





**NARRABRI MINE
ENVIRONMENTAL
MANAGEMENT SYSTEM**

Document Owner:	Environmental Superintendent
Document Approver:	General Manager
Revision Period:	3 years
Version:	4
Last Revision Date:	29/05/2020

WHC-PLN-NAR-WASTE MANAGEMENT PLAN

WASTE MANAGEMENT PLAN

Approval	Name	Position	Signed	Date
Document Owner:	Brent Baker	Environmental Superintendent		29/05/2020
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ACRONYMS USED THROUGHOUT THIS DOCUMENT

AR	-	Annual Review
CHPP	-	Coal Handling and Preparation Plant
DPI&E	-	Department of Planning, Industry and Environment
RR	-	NSW Resources Regulator
EA	-	Environmental Assessment
EPA	-	Environment Protection Authority
EPL	-	Environment Protection Licence
Mtpa	-	Million tonnes per annum
NCOPL	-	Narrabri Coal Operations Pty Ltd
NSC	-	Narrabri Shire Council
PA	-	Project Approval



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1 INTRODUCTION

Narrabri Mine ("the Mine") is located approximately 30km south-southeast of Narrabri, and 10km north-northwest of Baan Baa (see Figure 1). The mine is operated by Narrabri Coal Operations Pty Ltd (NCOPL) as an underground mining operation.

The site operates under Project Approval (PA) 08_0144, as modified, which was granted by the Minister for Planning on the 26th July 2010 and incorporates:

- Underground longwall mining with an annual production rate of 11Mtpa;
- Mine ventilation and gas drainage;
- Mine dewatering;
- Processing, stockpiling and loading of coal via a Coal Handling and Preparation Plant (CHPP);
- Emplacement of processing reject and storage of saline water;
- Construction and use of a water pipeline from the Namoi River;
- Transportation of the coal from the mine site to the Port of Newcastle via train;
- Final rehabilitation of surface disturbance following completion of the project; and
- All ancillary and related activities.

The Mine recognises that poor waste management practices have the potential to impact on the local environment. These impacts include:

- The potential for waste, or leachate from waste storage areas, to contaminate land and water;
- Incorrect classification and disposal of waste resulting in impacts to off-site disposal facilities;
- Possible offensive odours produced from waste storage areas; and
- Ineffective recycling and/or over-ordering of stock leading to wastage of resources.

This document applies to all activities conducted at the site and should be read in conjunction with other environmental management plans.

The initial Waste Management Plan prepared for the Stage 2 Longwall Project was approved by the Department of Planning & Environment (DP&E) on 6th December 2011. This version of the plan has been developed with reference to relevant legislation, approvals and guidelines, follows the management plan requirements specified in Schedule 6, Condition 2 of PA 08_0144, and is consistent with the commitments in the following documents:

- Stage 2 Longwall Project Environmental Assessment (EA) – specifically section 2.8;
- PA 08_0144 Statement of Commitments – specifically Section 3; and
- Narrabri Mine Modification 5 Environmental Assessment.



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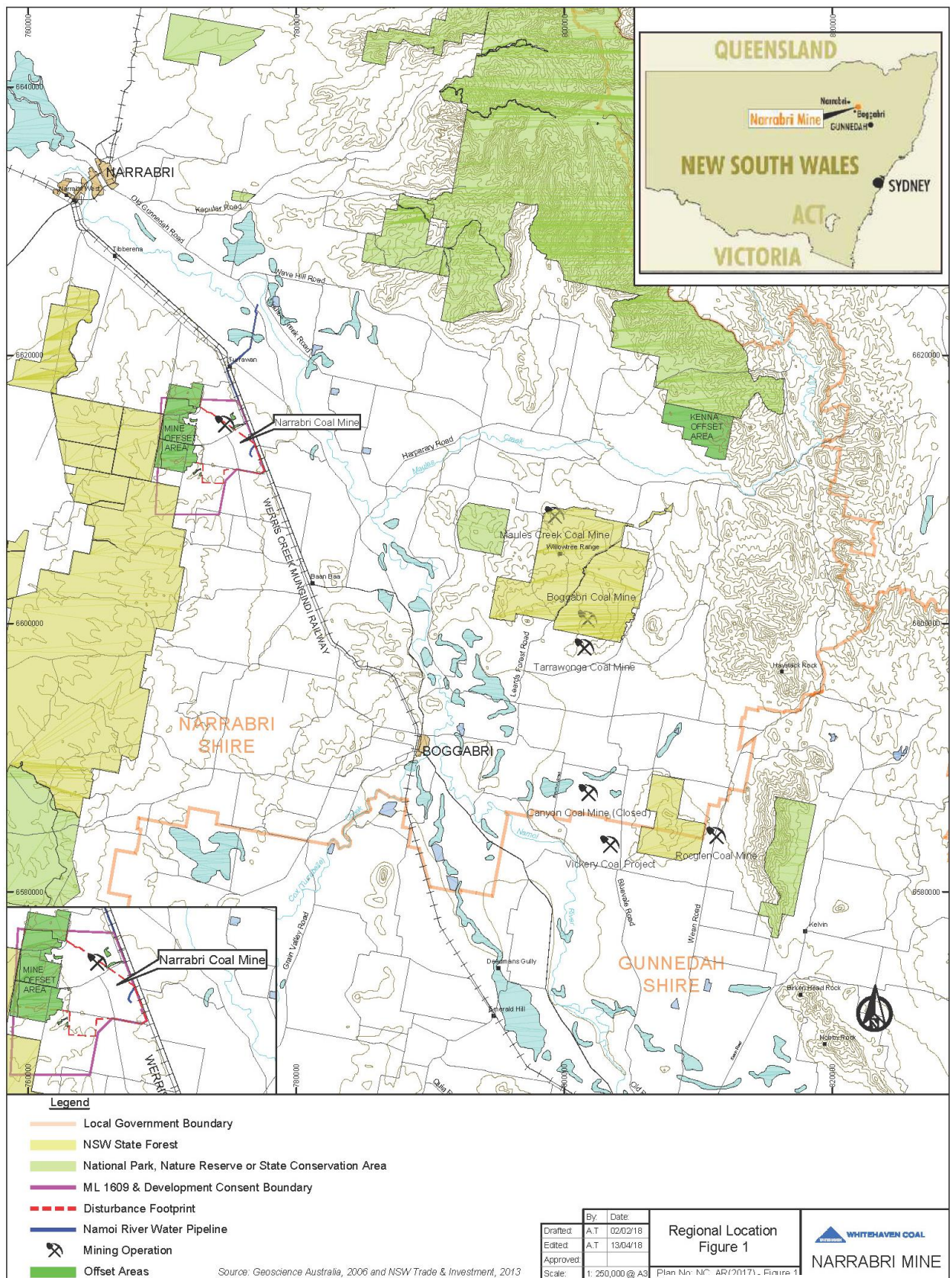


Figure 1: Narrabri Mine Location



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2 STATUTORY REQUIREMENTS

This Waste Management Plan has been prepared in recognition of the impact that poor waste management could have on the environmental performance of the mine. The plan follows the management plan requirements specified in Schedule 6, Condition 2 of PA 08_0144 and complies with the requirements of Schedule 4, Condition 33, as outlined in Table 1: Narrabri Mine Project Approval Conditions

Table 1: Narrabri Mine Project Approval Conditions

Project Approval Condition	Relevant Section
Waste Minimisation (Schedule 4, Condition 33)	
The Proponent shall revise the Waste Management Plan for the Stage 1 project to encompass all proposed mine activities and potential impacts associated with waste management for the site (Stages 1 and 2) and subsequently implement this revised version of the Waste Management Plan to the satisfaction of the Secretary. The plan must:	
(a) be submitted to the Secretary for approval prior to 30 June 2011;	Complete
(b) identify the various waste streams of the project;	Section 3
(c) describe what measures would be implemented to reuse, recycle, or minimise the waste generated by the project;	Section 4 and Appendix 1
(d) ensure irrigation of treated wastewater is undertaken in accordance with Environmental Guidelines: Use of Effluent by Irrigation (DEC, 2004), or its latest version; and	Section 4.6
(e) include a program to monitor the effectiveness of these measures.	Sections 5, 6 & 7
Management Plan Requirements (Schedule 6, Condition 2)	
The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
(a) detailed baseline data;	Section 1
(b) a description of;	-
<ul style="list-style-type: none"> • the relevant statutory requirements (including any relevant approval, licence or lease conditions); 	Section 2
<ul style="list-style-type: none"> • any relevant limits or performance measures/criteria; 	Section 4 and Appendix 1
<ul style="list-style-type: none"> • the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures; 	Section 4 and Appendix 1
(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	Section 4 and Appendix 1
(d) a program to monitor and report on the;	-
<ul style="list-style-type: none"> • impacts and environmental performance of the project; 	Section 5
<ul style="list-style-type: none"> • effectiveness of any management measures (see (c) above); 	Section 5
(e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 6.3
(f) a program to investigate and implement ways to improve the environmental performance of the project over time;	Section 7



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(g) a protocol for managing and reporting any:	-
• incidents;	Section 6.1
• complaints;	Section 6.2
• non-compliances with statutory requirements; and	Section 6.1
• exceedances of the impact assessment criteria and/or performance criteria; and	Section 6.1
(h) a protocol for periodic review of the plan.	Section 7

The following Acts, Regulations and Guidelines are applicable to this plan:

- Waste Classification Guidelines (EPA, 2014);
- Environmental Guidelines: Use of Effluent by Irrigation (DEC, 2004);
- *Protection of the Environment Operations Act 1997*;
- *Waste Avoidance and Resource Recovery Act 2001*;
- *Protection of the Environment Operations (Waste) Regulation 2014*;
- *Work Health and Safety (Mines and Petroleum Sites) Act 2013*; and
- *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014*.



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3 WASTE STREAMS

The principal wastes that will be generated throughout the life of the longwall project can be categorised as production and non-production wastes.

The following production wastes will be generated:

- Mined rock from the development of the ventilation shafts;
- Drill cuttings from gas drainage boreholes and exploration drilling activities;
- Coarse reject generated by the CHPP and fine reject/underground stowage material generated from the underground areas of the mine;
- Brine generated by the Water Conditioning Plant; and
- Drill cuttings from surface to in-seam (SIS) and underground in-seam (UIS) drilling.

Non-production wastes will include:

- General domestic wastes from the onsite buildings and routine maintenance consumables;
- Hydrocarbons, including by-products recovered from dirty water from the maintenance workshop, wash down pad and fuel storage areas;
- Minor quantities of hazardous chemicals; and
- Treated Waste Water.

Included in Appendix 1 is a schedule of wastes that are likely to be generated on the mine site during the operation of the mine.



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4 WASTE MANAGEMENT

The following subsections detail general measures to be adopted for waste management including waste minimisation, recycling, re-use and disposal. Waste streams identified in Section 3 that are not dealt with under general waste management are addressed separately at the end of this section.

4.1 General Site Waste Management

The following actions/strategies will be put into practice to minimise the accumulation/generation of waste at the mine:

- All personnel working on the mine site will undergo a site induction which will include an overview of the site's waste management;
- All waste storage areas will be clearly identified with appropriate signage. Bins and other receptacles will be marked according to the type of waste accepted (e.g. scrap metal, oil filters, waste oil, cardboard, other recyclables, general waste);
- There will be no long term storage of any non-production waste on the mine site, unless subsequently licenced or approved in a future management plan.

4.2 Waste Minimisation

The following methods will be used to minimise waste production:

- Specifications of construction material quantities for contractors will be as accurate as possible to avoid the over-ordering of materials and the potential for excess waste;
- The ordering of stock during the operation of the mine will be regularly reviewed to ensure efficient stock control and to avoid wastage; and
- Alternate products or bulk storages will be considered in an effort to reduce the volume of packaging.

4.3 Recycling

The mine will provide storage areas for all non-production waste materials that are suitable for recycling. The main recyclable waste materials that will be generated by the mine and their primary source(s), storage and collection requirements are as follows:

- Paper and cardboard: will be generated within the administration offices, stores facility and surface workshops. General paper and cardboard recycling bins are located in close proximity to site offices and the store. Paper and cardboard will be collected by waste contractors on a regular basis.



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- Scrap metal: will be generated from the workshop and the underground mine. The scrap metal will be placed into large skip bins, which will be collected by a metal recycler as sufficient quantities are available.
- Oil filters: will be generated at the maintenance workshop, with oil filters collected in 1000L pods and labelled skip bins. Oil filters will be collected by a licensed waste contractor.
- Waste oil and grease: will be generated at the maintenance workshop. The waste oil and grease will be stored in containers within bunded areas whilst awaiting collection by a licensed waste contractor.
- Batteries: will be removed from site to an appropriate recycling facility.
- Timber: timber products such as cable drums and pallets will be recycled where possible. If recycling or reuse is not feasible, waste timber products will be disposed of in general waste.
- Miscellaneous recyclables: such as printer cartridges will be stored at appropriate locations prior to collection by, or delivery to, appropriate recycling facilities.

4.4 Reuse of Waste Materials

Brine may be utilised on coal stockpile sprays for dust suppression.

4.5 Waste Disposal

Disposal will be viewed as the last option in the management of waste, only if the avoidance, re-use or recycling of the waste in question is not practical. The following systems will be implemented at the mine in regard to waste disposal:

- Only transport operators or companies that are licensed by the appropriate authorities will be contracted to remove waste from the mine site.
- Waste materials which cannot be either re-used or recycled will be sent to a landfill/facility licensed to accept that category of waste, or returned to the manufacturer/supplier where required.
- Wastes, which are required to be tracked, will be done so, in accordance with the relevant legislation.
- Waste tyres will be appropriately disposed of via the tyre fitting contractor engaged to supply tyres for the site.
- Sharps collected in approved storage containers from the First Aid room and bath house will be collected and disposed of by an approved handling agent.
- Sanitary Waste will be collected by a licensed Sanitary Waste Disposal agent.

4.6 Waste Water

Waste water from the site offices, bathhouse and other amenities is treated using a self-irrigating eco-cycle septic sewage system and re-used as irrigation water within the Pit Top Area in accordance with *Environmental Guidelines: Use of Effluent by Irrigation* (DEC, 2004)



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(Effluent Guideline). The Effluent Guideline outlines environmental performance objectives that apply to the use of effluent by irrigation. These objectives and how they are met by Narrabri Mine are outlined in Table 2.

Table 2: Narrabri Mine's Controls to Meet the Effluent Guidelines' Environmental Performance Objectives

Environmental Performance Objective	Narrabri Mine's Approach
<p>Protection of surface waters: Effluent irrigation systems should be located, designed, constructed and operated so that surface waters do not become contaminated by any flow from irrigation areas, including effluent, rainfall runoff, contaminated sub-surface flows or contaminated groundwater.</p>	<p>The Narrabri Mine sewage treatment system is designed to treat sewage to a suitable state for irrigation. The treated sewerage quality will target not exceeding the proposed guidelines found in Appendix 2. All effluent irrigated land within the Pit Top Area is managed within Narrabri Mine's reclaim water management system.</p>
<p>Protection of groundwater: Effluent irrigation areas and systems should be located, designed, constructed and operated so that the current or future beneficial uses of groundwater do not diminish as a result of contamination by the effluent or runoff from the irrigation scheme or changing water tables.</p>	<p>The effluent irrigated land is within the Pit Top Area of the Narrabri Mine which has a comprehensive groundwater monitoring network. The effluent water quality will be routinely monitored to ensure that the guidelines found in Appendix 2 are not being exceeded.</p>
<p>Protection of lands: An effluent irrigation system should be ecologically sustainable. In particular, it should maintain or improve the capacity of the land to grow plants, and should result in no deterioration of land quality through soil structure degradation, salinisation, waterlogging, chemical contamination or soil erosion.</p>	<p>A dedicated effluent irrigation soakage system was established on a level pad, built up above natural ground level. Inspections are undertaken to manage and rotate the soak discharges from the plant to avoid waterlogging and soil erosion.</p>
<p>Protection of plant and animal health: Design and management of effluent irrigation systems should not compromise the health and productivity of plants, domestic animals, wildlife and the aquatic ecosystem. Risk management procedures should avoid or manage the impacts of pathogenic micro-organisms, biologically active chemicals, nutrients and oxygen depleting substances.</p>	<p>All effluent irrigated land within the Pit Top Area is managed within Narrabri Mine's reclaim water management system. The effluent water quality will be routinely monitored to ensure that the guidelines found in Appendix 2 are not being exceeded.</p>
<p>Prevention of public health risks: The effluent irrigation scheme should be sited, designed, constructed and operated so as not to compromise public health. In this regard, special consideration should be given to the provision of barriers that prevent human exposure to pathogens and contaminants.</p>	<p>The irrigation area is located within the 'on-site' fenced Pit Top Area, and has appropriate signage installed to restrict unnecessary access by mine employees and contractors.</p>
<p>Resource use: Potential resources in effluent, such as water, plant nutrients and organic matter, should be identified, and agronomic systems developed and implemented for their effective use.</p>	<p>All effluent irrigated land within the Pit Top Area is managed within Narrabri Mine's reclaim water management system. The effluent water quality will be routinely monitored to ensure that the guidelines found in Appendix 2 are not being exceeded.</p>
<p>Community amenity: The effluent irrigation system should be located, designed, constructed and operated to avoid</p>	<p>The sewage treatment plant is located within the Pit Top Area of the Narrabri Mine and shielded from surrounding residences by an</p>



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Environmental Performance Objective	Narrabri Mine's Approach
unreasonable interference with any commercial activity or the comfortable enjoyment of life and property off-site. In this regard, special consideration should be given to odour, dust, insects and noise.	amenity bund that surrounds the Pit Top Area. There is no unreasonable interference associated with the location and operation of the plant.

4.7 Mined Rock

Waste rock removed during drilling of ventilation shafts will be stockpiled within the spoils handling area. This material will be used in conjunction with subsoil to backfill the water and drill cuttings settlement ponds. Drilling cuttings from exploration, gas drainage and service boreholes will be excavated from sumps and disposed of in the area designated for reject emplacement, or consolidated with excavated soil to backfill the sump (where minor amounts of cuttings are present).

4.8 Fine and Coarse Coal Reject

The Coal Handling and Preparation Plant (CHPP) processes generate approximately 2% of the ROM coal feed as coarse reject. The reject predominately consists of rock from the mine floor. Fines are mechanically dewatered within the CHPP process and loaded onto product coal stockpiles. Coarse rejects are separated within the CHPP process and sent via conveyor to a temporary stockpile adjacent to the CHPP. The coarse reject is then transported from the reject pile to the Reject Emplacement Area (REA) immediately west of the box cut. It is expected that 8.2 million tonnes (or approximately 5.7 million m³) will be managed within the REA over the 30 year mine life. Analysis of the reject material found it to be non-saline and non-acid forming requiring no specific management measures to be implemented in regard to acid generation or salinity. Sampling and analysis of the reject material will be undertaken every 5 years over the life of the mine. Cell floors are constructed to suitable compaction standards. Further details on the construction, operation and closure of the REA are outlined in *Rejects Emplacement Area: Capping Assessment & Closure Design* (ATC Williams, May 2019).

4.9 Brine

Brine generated by the Water Conditioning Plant is stored in lined ponds B2 and C located within the rail loop. It is estimated that almost 6,500ML of brine will be generated throughout the life of the longwall project. Due to the saline nature of the brine, the evaporation/storage ponds are constructed and lined to be effectively impermeable (1 x 10⁻¹⁴ m/sec). Water management associated with brine storage is addressed in the Water Management Plan.

It is expected that at the completion of mining the brine stored within the Brine Storage Area will be pumped into the goaf and retained gate roads of the completed mine through re-use of the cased goaf gas drainage drill holes.



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Alternative or beneficial uses of the brine will continue to be investigated throughout the life of the mine. Condition 21, Schedule 4 of PA 08_0144 requires the mine to engage suitably qualified experts to review brine management and any beneficial use options, which has been recently addressed in document *Narrabri Coal Mine Brine Management and Beneficial Use Options Report* (WRM, 29 May 2019).

5 **MONITORING, REPORTING AND REVIEW**

The mine will maintain records of all waste material removed from the mine site. The records will include the quantities and type of waste removed offsite for recycling or disposal, the contractor engaged to remove the wastes, the date the waste or recyclables were removed from site, the final destination for all waste products and any other relevant information. All waste receipts will be retained onsite by store personnel.

Waste management information will be documented and reported in each AR, where applicable. Details will be provided on the implementation of the Waste Management Plan and any areas that require improvement.



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6 MANAGEMENT OF INCIDENTS, COMPLAINTS AND NON-COMPLIANCES

6.1 Incidents and Non-Compliances

Any incidents relating to waste management will be managed via the Whitehaven incident management process.

In accordance with Schedule 6, Condition 4 of PA 08_0144, upon becoming aware of an incident, NCOPL will:

- Notify the Secretary as soon as practicable; and
- Prepare and submit a detailed report to the Secretary within 7 days of the date of the incident.

6.2 Complaints

Any complaints received in relation to waste management will be managed in accordance with the complaints management protocol described as follows:

- A publicly advertised telephone complaints line will be in place to receive complaints during operating hours and record complaints at other times.
- Each complaint received will be recorded on a Complaints Form, which will include the following details:
 - The date and time of complaint.
 - Any personal details the complainant wishes to provide or if no such details are provided a note to that effect.
 - The nature of the incident that led to the complaint, including the time of the dispersal and its duration.
 - The action taken by the mine in relation to the complaint, including any follow-up contact with the complainant.
 - If no action was taken by the mine, the reason why no action was taken.
- The Environmental Superintendent will be responsible for ensuring that an initial response is provided within 24 hours of receipt of a complaint (except in the event of complaints recorded when the mine is not operational or outside of usual business hours).
- Additional measures will be undertaken as required to address the complaint. This may include visiting the complainant, or inviting the complainant to the mine site.
- Once the identified measures are undertaken, the Environmental Superintendent will sign off on the relevant complaint within the Complaints Form.



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- If necessary, follow-up monitoring or will take place to confirm the source of the complaint is adequately mitigated.
- A summary of the complaints will be kept in a Complaints Register that will be kept by the mine and made available to the Narrabri Mine Community Consultative Committee, the complainant (on request) and on the Whitehaven website. A summary of complaints received every 12 months will be provided through the AR.

Based on the nature of individual complaints, specific contingency measures may be implemented to the (reasonable) satisfaction of the complainant. The Environmental Superintendent retains ultimate responsibility to ensure that complaints received are properly recorded and addressed appropriately.

6.3 Unpredicted Impact Protocol

It is considered unlikely that operation of the mine will result in any unpredicted or unforeseen impacts in relation to waste management. However, in the event that unpredicted or unforeseen impacts do occur, the protocol outlined in Table 3 will be adopted.

Table 3: Unpredicted Impact Protocol

Step	Procedure
1	Review the unpredicted impact including consideration of: <ul style="list-style-type: none"> • Any relevant monitoring data; and • Current mine activities as well as activities in the vicinity of the issue.
2	Commission an investigation by an appropriate specialist into the unpredicted impact, if considered appropriate.
3	Develop appropriate ameliorative measures based on the results of the above investigations, in consultation with relevant government departments.
4	Implement additional monitoring, where relevant, to measure the effectiveness of the improvement measures.



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7 DOCUMENT REVIEW AND CONTINUOUS IMPROVEMENT

This document will be reviewed in accordance with the requirements of Schedule 6, Condition 3 of PA 08_0144. The mine will investigate and implement ways to improve the environmental performance of the project over time. This will be achieved by keeping abreast of best practice in the industry for waste management and recycling options and reporting on outcomes of waste management in the AR.

8 ROLES AND RESPONSIBILITIES

Role	Responsibilities
General Manager	<ul style="list-style-type: none"> Provides adequate resources Ensures all contractors, employees and service providers comply with all laws, regulations, licences, approvals and conditions of the project approval
Environmental Superintendent	<ul style="list-style-type: none"> Provide waste management support and advice to all Employees and Contractors. Record incidents, complaints and non-compliances and respond in accordance with the plan. Coordinate effluent water quality monitoring and maintain records. Inspect/audit waste management practices and facilities. Undertake reviews of this plan.
Safety and Training	<ul style="list-style-type: none"> Deliver waste management information to employees and contractors via the induction process and training packages.
Supply Supervisor	<ul style="list-style-type: none"> Ensuring all waste contractors are appropriately licenced. Maintain records of waste removals from the site. Ensure all waste areas are designated appropriately.
Surface Operations Manager	<ul style="list-style-type: none"> Maintain the Sewage Treatment Plant and effluent irrigation area. Manage coal rejects and Brine disposal processes.
All Employees and Contractors	<ul style="list-style-type: none"> Ensure all waste types are placed into the appropriate storage areas or receptacles. Report any incidents relating to waste management.



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9 REVISION HISTORY

Rev.	Comments	Author	Authorised By	Date
0	Initial document	D Young	C Burgess	December 2007
1	Stage 2 Revision	J Johnson	S Pegg	October 2011
2	3 Yearly Review	S Farrar	D Ellwood	26 May 2015
3	General Review	S Farrar	D Ellwood	14 May 2018
4	Updated to address DPE comments and change to practices. Submitted to DPIE&E on 31 October 2019. No response was received. Advised by DPI&E to re-submit.	B Baker	G Linde	29 May 2020



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Appendix 1: Waste Management Schedule

Waste Type	Source	Management/Disposal
Paper	Office/Workshop areas	Sensitive documents are to be archived and removed off-site for disposal by the waste contractor in bulk quantities. General waste paper is disposed of as General Waste.
Cardboard	Used as packaging for various items	Cardboard to be placed into recycling bins (cages) for collection and recycling.
Plastic Packaging	Shrink wrap or general packaging	Placed into General Waste bins and skips for disposal to landfill.
Putrescibles Waste	Food and general waste	Placed into General Waste bins and skips for disposal to landfill.
Timber	Wooden pallets and cable drums	Reused or returned where possible. Otherwise stockpiled onsite for collection by timber recycling contractors (where feasible) or disposed into General Waste skips for disposal to landfill.
Metal	General materials including emptied and compacted 20L drums	Metals to be stored in designated skip bins and removed from site for recycling.
Hydrocarbons	Used in workshop and servicing areas	Any excess oil and grease which is collected during maintenance activities or through the separator will be stored in appropriately labelled containers and placed within bunded areas at the workshop or waste oil depot, prior to removal off-site by a licensed waste oil recycler.
Oil filters & Hydraulic hoses	Removed from equipment	Stored in empty 1000L pods and labelled skip bins and collected by the licensed waste contractor.
Rags	Used in workshop and servicing areas	Rags are to be placed into General Waste (open-top) skips.
Batteries	Expend batteries from vehicle fleet	Will be removed from site by a licensed contractor for recycling.
Tyres	Expend tyres from vehicle fleet	All tyres from the mine vehicle fleet are disposed of via the tyre supply company.
Diesel particulate and air filters	Underground and surface equipment	Placed into General Waste bins and skips for disposal to landfill.
Printer cartridges	From administration buildings	Collected in designated receptacles located adjacent to printers and recycled via Planet Ark.
Sanitary Waste	From Bath house facilities	Collected in designated receptacles and disposed of via a licensed waste contractor
Sharps	From the bathhouses and First Aid room	Collected in sharps containers in the bathhouses and First Aid room and disposed of via a licensed waste contractor



NARRABRI MINE ENVIRONMENTAL MANAGEMENT SYSTEM

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WHC-PLN-NAR-WASTE MANAGEMENT PLAN

Waste Type	Source	Management/Disposal
Waste Water	From bathhouse, office areas and underground	Effluent will be treated by a sewage treatment plant on site. Treated effluent will then be applied to a designated and signed irrigation pad within the Pit Top Area.
Drill cuttings	From exploration, gas drainage and other drilling activities	Temporarily stored on drill-pads in excavated drill-sumps, before being loaded out and dumped within a series of dewatering ponds adjacent to the Rejects Emplacement Area (REA). Decanted water remains within the site dirty Water Management system. Dewatered cuttings are disposed of within the REA.
Fine and coarse rejects	ROM coal via the CHPP	Fines are mechanically dewatered within the CHPP and sent to the Product Coal stockpiles. Coarse reject material is separated by the CHPP process and sent via conveyor to a temporary stockpile, before being loaded and transported for final disposal within the Rejects Emplacement Area.
Chemical bolt wastes	Underground operations	Chemicals have a 3-5 month shelf life and are collected and returned to the supplier.
Hazardous waste- Mine Rescue Breather (MRB) units	Safety device used for self-rescue from underground environments.	MRB units can contain inorganic substances which are hazardous when released in an uncontrolled manner. Unused product (where possible) will be returned to the supplier. Waste products will be disposed to a licensed facility by a licensed waste contractor.

Appendix 2: Effluent Irrigation limits; obtained from *Environmental Guidelines: Use of Effluent by Irrigation* (DEC, 2004).

Constituent	Concentration ¹ (mg/L)
Total Nitrogen	<50
Total Phosphorous	<10
BOD	<40
Total Dissolved Solids	<1000 ²

¹ Average concentrations established from a minimum of 12 representative samples, collected at regular intervals (monthly) over a year.

² Higher value adopted due to quality of site potable water input