Table of Contents

WINCHESTER SOUTH PROJECT

Environmental Impact Stateme

WHITEHAVEN COAL



2

TABLE OF CONTENTS

EXECUTIVE SUMMARY ES-1				
	ES1	BACKG	ES-1	
	ES2	THE PROJECT		ES-1
		ES2.1	Overview of the Project	ES-1
		ES2.2	General Arrangement	ES-1
		ES2.3	Construction	ES-5
		ES2.4	Operations	ES-5
		ES2.5	Rehabilitation, Mine Closure an	d
			Post mining Land Use	ES-6
	ES3	ASSESS	MENT PROCESS	ES-9
	ES4	ENGAG	EMENT	ES-9
	ES5		VIRONMENTAL ISSUES AND	ES-9
		ES5.1	Water Quality and Water Resources	ES-9
		ES5.2	Flooding	ES-10
		ES5.3	Social Values and Economic Effects	ES-10
		ES5.4	Flora and Fauna	ES-12
		ES5.5	Noise and Vibration	ES-13
		ES5.6	Air Quality	ES-13
		ES5.7	Transport	ES-14
		ES5.8	Land	ES-14
	ES6	GENER	AL ENVIRONMENTAL	
		MANAG	GEMENT COMMITMENTS	
		AND M	ODEL CONDITIONS	ES-14
	ES7	CONCLU	USION	ES-15
1	INTRO	DUCTION		1-1
	1.1	PURPO	SE OF THIS REPORT	1-1
		1.1.1	Document Structure	1-1
	1.2		T PROPONENT	1-4
	1.3		T CONSULTANTS	1-6
	1.4		T SUMMARY	1-13
	1.5	PROCES	ONMENTAL IMPACT ASSESSMENT	1-13
		1.5.1	Coordinated Project Declaration and Terms of Reference	n 1-13
		1.5.2	Objectives of the EIS	1-15
		1.5.3	How To Make a Public	1-15
	1.6	CONSU	Submission	1-15
	1.7		ORY CONTEXT	1-19
	1.7	1.7.1	Project Approvals Process and Assessment Pathway	1-19
		1.7.2	State Development and Public Works Organisation Act 1971	1-21
		1.7.3	Environment Protection and Biodiversity Conservation Act 1999	1-22
		1.7.4	Environmental Protection Act 1994	1-23
		1.7.5	Mineral Resources Act 1989	1-25
		1.7.6	Other Applicable Statutory Approvals and Legislation	1-26
		1.7.7	Policies and Provisions	1-36
		1.7.8	Local Planning Context	1-38

	1.7.9	Approvals Sought Through this EIS Process and Required	
		Separate to this EIS Process	1-40
PROJEC	T DESCRI	PTION	2-1
2.1	PROPOS	ED DEVELOPMENT	2-1
	2.1.1	Project Title and Objectives	2-1
	2.1.2	Project Summary and General Arrangement	2-1
	2.1.3	Capital Expenditure	2-4
	2.1.4	Project Rationale	2-4
	2.1.5	Regional and Local Context	2-11
	2.1.6	Interactions with Other Major	
		Projects and/or Developments	2-17
	2.1.7	Workforce and Associated	
		Accommodation	2-19
	2.1.8	Schedule of Work	2-20
2.2	SITE DES	SCRIPTION	2-21
	2.2.1	Tenure	2-21
	2.2.2	Existing Transport Infrastructure	2-23
	2.2.3	Existing Energy Infrastructure	2-27
	2.2.4	Existing Water Infrastructure	2-27
	2.2.5	Rural Premises, Business Precincts and Public Facilities	2-27
	2.2.6	Topography, Landform and Catchments	2-27
	2.2.7	Geology Features, Exploration History and Coal Resource	2-28
	2.2.8	Waterways and Watercourses	2-33
	2.2.9	Soils and Land Use	2-34
	2.2.10	Queensland Agricultural Land Audit	2-35
	2.2.11	Tourist Destinations and Recreation Sites	2-35
2.3	CLIMATI	E	2-36
	2.3.1	Rainfall	2-36
	2.3.2	Evaporation and	
		Evapotranspiration	2-36
	2.3.3	Temperature	2-36
	2.3.4	Humidity	2-39
	2.3.5	Bushfire Risk	2-39
	2.3.6	Wind Speed and Direction	2-39
	2.3.7	Atmospheric Stability	2-39
	2.3.8	Climate Change Projections for Australia and Queensland	2-41
2.4	CONSTR	UCTION	2-41
	2.4.1	Mine Access Road	2-42
	2.4.2	Mine Infrastructure Area	2-42
	2.4.3	Coal Handling and Processing Plant and ROM Pad	2-46
	2.4.4	Project Rail Spur and Loop	2-46
	2.4.5	Water Supply Infrastructure	2-46
	2.4.6	Electricity Supply and Distribution	2-47
	2.4.7	Vegetation Clearing and Soil Stockpiles	2-47
	2.4.8	Existing Infrastructure and Easements	2-48

	2.4.9	Internal Roads	2-48
	2.4.10	Flood Levees	2-48
	2.4.11	Site Up-catchment Water Management Infrastructure	2-50
	2.4.12	Train Load-out Facility and	
		Product Coal Stockpiles	2-51
	2.4.13	Explosives Magazines	2-51
	2.4.14	Earthworks	2-51
	2.4.15	Construction Materials	2-51
	2.4.16	Disturbance Area	2-51
2.5	OPERAT		2-52
	2.5.1	Hours of Operation	2-52
	2.5.2	Mine Life Staging	2-52
	2.5.3	Open Cut Extent	2-52
	2.5.4	Indicative Mining Schedule	2-52
	2.5.5	Mining Sequence, Methods and Equipment	2-54
	2.5.6	Coal Quality	2-55
	2.5.7	Coal Mining	2-55
	2.5.8	Winchester Quarry	2-55
	2.5.9	Waste Rock Management	2-55
	2.5.10	Coal Reject Management	2-56
	2.5.11	Hazardous Materials	2-56
2.6	INFRAST	RUCTURE REQUIREMENTS	2-56
	2.6.1	Mine Infrastructure Area	2-56
	2.6.2	Coal Handling and Processing	2-56
	2.6.3	Transportation	2-60
	2.6.4	Energy Supply	2-60
	2.6.5	Telecommunications	2-61
	2.6.6	Sewage	2-61
2.7	WATER	MANAGEMENT	2-62
	2.7.1	Water Management Objectives	2-62
	2.7.2	Up-catchment Diversions	2-65
	2.7.3	Water Consumption	2-65
	2.7.4	Groundwater Inflows	2-66
	2.7.5	Sediment Dams	2-66
	2.7.6	Controlled Release Strategy	2-66
	2.7.7	Simulated Performance of the Project Water Management	0.67
	2 7 0	System	2-67
2.0	2.7.8	Referable Dams MANAGEMENT	2-69
2.8			2-69
2.9		NMENTALLY RELEVANT IES AND NOTIFIABLE ACTIVITIES	2-69
PROJEC			3-1
3.1		ΓΙΟCATION	3-1
3.2		OPERATIONS	3-1
	3.2.1	Extraction Method	3-1
	3.2.2	Open Cut Mining Method	3-1
	3.2.2	Open Cut and Waste Rock	51
	J.2.J	Emplacement Extent	3-2
	3.2.4	Mining Sequence and Extraction	
		Rate	3-2
3.3	MINE IN	FRASTRUCTURE AREA	3-4

3

 3.4 PRODUCT COAL TRANSPORT AND PORT OPERATIONS 3.5 WORKFORCE ACCOMMODATION 3.6 INFRASTRUCTURE CORRIDOR ALIGNMEN 3.6.1 Electricity Transmission Line 3.6.2 Water Supply Pipeline 	3-7 3-7 3-7 S 3-8
3.6 INFRASTRUCTURE CORRIDOR ALIGNMEN 3.6.1 Electricity Transmission Line 3.6.2 Water Supply Pipeline	IT 3-5 3-7 3-7 3-7 S 3-8
3.6.1Electricity Transmission Line3.6.2Water Supply Pipeline	3-7 3-7 3-7 S 3-8
3.6.2 Water Supply Pipeline	3-7 3-7 S 3-8
	3-7 S 3-8
	S 3-8
3.6.3 Mine Access Road	
3.7 FINAL LANDFORM AND LAND OUTCOME	
3.7.1 Final Landform Design	3-8
3.7.2 Final Land Use	3-9
3.8 NOT CARRYING OUT THE PROJECT	3-9
3.9 ECOLOGICALLY SUSTAINABLE DEVELOPMENT AND HUMAN RIGHTS CONSIDERATIONS	3-9
3.9.1 Background	3-9
3.9.2 Consideration of Ecologically	55
Sustainable Development for the Project	3-11
ASSESSMENT OF PROJECT SPECIFIC MATTERS	4-1
4.1 WATER QUALITY	4-1
4.1.1 Methodology, Environmental Objectives and Performance	
Outcomes	4-1
4.1.2 Description of Environmental Values	4-3
4.1.3 Potential Impacts	4-9
4.1.4 Mitigation Measures, Management and Monitoring	4-13
4.2 WATER RESOURCES	4-17
4.2.1 Methodology and	
Environmental Objectives	4-17
4.2.2 Description of Environmental Values	4-17
4.2.3 Potential Impacts	4-17
4.2.4 Mitigation Measures,	4-20
4.2.4 Management and Monitoring	4-30
4.3 FLOODING AND REGULATED	
STRUCTURES	4-32
4.3.1 Methodology, Environmental Objectives and Performance	
Outcomes	4-32
4.3.2 Description of Environmental	
Values	4-33
4.3.3 Potential Impacts	4-33
4.3.4 Mitigation Measures,	4.25
Management and Monitoring	4-35
4.3.5 Regulated Structures	4-35
4.4 SOCIAL VALUES 4.4.1 Methodology and	4-36
Environmental Objectives	4-36
4.4.2 Description of Environmental Values	4-36
4.4.3 Potential Impacts	4-36
4.4.4 Mitigation Measures,	4-43
4.4.4 Minigation Measures, Management and Monitoring	4-45
4.4.5 Social Impact Management Plan	

4

4.5	FLORA A	AND FAUNA	4-58
	4.5.1	Methodology, Environmental	
		Objectives and Performance	
		Outcomes	4-58
	4.5.2	Environmental Values	4-61
	4.5.3	Potential Impacts	4-71
	4.5.4	Avoidance and Mitigation	
		Measures, Management and	
		Monitoring	4-81
	4.5.5	Offset Management Strategy	4-85
4.6		DWATER DEPENDENT	
	ECOSYS	TEMS	4-85
	4.6.1	Methodology and Environmental Objectives	4-85
	4.6.2	Description of Environmental	
	1.0.2	Values and Potential Impacts	4-87
	4.6.3	Mitigation Measures, Management and Monitoring	4-89
4.7		ND VIBRATION	4-89
	4.7.1	Methodology, Environmental	1.00
	4.7.1	Objectives and Performance Outcomes	4-89
	4.7.2	Description of Environmental	4 05
	4.7.2	Values	4-90
	4.7.3	Potential Impacts	4-92
	4.7.4	Mitigation Measures,	4-52
	4.7.4	Management and Monitoring	4-97
4.8	AIR QUA		4-98
4.0	4.8.1	Methodology, Environmental	4-50
	4.0.1	Objectives and Performance	
		Outcomes	4-98
	4.8.2	Description of Environmental	
	1.0.2	Values	4-98
	4.8.3	Potential Impacts	4-100
	4.8.4	Mitigation Measures,	
		Management and Monitoring	4-104
	4.8.5	Greenhouse Gas Emissions	4-105
4.9	TRANSP		4-106
	4.9.1	Methodology and	. 200
	4.5.1	Environmental Objectives	4-106
	4.9.2	Road Transport	4-106
	4.9.3	Rail Transport	4-116
	4.9.4	Air Transport	4-117
4.10	LAND		4-117
4.10			4-110
	4.10.1	Methodology, Environmental Objectives and Performance	
		Outcomes	4-118
	4.10.2	Description of Environmental	1 110
	4.10.2	Values	4-118
	4.10.3	Potential Impacts	4-134
	4.10.4	Mitigation Measures,	7 137
	4.10.4	Management and Monitoring	4-137
4.11	ECONO		4-139
	4.11.1	Methodology and	. 100
	7.11.1	Environmental Objectives	4-139
	4.11.2	Description of Environmental	. 200
		Values	4-139
	4.11.3	Potential Impacts	4-140
	4.11.4	Mitigation Measures	4-141
	T. I I. T	inition measures	- 141

4.12	CULTUR	AL HERITAGE	4-142
	4.12.1	Environmental Objectives	4-142
	4.12.2	Description of Environmental Values	4-142
	4.12.3	Potential Impacts, Mitigation and Management Measures	4-144
4.13	HAZARD	S AND COMMUNITY SAFETY	4-146
	4.13.1	Methodology and Environmental Objectives	4-146
	4.13.2	Description of Environmental Values	4-146
	4.13.3	Hazard Identification and Risk Assessment	4-146
	4.13.4	Hazard Mitigation and Management Measures	4-148
4.14	BIOSECU	JRITY	4-149
	4.14.1	Environmental Objectives	4-149
	4.14.2	Description of Environmental Values	4-149
	4.14.3	Potential Impacts	4-150
	4.14.4	Mitigation and Management Measures	4-151
4.15	WASTE	MANAGEMENT	4-153
	4.15.1	Methodology, Environmental Objectives and Performance	
	4.15.2	Outcomes Description of Waste Material	4-153
		and Sources	4-153
	4.15.3	Potential Impacts	4-155
	4.15.4	Mitigation, Management and Monitoring Measures	4-160
		MATTERS OF NATIONAL	
			5-1
5.1	INTROD		5-1
	5.1.1	Proponent Details	5-1
	5.1.2	Project Description	5-2
	5.1.3	Consultation Undertaken	5-5
5.2	BACKGR		5-7
	5.2.1	Referred Actions	5-7
	5.2.2		5-7
	5.2.3	Allocation of Disturbance	5-8
5.3	5.2.4 EXISTINO DATA	Commonwealth Requirements G ENVIRONMENT AND BASELINE	5-8 5-33
	5.3.1	Polovant Logiclation and Scone	5-33
	5.5.1	Relevant Legislation and Scope of Approvals Sought through the EIS Process	5-33
	5.3.2	Relevant Databases and Mapping	5-34
	5.3.3	Nearby Coal Mining and Coal Seam Gas Developments	5-34
	5.3.4	Threatened Flora and Ecological Communities	5-35
	5.3.5	Threatened Fauna	5-44
	5.3.6	Geological Features and Coal Resource	5-70
	5.3.7	Existing Water Resources	5-73
	5.3.8	Water Dependent Assets	5-86

5

5.4	SIGNIFIC	CANT IMPACT ASSESSMENT	5-91
	5.4.1	Introduction	5-91
	5.4.2	Impacts to Threatened Species	5-91
	5.4.3	Impacts to Threatened	
		Ecological Communities	5-104
	5.4.4	Impacts to Water Resources and Water Quality	5-106
	5.4.5	Indirect and Consequential Impacts	5-106
	5.4.6	Cumulative Impacts	5-109
	5.4.7	Risk Assessment	5-113
5.5		TE AND ACCESS ROAD ACTION 019/8460)	5-114
	5.5.1	Location of the Action	5-114
	5.5.2	Description of the Action	5-114
	5.5.3	Current Status of the Action	5-117
	5.5.4	Alternatives Considered	5-117
	5.5.5	Relationship to Other Actions	5-122
	5.5.6	Impacts on listed Threatened	
		Species and Ecological Communities	5-122
	5.5.7	Assessment Methodology for Water Resources and Water Quality	5-123
	5.5.8	Impacts on Water Resources and Water Quality	5-133
	5.5.9	Indirect and Consequential Impacts	5-142
	5.5.10	Cumulative Impacts	5-142
	5.5.11	Impact Avoidance, Mitigation Measures and Management	5-142
5.6	ELECTRI	Measures and Management Plans CITY TRANSMISSION LINE	5-142
5.6	ELECTRI	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458)	5-153
5.6	ELECTRI ACTION 5.6.1	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action	5-153 5-153
5.6	ELECTRI ACTION 5.6.1 5.6.2	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action	5-153 5-153 5-153
5.6	ELECTRI ACTION 5.6.1 5.6.2 5.6.3	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action	5-153 5-153 5-153 5-154
5.6	ELECTRI ACTION 5.6.1 5.6.2 5.6.3 5.6.4	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action Alternatives Considered	5-153 5-153 5-153 5-154 5-154
5.6	ELECTRI ACTION 5.6.1 5.6.2 5.6.3	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action	5-153 5-153 5-153 5-154
5.6	ELECTRI ACTION 5.6.1 5.6.2 5.6.3 5.6.4 5.6.5	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action Alternatives Considered Relationship to Other Actions Impacts on listed Threatened	5-153 5-153 5-153 5-154 5-154
5.6	ELECTRI ACTION 5.6.1 5.6.2 5.6.3 5.6.4 5.6.5	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action Alternatives Considered Relationship to Other Actions Impacts on listed Threatened Species and Ecological	5-153 5-153 5-153 5-154 5-154 5-154
5.6	ELECTRI ACTION 5.6.1 5.6.2 5.6.3 5.6.4 5.6.5 5.6.6	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action Alternatives Considered Relationship to Other Actions Impacts on listed Threatened Species and Ecological Communities Indirect, Consequential and	5-153 5-153 5-153 5-154 5-154 5-154 5-154
5.6	ELECTRI ACTION 5.6.1 5.6.2 5.6.3 5.6.4 5.6.5 5.6.6 5.6.6 5.6.7 5.6.8 WATER	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action Alternatives Considered Relationship to Other Actions Impacts on listed Threatened Species and Ecological Communities Indirect, Consequential and Cumulative Impacts Impact Avoidance, Mitigation Measures and Management	5-153 5-153 5-153 5-154 5-154 5-154 5-155 5-155
	ELECTRI ACTION 5.6.1 5.6.2 5.6.3 5.6.4 5.6.5 5.6.6 5.6.6 5.6.7 5.6.8 WATER	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action Alternatives Considered Relationship to Other Actions Impacts on listed Threatened Species and Ecological Communities Indirect, Consequential and Cumulative Impacts Impact Avoidance, Mitigation Measures and Management Plans PIPELINE ACTION	5-153 5-153 5-153 5-154 5-154 5-154 5-155 5-155 5-155
	ELECTRI ACTION 5.6.1 5.6.2 5.6.3 5.6.4 5.6.5 5.6.6 5.6.7 5.6.8 WATER (EPBC 20	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action Alternatives Considered Relationship to Other Actions Impacts on listed Threatened Species and Ecological Communities Indirect, Consequential and Cumulative Impacts Impact Avoidance, Mitigation Measures and Management Plans PIPELINE ACTION 019/8459)	5-153 5-153 5-153 5-154 5-154 5-154 5-155 5-155 5-155 5-157
	ELECTRI ACTION 5.6.1 5.6.2 5.6.3 5.6.4 5.6.5 5.6.6 5.6.7 5.6.8 WATER (EPBC 20 5.7.1	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action Alternatives Considered Relationship to Other Actions Impacts on listed Threatened Species and Ecological Communities Indirect, Consequential and Cumulative Impacts Impact Avoidance, Mitigation Measures and Management Plans PIPELINE ACTION 019/8459) Location of the Action	5-153 5-153 5-153 5-154 5-154 5-154 5-155 5-155 5-155 5-157 5-157 5-157
	ELECTRI ACTION 5.6.1 5.6.2 5.6.3 5.6.4 5.6.5 5.6.6 5.6.7 5.6.8 WATER (EPBC 20 5.7.1 5.7.2	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action Alternatives Considered Relationship to Other Actions Impacts on listed Threatened Species and Ecological Communities Indirect, Consequential and Cumulative Impacts Impact Avoidance, Mitigation Measures and Management Plans PIPELINE ACTION 019/8459) Location of the Action Description of the Action	5-153 5-153 5-153 5-154 5-154 5-154 5-155 5-155 5-155 5-157 5-157 5-157 5-157
	ELECTRI ACTION 5.6.1 5.6.2 5.6.3 5.6.4 5.6.5 5.6.6 5.6.7 5.6.8 WATER (EPBC 2) 5.7.1 5.7.2 5.7.3	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action Alternatives Considered Relationship to Other Actions Impacts on listed Threatened Species and Ecological Communities Indirect, Consequential and Cumulative Impacts Impact Avoidance, Mitigation Measures and Management Plans PIPELINE ACTION 019/8459) Location of the Action Description of the Action	5-153 5-153 5-153 5-154 5-154 5-154 5-155 5-155 5-155 5-157 5-157 5-157 5-157 5-158
	ELECTRI ACTION 5.6.1 5.6.2 5.6.3 5.6.4 5.6.5 5.6.6 5.6.7 5.6.8 WATER (EPBC 20 5.7.1 5.7.2 5.7.3 5.7.4	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action Alternatives Considered Relationship to Other Actions Impacts on listed Threatened Species and Ecological Communities Indirect, Consequential and Cumulative Impacts Impact Avoidance, Mitigation Measures and Management Plans PIPELINE ACTION 019/8459) Location of the Action Description of the Action Current Status of the Action Alternatives Considered	5-153 5-153 5-153 5-154 5-154 5-154 5-155 5-155 5-155 5-157 5-157 5-157 5-157 5-158 5-158
	ELECTRI ACTION 5.6.1 5.6.2 5.6.3 5.6.4 5.6.5 5.6.6 5.6.7 5.6.8 WATER (EPBC 2/ 5.7.1 5.7.2 5.7.3 5.7.4 5.7.5	Measures and Management Plans CITY TRANSMISSION LINE (EPBC 2019/8458) Location of the Action Description of the Action Current Status of the Action Alternatives Considered Relationship to Other Actions Impacts on listed Threatened Species and Ecological Communities Indirect, Consequential and Cumulative Impacts Impact Avoidance, Mitigation Measures and Management Plans PIPELINE ACTION 019/8459) Location of the Action Description of the Action Alternatives Considered Relationship to Other Actions Impacts on listed Threatened Species and Ecological	5-153 5-153 5-154 5-154 5-154 5-155 5-155 5-155 5-157 5-157 5-157 5-157 5-157 5-158 5-158 5-159

	5.7.8	Impact Avoidance, Mitigation Measures and Management Plans	5-160
5.8		STRATEGY RELEVANT TO RS OF NATIONAL	
	ENVIRO	NMENTAL SIGNIFICANCE	5-160
5.9	CONCLU	JSION	5-163
	5.9.1	Consideration of the Actions against the Objects of the Environment Protection and Biodiversity Conservation Act 1999	5-163
	5.9.2	Ecologically Sustainable Development Considerations	5-164
	5.9.3	Social and Economic Benefits and Impacts	5-170
	5.9.4	Consequences of Not Carrying Out the Actions	5-172
REHAB	ILITATION	N STRATEGY	6-1
6.1	REHABI	LITATION REQUIREMENTS	6-1
	6.1.1	Mined Land Rehabilitation Poli	cy 6-1
	6.1.2	Progressive Rehabilitation and Closure Plan	6-1
	6.1.3	Regional Plan and Local Plannir	-
		Scheme	6-7
6.2		PTUAL FINAL LANDFORM	6-9
	6.2.1 6.2.2	Waste Rock Emplacements Infrastructure Areas	6-9 6-9
	6.2.2	Residual Voids	6-9
	6.2.4	Geotechnical Stability	6-13
	6.2.5	Surface Water and	0-15
	0.2.5	Groundwater	6-13
	6.2.6	Geochemistry	6-14
6.3	PROPOS	SED LAND OUTCOMES	6-15
	6.3.1	Post-Mining Land Use	6-15
	6.3.2	Non-Use Management Area	6-16
	6.3.3	Summary	6-19
6.4	GENER	AL REHABILITATION ACTIVITIES	6-19
	6.4.1	Progressive Rehabilitation	6-20
	6.4.2	Decommissioning and	
		Mine Closure	6-20
	6.4.3	Vegetation Clearance	
		Procedures	6-21
	6.4.4	Soil Management	6-21
	6.4.5	Erosion and Sediment Control	6-23
	6.4.6	Water Management Infrastructure	6-23
	6.4.7	Revegetation Strategy	6-23
	6.4.8	Rehabilitation Trials	6-24
	6.4.9	Weed and Pest Management	6-24
6.5	6.4.10	Exploration Areas	6-24
6.5			6-25
6.6	6.6.1	LITATION PROGRAM Rehabilitation Goals	6-25 6-25
	6.6.2	Rehabilitation Goals	6-25
	6.6.3	Improvement Milestones	6-32
	6.6.4	Completion Criteria	6-32
	6.6.5	Monitoring, Maintenance and	0-32
	0.0.5	Reporting	6-32

6

7			ONMENTAL PROTECTION AND MODEL CONDITIONS	7-1
	7.1	GENERA		
		PROTEC	TION COMMITMENTS	7-1
	7.2	CONSUL	TATION AND COMMUNITY	7-1
	7.3	ENVIRO	NMENTAL REPORTING	7-1
		7.3.1	Annual Return	7-1
		7.3.2	Third Party Reporting	7-1
		7.3.3	Other Reporting Mechanisms	7-1
		7.3.4	Review of Management Plans	7-1
	7.4	PROPOS	ED ENVIRONMENTAL	
		AUTHO	RITY CONDITIONS	7-15
		7.4.1	Schedule A – General	7-15
		7.4.2	Schedule B – Air	7-16
		7.4.3	Schedule C – Waste	
			Management	7-18
		7.4.4	Schedule D – Noise	7-18
		7.4.5	Schedule E – Groundwater	7-20
		7.4.6	Schedule F – Water	7-23
		7.4.7	Schedule G – Sewage	
			Treatment	7-30
		7.4.8	Schedule H – Land and	
			Rehabilitation	7-31
		7.4.9	Schedule I – Regulated	7 20
•	-		Structures	7-39
8				8-1
	8.1	KEY BEN		8-1
	8.2			8-2
	8.3		ERATION OF THE CONSEQUENCE CARRYING OUT THE PROJECT	S 8-2
	8.4	CONCLU	JSION	8-3
9	REFERE	NCES		9-1
10	ABBREV	IATIONS	, ACRONYMS, GLOSSARY	
		FINITION		10-1
	10.1	ABBREV	IATIONS AND ACRONYMS	10-1
	10.2	GLOSSA	RY	10-7
	10.3	DEFINIT	10-11	

LIST OF FIGURES

and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-19Regional Meteorological and Weather StationFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass Design		
Figure ES-3Conceptual Final Landform and Land UseFigure ES-4Conceptual Final Landform SimulationFigure 1-1Project LocationFigure 1-2Regional LocationFigure 1-3Project Approval Process and Consultation ProcessFigure 2-1Project General ArrangementFigure 2-2General Arrangement – Project Year 2Figure 2-3General Arrangement – Project Year 9Figure 2-4General Arrangement – Project Year 9Figure 2-5General Arrangement – Project Year 19Figure 2-6General Arrangement – Project Year 27Figure 2-7Indicative Mining SequenceFigure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-18Regional GeologyFigure 2-19Regional Meteorological and Weather StationFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Nine Access Road Intersection DesignFigure 2-22Norwich Park Branch Railway Overpass –	Figure ES-1	Project Location
Figure ES-4Conceptual Final Landform SimulationFigure 1-1Project LocationFigure 1-2Regional LocationFigure 1-3Project Approval Process and Consultation ProcessFigure 2-1Project General ArrangementFigure 2-2General Arrangement – Project Year 2Figure 2-3General Arrangement – Project Year 9Figure 2-4General Arrangement – Project Year 9Figure 2-5General Arrangement – Project Year 19Figure 2-6General Arrangement – Project Year 27Figure 2-7Indicative Mining SequenceFigure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-18Regional GeologyFigure 2-18Regional GeologyFigure 2-19Regional Meteorological and Weather StationFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Nine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass –	Figure ES-2	Project General Arrangement
Figure 1-1Project LocationFigure 1-2Regional LocationFigure 1-3Project Approval Process and Consultation ProcessFigure 2-1Project General ArrangementFigure 2-2General Arrangement – Project Year 2Figure 2-3General Arrangement – Project Year 9Figure 2-4General Arrangement – Project Year 9Figure 2-5General Arrangement – Project Year 19Figure 2-6General Arrangement – Project Year 27Figure 2-7Indicative Mining SequenceFigure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-18Regional GeologyFigure 2-18Regional Geology – Indicative Cross-sectionsFigure 2-19Regional Geology – Indicative Cross-sectionsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22aNorwich Park Branch Railway Overpass –	Figure ES-3	Conceptual Final Landform and Land Use
Figure 1-2Regional LocationFigure 1-3Project Approval Process and Consultation ProcessFigure 1-3Project General ArrangementFigure 2-1General Arrangement – Project Year 2Figure 2-3General Arrangement – Project Year 9Figure 2-4General Arrangement – Project Year 9Figure 2-5General Arrangement – Project Year 19Figure 2-6General Arrangement – Project Year 27Figure 2-7Indicative Mining SequenceFigure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-18Regional GeologyFigure 2-19Regional Geology – Indicative Cross-sectionsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22Indicative Norwich Park Branch Railway Overpass –	Figure ES-4	Conceptual Final Landform Simulation
Figure 1-3Project Approval Process and Consultation ProcessFigure 2-1Project General ArrangementFigure 2-2General Arrangement – Project Year 2Figure 2-3General Arrangement – Project Year 5Figure 2-4General Arrangement – Project Year 9Figure 2-5General Arrangement – Project Year 19Figure 2-6General Arrangement – Project Year 27Figure 2-7Indicative Mining SequenceFigure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18Indicative Stratigraphy of the Project AreaFigure 2-19Regional GeologyFigure 2-19Regional Geology – Indicative Cross-sectionsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Norwich Park Branch Railway Overpass DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass –	Figure 1-1	Project Location
ProcessFigure 2-1Project General ArrangementFigure 2-2General Arrangement – Project Year 2Figure 2-3General Arrangement – Project Year 9Figure 2-4General Arrangement – Project Year 9Figure 2-5General Arrangement – Project Year 19Figure 2-6General Arrangement – Project Year 27Figure 2-7Indicative Mining SequenceFigure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18Indicative Stratigraphy of the Project AreaFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-18cRegional Geology – Indicative Cross-sectionsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 1-2	Regional Location
Figure 2-2General Arrangement – Project Year 2Figure 2-3General Arrangement – Project Year 5Figure 2-4General Arrangement – Project Year 9Figure 2-5General Arrangement – Project Year 19Figure 2-6General Arrangement – Project Year 27Figure 2-7Indicative Mining SequenceFigure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-19Regional Meteorological and Weather StationFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass –	Figure 1-3	
Figure 2-3General Arrangement – Project Year 5Figure 2-4General Arrangement – Project Year 9Figure 2-5General Arrangement – Project Year 19Figure 2-6General Arrangement – Project Year 27Figure 2-7Indicative Mining SequenceFigure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-19Regional Meteorological and Weather StationFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-1	Project General Arrangement
Figure 2-4General Arrangement – Project Year 9Figure 2-5General Arrangement – Project Year 19Figure 2-6General Arrangement – Project Year 27Figure 2-7Indicative Mining SequenceFigure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-19Regional Meteorological and Weather StationFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-2	General Arrangement – Project Year 2
Figure 2-5General Arrangement – Project Year 19Figure 2-6General Arrangement – Project Year 27Figure 2-7Indicative Mining SequenceFigure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-19Regional GeologyFigure 2-19Regional Meteorological and Weather StationFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-3	General Arrangement – Project Year 5
Figure 2-6General Arrangement – Project Year 27Figure 2-7Indicative Mining SequenceFigure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-19Regional Geology – Indicative Cross-sectionsFigure 2-210Notential Bush Fire Intensity MappingFigure 2-211Indicative Mine Access Road Intersection DesignFigure 2-222aIndicative Norwich Park Branch Railway Overpass Design	Figure 2-4	General Arrangement – Project Year 9
Figure 2-7Indicative Mining SequenceFigure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18aRegional GeologyFigure 2-19Regional Geology – Indicative Cross-sectionsFigure 2-19Regional Meteorological and Weather StationFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Norwich Park Branch Railway Overpass DesignFigure 2-22aNorwich Park Branch Railway Overpass –	Figure 2-5	General Arrangement – Project Year 19
Figure 2-8Brigalow Belt North BioregionFigure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18aRegional GeologyFigure 2-19Regional Geology – Indicative Cross-sectionsFigure 2-19Regional Meteorological and Weather StationsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-6	General Arrangement – Project Year 27
Figure 2-9Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18aRegional GeologyFigure 2-19Regional Geology – Indicative Cross-sectionsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-7	Indicative Mining Sequence
the Fitzroy Basin – Isaac Connors GMAFigure 2-10Queensland Floodplain Assessment MappingFigure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18aRegional GeologyFigure 2-19Regional Geology – Indicative Cross-sectionsFigure 2-19Regional Meteorological and Weather StationFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-8	Brigalow Belt North Bioregion
Figure 2-11Potential Strategic Cropping Land Trigger Map and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-19Regional Meteorological and Weather StationFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-9	
and Important Agricultural Area MappingFigure 2-12Native Title Determination and Indigenous Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-19Regional Geology – Indicative Cross-sectionsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-10	Queensland Floodplain Assessment Mapping
Land Use AgreementFigure 2-13Tenure – Rural PropertiesFigure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-19Regional Geology – Indicative Cross-sectionsFigure 2-19Regional Meteorological and Weather StationsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-11	Potential Strategic Cropping Land Trigger Map and Important Agricultural Area Mapping
Figure 2-14Mining and Petroleum TenementsFigure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-18cRegional Geology – Indicative Cross-sectionsFigure 2-19Regional Meteorological and Weather StationFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-12	
Figure 2-15Tenure – State-owned LandsFigure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-18cRegional Geology – Indicative Cross-sectionsFigure 2-19Regional Meteorological and Weather StationsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-13	Tenure – Rural Properties
Figure 2-16Existing Road NetworkFigure 2-17Upper Isaac River CatchmentFigure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-18cRegional Geology – Indicative Cross-sectionsFigure 2-19Regional Meteorological and Weather StationsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-14	Mining and Petroleum Tenements
Figure 2-17Upper Isaac River CatchmentFigure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-18cRegional Geology – Indicative Cross-sectionsFigure 2-19Regional Meteorological and Weather StationFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-15	Tenure – State-owned Lands
Figure 2-18aRegional GeologyFigure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-18cRegional Geology – Indicative Cross-sectionsFigure 2-19Regional Meteorological and Weather StationsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-16	Existing Road Network
Figure 2-18bIndicative Stratigraphy of the Project AreaFigure 2-18cRegional Geology – Indicative Cross-sectionsFigure 2-19Regional Meteorological and Weather StationsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-17	Upper Isaac River Catchment
Figure 2-18cRegional Geology – Indicative Cross-sectionsFigure 2-19Regional Meteorological and Weather StationsFigure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-18a	Regional Geology
Figure 2-19 Regional Meteorological and Weather Stations Figure 2-20 Potential Bush Fire Intensity Mapping Figure 2-21 Indicative Mine Access Road Intersection Design Figure 2-22a Indicative Norwich Park Branch Railway Overpass Design Figure 2-22b Norwich Park Branch Railway Overpass –	Figure 2-18b	Indicative Stratigraphy of the Project Area
Figure 2-20Potential Bush Fire Intensity MappingFigure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-18c	Regional Geology – Indicative Cross-sections
Figure 2-21Indicative Mine Access Road Intersection DesignFigure 2-22aIndicative Norwich Park Branch Railway Overpass DesignFigure 2-22bNorwich Park Branch Railway Overpass –	Figure 2-19	Regional Meteorological and Weather Stations
Design Figure 2-22a Indicative Norwich Park Branch Railway Overpass Design Figure 2-22b Norwich Park Branch Railway Overpass –	Figure 2-20	Potential Bush Fire Intensity Mapping
Overpass Design Figure 2-22b Norwich Park Branch Railway Overpass –	Figure 2-21	
	Figure 2-22a	•
	Figure 2-22b	Norwich Park Branch Railway Overpass – Indicative Elevation

LIST OF FIGURES (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

LIST OF FIGURES (CONTINUED)

Figure 2-23	Existing and Approved Conditions 0.1% AEP Flood Extent of the Isaac River	Figure 4-18	Neutral and Adverse Meteorological Conditions Noise Contours – Years 5 and 19
Figure 2-24	Indicative Flood Levee Cross-section	Figure 4-19	Annual Average and Maximum 24-hour Average PM10 Contours – Years 5 and 19
Figure 2-25	Indicative Mine Infrastructure Area Layout	Figure 4-20	Existing Road Network
Figure 2-26	Project CHPP Indicative Materials Handling Flowsheet	Figure 4-21	Traffic Survey Locations
Figure 2-27	Indicative Water Management System Schematic	Figure 4-22	Regional Plan and Planning Scheme Land Zoning
Figure 2-28	Indicative Cross-section of Mine Water Dams	Figure 4-23	Soil Mapping Units
Figure 2-29	Indicative Locations of Environmentally	Figure 5-1	Project Location
	Relevant Activities	Figure 5-2	Project General Arrangement
Figure 3-1	Options Considered – MIA and Mine Layout	Figure 5-3	EPBC Act Assessment Areas
Figure 3-2	Options Considered – Infrastructure Corridors	Figure 5-4	MNES – Threatened Ecological Communities
Figure 4-1	Environmental Values – Isaac River Sub-basin	Figure 5-5	Threatened Species Records (Reptiles)
Figure 4-2	Water Quality Monitoring – Baseline Data	Figure 5-6	Threatened Species Records (Birds)
Figure 4-3	Isaac River Water Quality and Flow	Figure 5-7	Threatened Species Records (Mammals)
Figure 4-4	Water Resource Monitoring – Baseline Data	Figure 5-8	Broad Fauna Habitat Types
Figure 4-5	Geomorphology Survey Sites	Figure 5-9	Threatened Species Habitat Mapping –
Figure 4-6	Numerical Groundwater Model Extent		Ornamental Snake
Figure 4-7	Social Impact Assessment Study Area and Affected Communities	Figure 5-10	Threatened Species Habitat Mapping – Squatter Pigeon (southern subspecies)
Figure 4-8	Mackay, Isaac and Whitsunday Local Government Areas	Figure 5-11	Threatened Species Habitat Mapping – Koala (combined populations of Queensland, NSW and the ACT)
Figure 4-9	Ground-truthed Regional Ecosystems (Remnant)	Figure 5-12	Threatened Species Habitat Mapping - Greater Glider
Figure 4-10	Matters of National Environmental Significance (MNES) – Threatened Ecological	Figure 5-13	Regional Geology
	Communities	Figure 5-14	Indicative Stratigraphy of the Project Area
Figure 4-11a	Threatened Flora Species Records within the	Figure 5-15	Water Quality Monitoring – Baseline Data
	Project Locality	-	
Figure 4-11b	Threatened Fauna Species Records within the Project Locality	Figure 5-16	Water Resource Monitoring – Baseline Data Geomorphology Survey Sites
Figure 4-12	Broad Fauna Habitat Types	Figure 5-17	, ,
Figure 4-12	Matters of State Environmental Significance	Figure 5-18	Groundwater Management Areas (GMAs) of the Fitzroy Basin – Isaac Connors GMA
1 gui e 4-15	(MSES) Relevant to the Project	Figure 5-19	Isaac River Catchment
Figure 4-14	Waterways Barrier Works as per the	Figure 5-20	Isaac River Water Quality and Flow
	Fisheries Act 1994	Figure 5-21	Environmental Values – Isaac River Sub-basin
Figure 4-15	Biodiversity Offset Staging	Figure 5-22	Representative Potential Aquatic and
Figure 4-16	Representative Potential Aquatic and Terrestrial GDEs		Terrestrial GDEs
Eiguro 4 17		Figure 5-23	Options Considered – MIA and Mine Layout
Figure 4-17	Noise Monitoring and Sensitive Receptor Locations	Figure 5-24	Options Considered – Infrastructure Corridors

LIST OF FIGURES (CONTINUED)

Figure 5-25	Conceptual Model of the Groundwater Regime (Pre-Mining and Post-Mining)
Figure 5-26	Numerical Groundwater Model Extent
Figure 5-27	Indicative Water Management Schematic
Figure 5-28	Biodiversity Offset Staging
Figure 6-1	General Arrangement – Project Year 2
Figure 6-2	General Arrangement – Project Year 5
Figure 6-3	General Arrangement – Project Year 9
Figure 6-4	General Arrangement – Project Year 19
Figure 6-5	General Arrangement – Project Year 27
Figure 6-6	Conceptual Final Landform and Land Use
Figure 6-7	Location of the Residual Voids in Relation to the Pre-mining 0.1% AEP Flood Extent of the Isaac River
Figure 6-8	Indicative Residual Void Cross-section
Figure 6-9	Conceptual Final Landform – Aerial

LIST OF TABLES

Table ES-1	Summary of Key Project Attributes	Table 4-10	Likelihood of Significant Residual Impact on
Table 1-1	EIS Consultants	Table 4-11	MSES
Table 1-2	Terms of Reference – Reconciliation Summary		Cumulative Impacts to Relevant MSES in the Locality
Table 1-3	Environmentally Relevant Activities to be Conducted for the Project	Table 4-12	Relative Scale of Various Noise Sources
		Table 4-13	Noise Limits Adopted for the Project
Table 1-4	Approvals Sought Through this EIS Process	Table 4-14	Overpressure and Vibration Limits Adopted for
Table 1-5	Approvals Required Separate to this EIS		the Project
	Process	Table 4-15	Representative Background Noise Levels
Table 2-1	Summary of Key Project Attributes	Table 4-16	Predicted Operational Noise Levels $(L_{Aeq,15min})$
Table 2-2	Approximate Project Timeframes		During Adverse Meteorological Conditions
Table 2-3	Meteorological Summary – Average Rainfall, Evaporation, Temperature and Humidity	Table 4-17	Daunia and Poitrel Mines Noise Predictions at the Olive Downs Homestead
Table 2-4	Adopted Climate Change Impact Projections	Table 4-18	Goals for Ambient Air Quality
Table 2-5	Indicative Earthworks Required for Key Project	Table 4-19	Estimated Background Air Quality Levels
	Construction Areas	Table 4-20	General Project Dust Control Measures
Table 2-6	Approximate Disturbance Areas – Key Project Construction Components	Table 4-21	Surveyed Traffic Volumes
Table 2-7	Indicative Mining Schedule	Table 4-22	Intersection Levels of Service
Table 2-8	Indicative Operation Fleet	Table 4-23	Predicted Project Two-Way Weekday Traffic Volumes
Table 2-9	Indicative List of Hazardous Substances	Table 4-24	Project-generated Daily Deliveries and Visitors

LIST OF TABLES (CONTINUED)

Table 2-10	Sewage Treatment Effluent Quality
Table 2-11	Predicted Average Groundwater Inflows
Table 2-12	Proposed Controlled Release Conditions
Table 2-13	Indicative Average Annual Water Balance for Project Water Management System
Table 2-14	Environmentally Relevant Activities at the Project
Table 4-1	Performance Outcomes for Water, Wetlands and Groundwater
Table 4-2	Draft Water Quality Objectives for the Project
Table 4-3	Maximum Captured Catchment Area
Table 4-4	Proposed Controlled Release Conditions
Table 4-5	Summary of Social Impact Assessment Stakeholder Consultation
Table 4-6	Summary of Social Baseline Characteristics
Table 4-7	Summary of Key Social Impacts/Benefits and Management/Enhancement Measures
Table 4-8	MSES of Relevance to the Project
Table 4-9	Ground-truthed Regional Ecosystems
Table 4-10	Likelihood of Significant Residual Impact on MSES
Table 4-11	Cumulative Impacts to Relevant MSES in the Locality
Table 4-12	Relative Scale of Various Noise Sources
Table 4-13	Noise Limits Adopted for the Project
Table 4-14	Overpressure and Vibration Limits Adopted for the Project
Table 4-15	Representative Background Noise Levels
Table 4-16	Predicted Operational Noise Levels (L _{Aeq,15min}) During Adverse Meteorological Conditions
Table 4-17	Daunia and Poitrel Mines Noise Predictions at the Olive Downs Homestead
Table 4-18	Goals for Ambient Air Quality
Table 4-19	Estimated Background Air Quality Levels
Table 4-20	General Project Dust Control Measures
Table 4-21	Surveyed Traffic Volumes
Table 4-22	Intersection Levels of Service
Table 4-23	Predicted Project Two-Way Weekday Traffic Volumes
Table 4-24	Project-generated Daily Deliveries and Visitors Vehicles

LIST OF TABLES (CONTINUED)

Table 4-25	Environmental Objectives and Performance Outcomes for Land Resources
Table 4-26	Compatibility of the Project with the State Interests Identified in the State Planning Policy
Table 4-27	Land Suitability – Cropping
Table 4-28	Land Suitability – Grazing
Table 4-29	Agricultural Land Class
Table 4-30	Approximate Distances from Project to Nearby Dwellings
Table 4-31	Approximate Project Area within Each Property
Table 4-32	Proposed Post-mining Land Suitability Classes
Table 4-33	Estimated Maximum Annual Waste Produced by the Project
Table 5-1	Summary of Disturbance Areas
Table 5-2	MNES Terms of Reference Reconciliation Table
Table 5-3	Division 5.2 of EPBC Regulations Reconciliation Table
Table 5-4	Cross Reference Table against the IESC Information Guidelines Requirements
Table 5-5	Likelihood of Occurrence Assessment Criteria
Table 5-6	Likelihood of Occurrence Assessment – Flora
Table 5-7	Likelihood of Occurrence Assessment – Fauna
Table 5-8	Survey Methods Employed for Potentially Occurring Threatened Terrestrial Fauna Species
Table 5-9	Draft Water Quality Objectives for the Project
Table 5-10	Assessment of Threatened Species and Threatened Communities
Table 5-11	Koala Habitat Assessment
Table 5-12	Target MNES Habitat Type
Table 5-13	Cumulative Impacts to Relevant MNES in the Locality
Table 5-14	Indicative Mining Schedule
Table 5-15	MNES Habitat Clearance Summary – Mine Site and Access Road Action (EPBC 2019/8460)
Table 5-16	Representative Mine Phases
Table 5-17	Maximum Captured Catchment Area
Table 5-18	MNES Impact Avoidance and Mitigation Measures
Table 5-19	Proposed Controlled Release Conditions

LIST OF TABLES (CONTINUED)

Table 5-20	MNES Habitat Clearance Summary – ETL Action (EPBC 2019/8458)
Table 5-21	Summary of Impacts to MNES for the Proposed Actions
Table 6-1	Status of Open Cut Pits at Mine Closure
Table 6-2	Proposed Land Outcome for Project Open Cut Pits
Table 6-3	Preliminary Soil Balance
Table 6-4	Indicative Progressive Rehabilitation Schedule
Table 6-5	Preliminary Completion Criteria for the Grazing PMLU Rehabilitation Areas
Table 6-6	Preliminary Completion Criteria for NUMA Improvement Areas
Table 7-1	Summary of Management, Monitoring and Reporting Commitments for the Project
Table 7-2	Summary of Key Project Commitments made by Whitehaven WS Throughout the EIS
Table D1	Noise Limits
Table D2	Blasting Noise Limits
Table E1	Groundwater Monitoring Locations and Frequency
Table E2	Groundwater Quality Triggers and Limits
Table E3	Groundwater Level Monitoring
Table F1	Mine-affected Water Release Points, Sources and Receiving Waters
Table F2	Mine-affected Water Release Limits
Table F3	Release Contaminant Trigger Investigation Levels, Potential Contaminants
Table F4	Mine-affected Water Release During Flow Events
Table F5	Receiving Water Background Sites and Monitoring Points
Table F6	Receiving Waters Contaminant Trigger Levels
Table G1	Contaminant Release Limits to Land
Table H1	Rehabilitation Requirements – Land Outcome (Grazing PMLU)
Table H2	Rehabilitation Requirements– Land Outcome (NUMA)
Table H3	Significant Residual Impacts to Prescribed Environmental Matters

LIST OF APPENDICES

TABLE OF CONTENTS (CONTINUED)

LIST OF PLATES

Plate ES-1	Location of the Mine Infrastructure Area	Appendix A	Groundwater Assessment
Plate ES-2	Modified Non-Remnant Vegetation	Appendix B	Surface Water and Flooding Assessment
Plate ES-3	Government Mapped Palustrine Wetland	Appendix C	Social Impact Assessment
	(Outside of Project Area)	Appendix D	Terrestrial Ecology Assessment
Plate ES-4	Government Mapped Lacustrine Wetland (Farm Dam within Project Area)	Appendix E	Aquatic Ecology and Stygofauna Assessment
Plate ES-5	Cattle Grazing at Winchester Downs – Indicative of Proposed Grazing Final Land Use	Appendix F	Integrated Assessment of Impacts on Groundwater Dependant Ecosystems
Plate 1-1	Location of the Mine Infrastructure Area	Appendix G	Noise and Vibration Assessment
Plate 3-1	Existing Rail Crossing at Peak Downs Mine Road	Appendix H	Air Quality and Greenhouse Gas Assessment
Plate 4-1	November 2019 Community Newsletter Cover	Appendix I	Road Transport Assessment
Plate 4-2	Modified/Disturbed Non-Remnant and Young Regrowth	Appendix J	Soils and Land Suitability Assessment
Plate 4-3	RE 11.9.2 Eucalyptus melanophloia +/-	Appendix K	Economic Assessment
	Eucalyptus orgadophila woodland on fine-grained sedimentary rocks	Appendix L	Non-Indigenous Cultural Heritage Assessment
Plate 4-4	Lacustrine Wetland within the Project Area	Appendix M	Geochemistry Assessment
	(LW3), Upstream (October 2019)	Appendix N	Preliminary Risk Assessment
Plate 4-5	Patch of RE 11.3.3c Palustrine Wetland within the Project Area		
Plate 4-6	Cattle Grazing at Winchester Downs		
Plate 5-1	Natural Grasslands TEC within the Study Area		
Plate 5-2	Poplar Box TEC within the Study Area		
Plate 5-3	Potential Koala Habitat within the Study Area		

LIST OF ATTACHMENTS

Attachment 1	Terms of Reference
Attachment 2	Terms of Reference Reconciliation Table
Attachment 3	Peer Review Letters
Attachment 4	Public Consultation Report
Attachment 5	Offset Management Strategy