

Maules Creek Continuation Project

Environmental Impact Statement

Table of Contents



TABLE OF CONTENTS

EXECUTIVE SUMMARY	ES-3		
ES1 BACKGROUND	ES-3		
ES1.1 OVERVIEW OF THE APPROVED MAULES CREEK COAL MINE AND HISTORY OF THE LEARD FOREST MINING PRECINCT	ES-3		
ES2 OVERVIEW OF THE PROJECT	ES-6		
ES2.1 OBJECTIVES OF THE PROJECT	ES-10		
ES2.1.1 Undertake a Logical Continuation of the Maules Creek Coal Mine	ES-10		
ES2.1.2 Avoidance and Impact Minimisation on Sensitive Environmental Features within the Vicinity of the Project	ES-10		
ES2.1.3 Establish Positive Outcomes for Biodiversity	ES-13		
ES2.2 MINING OPERATIONS	ES-13		
ES2.3 COAL PROCESSING AND TRANSPORT	ES-15		
ES2.4 COAL REJECT MANAGEMENT	ES-15		
ES2.5 WATER MANAGEMENT	ES-15		
ES2.6 INFRASTRUCTURE AND FACILITIES	ES-15		
ES2.7 WORKFORCE	ES-16		
ES2.8 FINAL VOID	ES-16		
ES2.9 INTERACTIONS WITH NEARBY MINES	ES-16		
ES3 APPROVAL PROCESS	ES-16		
ES3.1 NEW SOUTH WALES	ES-16		
ES3.2 COMMONWEALTH	ES-16		
ES3.3 DETERMINATION	ES-17		
ES4 ENGAGEMENT	ES-17		
ES5 KEY ENVIRONMENTAL ASSESSMENT ISSUES AND PROJECT MITIGATION	ES-18		
ES5.1 BIODIVERSITY	ES-18		
ES5.2 WATER RESOURCES	ES-18		
ES5.3 GREENHOUSE GAS	ES-19		
ES5.4 NOISE, BLASTING AND AIR QUALITY	ES-19		
ES5.5 ABORIGINAL CULTURAL HERITAGE	ES-20		
ES5.6 ECONOMIC EFFECTS, SOCIAL AND COMMUNITY INFRASTRUCTURE	ES-20		
ES5.7 REHABILITATION AND MINE CLOSURE	ES-20		
ES6 CONCLUSION	ES-21		
1 INTRODUCTION	1-1		
1.1 APPLICANT DETAILS	1-1		
1.2 PROJECT OVERVIEW	1-1		
		1.2.1 Purpose of this Document	1-1
		1.2.2 Project Objectives	1-4
		1.2.3 Project Summary	1-6
		1.2.4 Site Location	1-7
		1.3 OVERVIEW OF THE APPROVED MAULES CREEK COAL MINE	1-7
		1.3.1 History of the Maules Creek Coal Mine	1-7
		1.3.2 Approved Maules Creek Coal Mine	1-10
		1.3.3 Water Management Infrastructure	1-11
		1.3.4 Waste Rock Management	1-11
		1.3.5 Rehabilitation and Final Landform	1-11
		1.3.6 Mine Waste Management	1-11
		1.3.7 Existing Biodiversity Offset Strategy	1-11
		1.3.8 Environmental Monitoring and Management	1-12
		1.4 PROJECT INTERACTION WITH THE APPROVED MCCM	1-13
		1.4.1 Other Nearby Projects	1-13
		1.4.2 Boggabri Coal Mine	1-13
		1.4.3 Tarrawonga Coal Mine	1-13
		1.5 PROJECT RESTRICTIONS	1-13
		1.6 PROJECT CONSULTANTS	1-14
		1.7 STRUCTURE OF THIS DOCUMENT	1-15
		2 STRATEGIC CONTEXT	2-1
		2.1 PROJECT STRATEGIC CONTEXT	2-1
		2.1.1 Justification for the Project	2-2
		2.1.2 Key Project Benefits	2-2
		2.1.3 Key Project Avoidance and Minimisation Measures	2-4
		2.1.4 Consideration of Alternatives	2-4
		2.1.5 Consequences of the Project not Proceeding	2-7
		2.2 INTERNATIONAL STRATEGIC CONTEXT	2-7
		2.2.1 Paris Agreement	2-8
		2.2.2 Demand For Coal	2-8
		2.3 NATIONAL STRATEGIC CONTEXT	2-10
		2.3.1 National Strategy for Ecologically Sustainable Development	2-10
		2.3.2 National Greenhouse Gas Emissions	2-11
		2.4 STATE STRATEGIC CONTEXT	2-12
		2.4.1 Strategic Statement on Coal Exploration and Mining in NSW	2-12

TABLE OF CONTENTS (CONTINUED)

2.4.2	Net Zero Plan Stage 1: 2020-2030	2-13	3.10	WASTE ROCK MANAGEMENT	3-23
2.4.3	NSW Climate Change (Net ZeroFuture) Act 2023	2-13	3.10.1	Waste Rock Quantities	3-23
2.4.4	NSW Environment Protection Authority – Guide for Large Emitters	2-13	3.10.2	Waste Rock Emplacement Strategy	3-23
2.4.5	NSW Aquifer Interference Policy	2-14	3.10.3	Waste Rock Geochemistry	3-24
2.4.6	Guiding Principles for Responsible Mining in NSW	2-14	3.11	COAL REJECT MANAGEMENT	3-24
2.5	REGIONAL STRATEGIC CONTEXT	2-15	3.11.1	Coal and Coal Reject Geochemistry	3-24
2.5.1	New England North West Regional Plan 2041	2-15	3.11.2	Coal Reject Disposal Strategy	3-24
2.5.2	Narrabri Local Environmental Plan 2012	2-16	3.12	WATER MANAGEMENT	3-25
2.5.3	2022/2032 Narrabri Shire Community Strategic Plan	2-16	3.12.1	Project Water Management System	3-25
2.5.4	Narrabri Rural Land Strategy	2-17	3.12.2	Open Cut Dewatering	3-28
2.5.5	Leard Forest Regional Biodiversity Strategy	2-19	3.12.3	Water Transfer Pipeline	3-28
2.5.6	Other Strategic Planning Documents	2-19	3.13	FINAL LANDFORM	3-29
2.5.7	Third Party Agreements	2-20	3.14	INFRASTRUCTURE AND SERVICES	3-29
2.6	LOCAL STRATEGIC CONTEXT	2-20	3.14.1	Mine Infrastructure Area	3-29
2.6.1	Natural and Built Features	2-20	3.14.2	Site Access and Internal Roads	3-31
2.6.2	Land Use	2-21	3.14.3	Electricity Supply and Distribution	3-31
2.6.3	Population Centres and Localities	2-21	3.14.4	Lighting	3-32
2.7	KEY RISKS AND HAZARDS	2-21	3.14.5	Potable Water	3-32
2.8	CUMULATIVE IMPACTS	2-22	3.14.6	Ancillary Infrastructure	3-32
3	PROJECT DESCRIPTION	3-1	3.15	WASTE MANAGEMENT	3-32
3.1	PROJECT OVERVIEW	3-1	3.15.1	Used Tyre Management	3-33
3.2	LANDSCAPE REVEGETATION ZONES	3-8	3.16	MANAGEMENT OF DANGEROUS GOODS	3-33
3.2.1	Objective	3-8	3.16.1	Hydrocarbon Storage	3-33
3.2.2	Target Locations	3-8	3.16.2	Explosives Storage	3-33
3.2.3	Description of Revegetation Works	3-9	3.16.3	Chemicals Storage and Safety Data Sheets	3-34
3.3	COAL RESOURCE, GEOLOGICAL FEATURES AND EXPLORATION	3-10	3.17	WORKFORCE	3-34
3.4	PROJECT AREA	3-10	3.18	REHABILITATION AND MINE CLOSURE ACTIVITIES	3-34
3.5	PROJECT GENERAL ARRANGEMENT	3-14	3.18.1	Project Rehabilitation Strategy	3-34
3.6	PROJECT CONSTRUCTION ACTIVITIES	3-14	3.18.2	Project Mine Closure and Decommissioning	3-34
3.7	HOURS OF OPERATION	3-19	3.18.3	Project Rehabilitation Practices and Measures	3-36
3.8	OPEN CUT MINING	3-19	3.19	OTHER ACTIVITIES	3-36
3.8.1	Open Cut Mining Areas	3-19	3.19.1	Exploration Activities	3-36
3.8.2	Mining Equipment	3-19	3.19.2	Monitoring Activities	3-37
3.8.3	Indicative Mining Schedule	3-20	4	STATUTORY CONTEXT	4-1
3.8.4	Open Cut Mining Activities	3-20	4.1	EXISTING APPROVALS AND REGULATORY CONTROLS	4-1
3.9	COAL PROCESSING AND PRODUCT COAL TRANSPORT	3-23	4.2	STATUTORY REQUIREMENTS FOR THE PROJECT	4-1
			4.2.1	Power to Grant Approval	4-1
			4.2.2	Permissibility	4-2

TABLE OF CONTENTS (CONTINUED)

4.2.3	Approvals that Cannot be Refused if Consent is Granted	4-5		5.4.3	Public Reporting	5-7
4.2.4	Approvals not Required for SSD	4-6		5.5	WHITEHAVEN COMMUNITY SUPPORT	5-7
4.2.5	Preconditions to Exercising the Power to Grant Approval	4-6	6	ENVIRONMENTAL ASSESSMENT	6-1	
4.2.6	Mandatory Matters for Consideration	4-6		6.1	ENVIRONMENTAL RISK ASSESSMENT	6-1
4.2.7	Environmental Assessment Requirements for State Significant Development	4-6		6.2	CLIMATE AND TOPOGRAPHY	6-1
4.2.8	Development Contributions	4-16		6.2.1	Climate	6-1
4.2.9	EPBC Act	4-16		6.2.2	Topography	6-4
4.3	OTHER RELEVANT STATE LEGISLATION	4-17		6.3	TERRESTRIAL ECOLOGY	6-7
4.3.1	Mining Act	4-17		6.3.1	Methodology	6-7
4.3.2	PoEO Act	4-17		6.3.2	Existing Environment	6-8
4.3.3	Water Management Act 2000	4-17		6.3.3	Potential Impacts	6-15
4.3.4	NSW Roads Act 1993	4-18		6.3.4	Mitigation Measures	6-26
4.3.5	BC Act	4-18		6.3.5	Adaptive Management	6-42
4.3.6	NPW Act	4-18		6.3.6	Biodiversity Offset Strategy	6-42
4.3.7	NSW Climate Change (Net Zero Future) Act 2023	4-18		6.4	GROUNDWATER	6-47
4.4	OTHER RELEVANT COMMONWEALTH LEGISLATION	4-19		6.4.1	Methodology	6-47
4.4.1	Climate Act	4-19		6.4.2	Existing Environment	6-48
4.4.2	NGER Act	4-19		6.4.3	Potential Impacts	6-56
4.4.3	Commonwealth Native Title Act 1993	4-20		6.4.4	Mitigation Measures and Monitoring	6-68
4.5	PROJECT COMPLIANCE WITH STATUTORY REQUIREMENTS	4-20		6.4.5	Adaptive Management	6-71
5	ENGAGEMENT	5-1		6.5	SURFACE WATER	6-72
5.1	ENGAGEMENT APPROACH	5-1		6.5.1	Methodology	6-72
5.2	ENVIRONMENTAL IMPACT STATEMENT CONSULTATION	5-1		6.5.2	Existing Environment	6-73
5.2.1	Federal Government Agencies	5-1		6.5.3	Potential Impacts	6-81
5.2.2	State Government Agencies	5-1		6.5.4	Mitigation Measures and Monitoring	6-86
5.2.3	Local Government Agencies	5-3		6.5.5	Adaptive Management	6-86
5.2.4	Surrounding Mining Operations	5-3		6.6	AQUATIC ECOLOGY	6-87
5.2.5	Infrastructure Owners and Service Providers	5-4		6.6.1	Methodology	6-87
5.2.6	Public Consultation	5-4		6.6.2	Existing Environment	6-88
5.2.7	Social Impact Assessment	5-5		6.6.3	Potential Impacts	6-91
5.3	STAKEHOLDER VIEWS	5-5		6.6.4	Mitigation Measures and Monitoring	6-92
5.4	ENGAGEMENT TO BE CARRIED OUT	5-5		6.7	GROUNDWATER DEPENDENT ECOSYSTEMS	6-93
5.4.1	Maules Creek Coal Community Consultative Committee	5-7		6.7.1	Methodology	6-93
5.4.2	Website and Community Hotline	5-7		6.7.2	Existing Environment	6-94
				6.7.3	Assessment	6-100
				6.7.4	Mitigation Measures and Monitoring	6-103
				6.8	NOISE	6-104
				6.8.1	Methodology	6-104
				6.8.2	Existing Environment	6-104
				6.8.3	Applicable Criteria	6-108
				6.8.4	Potential Impacts	6-110
				6.8.5	Mitigation Measures	6-119
				6.8.6	Adaptive Management	6-121

6.9	BLASTING	6-121	6.15.4	Mitigation Measures	6-173
6.9.1	Methodology	6-121	6.16	LANDSCAPE AND VISUAL CHARACTER	6-174
6.9.2	Existing Environment	6-121	6.16.1	Methodology	6-174
6.9.3	Potential Impacts	6-122	6.16.3	Existing Environment	6-177
6.9.4	Management and Mitigation Measures	6-123	6.16.4	Potential Impacts	6-181
6.10	AIR QUALITY	6-125	6.16.5	Mitigation Measures and Management	6-187
6.10.1	Applicable Criteria	6-125	6.17	ECONOMIC EFFECTS	6-188
6.10.2	Existing Environment	6-125	6.17.1	Methodology	6-188
6.10.3	Potential Impacts	6-128	6.17.2	Existing Environment	6-188
6.10.4	Management and Mitigation Measures	6-133	6.17.3	Assessment	6-190
6.10.5	Adaptive Management	6-133	6.17.4	Mitigation Measures	6-191
6.11	GREENHOUSE GAS EMISSIONS	6-134	6.18	SOCIAL AND COMMUNITY INFRASTRUCTURE	6-191
6.11.1	Methodology	6-134	6.18.1	Methodology	6-191
6.11.2	Key Greenhouse Gas Policies	6-134	6.18.2	Existing Environment	6-192
6.11.3	Greenhouse Gas Emissions Scopes	6-137	6.18.3	Potential Impacts	6-194
6.11.4	Quantitative Assessment of Potential Greenhouse Gas Emissions	6-140	6.18.4	Mitigation Measures	6-194
6.11.5	Project Greenhouse Gas Mitigation Measures	6-144	6.18.5	Adaptive Management	6-196
6.11.6	Potential Impacts of Climate Change on the Project	6-147	6.19	HAZARD AND RISK	6-197
6.11.7	Adaptive Management	6-147	6.19.1	Methodology	6-197
6.12	ABORIGINAL HERITAGE	6-148	6.19.2	Hazard Identification and Risk Assessment	6-197
6.12.1	Methodology	6-148	6.19.3	Hazard Prevention and Mitigation Measures	6-198
6.12.2	Existing Environment	6-151	7	EVALUATION AND CONCLUSION	7-1
6.12.3	Cultural Values	6-152	7.1	SUITABILITY OF THE SITE	7-1
6.12.4	Potential Impacts	6-154	7.1.1	Existing Mining Leases	7-1
6.12.5	Mitigation Measures	6-155	7.1.2	Existing Mine Infrastructure	7-1
6.13	NON-INDIGENOUS CULTURAL HERITAGE	6-156	7.1.3	Existing Workforce	7-2
6.13.1	Methodology	6-156	7.1.4	Permissibility	7-2
6.13.2	Existing Environment	6-157	7.1.5	Consideration of the Compatibility of the Project with Relevant Land Uses	7-2
6.13.3	Potential Impacts	6-159	7.2	KEY DESIGN ALTERNATIVES	7-6
6.13.4	Cumulative Impacts	6-162	7.3	STATUTORY REQUIREMENTS AND PLANNING/POLICY OBJECTIVES	7-7
6.13.5	Mitigation Measures and Monitoring	6-162	7.3.1	Consideration of the Project against the Objects of the EP&A Act	7-7
6.14	AGRICULTURAL AND LAND RESOURCES	6-162	7.3.2	Consideration of the Project against the Objects of the EPBC Act	7-8
6.14.1	Methodology	6-163	7.3.3	Evaluation Under Section 4.15(1) of the EP&A Act	7-9
6.14.2	Existing Environment	6-163	7.3.4	Potential Implications of Climate Change	7-10
6.14.3	Potential Impacts	6-166	7.3.5	ESD Considerations	7-10
6.14.4	Mitigation Measures	6-167	7.3.6	Other Policies and Strategic Objectives	7-16
6.15	ROAD TRANSPORT	6-168			
6.15.1	Methodology	6-168			
6.15.2	Existing Environment	6-168			
6.15.3	Potential Impacts	6-171			

TABLE OF CONTENTS (CONTINUED)

7.4	EVALUATION OF KEY BENEFITS AND IMPACTS	7-16	Table 6-11	Key Flow Duration Curve Characteristics – Namoi River at Boggabri and Turrawan
7.4.1	Key Potential Benefits	7-16	Table 6-12	Average Annual Water Balance Results for the Project
7.4.2	Key Potential Impacts	7-17	Table 6-13	NPfI Project-specific Intrusiveness and Amenity Criteria and Project Noise Trigger Levels for Privately Owned Receivers (dBA)
7.4.3	Strategic Context	7-18	Table 6-14	Project Noise Trigger Levels for Non-residential Receivers (dBA)
7.4.4	Consideration of the Consequences of Not Carrying Out the Project	7-19	Table 6-15	Significance of Residual Noise Impacts and Potential Treatments
7.5	CONCLUSION	7-20	Table 6-16	Road Noise Criteria for Residential Land Uses
8	REFERENCE LIST	8-1	Table 6-17	Network Rail Line Noise Criteria
9	ACRONYMS AND ABBREVIATIONS	9-1	Table 6-18	Rail Noise Criteria for Private Rail Spur

LIST OF TABLES

Table ES-1	Summary of the Approved MCCM and the Project	Table 6-19	Summary of Potential Operational Noise Night-time Exceedances at Privately-owned Receivers under Adverse Meteorological Conditions
Table 3-1	Summary of the Approved Maules Creek Coal Mine and the Project	Table 6-20	Relevant Blasting Impact Assessment Criteria
Table 3-2	Mining and Exploration Tenements	Table 6-21	Blasting Minimum Compliance Distances assuming MIC of 8,000 kg
Table 3-3	Indicative Mine Schedule	Table 6-22	Relevant Air Quality Impact Assessment Criteria
Table 4-1	Applicable Preconditions to Granting Approval	Table 6-23	Summary of PM ₁₀ levels from TEOM monitoring stations (µg/m ³)
Table 4-2	Applicable Mandatory Matters for Consideration under the EP&A Act and EP&A Regulation	Table 6-24	Summary of Estimated Dust Emissions for the Project
Table 4-3	Applicable Mandatory Matters for Consideration under Environmental Planning Instruments	Table 6-25	Summary of Estimated Emissions from Nearby Mining Operations
Table 4-4	Applicable Mandatory Matters for Consideration under Other Acts	Table 6-26	Estimated Contributions from Other Background Dust Sources
Table 5-1	Summary of Key Stakeholder Views on the Project	Table 6-27	Estimated Highest Maximum Predicted Levels at any Privately-owned Receivers due to the Project only
Table 6-1	Relevant Rainfall in the Vicinity of the Project	Table 6-28	Estimated Highest Maximum Predicted Levels at any Community Receivers due to the Project only
Table 6-2	Relative Humidity and Temperature in the Vicinity of the Project	Table 6-29	Comparison of Estimated TSP Emission Rate for Project Construction and Operation
Table 6-3	Mapped Plant Community Types and Vegetation Zones	Table 6-30	Summary of Greenhouse Gas Emissions Estimates for the Project
Table 6-4	Avoidance and Minimisation Measures for Direct, indirect and Prescribed Impacts	Table 6-31	Summary of Aboriginal Heritage Consultation Undertaken for the Project
Table 6-5	Summary of Key Proposed Measures to Mitigate and Manage Residual Biodiversity Impacts	Table 6-32	Summary of Relevant Known Aboriginal Heritage Sites within the Subject Area
Table 6-6	Project Ecosystem Credit Requirements		
Table 6-7	Project Species Credit Requirements		
Table 6-8	Existing Water Licensing Summary for the MCCM		
Table 6-9	Estimated Water Licensing Requirements for the MCCP		
Table 6-10	Water Access Licence Trading Statistics		

TABLE OF CONTENTS (CONTINUED)

Table 6-33	Summary of Historic Heritage Items of Relevance to the Project	Figure 3-6	Indicative Stratigraphy of the Project Area
Table 6-34	Surveyed 2023 Average Weekday Traffic	Figure 3-7	Indicative General Arrangement FY2029
		Figure 3-8	Indicative General Arrangement FY2032
Table 6-35	Additional Project Generated Two Way Traffic	Figure 3-9	Indicative General Arrangement FY2036
Table 6-36	Predicted Cumulative Two-Way Traffic Volumes (Vehicles per day)	Figure 3-10	Indicative General Arrangement FY2040
Table 6-37	Predicted Peak Hour Two-Way Midblock Levels of Service	Figure 3-11	Project Disturbance Phasing
Table 6-38	Visual Magnitude Thresholds	Figure 3-12	Indicative Water Management System Schematic
Table 6-39	Visual Impact Matrix	Figure 3-13	Conceptual Final Landform
Table 6-40	Landscape Character Impact Assessment Summary	Figure 3-14	Conceptual Post-mining Land Use Areas
Table 6-41	Visual Impact Assessment	Figure 4-1	Narrabri LEP Zoning
Table 6-42	Summary of Key Social Impact Assessment Baseline Findings	Figure 6-1	Regional Meteorological Monitoring Locations
Table 6-43	Summary of Potential Social Impact for the Project	Figure 6-2a	Vegetation Mapping – Mine Site
Table 7-1	Principles of Ecologically Sustainable Development – EPBC Act and PoEA Act	Figure 6-2b	Vegetation Mapping – Water Transfer Pipeline
		Figure 6-3a	Threatened Ecological Communities – Mine Site
		Figure 6-3b	Threatened Ecological Communities – Water Transfer Pipeline (BC Act)
		Figure 6-3c	Threatened Ecological Communities – Water Transfer Pipeline (EPBC Act)
		Figure 6-4a	Threatened Species Records - Flora
		Figure 6-4b	Threatened Species Records - Birds (Part A)
		Figure 6-4c	Threatened Species Records - Birds (Part B)
		Figure 6-4d	Threatened Species Records - Birds (Part C)
		Figure 6-4e	Threatened Species Records - Mammals & Reptiles
		Figure 6-4f	Threatened Species Records - Bats
		Figure 6-5a	Landscape Revegetation Zones - Vegetation Mapping – Zone 1
		Figure 6-5b	Landscape Revegetation Zones - Vegetation Mapping – Zone 2
		Figure 6-5c	Landscape Revegetation Zones - Vegetation Mapping – Zone 3
		Figure 6-6	Regional Groundwater Source
		Figure 6-7	Groundwater Monitoring Network
		Figure 6-8a	Maximum Predicted Groundwater Drawdown for the Approved MCCM and the Project
		Figure 6-8b	Maximum Predicted Incremental Groundwater Drawdown for the Project

LIST OF FIGURES

Figure ES-1	Regional Location
Figure ES-2	Project Location
Figure ES-3	Existing/Approved Maules Creek Coal Mine – General Arrangement
Figure ES-4	General Arrangement of the Project
Figure ES-5	General Arrangement of the Mine Site
Figure ES-6	Example Whitehaven Rehabilitation
Figure 1-1	Regional Location
Figure 1-2	Project Location
Figure 1-3	Existing/Approved Maules Creek Coal Mine – General Arrangement
Figure 1-4a	Land Ownership Overview
Figure 1-4b	Land Ownership List
Figure 3-1	General Arrangement of the Project
Figure 3-2	General Arrangement of the Project – Mine Site
Figure 3-3	Conceptual Go-line, Access and Infrastructure Layout
Figure 3-4	General Arrangement Landscape Revegetation Zones
Figure 3-5	Geology of the Project Area and Surrounds
Figure 3-6	Indicative Stratigraphy of the Project Area
Figure 3-7	Indicative General Arrangement FY2029
Figure 3-8	Indicative General Arrangement FY2032
Figure 3-9	Indicative General Arrangement FY2036
Figure 3-10	Indicative General Arrangement FY2040
Figure 3-11	Project Disturbance Phasing
Figure 3-12	Indicative Water Management System Schematic
Figure 3-13	Conceptual Final Landform
Figure 3-14	Conceptual Post-mining Land Use Areas
Figure 4-1	Narrabri LEP Zoning
Figure 6-1	Regional Meteorological Monitoring Locations
Figure 6-2a	Vegetation Mapping – Mine Site
Figure 6-2b	Vegetation Mapping – Water Transfer Pipeline
Figure 6-3a	Threatened Ecological Communities – Mine Site
Figure 6-3b	Threatened Ecological Communities – Water Transfer Pipeline (BC Act)
Figure 6-3c	Threatened Ecological Communities – Water Transfer Pipeline (EPBC Act)
Figure 6-4a	Threatened Species Records - Flora
Figure 6-4b	Threatened Species Records - Birds (Part A)
Figure 6-4c	Threatened Species Records - Birds (Part B)
Figure 6-4d	Threatened Species Records - Birds (Part C)
Figure 6-4e	Threatened Species Records - Mammals & Reptiles
Figure 6-4f	Threatened Species Records - Bats
Figure 6-5a	Landscape Revegetation Zones - Vegetation Mapping – Zone 1
Figure 6-5b	Landscape Revegetation Zones - Vegetation Mapping – Zone 2
Figure 6-5c	Landscape Revegetation Zones - Vegetation Mapping – Zone 3
Figure 6-6	Regional Groundwater Source
Figure 6-7	Groundwater Monitoring Network
Figure 6-8a	Maximum Predicted Groundwater Drawdown for the Approved MCCM and the Project
Figure 6-8b	Maximum Predicted Incremental Groundwater Drawdown for the Project

TABLE OF CONTENTS (CONTINUED)

Figure 6-8c	Predicted Cumulative Groundwater Drawdown at End of Operations	Figure 6-31b	Non-Indigenous Cultural Heritage Assessment - Study Area B
Figure 6-8d	Predicted Maximum Cumulative Groundwater Drawdown	Figure 6-32	Verified Land and Soil Capability Classes Within the Project Mining Area
Figure 6-9	Private Bores Exceeding 2 m Drawdown in the Less Productive Porous Rock Groundwater Sources	Figure 6-33	Key Project Routes and Traffic Survey Locations
Figure 6-10	Regional Catchment Boundary	Figure 6-34	Land Ownership and Assessment Areas
Figure 6-11	Local Drainage Network	Figure 6-35	Landscape Character Zones
Figure 6-12	Surface Water Monitoring Network	Figure 6-36a	Viewpoint 1 Western View – Harparary Road
Figure 6-13	Namoi River Flow Duration Curves	Figure 6-36b	Viewpoint 2 Northern View – Maules Creek Village
Figure 6-14	Aquatic Ecology Survey Sites	Figure 6-36c	Viewpoint 3 Eastern View – Leards Forest Road
Figure 6-15	High Priority GDE Mapping (Namoi Alluvium WSP)	Figure 6-37	SA3 Region and Project Region
Figure 6-16	High Priority GDE Mapping (Porous Rock WSP)	Figure 6-38	Social Localities
Figure 6-17a	Review of High Priority GDE Mapping in Water Sharing Plans		
Figure 6-17b	Facultative GDEs Within BDAR Study Area		
Figure 6-18a	Predicted Cumulative Groundwater Drawdown at GDEs at End of Operations		
Figure 6-18b	Predicted Maximum Cumulative Groundwater Drawdown at GDEs		
Figure 6-19	Common Noise Level Sources		
Figure 6-20	Noise and Blast Monitoring Locations		
Figure 6-21	Complaints Summary		
Figure 6-22	Night Intrusive L_{Aeq} (15 min) Noise Contours FY2029		
Figure 6-23	Night Intrusive L_{Aeq} (15 min) Noise Contours FY2031		
Figure 6-24	Night Intrusive L_{Aeq} (15 min) Noise Contours FY2040		
Figure 6-25	Rail Networks		
Figure 6-26	Air Quality Monitoring Locations		
Figure 6-27	FY2031 24-hour average PM_{10} Contours		
Figure 6-28	Schematic Diagram Adopted Greenhouse Gas Assessment Boundary		
Figure 6-29	Site-Specific Greenhouse Gas Abatement and Offset Evaluation Schematic		
Figure 6-30a	Aboriginal Cultural Heritage Sites Project Mining Area		
Figure 6-30b	Aboriginal Cultural Heritage Sites Water Transfer Pipeline		
Figure 6-31a	Location of Non-Indigenous Cultural Heritage Assessment Study Areas		

LIST OF CHARTS

Chart 6-1	Predicted Annual Groundwater Inflows to the Project Open Cut Pts (Source: AGE, 2025)
Chart 6-2	Upper Namoi Zone 4 Groundwater Source Temporary Trade Statistics (NSW DCCEEW, 2024)
Chart 6-3	NSW Sectoral Performance 2005-2022 (Excluding Land Sector) - Compared to NSW Net Zero Targets
Chart 6-4	Australian ROM Coal Emissions Intensity Determinations and Estimated Project Average ROM Coal Emissions Intensity

LIST OF PLATES

Plate ES-1	Example of Areas Undergoing Active Revegetation across MCCM Offset Areas (2021)
Plate ES-2	Example of Areas Undergoing Active Revegetation across MCCM Offset Areas (2023)
Plate ES-3	MCCM Real-time Monitoring
Plate ES-4	Aboriginal Cultural Heritage Survey
Plate 1-1	Existing Mining Fleet at the MCCM
Plate 1-2	Mining Infrastructure at the MCCM
Plate 1-3	Progressive Rehabilitation of Overburden Emplacement at the MCCM
Plate 1-4	Example of Plantings at an MCCM Biodiversity Offset Area
Plate 1-5	Environmental Monitoring for the MCCM

TABLE OF CONTENTS (CONTINUED)

Plate 3-1	Example of Areas Undergoing Active Revegetation across MCCM Offset Areas	Attachment 9	Estimated Development Cost Report
Plate 6-1	Example of Coal Seams in the Maules Creek Formation	Attachment 10	Community Information
Plate 6-2	Groundwater monitoring site installed between Back Creek and Maules Creek in 2024	Attachment 11	JORC Summary
Plate 6-3	Back Creek – Upstream (Appendix B)	Attachment 12	Geotechnical Assessment of Proposed Final Landform
Plate 6-4	Back Creek – Downstream (Appendix B)	Attachment 13	Copy of Public Notice
Plate 6-5	Site BCP2 – facing upstream (Autumn 2024)	Attachment 14	Consent Under Section 380AA of the Mining Act
Plate 6-6	Site MCUS1 – facing upstream (Autumn 2024)	Attachment 15	Serious and Irreversible Impact Assessment Reports
Plate 6-7	Site NRDS1 – facing upstream (Autumn 2024)		
Plate 6-8	MCCM Real-time Monitoring System		
Plate 6-9	Barber's Lagoon memorial (HH04)		
Plate 6-10	Dilapidated shed structure forming part of HH12		
Plate 6-11	Detail of the survey tree scar face (HH14)		
Plate 6-12	Timber framed shed forming part of HH16		
Plate 6-13	Fairfax Public School in Maules Creek (LCZ 1)		
Plate 6-14	Agricultural Land use (LCZ 2)		
Plate 6-15	Aerial View of the Northern Part of Leard State Forest bordering the MCCM (LCZ 3)		
Plate 6-16	Namoi River (LCZ 4)		
Plate 6-17	Ranges in the distance Viewed from Harparary Road (LCZ 5)		
Plate 6-18	Progressive Rehabilitation at the MCCM		

LIST OF APPENDICES

Appendix A	Groundwater Impact Assessment
Appendix B	Surface Water Assessment
Appendix C	Biodiversity Development Assessment Report
Appendix D	Aquatic Ecology Assessment
Appendix E	Social Impact Assessment
Appendix F	Aboriginal Cultural Heritage Assessment
Appendix G	Non-Indigenous Cultural Heritage Assessment
Appendix H	Noise and Blasting Assessment
Appendix I	Air Quality Impact Assessment
Appendix J	Greenhouse Gas Assessment
Appendix K	Economic Assessment
Appendix L	Land Contamination Assessment
Appendix M	Landscape and Visual Impact Assessment
Appendix N	Road Transport Assessment
Appendix O	Agricultural Impact Assessment
Appendix P	Geochemistry Assessment
Appendix Q	Environmental Risk Assessment Report
Appendix R	Preliminary Hazard Analysis

LIST OF ATTACHMENTS

Attachment 1	Secretary's Environmental Assessment Requirements
Attachment 2	Development Application Area and Real Property Descriptions
Attachment 3	Land Ownership and Landholder Key
Attachment 4	Peer Review Letters
Attachment 5	Other Strategic Planning Statements, Plans and Policies
Attachment 6	Relevant Environmental Planning Instruments and Legislation
Attachment 7	Rehabilitation and Mine Closure Addendum
Attachment 8	Summary of Mitigation Measures