazing land predominantly mapped as non-remnant vegetation.

6.18.2 MNES controlling provisions

The project is comprised of one controlled action – to construct and operate a double-seam underground longwall coal mine, three open-cut pits (subsequently varied and now one open-cut pit) and associated infrastructure (EPBC 2019/8485). The relevant controlling provisions for the project are:

- sections 18 and 18A (Listed threatened species and communities)
- sections 20 and 20A (Listed migratory species)
- section 24D and 24E (A water resource, in relation to coal seam gas development and large coal mining development).

The project has the potential to significantly impact the following environmental values that are covered by the controlling provisions:

- Brigalow (*Acacia harpophylla* dominant and co-dominant) threatened ecological community (TEC) – endangered
- Poplar Box Grassy Woodland on Alluvial Plains TEC – endangered
- ornamental snake, (*Denisonia maculata)* – vulnerable
- squatter pigeon (southern), (*Geophaps scripta scripta)* – vulnerable
- koala, (*Phascolarctos cinereus)* (combined populations of QLD, NSW, and the Act) – endangered
- greater glider, (southern and central) (*Petauroides volans*) – endangered

6.18.3 Summary of feasible alternatives

This section provides a summary of feasible alternatives to the project identified in the assessment process. The likely impacts on MNES of the alternatives are outlined in sufficient detail to demonstrate why the preferred alternative was chosen.

The original proposal included three small open-cut pits, but this was reduced to one open-cut pit based on the potential adverse water quality impacts to environmental values of two of these pits located in the floodplain. The third open-cut pit is located largely out of the flood plain.

There is no feasible alternative to the general location of the project, and in particular the underground mine, which is dictated by the location of the target resource, those being the Vermont Lower Seam and the Lower Leichhardt Seam – and the proximity to the existing Lake Vermont Mine. The orientation of the underground longwall layout was chosen to minimise subsidence effects that may impact on watercourses.

The chosen longwall mining method would maintain the existing production capacity of the Lake Vermont Mine by reducing the magnitude of surface impacts from multiple open-cut pits. Additionally, less surface clearing is required due to the use of existing facilities such as existing roads/ haulage roads, the CHPP, rail loops, train load out and connections to water, power and telecommunications.

The preferred alternative for the design and operation of the project would, on balance, provide the optimum means of avoiding or mitigating the project's impacts on MNES.

6.18.4 Summary of the project's relevant impacts

The construction, operation, and decommissioning of the project would have the potential to cause the following significant impacts on MNES:

6.18.4.1 Listed threatened species and ecological communities

Brigalow (*Acacia harpophylla* dominant and co-dominant) TEC – Endangered

The Brigalow TEC within the study area is composed of RE 11.3.1, RE 11.4.8 and RE 11.4.9. It exists mostly in relatively small patches associated with One Mile Creek. A total of 154.5ha of the Brigalow TEC was recorded in the study area.

A total of 7.9ha of Brigalow TEC is proposed to be significantly impacted consisting of 7.6ha in stages 1-3. Of this total, an impact of 6.9ha is modelled to occur mainly along One Mile Creek in stage 2 of operations associated with residual ponding from the underground mining operations. The EIS appropriately concluded that areas subject to periodic ponding would likely result in the loss of that TEC habitat from the effects of waterlogging.

The significant impact assessment concluded that the loss of habitat is considered likely to adversely affect habitat critical to the survival of the ecological community. An offset is proposed to compensate for the significant impact.

Proposed avoidance and mitigation measures consist of: drainage works comprised of 'mitigation drains' and 'mitigation bunds'. The drains are intended to channel the water away from subsidence-induced ponding while the bunds act to prevent water egress into subsided areas. The construction of these areas would also result in additional clearing of vegetation.

Conclusion

I am satisfied that the EIS has adequately considered the potential impacts that the project could have on the Brigalow TEC. Project design has avoided direct clearing such as the temporary gas wells and temporary access tracks that have been located to avoid impacts to patches of the Brigalow TEC. I have recommended an offset condition and an MNES management plan to the Australian Minister for the Environment and Water.

Poplar Box Grassy Woodland on Alluvial Plains TEC – Endangered

The Poplar Box Grassy Woodland on Alluvial Plains TEC (Poplar Box TEC) within the study area is comprised of RE 11.3.2. It exists mostly in patches associated with Hughes Creek. A total of 656.6ha of the TEC was recorded in the study area.

Three patches of Poplar Box TEC totalling 44.4ha are proposed to be significantly impacted due to residual ponding from the stage 3 underground mining operations, surface works for subsidence ponding mitigation and an access track for drainage works. The impact would mainly occur around Boomerang Creek in the north of the project site.

The significant impact assessment concluded that the loss of habitat is considered likely to reduce the extent of the ecological community. An offset is proposed to compensate for the significant impact.

Proposed avoidance and mitigation measures consist of drainage works comprised of mitigation drains and mitigation bunds, weed control measures, and bushfire prevention.

Conclusion

I am satisfied that the EIS has adequately considered the potential impacts that the project could have on the Poplar Box TEC. Project design has largely avoided direct clearing to patches of the Poplar Box TEC by locating infrastructure such as ventilation shafts, ponding mitigation works, and a gas drainage access track outside the area of disturbance. I have recommended an offset condition and an MNES management plan to the Australian Minister for the Environment and Water.

Ornamental Snake (*Denisonia maculata)* – Vulnerable

Surveys detected the presence of the ornamental snake at three locations within the project site in Brigalow regrowth vegetation containing well developed gilgai. A total of 1,672ha of suitable habitat was recorded within the study area. A habitat amenity assessment based on field observation, soil mapping and high-resolution aerial imagery categorised high, medium, and low habitat types. The highest amenity habitat is located predominantly within the riparian areas associated with One Mile Creek and adjacent gilgai formations on the floodplain.

A total of 211.4ha of habitat comprised of 210.3ha of non-remnant vegetation and 1ha of remnant vegetation is proposed to be cleared for project infrastructure and a further 42.8ha would be significantly impacted by residual ponding.

The significant impact assessment concluded that the loss of high amenity habitat is considered likely to adversely affect habitat critical to the survival of the ornamental snake. An offset is proposed to compensate for the significant impact which includes the high, medium, and low habitat amenity categories.

Proposed avoidance and mitigation measures include locating project infrastructure to reduce direct disturbance, using fauna/ spotter catchers to monitor clearance procedures, reducing the potential for erosion and sedimentation by implementing control measures and the use of drainage mitigation measures to reduce the hydrological changes to snake habitat. Additionally, habitat features such as hollows and logs would be salvaged from clearing operations and placed strategically to provide habitat resources. Pest control measures to manage the occurrence and abundance of feral animals and exotic weeds would enhance habitat and be implemented in a Weed and Pest Management Plan.

The EIS stated that a further 557.5ha of suitable habitat impacted by subsidence would not decrease the habitat viability, rather it would potentially enhance existing gilgai habitat. The EIS contended that the additional area of land subject to residual ponding combined with an extended residence time, would provide favourable habitat for frogs which are the main prey of the snake, and therefore would provide additional habitat for the snake.

Submission comments from DESI sought further justification on what monitoring and management actions could be undertaken to ensure the condition of ornamental snake habitat would improve. The proponent provided a draft OSMP detailing how potential impacts would be monitored and proposed mitigation measures. For instance, the proposed drainage mitigation works are intended to minimise hydrological changes to gilgai habitats. In particular, the OSMP requires targets, performance indicators and corrective actions relating to subsidence impact management to ensure that there is no resultant loss of ornamental snake habitat. The OSMP states that monitoring and audits would be in accordance with the Subsidence Management Plan.

Conclusion

I am satisfied that the EIS has adequately considered the potential impacts that the project could have on the ornamental snake. I accept the conclusions reached in the EIS that the indirect impacts relating to residual ponding would be unlikely to significantly impact the ornamental snake. The altered habitat would likely result in additional areas of ponding and increased residence time. I note that the *Species Profile and Threats Database* (DCCEEW, 2024) recognises that the ornamental snake's preferred habitat is within, or close to, habitat that is favoured by its prey, frogs. This includes floodplains, land near waterbodies and along watercourses. The areas subject to residual ponding, 42.8ha, would therefore likely retain ecological function for the ornamental snake.

I have recommended an offset condition to the Australian Minister for the Environment and Water. I have also recommended an MNES management plan that includes a specific condition related to the monitoring of ornamental snake habitat, to ensure that there is no deleterious impact to the suitability of foraging habitat for the ornamental snake.

Squatter pigeon (southern), (*Geophaps scripta scripta)* – Vulnerable

The survey timing, methodology and effort met regulatory guideline standards. A total of 13 squatter pigeons were recorded in surveys and incidentally across the survey years 2019-2021. Squatter pigeon breeding and foraging habitat was mapped predominantly in the northern part of the project site associated with Boomerang Creek and

adjacent poplar box woodland.

A total of 15.8ha of remnant vegetation is proposed to be cleared for project infrastructure and a further 103.6ha would be subject to residual ponding. The assessment identified four classes of habitat amenity: breeding, climate-dependent breeding (relating to vegetation within 1km of the 14 natural wetlands where they sustain water in above average wet years), foraging, and dispersal.

The significant impact assessment concluded that the project is unlikely to result in a significant impact to the squatter pigeon. The EIS stated that the squatter pigeon population using the site was not an important population, and that it was part of the northern population that has connectivity over a large landscape for dispersal and breeding. The EIS also stated that the predicted subsidence would provide areas of intermittent ponding which may support the expansion of breeding habitat within the study area, through the provision of seasonal water sources.

Proposed avoidance and mitigation measures include monitoring and management of weeds in accordance with a Weed and Pest Management Plan, and bushfire prevention and management measures detailed in an Emergency Response Plan.

The EIS stated that offsets are not proposed for the significant impact to squatter pigeon associated with the project.

Conclusion

I consider that the significant impact conclusions reached by the EIS do not adequately compensate for the loss of breeding, foraging and dispersal habitat for the squatter pigeon. I note the existing approval condition for the Lake Vermont Mine to clear approximately 39ha of squatter pigeon habitat, and other approvals and proposals for large coal mines adjacent to the project site that will contribute to regional losses of habitat for the species.

To address this, I have recommended an offset condition for the significant impact to 15.8ha of squatter pigeon habitat to the Australian Minister for the Environment and Water. I have also recommended a condition for an MNES management plan that includes specific conditions related to the clearing of squatter pigeon habitat.

Koala (*Phascolarctos cinereus)* (combined populations of QLD, NSW, and the Act) – Vulnerable

Surveys across 2019 and 2021 detected six koalas in the study area, and predominantly within the riparian vegetation community of Boomerang Creek. The EIS stated that the riparian vegetation mapped as RE 11.3.25 along both Boomerang Creek and Phillips Creek played an important ecological role for the population. The EIS considered that the tree species have a higher leaf nutrient and moisture status on the more fertile soils. Also, that the canopy protection afforded by the gullies provided better thermal regulation, and that the major creek lines likely played an important dispersal and connectivity role.

The EPBC Act conservation status of the koala was uplisted from vulnerable to endangered in 2022. An updated Conservation Advice (DCCEEW, 2022) states that human activities including mining have resulted in habitat loss, fragmentation, and degradation. The conservation advice recognises that where habitat is used to meet essential life cycle requirements such as foraging, breeding and dispersal along corridors, it should constitute habitat critical to the survival of the species. The project was required to have regard to the current Conservation Advice and concluded that the koala population using the habitat on the project site was an important population.

A total of 109.2ha of koala habitat is proposed to be disturbed which includes 12.2ha of remnant vegetation to be cleared for project infrastructure and the open-cut pit, and a further 96.9ha would be significantly impacted by residual ponding and changed stream morphology. The residual ponding is predicted to inundate the area of foraging habitat for several months under flood conditions, thereby making it either unavailable or subject to senescence and eventual die-back of vegetation that is intolerant of waterlogging.

The significant impact assessment concluded that the loss of habitat is considered likely to adversely affect habitat critical to the survival of the koala. An offset is proposed to compensate for the significant impact.

Proposed avoidance and mitigation measures include vegetation clearance protocols, the use of fauna spotter/catchers, project site speed limits, minimising light spill via placement, configuration and direction, and pest control measures detailed in a Weed and Pest Management Plan. An Emergency Response Plan would detail bushfire prevention and management measures that will reduce the risk of bushfires. The subsidence ponding drainage management works are also stated to be effective measures to reduce hydrological changes to koala habitat.

Conclusion

I am satisfied that the EIS has adequately considered the potential impacts that the project could have on the koala. I note that the major creek lines in the north of the project provide the most suitable habitat for the koala and currently provide connectivity and dispersal opportunities to the Isaac River. I have recommended an offset condition, noting the location of the offset area is within the habitat area described by the EIS as having an

important ecological function. I have also recommended a condition for an MNES management plan that includes specific conditions related to the clearing of koala habitat, to the Australian Minister for the Environment and Water.

Greater glider (southern and central) (*Petauroides volans)* – Vulnerable

Seasonal surveys across the period of 2019 to 2021 detected greater gliders on 24 occasions within the riparian vegetation associated with Boomerang Creek and the surrounding poplar box woodlands. This large area of contiguous eucalyptus forest contains mature hollow-bearing trees and a diverse range of the glider's preferred food species.

The EPBC Act conservation status of the greater glider was uplisted from vulnerable to endangered in 2022. An updated Conservation Advice (DCCEEW, 2022) states that smaller or fragmented habitat patches connected to larger patches of habitat are considered habitat critical to the survival of the species. Additionally, all populations of the greater glider (southern and central) are considered important populations. Greater gliders are known to be particularly sensitive to disturbance such as tree removal and habitat fragmentation (DCCEEW, 2022). The project was required to have regard to the current Conservation Advice.

A total of 100.6ha of habitat is proposed to be cleared, comprised of 11.9ha of remnant vegetation for project infrastructure and a further 88.7ha would be significantly impacted by residual ponding and changes to stream morphology. The residual ponding is predicted to inundate the area of foraging habitat for several months under flood conditions, thereby making it either unavailable or subject to senescence and eventual die-back of vegetation that is intolerant of waterlogging.

The significant impact assessment concluded that the loss of habitat is considered likely to adversely affect habitat critical to the survival of the greater glider. An offset is proposed to compensate for the significant impact.

Proposed avoidance and mitigation measures include drainage management works to minimise hydrological changes to glider habitat, bushfire prevention and management measures, and lighting design measures to minimise light spill.

The indirect impacts from subsidence induced ponding would be monitored by an SMP. Additionally, the GDEMMP would monitor GDEs that coincide with riparian vegetation which is the preferred habitat of the greater glider. Disturbance thresholds for GDEs and the relevant listed threatened species, koala and greater glider, are proposed to be developed and completed after a minimum two-year baseline assessment. Once disturbance thresholds (related to reductions in habitat quality) are exceeded, the EIS proposes this would trigger the requirement for an offset.

Conclusion

I am satisfied that the EIS has adequately considered the potential impacts that the project could have on the greater glider. Mitigation measures include monitoring of the high habitat amenity riparian vegetation along Boomerang Creek, including in reaches that would be subject to changed stream morphology. I have recommended to the Australian Minister for the Environment and Water an offset condition and an MNES management plan that includes specific conditions related to the clearing of greater glider habitat, and for monitoring of GDE disturbance thresholds.

Australian painted snipe, *Rostratula australis* – Endangered

The Australian painted snipe is a cryptic wading bird that inhabits shallow freshwater wetlands. It is highly dispersive with movements responding to rainfall and availability of food. Prolonged and widespread declines in the estimated population have resulted in its conservation status of endangered under the EPBC Act.

The species was not recorded in surveys or incidentally, despite the presence of habitats on site such as gilgai wetlands, watercourses and farm dams. The EIS stated that the habitats were not suitable for the species as the wetlands lack a complex mosaic of shallow water, open mudflats and clumping vegetation. The species has been recorded at three adjacent mine sites to the project site but is considered to have a low likelihood of occurrence due to the low amenity habitat.

A total of 40.7ha of foraging habitat is proposed to be significantly impacted. The EIS stated that the 29.5ha of habitat impacted by residual ponding would likely improve and increase the area of suitable foraging habitat.

Conclusion

I agree with the EIS conclusion that the project is unlikely to significantly impact the species.

6.18.4.2 Listed migratory species

The EIS stated that 16 species of migratory birds listed under the EPBC Act have been identified in desktop surveys within 50km of the project site. An additional four species of migratory birds that have not been recorded

within 50km were assessed based on their inclusion within the project TOR.

Seasonal surveys across the period of 2019 to 2021 were consistent with Commonwealth guidance. Two migratory species were recorded within the project study area, the white-throated needletail and the Caspian tern.

Suitable habitat for migratory species that use wetland habitats, such as glossy ibis and Latham's snipe, was identified on site, including ephemeral gilgai wetlands, watercourses and farm dams. Remnant woodlands were considered suitable habitat for fork-tailed swift, black-faced monarch, satin flycatcher and the rufous fantail.

The white-throated needletail, *Hirundapus caudacutus*, is listed as vulnerable and migratory under the EPBC Act. It is a migratory species that is widespread in eastern Australia and almost exclusively aerial. The species was recorded in one survey on the project site. A total of 109.1ha of foraging habitat is proposed to be significantly impacted, consisting of direct clearing of 12.2ha of remnant vegetation and indirect clearing (via residual ponding) of 96.8ha of remnant vegetation. The EIS concluded that the proposed clearance of remnant vegetation would not fragment the habitat of this highly mobile species and that the project is unlikely to have a significant impact on the white-throated needletail.

The EIS recognised that proposed clearing would contribute to regional habitat losses for migratory birds from other large coal mining developments. However, the EIS did not consider that important habitat for migratory species exists on the site.

Conclusion

I agree with the EIS conclusion that the project is unlikely to significantly impact migratory species.

6.18.4.3 A water resource, in relation to coal seam gas development and large coal mining development

Groundwater dependent ecosystems

GDE surveys were conducted on MDL 429 and identified two types of GDEs as present: type 1 GDEs which are aquatic ecosystems that rely on the surface expression of groundwater, and type 2 GDEs which are terrestrial ecosystems that rely on the subsurface presence of groundwater. The surveys determined that type 1 GDEs are associated with the alluvial drainage features of Phillips Creek, Boomerang Creek and the Isaac River; and a type 2 GDE is associated with a HES wetland located outside of the project site approximately 2.4km east near the confluence of Boomerang Creek and Ripstone Creek.

Hydro-ecological conceptualisation of the GDE sites was undertaken based on the data from the GDE surveys at 17 GDE sites. Parameters for identifying GDEs included leaf water potential, soil moisture potential, leaf area index and stable isotope analysis, combined with normalised difference vegetation index imagery.

Two stygofauna surveys (one in autumn and one in spring of 2021) sampled nine bores representing the major habitats and aquifers and addressed TOR requirements. No stygofauna species of conservation significance under Queensland or Commonwealth legislation were detected. The assessment concluded that depauperate, sporadic and highly localised populations of stygofauna of low ecological value are present in the Tertiary sediments and alluvial areas but would not be significantly impacted.

There would be no direct clearing of the 17 surveyed GDE areas.

Groundwater drawdown

Modelled groundwater drawdown predicts impacts of > 20m in the Tertiary sediments beneath reaches of Boomerang Creek and Phillips Creek, and between 2m and 5m beneath HES Wetland 8, and HES Wetland 9.

The EIS stated that the risk of impact to GDEs would be low as the groundwater in the Tertiary and Permian coal seam aquifers does not support the function of any GDEs in the project site; and that the alluvial groundwater supporting type 1 GDEs is recharged by surface water flows.

However, I note that the GDE field surveys concluded that the potential impacts associated with groundwater drawdown to HES Wetland 8 are uncertain and that drawdown impacts could reduce the availability of groundwater extending into drier periods. I also note that drawdown of 5m is modelled for a small reach of the alluvium along Boomerang Creek. This is predicted to result in increased rates of groundwater drainage or drying. The EIS stated that the impacts on ecological function of the type 1 GDEs are likely to be insignificant as surface flows are the dominant driver of riparian function and that groundwater dependent species such as river red gum are resilient to periods of seasonal wetting and drying.

Any consequential impacts on water resources would be subject to the proposed monitoring measures to identify ecohydrological changes. I note that proposed corrective actions to reverse or halt impacts to GDEs, through direct water injection into the root zone or on the surface, are, to my knowledge, untested in the Bowen Basin. If these measures are unsuccessful, the EIS has recommended that disturbance thresholds for GDEs are developed as

part of the GDE two-year baseline assessment, that if triggered would lead to reporting and potential offset conditions.

Subsidence impacts

Modelled subsidence impacts would result in the formation of six main troughs in Boomerang Creek, and eight main troughs in One Mile Creek, reducing the channel velocity and sediment transport. The deeper stream beds at these locations are predicted to infill in large streamflow conditions. Localised erosion and scouring are proposed to be managed by bank protection measures such as rock armouring, revegetation, and the exclusion of stock. Impacts to water-dependent biota and ecosystems are proposed to be indirectly managed by annual monitoring inspections for subsidence impacts along the impacted sections of Boomerang Creek and One Mile Creek. This would include vegetation monitoring and fauna utilisation surveys.

Longwall mining would result in a subsided landform with surface water flowing into these areas and leading to ponding. Approximately 214ha of land is predicted to be impacted by subsidence-induced ponding. The proposed mitigation measures include two mitigation drains intended to drain catchment runoff through the subsidence zone and two mitigation bunds intended to prevent ingress of floodwater from Phillips Creek towards One Mile Creek.

Subsidence-induced ponding areas are predicted to persist for several months post-flooding. A proposed mitigation measure is to pump water from the ponds into the pre-mining overland flow path. A water balance model predicted that pumping would reduce the overland flow captured in the depressions to 11% of the total runoff that would drain to the depressions. However, there is no specific information on the course of actions proposed to be undertaken in relation to pumping.

The EIS stated that the areas of land subject to residual ponding may provide additional resources for threatened species such as the squatter pigeon and ornamental snake. An OSMP has been provided to quantify the expected habitat gain for the ornamental snake via a monitoring program.

An SMP would monitor and report on the potential impacts to water resources including, but not limited to surface cracking, erosion, ponding, and changes to watercourse geomorphology and ecology. Proposed management measures include erosion repair such as bank stabilisation (soft material or rock armouring) and revegetation for ponding or channel erosion; drainage mitigation works; and the infilling, re-grading, and revegetation of surface cracking.

Surface flow impacts

The loss of catchment area is predicted to result in changed timing and magnitude of flows. The loss of catchment draining into One Mile Creek is modelled to be 9km^2 or 6.9% of the existing catchment. Minor runoff events in a downstream 4km reach of One Mile Creek are predicted to have minor ecological impacts on aquatic values. Larger floods are predicted to have only minimal impacts to downstream flood levels.

The construction of flood protection levees around the open-cut pit and MIA were subject to a Flood Impact Assessment that concluded minor increases in flood depth, and only marginally higher flood flow velocities in proximity to the flood protection levee. I note that the Flood Modelling Assessment Report appropriately considered climate change on peak flows in modelling scenarios representing the worst -case scenario. Flood velocities resulting from the project were concluded not to be a significant impact on the hydrological characteristics of water resources due to the relatively minor, localised, and limited duration of impacts.

Water quality impacts

Some areas of land subject to subsidence-induced ponding occur on sodic dispersive soils. Steeper slopes are at risk of tunnel and gully erosion and transported sediment loads in higher flow events may adversely impact aquatic biota. The EIS proposes that erosion control measures such as rapid revegetation with pasture species are undertaken to stabilise soils.

Subsidence-induced changes to stream and channel geometry may occur resulting in channel alteration, unstable banks and dieback of riparian vegetation. Monitoring within Boomerang Creek and One Mile Creek in accordance with a REMP would identify and describe adverse impacts to surface water environmental values, altered flows, and surface water quality.

MAW from the open-cut pit, MIA, sediments dams, ROM stockpile, and underground mine water would be managed through a closed system to prevent MAW being released to the environment. However, sediment dams are expected to overflow from 10th percentile wet conditions or greater. Modelled overflow volumes and maximum overflow salinity levels are predicted to have minimal impacts on downstream environmental values in these events.

An ESCP would be implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of stormwater. A WMP is proposed to provide for effective management of actual and potential environmental impacts resulting from the release of contaminants,

saline drainage and acid rock drainage.

The final rehabilitated pit landform has been designed to prevent groundwater inflows and to limit the catchment area flowing into the depression. The modelled maximum salinity of water in the rehabilitated pit is stated to be below the low-risk drinking water guideline for beef cattle.

Conclusion

The EIS assessment has determined that there would be no significant impact or risk to the GDEs from subsidence-induced ponding or groundwater drawdown. I am satisfied that the proponent has appropriately assessed the risks to water resources from changes to surface flows and water quality.

I note and support the proponent's proposed mitigation and monitoring measures to assess and validate predicted subsidence values, and groundwater drawdown impacts on water resources. This includes a draft GDEMMP that recommends two years of GDE monitoring data in order to develop appropriate triggers and assessment parameters, prior to commencement of construction. I also note and support the development of a GDE habitat quality monitoring program for each of the 14 proposed GDE monitoring areas. The GDEMMP provides protocols for adaptive management actions once thresholds have been triggered. I have recommended a number of specific GDEMMP conditions to ensure that EIS commitments and draft management plan requirements are in place.

However, where impacts from subsidence-induced residual ponding have been assessed to be significant for listed threatened species and ecological communities, offsets have been proposed that adequately recognise the loss of this threatened species habitat.

I also note the continuation of the existing groundwater monitoring program and the requirement for the proponent to provide an updated REMP to include additional sites to monitor potential impacts to GDEs. The REMP would provide triggers for action once any adverse changes to surface water quality and quantity are detected. The Water Management System would operate to effectively capture and re-use mine-affected water and sediment runoff for site demands or be transferred to the existing Lake Vermont Mine operation. The WMP would also incorporate groundwater quality trigger levels and limits, in addition to erosion and sediment control measures.

I consider the proposed mitigation measures of pumping overland flow, the use of drainage infrastructure, and adherence to the ESCP would adequately ameliorate adverse impacts associated with surface flow changes. I support the monitoring and management actions provided in a draft SMP.

Table 5. Summary of MNES significant impacts

Listed threatened species or TEC	EPBC Act status	Total impact (ha)
Brigalow (Acacia harpophylla dominant and co-dominant) TEC	Endangered	7.9
Poplar Box Grassy Woodland on Alluvial Plains TEC	Endangered	44.4
ornamental snake, *Denisonia maculata*	Vulnerable	211.4
squatter pigeon (southern), *Geophaps scripta scripta*	Vulnerable	15.8
koala, *Phascolarctos cinereus*	Endangered	109.2
greater glider, (southern and central) *Petauroides volans*	Endangered	100.6

6.18.5 Summary of avoidance and mitigation measures

The EIS proposed to implement the following measures to avoid or mitigate impacts on MNES:

- avoiding the mining of three open-cut mines has reduced the potential clearing of remnant vegetation and potential adverse impacts to downstream water quality
- avoiding the use of a permanent out-of-pit mine waste rock emplacement by progressively backfilling the open-cut mine void
- minimising the overall mine footprint by using existing infrastructure
- avoiding or minimising clearing of remnant vegetation by siting the MIA on the western boundary, and locating infrastructure and vehicle access routes in previously disturbed areas
- an Ornamental Snake Management Plan that details how potential impacts to ornamental snake habitat would be monitored and proposed mitigation measures
- modelled subsidence impacts resulting in residual ponding to water dependent environmental values

(including koala and greater glider habitat) has resulted in the proposed use of pumping, mitigation drains and bunds to drain the water away more quickly
- surface cracks from subsidence that do not naturally self-ameliorate are proposed to be rehabilitated via excavation and backfilling
- a Subsidence Management Plan will monitor subsidence impacts and propose mitigation measures for potential impacts to land, hydrology, flora and fauna
- a GDEMMP proposes to monitor relevant biophysical parameters of GDEs and develop triggers for corrective actions.

In addition, I have recommended a condition that a MNES Management Plan which includes specific species/ ecological community mitigation and management measures for the listed threatened species and ecological communities is in place prior to the commencement of the action.

6.18.6 Environmental Offsets

The significant impacts for stages 1-4 are listed in Table 6. Offset areas for stages 1-3 have been provided. Stage 4 offsets would require a separate approval.

Table 6. Significant impacts on MNES and proposed offsets

MNES	Significant impact (ha) Stage 1 – 3	Significant impact (ha) Stage 4	Offset for significant impact (ha) Stage 1 – 3
Brigalow (Acacia harpophylla dominant and co-dominant) TEC	7.6	0.3	23.0
Poplar Box Grassy Woodland on Alluvial Plains TEC	44.4	0	291.7
ornamental snake, *Denisonia maculata*	46.0	165.4	116.21
squatter pigeon (southern), *Geophaps scripta scripta*	6.5	9.3	TBC
koala, *Phascolarctos cinereus*	102.1	7.1	480
greater glider, (southern and central) *Petauroides volans*	93.58	7	365

6.18.6.1 MNES Biodiversity Offsets Strategy

An MNES Biodiversity Offsets Strategy (Offsets Strategy) details the proposed offset site, offset outcomes, and quantifies significant impacts for MNES on the impact area, and the proposed conservation gains for staged offsets in the offset area. The Offsets Strategy has determined the significant impacts across all four stages, but only addresses proposed offsets for stage 1 to stage 3 (the underground mine impacts). The impacts from stage 4 (the open-cut pit impacts) are proposed to be dealt with in a separate Biodiversity Offsets Strategy to be provided closer to the commencement time of stage 4 which is at year 20 of operation.

The Offsets Strategy has provided habitat quality survey data for the respective locations within the offset area intended to offset individual MNES. Twenty-four habitat quality plots were assessed in 2022 against 13 assessment units in accordance with the *Guide to determining terrestrial habitat quality* (DES 2020). Offset completion criteria have determined the starting habitat quality scores for the MNES and future habitat quality scores based on management measures that meets requirements of the *Guide to determining terrestrial habitat quality* (DES 2020).

6.18.6.2 Offset area

The proposed offset area is a land-based offset area of approximately 770ha located in the north-east corner of the Meadowbrook project site (Lot 102 on SP310393). The western and southern boundaries have been determined by the extent of the modelled limit of subsidence (20mm).

The offset area, and the values of the Meadowbrook project site generally, have been subject to extensive clearance, timber harvesting and sowing with Buffel grass in the past, and are currently used for grazing cattle. The area was described as containing degraded tracts of vegetation. The habitat quality assessments identified similar

scores for the RE patches on the offset area as those subject to clearing on the impact areas.

The offset area is proposed to acquit the impacts associated with stages 1-3. The staged land clearance would be subject to a staged offset approach.

The EIS stated that the offset area was chosen due to its potential to provide a substantial increase to the habitat, connectivity and other ecological values of the area. The offset area is intended to maintain west-east riparian corridors across this landscape associated with Boomerang Creek, Hughes Creek, One Mile Creek and Phillips Creek.

The offset area meets offset principles as it is situated close to the area of impact and contains the habitat attributes of the impacted MNES. The offset area is proposed to be secured via a declaration of an area of high nature conservation value under the *Vegetation Management Act 1999*.

6.18.6.3 Offset area management plan

The purpose of the Offset area management plan (OAMP) is to provide specific improvements in ecological habitat values for each matter impacted by the project. It addresses TOR requirements to provide information demonstrating how offsets (for stages 1 – 3) would compensate for significant impacts on the relevant MNES. The OAMP has adequately met TOR requirements including offset completion criteria, management actions, interim milestones, and monitoring. Interim five-yearly targets have been proposed for the two TECs and the four threatened species, and monitoring surveys would be undertaken by ecologists and reported on. Relevant EPBC Act threatened species survey guidelines would be used.

Proposed management actions appropriately address key threats to the listed threatened species and ecological communities as per conservation advices, recovery plans, and threat abatement plans.

Offset for Brigalow (Acacia harpophylla dominant and co-dominant) TEC

Brigalow TEC offsets are proposed for 7.6ha of significant impacts associated with stages 1-3. Field survey of the offset area included habitat scoring of the brigalow regrowth in four plots associated with two assessment units. A total of 23.0ha of brigalow in four locations is proposed to be offset with 83% of this area consisting of HVR (RE 11.4.8).

Proposed management actions in the defined Brigalow TEC offset area include the exclusion of fire. This would be an important goal as the majority of the existing brigalow is HVR that has been previously cleared by bulldozer and chain. The EIS states this regrowth will require at least 20 years of management in order to attain remnant status.

Offset for Poplar Box Grassy Woodland on Alluvial Plains TEC

Poplar Box TEC offsets are proposed for 44.4ha of significant impact associated with stage 3. Field survey of the offset area included habitat scoring of the remnant poplar box (RE 11.3.2) located in the Boomerang Creek floodplain. A total of 291.7ha of Poplar Box TEC in one location is proposed to be offset.

Offset for Ornamental snake, *Denisonia maculata*

Offsets are proposed for 46.0ha of significant impact to the ornamental snake associated with stage 1-3, of which 45.7ha is cleared non-remnant grazing land. A total of 116.21ha of ornamental snake habitat, of which 55.5ha is HVR, is proposed to be offset in six locations.

Offset for Squatter pigeon (southern), *Geophaps scripta scripta*

The EIS concluded that the direct clearing of approximately 15.8ha of foraging, breeding and dispersal habitat would be unlikely to result in a significant impact to the squatter pigeon. The EIS did not propose an offset for the significant impact to the squatter pigeon.

I do not agree with the EIS conclusion. I consider that the significant impact conclusions reached by the EIS do not adequately compensate for the direct clearing impacts to breeding, foraging and dispersal habitat. I note that the conservation advice for this species considers that current threats include ongoing vegetation clearance and fragmentation. I consider that the local population of the squatter pigeon would likely be subject to significant loss of habitat from the existing expansion of the Lake Vermont Mine and recent Commonwealth and State approvals for greenfield coal mines adjacent to the project site.

I agree with the conclusions reached in the EIS that the indirect impacts relating to residual ponding would not significantly impact the squatter pigeon. The altered habitat would likely result in additional areas of ponding and increased residence time. I note that the *Species Profile and Threats Database* (DCCEEW, 2024) recognises that preferred breeding and foraging habitat for the squatter pigeon is in close proximity to water resources.

I also note that suitable habitat (breeding and foraging) for the squatter pigeon appears to be available in the Offset Area.

I have recommended an offset condition and an MNES management plan to the Australian Minister for the Environment and Water. I have also recommended other conditions that clarify the extent of impact for stages 1-3 and the required staged offsets. This would require the proponent to confirm via site surveys, that the offset area contains suitable available habitat for the squatter pigeon.

Offset for Koala, *Phascolarctos cinereus*

Koala offsets are proposed for 102.1ha of significant impacts associated with stages 1-3. A total of 480.0ha of koala habitat in eight locations is proposed to be offset. The location of the offset is within the riparian habitat of Boomerang Creek and the adjacent floodplain Poplar Box TEC woodlands. The riparian vegetation associated with the creeks that traverse the offset area provide important dispersal opportunities for the koala. The risk of uncontrolled fire is proposed to be managed via controlled cattle grazing to reduce fuel loads.

Offset for Greater glider, (southern and central) *Petauroides volans*

Greater glider offsets are proposed for 93.6ha of significant impacts associated with stages 1-3 impacts. A total of 365.0ha of greater glider habitat in six locations is proposed to be offset. The location of the offset is within the riparian habitat of Boomerang Creek and the adjacent floodplain Poplar Box TEC woodlands. Poplar box is known for its ability to form hollows and a management action would be to thin the poplar box to encourage large trees to grow. The riparian vegetation associated with the creeks that traverse the offset area provide important dispersal opportunities for the greater glider.

7 Recommended conditions

Section 59(d) of the EP Act requires this report to recommend conditions on which any approval required for the project may be given. Approvals more broadly identified as being required for the project are detailed in Table 3.1.

The following state approvals administered through the EIS process are required for the project:

- EA under the EP Act
- PRCP schedule
- Social Impact Assessment consistent with the requirements of the *Strong and Sustainable Resource Communities Act 2017* (SSRC Act) and the Coordinator-General's SIA guideline (DSDMIP 2018)

The project also requires an approval for a controlled action under the EPBC Act from the Australian Government. The EIS process was accredited under the Bilateral Agreement for the assessment of impacts on the controlling provisions.

The following sections of this report discuss the conditions relevant to each of these approvals.

7.1 Environmental authority

DESI has developed model mining conditions that are used as the basis for mining EAs. Model mining conditions, site-specific requirements and contemporary amendments are proposed to be applied to the project as part of an amendment to the Lake Vermont Mine EA as shown in Appendix A.

7.2 PRCP schedule

The EIS included a proposed PRCP schedule for the project. As discussed in section 6.6 Rehabilitation, the proponent proposes to amend the Lake Vermont EA to include this project. As the project PRC plan will need to be developed as an amendment to the not yet approved Lake Vermont PRC plan, in order to avoid pre-empting this statutory process, a draft PRCP schedule has not been included in this Assessment Report.

7.3 Social impact assessment

Appendix B includes conditions stated by the Coordinator-General under section 11(2) of the SSRC Act to address social impacts. In accordance with section 11(3)(a) of the SSRC Act, these conditions are enforceable conditions under the SDPWO Act.

7.4 Australian Government approval

The Lake Vermont Meadowbrook Project is a controlled action requiring approval under the EPBC Act. The EIS adequately assessed the likelihood of occurrence of MNES, the project's relevant impacts, feasible alternatives to

the project, and the feasible mitigation measures. The conditions in Appendix C have been developed from the feasible mitigation measures, and are recommended to the Commonwealth Minister for the Environment to consider when deciding whether to grant an approval under the EPBC Act.

8 Suitability of the project

DESI has considered the Lake Vermont Meadowbrook Project final TOR, the submitted EIS, all submissions on the submitted EIS and the standard criteria. The detailed information provided in this EIS process on the project and its potential impacts on the identified environmental values, have been assessed by representatives of the Australian, state and local governments, industry, interest groups and members of the public through an open, public review process.

The proponent has engaged extensively and cooperatively to address and deliver the EIS. Minor outstanding points of contention have been addressed as part of the recommended EA conditions. The EIS adequately addresses the final TOR, and has presented a range of mitigation measures to avoid or minimise adverse environmental, social and economic impacts. In addition, I have undertaken an assessment of human rights impacts (see Appendix D) as required by the *Human Rights Act 2019* (HR Act), prior to finalising this report.

Provided that the recommendations of this EIS assessment report are fully implemented by the proponent and recommended conditions are applied by the relevant agencies to the necessary approvals, I have determined that the project is suitable to proceed.

9 Completion of the EIS process

In accordance with s. 60(1) of the Environmental Protection Act, the giving of this EIS assessment report to the proponent completes the EIS process for the Lake Vermont Meadowbrook Project.

This EIS assessment report is given to the proponent by the following delegate of the chief executive:

ORIGINAL SIGNED	29/4/2024
Signature	**Date**

Christopher Loveday
Director, Technical and Assessment Services
Department of Environment, Science and Innovation
Delegate of the chief executive
Environmental Protection Act 1994

Enquiries: EIS Coordinator
13QGOV (13 74 68)
Email: eis@des.qld.gov.au

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Appendix A—Recommended conditions for the environmental authority

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.

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	Water
Schedule K	Enhanced Releases
Schedule D	Groundwater
Schedule E	Sewage Treatment
Schedule F	Acoustic
Schedule G	Land
Schedule H	Waste
Schedule I	Regulated Structures
Schedule J	Watercourse Diversions

Definitions

Attachment 1: Authorised Disturbance Footprint (Lake Vermont Coal Mine)

Attachment 2: Authorised Disturbance Footprint (Meadowbrook Project)

Attachment 3: Groundwater Bore Monitoring Locations (Lake Vermont Coal Mine)

Attachment 4: Groundwater Bore Monitoring Locations (Meadowbrook Project)

Attachment 5: MSES authorised significant impact areas

Attachment 6: Brigalow TEC authorised significant impact areas

Attachment 7: Poplar Box TEC authorised significant impact areas

Attachment 8: Ornamental Snake authorised significant impact areas

Attachment 9: Greater Glider authorised significant impact areas

Attachment 10: Koala authorised significant impact areas

Attachment 11: Identified GDE locations (Meadowbrook)

Attachment 12: Authorised areas of residual subsidence ponding

Schedule A: General

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	**Scope of approval** The environmental authority holder is approved for a maximum coal extraction rate of twelve (12) million tonnes per annum (Mtpa) of run-of-mine (ROM) coal in accordance with the conditions of this environmental authority.
A3	In carrying out the mining activity authorised by this environmental authority, the holder of this environmental authority must comply with **Attachment 1: Authorised Disturbance Footprint (Lake Vermont)** and **Attachment 2: Authorised Disturbance Footprint (Meadowbrook Project)** attached to this environmental authority.
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** Except where specified otherwise in another condition of this environmental authority, all monitoring records or reports required by this environmental authority must be kept for a period of not less than **five (5) years**.
A6	Monitoring and determinations required under any condition of this environmental authority must be conducted by an appropriately qualified person.
A7	**Management Plan, 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 mining activities which mirrors the content requirement of the 'Standard for Risk Management (ISO31000:2009)', or the latest edition of an Australian standard for risk management, to the extent relevant to environmental management, by **20 November 2015**.
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, or reasonably expected to be not in accordance with, the conditions of this environmental authority.
A11	Within **ten (10) business days** following the initial notification of any 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 activities including: (a) name, address and contact number for of the complainant; (b) time and date of complaint; (c) reasons for the compliant; (d) investigations undertaken; (e) conclusion formed; (f) actions taken to resolve the complaint; (g) any abatement measures implemented; and (h) person responsible for resolving the complaint.
A13	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 years of the amendment or change being made, unless a different period is specified in the amended standard or relevant legislation, or where the amendment or change relates specifically to regulated structures referred to in **conditions I1** and **I39**, the time specified in that condition; and (b) until compliance with the amended or changed standards, 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.
New A14	**Flaring** A total of <**number (numeric value**)> gas drainage flares are authorised to be constructed for mining activities on MLxxxxx (Meadowbrook Project).
New A15	The flares constructed for the purpose of gas drainage on MLxxxxx (Meadowbrook Project) must consider the expectations of the Greenhouse gas abatement plan and: (a) Be located in an area of pre-cleared disturbance; (b) Be located 100m away from any watercourse; (c) Not exceed an area of 80m x 20m for disturbance associated with each flare; and (d) consider the requirements of the Greenhouse Gas Abatement Plan required by **Condition B14**.
New A16	**Conditions for Flares** Flares must be designed to demonstrate compliance with the USEPA code of Federal Regulations 40 CFR 60.18 and CFR 63.11 and NSW EPA Protection of the Environment Operations (Clean Air) Regulation 2010 and must meet the following requirements: (a) The flare must be equipped with a flare tip design to provide good mixing with air, flame stability and achieve a minimum methane destruction efficiency of 98% under varied gas flow rate and meteorological conditions; (b) The flare must be equipped with a continuously burning pilot or other automatic ignition system that assures gas ignition and provides immediate notification of appropriate personnel when the ignition system ceases to function; (c) The flare must be designed to handle large fluctuations in both the volume and the chemical content of gases; and (d) Visible emissions must not be permitted for more than five minutes in any two-hour period.

Schedule B: Air

Schedule B: Air	
Condition number	**Condition**
New B1	**Dust Nuisance** The release of dust or particulate matter or both resulting from the mining activity must not cause an environmental nuisance, at any sensitive or commercial place.
New B2	**Dust and particulate matter monitoring** When requested by the administering authority, dust and particulate monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within **ten (10) business days** to the administering authority following the completion of monitoring.
B3	**Dust and Particulate Matter Monitoring** Monitoring conducted under condition B2 must be carried out at a place or places relevant to the potentially affected dust sensitive place as agreed upon with the administering authority. Dust and particulate matter must not exceed the following levels when measured at the agreed locations: The environmental authority holder shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust and particulate matter emissions generated by the mining activities do not cause exceedances of the following levels when measure at any sensitive or commercial place: (a) dust deposition of 120 milligrams per square metre per day, averaged over 1 month, when monitored in accordance with the most relevant 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**, for no more than 5 exceedances [Note 1] recorded each year, when monitored in accordance with the most recent version of either: (i) 'Australian Standards *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 Standards *AS3580.9.9 methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM_{10} low volume sampler – Gravimetric method'*; or (iii) Any alternative method of monitoring PM10 which may be permitted by the 'Air Quality Sampling Manual' as published from time to time by the administering authority.. (c) a concentration of total particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a **one (1) year averaging time**, when monitored in accordance with the most recent version of '*AS/NZ3580.9.3:2003 Methods for sampling and analysis of ambient air – Determination of suspended particulate*

	matter – Total suspended particulate matter (TSP) – High volume sampler gravimetric method'. *[Note 1]: The five exceedances for the PM_{10} standard were introduced to account for the impact of bushfires, dust storms and fuel reduction for fire management purposes. The five exceedances are in essence arbitrary in that the number was chose as it is difficult to determine exactly the number of times these events may happen in any one year. More than five exceedances as a result of one or more of these events would not be considered to be a breach of condition.*
New B4	The ROM haul road from the Meadowbrook project/MLAxxxxxx to the existing CHPP must be sealed with bitumen or an equivalent hard surface and cleaned as necessary to minimise the release of dust and particulate matter to the atmosphere.
New B5	**Air Emissions Management Plan** An Air Emissions Management Plan must be implemented by <insert appropriate date> for all stages of mining activities. The Air Emissions Management Plan must incorporate a program for continuous improvement for the management of dust and particulate matter resulting from the mining activities with respect to, but not limited to: (a) The collection of air quality and meteorological data at locations and using the monitoring methods described in **Table B1 Air quality limits and monitoring requirements** at all locations specified in **Table B2 Dust and Particulate Matter Monitoring Locations**; (b) A system to identify adverse meteorological conditions likely to produce elevated levels of dust including PM10 at a sensitive place or commercial place due to the mining activities; and (c) A dust and particulate matter control strategy which activates a timely implementation of management control actions.
New B6	The environmental authority holder must submit an EA amendment application to populate **Table B2 Dust and Particulate Matter Monitoring Locations** by <insert appropriate date>.
New B7	The Air Emissions Management Plan required by **condition B5** must be reviewed by **30 September** each calendar year by an appropriately qualified person and any recommendations incorporated into the Air Emissions Management Plan.
New B8	**Air quality monitoring** The environmental authority holder must conduct monitoring as per **Table B1 Ambient Air Quality Limits and Monitoring Requirements** at the locations in accordance with **Table B2 Dust and Particulate Matter Monitoring Locations**.
New B9	The monitoring in accordance with **condition B8** must commence by <insert appropriate date>.
New B10	Where monitoring identifies instances where a concentration specified in **condition B3** or **Table B1 Ambient Air Quality Limits and Monitoring Requirements** is exceeded at any sensitive place or commercial place, the environmental authority holder must report to the administering authority within **ten (10) business days**:

	(a) The air quality data at the sensitive place or commercial place; (b) A description of meteorological conditions recorded in accordance with **Table B1 Ambient Air Quality Limits and Monitoring Requirements** and **Table B2 Dust and Particulate Matter Monitoring Locations** occurring at the time; (c) The air quality data upwind of the mining activities (if known); (d) Measures taken to reduce dust generated by the mining activities; and (e) The contribution of the mining activities to the PM10 concentration at the sensitive or commercial place.
New B11	Air quality monitoring data must be made publicly available in real time online on the environmental authority holders website and updated on a fortnightly basis.
New B12	The format of the information to be made available in accordance with **condition B10** must be provided to the administering authority for approval by <insert appropriate date>.
New B13	The real-time, online publication of monitoring parameters in accordance with **condition B10** must commence by <insert appropriate date>.
New B14	**Odour** The release of noxious or offensive odour(s) or any other noxious or offensive airborne contaminant(s) resulting from the mining activity must not cause an environmental nuisance at any sensitive or commercial place.
New B15	**Greenhouse gas abatement plan** A greenhouse gas (GHG) abatement plan must be developed and implemented prior to the commencement of mining activities and for the duration of mining activities. The GHG abatement plan must include: a) an inventory of projected unmitigated annual Scope 1 and Scope 2 emissions for each GHG over the life of the project; and b) the intended objectives, measures and performance standards to avoid and mitigate GHG emissions to ensure consistency of project emissions with the latest version of the Queensland Climate Action Plan and relevant Queensland targets requirements; and c) a process for regularly reviewing, assessing, and implementing new technologies to identify opportunities to further reduce GHG emissions and energy use and progressively improve energy efficiency; and d) a program for annual monitoring, auditing and reporting on GHG emissions from all relevant activities and the success of measures to avoid and mitigate GHG emissions and achieve reduction targets.
New B16	The results of the program conducted under **condition B14** (d) must be made publicly available on the environmental authority holder's website, and any other website requested by the administering authority.
New B17	Every 2 years, the environmental authority holder must review the effectiveness of the GHG abatement plan required by **condition B14** and update the plan to address any matters identified in the review.

New B18	At all times, the environmental authority holder must comply with the plan required by **condition B14**, as updated from time to time.

Table A1 — Ambient Air Quality Limits and Monitoring Requirements

Monitoring location	Air Quality Indicator	Monitoring Frequency	Air Quality Limit	Monitoring Method
All sites as specified in Table B2	PM_{10}	Continuous	50µg/m^3(24-hr avg)	AS/NZS 3580.9.6:2015 AS/NZS3580.9.7:2009 AS3580.9.8:2022 AS358.9.9:2017 AS/NZS35801.9.11:2022
	TSP	Continuous	90µg/m^3	AS/NZS 3580.9.3:2015 *Any alternative method of monitoring TSP that may be permitted by the Air Quality Sampling Manual as published from time to time by the administering authority.*
	Dust deposition	Continuous	120mg/m^2/day	AS/NZS3580.10.1:2003
	Wind speed and direction, Temperature, Precipitation, Relative humidity	Continuous	N/A	AS/NZS 3850.14:2014

Table B2 - Dust and Particulate Matter Monitoring Locations

Monitoring Point	Receiving area	Latitude (decimal degree, GDA2020)	Longitude (decimal degree, GDA2020)	Monitoring description
TBC	TBC	TBC	TBC	PM_{10}, TSP, Dust Deposition, Met Station
TBC	TBC	TBC	TBC	TBC
TBC	TBC	TBC	TBC	TBC

Schedule C: Water

Schedule C: Water	
Condition number	**Condition**
C1	Contaminants that will, or have the potential to, cause environmental harm must not be released directly or indirectly to any waters as a result of the authorised mining activities, except as permitted under the conditions of this environmental authority.
C2	Unless otherwise permitted under Schedule K of this environmental authority, the release of mine affected water to waters must only occur from the release points specified in **Table C1** – **Mine Affected Water Release Points, Sources and Receiving Water**s and depicted in **Attachment 1: Authorised Disturbance Footprint** attached to this environmental authority.
C3	The release of mine affected water to internal water management infrastructure that is installed and operated in accordance with a water management plan that complies with **condition C27** to **C29** inclusive is permitted.

Table C1 – Mine Affected Water Release Points, Sources and Receiving Waters

Release Point (RP)	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)	Mine Affected Water Source and Location	Monitoring Point	Receiving Waters Description
RP1	-22.4305	148.4433	Mine Area	Pipe or drain	Unnamed gully and Isaac River
RP2	-22.4377	148.4482	Mine Area	Pipe or drain	Unnamed gully and Isaac River
RP3	-22.4621	148.4638	Mine Area	Pipe or drain	Unnamed gully and Isaac River
RP4	-22.4289	148.3886	Mixed Mine Water (pumped to release point)	Pipe or drain	Phillips Creek
RP5	-22.3905	148.4319	Mixed Mine Water (pumped to release point)	Pipe or drain	Phillips Creek
RP6	-22.4362	148.3845	Mixed Mine Water (pumped to release point)	Pipe or drain	Phillips Creek
RP7	-22.4436	148.3846	Mixed Mine Water (pumped to release point)	Pipe or drain	Phillips Creek
RP8	-22.3636	148.4502	Mixed Mine Water Release	Pipe or drain	Phillips Creek
RP9	-22.4125	148.4603	Mixed Mine Water Release	Pipe or drain	Unnamed gully and Isaac River
RP10	-22.3954	148.4097	Mixed Mine Water Release	Pipe or drain	Unnamed gully and Isaac River

C4	**Conditions C5, C9, C10, C11, C17, C19** and **C20** do not apply when releasing mine affected water under enhanced contaminated release conditions specified in Schedule K, at release points specified in **Condition K1**.
C5	The release of mine affected water to waters in accordance with **condition C2** must not exceed the release limits started in **Table C2 – Mine Affected Water Release Limits** when measured at the monitoring points specified in **Table C1 – Mine Affected Water Release Pints, Sources and Receiving Waters** for each quality characteristic.
C6	The release of mine affected water to waters from the release points must be monitored at the locations specified in **Table C1 Mine Affected Water Release Points, Sources and Receiving Water** for each quality characteristics and at the frequency specified in **Table C2 – Mine Affected Water Release Limits** and **Table C3 – Release Contaminant Trigger Investigation Levels, Potential Contaminants**. *Note: The administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response in the event condition C7 is contravened due to a temporary lack of safe or practicable access. The administering authority expects the environmental authority holder to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.*

Table C2 – Mine Affected Water Release Limits

Quality Characteristic	Release Limits	Monitoring Frequency	Comment
Electrical conductivity (µS/cm)	Release limits specified in Table C4 for variable flow criteria.	Daily during release (the first sample must be taken within 2 hours of commencement of release)	
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)	
Turbidity (NTU)	N/A	Daily during release [Note 1] (first sample within 2 hours of commencement of release)	Turbidity is required to assess ecosystems impacts and can provide instantaneous results.
Suspended Solids (mg/L)	1,500	Daily during release [Note 1] (first sample within 2 hours of commencement of release)	Suspended solids are required to measure the performance of sediment and erosion control measures.
Sulfate (mg/L)	Release limits specified in Table C4 for variable flow criteria	Daily during release (first sample within 2 hours of commencement of release)	

Note: Limit for suspended solids can be omitted if turbidity limit is included. Limit for turbidity not required if suspended solids limit included. Both indicators should be measured in all cases.

Table C3 – Release Contaminant Trigger Investigation Levels, Potential Contaminants

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level	Monitoring Frequency
Aluminium	55	For aquatic ecosystem protection, based on SMD guideline	Commencement of release and thereafter weekly during release
Arsenic	13	For aquatic ecosystem protection, based on SMD guideline	
Cadmium	0.2	For aquatic ecosystem protection, based on SMD guideline	
Chromium	1	For aquatic ecosystem protection, based on SMD guideline	
Copper	2	For aquatic ecosystem protection, based on LOR for ICPMS	
Iron	300	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 CV FIMS	
Nickel	11	For aquatic ecosystem protection, based on SMD guideline	
Zinc	8	For aquatic ecosystem protection, based on SMD guideline	
Boron	370	For aquatic ecosystem protection, based on SMD guideline	
Cobalt	90	For aquatic ecosystem protection, based on low reliability guideline	
Manganese	1900	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	1100	For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN	

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level	Monitoring Frequency
Petroleum hydrocarbons (C6-C9)	20	For aquatic ecosystem protection, based on LOR	
Petroleum hydrocarbons (C10-C36)	100	For aquatic ecosystem protection, based on LOR	
Fluoride (total)	2000	Protection of livestock and short term irrigation guideline	
Sodium (mg/L)	180	Australian Drinking Water Guidelines. Trigger may require amendment if future advice from Queensland Health becomes available	

Notes:

1. All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.

*2. The quality characteristics required to be monitored as per **Table C3 – Release Contaminant Trigger Investigation Levels, Potential Contaminants** can be reviewed once the results of two years monitoring data is available, or if sufficient data is available to adequately demonstrate negligible environmental risk, and it may be determined that a reduced monitoring frequency is appropriate or that certain quality characteristics can be removed from **Table C3 – Release Contaminant Trigger Investigation Levels, Potential Contaminants** by amendment.*

3. SMD – slightly moderately disturbed level of protection, guideline refers ANZECC and ARMCANZ (2000).

4. LOR – typical reporting for method stated. ICPMS/CV FIMS/GCMS – analytical method required to achieve LOR.

C7	If quality characteristics of the release exceed any of the trigger levels specified in **Table C3 – Release Contaminant Trigger Investigation Levels, Potential Contaminants** during a release event, the environmental authority holder must compare the downstream results in the receiving waters to the trigger values specified in **Table C3 – Release Contaminant Trigger Investigation Levels, Potential Contaminants** 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 **Table C3 – Release Contaminant Trigger Investigation Levels, Potential Contaminants** 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 **ninety (90) days** of receiving the result, outlining 1. details of the investigations carried out; and 2. actions taken to prevent environmental harm. *Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with **C7 (b)(ii)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*
C8	If an exceedance in accordance with condition **C7 (b)(ii)** is identified, the holder of the environmental authority must notify the administering authority via WaTERS within **twenty-four (24) hours** of receiving the result.
C9	**Mine Affected Water Release Events** The holder must ensure a stream flow gauging station/s is installed, operated and maintained to determine and record stream flows at the locations and flow recording frequency specified in **Table C4 – Mine Affected Water Release During Flow Events**.
C10	The release of mine affected water to waters in accordance with **condition C2**, must only take place in accordance with the receiving water flow criteria for discharge specified in **Table C4 – Mine Affected Water Release During Flow Events** for the release point(s) specified in **Table C1 – Mine Affected Water Release Points, Sources and Receiving Waters**.
C11	The release of mine affected water to waters in accordance with **condition C2** must not exceed the release limits stated in **Table – C4 Mine Affected Water Release During Flow Events** when measured at the monitoring points specified in **Table C1 – Mine Affected Water Release Points, Sources and Receiving Waters** for each quality characteristic.

Table C4 – Mine Affected Water Release During Flow Events

Receiving Waters/ Stream	Release Point (RP)	Gauging Station	Gauging Station Latitude (decimal degree, GDA94)	Gauging Station Longitude (decimal degree, GDA94)	Receiving Water Flow Recording Frequency	Receiving Water Flow Criteria for Discharge (m^3/s)	Maximum Release Rate (for all combined RP flows)	Electrical Conductivity Release Limits
Isaac River	RP1, RP2, RP3, and RP9.	Isaac at Deverill (DNRN Gauging Station #130410A)	-22.1726	148.3822	Continuous (minimum daily)	≥37.5 cubic meters/sec	0.5 cubic meters/sec	Electrical conductivity: <1,500 µS/cm (Maximum, based on protection of aquatic ecosystems) Sulfate: <300mg/L
Phillips Creek	RP4, RP5, RP6, RP7, RP8, and RP10	Isaac at Deverill (DERM Gauging Station #130410A)	-22.1726	148.3822	Continuous (minimum daily)	Low/No Flow – 28 days after natural flow events that exceed 7.5 cubic meters/sec at Isaac at Deverill	0.5 cubic meters/sec	Electrical conductivity: <720 µS/cm Sulfate: <300mg/L
Phillips Creek	RP4, RP5, RP6, RP7, RP8, and RP10	Isaac at Deverill (DERM Gauging Station #130410A)	-22.1726	148.3822	Continuous (minimum daily)	Medium Flow ≥7.5 cubic meters/sec in the Isaac River	<0.610 cubic meters/sec	Electrical conductivity: 1,500 µS/cm Sulfate: <600mg/L
Phillips Creek	RP4, RP5, RP6, RP7, RP8, and RP10	Isaac at Deverill (DERM Gauging Station #130410A)	-22.1726	148.3822	Continuous (minimum daily)	Medium Flow ≥ 7.5 cubic meters/sec in the Isaac River	<0.223 cubic meters/sec	Electrical conductivity: <3,500 µS/cm Sulfate: <1,200mg/L
Phillips Creek	RP4, RP5, RP6, RP7, RP8, and RP10	Isaac at Deverill (DERM Gauging Station #130410A)	-22.1726	148.3822	Continuous (minimum daily)	High Flow ≥1.0 cubic meters/sec at Phillips Creek Gauging Station AND≥ 37.5 cubic meters/sec in the Isaac River	<0.684 cubic meters/sec	Electrical conductivity: <5,500 µS/cm Sulfate: <1,400mg/L

C12	The daily quantity of mine affected water released from each release point must be measured and recorded.
C13	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.
C14	**Notification of Release Event** The environmental authority holder must notify the administering authority via WaTERS as soon as practicable and no later than **twenty-four (24) hours** 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).
C15	The environmental authority holder must notify the administering authority via WaTERS as soon as practicable within **twenty-four (24) hours** after cessation of a release notified under **condition C14**. The cessation notification must include the submission of written advice to the administering authority of the following information: (a) release cessation date and time; and (b) total volume of water released.
C16	The environmental authority holder must notify the administering authority within **twenty-eight (28) days** provide the following information in writing via WaTERS: (a) release commencement and cessation dates and time; (b) natural flow rate in receiving water; (c) volume of water released; (d) details regarding the compliance of the release with the conditions of this environmental authority (i.e. contaminant limits, natural flow, discharge volume); (e) all continuous and in-situ water quality monitoring results (including laboratory analyses); and (f) any other matters pertinent to the water release event.
C17	**Notification of Release Event Exceedance** If the release limits defined in **Table C2 – Mine Affected Water Release Limits** are exceeded, the holder of the environmental authority must notify the administering authority within **twenty-four (24) hours** of receiving the results.

C18	The environmental authority holder must, within **twenty-eight (28) days** of a release 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.
C19	**Receiving environment monitoring and contaminant trigger levels** The quality of the receiving waters must be monitored at the locations specified in **Table C6 – Receiving Water Upstream Background Sites and Downstream Monitoring Points** for each quality characteristic and at the monitoring frequency stated in **Table C5 – Receiving Waters Contaminant Trigger Levels**.
C20	If quality characteristics of the receiving water at Phillips Creek, Isaac River and Carfax Gully monitoring points exceed any of the trigger levels specified in **Table C5 – Receiving Waters Contaminant Trigger Levels** during a release event the environmental authority holder 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 proved 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 **C20 (b)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*

Table C5 – Receiving Waters Contaminant Trigger Levels

Quality Characteristic	Trigger Level	Monitoring Frequency
pH (pH units)	6.5 – 8.0	Daily during the release[1]
Electrical Conductivity (µS/cm)	1,000	
Suspended solids (mg/L)	1,500	
Sulfate (SO_4^{2-}) (mg/L)	300	
Sodium (mg/L)	180	

[1]Samples shall not be collected where temporary access to monitoring points presents a serious health and safety risk. However, the administering authority expects the environmental authority holder to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.

Table C6 – Receiving Water Upstream Background Sites and Downstream Monitoring Points

Monitoring Points	Receiving Waters Location Description	Latitude (GDA94)	Longitude (GDA94)
Upstream Background Monitoring Points[1, 3]			
MP1	Downs Creek at Mine Access and Golden mile Road intersection	-22.5413	148.4091
MP2	Phillips Creek	-22.4502	148.3784
Downstream Monitoring Points[2]			
MP3	Isaac River	-22.3559	148.4941
MP4	Phillips Creek	-22.3820	148.4479
MP5	Isaac River	-22.4514	148.5611
MP6	Carfax Gully	-22.4549	148.5398

Notes: [1]The upstream monitoring point should be within 5km of the release point.

[2] The downstream point should not be greater than 5km from the release point.

[3] The data from the background monitoring points must not be used where they are affected by releases from other mines.

C21	**Receiving Environmental Monitoring Program (REMP)** The environmental authority holder must develop and implement a Receiving Environmental Monitoring Program (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 One Mile Creek, Boomerang Creek, Phillips Creek and the Isaac River within 15km 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. The REMP should apply procedures and guidelines from ANZG and other relevant guideline documents.
C22	A REMP Design Document that addresses the requirements of the REMP must be prepared (including for the Meadowbrook Project) and made available to the administrating authority upon request.
C23	A report outlining the findings of the REMP, including all monitoring results and interpretations must be prepared annually and made available on request to the administrating authority. 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.
C24	**Water Reuse** Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this environmental authority and deposited into artificial water storage structures, such as farm dams or tanks, or used directly at properties owned by the environmental authority holder or a third party (with the written consent of the third party).
C25	**Annual Water Monitoring Reporting** The following information must be recorded in relation to all water monitoring required under the conditions 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; (f) the results of all monitoring and details of any exceedances of the conditions of this environmental authority; and (g) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

C26	**Temporary Interference with Waterways** Temporarily destroying native vegetation, excavating, or placing fill in a watercourse, lake or spring necessary for, and associated with, mining activities must be undertaken in accordance with Department of Natural Resources and Mines (or its successor) Guideline – Activities in a Watercourse, Lake or Spring associated with Mining Activities.
C27	**Water Management Plan** A Water Management Plan must be developed by an appropriately qualified person, prior to mining activities commencing, and remain and remain implemented for the duration of mining activities, and at a minimum include the following: (a) provide for effective management of actual and potential environmental impacts resulting from water management associated with the mining activity carried out under this environmental authority; and (b) be developed in accordance with the administering authority's guideline Preparation of water management plans for mining activities (EM324) and include: (i) a study of the source of contaminants; (ii) a water balance model for the site; (iii) a water management system for the site; (iv) measures to separate mine affected water and sediment stormwater in storages on site and manage their volumes (v) sediment dam water quality in alignment with stock water drinking criteria as per C31 below (vi) measures to manage and prevent saline drainage; (vii) measures to manage and prevent acid rock drainage; (viii) contingency procedures for emergencies; and (ix) a program for monitoring and review of the effectiveness of the water management plan.
C28	**Erosion and Sediment Control** An Erosion and Sediment Control Plan must be developed and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.

New C29	The Erosion and Sediment Control Plan must demonstrate how erosion and sediment control measures detailed in the plan adequately minimise the release of sediment to receiving waters and must include at least the following: (a) an assessment of the size and characteristics of all catchment areas; and (b) an assessment of relevant properties of soils and waste materials; and (c) identification of receiving waters environmental values, water quality objectives and management intent; and (d) specification of minimum design criteria for erosion and sediment control structures to achieve the management intent of receiving waters; and (e) locations and descriptions of all erosion and sediment control measures; and (f) an audit schedule to ensure erosion and sediment control measures are maintained; and **(g)** measures to manage sediment dam water quality in accordance with trigger values for livestock drinking water quality in ANZECC 2000.
New C30	The Erosion and Sediment Control Plan must be reviewed by <INSERT DATE for each calendar year>. The review must be documented and must: (a) include a statement that the Erosion and Sediment Control Plan has been reviewed by an appropriately qualified person; and (b) assess the plan against the requirements of **Condition C29**; and (c) include recommended actions to ensure actual and potential environmental impacts are effectively managed; and (d) provide details and timelines of the actions to be taken; and (e) identify any amendments made to the Erosion and Sediment Control Plan.
New C31	A copy of the Erosion and Sediment Control Plan must be kept up to date following each annual review and must be provided to the administering authority on request.
C32	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 **Condition C28**; and (b) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with **Condition C29**, for the purpose of ensuring water does not become mine affected water.

New C33	**Water Storage monitoring** The quality of water in water storages in **Table C7 – Water storage monitoring** must be monitored: (a) at the location in **Table C7 – Water storage monitoring**; and (b) at the monitoring frequency in **Table C7 – Water storage monitoring**; and (c) for all quality characteristics specified in: (i) **Table C2 – Mine affected water release limits** and **Table C3 – Release contaminant trigger investigation levels**. (ii) include the volume of the water storage in ML at the time of monitoring.
New C34	If results of any water storage monitoring from **Condition C33** exceed a trigger value for livestock drinking water quality in ANZG 2018, then all necessary actions must be taken to prevent access to the waters by wildlife and livestock.

Table C7 – Water storage monitoring

Water Storage	Water Storage Description	Location	Monitoring point	Monitoring frequency
TBC e.g. Pit 6 Sediment Dam 1	TBC	<<INSERT location details Name; GDA2020 MGA2020 Zone xx (Eastings and Northings) – (decimal degrees to be provided to a minimum of 3 decimal places) >>	TBC <e.g., Dam spillway>	Quarterly
TBC	TBC		TBC	Quarterly
TBC	TBC		TBC	Quarterly

Schedule K: Enhanced Releases

Schedule K: Enhanced Releases	
Condition number	**Condition**
K1	**Enhanced Contaminant Release** The enhanced release of mine affected water must only occur from release points RP4, RP5, RP6, RP7 and RP10, as specified in **Table C1 – Mine Affected Water Release Points, Sources and Receiving Waters** and depicted in **Attachment 1: Authorised Disturbance Footprint** attached to this environmental authority.
K2	**Enhanced Contaminant Release – Control of Contaminant Releases** The enhanced release of mine affected water in accordance with **Condition K1**, must have release control mechanisms. Release control mechanisms must be: (a) Fitted at release points RP4, RP5, RP6, RP7 and RP10, as specified in **Table C1 – Mine Affected Water Release Points, Sources and Receiving Waters** and depicted in **Attachment 1: Authorised** attached to this environmental authority, prior to the commencement of an enhanced release at that point; (b) Capable of immediately ceasing the discharge of mine water; and (c) Able to reduce or stop the release when: (i) Downstream electrical conductivity (EC) approaches the limit specified in **Table K1 – Receiving Waters contaminant Trigger Levels**; or (ii) The administering authority issues a cease release order.

Table K1 – Receiving Waters Contaminant Trigger Levels

Quality Characteristic	**Trigger Level**	**Monitoring Frequency**
EC (µS/cm)	1,800	Real-time monitoring of pH, EC and flow at MP4 during active release to Phillips Creek. At other sites where real-time monitoring is not available, daily grab sampling during active release as soon as possible after commencement of release, when safe access permits (during daylight hours only).
pH (pH units)	6.5 – 9.0	
Suspended solids (mg/L)	1,500	Daily during release (first sample within two hours of commencement of release)
Sulfate (SO_4^{2-}) (mg/L)	300	
Sodium (mg/L)	180	

K3	**Enhanced Monitoring** The enhanced release of mine affected water in accordance with **Condition K1**, must be able to be monitored via real-time telemetry (minimum hourly) for flow rate, EC and pH at: (a) The release points RP4, RP5, RP6, RP7 and RP10 as specified in Table **C1 – Mine Affected Water Release Points, Sources and Receiving Waters** prior to commencement of release at that point; and (b) At MP2 and MP4 as specified in **Table C6 – Receiving Water Upstream Background Sites and Downstream Monitoring Points** of this environmental authority.
K4	All continuous environmental monitoring systems required by this environmental authority must have an instrument availability during release events of at least 80% except for the continuous monitoring of release points RP4, RP5, RP6, RP7 and RP10 as specified in **Table C1 – Mine Affected Water Release Points, Sources and Receiving Waters** which must have an instrument availability of at least 90%.
K5	**Contaminant Release Events** The enhanced release of mine affected water in accordance with **Condition K1** may commence when the receiving water flow criteria for commencement of a release as specified in **Table K2 – Enhanced Containment Release Limits** is met, and must not exceed the release limits stated in **Table K2 – Enhanced Contaminant Release Limits** when measured at the monitoring points RP4, RP5, RP6, RP7 and RP10 as specified in **Table C1 – Mine Affected Water Release Points, Sources and Receiving Waters**.

Table K2 – Enhanced Contaminant Release Limits

Quality Characteristic	Maximum Release rate (for all combined RP flows)	Receiving Water Flow Criteria for Commencement of Release	Enhanced Release Limit	Monitoring Frequency
EC (µS/cm)	2.5 cubic meters/sec	Flow at Isaac at Deverill (DNRM Gauging Station #130410A) >1.0 cubic meters/sec	8,000	Continuous (minimum hourly)
pH (pH Units)	2.5 cubic meters/sec	Flow at Isaac at Deverill (DNRM Gauging Station #130410A) >1.0 cubic meters/sec	6.5 – 9.0	
Sulfate (mg/L)	2.5 cubic meters/sec	Flow at Isaac at Deverill (DNRM Gauging Station #130410A) >1.0 cubic meters/sec	1,689[1]	Daily during release (first sample within two hours of commencement of release)
Turbidity (NTU)	2.5 cubic meters/sec	Flow at Isaac at Deverill (DNRM Gauging Station #130410A) >1.0 cubic meters/sec	NA[2]	
Suspended Solids (mg/L)	2.5 cubic meters/sec	Flow at Isaac at Deverill (DNRM Gauging Station #130410A) >1.0 cubic meters/sec	1,500	

[1]Sulfate trigger determined from site specific mine water storage data of 8,000µS/cm EC using EC:Sulfate ratio

[2]Limit for suspended solids can be omitted if turbidity limit is included. Limit for turbidity not required if suspended solids limit is included. Both indicators should be measures in all cases.

K6	The enhanced release of mine affected water to waters in accordance with **Condition K1** must cease when the limit stated in **Table K3 – Receiving Water Cease Release Limit** is exceeded when measured at MP4 as specified in **Table C6 – Receiving Water Monitoring Points.**

Table K3 – Receiving Water Cease Release Limit at Downstream Points

Contaminant Limit EC (microsiemens/cam) Phillips Creek	**Monitoring Frequency**
2,000	Real-time monitoring of pH, EC, and flow at MP4 during active release to Phillips Creek. At other sites where real-time monitoring is not available daily grab sampling during release as soon as possible after commencement of active release, when safe access permits (during daylight hours only).

K7	**Notification of release event exceedance** If the limits defined in **Table K2 – Enhanced Contaminated Release Limits** are exceeded, the holder of the environmental authority must: (a) Notify the administering authority via WaTERS within **twenty-four (24) hours** of receiving the results; and (b) Provide a report within **twenty-eight (28) days** in accordance with **condition C18**.
K8	**Receiving environment monitoring and contaminant trigger levels** The quality of the receiving waters must be monitored at the locations specified in **Table C6 – Receiving Water Upstream Background Sites and Downstream Monitoring Points** for each quality characteristic and at the monitoring frequency stated in **Table K1 – Receiving Waters Containment Trigger Levels**.
K9	If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in **Table K1 – Receiving Waters Contaminant Trigger Levels** during a release event, the environmental authority holder 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 **K9 (b)** of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.*
K10	If an exceedance in accordance with **Condition 9 (b)** is identified, the holder of the authority must notify the administering authority within **fourteen (14) days** of receiving the result.

K11	**Release notification – potentially affected stakeholders** The environmental authority holder must notify all potentially affected stakeholders on commencement (within **two (2) hours** or another time frame as agreed to in writing with the relevant potentially affected stakeholder) of releasing mine affected water in accordance with **Schedule K** to the receiving environment. Notification must be in the form agreed to by the potentially affected stakeholder. Notification must include the following information unless otherwise agreed to by the potentially affected stakeholder: (a) Release commencement date/time; (b) Release location (release point/s); (c) Release rate; (d) Receiving waters for the release; (e) Receiving water flow rate; (f) Water quality of the release including salinity and pH; and (g) Estimated duration of the release.
K12	**Enhanced Contaminant Release – Annual Reporting** The environmental authority holder must provide the administering authority an annual independent assessment of the effectiveness of the on-site water management practices, to be submitted by **31 August each year**. This assessment must be undertaken by an appropriately qualified person that is independent of the environmental authority holder and must demonstrate the continued effectiveness of on-site water management to the extent that is practicable including: (1) Control of mine-affected water generation: (a) Minimisation of disturbance within rehabilitated or undisturbed areas; (b) Minimisation of raw water imports for mining processes; (c) Prioritised re-use of mine-affected water where practicable, particularly in high water usage processes such as coal beneficiation; and (d) Effective irrigation, evaporation and re-use of treated sewage effluent to prevent it from entering mine-affected water storages. (2) Separation of mine-affected and non-mine-affected catchments on site: (a) Mine-affected water catchments are being effectively reduced by the environmental authority holder's implemented rehabilitation program; (b) Mine design should allow for runoff from successfully rehabilitated disturbed areas to be shed from site without being retained in the mine-affected water system; and (c) Rehabilitation completion criteria should include water quality limits to define successfully rehabilitated (i.e. non mine-affected) catchments. For example, water quality is an indicator that an area has been successfully rehabilitated and is no longer generating mine affected water. (3) Details of any progressive rehabilitation that demonstrates mine-affected water catchments are being effectively reduced by the environmental authority holder's implemented rehabilitation program.

K13	If the administering authority determines that the annual assessment report does not demonstrate the continued effectiveness of the on-site water management practices in accordance with **Condition K12**, the administering authority will: (1) revoke the enhanced contaminant release conditions; and (2) notify the EA holder in writing within **ten (10) business days** of making the decision. *Note: This does not exclude other enforcement actions under the Department of Environment and Science Enforcement Guidelines.*
K14	If, subject to **Condition K13** the enhanced contaminant release conditions are revoked, then the contaminant release limit for electrical conductivity and sulfate will revert to the pre-existing limits as detailed in **Table C2 – Contaminant release limits**.

Schedule D: Groundwater

Schedule D: Groundwater	
Condition number	**Condition**
D1	The holder of this environmental authority must not release contaminants, directly or indirectly, to groundwater.
D2	**Assessment Criteria for Compliance Bores** The assessment criteria for compliance bores specified in **Table D1 – Groundwater Monitoring Locations and Frequency** includes: (a) a trigger event is defined as a single exceedance of the criteria defined in **Table D2 – Groundwater Quality Triggers and Limits**; and (b) A limit exceedance is defined as **three (3)** consecutive exceedances of the criteria specified in **Table D2 – Groundwater Quality Triggers and Limits**.
D3	Groundwater quality of compliance and reference/interpretation bores must be monitored at the locations and frequencies defined in **Table D1 – Groundwater Monitoring Locations and Frequency** and **Attachment 2: Groundwater Bore Monitoring Locations (Lake Vermont) and Attachment 4: Groundwater Monitoring Locations (Meadowbrook Project)** for quality characteristic identified in **Table D2 – Groundwater Quality Triggers and Limits**.
D4	Water quality criteria, specified in **Table D2 – Groundwater Quality Triggers and Limits**, may be updated by an amendment application submitted to the administering authority, following the collection of additional baseline monitoring data prior to the commencement of overburden removal within ML70528; and prior to mining commencement in the Meadowbrook area, for all Meadowbrook monitoring bores (per **Attachment 4: Groundwater Monitoring Locations (Meadowbrook Project**). *Note: Condition D8 specifies groundwater trigger level thresholds*.
D5	Groundwater level must be monitored at the locations and frequencies defined in **Table D1 – Groundwater Monitoring Locations and Frequency** and **Attachment 32: Groundwater Bore Monitoring Locations (Lake Vermont Coal Mine) and Attachment 4: Groundwater Monitoring Locations (Meadowbrook Project)**.

Table D1 – Groundwater Monitoring Locations and Frequency

Monitoring Bore[1]	AquiferGroundwater unit	Longitude easting (GDA2020)	Latitude northing (GDA2020)	Surface RL (mAHD)	Monitoring frequency
Lake Vermont Reference bores – for interpretational purposes only					
1238_MB1	Tertiary	148.46472650785	-22.393137522923	TBC	2-Monthly
1238_MB2	Vermont Seam (Permian Rangal Coal measures)				2-Monthly
2372-MB1	Tertiary	148.43380647635	-22.363937526194	166.91	2-Monthly
2372-MB2	Rewan Group				2-Monthly
2372-MB3	Vermont Seam (Permian Rangal Coal measures)				2-Monthly
2393-MB1	Tertiary	148.41638645811	-22.390857523225	173.24	2-Monthly
2393-MB2	Leichhardt Seam (Permian Rangal Coal measures)				2-Monthly
2393-MB3	Vermont Lower Seam (Permian Rangal Coal measures)				2-Monthly
2394-MB1	Tertiary	148.40867645013	-22.391657523144	173.96	2-Monthly
2394-MB2	Rewan Group				2-Monthly
West_MB1	Tertiary	148.38925642987	-22.419217520111	184	2-Monthly
West_MB2	Permian Rangal Coal Measures				2-Monthly
Meadowbrook Interpretation bores – for interpretational purposes only					
W2_MB1	Tertiary sediments	637483	7531634	187.92	Quarterly
W2_MB2	Girah 1 Seam	637485	7531634	187.93	Quarterly
W3_MB1	Quaternary alluvium	640585	7529617	176.80	Quarterly
W4_MB1	Quaternary alluvium	638287	7528917	179.00	Quarterly
W6_MB1	Permian overburden	637873	7528074	179.85	Quarterly

W6_MB2	Girah 1 Seam	637876	7528075	179.95	Quarterly
W7_MB1	Permian overburden	637599	7526327	180.69	Quarterly
W8_MB1	Girah 1 Seam	639421	7523800	177.67	Quarterly
W9_MB1	Tertiary sediments	641068	7524299	177.46	Quarterly
W10_MB1	Rewan Group	641984	7524441	177.00	Quarterly
W10_MB2	Vermont Upper Seam	641984	7524441	177.00	Quarterly
W13_MB1	Vermont Lower Seam	645496	7531109	166.80	Quarterly
W13_MB2	Girah 1 Seam	645494	7531109	166.80	Quarterly
W14_MB2	Permian Coal Seam	645490	7528697	167.80	Quarterly
W15_MB1	Tertiary sediments	649123	7527686	163.50	Quarterly
W15_MB2	Vermont Upper Seam	649123	7527686	163.50	Quarterly
W15_MB3	Vermont Lower Seam	649123	7527686	163.50	Quarterly
Lake Vermont Water Quality Compliance Bores					
2371W-MB1	Tertiary Sediments	148.39160643246	-22.400977522129	178.92	2-Monthly
2375-MB2	Vermont Seam (Permian Rangal Coal measures)	148.43910648156	-22.38323752056	168.36	2-Monthly
2226-MB2	Rewan Group	148.39158643249	-22.400947522129	178.84	2-Monthly
2226-MB3	Leichhardt Seam (Permian Rangal Coal measures)				2-Monthly
2218-MB2	Rewan Group	148.41479645641	-22.393497522938	173.29	2-Monthly
2218-MB3	Leichhardt Seam (Permian Rangal Coal measures)	645638	7522936		2-Monthly
Meadowbrook Water Quality Compliance Bores					
W1_MB1	Tertiary sediments	638029	7531555	187.09	Quarterly
W1_MB2	Leichhardt Lower Seam	638031	7531554	187.06	Quarterly
W1_MB3	Vermont Seam	638034	7531554	187.18	Quarterly
W3_MB2	Tertiary sediments	640583	7529617	176.20	Quarterly
W4_MB2	Permian overburden	638284	7528917	179.25	Quarterly
W5_MB1	Rewan Group	638502	7528005	181.15	Quarterly

W5_MB2	Leichhardt Lower Seam	638500	7528002	181.16	Quarterly
W5_MB3	Vermont Seam	638499	7527999	181.14	Quarterly
W9_MB2	Vermont Upper Seam	641068	7524301	177.42	Quarterly
W9_MB3	Vermont Lower Seam	641067	7524303	177.42	Quarterly
W10_MB3	Vermont Lower Seam	641984	7524443	177.00	Quarterly
W11_MB1	Rewan Group	644056	7525042	174.42	Quarterly
W11_MB2	Leichhardt Seam	644058	7525043	174.27	Quarterly
W12_MB1	Tertiary sediments	643383	7530347	166.80	Quarterly
W14_MB1	Tertiary sediments	645488	7528697	166.80	Quarterly
Lake Vermont Water Level Monitoring Bores[2]					
2226-VWP	Rewan Group, Permian coal measures	643244148.39158	7522132-22.40094	178.84	2-Monthly
2183-VWP	Permian Rangal Coal Measures	644183148.40084	7520540-22.41524	185.16	2-Monthly
2218-VWP	Rewan Group, Permian Rangal Coal Measures	645641148.41479	7522935-22.39349	173.29	2-Monthly
2372-VWP	Permian Rangal Coal Measures	647630148.43380	7526189-22.36393	166.91	2-Monthly
2375W-VWP	Permian Rangal Coal Measures	648154148.43910	7524047-22.38323	168.36	2-Monthly
1235C-VWP	Permian Rangal Coal Measures	649913148.45635	7522236-22.39943	170.81	2-Monthly
2369W-MB1	Tertiary Clay/Sand	645639148.41477	7522934-22.39350	173.4	2-Monthly
2370W-MB1	Tertiary Sand/Sandy Clay	648151148.43907	7524060-22.38311	168.30	2-Monthly
Meadowbrook Proposed Additional Interpretation Bores					
W16_MB1	Quaternary alluvium	648779	7530462	162	
W16_MB2	Tertiary sediments	648779	7530462	162	
W16_MB1	Quaternary alluvium	649341	7530086	161.5	
W16_MB2	Tertiary sediments	649341	7530086	161.5	

*[1]If any of the monitoring bores in **Table D1 – Groundwater Monitoring Locations and Frequency** become unfit for purpose, as a result of advancing mining activities, the environmental authority holder must submit proposed replacement bores to the administering authority for approval and inclusion in **Table D1 – Groundwater Monitoring Locations and Frequency.***

[2] *Groundwater level monitoring only.*

[3]*Collar RL (mAHD)*

Table D2 – Groundwater Quality Triggers and Limits[1]

Project area	Parameter	Groundwater unit – Triggers and Limits		
		Tertiary	Rewan	Permian
	Physical parameters/sulphate			
Lake Vermont	**pH (pH units) (field)**	**5.13 – 7.24**	**5.13 – 7.24**	**5.13 – 7.24**
	Electrical Conductivity (EC) (µS/cm)(field)	40,712	30,944	30,581
	Sulfate (mg/L) (all bores other than 2371W-MB1)	1,942	1,270	756
	Sulfate (mg/L) – 2371W-MB1	4,180		
Meadowbrook	pH (pH units) (field)	5.84 – 6.79	6.44 – 7.17	6.24 – 8.66
	Electrical Conductivity (EC) (µS/cm)(field) (all bores other than W14 MB1)	30422	24581	41567
	Electrical Conductivity (EC) (µS/cm)(field) (W14 MB1)	1205	-	-
	Sulfate (mg/L) (all bores excluding where separate limit proposed for individual bores	1250	-	1760
	Sulfate (mg/L) W14_MB1	163	-	-
	Sulfate (mg/L) W5_MB1	-	1696	-
	Sulfate (mg/L) W1_MB1	-	165	-
	Sulfate (mg/L) W1_MB2	-	-	20
	Sulfate (mg/L) W1_MB3	-	-	20
	Metals/metalloids (mg/L) (dissolved, by ICP-MS/FIMS)			
Lake Vermont	Aluminium	0.055	0.055	0.055
	Chromium	0.006	0.001	0.001
	Cobalt	0.016	0.044	0.007
	Copper	0.013	0.005	0.055
	Manganese	1.9	1.9	1.9
	Molybdenum	0.034	0.034	0.034
	Nickel	0.02	0.022	0.011
	Selenium	0.01	0.01	0.01

	Zinc	0.08	0.04	0.017
Meadowbrook	Aluminium	0.055	0.055	0.055
	Chromium	0.005	0.005	0.006
	Cobalt	0.008	0.005	0.024
	Copper	0.008	0.008	0.153
	Manganese	1.9	1.9	1.9
	Molybdenum	0.034	0.047	0.070
	Nickel	0.223	0.410	0.075
	Selenium	0.01	0.01	0.01
	Zinc	0.107	0.066	0.13
Total Petroleum Hydrocarbons (µg/L)[2]				
Lake Vermont and Meadowbrook	C_6-C_9	20	20	20
	C_{10}-C_{36}	100	100	100
	Major Ions (mg/L)			
Lake Vermont and Meadowbrook	Calcium	For interpretational purposes only		
	Chloride	For interpretational purposes only		
	Potassium	For interpretational purposes only		
	Magnesium	For interpretational purposes only		
	Sodium	For interpretational purposes only		
	Bicarbonate	For interpretational purposes only		

[1]Trigger levels and compliance limits are applicable to compliance bores.

[2] For aquatic ecosystem protection, based on LOR for GCMS. LOR – typical reporting for method stated. ICPMS/ GCMS – analytical method required to achieve LOR. GCMS - Gas chromatography–mass spectrometry.

Table D3 – Lake Vermont Groundwater Level Monitoring

Monitoring location	Aquifer	Water Level Trigger[1]
2226-VWP	Rewan Group	5m/year
2183-VWP	Permian Coal Measures	5m/year
2218-VWP	Rewan Group	5m/year
2372R-VWP	Permian Coal Measures	5m/year
2375W-VWP	Permian Coal Measures	5m/year
1235C-VWP	Permian Coal Measures	5m/year

2369W-MB1	Tertiary Clay/Sand	2m/year
2370W-MB1	Tertiary Clay/Sandy Clay	2m/year

[1] Water level triggers have been derived from Section 362 of the Water Act 2000.

[2]Trigger levels and compliance limits are applicable to compliance bores. Monitoring to be conducted at all bores.

Table D4 – Meadowbrook Groundwater Level Monitoring

Monitoring location	Groundwater unit	Level Trigger Threshold (mAHD)
W1_MB1	**Tertiary sediments**	**158.4**
W1_MB2	Leichhardt Lower Seam	158.54
W1_MB3	Vermont Seam	159.07
W3_MB2	Tertiary sediments	142.1
W4_MB2	Permian overburden	149.47
W5_MB1	Rewan Group	151.87
W5_MB2	Leichhardt Lower Seam	146.44
W5_MB3	Vermont Seam	155.52
W9_MB2	Vermont Upper Seam	96.32
W9_MB3	Vermont Lower Seam	98.01
W10_MB3	Vermont Lower Seam	130.73
W11_MB1	Rewan Group	115.24
W11_MB2	Leichhardt Seam	13.99
W12_MB1	Tertiary sediments	138.35
W14_MB1	Tertiary sediments	145.84

D6	Results of monitoring of groundwater from compliance bores identified in **Table D1 – Groundwater Monitoring Locations and Frequency**, must not exceed any of the limits defined in **Table D2 – Groundwater Quality Triggers and Limits** on **three (3)** consecutive occasions.
D7	If the limits specified in **Table D2 – Groundwater Quality Triggers and Limits** are exceeded at the compliance bores on **three (3)** consecutive occasions, the holder of the environmental authority must notify the administering authority via WaTERS within **twenty-four (24) hours** of receiving the results.
D8	**Trigger Investigation** If monitoring results from water quality compliance bores or water level bores specified in **Table D1 – Groundwater Monitoring Locations and Frequency**, exceed any of the limits specified in **Table D2 – Groundwater Quality Triggers and Limits** or **Table D3 – Lake Vermont Groundwater Level Monitoring** or **Table D4: Meadowbrook Groundwater Level Monitoring**, the holder of the environmental authority must complete an investigation within **fourteen (14) days** of detection to determine if the exceedance is a result of: (a) mining activities authorised under this environmental authority; (b) natural variation; or (c) neighbouring land use resulting in groundwater impacts.
D9	The holder of this environmental authority must notify the administering authority via WaTERS and provide a report of the investigation to the administering authority via WaTERS within **twenty-eight (28) days** of completion of the investigation under **Condition D8**.
D10	If the investigation under **Condition D8** determined that the exceedance was the result of mining authorised under this environmental authority, then investigations must be undertaken by the holder of this environmental authority to establish whether environmental harm has occurred or may occur.
D11	If an investigation undertaken in accordance with **Condition D10** determines that environmental harm has or may occur, the holder of this environmental authority must: (a) implement immediate measures to reduce the potential for environmental harm; and (b) develop long-term mitigation measures to address any existing groundwater contamination and prevent recurrence of groundwater contamination.
D12	The holder of this environmental authority must provide details of the measures implemented to reduce the potential for environmental harm as well as the long-term mitigation measures to the administering authority within **twenty-eight (28) days** after completing the investigation under **Condition D10**.
New D13	**Groundwater Model** The groundwater model must be reviewed and updated by an appropriately qualified person every five (5) years.

New D14	The groundwater model review in **Condition D13** must: (a) include all hydrogeological units potentially impacted by the activities authorised under this environmental authority; (b) be undertaken in accordance with the most recent version of the 'Australian Groundwater Modelling Guidelines' (2012); (c) be validated and recalibrated with all recent monitoring data; and (d) be documented and recorded.
New D15	If the outcomes of the updated groundwater model required by condition D14 differ from the predictions and associated impacts from the current groundwater model, the environmental authority holder must also submit a report to the administering authority within 28 days of completion of the review under condition D14 that details the impacts to environmental values that will, or are likely to, occur as a result of the updates to the groundwater model.
New D16	**Annual Groundwater Monitoring Report** Within one year after commencing mining activities on MLxxxxxx (Meadowbrook Project) an Annual Groundwater Monitoring Report (AGMR) must be completed each year.
New D17	The AGMR required by **condition D16** must include: (a) a review of all the groundwater quality and SWL data of all groundwater bores listed within **Table D1 – Groundwater monitoring locations and frequency**; and (b) an assessment of groundwater quality and SWL trends for all data from all groundwater bores listed in **Table D1 – Groundwater monitoring locations and frequency**; and (c) details of any review undertaken of the groundwater conceptual model; and (d) an assessment of any impacts on groundwater quality and level due to the mining activities; and (e) comparison with receiving environment surface water quality monitoring results to determine any interaction or impact from groundwater on surface water. (f) An assessment of the bore monitoring network being fit for purpose as the mine progresses.
D18	**Bore Construction, Maintenance and Decommissioning** The construction (of bores after <insert appropriate date>), maintenance, operation and decommissioning of each groundwater monitoring bore must be undertaken by an appropriately qualified person in a manner that: (a) prevents contaminants entering the groundwater; and (b) ensures representative groundwater samples from the target hydrogeological unit; and (c) maintains the hydrogeological environment within the hydrogeological unit. The construction, maintenance and management 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 monitoring.

New D19	A bore report must be kept for each monitoring bore which includes: (a) a unique identification reference number and geographic coordinate location; and (b) construction information including but not limited to the depth of bore, depth and length of casing, depth and length of screening and bore sealing details; and (c) stratigraphy and target hydrogeological unit of the bore; and (d) depth at which groundwater was intercepted and the final standing water level (SWL) after bore development.
New D20	**Groundwater Dependent Ecosystems** The activities authorised under this environmental authority must not cause harm to any groundwater dependent ecosystems, as specified in **Table D5 – Meadowbrook Groundwater Dependent Ecosystems**, and as illustrated in (**Attachment 11: Identified GDE locations Meadowbrook**).
New D21	Groundwater dependent ecosystems outside of the MLxxxxx (Meadowbrook Project) tenure boundary must not be impacted.
New D22	**Groundwater Dependent Ecosystem Monitoring and Management Plan** A Groundwater dependent ecosystem monitoring and management plan (GDEMMP) must be developed and implemented prior to commencement of mining activities on MLxxxxx (Meadowbrook), which must: a) provide two (2) years of GDE baseline monitoring to develop appropriate triggers and assessment parameters prior to construction b) undertake baseline monitoring (consisting of four events covering two (2) wet seasons and two (2) dry seasons) to commence upon project approval and prior to construction c) specify surface water quality, sediment quality, and macroinvertebrate trigger thresholds d) detail how changes to surface water quality, sediment quality, macroinvertebrates, and the receiving environment, as a result of the action, would be detected, assessed, and if harm to the environment occurs, remediated e) specify subsidence trigger thresholds and management measures, to detect and mitigate subsidence to prevent harm to protected matters, that will be implemented if approved subsidence trigger thresholds are exceeded f) be informed by the development of a GDE habitat quality monitoring program for each of the 14 proposed GDE monitoring areas g) monitor and report on the condition of potential GDE areas including those in any proposed offset area h) the approval holder must implement effective mitigation measures where monitoring triggers have been breached due to hydrological changes (water quality or quantity impacts) or groundwater drawdown impacts from the project i) provide an assessment of the impact, including any significant residual impacts (e.g. habitat loss), to GDEs including Brigalow TEC, Poplar Box TEC, and to koala and greater glider that are dependent on GDE areas within riparian corridors j) conduct annual biodiversity hotspot surveys in conjunction with a monthly water quality monitoring program to monitor potential changes/ impacts to the stygofauna community over the life of the mine until after the mine closure and the rehabilitation period.

Table D5 – Meadowbrook groundwater dependent ecosystems

GDE description	Catchment	Location (decimal degrees, GDA2020)
TYPE 1: GDE associated with the narrow belts of alluvium that are associated with larger incised drainage lines of Boomerang and Phillips Creek, extending eastward to the Isaac River.	Boomerang Creek; and Phillips Creek catchments.	*Refer Attachment 11 – Identified GDE locations (Meadowbrook)*
TYPE 2: GDE systems which are supported by a lens of fresh groundwater that lies at depth below the surface wetland systems, located near the junction of Boomerang & Ripstone Creeks.	Ripstone Creek catchment.	*Refer Attachment 11 – Identified GDE locations (Meadowbrook)*

Schedule E: Sewage Treatment

Schedule E: Sewage Treatment	
Condition number	**Condition**
E1	The only contaminant permitted to be released to land is treated sewage effluent in compliance with the release limits and monitoring frequency states in **Table E1 – Contaminant Release Limits to Land**.

Table E1 – Contaminant Release Limits to Land

Quality Characteristics	Release Limit	Units	Limit Type	Monitoring Frequency
5- day Biochemical oxygen demands (BOD5)	20	mg/L	80th percentile	Monthly
pH	6.5 – 8.5	pH units	Range	Monthly
Total Chlorine	5	mg/L	Maximum	Monthly
E.Coli	1000	CFU/100ml	Maximum	Monthly
Total Phosphorus as P	20	mg/L	Maximum	Monthly
Total Nitrogen as N	60	mg/L	Maximum	Monthly

E2	Treated sewage effluent may only be released to land in accordance with the conditions of this approval at the following locations: (a) within areas approved for treated effluent disposal.
E3	The application of treated effluent to land must be carried out in a manner such that: (a) vegetation is not damaged; (b) there is no surface ponding of treated effluent; and (c) there is no run-off of effluent.
E4	If areas irrigated with effluent are accessible to employees or the general public, prominent signage must be provided advising that effluent is present and care should be taken to avoid consuming or otherwise coming into unprotected contact with effluent.
E5	The daily volume of effluent release to land must be measured and records kept of the volumes of effluent released.
E6	When circumstances prevent the irrigation or beneficial reuse of treated sewage effluent such as during or following rain events, waters must be directed to a wet weather storage or alternative measure must be taken to store/lawfully dispose of effluent.
E7	Treated sewage effluent must only be supplied to another person or organisation that has a written plan detailing how the user of the treated sewage effluent will comply with their general environmental duty under section 319 of the *Environmental Protection Act 1994* whilst using the treated sewage effluent. *Note: the supply of treated wastewater for re-use is regulated under the Water Supply (Safety and Reliability) Act 2008.*
New E8	A Site-Based Irrigation Management Plan be developed and implemented to manage risks associated with effluent irrigation, which includes monthly visual inspections of crop ‘health’ status.

Schedule F: Acoustic

Schedule F: Acoustic	
Condition number	**Condition**
F1	The holder of this environmental authority must ensure that noise generated by the mining activities does not cause the criteria in **Table F1 – Noise Limits** to be exceeded at a sensitive place or commercial place.

Table F1 – Noise Limits

Sensitive Place						
Noise level dB(A) measured as:	**Monday to Saturday**			**Sundays and Public Holidays**		
	7am to 6pm	**6pm to 10pm**	**10pm to 7am**	**9am to 6pm**	**6pm to 10pm**	**10pm to 9am**
$L_{Aeq, adj, 15 mins}$	40	40	35	40	40	35
$L_{A1, adj, 15 mins}$	45	45	40	45	45	40
Commercial Place						
Noise level dB(A) measured as:	**Monday to Saturday**			**Sundays and Public Holidays**		
	7am to 6pm	**6pm to 10pm**	**10pm to 7am**	**9am to 6pm**	**6pm to 10pm**	**10pm to 9am**
$L_{Aeq, adj, 15 mins}$	45	45	40	45	45	40

Notes: 1. In the event that measured bg (LA90, adj, 15mins) is less than 30 dB(A), then 30 dB(A) can be substituted for the measured background level.

2. bg = background noise level (LA90, adj, 15mins) measured over 3-5 days at the nearest sensitive receptor.

3.If the project is unable to meet the noise limits as calculated above alternative limits may be calculated using the processes outlined in the "Planning for Noise Control" guideline.

F2	**Airblast Overpressure Nuisance** 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 F2 – Blasting Noise Limits** to be exceeded at a sensitive place or commercial place.

Table F2 – Blasting Noise Limits

Blasting Noise Limits	Sensitive or Commercial Blasting Noise Limits	
	7am to 6pm	**6pm to 7am**
Airblast overpressure	115dB (Linear) Peak for nine (9) out of ten (10) consecutive blasts initiated and not greater than 120dB (Linear) Peak at any time	No blasting to occur.
Ground vibration peak particle velocity (PPV)	5mm/second PPV of nine (9) out of ten (10) consecutive blasts and not greater than 10mm/second PPV at any time	No blasting to occur.

F3	**Monitoring and Reporting** Noise monitoring and recording must include the following descriptor characteristics and matters: (a) $L_{AN,T}$ (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins); (b) background noise LA_{90}; (c) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels; (d) atmospheric conditions including temperature, relative humidity and wind speed and directions; (e) effects due to any extraneous factors such as traffic noise; (f) location, date and time of monitoring; and (g) if the complaint concerns low frequency noise, Max $_{LpLIN,T}$ and one third octave band measurements in dB(LIN) for centre frequencies in the 10-200Hz range.
F4	The holder of this environmental authority must develop and implement a blast monitoring program to monitor compliance with **Table F2 – Blasting Noise Limits**.

Schedule G: Land

Schedule G: Land	
Condition number	**Condition**
G1	**Rehabilitation** All areas significantly disturbed by mining activities must be rehabilitated to achieve the following rehabilitation goals: (a) safe to humans and wildlife; (b) stable; (c) non-polluting; and (d) self-sustaining for the post-mining land use.
New G2	Land disturbed by mining on MLxxxxxx (Meadowbrook) must be rehabilitated to a stable landform with self-sustaining final land use in accordance with **Table G2 – Post-mining Land Use for disturbance areas on MLxxxxxx (Meadowbrook)**.
G3	Rehabilitation must commence progressively as areas become available.
G4	A Rehabilitation Plan must be developed by **20 August 2017** by a suitably qualified person and implemented.
G5	The Rehabilitation Plan required in **Condition G4** must include: (a) rehabilitation objectives to achieve the rehabilitation goals for all disturbed areas; (b) detailed rehabilitation methods for each disturbed area; (c) rehabilitation indicators to measure the success of the rehabilitation against the rehabilitation objectives; (d) final completion criteria that will achieve the rehabilitation goals and objectives; and (e) details of appropriate monitoring and maintenance of rehabilitation.
G6	The environmental authority holder must notify the administering authority of any changes to the Rehabilitation Plan developed under **Condition G3**, and submit to the administering authority.
G7	All areas significantly disturbed by mining activities must be rehabilitated in accordance with the Rehabilitation Plan to achieve the final completion criteria.
G8	**Contaminated Land** Before applying for a surrender, or 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.
G9	Before applying for progressive rehabilitation certification of 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 and rehabilitation requirements in accordance with the rehabilitation plan required by **Condition G3**.
G10	**Biodiversity Offsets** Impacts to prescribed environmental matters are not authorised unless the impacts are authorised in **Conditions G11** and **G12**.
G11	Notwithstanding **Condition G10**, impacts to prescribed environmental matters, are only authorised to occur if: (a) for the prescribed environmental matters specified in **Table G1 – Authorised Impacts to Prescribed Environmental Matters**, the impacts do not exceed the maximum extent of impact specified for that prescribed environmental matter.
G12	An environmental offset must be delivered for each impact specified in **Table G1 – Authorised Impacts to Prescribed Environmental Matters** as requiring an environmental offset.
New G13	Records demonstrating that each Meadowbrook Project impact to a prescribed environmental matter not listed in **Table G1: Authorised 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.
New G14	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 Meadowbrook Project impact to each prescribed environmental matter authorised in **Table G1: Authorised Impacts to Prescribed Environmental Matters**, unless a lesser extent of the impact has been approved in accordance with **condition G15**.
New G15	The significant residual impacts to a prescribed environmental matter authorised in **condition G10** (and set out in Table G1), for which an environmental offset is required by **condition G12** may be carried out in stages. An environmental offset can be delivered for each stage of the impacts to prescribed environmental matters.
G16	Prior to the commencement of any impacts to a prescribed environmental matter for which an environmental offset is required by **Condition G12**, or stage as authorised by **Condition G15**, an analysis of the anticipated maximum extent of impact to each prescribed environmental matter 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.
G17	The analysis of impacts required by **Condition G16** must be approved by the administering authority before the notice of election, or the notice of election of a forthcoming stage, if applicable, is given to the administering authority.
G18	The notice of election, or the notice of election of a forthcoming stage, if applicable, must be provided to the administering authority no less than **three (3) months** before the proposed

	commencement of the prescribed activities, or the proposed commencement of that stage, unless a lesser timeframe has been agreed to by the administering authority.
G19	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.
New G20	**Subsidence Management Plan** A Subsidence Management Plan must be developed by an appropriately qualified person and be implemented prior to the commencement of underground longwall mining activities. The Subsidence Management Plan must: (a) provide an overview of the existing environment of the proposed subsidence area; (b) provide a summary of the key impacts that may arise as a result of the proposed subsidence; (c) provide for the proper and effective monitoring and management of the actual and potential environmental impacts of the proposed subsidence; including but not limited to impacts to: i) landform conditions; ii) surface cracking; iii) erosion; iv) ponding; v) watercourse channel/geomorphic conditions; vi) ecology; vii) flow; viii) water quality of subsided creeks and receiving waters; ix) an assessment of the adequacy of any completed repair works or recommended actions from the previous monitoring period. (d) provide for the development of management actions (e.g. repairs or rehabilitation works) and establish a process to monitor the completion of actions.
New G21	**Annual subsidence monitoring inspection** An annual subsidence monitoring inspection must be undertaken (annually, within 12 months of underground longwall mining commencing) to identify any areas of observable or measurable impact that might be associated with subsidence or associated surface disturbance.
New G22	Annual subsidence monitoring inspections must continue until subsidence movement in the northern subsidence area is considered to have finalised.
New G23	**Annual Subsidence Monitoring Report**

	An annual subsidence monitoring report must be prepared (annually, within 3 months of the completion of the annual subsidence monitoring inspection) to provide the results and analysis from each monitoring event(s) as well as detail any required repair/rehabilitation activities.
New G24	**Subsidence Management Plan review** A review of the Subsidence Management Plan must be conducted every 4 years, and a report made available upon request to the administering authority.
New G25	**Residual subsidence ponding** Residual subsidence ponding, as a result of mining activities, is only permitted to occur in the areas depicted in **Attachment 12 – Authorised areas of residual subsidence ponding**.
New G26	**Meadowbrook open-cut disturbance** Prior to the open-cut mining activities on MLxxxxx (Meadowbrook Project), as depicted in **Attachment 2: Authorised Disturbance Footprint (Meadowbrook Project)**, the flood protection levee south of Philips Creek on ML70528 must be constructed and commissioned as per the following requirements: (a) 7.8 kilometres in length; (b) designed to withstand 1 in 1000 Average Recurrence Interval (ARI) event(s); and (c) in accordance with **Schedule I Regulated Structures** of this environmental authority.

Table G1 – Authorised Impacts to Prescribed Environmental Matters

Matters of state environmental significance		**Maximum extent of impact**	**Significant Impact**	**Meadowbrook Project stage impact areas**				**Environmental offset required**
				S1	S2	S3	S4	
MSES - Regulated Vegetation								
Endangered RE	RE11.3.1	12.1ha in Meadowbrook Project (7.3 ha of which is Brigalow TEC under EPBC Act) [2]	Yes	0	1.2	0	3.6	Yes (partly co-located with MNES offsets)
	RE11.4.8	3.9ha in Meadowbrook Project (0.6ha of which is Brigalow TEC under EPBC Act) [2]	Yes	0	0	0	3.3	Yes (Fully co-located with MNES offsets)
Of Concern RE	RE11.3.2	58.3ha in Meadowbrook Project (44.4 of which is Poplar Box TEC under EPBC Act) [2]	Yes	0	0	13.9	0	Yes
	RE11.3.4	4.9ha in Meadowbrook	Yes	0	0	4.9	0	Yes (Fully co-located with

		Project[2]						MNES offsets)
RE intersecting an area shown as a wetland on the vegetation management wetlands map	RE11.5.17	4.7ha in Meadowbrook Project[2]	Yes	0	0	4.7	0	Yes (partly co-located with MNES offsets)
REs occurring within the defined distance of defining banks of a vegetation management watercourse RE occurring within defined distance of defining banks of a relevant watercourse	RE11.3.1	8.0ha in Meadowbrook Project[2]	Yes	0.2	7.8	0	0	Yes
	RE 11.3.25	28.4ha in ML70528; and 6.1ha in Meadowbrook Project[2]	Yes	1.2	0	4.8	0	Yes
RE intersecting an area shown as a wetland on the vegetation management wetlands map	RE 11.3.27	3.9ha in ML70528; and 0.48ha in Meadowbrook Project	Yes	0.48	0	0	0	Yes
MSES - Protected Wildlife Habitat								
Vulnerable species	Squatter pigeon (*Geophaps scripta scripta*)	39.2ha in ML70528; and 15.8ha in Meadowbrook Project	Yes	6.5	0	0	9.3	Yes
MNES[1] – Threatened Ecological Communities								
Brigalow TEC		7.9ha in Meadowbrook Project[3]	Yes	0.6	6.9	0.1	0.3	Yes
Vulnerable species	Squatter pigeon (*Geophaps scripta scripta*)	39.2ha in ML70528; and 15.8ha in Meadowbrook Project	Yes	6.5	0	0	9.3	Yes
Poplar Box TEC		44.4ha in Meadowbrook Project[4]	Yes	0	0	44.4	0	Yes
MNES[1] – Protected Wildlife Habitat								
Vulnerable species	Ornamental Snake (Denisonia maculata)	211.1ha in Meadowbrook Project[5]	Yes	41.1	4.6	0.3	165.4	Yes
Vulnerable species	Greater Glider (Petauroides Volans)	100.6ha in Meadowbrook Project[6]	Yes	4.5	0	89.1	7	Yes

Vulnerable species	Koala (Phascolarctos cinereus)	109.2ha in Meadowbrook Project[7]	Yes	4.8	8.2	89.1	7.1	Yes

[1] *Offsets will be regulated under the EPBC Act approval conditions*

[2] *authorised impact extent provided in Attachment 5*

[3] *authorised impact extent provided in Attachment 6*

[4] *authorised impact extent provided in Attachment 7*

[5] *authorised impact extent provided in Attachment 8*

[6] *authorised impact extent provided in Attachment 9*

[7] *authorised impact extent provided in Attachment 10*

Table G2 – Post-mining Land Use for disturbance areas on MLxxxxxx (Meadowbrook)

Mine Domain	Disturbance type/Mine feature	Description	Post mining land use
Infrastructure	**Mine infrastructure areas**	**Surface disturbance associated with mine infrastructure areas, including the MIA flood levee**	**Grazing pasture – Land Suitability class 3**
	Water management infrastructure	Dams and diversion drains (rehabilitated to pasture)	Grazing pasture – Land Suitability class 3
		Dams (retained for stock watering where a landowner retention agreement applies)	Water storage for stock watering
	Infrastructure corridor and access roads	Infrastructure corridor and access roads	Retained infrastructure (where a landowner retention agreement applies)
Open-cut mining	Open-cut disturbance areas	Open-cut disturbance areas, including backfilled pit, in-pit and out-of-pit waste rock emplacements and flood levee (slopes <15%)	Grazing pasture – Land Suitability class 3
Subsidence	Areas subject to subsidence	Areas subject to subsidence and some surface disturbance associated with gas drainage bores and access tracks – non-riparian areas	Grazing pasture – Land Suitability class 3
		Native vegetation on Boomerang Creek and One Mile Creek, and riparian zones subject to subsidence	Native ecosystem

Schedule H: Waste

Schedule H: Waste	
Condition number	**Condition**
H1	Unless otherwise permitted by the conditions of this environmental authority or with prior approval from the administering authority and in accordance with a relevant standard operating procedure, waste must not be burnt.
New H2	Unless otherwise authorised by the conditions of this environmental authority, all waste generated in carrying out the activity must be lawfully reused, recycled or removed to a facility that can lawfully accept the waste.
New H3	The holder of this environmental authority may burn vegetation cleared while carrying out the mining activity, provided the burning does not cause environmental harm at any sensitive place or commercial place.
New H4	**Storage and disposal of tyres** Scrap tyres must be stored and disposed of in accordance with the *Operational Policy Disposal and storage of scrap tyres at mine sites (DES, 2023)*.
New H5	**Waste Management Plan** A Waste Management Plan must be: (a) developed and implemented for the duration of mining activities; and (b) reviewed at regular intervals, not exceeding **two (2) years**.
New H6	The Waste Management Plan required by **condition H5** must include: (a) a description of the activities that may generate waste; (b) waste management strategies including: (i) recording of the types and amounts of wastes generated by the mining activity; (ii) segregation of the wastes; (iii) storage of the wastes; (iv) transport of the wastes; (v) disposal of waste including leachate management; and (vi) monitoring and reporting matters concerning the waste; (c) the hazard characteristics of the wastes generated including disposal procedures for regulated wastes; (d) a program for reusing, recycling or disposing of all wastes; (e) how waste will be managed in accordance with the waste and resource management hierarchy, including a description of the types and amounts of waste that will be dealt with under each of the waste management practices in the waste management hierarchy (i.e., avoidance, reuse, recycling, energy recovery, disposal);

	(f) how the waste will be stored, handled and transferred in a proper and effective manner; (g) procedures for identifying and implementing opportunities to minimise the amount of waste generated, promote efficiency in the use of resources and improve the waste management practices employed; (h) procedures for dealing with accidents, spills, and other incidents that may impact on waste management; (i) details of any accredited management system employed, or planned to be employed, to manage waste; (j) how often the performance of the waste management practices will be assessed; (k) indicators or other criteria on which the performance of the waste management practices will be assessed; and (l) staff training and induction to the waste management program.
H7	**Tailings Disposal** Tailings must be managed in accordance with procedures contained within a Tailings Disposal Plan, which must be developed and implemented for all stages of the authorised mining activities. The Tailings Disposal Plan must include provisions for: (a) containment of tailings; (b) the management of seepage and leachates both during operations 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; (f) rehabilitation strategy; and (g) monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of tailings, including the prevention and management of acid mine drainage, erosion minimisation and establishment of vegetation cover.

Schedule I: Regulated Structures

Schedule I: Regulated Structures	
Condition number	**Condition**
I1	**Assessment of Consequence Category** The consequence category of any structure must be assessed by a suitably qualified and experience person in accordance with the 'Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)' or its successor at the following times: (a) prior to the design and construction of the structure, if it is not an existing structure; or (b) prior to any change in its purpose or the nature of its stored contents.
I2	A consequence assessment report and certification must be prepared for any structure assessed and the report may include a consequence assessment for more than one structure.
I3	Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the most recent version of the 'Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)' or its successor.
I4	**Design and Construction of a Regulated Structure** **Conditions I5** to **I9** inclusive do not apply to existing structures. *Note: Construction of a dam includes modification of an existing dam – refer to the Definition schedule of this environmental authority.*
I5	All regulated structures must be designed by, and constructed under the supervision of a suitably qualified and experienced person in accordance with the requirements of the most recent version of the 'Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)' or its successor. *Note: Certification of design and construction may be undertaken by different persons.*
I6	Construction of a regulated structure is prohibited unless: (a) the holder has submitted a consequence category assessment report and certification to the administering authority; and (b) certification for the design, design plan and the associated operating procedures has been certified by a suitably qualified and experienced person in compliance with the relevant condition of this authority.
I7	Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan in the form set out in the most recent version of the 'Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)' or its successor and must be recorded in the Register of Regulated Structures.
I8	Regulated structures must: (a) be designed and constructed in accordance with and conform to the requirements of the most recent version of the 'Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)' or its successor;

	(b) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of: (i) floodwater from entering the regulated dam from any watercourse or drainage line; and (ii) wall failure due to erosion by floodwaters arising from any watercourse or drainage line. (c) for regulated dams that are dams associated with a 'failure to contain – seepage': 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.
I9	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.
I10	**Operation of a Regulated Structure** Operation of a regulated structure, except for an existing structure, is prohibited unless: (a) the holder has submitted to the administering authority: (i) one electronic copy of the design plan and certification of the 'design plan' in accordance with **condition I6**, and (ii) a set of 'as constructed' drawings and specifications, and (iii) certification of those 'as constructed drawings and specifications' in accordance with **condition I9**, and (iv) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the design storage allowance (DSA) volume across the system, a copy of the certified system design plan. (v) the requirements of this authority relating to the construction of the regulated structure have been meet; (vi) the holder has entered the details required under this authority, into a Register of Regulated Dams; and (vii) there is a current operational plan for the regulated structures.
I11	For existing structures that are regulated structures: (a) where the existing structure that is a regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, the holder must submit to the administering authority within twelve (12) months of the commencement of this condition a copy of the certified system, design plan including that structure; and (b) there must be a current operational plan for the existing structures.
I12	Each regulated structure must be maintained and operated, for the duration of its operational life until decommissioned and rehabilitated, in a manner that is consistent with the current

	operational plan and, if applicable, the current design plan and associated certified 'as constructed' drawings.
I13	**Mandatory Reporting Level** **Conditions I14** to **I17** inclusive only apply to regulated structures which have not been certified as low consequence category for 'failure to contain – overtopping'.
I14	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.
I15	The holder 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.
I16	The holder must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated dam.
I17	The holder must record any changes to the MRL in the Register of Regulated Structures.
I18	**Design Storage Allowance** The holder must assess the performance of each regulated dam or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated dam or linked containment system taken prior to **1 July of each year**.
I19	By **1 November of each year**, storage capacity must be available in each regulated dam (or network of linked containment systems with a shared DSA volume), to meet the DSA volume for the dam (or network of linked containment systems).
I20	The holder 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.
I21	The holder must, immediately on becoming aware that a regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on **1 November of any year**, act to prevent the occurrence of any unauthorised discharge from the regulated dam or linked containment systems.
I22	**Annual Inspection Report** Each regulated structure must be inspected each calendar year by a suitably qualified and experienced person.
I23	At each annual inspection, the condition and adequacy of all components of the regulated structure must be assessed and a suitably qualified and experience person must prepare an annual inspection report containing details of the assessment and include recommended actions to ensure the integrity of the regulated structure.
I24	The suitably qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the most recent version of the 'Manual for

	Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)' or its successor.
I25	The holder must within **twenty (20) business days** of receipt of the annual inspection report, provide to the administering authority: (a) the recommendations section of the annual inspection report; and (b) if applicable, any actions being taken in response to those recommendations; and (c) if, following receipt of the recommendations and (if applicable) actions, the administering authority requests a full copy of the annual inspection report from the holder, provide this to the administering authority within **ten (10) business days** of receipt of the request.
I26	**Transfer Arrangements** The holder 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.
I27	**Decommissioning and Rehabilitation** Dams must not be abandoned but be either: (a) decommissioned and rehabilitated to achieve compliance with condition I28; or (b) be left in-situ for a beneficial use(s) provided that: (i) it no longer contains contaminants that will migrate into the environment; and (ii) It contains water of a quality that is demonstrated to be suitable for its intended beneficial use(s); and (c) The administering authority, the holder of the environmental authority and the landholder agree in writing that: (i) the dam will be used by the landholder following the cessation of the environmentally relevant activity(ies); and (ii) landholder is responsible for the dam, on and from an agreed date.
I28	Before surrendering this environmental authority the site must be rehabilitated to achieve a safe, stable, non-polluting landform and meets the requirement of **conditions G1** and **G6**.
I29	**Register of Regulated Structures** A Register of Regulated Structures must be established and maintained by the holder for each regulated dam.
I30	The holder must provisionally enter the required information in the Register of Regulated Structures when a design plan for a regulated dam is submitted to the administering authority.
I31	The holder must make a final entry of the required information in the Register of Regulated Structures once compliance with **conditions I10** and **I11** has been achieved.
I32	The holder must ensure that the information contained in the Register of Regulated Structures is current and complete on any given day.

I33	All entries in the Register of Regulated Structures must be approved by the chief executive officer for the holder of this authority, or their delegate, as being accurate and correct.
I34	The holder must, at the same time as providing the annual return, supply to the administering authority a copy of the records contained in the Register of Regulated Structures, in the electronic format required by the administering authority.
I35	**Transitional Arrangements** All existing structures that have not been assessed in accordance with either the Manual of the former Manual for Assessing Hazard Categories and Hydraulic Performance of Dams must be assessed and certified in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635) by 20 February 2016.
I36	All existing structures must subsequently comply with the timetable for any further assessments in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635) specified in **Table I1 – Transitional requirements for Existing Structures**, depending on the consequence category for each existing structure assessed in the most recent previous certification for that structure.
I37	**Table I1 – Transitional Requirements for Existing Structures** ceases to apply for a structure once any of the following events has occurred: (a) it has been brought into compliance with the hydraulic performance criteria applicable to the structure under the Manual; or (b) it has been decommissioned; or (c) it has been certified as no longer being assessed as a regulated structure.
I38	Certification of the transitional assessment required by **conditions I35** and **I36** (as applicable) must be provided to the administering authority **20 February 2016**.

Table I1 – Transitional Requirements for Existing Structures

Transition period required for existing structures to achieve the requirements of the Manual for Assessing Consequence Categories and Hydraulic Performance of Dams (EM635)			
Compliance with Criteria	**High**	**Significant**	**Low**
>90% and a history of good compliance performance in last 5 years	No transition required	No transition required	No transitional conditions apply. Review consequence assessment every 7 years.
>70% – ≤90%	Within 7 years, unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	Within 10 years, unless otherwise agreed with the administering authority, based on no history of unauthorised releases.	No transitional conditions apply. Review consequence assessment every 7 years.
>50 – ≤70%	Within 5 years unless otherwise agreed with the administering authority, based on no history of unauthorised	Within 7 years unless otherwise agreed with the administering authority, based on no history of unauthorised	Review consequence assessment every 7 years.

	releases.	releases.	
≤50%	Within 5 years of as per compliance requirements (e.g. TEP timing)	Within 5 years or as per compliance requirements (e.g. TEP timing)	Review consequence assessment every 5 years.

Schedule J: Watercourse Diversions

Schedule J: Watercourse Diversions	
Condition number	**Condition**
J1	**Permanent watercourse diversions** Permanent watercourse diversions, or the re-establishment of a pre-existing watercourse where a temporary watercourse diversion is being replaces, 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 on-going 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; and (e) maintain equilibrium and functionality in all substrate conditions at the location of the diversion.
J2	**Temporary watercourse diversions** Temporary watercourse diversions must be designed and constructed to: (a) maintain the pre-existing hydrologic characteristics of surface water systems for the area in which the watercourse diversion is located; (b) maintain the hydraulic characteristics of the watercourse diversion that are equivalent to other local watercourses and are suitable for the area in which the diversion is located. Where structures that require on-going maintenance are used, they must not compromise the equilibrium and performance of the temporary watercourse diversion and adjoining watercourses; (c) maintain sediment transport and water quality regimes that minimise any impacts to upstream water quality, geomorphology or vegetation; and (d) maintain equilibrium and functionality at all substrate conditions at the location of the diversion.
J3	**Design Plan** A certified Design Plan that achieves **condition J1** for permanent watercourse diversions and **condition J2** for temporary watercourse diversions must be submitted to the administering authority at least **ten (10) business days** before commencing construction of the diversion.
J4	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.
J5	**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.
J6	**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 the environmental authority. An electronic copy must be provided to the administering authority on request.

Definitions

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

'80th percentile' is not more than one fifth, of the measured values are to exceed the stated release limit for the limit period. For example, no more than eight (8) for any ten (10) consecutive samples for the long term period.

'the Act' means the Environmental Protection Act 1994.

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

'affected person' is someone whose drinking water can potentially be impacted as a result of discharges from a dam or their life or property can be put at risk due to dwellings or workplaces being in the path of a dam break flood.

'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);

a) against recommendations contained in previous annual inspections reports;
b) against recognised dam safety deficiency indicators;
c) for changes in circumstances potentially leading to a change in consequence category;
d) for conformance with the conditions of this authority;
e) for conformance with the 'as constructed' drawings;
f) 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); and
g) 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 or regulated structure, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in the declaration, all of the following aspects are addressed and are sufficient to allow an independent audit of the assessment:

a) exactly what has been assessed and the precise nature of that determination;
b) the relevant legislative, regulatory and technical criteria on which the assessment has been based;
c) 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
d) 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 or regulated structure, means:

a) operations of any kind and all things constructed, erected or installed for that dam; and

b) any land used for those operations.

'authority' means an environmental authority or a development approval.

'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.

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

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

'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 most recent version of the 'Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)' or sits successor, 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)).

'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, **certifying** or **certified'** have a corresponding meaning as 'certification'.

'chemical' means:

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

'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 most recent version of the 'Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)' or its successor.

'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.

'daily peak design capacity' for sewage treatment works, has the meaning in Schedule 2, section 63(4) of the Environmental Protection Regulation 2008 as the higher equivalent person (EP) for the works calculated using each of the formulae found in the definition for EP.

'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 (eg 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 storage allowance' or '**DSA'** means an available volume, estimated in accordance with the most recent version of the 'Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)' or its successor 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 structure, means the certifier of the design plan for the regulated dam.

Disturbance of land includes:

a) compacting, removing, covering, exposing or stockpiling of earth
b) removal or destruction of vegetation or topsoil or both to an extent where the land has been made susceptible to erosion;
c) carrying out mining within a watercourse, waterway, wetland or lake;
d) the submersion of areas by tailings or hazardous contaminant storage and dam/structure walls;
e) temporary infrastructure, including any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after the mining activity has ceased; or
f) releasing of contaminants into the soil, or underlying geological strata.

However, the following areas are not included when calculating areas of 'disturbance':

a) areas off lease (e.g. roads or tracks which provide access to the mining lease);
b) areas previously disturbed which have achieved the rehabilitation outcomes;
c) by agreement with the administering authority, areas previously disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions);
d) areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc.) which is to be left by agreement with the landowner; or
e) disturbance that pre-existed the grant of the tenure.

'document' has the meaning in the *Acts Interpretation Act 1954* and means:

a) any paper or other material on which there is writing; and
b) any paper or other material on which there are marks; and
c) figures, symbols or perforations having a meaning for a person qualified to interpret them; and
d) any disc, tape or other article or any material from which sounds, images, writings or messages are capable of being produced or reproduced (with or without the aid of another article or device).

'EC' means electrical conductivity.

'emergency action plan' means documentation forming part of the operational plan held by the holder 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 affected persons and the implementation of protection measures. The plan must require dam owners to annually review and update contact information where required.

'enhanced release' means a release of mine affected water from release points RP4, RP5, RP6, RP7 OR RP10 in accordance with Schedule K.

'environmental authority' means this environmental authority.

'environmental harm' has the meaning in section 14 of the *Environmental Protection Act 1994* and means any adverse effect, or potential adverse effect (whether temporary or permanent and of whatever magnitude, duration or frequency) on an environmental value, and includes environmental nuisance.

'environmental nuisance' has the meaning in section 15 of the *Environmental Protection Act 1994* and means unreasonable interference or likely interference with an environmental value caused by –

a) aerosols, fumes, light, noise, odour, particles or smoke; or

b) an unhealthy, offensive or unsightly condition because of contamination; or

c) another way prescribed by regulation.

'environmental offset' has the meaning of section 7 of the *Environmental Offsets Act 2014*.

'equilibrium': a state where 'balance' is achieved despite changing variables.

'equivalent person or EP' has the meaning under section 3 of the Planning Guidelines For Water Supply and Sewerage, 2005, published by the Queensland Government. It is calculated in accordance with Schedule 2, Section 63(4) of the Environmental Protection Regulation 2008 where:

a) EP = V/200 where V is the volume, in litres, of the average dry weather flow of sewage that can be treated at the works in a day; or

b) EP = M/2.5 where M mis the mass, in grams, of phosphorous in the influent that the works are designed to treat as the inlet load in a day.

'existing authority' has the meaning in section 94 of the *Environmental Offsets Act 2014*.

'existing structure' means a structure that was in existence prior to (insert date of EA the adoption of this schedule of conditions under the authority) meets any or both of the following, a structure:

a) with a design that is in accordance with the version 5.0 of Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933) and that is considerably in progress; and

b) 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 most recent version of the 'Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)' or its successor published by the administering authority.

'**flaring**' means the process of combusting mine gases.

'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.

'functional design' is a document that contains 'conceptual' information about the design, operation and revegetation criteria of a watercourse diversion that addresses the outcomes stated in the model conditions and any conditions on the environmental authority relating to the diversion. The document should include, but not be

limited to:

a) geomorphic and vegetation assessment of the existing watercourse;

b) hydrologic conditions of the existing watercourse;

c) the proposed watercourse diversion route; and

d) results from hydrologic, hydraulic and sediment transportation modelling used in the design of the diversion.

'GDA' means Geocentric Datum of Australia.

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

'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 most recent version of the 'Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)' or tis successor.

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

'$L_{A1,\ Adj,15min}$' means the A-weighted sound pressure level, adjusted for tonal character, that which is exceeded for 1% of any 15 minute period.

'L_{A90}' means the A-weighted sound pressure level that has been exceeded for 90% of the sample period.

'$L_{Aeq,\ Adj\ 15min}$' means the A-weighted sound pressure level of a continuous steady sound, adjusted for tonal character, that within any 15 minute period has the same square sound pressure as a sound level that varies with time.

'Lake Vermont' means Lake Vermont Mine

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

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

'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.

'levee' means an embankment that only provides for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from releases from other works, during the progress of those stormwater or flood flows or those releases; and does not store any significant volume of water or flowable substances at any other times.

'licensed place' means the mining activities carried out at the mining tenements detailed in page 1 of this environmental authority.

'low consequence dam' means any dam that is not a high or significant hazard category as assessed using the most recent version of the 'Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)' or its successor.

'm' means metres.

'mandatory reporting level' or '**MRL'** means a warning and reporting level determined in accordance with the criteria in the most recent version of the 'Manual for assessing consequence categories and hydraulic performance

of structures (ESR/2016/1933)' or its successor published by the administering authority.

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

'Meadowbrook' means the Lake Vermont Meadowbrook Project.

'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.

'mining activity' or **'mining activities'** means exploration, construction, mining operation, rehabilitation and monitoring activities on the mining tenures stated in Environmentally Relevant Activity and location details of this environmental authority.

'mine affected water':

a) means the following types of water:
   i) pit water, tailings dam water, processing plant water;
   ii) water contaminated by a mining activity which would have been an environmentally relevant activity under Schedule 2 of the Environmental Protection Regulation 2008 if it had not formed part of the mining activity;
   iii) rainfall runoff which has been in contact with any areas disturbed by 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;
   iv) groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated;
   v) groundwater from the mine's dewatering activities;
   vi) a mix of mine affected water (under any of paragraphs i) – v) and other water.

b) 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:
   i) land that has been rehabilitated to a stable landform and either capped or revegetated in accordance with the acceptance criteria set out in the environmental authority but only still awaiting maintenance and monitoring of the rehabilitation over a specified period of time to demonstrate rehabilitation success; or
   ii) land that has partially been rehabilitated and monitoring demonstrates the relevant part of the landform with which the water has been in contact does not cause environmental harm to waters or groundwater, for example:
      1) areas that have been capped and have monitoring data demonstrating hazardous material adequately contained with the site;
      2) 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.

'minimise' is to reduce to the smallest possible amount or degree.

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

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

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

'notice of election' has the meaning in section 18(2) *Environmental Offsets Act 2014*.

'operational plan' includes:

a) normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA allowance); and
b) 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' or **'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).

'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-existing watercourse' is the section of a watercourse from which the flow of water will be diverted as a result of the construction and operation of a watercourse diversion.

'prescribed environmental matters' has the meaning in section 10 of the *Environmental Offsets Act 2014*, limited to Matters of State Environmental Significance listed in schedule 2 of the Environmental Offsets Regulation 2014.

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

a) a marine park under the Marine Parks Act 1992; or

b) a World Heritage Area.

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

a) a watercourse;

b) groundwater; and

c) an area of land that is not specified in Schedule # - Table # (Authorised activities) of this environmental authority.

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

'regional ecosystem' has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 3.2 August 2012) and means a vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil. Regional ecosystems of Queensland were originally described in Sattler and Williams (1999). The Regional Ecosystem Description Database (Queensland Herbarium 2013) is maintained by Queensland Herbarium and contains the current descriptions of regional ecosystems.

'Register of Regulated Structures' includes:

a) date of entry in the register;
b) name of the dam, its purpose and intended/actual contents;
c) the consequence category of the dam as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* (EM635);
d) date, names, and reference for the design plan plus dates, names, and reference numbers of all document(s) lodged as part of a design plan for the dam;
e) name and qualifications of the suitably qualified and experienced person who certified the design plan and 'as constructed' drawings;
f) for the regulated dam, other than in relation to any levees –
    i) the dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the

dam;
ii) coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area;
iii) dam crest volume (megalitres);
iv) spillway crest level (metres AHD);
v) maximum operating levels (metres AHD);
vi) storage rating table of stored volume versus level (metres AHD);
vii) design storage allowance (megalitres) and associated level of the dam (metres AHD); and
viii) mandatory reporting level (metres AHD).

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

'regulated dam' means any dam in the significant or high hazard category as assessed using the *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures* (EM635) published by the administering authority.

'regulated structure' includes land-based containment structures, levees, bunds and voids, but not a tank or container designed and constructed to an Australian Standard that deals with strength and structural integrity.

'rehabilitation' means 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 licenced place.

'reporting limit' means the lowest concentration that ban be reliably measured with specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes, the reporting limit is selected as the lowest non-zero standard in the calibration curve. Results that fall below the reporting limit will be reported as "less than" the value of the reporting limit. The reporting limit is also referred to as the practical quantification limit or the limit of quantification. For polycyclic aromatic hydrocarbons, the reporting limit must be based on super-ultra trace methods and, depending on the specific polycyclic aromatic hydrocarbon, will range between 0.005ug/L–0.02µg/L.

'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.

'**residual subsidence ponding'** means ponding, as a result of subsidence from mining activities, after all possible mitigation (e.g. drainage and pumping) has been undertaken.

'revegetation' is the re-establishment of vegetation1 of a species and density of cover similar to surrounding undisturbed areas or the landform that existed before mining activities on soil surfaces associated with the construction or rehabilitation of a watercourse diversion.

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

'run of mine ore' refers to mined coal, excluding waste and dilution.

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

'sensitive place' means:

a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
b) a motel, hotel or hostel; or
c) an educational institution; or
d) a medical centre or hospital; or
e) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 2004* or a World Heritage Area; or
f) a public park or 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 and educational institution, childcare or kindergarten, school or playground, hospital, surgery or other medical institution, commercial and retail activity, 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 pack 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 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 related company.

For example, 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*.

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

'strategic environmental areas' has the meaning in section 11(1) of the *Regional Planning Interest Act 2014*.

'structure' means dam or levee.

'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:

a) For regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design.
b) 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.

'suitably qualified and experienced person' in relation to watercourse diversions means a person who is a RPEQ under the provisions of the *Professional Engineers Act 2002*, who has an **appropriate level of expertise** in the structures, geomechanics, hydrology, hydraulics and environmental impact of watercourse diversions.

An **appropriate level of expertise** includes:

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

Persons with relevant expertise include:

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

'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.

'temporary watercourse diversion' is a man-made structure that may incorporate geomorphologic, hydraulic, hydrologic and ecological components of a local watercourse ad is designed, constructed, operated and maintained to an engineering standard that ensures the diversion does not compromise the equilibrium and performance of the diversion and adjoining watercourses. A temporary diversion is replaced by a permanent diversion, or the re-establishment of the pre existing watercourse, within the timeframe specified in the design plan.

'µS/cm' means micro siemens per centimetre.

'void' means any constructed, open excavation in the ground.

'waste' is defined under section 13 of the *Environmental Protection Act 1994*.

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

'watercourse' has the same meaning given in section 5 of the *Water Act 2000*.

'**watercourse diversion**' is a man-made structure that diverts or interferes with the course of flow within a watercourse, but that does not impound water.

'water year' means the **twelve (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 watercourses, bed and banks of any waters, dams, non-tidal or tidal waters (including the sea), storm water channel, storm water drain, and groundwater and any part thereof.

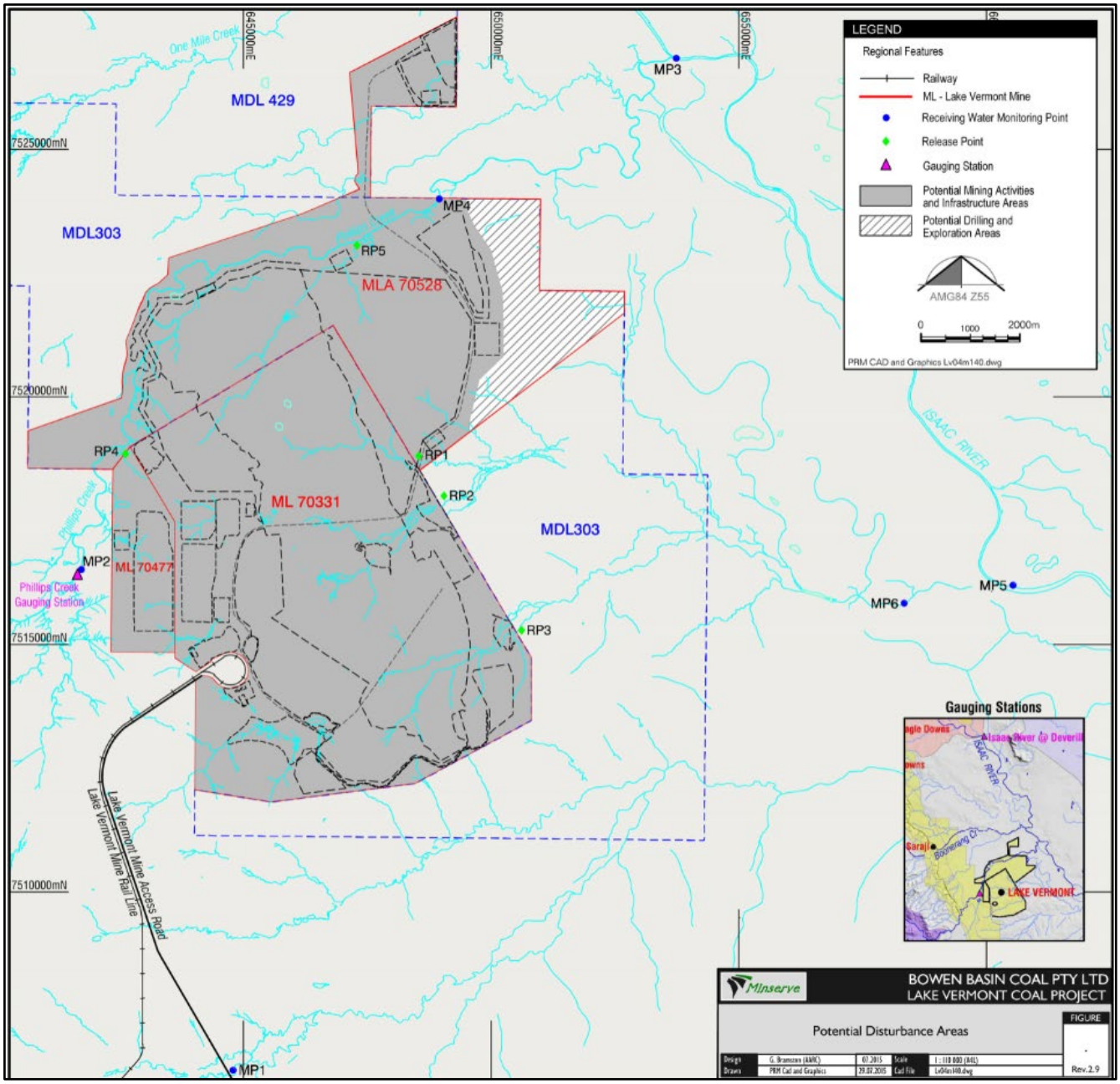
'**WaTERS'** means the Water Tracking and Electronic Reporting System (WaTERS) used for tracking of regulated activities in Queensland that involve water releases to the environment.

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

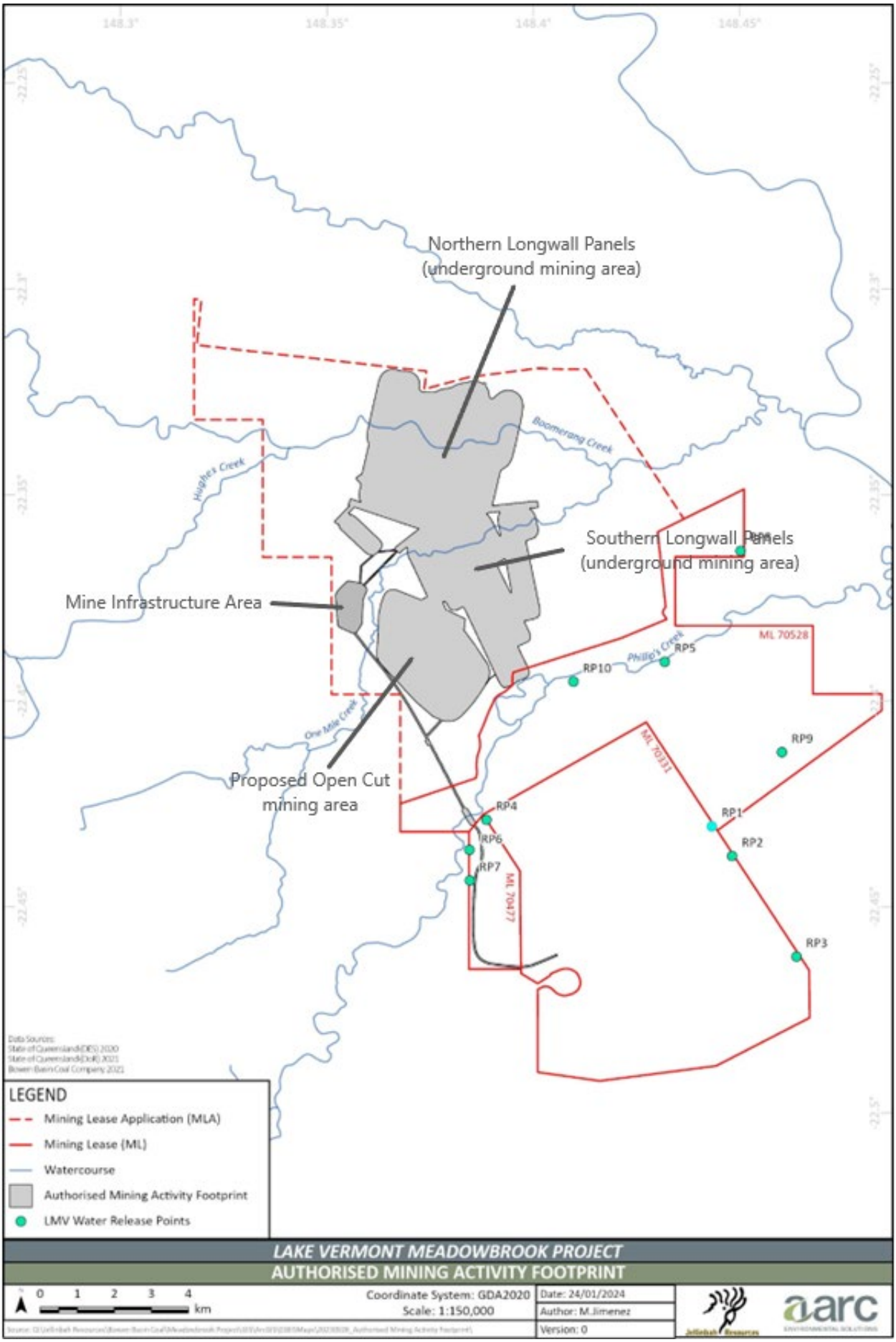
'wet season' means the time of year, covering one or more months, when most of the average annual rainfall in a region occurs. For the purposes of DSA determination this time of year is deemed to extend from **1 November** in one year to **31 May** in the following year inclusive.

END OF DEFINTIIONS

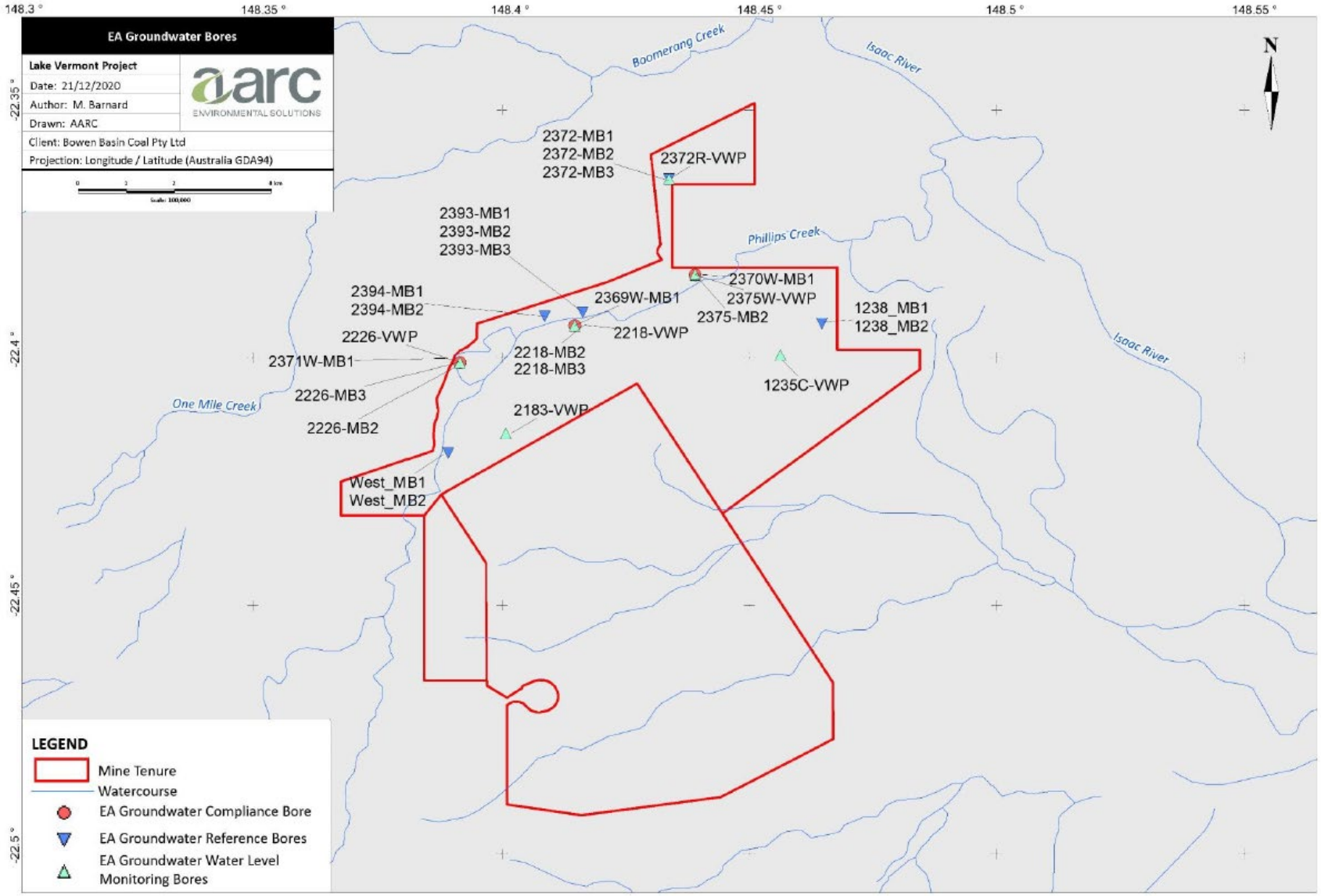
Attachment 1: Authorised Disturbance Footprint (Lake Vermont Coal Mine)



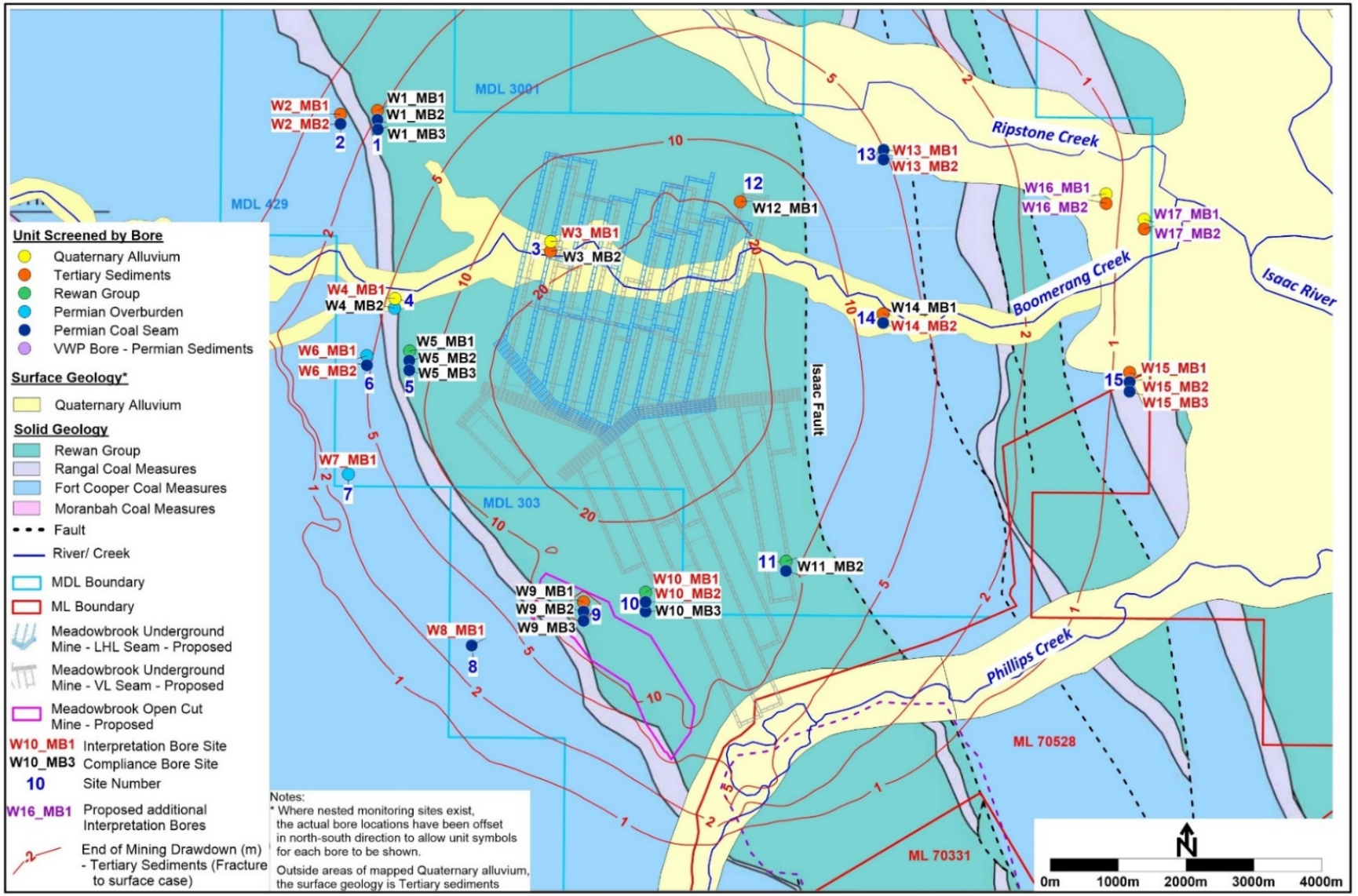
Attachment 2: Authorised Disturbance Footprint (Meadowbrook Project)



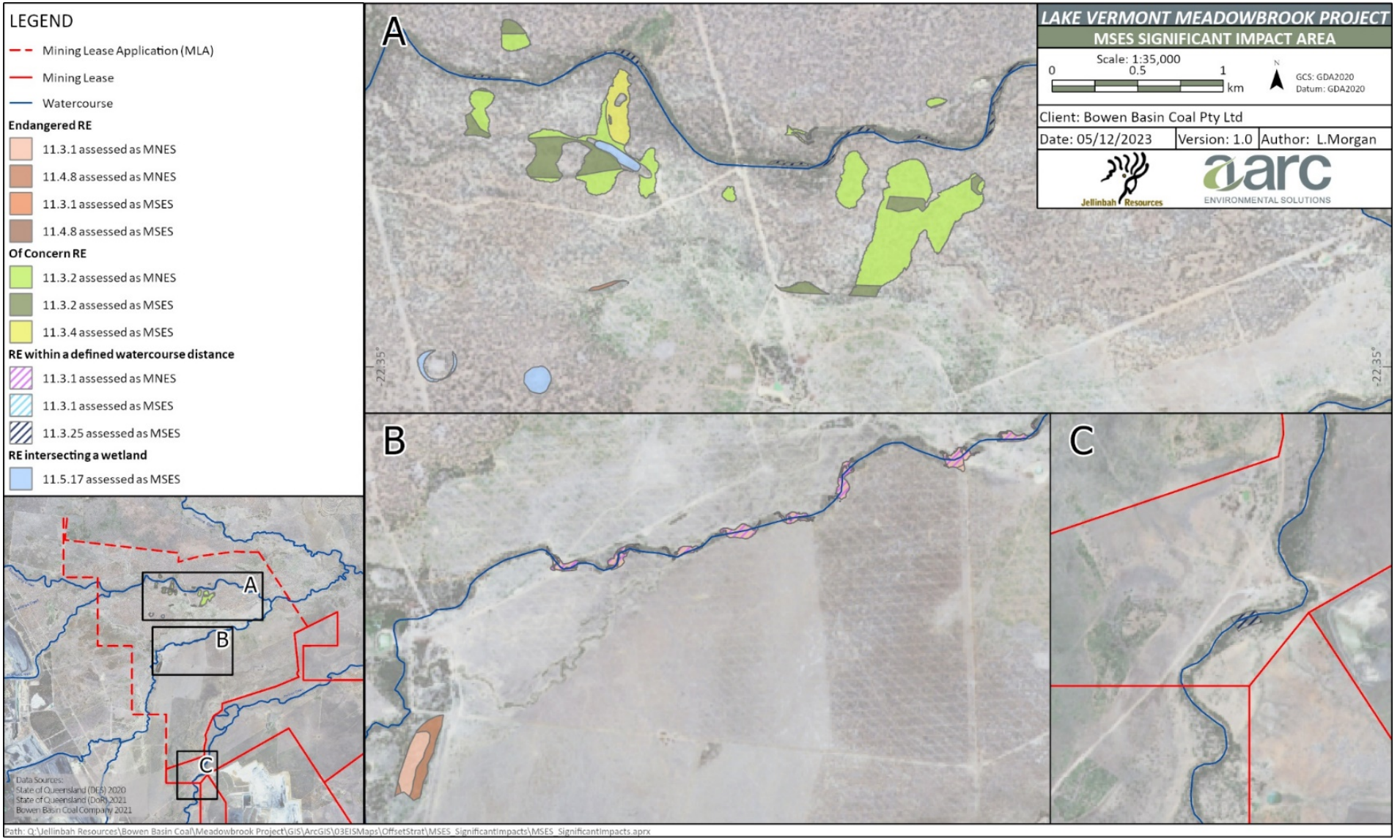
Attachment 3: Groundwater Bore Monitoring Locations (Lake Vermont Coal Mine)



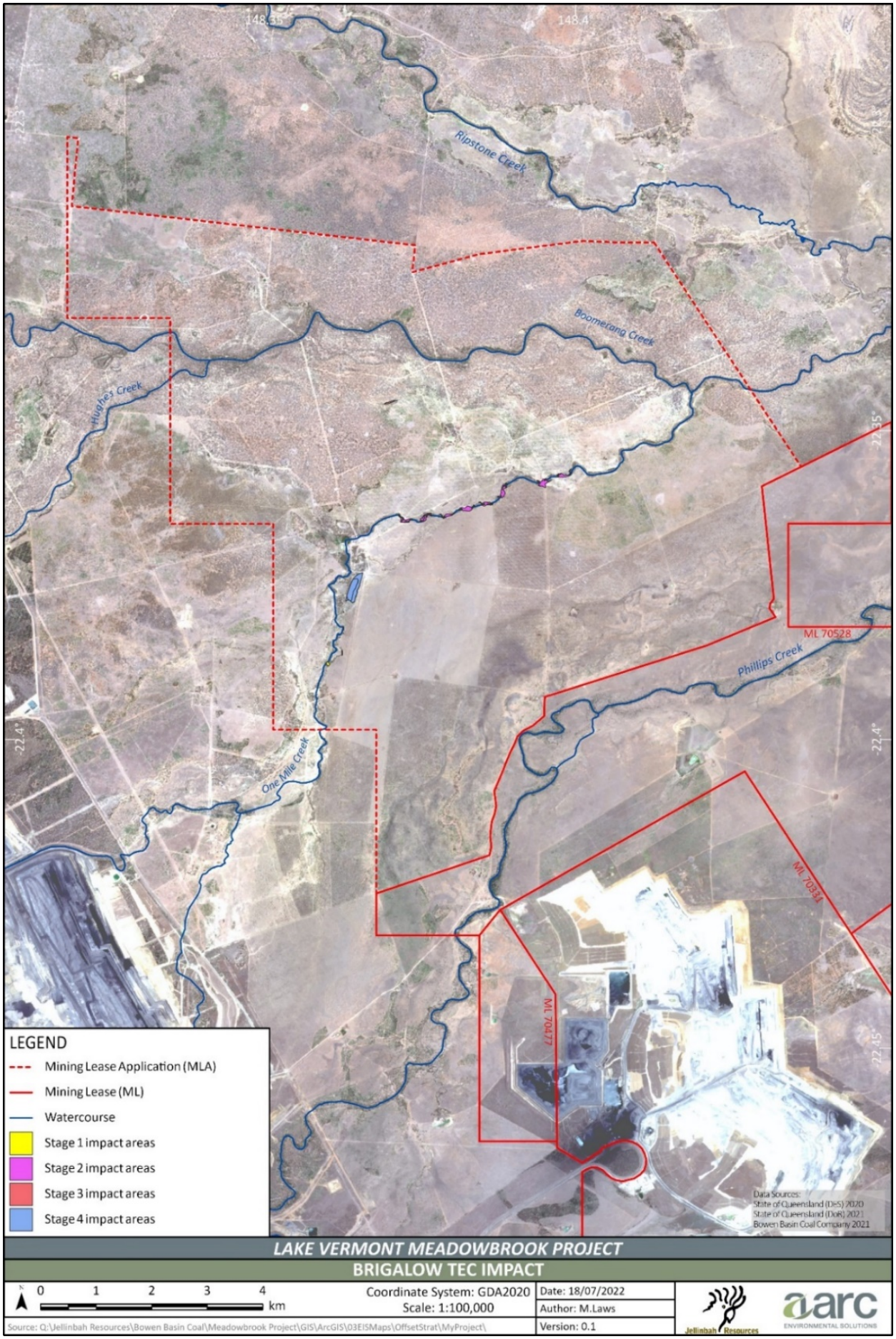
Attachment 4: Groundwater Bore Monitoring Locations (Meadowbrook Project)



Attachment 5: MSES authorised significant impact areas

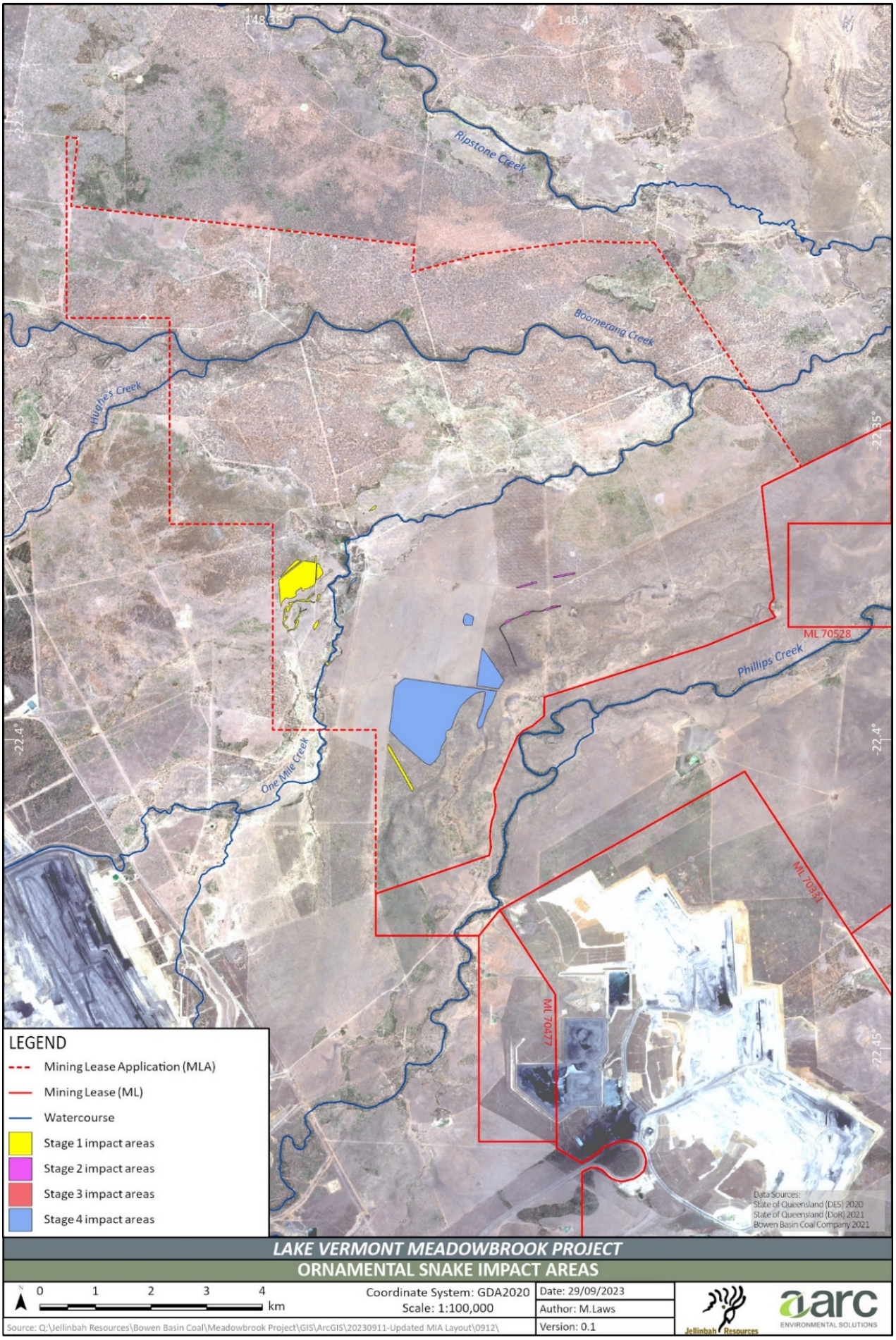


Attachment 6: Brigalow TEC authorised significant impact areas

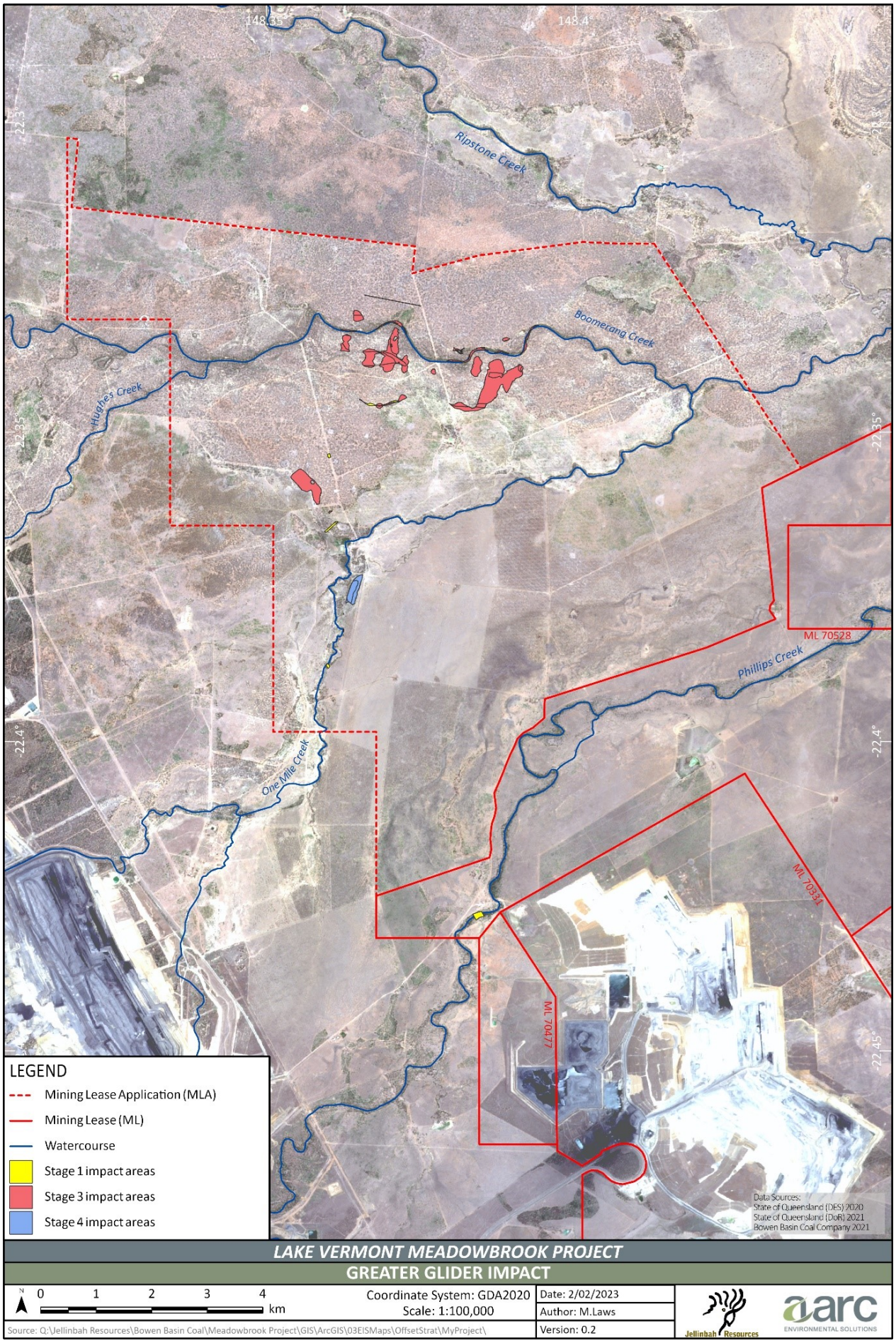


Attachment 7: Poplar Box TEC authorised significant impact areas

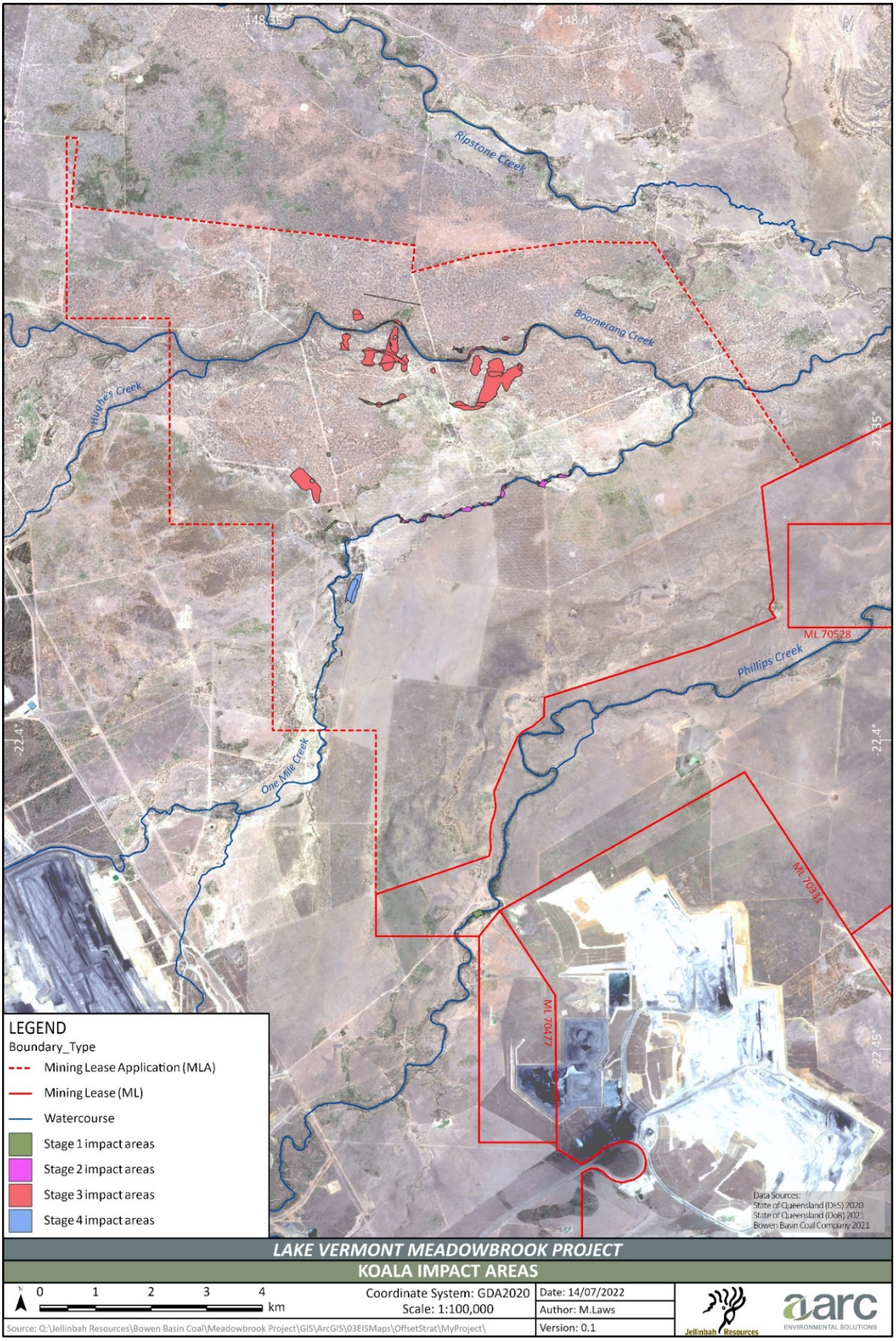
Attachment 8: Ornamental Snake authorised significant impact areas



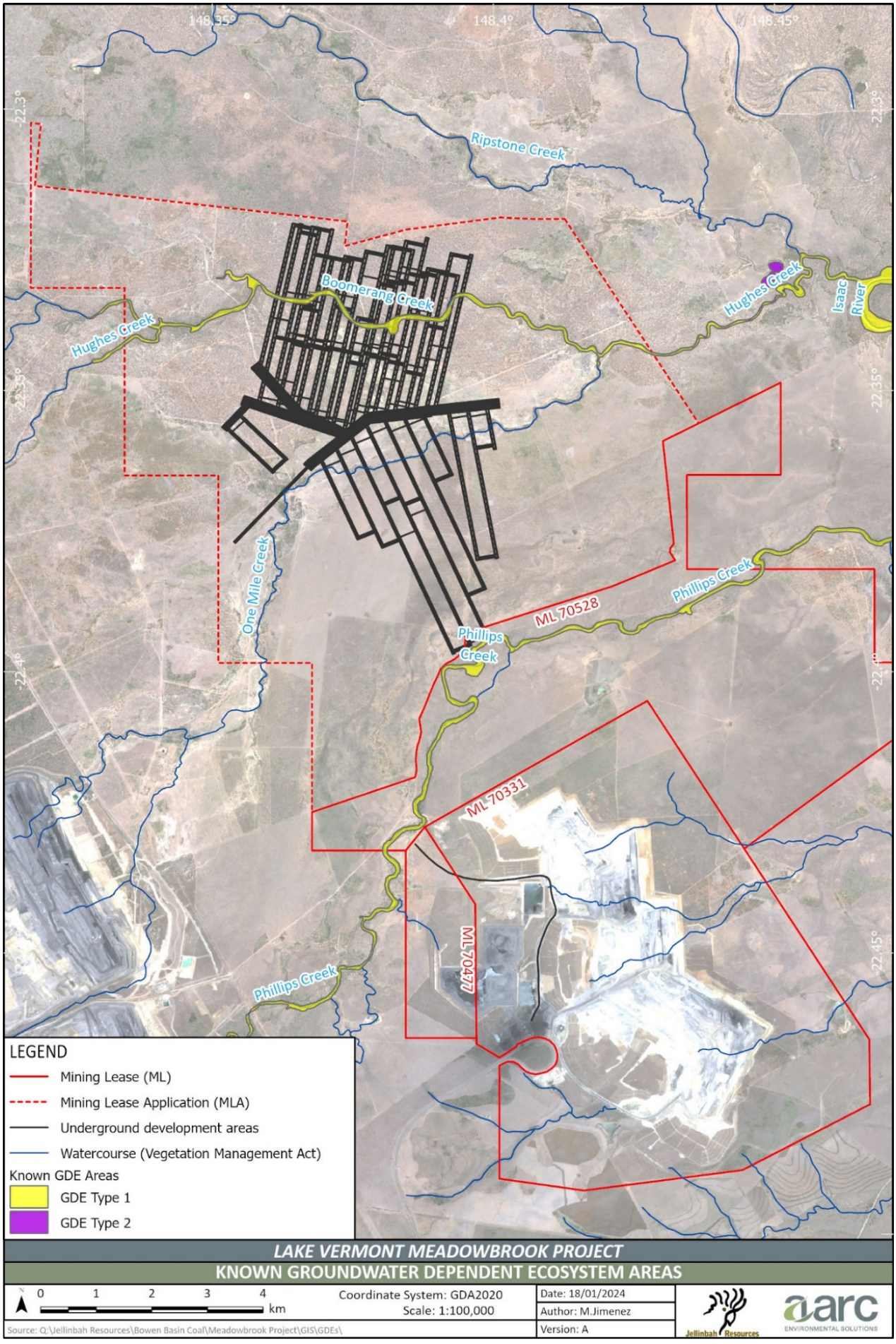
Attachment 9: Greater Glider authorised significant impact areas



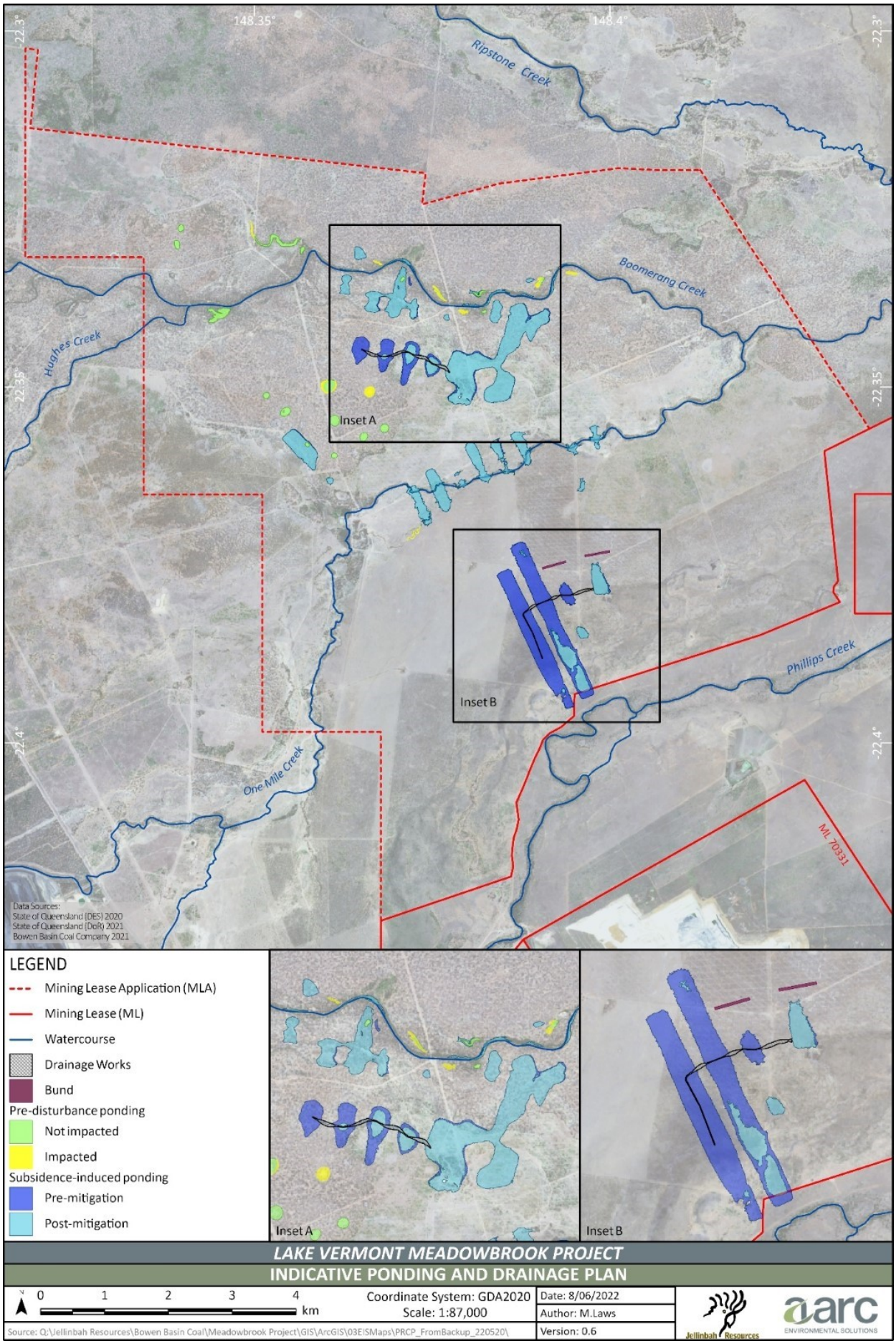
Attachment 10: Koala authorised significant impact areas



Attachment 11: Identified GDE locations (Meadowbrook)



Attachment 12: Authorised areas of residual subsidence ponding



END OF PERMIT

Appendix B—Coordinator-General's stated conditions under the SSRC Act and proponent commitments

This appendix includes conditions stated by the Coordinator-General under section 11(2) of the SSRC Act. In accordance with section 11(3)(a) of the SSRC Act, these conditions are enforceable conditions under the SDPWO Act. The entity with jurisdiction for the conditions in this appendix is the Coordinator-General.

Condition 1. General conditions

The proponent must advise the Coordinator-General in writing that construction of the project has commenced within 5 business days of construction commencing.

The proponent must advise the Coordinator-General in writing that the operation of the project has commenced within 5 business days of operations commencing.

Condition 2. Social Impact Management Plan

The proponent must develop and implement a detailed Social Impact Management Plan (SIMP) to manage the potential social impacts of the project identified in the social impact assessment (SIA) through ongoing community and stakeholder engagement.

The proponent must submit the detailed SIMP to the Coordinator-General for approval at least 3 months prior to the commencement of construction.

(a) The SIMP must be prepared in consultation with the Isaac Regional Council.

(b) The SIMP must include the following plans:

  (i) Community and Stakeholder Engagement Plan in accordance with Condition 3

  (ii) Workforce Management Plan in accordance with Condition 4

  (iii) Housing and Accommodation Plan in accordance with Condition 5

  (iv) Local Business and Industry Procurement Plan in accordance with Condition 6 and

  (v) Health and Community Wellbeing Plan in accordance with Condition 7.

(c) A SIMP for the closure of the mine must be prepared and submitted to the Coordinator-General for approval at least 24 months prior to the conclusion of operations.

(d) The proponent must publish the SIMP on their website within one month of the Coordinator-General's approval of the plan. The proponent must notify the Coordinator-General within 5 business days of the SIMP being made publicly available on the proponent's website.

Condition 3. Community and Stakeholder Engagement Plan

(a) The proponent must engage with all relevant stakeholders to ensure they are informed about the project and that identified potential social impact issues are effectively managed and monitored.

(b) The proponent must prepare a Community and Stakeholder Engagement Plan that is to be submitted as part of the SIMP to the Coordinator-General for approval, in accordance with Condition 2.

(c) The Community and Stakeholder Engagement Plan must address the construction and operation phases of the project, and include:

  (i) objectives and key performance indicators

  (ii) an analysis of key stakeholders and stakeholder issues

  (iii) action plans for ongoing engagement including details of proposed communication tools, timeframes for activities and roles and responsibilities for engagement

  (iv) processes for incorporating stakeholder feedback into the further development of project-specific management measures

(v) details of any stakeholder agreements to be negotiated, including agreements with state and local government agencies

(vi) a complaints management process and

(vii) monitoring and reporting protocols.

(d) The Community and Stakeholder Engagement Plan must:

(i) be consistent with the Community and Stakeholder Engagement Plan outlined in Section 6 of the Social Impact Management Plan (Appendix T) of the EIS (BBC, 2023) and

(ii) incorporate the management measures listed in Appendix T and proponent's commitments in Chapter 22 – Proposed Environmental Management and Monitoring Commitments of the EIS (BBC, 2023).

(e) The Community and Stakeholder Engagement Plan must provide details for:

(i) providing advanced notice to directly affected landholders and residents of nearby homesteads of project works that may potentially impact on the amenity and activities of the properties

(ii) consulting with emergency service providers to develop an emergency response procedure for the project and

(iii) consulting with the Isaac Regional Council, local service providers and relevant state agencies about potential impacts from the project on primary healthcare, childcare and social housing and measures to manage potential impacts.

Condition 4. Workforce Management Plan

(a) The proponent must prioritise recruitment of workers from local and regional communities and those who would relocate to regional communities.

(b) The proponent must support the health and wellbeing of the project workforce.

(c) The proponent must prepare a Workforce Management Plan that is to be submitted as part of the SIMP to the Coordinator-General for approval, in accordance with Condition 2.

(d) The Workforce Management Plan must address the construction and operational phases of the project, and include:

(i) objectives and key performance indicators

(ii) summary workforce profile, including the estimated proportions of new local and FIFO workers

(iii) roster arrangements for local and FIFO workers;

(iv) measures that implement the recruitment strategy described in the social impact management plan for the Lake Vermont Meadowbrook project

(v) measures to enhance potential employment opportunities for local communities including Indigenous people and mitigate potential negative social impacts

(vi) proposed training and development initiatives to improve local and regional skills including initiatives for traditionally underrepresented

(vii) programs to support the physical and mental health and wellbeing of workers

(viii) the level of on-site health services to be provided for workers

(ix) details of any workforce code of conduct that governs worker interactions with local communities and

(x) monitoring and reporting protocols.

(e) The Workforce Management Plan must:

(i) be consistent with the Workforce Management Plan outlined in Section 2 of the Social Impact Management Plan (Appendix T) of the EIS (BBC, 2023) and

(ii) incorporate the management measures listed in Appendix T and proponent's commitments in Chapter 22 – Proposed Environmental Management and Monitoring Commitments of the EIS (BBC, 2023).

Condition 5. Housing and Accommodation Plan

(a) The proponent must limit or mitigate negative social impacts of the project to housing and accommodation affordability and availability in local and regional communities.

(b) The proponent must prepare a Housing and Accommodation Plan that is to be submitted as part of the SIMP to the Coordinator-General for approval, in accordance with Condition 2.

(c) The Housing and Accommodation Plan must address the construction and operational phases of the project, and include:

  (i) objectives and key performance indicators

  (ii) measures to enhance potential benefits for project workers and the community

  (iii) measures to mitigate potential negative social impacts

  (iv) policies regarding housing and accommodation support to be provided to project workers and their families who wish to move to the local communities and

  (v) monitoring and reporting protocols.

(d) The Housing and Accommodation Plan must:

  (i) be consistent with the Housing and Accommodation Plan outlined in Section 3 of the Social Impact Management Plan (Appendix T) of the EIS (BBC, 2023) and

  (ii) incorporate the management measures listed in Appendix T and proponent's commitments in Chapter 22 – Proposed Environmental Management and Monitoring Commitments of the EIS (BBC, 2023).

(e) The Housing and Accommodation Plan must be developed in consultation with the Isaac Regional Council and provide:

  (i) an updated assessment of local housing availability and demand, housing tenure, dwelling stock, sales and rental volumes, and prices

  (ii) the timing for the proposed purchase or construction of 15 dwellings

  (iii) the likely impact of the project on the housing market and housing demand

  (iv) support for investment in non-resource worker housing

  (v) the arrangements for housing the project's FIFO workforce including the capacity of the existing Lake Vermont Mine WAV and other commercial WAV's, and beds secured for construction and operational workforce

  (vi) analysis of the dwelling type preferences for the resident workforce

  (vii) a description of the currently available options through the proponent for the provision of accommodation.

Condition 6. Local Business and Industry Procurement Plan

(a) The proponent must ensure that opportunities for local businesses to provide goods and services for the project are maximised during the construction and operational phases.

(b) The proponent must prepare a Local Business and Industry Procurement Plan that is to be submitted as part of the SIMP to the Coordinator-General for approval, in accordance with Condition 2.

(c) The Local Business and Industry Procurement Plan must address the construction and operational phases of the project, and include:

  (i) objectives and key performance indicators

  (ii) procurement strategies and initiatives for local and regional suppliers, including Aboriginal and Torres Strait Islander owned businesses, and actions to facilitate participation

  (iii) proposed policies and programs to build local and regional capacity and capability and reduce barriers to entry

(iv) processes that embed the local business and industry procurement strategies into the contracting model for the project

(v) measures to mitigate any potential negative social impacts on local industries

(vi) details of any established industry guidelines or codes of practice which the proponent has committed to compliance and

(vii) monitoring and reporting protocols.

(d) The Local Business and Industry Procurement Plan must:

(i) be consistent with the Local Business and Industry Procurement Plan outlined in Section 4 of the Social Impact Management Plan (Appendix T) of the EIS (BBC, 2023) and

(ii) incorporate the management measures listed in Appendix T and proponent's commitments in Chapter 22 – Proposed Environmental Management and Monitoring Commitments of the EIS (BBC, 2023).

Condition 7. Health and Community Well-being Plan

(a) The proponent must limit or mitigate negative social impacts of the project and capitalise on opportunities to improve the health and well-being of local and regional communities.

(b) The proponent must limit or mitigate adverse impacts of the project on the level of service (social services, facilities and infrastructure) currently provided to local communities.

(c) The proponent must prepare a Health and Community Well-being Plan that is to be submitted as part of the social impact management plan to the Coordinator-General for approval, in accordance with Condition 2.

(d) The Health and Community Well-being Plan must address the construction and operational phases of the project, and include:

(i) objectives and key performance indicators

(ii) measures to ensure that the level of service provided to the local community by existing social services, facilities and infrastructure is not reduced

(iii) measures to mitigate potential health and well-being impacts on local communities and enhance potential benefits

(iv) emergency response arrangements and management measures agreed with emergency service providers, for incidents associated with the project, both on and off the project site

(v) details of any community development programs to be implemented, and the outcomes to be achieved and

(vi) monitoring and reporting protocol.

(e) The Health and Community Well-being Plan must:

(i) be consistent with the Health and Community Well-being Plan outlined in Section 5 of the Social Impact Management Plan (Appendix T) of the EIS (BBC, 2023) and

(ii) incorporate the management measures listed in Appendix T and proponent's commitments in Chapter 22 – Proposed Environmental Management and Monitoring Commitments of the EIS (BBC, 2023).

(f) The Health and Community Well-being Plan must provide details for the following matters:

(i) measures developed in consultation with the Isaac Regional Council, Queensland Health and primary healthcare providers, including local general practitioners, to limit potential adverse impacts of the project on the level of primary healthcare service provided to the local community and

(ii) measures developed in consultation with the Isaac Regional Council and the Isaac Affordable Housing Trust to limit potential adverse impacts of the project on the level of social housing service provided to the local community.

Condition 8. Reporting on the implementation and effectiveness of social impact management measures

(a) The proponent must prepare an annual Social Impact Management Report (SIMR) for each year of construction and the first 5 years of operation.

(b) The annual SIMR must be submitted to the Coordinator-General for approval within 30 business days after the end of the relevant 12-month period from the commencement of construction of the project.

(c) Using the monitoring protocol described in the SIMP, the SIMR must detail:

  (i) an assessment of the social impacts of the project against the potential social impacts identified in the social impact assessment, including the consideration of other proposed developments in local communities

  (ii) the progress and effectiveness of the social impact management measures identified in the social impact management plan

  (iii) where monitoring indicates measures have not been effective, describe how those social impact management measures have been modified

  (iv) the actions taken to implement closure commitments made by the proponent (Appendix 2).

(d) The SIMR must present the total workforce profile including:

  (i) total number of workers employed

  (ii) proportion of local workers, new local workers, Aboriginal and Torres Strait Islander workers and FIFO workers.

(e) Each SIMR must be publicly available on the proponent's website within 30 business days of the Coordinator-General's approval of the relevant report. The proponent must notify the Coordinator-General within 5 business days of the SIMR being published on proponent's website.

Definitions

'commencement of construction' is defined as the commencement of construction of the infrastructure corridor as described in Section 3.3.1 of Chapter 3 – Project Description.

'commencement of operation' is mining and processing of coal.

'FIFO worker' is a worker who does not live in one of the local or regional communities and must commute to work and stay at the workforce accommodation village while on shift.

'local communities' are the 8 nearby regional communities identified in the evaluation report.

'local worker' is a worker who lives in one of the local communities.

'new local worker' is a worker for the project that moves to the local area.

'the project' the Lake Vermont Meadowbrook project.

Appendix C—Recommended conditions for the Commonwealth's approval

To ensure the mitigation measures and offsets summarised in the previous section are enforceable, the proposed conditions for the MNES controlling provisions of listed threatened species and ecological communities; and water resources, are recommended for the Commonwealth's approval under the EPBC Act.

Listed threatened species and ecological communities

Condition 1. Maximum clearance limits

The outcome sought by this condition is to ensure the approval holder does not impact on more than the defined maximum disturbance limits for habitat for listed threatened species and ecological communities specified in Table 1 for each stage of the action.

a) The approval holder must not clear outside of the project area as depicted by Figure 2.
b) During each stage of the action, the approval holder must not clear more than the areas (in hectares) of habitat for each listed threatened species and community as specified in the following Table 1.

Table 1. Maximum disturbance limits to habitat for Listed threatened species and ecological communities

Listed threatened species or TEC	Stage 1	Stage 2	Stage 3	Stage 4	Total impact
Brigalow (Acacia harpophylla dominant and co-dominant) TEC	0.6	6.9	0.1	0.3	7.9
Poplar Box Grassy Woodland on Alluvial Plains TEC	0	0	44.4	0	44.4
Ornamental Snake (*Denisonia maculata*)	41.1	4.6	0.3	165.4	211.4
Squatter Pigeon (southern) (*Geophaps scripta scripta*) breeding, foraging and dispersal habitat	TBC	TBC	TBC	9.3	15.8
Koala (*Phascolarctos cinereus*) (combined populations of Qld, NSW and the ACT) habitat	4.8	8.2	89.1	7.1	109.2
Greater Glider (southern and central) (*Petauroides volans*)	4.5	0	89.1	7	100.6

Condition 2. Offset management strategy

The outcome sought by this condition is to update the significant impact figures and offset obligations for the listed threatened species and ecological communities identified in Condition 1.

a) In consultation with DCCEEW, update the MNES Biodiversity Offsets Strategy to include information to support the updated impact figures for the squatter pigeon, including:
    (i) detailed justification for the updated impact figures
    (ii) a clear description of project staging identifying project impacts and their corresponding offset stage
    (iii) information which demonstrates that there is suitable available land in the proposed offset area to compensate for the significant impact on the squatter pigeon
    (iv) updated EPBC Act offset assessment guide calculations and justifications, informed by the updated calculation for the squatter pigeon
    (v) a general description of interim performance measures and completion criteria to be achieved by the offset for the squatter pigeon.
b) The approval holder must submit the updated MNES Biodiversity Offsets Strategy for the written approval of the Australian Minister for the Environment prior to commencement of the action.
c) In addition to the MNES Biodiversity Offsets Strategy, the approval holder must submit an updated Offset Area Management Plan (OAMP) consistent with updated impact figures for the squatter pigeon for each offset stage of the project, for the written approval of the Australian Minister for the Environment prior to commencing each offset stage of the action.
d) The approval holder must not commence the action until the offset site has been secured. The OAMP must be attached to the legal mechanism used to secure the offset site. The approval holder must provide

written evidence to the department within 5 business days of the offset site being secured, including evidence that the OAMP is attached to the securing mechanism. The approval holder must ensure that the offset site remains secured at least until the expiry date of this approval.

e) If the approval holder is unable, within 5 years of the date of the commencement of the action to provide evidence to the department that the ornamental snake and squatter pigeon is using the offset site, the approval holder must, within 5 years and 6 months of the commencement of action, submit an alternative OAMP. The alternative OAMP must set out how the approval holder will provide offsets meeting the requirement of the EPBC Act Environmental Offsets Policy for the impacts of the action to the Ornamental Snake and Squatter Pigeon.

Condition 3. Matters of National Environmental Significance (MNES) Management Plan

The outcome sought by this condition is to ensure that prior to the commencement of the action, the approval holder has a MNES management plan in place which includes specific species/ ecological community management measures for the listed threatened species and ecological communities identified in Condition 1.

a) The approval holder must submit a MNES management plan for the written approval of the Australian Minister for the Environment prior to commencement of the action.
b) The approval holder must implement the MNES Management Plan from the date of commencement of the action until the expiry date of this approval.
c) The approval holder must not impact on ornamental snake (*Denisonia maculata*), squatter pigeon (*Geophaps scripta scripta*), koala (*Phascolarctos cinereus*), greater glider (*Petauroides volans*), Brigalow (Acacia harpophylla dominant and co-dominant) TEC, and Poplar Box Grassy Woodland on Alluvial Plains TEC habitat until the Australian Minister for the Environment has approved the MNES management plan.
d) The MNES management plan must:

(i) be generally in accordance with the flora and fauna management and mitigation measures proposed in the EIS

(ii) be prepared by a suitably qualified person in accordance with the Australian Government department's Environmental Management Plan Guidelines

(iii) include: measures that will be implemented to avoid, mitigate, and manage impacts to EPBC Act listed threatened species and communities and their habitat during construction, operation, and decommissioning of the action, within, adjacent and downstream of the project site

(iv) undertake a monitoring program to determine the success of management measures that informs adaptive implementation of the MNES management plan for the duration of this approval

(v) detail how proposed management measures align with EPBC Act requirements including relevant approved conservation advice, and are consistent with the measures contained in relevant recovery plans and threat abatement plans

(vi) for the **ornamental snake** (*Denisonia maculata*) the MNES management plan must incorporate the monitoring and management measures detailed in the Ornamental Snake Management Plan and in an updated Subsidence Management Plan to determine that subsidence-induced ponding areas would provide suitable foraging and breeding habitat for frogs, a key source of prey for the ornamental snake

(vii) for the **squatter pigeon** (southern) (*Geophaps scripta scripta*) the MNES management plan must incorporate the following measures to mitigate potential impacts to the squatter pigeon, as a minimum:

a. a suitably qualified person is to implement transect searches for nesting birds within mapped breeding habitat within a 14-day period immediately prior to scheduled clearing
b. if nesting is confirmed, a 40m exclusion zone is to be maintained around the nest site until the breeding cycle is complete or the nest is abandoned
    i. establish a 40m zone around any nesting squatter pigeon individuals or if eggs are present
    ii. clearly demarcate the exclusion zone with tape and signage so that persons undertaking clearing and construction activities will be able to readily see the boundary of the exclusion zone from at least 50 metres away
    iii. do not undertake construction activities within any exclusion zone
    iv. maintain the exclusion zone until a suitably qualified expert confirms all squatter pigeon eggs have hatched, and all squatter pigeon individuals in the nest have left on their own accord
c. areas of potential habitat must be flushed immediately prior to any clearing works
d. monitoring of subsidence-induced ponding areas to determine that additional areas of foraging habitat are created due to their distance to water.

(viii) for the **koala** (*Phascolarctos cinereus*) the MNES management plan must incorporate the following

measures to mitigate potential impacts to the koala, as a minimum:

a. a 40km/h speed limit must be enforced within the project area
b. koala proof fencing must be incorporated into the design of any infrastructure constructed for the project where it passes through areas of critical koala habitat. Fencing must not use barbed wire
c. clearing within koala habitat must be undertaken sequentially, in daylight hours and outside of peak breeding season as a priority and in accordance with a Clearing Management Program
d. incorporation of disturbance thresholds for the koala in the GDEMMP.

(viii) for the **greater glider** (*Petauroides volans*) the MNES management plan must incorporate the following measures to mitigate potential impacts to the greater glider, as a minimum:

a. a 40km/h speed limit must be enforced within the project area
b. pre-clearance surveys to map and mark the location of habitat trees within the clearing area are to be undertaken and completed one to three weeks prior to commencement of vegetation clearing
c. fencing must use a non-barbed top wire for the project where it passes through areas of critical greater glider habitat
d. removal of hollow-bearing habitat trees must be consistent with best practice soft felling tree procedures for arboreal fauna and supervised by a suitably qualified person or fauna/ spotter catcher
    i. 48hrs prior to clearing hollow-bearing trees, trees are checked by a suitably qualified person
    ii. if individuals are identified, techniques such as tapping or shaking trees is recommended to encourage individuals to vacate. This should be performed as late in the day as possible to avoid disturbing/ dislocating nocturnal gliders
    iii. the suitably qualified expert has the authority to cease clearance for a sufficient amount of time to relocate fauna to an appropriate habitat area
    iv. felling is to involve gently pushing the tree and lowering or felling using equipment (e.g. claw extension or forestry harvester) that would allow the habitat trees to be lowered to the ground with minimal impact. This could also require selective removal of large hollow limbs by a climbing arborist.
e. incorporation of disturbance thresholds for the greater glider in the GDEMMP.

A water resource, in relation to coal seam gas development and large coal mining development

Condition 4. Groundwater Dependent Ecosystem Monitoring and Management Plan

The outcome sought by this condition is to ensure that prior to the commencement of the action, the approval holder has a Groundwater dependent ecosystem monitoring and management plan (GDEMMP) in place which includes specific GDE monitoring parameters. The GDEMMP must:

a) be informed by the development of a GDE habitat quality monitoring program for each of the 14 proposed GDE monitoring areas
b) provide two years of GDE baseline monitoring (consisting of four events covering two wet seasons and two dry seasons) to develop appropriate triggers and assessment parameters, to commence upon project approval and prior to construction
c) monitor and report on the condition of potential GDE areas including those in any proposed offset area
d) specify surface water quality, sediment quality, and macroinvertebrate trigger thresholds
e) detail how changes to surface water quality, sediment quality, macroinvertebrates, and the receiving environment, as a result of the action, would be detected, assessed, and if harm to the environment occurs, remediated
f) specify subsidence trigger thresholds and management measures, to detect and mitigate subsidence to prevent harm to protected matters, that will be implemented if approved subsidence trigger thresholds are exceeded
g) the approval holder must implement effective mitigation measures where monitoring triggers have been breached due to hydrological changes (water quality or quantity impacts) or groundwater drawdown impacts from the project
h) provide offsets for threshold exceedances that result in habitat loss for significant impacts to GDEs including Brigalow TEC, Poplar Box TEC, and koala and greater glider that are dependent on GDE areas within riparian corridors
i) conduct annual biodiversity hotspot surveys in conjunction with a monthly water quality monitoring program to monitor potential changes/ impacts to the stygofauna community over the life of the mine until after the mine closure and the rehabilitation period
j) undertake groundwater pumping techniques for stygofauna sampling and consider the installation of

additional shallow monitoring bores close to One Mile Creek.

Condition 5. Subsidence Management Plan

The outcome sought by this condition is to ensure that prior to the commencement of the action, the approval holder has a Subsidence Management Plan (SMP) in place which includes specific subsidence monitoring and actions. The SMP must be developed by an appropriately qualified person, prior to mining activities commencing, and remain implemented for the duration of mining activities. The SMP must:

a) provide an overview of the existing environment of the proposed subsidence area
b) provide a summary of the key impacts that may arise as a result of the proposed subsidence
c) provide for the proper and effective monitoring and management of the actual and potential environmental impacts of the proposed subsidence; including but not limited to impacts to:
    i) landform conditions;
    ii) surface cracking;
    iii) erosion;
    iv) ponding;
    v) watercourse channel/ geomorphic conditions;
    vi) ecology;
    vii) an assessment of the adequacy of any completed repair works or recommended actions from the previous monitoring period.
d) provide for the development of management actions (e.g. repairs or rehabilitation works) and establish a process to monitor the completion of actions.

Condition 6. Water Management Plan

The outcome sought by this condition is to ensure that prior to the commencement of the action, the approval holder updates the existing Lake Vermont WMP. The WMP must be developed by an appropriately qualified person, prior to mining activities commencing, and remain implemented for the duration of mining activities. The WMP must:

a) provide for effective management of actual and potential environmental impacts resulting from water management associated with the mining activity carried out under this approval; and
b) be developed in accordance with the administering authority's guideline *Preparation of water management plans for mining activities (EM324)* and include:
    i) a study of the source of contaminants;
    ii) a water balance model for the site;
    iii) a water management system for the site;
    iv) measures to manage and prevent saline drainage;
    v) measures to manage and prevent acid rock drainage;
    vi) contingency procedures for emergencies; and
    vii) a program for monitoring and review of the effectiveness of the water management plan.

Condition 7. Receiving Environment Monitoring Program

The outcome sought by this condition is to ensure that prior to the commencement of the action, the approval holder updates the existing Receiving Environment Monitoring Program (REMP). For the purposes of the REMP, the receiving environment is the waters of One Mile Creek, Boomerang Creek, Phillips Creek and the Isaac River within 15km downstream of the release points. The approval holder must develop and implement the REMP to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. The REMP must:

a) monitor 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
b) monitor fish passage through culverts of Phillips Creek and One Mile Creek to determine success of fish passage at these structures
c) 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
d) apply procedures and guidelines from ANZG and other relevant guideline documents.

Appendix D—Human Rights Act assessment

Impact assessment

Human Rights Act 2019

Introduction:

Bowen Basin Coal Pty Ltd, on behalf of the Lake Vermont Joint Venture including QCMM (Lake Vermont Holdings Pty Ltd), Marubeni Coal Pty Ltd, CHR Vermont Pty Ltd and Coranar (Australia) Pty Ltd have proposed the Lake Vermont Meadowbrook Project (the project).

This project proposes underground longwall mining and an open-cut satellite pit to mine coal seams to the immediate north of the existing Lake Vermont Mine approximately 30 kilometres northeast of Dysart. The project proposes extraction of approximately 122 million tonnes of run-of-mine (ROM) coal over the 30-year life of the project. Annually, extraction is estimated at up to 7 million tonnes per annum (Mtpa) of ROM coal, equivalent to approximately 5.5Mtpa of metallurgical product coal, for the export market.

Bowen Basin Coal has completed an Environmental Impact Statement (EIS) for the project that describes the project, provides an assessment of the proposed and potential environmental, economic, and social impacts of the project, both positive and negative. The EIS also describes monitoring, management and mitigation measures proposed to avoid or minimise any negative impacts. The EIS also considers feasible alternatives to the project whilst providing enough information for the administering authority to determine if the project is suitable to proceed or not. The EIS process provided opportunities for state government agencies as well as members of the public to make comments and submissions on the project. In the EIS assessment report, I recommend that the project is suitable to proceed provided that the recommendations of the EIS assessment report are fully implemented by requiring conditions.

This human rights assessment details how human rights have been considered as part of the recommendation by the delegate that the project is suitable to proceed. It is important to note that whilst my decision impacts Bowen Basin Coal, only individuals in Queensland have human rights and not corporations, therefore this assessment focuses entirely on the impact of my decision on individuals' human rights.

Legislative Basis:

The *Human Rights Act 2019* (the HR Act) makes it unlawful for a public entity, in its decision making, to fail to give proper consideration to a human right relevant to a decision or action.

It is a law that applies to anyone working for the Queensland Government, including the decision maker for an Environmental Impact Statement assessment report (EIS assessment report) under the *Environmental Protection Act 1994* (EP Act).

When deciding if the project is suitable to proceed, I am required to:

- give proper consideration to human rights relevant to my decision; and
- make decisions that are compatible with human rights.

ASSESSMENT DETAILS
Assessing officer: Chris Loveday
Decision/action: This human rights assessment relates to the EIS assessment report requirement under section 57 of the EP Act (version of the EP Act current at the commencement of the EIS process, 4 December 2019) for the coal project EIS proposed by Bowen Basin Coal (the proponent).

Queensland Government

The chief executive must give the proponent a report (an EIS assessment report) about the submitted EIS within 30 business days after

(a) if, at the end of the submission period, the chief executive has accepted any submissions—the day the notice mentioned in subsection (1) was given; or

(b) otherwise—the end of the submission period.

Related to the requirement under section 57:

The EP Act requires that under section 58 in preparing an EIS assessment report, the chief executive must consider the following:

(a) the final terms of reference for the EIS;

(b) the submitted EIS;

(c) all properly made submissions and any other submissions accepted by the chief executive;

(d) the standard criteria;

(e) another matter prescribed under a regulation.

Additionally, section 59 of the EP Act lists the required content of an assessment report required by section 57, an EIS assessment report must:

(a) address the adequacy of the EIS in addressing the final terms of reference; and

(b) address the adequacy of any environmental management plan for the project; and

(c) make recommendations about the suitability of the project; and

(d) recommend any conditions on which any approval required for the project may be given; and

(e) contain another matter prescribed under a regulation.

HUMAN RIGHTS ENGAGED

The following Human Rights were identified as potentially engaged by the decision:

1. Section 15(2) - Recognition and equality before the law - Every person has the right to enjoy the person's human rights without discrimination.
2. Section 16 - The right to life - Every person has the right to life and has the right not to be arbitrarily deprived of life.
3. Section 24(2) - Property rights - A person must not be arbitrarily deprived of the person's property.
4. Section 26(2) - Protection of families and children - Every child has the right, without discrimination, to the protection that is needed by the child, and is in the child's best interests, because of being a child.
5. Section 28 - Cultural rights—Aboriginal peoples and Torres Strait Islander peoples –
    1) Aboriginal peoples and Torres Strait Islander peoples hold distinct cultural rights.
    2) Aboriginal peoples and Torres Strait Islander peoples must not be denied the right, with other members of their community—

a) to enjoy, maintain, control, protect and develop their identity and cultural heritage, including their traditional knowledge, distinctive spiritual practices, observances, beliefs and teachings; and
b) to enjoy, maintain, control, protect, develop and use their language, including traditional cultural expressions; and
c) to enjoy, maintain, control, protect and develop their kinship ties; and
d) to maintain and strengthen their distinctive spiritual, material and economic relationship with the land, territories, waters, coastal seas and other resources with which they have a connection under Aboriginal tradition or Island custom; and
e) to conserve and protect the environment and productive capacity of their land, territories, waters, coastal seas and other resources.

3) Aboriginal peoples and Torres Strait Islander peoples have the right not to be subjected to forced assimilation or destruction of their culture.

I have not listed all 23 Human Rights protected under the HR Act above, instead I have only listed those rights I believe to be engaged by a decision about the suitability of the project.

I did not undertake any additional consultation to determine if the above rights were engaged. Instead, I have relied on the EIS process and on the public notification process undertaken as part of the EIS process to fulfill the requirements (where appropriate) to consult with potentially affected individuals, whose human rights may be engaged by the decision.

LIMITATIONS

In considering if the rights below are limited by the project, I have considered the impact of a determination that the project is suitable to proceed following the completion of the EIS process. Whilst such a determination does not preclude the proponent from being able to make an application for an Environmental Authority, I can only consider my decision as part of this assessment.

For those rights potentially engaged by the decision, my assessment is set out below:

1. **Section 15(2) – Recognition and equality before the law – Every person has the right to enjoy the person's human rights without discrimination.**

Potential Impacts

Discrimination is defined in the HR Act to include direct discrimination or indirect discrimination, within the meaning of the *Anti-Discrimination Act 1991* on the basis of an attribute in section 7 of that Act. The relevant attributes for the decision are age and race. In relation to indirect discrimination, I have considered whether my decision imposes a burden or denies a benefit in a way that has the effect of reinforcing, perpetuating, or exacerbating disadvantage, including historical or systemic disadvantage.

The project coal seams provide high-quality hard coking coal, PCI coal and an industrial coal product. Industrial coal is scalped from reject material and equates to approximately 10% to 15% of the total product coal produced. The mining and combustion of the project's coal would emit greenhouse gases (mostly CO2) into the atmosphere. Whilst the amount of CO2 emitted would be small from a global emissions perspective, it may contribute to climate change. There is evidence to suggest that climate change will disproportionately impact those who have vulnerabilities due to age, whether young or old, or because of underlying health conditions, and for First Nations peoples, more than others. Furthermore, there is evidence to suggest that future generations will not have the same freedoms as the current generation, because their options for

avoiding dangerous climate change may be restricted, therefore, the intergenerational aspect is a key consideration for this right.

Considerations

The potential limitation to the right to enjoy a person's human rights without discrimination occurs from climate change impacts that may arise from the project.

- The purpose of the limitation on human rights in section 15(2) is to allow the extraction of a metallurgical coal product for export. The International Energy Agency's Sustainable Development Scenario predicts 85% of the total global thermal and metallurgical coal demand in 2030 and 2050 would be from the Asia Pacific region.
- Mining and selling the project coal would generate economic benefits, including profits to the proponent, royalties and taxes to the State of Queensland, and social and economic benefits in regional employment, regional infrastructure improvements and flow on effects to local communities. The social and economic benefits at both a state and regional level would occur across all project stages, with royalties tied to the sale of product coal during the operational phase. The royalties received would deliver improvements to economic and social infrastructure across Queensland communities, including those in other parts of Queensland not located in the Bowen Basin.
- There is a public benefit that is realised by the supply of the project's metallurgical coal product, of which there is currently no viable alternative for the commercial production of steel. The steel industry is investigating the manufacture of steel without the use of fossil fuels; however, the widespread deployment of this technology is not yet available.
- The purpose of generating social and economic benefits and providing energy security is consistent with a free and democratic society based on human dignity, equality and freedom. At the local level, the project represents a continuation in employment for existing Lake Vermont Mine workers as production at that mine declines. Developing the mineral resources of the State is an important source of revenue which benefits the people of Queensland and supports the efforts of the Queensland government to undertake decarbonisation activities across the state.
- The proponent has proactively worked to align with GHG emissions targets, which led to a project decarbonisation plan being presented as part of the proponent's response to submissions. In the decarbonisation plan, the proponent acknowledges the project's obligation to report emissions under the *National Greenhouse and Energy Reporting Act 2007* (NGER Act) and proposes methodologies to abate emissions in line with the Australian Government's reformed Safeguard Mechanism.
- To avoid and minimise Scope 1 and 2 emissions generated by the project, and their contribution to climate change, the assessment report recommends the implementation of a Greenhouse gas abatement plan (based on the decarbonisation plan). This Greenhouse gas abatement plan must be made publicly available and reviewed every two years for effectiveness, with matters identified in the review to be addressed and updated. The plan must include:
    - an inventory of projected unmitigated annual Scope 1 and 2 emissions for each greenhouse gas over the life of the project
    - the intended objectives, measures and performance standards to avoid and mitigate Scope 1 and 2 emissions consistent with Queensland's Climate Action Plan and relevant targets

- a process for regularly reviewing, assessing and implementing new technologies to identify opportunities to further reduce emission and energy use and progressively improve energy efficiency
- a program for annual monitoring, auditing and reporting on emissions from all relevant activities and the success of measures to avoid and mitigate emissions and achieve relevant targets

- In addition, the applicant must record and report emissions data against the industry baseline to the Australian Clean Energy Regulator each year the project emits more than 100,000 tonnes of CO2 equivalent (CO2-e), in accordance with the National Greenhouse Gas Reporting framework and Safeguard Mechanism. Where the project exceeds the baseline set by the Australian Government, the applicant can surrender Australian Carbon Credit Units to the Clean Energy Regulator. The Clean Energy Regulator must publish information about all facilities covered by the Safeguard Mechanism. The industry baselines will decline over time to be consistent with achieving Australia's emission reduction targets.
- In relation to Scope 3 emissions, the proponent proposes to export the majority of coal product for use overseas. The Australian and Queensland emissions targets are not affected by emissions in another country, and how other countries choose to limit emissions in their jurisdiction is a matter for them to address directly. However, climate change is a global issue and overseas emissions from Queensland and Australian coal may still contribute to climate change, which may have an impact on Queenslanders.

Based on the above considerations, the limitation of the human rights in section 15(2) is considered necessary to achieve the purpose. The economic and social benefits, as well as energy security, justifies the limitation of this right.

In summary

I have determined that the action will potentially limit the rights in section 15(2) because of the project's contribution to climate change.

2. Section 16 - The right to life - Every person has the right to life and has the right not to be arbitrarily deprived of life.

Potential Impacts

The project, as proposed, involves activities (including mining and transport activities) that generate direct impacts on the environment in the vicinity of the project area. The project may also cause direct impacts on people who live and work in the vicinity of the project and who use the environment in that area for work, recreation, and cultural purposes.

The mining and combustion of the project's coal would emit greenhouse gases (mostly CO2) into the atmosphere and that has the potential to generate indirect impacts on people, property, and the environment in Queensland. Whilst the amount of CO2 emitted would be small from a global emissions perspective, it may contribute to climate change impacts.

The EIS estimates the project's total Scope 1 greenhouse gas emissions would be 33.50 megatons (Mt) of CO2-e, total Scope 2 emissions would be 1.46Mt CO2-e and total Scope 3 emissions (emissions caused during the transport and combustion of the project coal) have been estimated at 312.67Mt CO2-e.

The impact of greenhouse gas emissions on climate change is relevant when considering human rights, because the mining and combustion of the project's coal would contribute to the remaining carbon budget to meet the Paris Agreement goal (to limit the increase in global temperature above pre-industrial levels to well below 2°C while pursuing efforts to limit it to 1.5°C) and may make it harder to achieve that goal.

The EIS includes an Air Quality and Greenhouse Gas Assessment, and a Decarbonisation Plan to support the project Air Quality chapter. The EIS presents a methodology that includes significant abatement measures and identifies requirements for carbon offsets. As a result, emissions are projected to be consistent with the *National Greenhouse and Energy Reporting Act 2007,* (NGER Act), Australian Government's reformed Safeguard Mechanism and Queensland government emission targets.

Considerations

The potential limitation to the rights in section 16 occurs because of the project's direct impacts on the environment and people in the vicinity of the project and because of its contribution to climate change.

The purpose of the limitation on human rights in section 16 is to allow mining and ancillary activities to occur on-site that facilitate the extraction of a metallurgical coal product for export.

The considerations set out above in discussing section 15(2) are relevant also to this section and the limitation to the rights in section 16.

To avoid and mitigate direct impacts on site and their impacts on the right to life, a range of conditions requiring the applicant to avoid, mitigate and monitor the various impacts to environmental values and sensitive receptors in the vicinity of the project were included in recommended conditions stated in the Assessment Report and subsequently to be conditioned in the Draft Environmental Authority (EA).

Based on the above considerations, the limitation of the human rights in section 16 is considered necessary to achieve the purpose. The economic and social benefits, along with the mitigation of impacts achieved by conditions on the Draft EA justify the limitation of this right.

In summary

I have determined that the action will potentially limit the rights in section 16 because of the project's direct impacts on the environment and people in the vicinity of the project and because of its contribution to climate change.

3. Section 24(2) - Property rights - A person must not be arbitrarily deprived of the person's property.

Potential impacts

The project as proposed involves activities that generate direct impacts on property within and adjacent to the project area. These impacts include (but are not limited to) dust nuisance, noise nuisance, land (vegetation) clearing, other land disturbance, groundwater level drawdown and property access restrictions.

As discussed above, the mining and combustion of the project's coal would emit greenhouse gases (mostly CO2) into the atmosphere and that has the potential to generate indirect impacts on people, property, and the environment in Queensland. Whilst the amount of CO2 emitted would be small from a global emissions perspective, it may contribute to impacts from climate change and has the capacity to limit property rights.

Climate change has the potential to impact the use and enjoyment of property due to damage or loss because of the predicted increased frequency and severity of natural climatic hazards such as rainfall, bushfire, and displacement because of sea level rise.

Modelling identified that drawdown of groundwater levels in consolidated and unconsolidated aquifers as a result of the project has the potential to impact bore water supplies to properties beyond the mining lease. I consider that the proponent has made every effort to identify impacted registered and unregistered bore owners on adjacent properties, in order to address make good obligations under s409 of the *Water Act 2000*, however there may be impacted individuals not yet identified.

Considerations

The potential limitation of the rights in section 24(2) occurs because of the project's direct impacts on property in the vicinity of the project and because of its contribution to climate change.

The purpose of the limitation on human rights in section 24(2) is to allow mining and ancillary activities to occur on site that facilitates the extraction of a metallurgical coal product for export.

The considerations set out above in discussing section 15(2) are relevant to this section and the limitation to the rights in section 24(2).

In order to avoid and mitigate direct impacts on site and their impacts to property rights, a range of conditions requiring the applicant to avoid, mitigate and monitor the various impacts to properties including direct impacts from land disturbance, nuisance matters such as dust and noise, and groundwater drawdown have been conditioned in the Draft EA including rehabilitation activities that are required to occur on-site in order to ensure landholders' property rights are protected to the extent possible and land is restored to a suitable post-mining land use.

Based on the above considerations, the limitation of the human rights in section 24(2) is considered necessary to achieve the purpose. The economic and social benefits, along with the mitigation of impacts achieved by conditions in the Draft EA justify the limitation of this right.

In summary

I have determined that the action will potentially limit the rights in section 24 because of the project's direct impacts on property in the vicinity of the project and because of its contribution to climate change.

4. Section 26(2) - Protection of families and children - Every child has the right, without discrimination, to the protection that is needed by the child, and is in the child's best interests, because of being a child

Potential impacts

The impact of greenhouse gas emissions on climate change is relevant when considering the rights of children because it is likely that, because of climate change, the frequency and severity of natural hazards such as heat waves, rainfall events, drought events, tropical cyclones and sea level rise currently being experienced are expected to increase in the future. The potential impacts from climate change would disproportionately affect children who are living now and are born in the future. Children are on average more at risk because they are more vulnerable to climate change due to physical impacts such as thermal stress and because they will experience climate change impacts into the future when they are expected to increase in severity and duration. The project's contribution to increasing emissions may exacerbate climate change impacts.

Considerations

The potential limitation to the rights in section 26(2) occurs from climate change impacts that may arise from the project.

The purpose of the limitation on human rights in section 26(2) is to allow mining and ancillary activities to occur on site that facilitate the extraction of a metallurgical coal product for export.

The considerations set out above in discussing section 15(2) are relevant to this section and the limitation to the rights in section 26(2). Based on those considerations, the limitation of the human rights in section 26(2) is considered necessary to achieve the purpose.

In summary

I have determined that the action will potentially limit the rights in section 26(2) because of the project's contribution to climate change.

5. **Section 28 - Cultural rights—Aboriginal peoples and Torres Strait Islander peoples –**
    1) **Aboriginal peoples and Torres Strait Islander peoples hold distinct cultural rights.**
    2) **Aboriginal peoples and Torres Strait Islander peoples must not be denied the right, with other members of their community—**
        a) **to enjoy, maintain, control, protect and develop their identity and cultural heritage, including their traditional knowledge, distinctive spiritual practices, observances, beliefs and teachings; and**
        b) **to enjoy, maintain, control, protect, develop and use their language, including traditional cultural expressions; and**
        c) **to enjoy, maintain, control, protect and develop their kinship ties; and**
        d) **to maintain and strengthen their distinctive spiritual, material and economic relationship with the land, territories, waters, coastal seas and other resources with which they have a connection under Aboriginal tradition or Island custom; and**
        e) **to conserve and protect the environment and productive capacity of their land, territories, waters, coastal seas and other resources.**
    3) **Aboriginal peoples and Torres Strait Islander peoples have the right not to be subjected to forced assimilation or destruction of their culture**

Potential Impacts

The project, as proposed, involves activities that generate direct impacts on land and waters within and adjacent to the project area. These impacts may affect the intangible cultural heritage values and potential artefacts found on the project site and impact the rights of traditional owners to use the site and the surrounding land.

The applicant has an existing cultural heritage management plan (CHMP) with the Barada Barna people which was created for the "life of the Vermont Coal Project" inclusive of this project and remains valid with the Barada Barna people entity. The CHMP identifies mitigation measures to manage cultural heritage within the project area, in accordance with the *Aboriginal Cultural Heritage Act 2003* (Qld). By implementing

this plan and associated engagement during ground disturbance with the Barada Barna People, the project's direct impacts are minimised.

As discussed above, the mining and combustion of the project's coal would emit greenhouse gases (mostly CO2) into the atmosphere and has the potential to generate indirect impacts on people, property, and the environment in Queensland. Whilst the amount of CO2 emitted would be small from a global emissions perspective, it may contribute to climate change and has the capacity to limit the cultural rights of Aboriginal peoples and Torres Strait Islander peoples.

The Torres Strait and coastal Queensland is predicted to be affected by sea level rise, which has the potential to limit cultural rights of Aboriginal and Torres Strait Islander peoples in specific ways, including by causing: disruption of traditional cultural practices and therefore the transfer of traditional knowledge; displacement from traditional land; impediments to the continuation, preservation and development of culture into the future and for future generations; and irreversible harm to traditional lands and waters.

Considerations

The potential limitation to the rights in section 28 occurs because of the project's direct impacts on land in the vicinity of the project and its contribution to climate change impacts that may arise from the project.

The purpose of the limitation on human rights in section 28 is to allow mining and ancillary activities to occur on site that facilitate the extraction of a metallurgical coal product for export.

The considerations set out above in discussing section 15(2) are relevant to this section also.

To avoid and mitigate direct impacts on site and their impacts on Aboriginal and Torres Strait Island people's connections with, and the conservation and protection of, land, waters and other resources, a range of conditions requiring the applicant to avoid, mitigate and monitor the various impacts to environmental values in the vicinity of the project were included in recommended conditions on the Draft EA.

The linkages between climate change impacts from this project, including induced sea level rise and the potential to limit the human rights in section 28 are not clear. Whilst climate change impacts are predicted to affect communities in the Torres Strait more significantly than other communities in general, the specific risks in relation to these communities and the timeframe in which those risks may be realised are not quantified.

The project, however, has a known lifespan and volume/amount of coal to be removed and benefits that can be easily quantified. On balance, the limitation of the human rights in section 28 is considered necessary to achieve the purpose of the project. The economic and social benefits of the project, including energy security, justifies the limitation to this right.

In summary

I have determined that the action will potentially limit the rights in section 28 because of the project's direct impacts on the environment and people in the vicinity of the project, and its contribution to climate change.

RECORD OF CONSULTATION (if relevant)

No specific consultation was undertaken in relation to the decision. Broad, project-based consultation was undertaken as part of the EIS process.

OUTCOME

☒ Human rights **are limited** and the decision/action is compatible with the HR Act because:

On balance, the limitation on the human rights engaged by the project is reasonable and justifiable because of the benefits of the project.

ORIGINAL SIGNED	29/04/2024
Signature	Date

Christopher Loveday

Department of Environment, Science, and Innovation

Delegate of the administering authority

Environmental Protection Act 1994