Whitehaven

2025

Maules Creek Continuation Project

Environmental Impact Statement

Appendix R
Preliminary Hazard Analysis

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1 Introduction

The Maules Creek Coal Mine (MCCM) is an open cut coal mine located approximately 17 kilometres north-east of Boggabri, New South Wales (NSW) (Figure 1). The MCCM is operated by Maules Creek Coal Pty Ltd (MCC).

Mining operations at the MCCM are currently approved until 31 December 2034 with a run-of-mine (ROM) coal extraction rate of up to 13 million tonnes per annum (Mtpa) in accordance with Project Approval (PA) 10_0138 (as modified). PA 10_0138 was issued under Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) in 2012. The existing MCCM comprises a single open cut pit, Northern Emplacement and Southern Emplacement areas, and Mine Infrastructure Area (MIA). The MIA includes the Coal Handling and Preparation Plant (CHPP), run-of-mine (ROM) coal stockpiles, product coal stockpiles, train load-out infrastructure, workshops and administration buildings, hardstand and laydown areas, car parking, wash bays, and other associated infrastructure (Figure 2).

MCC is seeking approval to continue open cut mining operations within the MCCM mining and exploration tenements for a further 10 years (from 2035 to 2044). Development Consent for the Maules Creek Continuation Project (the Project) is being sought under the State Significant provisions (i.e. Division 4.7) under Part 4 of the EP&A Act.

This Preliminary Hazard Analysis (PHA) forms part of an Environmental Impact Statement (EIS), which has been prepared to accompany a Development Application made for the Project in accordance with Part 4 of the EP&A Act.

This PHA has been conducted to evaluate the potential hazards associated with the Project in accordance with:

- the general principles of risk evaluation and assessment outlined in *Multi-level Risk Assessment guideline* (NSW Department of Planning and Infrastructure [DP&I], 2011);
- the requirements of Chapter 3 (Hazardous and offensive development) of the *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP); and
- *Hazardous Industry Planning Advisory Paper (HIPAP) No. 6: Hazard Analysis* (NSW Department of Planning [DoP], 2011a).

Assessed risks have been compared to qualitative risk assessment criteria developed in accordance with International Organisation for Standardisation (ISO) 31000:2018 *Risk Management – Guidelines,* and in *HIPAP No. 4: Risk Criteria for Land Use Safety Planning* (HIPAP No. 4) (DoP, 2011b).

This PHA also addresses Secretary's Environmental Assessment Requirements (SEARs) as outlined in Table 1.

Table 1
Relevant Secretary's Environmental Assessment Requirements

Requirement	Section Where Addressed
Hazards and Bushfire • … • A preliminary risk screening in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021, and a Preliminary Hazard Analysis (PHA) prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis'* and Multi-Level Risk Assessment if the development is "potentially hazardous".	This PHA

LEGEND
- MCCM Mining Tenement Boundary (CL and ML)
- Mine Site
- Local Government Boundary
- State Forest
- State Conservation Area, Aboriginal Area
- Rail Line

Source: NSW Spatial Services (2023); Geoscience Australia (2011)

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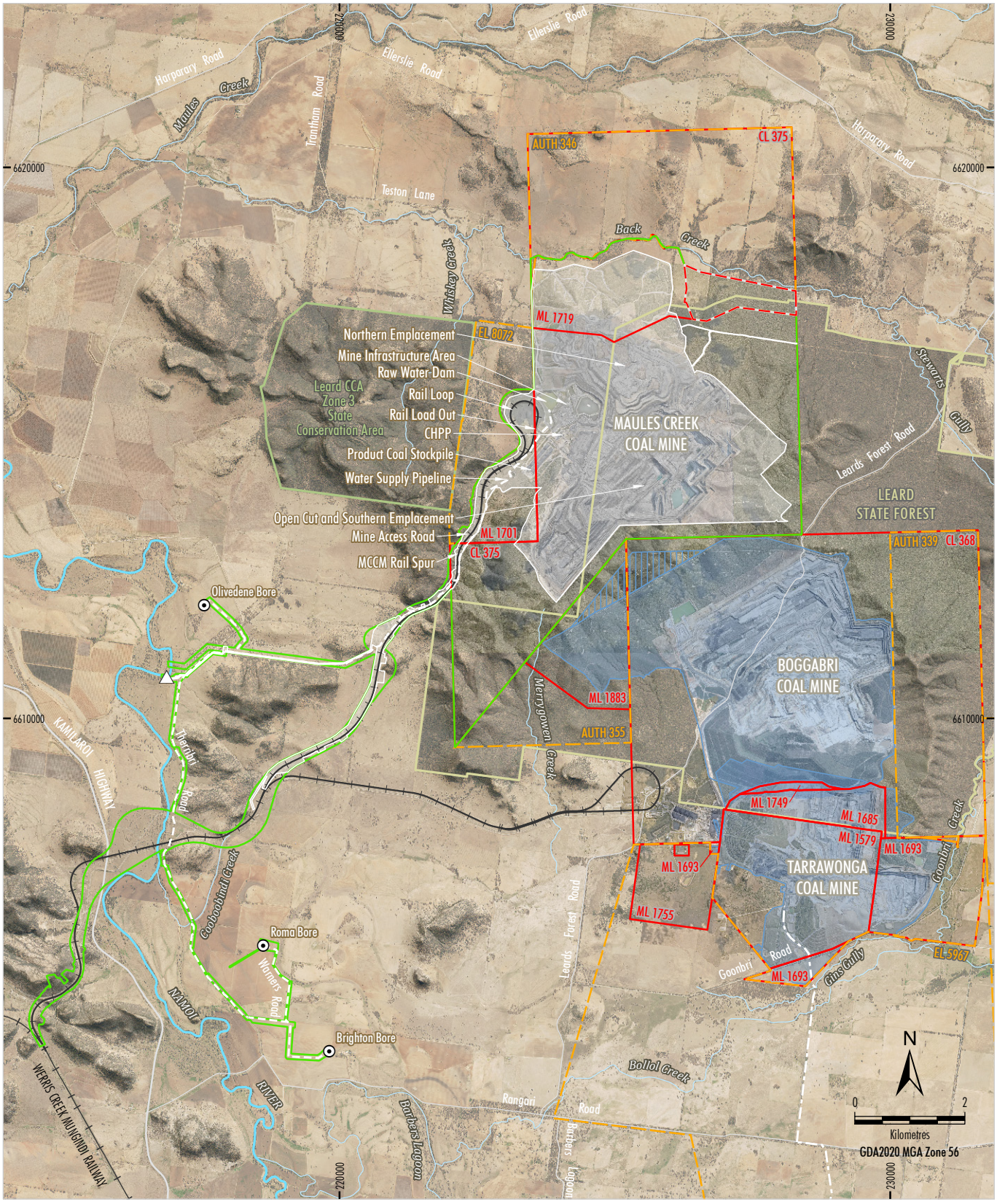
MAULES CREEK CONTINUATION PROJECT

Project Location

Figure 1



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LEGEND

- Rail Line
- State Conservation Area
- State Forest
- Exploration Licence Boundary (AUTH and EL)
- Mining Tenement Boundary (ML and CL)
- Provisional Mining Lease Application Area
- Other Mining Operation *
- Other Mining Operation - Proposed *
- VCM to TCM Water Transfer Pipeline

Existing/Approved MCCM Development

- Project Boundary (PA 10_0138)
- Approximate Extent of Existing/Approved Surface Development
- MCCM Water Supply Pipeline
- MCCM Groundwater Supply Bore
- MCCM Namoi River Pump Station

** BCM boundary digitised from Figure 1 of the BCM Modification 10 Scoping Letter.*

Source: NSW Spatial Services (2024)
Orthophoto Mosaic: Whitehaven (2019-2024)

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MAULES CREEK CONTINUATION PROJECT

Existing/Approved Maules Creek Coal Mine – General Arrangement

Figure 2

1.1 Project Overview

The Project would include the following activities:

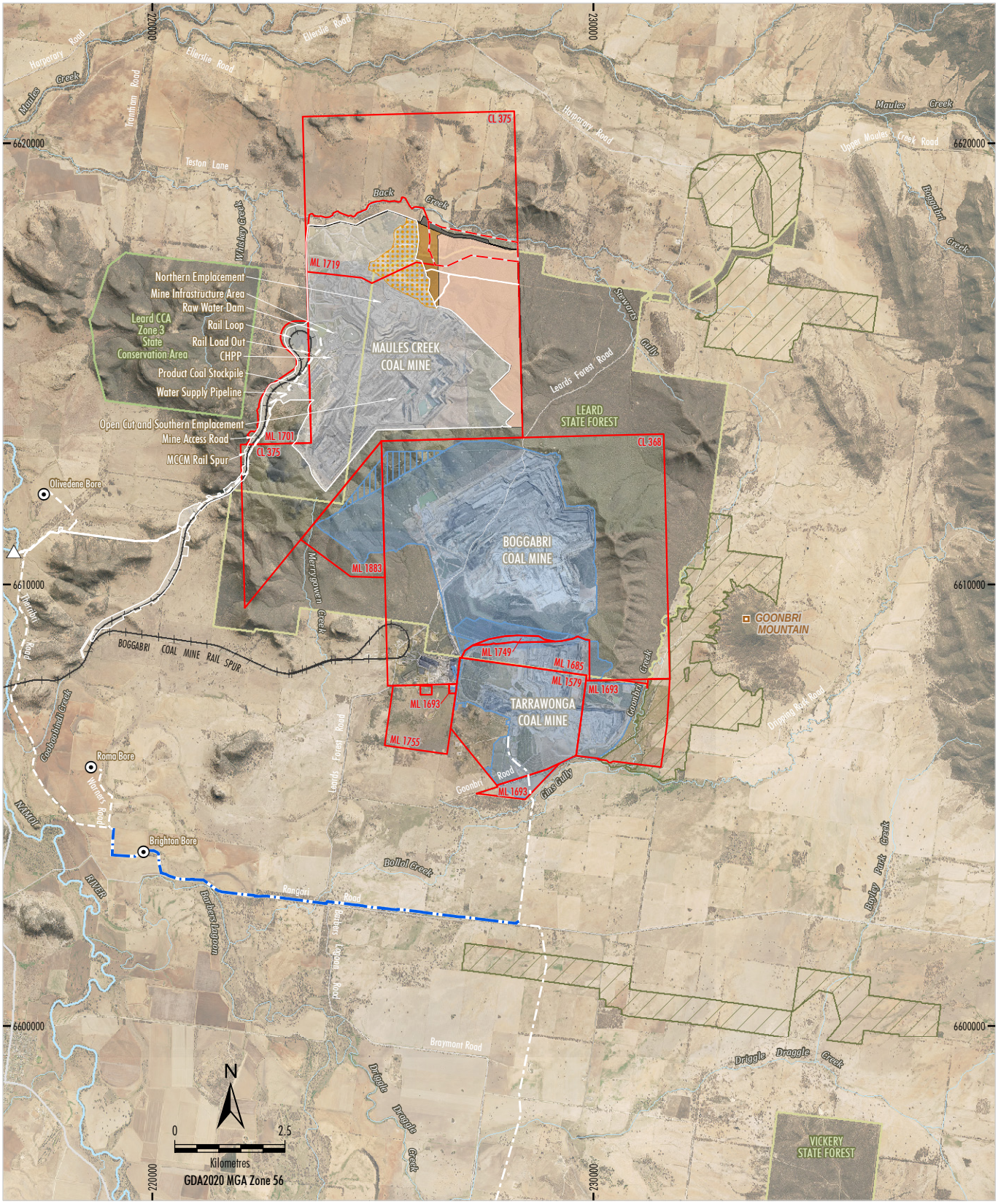
- extension of open cut operations within Coal Lease (CL) 375, ML 1719 and Authorisation 346 to allow mining and processing of additional coal reserves until approximately 31 December 2044;
- extraction of approximately 117 million tonnes (Mt) of ROM coal (in addition to the approved MCCM coal resource of 240 Mt of ROM coal);
- extraction of up to 14 million tonnes per annum (Mtpa) of ROM coal (i.e. a 1 Mtpa increase from the currently approved maximum ROM coal mining rate of 13 Mtpa);
- a revegetation program to establish approximately 2,300 hectares of native woodland in the vicinity of the MCCM (i.e. in addition to any offset and rehabilitation obligations);
- an increase in the operational workforce to an average of approximately 940 people, with a peak operational workforce of approximately 1,030 people;
- continued operation of the existing CHPP and train load-out and rail spur infrastructure, with upgrades as required;
- continued transport of up to 12.4 Mtpa of product coal via rail (i.e. no change to the currently approved maximum product coal transport rate);
- development of an integrated waste rock emplacement landform that incorporates geomorphic design principles;
- construction of a remote go-line, access and infrastructure area;
- continued operation and extension of the MCCM water management system;
- upgrades to workshops, electricity distribution and other ancillary infrastructure;
- continued placement of coal rejects within the mined out voids and the out-of-pit overburden emplacement areas;
- construction and operation of a water transfer pipeline between the MCCM water pipeline network and the approved Vickery Coal Mine to Tarrawonga Coal Mine pipeline;
- ongoing exploration activities; and
- other associated infrastructure, equipment and activities.

The Project general arrangement is presented as Figure 3.

1.2 Objective and Scopes

The objective of this PHA is to identify the off-site risks posed by the Project to people, their properties and the environment and assess the identified risks using applicable qualitative criteria. In accordance with the assessment guideline *Multi-level Risk Assessment* (DP&I, 2011), this assessment specifically covers risks from fixed installations, on-site storages, construction/development activities and other infrastructure, and does not encompass transportation by road, rail, air or sea.

This PHA therefore considers off-site risks to people, properties and the environment (in the presence of controls) arising from atypical and abnormal hazardous events and conditions (i.e. equipment failure, operator error and external events), with a specific focus on fixed installations on-site in accordance with the *Multi-level Risk Assessment* (DP&I, 2011). This assessment does not consider risks to MCC employees or MCC-owned property or risks that are not atypical or abnormal (e.g. long-term effects of typical dust emissions).



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LEGEND

- Rail Line
- State Conservation Area
- State Forest
- Mining Tenement Boundary (ML and CL)
- Provisional Mining Lease Application Area
- Other Mining Operation *
- Other Mining Operation - Proposed *
- VCM to TCM Water Transfer Pipeline

Existing/Approved MCCM Development

- Approximate Extent of Existing/Approved Surface Development
- MCCM Water Supply Pipeline
- MCCM Groundwater Supply Bore
- MCCM Namoi River Pump Station

Maules Creek Continuation Project

- Indicative Go-line, Access and Infrastructure Area
- Indicative Open Cut Extension Area
- Indicative Overburden Emplacement Extension
- Existing Overburden Rehabilitation to be Disturbed
- Indicative Landscape Revegetation Zones#
- Indicative Water Transfer Pipeline (Proposed)

Source: NSW Spatial Services (2024)
Orthophoto Mosaic: Whitehaven (2019-2024)

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MAULES CREEK CONTINUATION PROJECT

General Arrangement of the Project

** BCM boundary digitised from Figure 1 of the BCM Modification 10 Scoping Letter.*

#Landscape Revegetation Zones shown on this figure are approximate extents only.

Figure 3

On-site environmental risks are assessed in the Environmental Risk Assessment (Appendix Q of the EIS). This report should be read in conjunction with a range of specialist studies conducted for the EIS (Appendices A to Q).

1.3 Preliminary Screening Process

Preliminary screening to determine the requirement for a PHA was undertaken for the Project, taking into account broad estimates of the possible off-site effects or consequences from hazardous materials present on-site and their locations to determine the associated level of risk, evaluate the risk on the basis of accepted risk criteria and identify strategies for managing residual risk.

“Potentially hazardous industry” is defined by the Resilience and Hazards SEPP as a development for the purposes of any industry which, if the development were to operate without employing any measures to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk to human health, life property or the biophysical environment.

In accordance with *Multi-level Risk Assessment* (DP&I, 2011), it was determined that the Project is potentially hazardous as the possibility of harm to the off-site environment in the absence of controls could not be discounted.

A Level 1 assessment (qualitative analysis) can be justified if the analysis of the facility demonstrates that there are no major off-site risks, if the technical and management controls are well understood and where there are no sensitive surrounding land uses (DP&I, 2011).

The PHA review team (Section 2.1) reviewed this screening process and concluded that there is limited potential for scenarios with significant off-site consequences, the technical and management controls are well understood and that there are no sensitive surrounding land uses (e.g. there are no residential dwellings immediately adjacent to the Project area). Accordingly, the team implemented a Level 1 assessment (qualitative analysis) for this PHA.

2 Assessment Methodology

The methodology employed during the preparation of this PHA was as follows:

(i) Identify the hazards associated with the Project.

(ii) Analyse the consequences of identified hazardous events.

(iii) Qualitatively estimate the likelihood of hazardous events.

(iv) Propose risk treatment measures.

(v) Qualitatively assess risks to the environment, people and their properties arising from atypical and abnormal events and compare these to the risk criteria outlined in HIPAP No. 4 (DoP, 2011b).

(vi) Recommend further risk treatment measures, if necessary.

(vii) Qualitatively determine the residual risk assuming the implementation of the risk treatment measures.

2.1 Preliminary Hazard Analysis Review Team

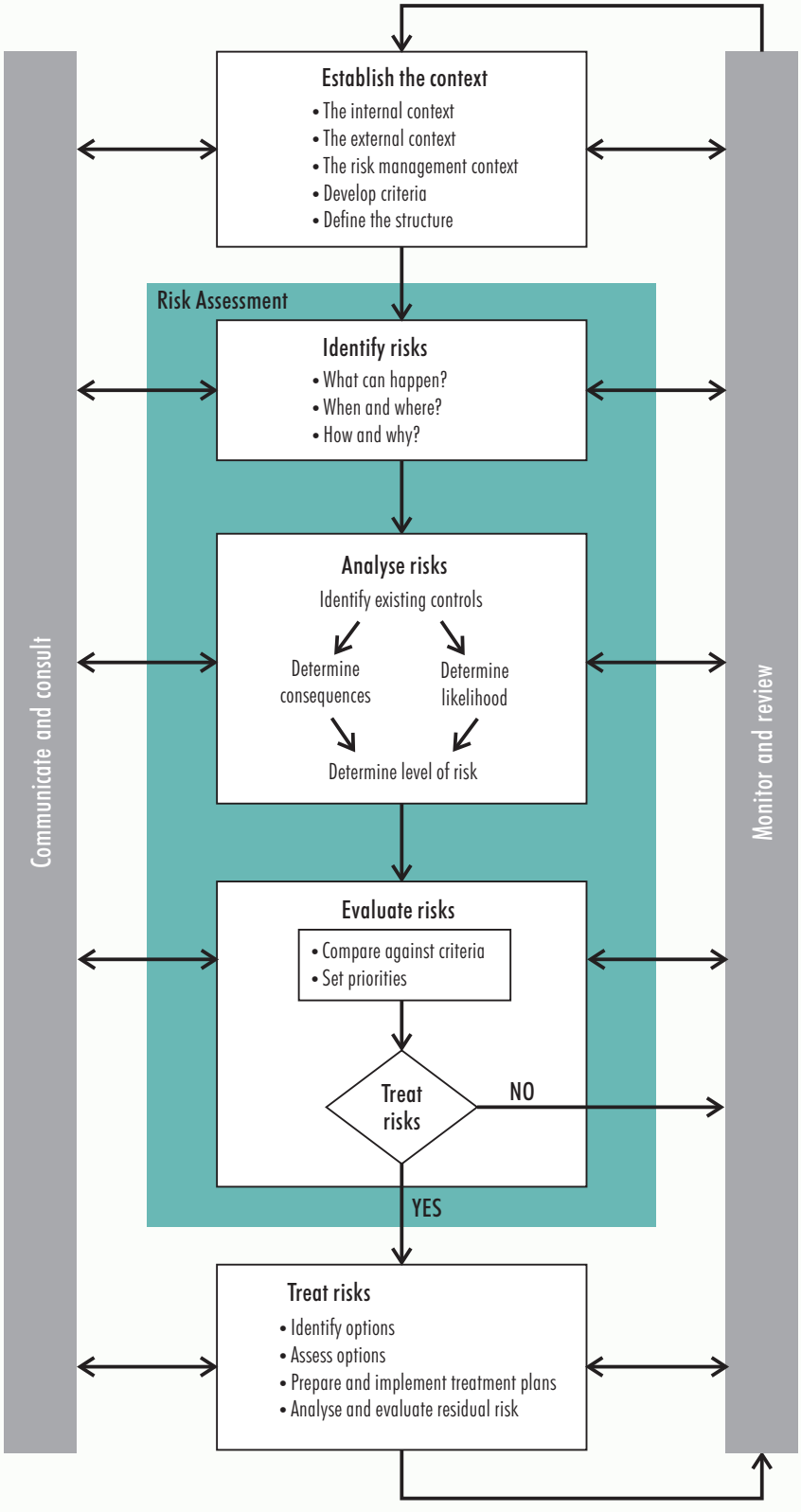
Potential hazards and treatments were identified early in the Project design phase with consideration of the hazards identified for the existing MCCM. An updated PHA multi-disciplinary risk review was completed using the above methodology based on the final Project design in March 2025. The review involved technical and operational specialists from Whitehaven, including:

- Whitehaven General Manager – Approvals.
- Whitehaven Technical Services Manager.
- Whitehaven Manager – Approvals.
- Whitehaven Lead – Approvals.
- MCC Environment Superintendent – Environment.

2.2 Risk Management Process

This PHA has been undertaken in regard to the risk management process described in ISO 31000:2018. The risk management process is shown schematically on Figure 4 and includes the following components:

- Establish the context – Sections 1 and 2.
- Identify risks – Section 3.2 and Attachment A.
- Analyse risks – Section 4 and Attachment A.
- Evaluate risks – Section 4 and Attachment A.
- Treat risks – Section 3.2.3 and Attachment A.



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Source: Handbook (HB) 203:2012 Managing Environment Related Risk

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MAULES CREEK CONTINUATION PROJECT

Risk Management Process

Figure 4

2.3 Risk Criteria

This PHA considered the following qualitative criteria (DoP, 2011b):

(a) *All 'avoidable' risks should be avoided. This necessitates investigation of alternative locations and technologies, wherever applicable, to ensure that risks are not introduced in an area where feasible alternatives are possible and justified.*

(b) *The risks from a major hazard should be reduced wherever practicable, irrespective of the value of the cumulative risk level from the whole installation. In all cases, if the consequences (effects) of an identified hazardous incident are significant to people and the environment, then all feasible measures (including alternative locations) should be adopted so that the likelihood of such an incident occurring is made very low. This necessitates the identification of all contributors to the resultant risk and the consequences of each potentially hazardous incident. The assessment process should address the adequacy and relevance of safeguards (both technical and locational) as they relate to each risk contributor.*

(c) *The consequences (effects) of the more likely hazardous events (i.e. those of high probability of occurrence) should, wherever possible, be contained within the boundaries of the installation.*

(d) *Where there is an existing high risk from a hazardous installation, additional hazardous developments should not be allowed if they add significantly to that existing risk.*

2.4 Qualitative Measures of Consequence, Likelihood and Risk

To undertake a qualitative risk assessment, it is useful to define (in a descriptive sense) the various levels of consequences of a particular event, and the likelihood (or probability) of such an event occurring. Risk assessment criteria were developed during the 'Establish the Context' phase of the Risk Management Process (Section 1.3.2) in accordance with ISO 31000:2018.

In accordance with ISO 31000:2018, Tables 2, 3 and 4 were reviewed by Whitehaven and were considered to be consistent with the specific objectives and context of this PHA. The hazard identification table (Attachment A) illustrates the systematic application of the below criteria for the Project.

Table 2
Likelihood Measures

Rank	Likelihood	Description
5	Almost Certain	The unwanted event has occurred frequently; occurs in order of one or more times per year and is likely to reoccur within one year.
4	Likely	The unwanted event has occurred infrequently; occurs in order of less than once per year and is likely to reoccur within five years.
3	Possible	The unwanted event has happened at some time; or could happen within 10 years.
2	Unlikely	The unwanted event has happened at some time; or could happen within 20 years.
1	Rare	The unwanted event has never been known to occur; or is highly unlikely to occur within 20 years.

Source: Risk Mentor (2023)

Table 3
Qualitative Measures of Maximum Reasonable Consequences for Environmental Issues

Rank	Consequence	Example
5	Catastrophic	Unconfined and widespread environmental damage or effect (permanent; >10 years) requires major remediation.
4	Major	Long-term environmental impact (2 to 10 years).
3	Medium	Medium term environmental impact (typically <1 year), requires moderate remediation.
2	Minor	Short-term environmental impact (typically <1 week), requires minor remediation.
1	Negligible	No lasting environmental impact (typically <24 hours).

Source: Risk Mentor (2023)

Table 4
Risk Ranking Matrix

		Consequence Rating				
		1. Negligible	2. Minor	3. Medium	4. Major	5. Catastrophic
Likelihood	5. Almost Certain	M5	H10	H15	C20	C25
	4. Likely	L4	M8	H12	H16	C20
	3. Possible	L3	M6	M9	H12	H15
	2. Unlikely	L2	L4	M6	M8	H10
	1. Rare	L1	L2	L3	L4	M5

Source: Risk Mentor (2023)

3 Hazard Identification

The major potentially hazardous materials required for the Project include hydrocarbons, explosive materials and chemicals. A brief description of these materials is presented below. Further details of the proposed Project activities are provided in Section 3 of the EIS main text.

3.1 Description of Hazardous Materials

3.1.1 HYDROCARBONS

Hydrocarbons that would be used at the Project would include fuels (diesel and petrol), greases, oils, paints and degreasers.

Diesel and Petrol

Diesel is classified as a combustible liquid (Class C1) by Australian Standard (AS) 1940:2017 *The storage and handling of flammable and combustible liquids* (Standards Australia Limited [SAL], 2017) for the purpose of handling and storage, but is not classified as a dangerous good for transport purposes in accordance with the criteria of the *Australian Code for the Transport of Dangerous Goods by Road or Rail* (ADG Code) (National Transport Commission, 2022). In the event of a spill, diesel is damaging to soils and aquatic ecosystems, and fire can occur if ignited (flash point of approximately 61 to 150 degrees Celsius). The risks associated with the Project would include handling, storage and use of diesel.

Petrol is classified as a flammable liquid (Class 3) by AS 1940:2017 (SAL, 2017) and as a dangerous good according to the criteria of the ADG Code (National Transport Commission, 2022). On-site petrol usage would be minor and petrol engine vehicles would be fuelled off-site.

The use of diesel and petrol at the Project, and the construction and operation of all hydrocarbons (diesel and petrol) storages would be undertaken in consideration of the requirements of AS 1940:2017, the NSW *Work Health and Safety Regulation 2011*, the NSW *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and associated regulations.

Oils, Greases, Paints and Degreasers

Oil is classified as a combustible liquid (Class C2) by AS 1940:2017. Procedures would be developed at the Project for the handling, storage, containment and disposal of workshop hydrocarbons (i.e. oils, greases, paints and degreasers) in accordance with AS 1940:2017. Workshop hydrocarbon spills and leaks would also be contained by impervious flooring/bunding and spill response equipment would be maintained on-site.

Other Hydrocarbons

Minor quantities of other hydrocarbons may be used at the Project for construction, development and maintenance activities (such as acetylene). The handling and storage of other hydrocarbons on-site would be conducted in accordance with Australian Standards and relevant codes.

3.1.2 CHEMICALS

The management and storage of chemicals at the Project would be conducted in accordance with the existing management procedures at the MCCM, as well as Australian Standards and relevant codes.

No chemicals or hazardous materials would be permitted on-site unless a copy of the appropriate Safety Data Sheet (SDS) is available on-site in a central repository or, in the case of a new product, it is accompanied by a SDS.

3.1.3 EXPLOSIVES

Explosive materials required for the Project would include initiating products and bulk explosives. Explosives would be stored, handled and used in accordance with Australian Standards.

Explosive materials would be stored in storage facilities located within the Project footprint. Explosives storage would be conducted in accordance with the NSW *Explosives Act 2003* and *Explosives Regulation 2013.* The *Explosives Regulation 2013* details the requirements for the safe storage, land transport and handling, and disposal of the explosive, with reference to AS 2187.2:2006 *Explosives – Storage and use – Use of explosives* for specific guidelines.

Throughout the life of the Project, any on-site explosive storages may be relocated to appropriate locations depending on the progression of the open cut pit.

3.1.4 LIQUID AND NON-LIQUID WASTES

The existing wastewater treatment plant at the MCCM would continue to be used to treat effluent on-site. Sewage and effluent from on-site ablution facilities would be collected and treated in the existing MCCM sewage treatment plant, in accordance with relevant approvals (including an Environment Protection Licence [EPL]). The sewage treatment plant would continue to be serviced by a licensed waste disposal contractor. Sewage and effluent from mobile crib huts would be collected by a licensed waste disposal contractor and taken to a licensed off-site facility. Once treated, sewage and effluent may also be applied to selected rehabilitation or landscaped areas at licensed discharge points as irrigation water, in accordance with an EPL.

Waste heavy vehicle tyres would continue to be temporarily stockpiled at laydown areas prior to permanent burial in the open cut pit in accordance with the existing MCCM EPL 20221 and Whitehaven's Mine Tyre Disposal Environmental Procedure. Management measures provided in the existing MCCM EPL 20221 include:

- heavy plant waste tyres are re-used on the premises as much as practical;
- any surplus heavy plant waste tyres are emplaced by being spread out within the waste rock/overburden emplacements and buried as deep as practical, but, covered by at least 20 metres (m) of inert material beneath any final rehabilitated surface;
- heavy plant waste tyres are placed at least 15 m away from coarse reject material or tailings emplacement areas;
- any heavy plant waste tyres are not emplaced directly on the pit floor, or in a location that is likely to impede or contaminate saturated aquifers;
- any heavy plant waste tyres are not emplaced in a position that compromises the stability of the final rehabilitated landform;
- any heavy plant waste tyres are not placed within 15 m of heated or potentially acid forming materials;
- any heavy plant waste tyres are not placed in an area likely to leach to any watercourse; and
- the co-ordinates (easting, northing and elevation) of each disposal location are recorded.

In addition, the stockpiles of any heavy plant waste tyres stored at the Project area awaiting disposal would:

- be less than 3 m in height;
- not cover an area of more than 200 square metres; and
- not be located within 10 m of any other flammable or combustible materials.

The existing management measures of the waste heavy vehicle tyres would continue to be implemented for the Project.

Waste hydrocarbons would be collected and stored on-site prior to being removed by licensed contractor(s) in accordance with a Waste Management Plan to be prepared for the Project.

3.2 Hazard Identification Process

The Project hazard identification table (Attachment A) provides a summary of the potential on-site hazards identified for the Project and a qualitative assessment of the risks posed.

3.2.1 PROJECT COMPONENT

In accordance with *Multi-level Risk Assessment* (DP&I, 2011), this PHA specifically covers the risks from fixed installations. As such, the main focus of the assessment was on-site storage. In addition, some additional risks relating to construction/development activities and other infrastructure (e.g. on-site water reticulation/power reticulation) were identified and included in this PHA. Further discussion on the objectives and scope of the assessment are described in Section 1.2.

3.2.2 INCIDENT CLASSES

The following generic classes of incidents were identified:

- leak/spill;
- fire/explosion;
- theft; and
- equipment/infrastructure malfunction.

These classes of incident were applied to the Project component areas to identify scenarios for which treatment measures were developed.

3.2.3 BUSHFIRES

Any uncontrolled bushfires originating from Project activities may present potentially serious impacts to nearby localities of Maules Creek, Boggabri and Narrabri, rural properties in the vicinity of the Project site as well as Leard State Forest.

Similarly, fires originating in nearby woodland, grassland or rural areas could pose a significance risk to project infrastructure and to staff, contractors and equipment. Smoke from bushfires can also have adverse impacts on the Project operation.

The degree of potential impacts would vary with climatic conditions (e.g. temperature, humidity and wind), location to the bushfire and the quantity of available fuel.

Due to the inherent uncertainties associated with climate change projections, the potential impacts of climate change on the Project cannot be determined with a high degree of confidence. This suggests that bushfire activity may become more prevalent in the region.

In addition, rainfall has the potential to both increase and decrease, particularly seasonally, with heavier rainfall events likely to become more frequent.

Key on-site mitigation measures include the prohibition of smoking, and the management of fuel loads.

A MCCM Bushfire Management Plan would be implemented to manage potential bushfire risks.

3.2.4 PROJECT RISK TREATMENT MEASURES

In addition to safety management controls and safety management system, a number of hazard controls, including mitigation and management measures, would be described in management plans or internal control strategy documents for the Project. Management plans would include, but not be limited to, the following:

- Blast Management Plan.
- Water Management Plan.
- Waste Management Plan.
- Pollution Incident Response Management Plan.

The following hazard control and mitigation measures would be adopted for the Project:

- **Maintenance** – Ongoing and timely maintenance of all mobile and fixed plant equipment in accordance with the recommended maintenance schedule of the original equipment manufacturer, and consistent with maintenance schemes required by relevant legislation.
- **Staff Training** – Equipment operators and drivers would be trained and (where appropriate) licensed for their positions. Only personnel who are appropriately qualified to undertake skilled and potentially hazardous work would be permitted to do so.
- **Engineering Structures** – Civil engineering structures (including dams) would be constructed in accordance with the applicable Australian Standards, codes and guidelines. Where applicable, Whitehaven would obtain the necessary licences and permits for the construction of engineering structures.
- **Contractor Management** – All contractors employed by Whitehaven would be required to operate in accordance with the relevant Australian Standards and NSW legislation.
- **Storage Facilities** – Storage and usage procedures for potentially hazardous materials (e.g. hydrocarbons, chemicals and explosives) would be developed consistent with Australian Standards and relevant legislation. A register would be kept up-to-date with the chemicals and dangerous goods stored on-site.
- **Coal Stockpile Management** – Coal stockpiles would be managed to reduce the potential for spontaneous combustion.
- **Emergency Response** – Firefighting and spill management equipment would be kept on-site in appropriate locations. Emergency response procedures, systems and manuals would be implemented.

4 Risk Management and Evaluation

Attachment A presents a qualitative assessment of the potential risks associated with the construction and operation of the Project. As described in Section 1.2, the assessment particularly evaluates the risks associated with fixed installations, on-site storages, construction/development activities and other infrastructure to people, their properties and the environment arising from abnormal and atypical hazardous events and conditions.

Hazard treatment measures have been proposed, where required, to result in a 'low' level of potential risk in accordance with the risk acceptance criteria described in Section 2.4. Proposed risk treatment measures are described in Section 3.2.3.

The Level 1 Assessment conducted is considered sufficient, as this PHA demonstrates a societal risk in the negligible zone and there are no potential scenarios with significant off-site consequences in accordance with *The Multi-level Risk Assessment Guideline* (DP&I, 2011) (Section 1.3).

5 References

Department of Planning (2011a) *Hazardous Industry Planning Advisory Paper No. 6: Hazard Analysis*.

Department of Planning (2011b) *Hazardous Industry Planning Advisory Paper No. 4: Risk Criteria for Land Use Safety Planning*.

Department of Planning and Infrastructure (2011) *Multi-level Risk Assessment*.

National Transport Commission (2022) *Australian Dangerous Goods Code*.

Risk Mentor (2023) *Maules Creek Continuation Project EIS – Environmental Risk Assessment Report*.

Standards Australia Limited (2017) *The storage and handling of flammable and combustible liquids*.

ATTACHMENT A

HAZARD IDENTIFICATION AND ANALYSIS

Table A-1
Hazard Identification and Analysis

Project Component	Incident Type	Scenario	Proposed Control Measures	Likelihood[1]	Consequence[2]	Risk[3]
On-site Storage Hydrocarbons (i.e. fuels [diesel/petrol], oils, greases, degreaser and kerosene), chemicals and explosives	Leak/spill	Failed storage vessel or associated fittings, pump or pipework due to operator error, mechanical impacts (e.g. collision), corrosion or extreme natural phenomena (e.g. earthquake, flood or severe storm), which leads to off-site impacts including hydrocarbon or chemical contamination.	– Design and construction of storage facilities (including bunding, locked valves) and structures/fittings/pipes to relevant standards and legislation. – Storage tanks and facilities positioned to minimise potential impacts of leaks/spills. – Runoff controlled and captured (closed water management system designed to handle major rainfall or spill event). – Regular inspections and maintenance (where required). – Escort/induction of off-site delivery vehicles. – Operator training and operational procedures. – Management Plans. – Construction of impervious floored workshop and washbay facilities. – Spill management equipment (e.g. spill kits), procedures and training. – Spill Response Procedure. – Emergency Management and Response Systems. – Pollution Incident Response Management Plan.	2	2	L4

Table A-1 (Continued)
Hazard Identification and Analysis

Project Component	Incident Type	Scenario	Proposed Control Measures	Likelihood[1]	Consequence[2]	Risk[3]
On-site Storage Hydrocarbons (i.e. fuels [diesel/petrol], oils, greases, degreaser and kerosene), chemicals and explosives	Fire/explosion	Poor maintenance or design, mechanical impacts (e.g. collision), operator error, co-located storage of incompatible chemicals or extreme natural phenomena (e.g. lighting, flood or severe storm), which leads to off-site fire/bushfire/explosion/fume emissions-related impacts.	– Design and construction of storage facilities (including bunding, locked valves) and structures/fittings/pipes to relevant standards and legislation. – Storage tanks and facilities located at a significant distance from sensitive land uses to minimise potential impacts of fire/explosion. – Protection of storage facilities (e.g. bollards). – Regular inspections and maintenance (where required). – Escort/induction of off-site delivery vehicles. – Operator training and operational procedures. – Safety management controls (e.g. lighting alert system). – Management Plans (including Bushfire Management Plan). – Firefighting equipment in appropriate locations. Mining equipment may be used where appropriate to control fires (e.g. water carts, dozers). – Regular inspections and maintenance of firefighting equipment. – Liaison with the Rural Fire Service to facilitate rapid response. – Emergency Management and Response Systems. – Pollution Incident Response Management Plan.	1	2	L2

Table A-1 (Continued)
Hazard Identification and Analysis

Project Component	Incident Type	Scenario	Proposed Control Measures	Likelihood[1]	Consequence[2]	Risk[3]
On-site Storage Hydrocarbons (i.e. fuels [diesel/petrol], oils, greases, degreaser and kerosene), chemicals and explosives	Theft	Theft or malicious act that results in off-site impacts.	– Explosives storage facility location remote from public roads. – Restriction of access to storage areas. – Restricted access to unauthorised persons – Installation of fencing and/or signage to discourage access to the site. – Automated boom gates (requiring authorised identification) at entry points to mine and other industrial areas and regular inspections of operational areas. – Provision of adequate lighting around storage facilities. – Closed-circuit television (CCTV) camera surveillance on-site. – Register of dangerous goods SDS. – Maintenance of an explosives inventory, with regular auditing.	2	1	L2

Table A-1 (Continued)
Hazard Identification and Analysis

Project Component	Incident Type	Scenario	Proposed Control Measures	Likelihood[1]	Consequence[2]	Risk[3]
On-site Storage ROM and product coal stockpiles	Fire	Spontaneous combustion event leads to fire related impacts (fume/emissions).	– Design and management of coal stockpiles (e.g. size, shape and age tracking). – Regular monitoring and communication of stockpile status and active management. – Availability of site water carts. – Operator training and operational procedures. – Management plans. – Firefighting equipment and spill kits in appropriate locations. Mining equipment may be used where appropriate to control fires (e.g. water carts, dozers). – Regular inspections and maintenance of firefighting equipment. – Emergency Management and Response Systems.	2	1	L2

Table A-1 (Continued)
Hazard Identification and Analysis

Project Component	Incident Type	Scenario	Proposed Control Measures	Likelihood[1]	Consequence[2]	Risk[3]
On-site Storage ROM and product coal stockpiles	Explosion	Coal dust explosion at coal stockpiles or coal handling infrastructure leads to explosion-related impacts.	– Housekeeping activities – site would be kept clean and tidy and fire hazards removed, where practicable. – Removal of hazardous items and regular cleaning around the site, including: o fuel load assessments; o established access roads; and o established fire breaks. – Water carts with water cannon available for stockpile dust suppression if required, as well as use of fixed stockpile sprays. – Firefighting equipment and spill kits in appropriate locations. – Regular inspections and maintenance of firefighting equipment. – Emergency Management and Response Systems (including operator training). – Pollution Incident Response Management Plan.	2	1	L2

Table A-1 (Continued)
Hazard Identification and Analysis

Project Component	Incident Type	Scenario	Proposed Control Measures	Likelihood[1]	Consequence[2]	Risk[3]
Construction/ Development Project construction and development activities	Leak/spill	Spill of hydrocarbons (i.e. fuels [diesel/petrol], oils, greases, degreaser and kerosene), chemicals, sewage wastes or domestic wastes, which leads to off-site impacts on nearby watercourses or land.	– Storage of hydrocarbons and chemicals in accordance with relevant standards and legislation. – Long-term storage of waste off-site by an approved and licensed waste contractor. – Ground Disturbance Permit includes site construction runoff control (drains and sumps). – Construction specific environmental controls. – Register of dangerous goods SDS. – Operator training and operational procedures. – Management Plans (e.g. Water Management Plan, Waste Management Plan). – Spill management equipment (i.e. spill kits). – Emergency Management and Response Systems. – Pollution Incident Response Management Plan.	3	1	L3

Table A-1 (Continued)
Hazard Identification and Analysis

Project Component	Incident Type	Scenario	Proposed Control Measures	Likelihood[1]	Consequence[2]	Risk[3]
Construction/ Development Project construction and development activities	Fire	Construction activity near hydrocarbons/chemicals storage results in a fire leading to off-site impacts.	– Housekeeping activities – site would be kept clean and tidy and fire hazards removed, where practicable. – Storage of hydrocarbons and chemicals in accordance with relevant standards and legislation. – Storage facilities located at a significant distance from sensitive land uses to minimise potential impacts of fire/explosion. – Safety Management System including 'Hot work' permits. – Construction-specific environmental controls. – Operator training and operational procedures. – Management Plans. – Firefighting equipment and spill kits in appropriate locations. Mining equipment may be used where appropriate to control fires (e.g. water carts and dozers). – Regular inspections and maintenance of firefighting equipment. – Liaison with the Rural Fire Service to facilitate rapid response. – Regular maintenance of existing and proposed tracks to slow the spread of fire and provide suitable access around the site. – Emergency Management and Response Systems. – Pollution Incident Response Management Plan.	2	2	L4

Table A-1 (Continued)
Hazard Identification and Analysis

Project Component	Incident Type	Scenario	Proposed Control Measures	Likelihood[1]	Consequence[2]	Risk[3]
Other Infrastructure and Supporting Systems	Leak/Spill	Leak or spill from Project water management system (e.g. coal contact water) leading to off-site impacts associated with water quality.	– Long-term storage of waste off-site by an approved and licensed waste contractor. – Operator training and operational procedures. – Management Plans (e.g. Water Management Plan, Waste Management Plan). – Spill management equipment (i.e. spill kits). – Emergency Management and Response Systems. – Pollution Incident Response Management Plan.	2	2	L4

Table A-1 (Continued)
Hazard Identification and Analysis

Project Component	Incident Type	Scenario	Proposed Control Measures	Likelihood[1]	Consequence[2]	Risk[3]
Other Infrastructure and Supporting Systems	Fire	Malfunction of on-site power reticulation or water reticulation systems leading to off-site bushfire.	– Power reticulation designed to Australian Standards and legislation – including security measures. – Regular inspections of power and water reticulation infrastructure for structural integrity and effectiveness, and repair as required to maintain function. – Power usage monitoring and alarms. – Housekeeping activities – site would be kept clean and tidy and fire hazards removed, where practicable. – Operator training and operational procedures. – Management Plans. – Firefighting equipment and spill kits in appropriate locations. Mining equipment may be used where appropriate to control fires (e.g. water carts, dozers). – Regular inspections and maintenance of firefighting equipment. – Liaison with the Rural Fire Service to facilitate rapid response. – Regular maintenance of fire breaks to slow the spread of fire. – Emergency Management and Response Systems. – Pollution Incident Response Management Plan.	2	2	L4

1 Refer to Table 2.
2 Refer to Table 3.
3 Refer to Table 4.