

**CDM SMITH AUSTRALIA**

Level 1, 48-50 Smith Street  
Darwin NT 0800  
australia@cdmsmith.com

# Chapter Twelve Offsets

Winchelsea Island  
(Akwamburrkba)  
Manganese Mine: Draft  
Environmental Impact  
Statement



**PREPARED FOR:**

Winchelsea Mining Pty Ltd

Address:  
Pole 12 Roswell Highway  
Alyangula, NT

Website: <https://wmining.com.au>  
Email: [office@wmining.com.au](mailto:office@wmining.com.au)

**CDM  
Smith**  
listen. think. deliver.

# Table of contents

Key Project Terms .....	xxvi
Acronyms, Abbreviations and Units .....	xxviii
<b>Section 1 Introduction.....</b>	<b>1</b>
1.1 Overview .....	1
1.1.1 Project Details .....	1
1.1.2 Project Purpose.....	4
1.1.3 Importance and Use of Manganese Ore .....	5
1.1.4 Regulatory Process.....	7
1.1.5 Summary of Key Physical Components of the Proposal.....	9
1.2 Objectives of the Proposal.....	12
1.3 Project Location and Regional Setting .....	17
1.3.1 Locational Setting.....	17
1.3.2 Environmental Setting.....	20
1.3.3 Cultural Setting.....	22
1.4 Proponent Details.....	25
1.4.1 Contact Details.....	25
1.4.2 Background and Purpose of Winchelsea Mining.....	26
1.4.3 Winchelsea Organisational Structure.....	30
1.4.4 Winchelsea Environmental Record .....	30
1.5 Land Tenure and Zoning .....	33
1.5.1 Land Tenure.....	33
1.5.2 Mineral Lease .....	37
1.5.3 Other Resource Tenure.....	37
1.5.4 Zoning.....	38
1.6 Draft EIS Structure .....	40
1.7 Cross Reference.....	43
1.8 Minor Amendments to Proposal since Referral.....	50
<b>Section 2 Approvals and Regulatory Framework.....</b>	<b>55</b>
2.1 Project Approvals Process .....	55
2.1.1 Assessment Bilateral Agreements.....	55
2.2 Relevant Legislation and Policies.....	57
2.2.1 Commonwealth.....	57
2.2.2 Northern Territory.....	58

<b>Section 3 Stakeholder Engagement and Consultation .....</b>	<b>65</b>
3.1 Engagement Purpose, Objectives and Outcomes.....	65
3.1.1 Purpose and Objectives.....	65
3.1.2 Outcomes.....	66
3.2 Stakeholder Engagement Strategy.....	66
3.2.1 Overview of Approach.....	66
3.2.2 Principles for Project Engagement.....	66
3.2.3 Significant Variation Process.....	67
3.3 Stakeholder Analysis.....	68
3.3.1 IAP2 Core Values.....	68
3.3.2 Key Stakeholders.....	68
3.4 Identification of Potential Concerns and Opportunities.....	71
3.5 Level of Engagement and Activities.....	71
3.6 Stakeholder Engagement to Date.....	75
3.7 Future Engagement.....	79
<b>Section 4 Project Description .....</b>	<b>82</b>
4.1 Overview.....	82
4.2 Previous Activities.....	82
4.3 Mineral Resources and Ore Reserves.....	83
4.3.1 Investigations.....	83
4.3.2 Ore Estimation.....	86
4.3.3 Product Quality.....	87
4.4 Construction and Operation.....	92
4.4.1 Design.....	92
4.4.2 Mining.....	92
4.4.3 Processing.....	99
4.4.4 Tailings Storage.....	107
4.4.5 Process Water.....	115
4.4.6 Power Station.....	115
4.4.7 Rock Quarry.....	118
4.4.8 Haul Roads.....	118
4.4.9 Ancillary Mine Infrastructure.....	121
4.4.10 Wharf, Barging and Transhipment.....	121
4.4.11 Dredging and Spoil Disposal.....	132
4.4.12 Dredge Channel.....	135
4.4.13 Waste Generation.....	137
4.4.14 Workforce and Accommodation.....	145

4.4.15	Transport .....	146
4.4.16	Water Use and Supply .....	147
4.4.17	Dangerous Goods and Hazardous Substances .....	151
4.4.18	Impact of a Changing Climate .....	155
<b>Section 5 Rehabilitation and Mine Closure .....</b>		<b>158</b>
5.1	Mine Closure Planning .....	158
5.1.1	Closure Components .....	158
5.1.2	Post-Mining Land Use .....	159
5.1.3	Closure-Outcomes and Completion Criteria .....	159
5.1.4	Closure Plans .....	166
5.2	Rehabilitation Planning .....	167
5.2.1	Research, Investigation and Trials .....	168
5.3	Monitoring and Maintenance .....	168
<b>Section 6 Alternatives Assessment .....</b>		<b>172</b>
6.1	Mining, Ore Processing and Tailings .....	173
6.2	Power Supply .....	173
6.3	Water Supply .....	174
6.4	Marine Components .....	174
<b>Section 7 Existing Environment .....</b>		<b>181</b>
7.1	Landforms and Terrestrial Environmental Quality .....	181
7.2	Terrestrial Ecosystems .....	184
7.3	Hydrological Processes .....	186
7.4	Inland Water Quality .....	186
7.5	Aquatic Ecosystems .....	188
7.6	Coastal Processes .....	188
7.7	Marine Environmental Quality .....	190
7.8	Marine Ecosystems .....	190
7.9	Air Quality and Atmospheric Processes .....	192
7.10	Community and Economy .....	192
7.11	Culture and Heritage .....	194
7.12	Human Health .....	194
<b>Section 8 Risk Assessment of Env Factors .....</b>		<b>196</b>
8.1	Introduction .....	196

8.2	Risk Assessment Methodology .....	197
8.2.1	Risk Identification .....	198
8.2.2	Risk Matrix.....	202
8.2.3	Risk Treatment .....	209
8.2.4	Risk Evaluation and Assessment.....	209
8.2.5	Indirect and Cumulative Impact .....	220
<b>Section 9 Key Environmental Factors .....</b>		<b>226</b>
9.1	Landforms .....	226
9.1.1	Environmental Values.....	226
9.1.2	Existing Features and Landforms .....	226
9.1.3	Potential Significant Impacts and Risks .....	245
9.1.4	Avoidance, Mitigation and Management.....	258
9.1.5	Monitoring and Reporting.....	263
9.1.6	Residual Impact .....	264
9.1.7	Predicted Outcome and Conclusion .....	268
9.2	Terrestrial Environmental Quality.....	269
9.2.1	Environmental Values.....	269
9.2.2	Potential Significant Impacts and Risks .....	296
9.2.3	Avoidance, Mitigation and Management.....	310
9.2.4	Monitoring and Reporting.....	314
9.2.5	Residual Impact .....	314
9.2.6	Predicted Outcome and Conclusion .....	319
9.3	Terrestrial Ecosystems .....	320
9.3.1	Environmental Values.....	320
9.3.2	Potential Significant Impact and Risks.....	374
9.3.3	Avoidance, Mitigation and Management.....	399
9.3.4	Monitoring and Reporting.....	407
9.3.5	Residual Impact .....	407
9.3.6	Predicted Outcome and Conclusion .....	416
9.4	Hydrological Processes .....	417
9.4.1	Environmental Values.....	417
9.4.2	Potential Significant Impacts and Risks .....	446
9.4.3	Avoidance, Mitigation and Management Measures .....	469
9.4.4	Monitoring and Reporting.....	473
9.4.5	Residual Impact .....	475
9.4.6	Predicted Outcome and Conclusion .....	479
9.5	Inland Water Environmental Quality .....	480
9.5.1	Environmental Values.....	480
9.5.2	Potential Significant Impacts and Risks .....	498

9.5.3	Avoidance, Mitigation and Management .....	526
9.5.4	Monitoring and Reporting.....	530
9.5.5	Residual Impact .....	534
9.5.6	Predicted Outcome and Conclusions .....	537
9.6	Aquatic Ecosystems .....	539
9.6.1	Environmental Values.....	539
9.6.2	Potential Significant Impacts and Risks .....	553
9.6.3	Avoidance, Mitigation and Management .....	566
9.6.4	Monitoring and Reporting.....	568
9.6.5	Residual Impact .....	570
9.6.6	Predicted Outcome and Conclusion .....	574
9.7	Coastal Processes.....	575
9.7.1	Environmental Values.....	578
9.7.2	Potential Significant Impacts and Risks .....	604
9.7.3	Avoidance, Mitigation and Management .....	629
9.7.4	Monitoring and Reporting.....	630
9.7.5	Residual Impact .....	630
9.7.6	Predicted Outcome and Conclusion .....	634
9.8	Marine Environmental Quality .....	635
9.8.1	Environmental Values.....	638
9.8.2	Potential Significant Impacts and Risks .....	654
9.8.3	Avoidance, Mitigation and Management .....	681
9.8.4	Monitoring and Reporting.....	685
9.8.5	Residual Impact .....	686
9.8.6	Predicted Outcome and Conclusion .....	694
9.9	Marine Ecosystems .....	696
9.9.1	Environmental Values.....	699
9.9.2	Potential Significant Impacts and Risks .....	776
9.9.3	Avoidance, Mitigation and Management .....	790
9.9.4	Monitoring and Reporting.....	794
9.9.5	Residual Impact .....	796
9.9.6	Predicted Outcome and Conclusion .....	804
9.10	Air Quality .....	806
9.10.1	Environmental Values.....	806
9.10.2	Potential Significant Impacts and Risks .....	810
9.10.3	Avoidance, Mitigation and Management .....	826
9.10.4	Monitoring and Reporting.....	827
9.10.5	Residual Impact .....	827
9.10.6	Predicted Outcome and Conclusion .....	830

9.11	Atmospheric Processes .....	831
9.11.1	Environmental Values .....	831
9.11.2	Potential Significant Impacts and Risks .....	835
9.11.3	Avoidance, Mitigation and Management .....	841
9.11.4	Monitoring and Reporting.....	842
9.11.5	Residual Impact .....	843
9.11.6	Predicted Outcome and Conclusion .....	844
9.12	Community and Economy.....	845
9.12.1	Environmental Values .....	845
9.12.2	Potential Significant Impacts and Risks .....	881
9.12.3	Avoidance, Mitigation and Management .....	894
9.12.4	Monitoring and Reporting.....	899
9.12.5	Residual Impact .....	900
9.12.6	Predicted Outcome and Conclusion .....	907
9.13	Culture and Heritage .....	908
9.13.1	Environmental Values .....	908
9.13.2	Potential Significant Impacts and Risks .....	935
9.13.3	Avoidance, Mitigation and Management .....	946
9.13.4	Monitoring and Reporting.....	951
9.13.5	Residual Impact .....	952
9.13.6	Predicted Outcome and Conclusion .....	960
9.14	Human Health .....	961
9.14.1	Environmental Values .....	961
9.14.2	Potential Significant Impacts and Risks .....	976
9.14.3	Avoidance, Mitigation and Management .....	986
9.14.4	Monitoring and Reporting.....	989
9.14.5	Residual Impact .....	991
9.14.6	Predicted Outcome and Conclusion .....	999
<b>Section 10 Commonwealth Government Matters.....</b>		<b>1000</b>
10.1	Environment Protection and Biodiversity Conservation Act 1999.....	1000
10.2	Matters of National Environmental Significant .....	1001
10.2.1	Overview.....	1001
10.2.2	Desktop and Field Surveys Assessment .....	1003
10.2.3	Likelihood of Occurrence Assessment .....	1006
10.2.4	Nationally Threatened Species – Significant Impact Assessments .....	1010
10.2.5	Migratory Species – Significant Impact Assessment .....	1032
<b>Section 11 Environmental Management .....</b>		<b>1037</b>
11.1	Environmental Management System .....	1037

11.2	Environmental Policy .....	1039
11.3	Environmental Requirements .....	1042
11.4	Roles and Responsibilities .....	1042
11.4.1	Overview .....	1042
11.4.2	Design and Construction Works .....	1042
11.5	Incident Reporting, Management and Corrective Actions .....	1044
11.5.1	Incident Reporting and Management .....	1044
11.5.2	Corrective Actions .....	1045
11.6	Education and Training .....	1047
11.7	Environmental Inspections and Audits .....	1048
11.7.1	Inspections .....	1048
11.7.2	Audits .....	1049
11.8	Communication and Reporting .....	1050
11.8.1	Project Internal .....	1050
11.8.2	Project External .....	1051
11.8.3	Contractor Monthly Reporting .....	1051
11.8.4	Records of Environmental Activities .....	1052
11.8.5	Documentation, Document Control and Records .....	1053
11.9	Performance Outcomes and Indicators .....	1053
11.10	Continual Improvement .....	1054
<b>Section 12 Offsets .....</b>		<b>1055</b>
<b>Section 13 Holistic Assessment .....</b>		<b>1059</b>
13.1	Indirect and Cumulative Impact Assessment .....	1059
13.2	Consideration of Project Against Legislated Principles and Duties .....	1092
13.2.1	Ecologically Sustainable Development .....	1092
13.2.2	Waste Management Hierarchy .....	1097
13.2.3	Ecosystem-Based Management .....	1098
13.2.4	Impacts of a Changing Climate .....	1098
13.2.5	General Duty of Proponents .....	1098
<b>Section 14 Conclusion of Predicted Impacts .....</b>		<b>1101</b>
<b>Section 15 References .....</b>		<b>1127</b>
15.1	Sections 1 to 6 .....	1127
15.2	Section 7 .....	1130
15.3	Section 8 .....	1132



15.4	Section 9 .....	1132
15.4.1	Section 9.1 (Landforms).....	1132
15.4.2	Section 9.2 (Terrestrial Environmental Quality).....	1134
15.4.3	Section 9.3 (Terrestrial Ecosystems).....	1135
15.4.4	Section. 9.4 (Hydrological Processes).....	1139
15.4.5	Section 9.5 (Inland Water Environmental Quality).....	1141
15.4.6	Section 9.6 (Aquatic Ecosystems).....	1142
15.4.7	Section 9.7 (Coastal Processes).....	1144
15.4.8	Section 9.8 (Marine Environment Quality).....	1145
15.4.9	Section 9.9 (Marine Ecosystems).....	1147
15.4.10	Section 9.10 (Air Quality).....	1150
15.4.11	Section 9.11 (Atmospheric Processes).....	1151
15.4.12	Section 9.12 (Community and Economy).....	1151
15.4.13	Section 9.13 (Culture and Heritage).....	1153
15.4.14	Section 9.14 (Human Health).....	1155
15.5	Section 10 to 14 .....	1156

## Figures

Figure 1.1-1	Project Location .....	3
Figure 1.1-2	Minerals Used in Electric Cars Compared to Conventional Cars.....	6
Figure 1.1-3	Mineral Use in Power Generation Sources.....	6
Figure 1.2-1	ALC 15-Year Strategic Plan Goals, Source ALC, n.d.....	15
Figure 1.3-1	Regional Location.....	19
Figure 1.3-2	Key Environmental Features of the Groote Archipelago.....	21
Figure 1.3-3	Key Communities and Cultural Features of the Groote Archipelago.....	24
Figure 1.4-1	Winchelsea Mining Revenue Structure.....	29
Figure 1.4-2	Indicative Winchelsea Organisational Structure.....	30
Figure 1.4-3	Winchelsea Environmental Policy.....	32
Figure 1.5-1	Anindilyakwa Indigenous Protected Area.....	34
Figure 1.5-2	Anindilyakwa Land Council Proposed Sea Native Title Claim Area.....	35
Figure 1.5-3	Land Tenure.....	36
Figure 1.5-4	Resource Tenures.....	39
Figure 1.8-1	Winchelsea Island Mine Proposed Old (left) and New (right) Project Layout Comparison.....	53
Figure 1.8-2	Winchelsea Island Mine Infrastructure Area Old Layout / New Layout Comparison.....	54
Figure 2.1-1	EIS Approval Process.....	56
Figure 2.2-1	Components of the NT Offsets Framework.....	59
Figure 4.3-1	Collation of Exploration Investigations.....	85
Figure 4.3-2	Schedule of Product Type Production.....	88
Figure 4.3-3	Margin of Product and Areas of Resource Excluded from the Project.....	91

Figure 4.4-1	Mining Pits and Sequence .....	94
Figure 4.4-2	Production Profile Over Life of Mine .....	97
Figure 4.4-3	Ore Movement Schedule .....	98
Figure 4.4-4	Waste Overburden Movement Schedule.....	98
Figure 4.4-5	Stage 1 Plant General Arrangement.....	99
Figure 4.4-6	Stage 2 Thickener, Process Water and Services General Arrangement .....	100
Figure 4.4-7	Process Plant Process Flow Diagram .....	101
Figure 4.4-8	Tailings Disposal Pump Arrangement.....	104
Figure 4.4-9	Tailings Storage Facility Layouts.....	114
Figure 4.4-10	Annual Process Water Demand.....	115
Figure 4.4-11	Example Diesel Generator Type .....	116
Figure 4.4-12	Mine Infrastructure Area Layout .....	117
Figure 4.4-13	Indicative Haul Road Cross-Section Design.....	120
Figure 4.4-14	Barge Loading Facility General Arrangement.....	124
Figure 4.4-15	Transshipment Process Flow Diagram.....	128
Figure 4.4-16	Existing and Proposed Cyclone Moorings.....	131
Figure 4.4-17	Typical Cutter Suction Dredge Layout .....	132
Figure 4.4-18	Typical Cutter Suction Dredge Operation .....	133
Figure 4.4-19	Conceptual Dredging Arrangement and Seabed Condition.....	136
Figure 4.4-20	Water Circuit Schematic.....	150
Figure 5.1-1	Expected Mine Voids and Infrastructure at Closure.....	165
Figure 5.3-1	Progressive Mine Rehabilitation Phase 1 to 4: 2024 – 2037 .....	171
Figure 5.3-1	Assessment Approach for Considering Alternatives.....	172
Figure 6.4-1	Northern Export Wharf Option .....	175
Figure 6.4-2	Southern Wharf Non-Dredging Option (1R2) .....	176
Figure 6.4-3	Southern Wharf Non-Dredging Option (1J1).....	177
Figure 6.4-4	Example RORO Barge Option.....	178
Figure 6.4-5	Extract of Marine Alternative Options Assessment .....	180
Figure 7.1-1	Existing Environmental Features Relevant to Landforms and Terrestrial Environmental Quality .....	183
Figure 7.2-1	Existing Environmental Features Relevant to Terrestrial Ecosystems.....	185
Figure 7.4-1	Existing Environmental Features Relevant to Hydrological Processes and Inland Water Quality.....	187
Figure 7.6-1	Existing Environmental Features Relevant to Coastal Processes.....	189
Figure 7.8-1	Existing Environmental Features Relevant to Marine Environmental Quality and Ecosystems .....	191
Figure 7.10-1	Existing Environmental Features Relevant to Air Quality, Community and Economy.....	193
Figure 7.12-1	Existing Environmental Features Relevant to Cultural Heritage and Human Health .....	195
Figure 8.2-1	Project Risk Assessment Methodology .....	201
Figure 8.2-2	Project and Actions Considered for Cumulative Impacts.....	223
Figure 9.1-1	Land System .....	231
Figure 9.1-2	Topography .....	233
Figure 9.1-3	Landform Features on Winchelsea Island.....	234
Figure 9.1-4	Western Winchelsea Island Coastal Landforms and Geomorphology.....	235

Figure 9.1-5 Images of Key Landform Features on Winchelsea Island ..... 236

Figure 9.1-6 Images of Key Landform Features on Winchelsea Island ..... 249

Figure 9.2-1 Surface Geology Units ..... 272

Figure 9.2-2 Geology Field Mapping – Fact Map ..... 273

Figure 9.2-3 Collation of Exploration Investigations ..... 274

Figure 9.2-4 Winchelsea Island Stratigraphy ..... 275

Figure 9.2-5 Topography and Drainage Lines ..... 276

Figure 9.2-6 Land System ..... 279

Figure 9.2-7 Soil Particle Size Distribution ..... 282

Figure 9.2-8 Soil Types ..... 283

Figure 9.2-9 Sampling Locations ..... 284

Figure 9.3-1 Project Location in the Gulf of Carpentaria ..... 322

Figure 9.3-2 Vegetation Mapping Units (VMUs) within the Project Disturbance Envelope ..... 325

Figure 9.3-3 Vegetation and Flora Survey Sites ..... 329

Figure 9.3-4 Data Deficient and Not Evaluated Plant Species Recorded on Winchelsea Island During Terrestrial Ecology Surveys  
 ..... 331

Figure 9.3-5 Potential Groundwater Dependant Ecosystems (GDEs) in the Project Area ..... 335

Figure 9.3-6 Avian Survey Sites ..... 343

Figure 9.3-7 Records of Terrestrial Migratory and Data Deficient Avian Species ..... 346

Figure 9.3-8 Locations of Northern Masked Owl ARUs and Call Broadcast Surveys ..... 348

Figure 9.3-9 Northern Masked Owl Call Kernel Density and Locations of Sightings and Social Call Detections ..... 349

Figure 9.3-10 Potential Northern Masked Owl Habitat Trees with Quality Categorisations and Potential Roost/Nest Site Locations  
 ..... 351

Figure 9.3-11 Rodent Burrow Coastal and Inland Aerial Transects ..... 353

Figure 9.3-12 Rodent Detections on Winchelsea Island ..... 354

Figure 9.3-13 Locations of Bat Survey Sites in 2022 ..... 356

Figure 9.3-14 Camera Trap Locations ..... 358

Figure 9.3-15 Northern Quoll Records ..... 360

Figure 9.3-16 Records of Other Threatened Fauna Species ..... 361

Figure 9.3-17 Records of TPWC Act Near Threatened and Data Deficient Species ..... 362

Figure 9.3-18 Significant Vegetation Communities and Key Impact Areas Within the Project Area ..... 393

Figure 9.4-1 Topography and Drainage Lines ..... 420

Figure 9.4-2 Existing conditions 0.1% AEP Event Flood Extent, Depth and Water Level ..... 422

Figure 9.4-3 Existing Conditions 1% AEP Event Flood Extent, Depth and Water Level ..... 423

Figure 9.4-4 Existing Conditions 2% AEP Event Flood Extent, Depth and Water Level ..... 424

Figure 9.4-5 Existing conditions 5% AEP event flood extent, depth and water level ..... 425

Figure 9.4-6 Existing Conditions 10% AEP Event Flood Extent, Depth and Water Level ..... 426

Figure 9.4-7 Extent of Storm Surge Events, ADG, 2018 ..... 427

Figure 9.4-8 Surface Water Sampling locations ..... 428

Figure 9.4-9 Winchelsea Island Stratigraphy, Xenith, 2020 ..... 429

Figure 9.4-10 Indicative Areal Extent of Aquifer ..... 431

Figure 9.4-11 Bedrock 1m Contours and Monitoring bores ..... 432

Figure 9.4-12 Model of the Basement Quartzite, Xenith, 2020..... 433

Figure 9.4-13 Winchelsea Island Approximate Areal Extent of Cretaceous Aquifer ..... 434

Figure 9.4-14 Airborne Electromagnetic Depth Slice Showing the Saltwater Wedge/Freshwater Lens for Winchelsea Island 436

Figure 9.4-15 Groundwater Sampling Locations ..... 438

Figure 9.4-16 BoM Atlas of Terrestrial GDEs for Winchelsea Island..... 441

Figure 9.4-17 NT Declared Water Control Districts..... 443

Figure 9.4-18 NT Water Allocation Planning Area ..... 444

Figure 9.4-19 Beneficial Use Areas in the Groote Archipelago ..... 445

Figure 9.4-20 Potential Water Balance Changes at Three Stages of Mining Winchelsea Island ..... 451

Figure 9.4-21 Developed Conditions 0.1% AEP Event Flood Extent, Depth and Water Level..... 453

Figure 9.4-22 Developed Conditions 1% AEP Event Flood Extent, Depth and Water Level ..... 454

Figure 9.4-23 Developed Conditions 2% AEP Event Flood Extent, Depth and Water Level ..... 455

Figure 9.4-24 Developed Conditions 5% AEP Event Flood Extent, Depth and Water Level ..... 456

Figure 9.4-25 Developed Conditions 10% AEP Event Flood Extent, Depth and Water Level..... 457

Figure 9.4-26 Groundwater Model Grid ..... 461

Figure 9.4-27 Modelled Water Levels (Depth of 5 m to -5 m) in the Winchelsea Island Sedimentary Aquifer Over Time ... 462

Figure 9.4-28 Saltwater Intrusion, U.S. Geological Survey, 2019 ..... 463

Figure 9.4-29 Modelled Salinities for a Depth of 5 m to -5 m..... 465

Figure 9.4-30 Modelled Salinities for a depth of -5 m to -15 m ..... 466

Figure 9.4-31 Vegetation Communities of Winchelsea Island with Potential Groundwater Ecosystems..... 468

Figure 9.4-32 Groundwater Monitoring Locations ..... 474

Figure 9.5-1 Existing Inland Surface Water Features..... 482

Figure 9.5-2 Existing Conditions 1% AEP Event Flood Extent, Depth and Water Level ..... 483

Figure 9.5-3 Extent of Storm Surge Events, ADG, 2018 ..... 484

Figure 9.5-4 Baseline Sampling Locations ..... 497

Figure 9.5-5 Model Layering, Looking North-East Through a Central Slice of Winchelsea Island..... 510

Figure 9.5-6 Modelled Layer 3 Salinities ..... 512

Figure 9.5-7 Modelled Layer 4 Salinities ..... 513

Figure 9.5-8 Modelled Salinities at WMB1 and WMB2 and, Bold Line Shows Geomean Value ..... 514

Figure 9.5-9 Modelled Salinities at WMB4 and the Pit Lake, Bold Line Shows Geomean Value..... 515

Figure 9.5-10 Modelled Salinities at the WMB6 and WMB7, Bold Line Shows Geomean Value ..... 516

Figure 9.5-11 Maximum Pit Water Salinity Discharges..... 519

Figure 9.5-12 PWD Salinity and Overflow Volume (Simulation 39) ..... 519

Figure 9.5-13 Proposed Surface Water Discharge Locations ..... 520

Figure 9.5-14 Ongoing Terrestrial Monitoring Plan..... 533

Figure 9.6-1 Examples of Aquatic Ecosystems on Winchelsea Island ..... 540

Figure 9.6-2 Aquatic Systems on Winchelsea Island..... 542

Figure 9.6-3 Groundwater Dependent Ecosystem Mapping ..... 546

Figure 9.6-4 Groundwater, Surface Water, Soil and Sediment Sampling Locations..... 552

Figure 9.6-5 Area of Potential Impact to Groundwater Dependent Ecosystems ..... 562

Figure 9.6-6 Modelled End of Mining Water Levels and Salinity Concentrations .....	563
Figure 9.7-1 Marine Activity and Infrastructure Areas .....	576
Figure 9.7-2 Barge Loading Facility and Dredge Channel .....	577
Figure 9.7-3 Surface Geology Units.....	580
Figure 9.7-4 Western Winchelsea Island Coastal Geomorphology.....	583
Figure 9.7-5 Bartalumba Bay Bathymetry and Tidal Planes.....	585
Figure 9.7-6 Selected Monthly Wind Roses from Milner Bay, Groote Eylandt (south of Winchelsea Island) .....	586
Figure 9.7-7 Marine Sediment Sample Locations .....	589
Figure 9.7-8 Sediment Sizes for Surface Samples (Left) and Top Layer of Vibracore Samples (Right).....	590
Figure 9.7-9 Locations of Water Level and Current Data Loggers .....	592
Figure 9.7-10 Typical Current Patterns in Bartalumba Bay .....	593
Figure 9.7-11 Current Roses from Current Data Loggers .....	594
Figure 9.7-12 Key Fetches for Elevated Wave Conditions in Bartalumba Bay .....	597
Figure 9.7-13 Indicative Southward Sediment Transport Along Sandy Embankment .....	598
Figure 9.7-14 Survey Locations for Benthic Communities and Habitat .....	600
Figure 9.7-15 Mangroves Species Adjacent to Site.....	603
Figure 9.7-16 Significant Wave Height Maps for a Strong North-west Monsoon Condition With or Without Structures ...	608
Figure 9.7-17 Significant Wave Height Maps for a Strong South-east Trade Condition With or Without Structures.....	609
Figure 9.7-18 Depth Average Current Magnitude and Direction Maps for Strong Southward Flow With or Without Structures	611
Figure 9.7-19 Depth Average Current Magnitude Maps for Strong Southward Flow With or Without Structures .....	612
Figure 9.7-20 Bed Shear Stress for Strong Southward Flow Only With or Without Structures .....	614
Figure 9.7-21 Bed Shear Stress for Strong Northward Flow Only With or Without Structures .....	615
Figure 9.7-22 Bed Shear Stress With or Without Structures For Strong Southward Flow Plus Strong Southeast Wind (~1 year ARI)	616
Figure 9.7-23 Bed Shear Stress With or Without Structures For Strong Northward Flow Plus Strong Southeast Wind (~1 year ARI)	617
Figure 9.7-24 Bed Shear Stress With or Without Structures For Strong Southward Flow Plus Strong Northeast Wind (~1 year ARI)	618
Figure 9.7-25 Bed Shear Stress With or Without Structures For Strong Northward Flow Plus Strong Northeast Wind (~1 year ARI)	619
Figure 9.7-26 Potential Sedimentation Mechanisms.....	620
Figure 9.7-27 Conceptual Dredging Arrangement and Seabed Condition .....	623
Figure 9.7-28 Transshipment Spill Worst Case Scenario.....	625
Figure 9.7-29 Loading Bay Spill Worst Case Scenario .....	626
Figure 9.7-30 Indicative Habitat Impact Areas for Worst Case Wharf Option .....	628
Figure 9.8-1 Marine Activity and Infrastructure Areas.....	636
Figure 9.8-2 Barge Loading Facility and Dredge Channel.....	637
Figure 9.8-3 Marine Sample Locations .....	639
Figure 9.8-4 In-situ Marine Water Temperature Data for Bartalumba Bay .....	642
Figure 9.8-5 In-situ Marine Water Salinity Data for Bartalumba Bay .....	643
Figure 9.8-6 In-situ Marine Water Electrical Conductivity Data for Bartalumba Bay .....	643
Figure 9.8-7 In-situ Marine Water Total Suspended Solids Data for Bartalumba Bay .....	644
Figure 9.8-8 In-situ Marine Water Turbidity Data for Bartalumba Bay .....	645
Figure 9.8-9 Mean PAR Results with Depth in Bartalumba Bay – A.....	646
Figure 9.8-10 Mean PAR Results with Depth in Bartalumba Bay – B.....	647

Figure 9.8-11 In-situ Marine Water Dissolved Oxygen Data for Bartalumba Bay ..... 648

Figure 9.8-12 In-situ Marine Water pH Data for Bartalumba Bay ..... 649

Figure 9.8-13 Current Marine Traffic Density and Indicative Project Shipping and Barge Routes..... 664

Figure 9.8-14 Typical Cutter Suction Dredge Layout and Operation ..... 668

Figure 9.8-15 Worst Case Dredge and Disposal Scenario Maximum Depth-averaged SSC Results ..... 669

Figure 9.8-16 Worst Case Transshipment Maximum Depth-averaged SSC Results ..... 670

Figure 9.8-17 Worst Case Loading Bay Maximum Depth-averaged SSC Results..... 671

Figure 9.8-18 Benthic Communities Habitat Map of Bartalumba Bay ..... 675

Figure 9.8-19 Mapped Dredge and Disposal Plume ZoMI and ZoHI Extents ..... 676

Figure 9.8-20 Modelled Running Means and ZoMI and ZoHI Threshold Levels at Five Selected Locations..... 677

Figure 9.8-21 Plausible Minimum and Maximum Wharf Structure Extents, Seashore Engineering (2023)..... 679

Figure 9.9-1 Wharf and Barge Loading Facility ..... 697

Figure 9.9-2 Existing and Proposed Cyclone Moorings ..... 698

Figure 9.9-3 Bioregional Setting and Key Marine Ecological Features ..... 702

Figure 9.9-4 Survey Locations and Effort for Benthic Communities and Habitats ..... 706

Figure 9.9-5 BCH Map of the Barge Loading Facility Area ..... 713

Figure 9.9-6 BCH Map of the Transshipment Area ..... 717

Figure 9.9-7 BCH Map of the Proposed Cyclone Mooring Zone..... 718

Figure 9.9-8 Benthic Infauna Sampling Sites..... 720

Figure 9.9-9 Species Richness Index (Margalef’s-d) for all Sites in the Survey Area ..... 721

Figure 9.9-10 Species Diversity Index (Shannon-H) for all Sites in the Survey Area..... 721

Figure 9.9-11 Evenness and Dominance Values for all Sites in the Survey Area ..... 722

Figure 9.9-12 Protected Matters Search Tool Search Area ..... 726

Figure 9.9-13 Marine Turtle Nest Aerial Survey Transects and Ground Survey Areas ..... 727

Figure 9.9-14 Migratory Bird Aerial Survey Transects and Ground Wetland Survey Sites..... 729

Figure 9.9-15 Conservation Significant Marine Species Sightings in the Project Search Area..... 745

Figure 9.9-16 Records of EPBC Listed Migratory Shorebirds on Winchelsea Island – Entire Island..... 752

Figure 9.9-17 Records of EPBC Listed Migratory Shorebirds on Winchelsea Island – Inset A..... 753

Figure 9.9-18 Records of EPBC Listed Migratory Shorebirds on Winchelsea Island – Inset B..... 754

Figure 9.9-19 Records of EPBC Listed Migratory Shorebirds on Winchelsea Island – Inset C..... 755

Figure 9.9-20 Records of EPBC Listed Migratory Shorebirds on Winchelsea Island – Inset D..... 756

Figure 9.9-21 Locally Important Shorebird and Wetland Bird Habitats on Winchelsea Island..... 757

Figure 9.9-22 Marine Turtle Nesting Records and Locally Significant Marine Turtle Nesting Locations..... 775

Figure 9.9-23 Transshipment Anchorage Exclusion Area ..... 786

Figure 9.10-1 Selected Monthly Wind Roses from Milner Bay, Groote Eylandt (South of Winchelsea Island) ..... 807

Figure 9.10-2 Sensitive Receptors and Sensitive Zones Relevant to the Project ..... 809

Figure 9.10-3 Year 12 – Predicted Annual Average Ground-level Concentrations of TSP due to the Project ..... 816

Figure 9.10-4 Year 12 – Predicted Max 24-hour Average Ground-level Concentrations of PM10 due to the Project..... 817

Figure 9.10-5 Year 12 – Predicted Annual Average Ground-level Concentrations of PM10 due to the Project ..... 818

Figure 9.10-6 Year 12 – Predicted Max-24 hour Average Ground-level Concentrations of PM2.5 due to the Project..... 819

Figure 9.10-7 Year 12 – Predicted Annual Average Ground-level Concentrations of PM2.5 due to the Project ..... 820

Figure 9.10-8 Predicted Maximum Monthly Dust Deposition Rates Due to the Project, in Isolation..... 821

Figure 9.11-1 Australian Emission Inventory from 1990 to 2021 ..... 832

Figure 9.11-2 Existing Landscapes and Carbon Sinks of Groote Eylandt and Winchelsea Island, Ndevr Environmental (2023) 833

Figure 9.11-3 Groote Eylandt and Winchelsea Island Emissions per IPCC Category, Ndevr Environmental (2023) ..... 833

Figure 9.11-4 Existing Landscapes and Carbon Sinks of Groote Eyland and Winchelsea Island..... 834

Figure 9.12-1 Key Communities of the Groote Archipelago ..... 847

Figure 9.12-2 Participant in the Community Development Program, Anindilyakwa SA2, 2021 *Source: ABS, 2022, Census of Population and Housing 2021.* ..... 851

Figure 9.12-3 Aboriginal and Torres Strait Islander and Total population, Anindilyakwa SA2, 2021. *Source: ABS, 2022, Census of Population and Housing 2021.* ..... 852

Figure 9.12-4 Dedicated Recreation Areas and Viewpoints..... 855

Figure 9.12-5 Surrounding Community Services and Infrastructure ..... 864

Figure 9.12-6 Index of Socio-economic Advantage and Disadvantage Based on Local Government Area Data..... 866

Figure 9.12-7 Index of Socio-economic Advantage and Disadvantage Based on SA1 Level Data..... 866

Figure 9.12-8 Index of Economic Resources Based on Local Government Area Data ..... 869

Figure 9.12-9 Index of Economic Resources Based on Local Government Area Data ..... 872

Figure 9.12-10 Index of Economic Resources Based on SA1 Level Data ..... 872

Figure 9.12-11 Proportion of Indigenous Adults in Mainstream Employment by Age: Groote Archipelago, 2006 and 2021, *Source: ABS, 2022, Census of Population and Housing 2021.* ..... 874

Figure 9.12-12 Industries of employment, Anindilyakwa (SA2), 2021. *Source: ABS, 2022, Census of Population and Housing 2021.* ..... 876

Figure 9.12-13 Number of Businesses, Anindilyakwa (SA2), 2016-2021. *Source: ABS, 2021, 8165.0 Counts of Australian Businesses, including Entries and Exits, June 2017 to June 2021.* ..... 878

Figure 9.12-14 Changes in Business Numbers, Anindilyakwa (SA2), 2016 to 2021. *Source: ABS, 2021, 8165.0 Counts of Australian Businesses, including Entries and Exits, June 2017 to June 2021.* ..... 878

Figure 9.12-15 Growth in ORIC-registered Corporations, Groote Archipelago, 1994-2021. *Source: Taylor et al., 2022* ... 879

Figure 9.13-1 Anindilyakwa Indigenous Protected Area ..... 911

Figure 9.13-2 Regulatory and Non-Regulatory Boundaries ..... 912

Figure 9.13-3 Images of Cultural Heritage Sites on Winchelsea Island..... 917

Figure 9.13-4 2017 Field Survey Transect Location and Survey Method..... 924

Figure 9.13-5 Identified Cultural Heritage Sites..... 929

Figure 9.13-6 Recorded Underwater Cultural Heritage Sites..... 934

Figure 9.13-7 Traditional Owner Instructed Exclusion Areas ..... 950

Figure 9.14-1 Sensitive Human Receptors and Zones Relevant to the Project ..... 963

Figure 9.14-2 Surrounding Community Services and Infrastructure ..... 965

Figure 9.14-3 Proportion of Indigenous Liveborn Infants with Low Birth Weight, Groote Archipelago, 2000-2020 (Source: Taylor et al., 2022 using ABS data)..... 966

Figure 9.14-4 Age-Specific Mortality Rates, Groote Archipelago, 2001-2020 (Source: Taylor et al., 2022 using ABS data)..... 967

Figure 9.14-5 Total Indigenous Births and Deaths, Groote Archipelago, 2001-2020 (Source: Taylor et al., 2022 using ABS data) 967

Figure 9.14-6 Prevalence of 'Core Activity Need for Assistance' by Age: Indigenous Population, Groote Archipelago, 2011, 2016, 2021 ..... 969

Figure 9.14-7 Health Conditions, Groote Archipelago, 2021 ..... 970

Figure 9.14-8 Proportion of Indigenous Population with One or More Preventable Chronic Diseases, Groote Archipelago, 2016-2022 (Source: Taylor et al., 2022 using ABS data) ..... 971

Figure 9.14-9 Potential Mosquito and Biting Midge Breeding Habitat ..... 973

Figure 9.14-10 Predicted Max 24-hour Average Ground-level Concentrations of PM<sub>2.5</sub> Due to the Project ..... 982

Figure 9.14-11 Predicted Annual Average Ground-level Concentrations of PM<sub>2.5</sub> Due to the Project ..... 983

Figure 11.1-1 Winchelsea Mining’s Environmental Management System for the Project ..... 1038

Figure 11.1-2 Winchelsea Mining’s Environmental Management System Documentation Structure for the Project ..... 1039

Figure 11.2-1 Environment Policy ..... 1041

Figure 11.5-1 Winchelsea Mining’s Environmental Incident Management Process for the Project ..... 1046

Figure 13.1-1 Surrounding Activities with Potential Indirect or Cumulative Impacts ..... 1062

Figure 13.1-2 Potential Indirect and Cumulative Interactions with Surrounding Projects and Activities ..... 1063

## Plates

Plate 1.2-1 Indigenous Ceremony During Exploration Program ..... 17

Plate 1.4-1 Anindilyakwa Land Council Logo ..... 26

Plate 1.4-2 Groote Archipelago Local Decision Making Agreement ..... 26

Plate 1.4-3 Groote Archipelago Local Decision Making Agreement – Economic Development Implementation Plan ..... 27

Plate 1.4-4 Media Link to Video on the Background and Purpose of Winchelsea Mining ..... 28

Plate 4.4-1 Selection of Proposed Vehicle Fleet ..... 96

Plate 4.4-2 Example Rock Causeway Design ..... 122

Plate 4.4-3 Example Fender Piles ..... 122

Plate 4.4-4 Example Barge Loader Design ..... 123

Plate 4.4-5 Example Radial Telescopic Barge Loader ..... 123

Plate 4.4-6 Transshipment using Dub Barge and Self Loading Geared Vessel ..... 126

Plate 4.4-7 Example Tug Assisted Transshipment Dumb Barge ..... 126

Plate 4.4-8 Example Primary Tug ..... 127

Plate 4.4-9 Example Secondary Tug ..... 127

Plate 4.4-10 Logistics Barge Loaded with Mining Equipment ..... 129

Plate 4.4-11 Indicative Cyclone Mooring Arrangement ..... 130

Plate 9.1-1 View of the Homogenous Woodland of the Lateritic Plains and Rises on Gently Undulating Sandplains (Central) ..... 248

Plate 9.2-1 General View ..... 293

Plate 9.2-2 Surface Sandstone ..... 293

Plate 9.9-1 Mangrove Lined Shore of Winchelsea Island South of the Project Area ..... 700

Plate 9.9-2 High cover coral/marcoalgal reef in Fringing Reefs of Bartalumba Bay ..... 701

Plate 9.9-3 Bioturbated Sand and Silt in Central Bartalumba Bay ..... 701

Plate 9.9-4 Soft Corals and Sponges in Northern Bartalumba Bay ..... 701

Plate 9.9-5 High cover seagrass in Southern Bartalumba Bay ..... 701



## Tables

Table 1.1-1	Key Assessment Milestones .....	8
Table 1.1-2	Physical Components of the Proposal.....	9
Table 1.1-3	Operational Components of the Proposal.....	11
Table 1.1-4	Key Project Areas .....	11
Table 1.4-1	Proponent Details .....	25
Table 1.4-2	Environmental Consultant Details.....	25
Table 1.4-3	Lead Engineering Consultant Details.....	25
Table 1.5-1	Land Tenure and Proponent Interest.....	34
Table 1.6-1	Draft EIS Structure .....	40
Table 1.6-2	Key Companies Involved in the Draft EIS.....	40
Table 1.7-1	Summary Cross-Reference Table for ToR Requested Referral Requirements.....	43
Table 1.8-1	Minor Amendments to Proposal Since Referral .....	50
Table 2.2-1	Summary of Other Legislation Potentially Applicable to the Project.....	61
Table 2.2-2	Summary of Project Approvals, Licences and Permits.....	63
Table 3.3-1	Key Project Stakeholders.....	68
Table 3.5-1	IAP2 Levels of Engagement.....	72
Table 3.5-2	Different Styles of Engagement/Communication .....	72
Table 3.5-3	Engagement Activities by Stakeholder Groups.....	73
Table 3.6-1	Description of Dedicated Traditional Aboriginal Owner and Community Consultations.....	75
Table 3.6-2	Organisation Meetings Involving Consultation.....	76
Table 3.7-1	Consultation Phases.....	80
Table 4.3-1	EL 27521 Crude Resource Estimate by Resource Classification .....	87
Table 4.3-2	Mineral Lease 32704 Crude Resource Estimate by Resource Classification .....	87
Table 4.3-3	Total ROM Ore Reserve .....	87
Table 4.3-4	Export Products.....	88
Table 4.3-5	Project Export Ore Schedule.....	89
Table 4.3-6	Margin Rank/Financial Analysis Unit Costs .....	90
Table 4.4-1	Proposed Mining Fleet Requirements.....	95
Table 4.4-2	Production Schedule of Mining .....	97
Table 4.4-3	Key Tailings Storage Facility Design Parameters.....	108
Table 4.4-4	Smooth HDPE Liner Specifications .....	111
Table 4.4-5	Quarrying Details .....	118
Table 4.4-6	Project Haul Road Design Criteria .....	119
Table 4.4-7	Transshipment Bert Vessel Range Parameters .....	125
Table 4.4-8	Summary of Potential Construction Wastes .....	138
Table 4.4-9	Summary of Potential Operational Wastes.....	141
Table 4.4-10	Summary of Potential Offshore Wastes.....	144
Table 4.4-11	Winchelsea Mine Employment Breakdown.....	145
Table 4.4-12	Water Use and Supply Source .....	147

Table 4.4-13	Pit Water Storage Capacity .....	148
Table 4.4-14	Sediment Dam Capacity.....	149
Table 4.4-15	Preliminary List of Project Hazardous Substances .....	152
Table 5.1-1	Proposed Closure Outcomes and Completion Criteria.....	160
Table 5.3-1	Preliminary Closure and Rehabilitation Schedule .....	170
Table 8.1-1	Relevant Environmental Factors and Objectives .....	197
Table 8.2-1	NT EPA Statement of Reason - Relevant Environmental Factors and Potential Risk .....	198
Table 8.2-2	Qualitative Risk Analysis Matrix .....	202
Table 8.2-3	Risk Range .....	202
Table 8.2-4	Definition of Likelihood Classification .....	202
Table 8.2-5	Description of Risk Classification.....	203
Table 8.2-6	Consequence Classification.....	204
Table 8.2-7	Level of Certainty .....	209
Table 8.2-8	Identified Risks and Relevant Factors .....	211
Table 8.2-9	Summary of Risks .....	219
Table 8.2-10	Projects Considered for Cumulative Impacts .....	221
Table 8.2-11	Assigned Classification of Projects Relevant to Cumulative Impacts.....	224
Table 9.1-1	Predominant Land Systems in the Project Area.....	229
Table 9.1-2	Landforms of Winchelsea Island and Linkage to Other Environmental Values .....	238
Table 9.1-3	Potential Sources of Impact to Landforms .....	245
Table 9.1-4	Preliminary List of Project Hazardous Substances.....	251
Table 9.1-5	Projects Considered for Cumulative Impacts .....	255
Table 9.1-6	Avoidance, Mitigation and Management Measures .....	258
Table 9.1-7	Landforms Residual Impact Assessment Summary .....	265
Table 9.2-1	Predominant Land Systems in the Project Area .....	278
Table 9.2-2	Soil Sampling Locations and Analytical Suite.....	280
Table 9.2-3	Soil In-situ Results.....	285
Table 9.2-4	Soils Laboratory Results.....	286
Table 9.2-5	Photos of Winchelsea Island Surface Soils.....	291
Table 9.2-6	Completed Boreholes and Ground Conditions.....	294
Table 9.2-7	Soil Classification and Respective K-factor Values .....	296
Table 9.2-8	Existing Risk Based on Seasonality and Rainfall .....	296
Table 9.2-9	Potential Sources of Impact to Terrestrial Environmental Quality .....	297
Table 9.2-10	Preliminary List of Project Hazardous Substances .....	304
Table 9.2-11	Projects Considered for Cumulative Impacts .....	307
Table 9.2-12	Avoidance, Mitigation and Management Measures.....	310
Table 9.2-13	Terrestrial Environmental Quality Residual Impact Assessment Summary.....	316
Table 9.3-1	Threatened Flora Species with the Potential to Occur in the Project Area.....	323
Table 9.3-2	Descriptions and Area Coverage of the Vegetation Mapping Units (VMUs) within the Project Disturbance Envelope	326
Table 9.3-3	Data Deficient and Not Evaluated Plant Species Recorded on Winchelsea Island .....	330

Table 9.3-4	Potential Groundwater Dependant Ecosystem (GDE) Vegetation Mapping Unit (VMU) Descriptions and Areas on Winchelsea Island .....	333
Table 9.3-5	Threatened and Significant Fauna Species with the Potential to Occur in the Project Area.....	337
Table 9.3-6	Record Notes and Survey Methods for Threatened and Significant Fauna Species with the Potential to Occur in the Project Area.....	339
Table 9.3-7	Timing of Avian Survey Effort.....	342
Table 9.3-8	Most Frequently Detected Avian Species on Winchelsea Island .....	344
Table 9.3-9	Summary of Avian Diversity, and Survey Completeness .....	345
Table 9.3-10	Camera Trapping Survey Effort .....	357
Table 9.3-11	Northern Territory Government Recommended Camera Trapping Survey Effort to Detect Rare Species (Gillespie et al., 2015).....	357
Table 9.3-12	Overview of Terrestrial Species Relevant to the Project.....	364
Table 9.3-13	Potential Sources of Impacts to Terrestrial Ecosystems.....	374
Table 9.3-14	Summary of Clearance Footprint Vegetation Mapping Unit Total Area.....	382
Table 9.3-15	Projects Considered for Cumulative Impacts .....	397
Table 9.3-16	Potential Impacts to Terrestrial Ecosystems and Avoidance, Mitigation, and Management Measures.....	399
Table 9.3-17	Terrestrial Ecosystems Residual Impact Assessment Summary .....	409
Table 9.4-1	Frequency and Intensity of Cyclones .....	418
Table 9.4-2	Winchelsea Groundwater Levels.....	436
Table 9.4-3	Potential Source of Impacts to Hydrological Processes .....	446
Table 9.4-4	Design Rainfall Depths.....	452
Table 9.4-5	Avoidance, Mitigation and Management Measures relating to Impacts on Hydrological Processes.....	469
Table 9.4-6	Hydrological Processes Residual Impact Assessment Summary .....	477
Table 9.5-1	Surface Water Analytical Program.....	485
Table 9.5-2	Surface Water Monitoring Locations.....	486
Table 9.5-3	Surface Water In-situ Results .....	487
Table 9.5-4	Surface Water Laboratory Results .....	487
Table 9.5-5	Summary of Surface Water Quality .....	489
Table 9.5-6	Sediment Analytical Program .....	489
Table 9.5-7	Drainage Line Sediments Laboratory Results.....	489
Table 9.5-8	Groundwater Sampling Locations and Rationale .....	492
Table 9.5-9	Groundwater Analytical Program .....	493
Table 9.5-10	Groundwater In-situ Results .....	494
Table 9.5-11	Groundwater Quality Recorded Exceedances.....	496
Table 9.5-12	Summary of Conceptual Site Model for Inland Water Environmental Quality Contaminant Pathways.....	499
Table 9.5-13	Potential Sources of Impacts to Inland Water Environmental Quality .....	501
Table 9.5-14	Salinity Range of Mine Pits and PWD Discharges.....	518
Table 9.5-15	Projections of Change to Climate – Year 2090 .....	522
Table 9.5-16	Projects Considered for Cumulative Impacts .....	524
Table 9.5-17	Potential Impacts to Inland Water Environmental Quality and Avoidance, Mitigation, and Management Measures	526
Table 9.5-18	Surface and Groundwater Quality Field and Laboratory Parameters.....	531

Table 9.5-19	Proposed Sampling Locations .....	532	
Table 9.5-20	Summary of Residual Risk Level to Inland Water Environmental Quality .....	535	
Table 9.6-1	Potential GDE Vegetation Mapping Unit Descriptions and Areas on Winchelsea Island.....	544	
Table 9.6-2	Groundwater Monitoring Locations .....	547	
Table 9.6-3	Water Analytical Program .....	547	
Table 9.6-4	Groundwater Exceedances 2022 .....	549	
Table 9.6-5	Aquatic Ecosystem Sampling Sites – Surface Water .....	550	
Table 9.6-6	Terrestrial Soil Sampling Locations .....	550	
Table 9.6-7	Soil and Sediment Analytical Program.....	551	
Table 9.6-8	Potential Sources of Impacts and Risks to Aquatic Ecosystems .....	553	
Table 9.6-9	Avoidance, Mitigation and Management Measures Relating to Impacts on Aquatic Ecosystems.....	566	
Table 9.6-10	Proposed Aquatic Ecosystems Monitoring Details.....	569	
Table 9.6-11	Residual Moderate to Extreme Risks to Aquatic Ecosystems .....	572	
Table 9.7-1	Tidal Planes from Australian National Tide Tables .....	587	
Table 9.7-2	Summary of Bed Shear Stress Values and Sediment Transport Implications.....	596	
Table 9.7-3	Survey Effort for Side-scan Sonar and Benthic Video .....	599	
Table 9.7-4	Benthic Communities and Habitats Composition Within the Marine Portions of the Project Area .....	601	
Table 9.7-5	Coral Genera and Seagrass Located in and Adjacent to the Project Area (Wharf and BLF).....	602	
Table 9.7-6	Potential Sources of Impact to Coastal Processes.....	604	
Table 9.7-7	Avoidance, Mitigation and Management Measures.....	629	
Table 9.7-8	Coastal Processes Residual Impact Assessment Summary .....	632	
Table 9.8-1	Descriptive Statistics of In-situ Data Collected in Bartalumba Bay.....	640	
Table 9.8-2	Land Systems of the Project Area Marine Environments.....	654	
Table 9.8-3	Potential Sources of Impacts and Risks to Marine Environmental Quality .....	654	
Table 9.8-4	Threshold Limits for Modelled SSC and Turbidity Used to Define the ZoMi and ZoHi for the Dredging Program .....	673	
Table 9.8-5	Potential Impacts to Marine Environment Quality and Avoidance, Mitigation, and Management Measures.....	681	
Table 9.8-6	Proposed Marine Environmental Quality Monitoring Details.....	685	
Table 9.8-7	Marine Environmental Quality Residual Impact Assessment Summary.....	689	
Table 9.9-1	Survey Effort for Side-Scan Sonar and Benthic Video .....	703	
Table 9.9-2	Benthic Communities and Habitats Composition Within the Marine Portions of the Project Area .....	707	
Table 9.9-3	Benthic Communities and Habitat Category Descriptions and Representative Photos.....	708	
Table 9.9-4	BCH Categories, Respective Size and Proportion within the Wharf and Barge Loading Facility Area.....	712	
Table 9.9-5	BCH Categories, Respective Size and Proportion within the Transshipment Area .....	716	
Table 9.9-6	BCH Categories, Respective Size and Proportion within the Potential Cyclone Mooring Zone.....	716	
Table 9.9-7	Benthic Infauna Sampling Locations.....	719	
Table 9.9-8	Marine Turtle Species Targeted in Surveys and Potential Occurrence on Winchelsea Island.....	724	
Table 9.9-9	Marine Turtle Nesting and Migratory Bird Aerial Survey Transects 2018-2022 .....	724	
Table 9.9-10	Likelihood of Occurrence of Threatened and Significant Species .....	731	
Table 9.9-11	Overview of Species with Moderate or High Likelihood of Occurrence Around the Project Area.....	735	
Table 9.9-12	Marine and Wetland Birds Recorded During Avifauna Surveys and Existing Data .....	747	
Table 9.9-13	Overview of Marine and Migratory Bird Species Relevant to the Project.....	758	

Table 9.9-14	Summary of Marine Turtle Nests and False Crawls Detected in Aerial and Ground Surveys.....	774
Table 9.9-15	Potential Sources of Impact to Marine Ecosystems .....	776
Table 9.9-16	Irreversible BCH loss associated with the construction of the BLF .....	784
Table 9.9-17	Avoidance, Mitigation and Management Measures relating to Impacts on Marine Ecosystems .....	790
Table 9.9-18	Proposed Marine Ecosystems Monitoring Details .....	795
Table 9.9-19	Residual Moderate and High Risks to the Marine Environment.....	799
Table 9.10-1	Sensitive Receptors in the Vicinity of the Project .....	808
Table 9.10-2	Sensitive Zones in the Vicinity of the Project.....	808
Table 9.10-3	Background Dust Levels Included in the Assessment.....	810
Table 9.10-4	Potential Sources of Impacts and Risks to Air Quality .....	811
Table 9.10-5	Emission Rates for Project (Year 8) .....	813
Table 9.10-6	Predicted Ground-level Concentrations of Annual Average TSP and Dust Deposition Rate in Isolation and with Background Concentrations .....	822
Table 9.10-7	Predicted Ground-level Concentrations of Maximum 24-hour Average and Annual Average for PM <sub>10</sub> in Isolation and with Background Concentrations .....	822
Table 9.10-8	Predicted Ground-level Concentrations of Maximum 24-hour Average and Annual Average for PM <sub>2.5</sub> in Isolation and with Background Concentrations .....	823
Table 9.10-9	Potential Impacts to Air Quality and Avoidance, Mitigation, and Management Measures .....	826
Table 9.10-10	Air Quality Residual Impact Assessment Summary.....	829
Table 9.11-1	Potential Sources of Impacts and Risks to Atmospheric Processes .....	835
Table 9.11-2	NGER annual Reporting Threshold – Greenhouse Gas Emissions and Energy Use .....	837
Table 9.11-3	Summary of Annual GHG Emissions for the Life of the Project .....	839
Table 9.11-4	Summary of Energy Consumption and GHG Emissions for the Life of the Project.....	840
Table 9.11-5	Contribution of Project to Current GHG emissions (Mt CO <sub>2</sub> -e) for Australia and Northern Territory .....	841
Table 9.11-6	Potential Impacts to Atmospheric Processes and Avoidance, Mitigation and Management Measures .....	841
Table 9.11-7	Atmospheric Processes Residual Impact Assessment Summary .....	843
Table 9.12-1	Selected Population Characteristics, Suburbs, and Localities, 2021 .....	848
Table 9.12-2	Age, Anindilyakwa SA2, 2021.....	849
Table 9.12-3	Population Projections, East Arnhem, and the Northern Territory, 2016-2036.....	850
Table 9.12-4	Aboriginal and Torres Strait Islander Profile, Suburbs, and Localities, 2021.....	852
Table 9.12-5	Level of Tertiary Education, 2021 .....	853
Table 9.12-6	Percent of Persons Usually Resident(a)(b), Anindilyakwa (SA2), 2021.....	856
Table 9.12-7	Percent of Private Dwelling by Structure Type(a), Anindilyakwa (SA2), 2021.....	857
Table 9.12-8	Percent of Private Dwelling by Structure Type(a), Anindilyakwa (SA2), 2021.....	857
Table 9.12-9	Percent of Occupied Private Dwellings by Number of Bedrooms, Anindilyakwa (SA2), 2021 .....	858
Table 9.12-10	Socio-economic Indices, Groote Eylandt Archipelago, 2021 .....	865
Table 9.12-11	Index of Economic Resources Per Local Government Area .....	868
Table 9.12-12	Index of Education and Occupation Per Local Government Area.....	871
Table 9.12-13	Labour Force Participation by Suburb, 2021 .....	873
Table 9.12-14	Labour Force Skills, 2021 .....	875
Table 9.12-15	Major Industry Sector Economic Values, East Arnhem LGA, 2018-19.....	877

Table 9.12-16 Mining Employment by Type of Mining, 2021.....	877
Table 9.12-17 Median and Average Personal and Household Weekly Incomes Report by Indigenous Residents of the Groote Archipelago.....	880
Table 9.12-18 Gross Personal Income Report by Indigenous Residents of the Groote Archipelago, 2006 and 2021.....	880
Table 9.12-19 Potential Sources of Impact to Community and Economy.....	881
Table 9.12-20 Anticipated Capital Expenditure (\$), Regional, Rest of Northern Territory, Australia and International.....	892
Table 9.12-21 Anticipated Operational Expenditure (\$), Regional, Rest of Northern Territory, Australia and International.....	892
Table 9.12-22 Avoidance, Mitigation and Management Measures relating to Impacts on Culture and Heritage.....	894
Table 9.12-23 Community and Economy Residual Impact Assessment Summary.....	901
Table 9.13-1 Summary of Regulatory Framework Associated with Culture and Heritage.....	908
Table 9.13-2 Description of Dedicated Traditional Aboriginal Owner and Community Consultations.....	920
Table 9.13-3 Sites on Heritage Registers.....	921
Table 9.13-4 AAPA Registered Sites Close to the Project Area.....	922
Table 9.13-5 Survey Transect Length and Proportion by Land System.....	923
Table 9.13-6 Cultural Heritage Sites Identified During Field Surveys.....	926
Table 9.13-7 Underwater Cultural Heritage Sites in NT Water and Intertidal Zones.....	931
Table 9.13-8 Potential Sources of Impact to Culture and Heritage.....	935
Table 9.13-9 Cultural Heritage Sites Identified During Field Surveys.....	942
Table 9.13-10 Avoidance, Mitigation and Management Measures relating to Impacts on Culture and Heritage.....	946
Table 9.13-11 Culture and Heritage Monitoring Requirements.....	951
Table 9.13-12 Culture and Heritage Residual Impact Assessment Summary.....	954
Table 9.14-1 Sensitive Human Receptors Vicinity of the Project.....	961
Table 9.14-2 Sensitive Human Zones Vicinity of the Project.....	962
Table 9.14-3 Assistance with Core Activities, Groote Eylandt Archipelago, 2021.....	968
Table 9.14-4 Characteristics of Mosquito-borne Diseases.....	975
Table 9.14-5 Potential Sources of Impact to Human Health.....	976
Table 9.14-6 Avoidance, Mitigation and Management Measures relating to Impacts on Human Health.....	986
Table 9.14-7 Biting Insect Monitoring Requirements.....	989
Table 9.14-8 Human Health Residual Impact Assessment Summary.....	993
Table 10.2-1 Summary of the Potential Impacts of MNES.....	1001
Table 10.2-2 Aerial Survey Effort.....	1005
Table 10.2-3 Likelihood of Occurrence Assessment in the Project Area.....	1006
Table 10.2-4 Significant Impact Assessment –Key Terrestrial Mammals.....	1012
Table 10.2-5 Significant Impact Assessment – Marine Mammals.....	1016
Table 10.2-6 Significant Impact Assessment – Marine Reptiles and Fish.....	1023
Table 10.2-7 Migratory Species Identified in the PMST Report and Fauna Atlas as Occurring, or Potentially Occurring within 10 km of the Project area.....	1032
Table 10.2-8 Listed Migratory Bird Species.....	1035
Table 11.4-1 Draft Environmental Inspection Regime.....	1042
Table 11.6-1 Preliminary Training and Competency Matrix.....	1047
Table 11.7-1 Draft Environmental Inspection Regime.....	1049

Table 11.8-1 Project Internal Reporting ..... 1050

Table 11.8-2 External Environmental Reporting Requirements ..... 1051

Table 11.10-1 Assessed Significant Residual Impact Per Factor ..... 1055

Table 13.1-1 Projects Considered for Indirect and Cumulative Impacts ..... 1059

Table 13.1-2 Summary of Potential Indirect and Cumulative Impacts ..... 1064

Table 13.2-1 Guiding Principles of Ecologically Sustainable Development Addressed ..... 1093

Table 13.2-2 General Duty of Proponents Addressed ..... 1098

Table 13.2-1 Assessment of Project Against NT EPA Environmental Factor Objective ..... 1102

## Appendices

**Appendix A Stakeholder Engagement Plan ..... 1160**

**Appendix B Risk Assessment Register ..... 1161**

**Appendix C EIS Terms of Reference and Cross Reference Table ..... 1162**

**Appendix D Air Quality Report ..... 1163**

**Appendix E JORC Reserve Estimate Report ..... 1164**

**Appendix F Terrestrial Ecology Report ..... 1165**

**Appendix G Erosion and Sediment Control Plan ..... 1166**

**Appendix H Mine Rehabilitation and Closure Plan ..... 1167**

**Appendix I Terrestrial Sampling Report ..... 1168**

**Appendix J Geochemical Report ..... 1169**

**Appendix K Water Management Plan ..... 1170**

**Appendix L PMST Report ..... 1171**

**Appendix M Biosecurity Management Plan ..... 1172**

**Appendix N Weed Management Plan ..... 1173**

**Appendix O Groundwater Investigation Report ..... 1174**

**Appendix P Surface Water Assessment Report ..... 1175**

**Appendix Q Groundwater Modelling Report ..... 1176**

**Appendix R Coastal Processes Assessment Report ..... 1177**

**Appendix S Sediment Transport Modelling Report ..... 1178**

**Appendix T Marine Quality Sampling Report ..... 1179**

**Appendix U Dredge Environmental Management Plan ..... 1180**

**Appendix V Sediment and Analysis Plan ..... 1181**

**Appendix W Benthic Communities and Habitat Survey Report ..... 1182**

<b>Appendix X Social Impact Assessment .....</b>	<b>1183</b>
<b>Appendix Y Winchelsea Island Cultural Heritage Report and Anthropological Assessment .....</b>	<b>1184</b>
<b>Appendix Z Benthic Loss Assessment .....</b>	<b>1185</b>
<b>Appendix AA Cultural Heritage Management Plan.....</b>	<b>1186</b>
<b>Appendix BB Biting Insect Report .....</b>	<b>1187</b>
<b>Appendix CC Biting Insect Management Plan .....</b>	<b>1188</b>
<b>Appendix DD Conservation Significant Marine Species Report.....</b>	<b>1189</b>
<b>Appendix EE Migratory and Shorebirds Report .....</b>	<b>1190</b>
<b>Appendix FF Marine Turtles Report .....</b>	<b>1191</b>



## Key Project Terms

Term	Definition or Elaboration
Adaptive Management	Systematic process for incrementally improving management practices by learning from the outcomes of past and current practices.
AUS China International Mining	AUS China International Mining Pty Ltd
CDM Smith	CDM Smith Australia Pty Ltd
Disturbance Envelope	Defined as the maximum area within which the Project disturbance could occur. The disturbance envelope for the Project encompasses 739 ha, inclusive of the terrestrial mining area and infrastructure, marine infrastructure, dredge spoil disposal area and transshipment area.
Environmental Aspect	An element of the Winchelsea Minings activities, products or services that can interact with the environment.
Environmental Impact	Change to the environment whether adverse or beneficial, wholly or partially resulting from Winchelsea Mining's environmental aspects. Environmental impacts can be caused directly or indirectly from a Project activity or cumulatively with other non-Project related activities in a set area.
Environmental Factor	The NT EPA listed environmental objectives to identify environmental matters that have value to the Northern Territory and that need to be protected; and to state the objective to be achieved for each matter. The NT EPA has prepared these environmental objectives and organised these in structured divisions of the environment, called environmental factors.
GHAC	Groote Holdings Aboriginal Corporation
Infrastructure Footprint	Defined as the area subject to direct placement of infrastructure and material inclusive of the terrestrial and wharf components. This area excludes the dredge spoil disposal area and transshipment area as no permanent physical infrastructure will be placed in these areas. The infrastructure footprint encompasses 339 ha within the Project area.
Project	The Project refers to the Winchelsea Island Manganese Mine Project. The Project includes establishment of a manganese mine extracting from nine separate extraction areas covering, associated terrestrial infrastructure, wharf and barge loading facility, dredged access channel, dredge spoil disposal, transshipment and cyclone moorings. The Project is inclusive of all infrastructure within the nominated Project area and directly associated activities occurring outside that area.
Project Area	The Project area is defined as wholly including mineral lease for exploration activities 32704, coastal and marine areas adjacent and connecting to mineral lease 32704, the dredge spoil disposal area and transshipment area. The entire Project area covers 1,680 ha.
Significant Impact	A significant impact of an action is an impact of major consequence having regard to: (a) the context and intensity of the impact; and (b) the sensitivity, value and quality of the environment impacted on and the duration, magnitude and geographic extent of the impact.
Sitzler	Sitzler Pty Ltd
Study Area	Refers to the area of survey or investigation for a specific study. This area may be beyond the Project area or disturbance envelope.
Tailings Storage Facility	A specially engineered and constructed impoundment into which tailings (residue) from the ore processing plant are deposited for placement in perpetuity. The storage facility is constructed with confining embankments consisting of earthen material (e.g., rock and soil) and capped following closure.
Winchelsea Island	Akwamburrkba

Term	Definition or Elaboration
Winchelsea Mining	Winchelsea Mining Pty Ltd
Xenith	Xenith Consulting Pty Ltd

## Acronyms, Abbreviations and Units

Abbreviation, Acronym or Unit	Definition
AAAC	Anindilyakwa Advancement Aboriginal Corporation
AAPA	Aboriginal Areas Protection Authority
ABS	Australian Bureau of Statistics
AFANT	Armature Fisherman's Association Northern Territory
ALARP	As Low As Reasonably Practicable
Al <sub>2</sub> O <sub>3</sub>	Aluminium Oxide
ANC	Acid Neutralising Capacity
ARC	Arnhem Coast
ASRIS	Australian Soil Resource Information System
ASS	Acid Sulfate Soils
CAN	Australian Company Numbers
ADT	Articulated Dump Truck
ALC	Anindilyakwa Land Council
Al <sub>2</sub> O <sub>3</sub>	Aluminium Oxide
ALRA	<i>Aboriginal Land Rights (Northern Territory) Act 1976</i>
Bcm	Bank Cubic Meter
BLF	Barge Loading Facility
BLM	Blue Mud Land System
BoM	Bureau of Meteorology
BWM	International Convention for the Control and Management of Ships' Ballast Water and Sediments
CD	Chart Datum
CEO	Chief Executive Officer
CP	Cemented Pisolite
CNZ	Central North Mineralisation Zone
CMZ	Central Main Mineralisation Zone
Cth	Commonwealth
CSD	Cutter Suction Dredge
CSZ	Central South Mineralisation Zone
DAFF	Department of Agriculture, Fisheries and Forestry
DAWE	Department of Agriculture, Water and the Environment
DCCEEW	Department of Climate Change, Energy, the Environment and Water

Abbreviation, Acronym or Unit	Definition
DEPWS	Department of Environment, Parks and Water Security
DIPL	Department of Infrastructure, Planning and Logistics
DITT	Department of Industry, Tourism and Trade
Dmt	Dry Metric Tonne
DWCD	Declared Water Control District
DWT	Dead Weight Tonne
EIS	Environmental Impact Statement
EIL	Ecological Investigation Level
EL	Exploration Licence
EMP	Environmental Management Plan
EMS	Environmental Management System
EP Act	<i>Environmental Protection Act 2019</i>
EPBC Act	<i>Environmental Protection and Biosecurity Conservation Act 1999</i>
EPL	Environment Protection Licence
ERA	Environmentally Restricted Area
EV	Electric Vehicle
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
Fe	Iron
FIFO	Fly-In Fly-Out
g/cc	Gram per Cubic Centimetre
GDE	Groundwater Dependant Ecosystem
GEMCO	Groote Eylandt Mining Company
GHG	Greenhouse Gas
Grt	Groote land
ha	Hectares
HDPE	High Density Polyethylene
hp	Horsepower
HVAS	High-Volume Air Sampler
IAP2	International Association for Public Participation
IBRA	Interim Biogeographic Regionalisation for Australia
IEA	International Energy Agency
IECA	International Erosion Control Association

Abbreviation, Acronym or Unit	Definition
ILUA	Indigenous Land Use Agreement
IPA	Indigenous Protection Area
IUCN	International Union for Conservation of Nature
JORC	Joint Ore Reserve Committee
Kfh	Keepers Hut Land System
kg	Kilogram
km	Kilometres
ktpa	Kilo tonnes per annum
kW	KiloWatt
LA	Los Angeles
LAT	Lowest astronomical tide
LDMA	Local Decision-Making Agreements
Lit1	Littoral 1 Land System
LOM	Life of Mine
LWM	Low Water Mark
m	Metre
m <sup>3</sup>	Cubic meter
m <sup>3</sup> /hr	Cubic meter per hour
MagL	Manganiferous Laterite
mbgl	metres below ground level
MIA	Mine Infrastructure Area
ML	Megalitres
MLWM	Mean Low Water Mark
ML/yr	Megalitres per year
MMP	Mining Management Plans
MMZ	Main Mineralised Zone
MN	Mangcrete
Mn	Manganese
MNES	Matters of National Environmental Significance
MP	Member of Parliament
MRCP	Mine Rehabilitation and Closure Plan
MSL	Mean Sea Level
Mt	Million Tonnes

Abbreviation, Acronym or Unit	Definition
mtpa	Million Tonnes per Annum
MW	Megawatt
NAF	Non-Acid Forming
NAGD	National Assessment Guidelines for Dredging
NEZ	North East Mineralised Zone
NEPM	Nation Environment Protection Measure
NLC	Northern Land Council
NT	Northern Territory
NT EPA	Northern Territory Environment Protection Authority
NW	North West
OGV	Ocean going vessel
P	Phosphorus
P <sub>2</sub> O <sub>5</sub>	Phosphorus Pentoxide
PC	Personal Computer
PCS	Process Control System
PID	Proportional-Integral-Derivative
PLT	Point Load Result
ppt	Parts per Thousand
PM	Pisolitic Manganese
PMLU	Post-Mining Land use
PM <sub>2.5</sub>	Particulate Matter 2.5 micrometres or less
PM <sub>10</sub>	Particulate Matter 10 micrometres or less
PSU	Practical Salinity Units
Pty Ltd	Propriety Limited
Que	Queue Land System
RC	Reverse Circulation
RMP	Risk Management Plan
ROM	Run of Mine
RDU	Royalties Development Unit
RORO	Roll-on Roll-off
RUSLE	Revised Universal Soil Loss Equation
Sea Dumping Act	<i>Environmental Protection (Sea Dumping) Act 1981</i>
SEP	Stakeholder Engagement Plan

Abbreviation, Acronym or Unit	Definition
SiO <sub>2</sub>	Silicon Dioxide
SOP	Standard Operating Procedures
SM	Silicious Manganese
SSC	Suspended Sediment Concentration
SSTV	Site-Specific Trigger Values
TEC	Threatened Ecological Communities
t	Tonnes
ToR	Terms of Reference
TPWC Act	<i>Territory Parks and Wildlife Conservation Act 2000</i>
TSF	Tailings storage facility
TSP	Total Suspended Particulates
USGS	United States Geological Survey
WA	Western Australia
WMP	Water Management Plan
WDL	Waste Discharge Licence

## **ACKNOWLEDGEMENT**

**CDM Smith and Winchelsea Mining acknowledges the traditional owners and custodians of country throughout Australia and acknowledges their continuing connection to land, waters and community. We pay our respects to the people, the cultures and the elders past, present and emerging.**

**We acknowledge and thank the Anindilyakwa Land Council and the Traditional Owners of Winchelsea Island, for providing permission to access survey areas and collect data for the Winchelsea Island (Akwanburrkba) Manganese Mine Project Environmental Impact Statement and supporting studies.**



## Section 12 Offsets

Developments that may have a significant impact on the environment are assessed in accordance with the *Environment Protection Act 2019* (EP Act) and Environment Protection Regulations 2020. The EP Act requires that development proponents implement a hierarchy of:

- 'Avoid significant impacts wherever possible;
- Where significant impacts cannot be avoided, mitigate those impacts to the greatest extent practicable; and
- Where significant impacts cannot be avoided or mitigated, offset the impacts' (DEPWS, 2023a).

Where a project cannot avoid or mitigate, or where measures have been applied, yet a significant residual impact remains, it may require offsetting. To support the use of offsets under the EP Act, the NT Government has established the NT Offsets Framework

The NT Offsets Framework is established under section 125(1) of the EP Act and comprises the Northern Territory Offset Principles (the Offset Principles) (DENR, 2020), Offset Policies (DEPWS, 2022a; DEPWS, 2023b) and supporting Technical Guidelines (DEPWS, 2022a; 2022b), and Administrative Guidelines<sup>58</sup>.

The Project is being assessed at the level of an Environmental Impact Statement (EIS) under the EP Act and offset requirements can be applied to statutory environmental approvals under the Act. In accordance with DEPWS (2023b), 'determination of whether offsets are required will occur during the environmental assessment and approval process. Offsets can only be considered where all reasonable steps have been taken to avoid and mitigate potential impacts to the environment. Any remaining impacts that cannot be avoided or mitigated are referred to as residual impacts. Where a biodiversity offset is determined to be appropriate, the decision maker for the approval may require significant residual impacts to be offset as a condition of the approval (a biodiversity offset approval condition)'. Under the EP Act, offsets will only be necessary where residual impacts can be considered 'significant'.

Based on the environmental impact assessment findings and in alignment with principles of environmental improvement held by the Traditional Owners (TOs), Winchelsea Mining proposes to develop a Biodiversity Offset Plan outlining how offsets will be designed and delivered in accordance with the Policy and the NT Offsets Framework.

Offsets may also be required under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* Act (EPBC Act) for significant impacts on protected matters arising from the action. The NT Offsets Principles establish that there should be no duplication in offsets required by the Commonwealth and Northern Territory for projects in the Northern Territory.

Table 9.6-10 provides a summary of the significant residual impacts for the Project, as per the relevant factors and based on the full environmental assessment involving detailed field surveys and environmental assessments.

**Table 11.10-1 Assessed Significant Residual Impact Per Factor**

Factor	Significant Residual Impact	Proposed Offsetting
Landforms	No	No
Terrestrial Environmental Quality	No	No
Terrestrial Ecosystem	Yes	Yes (refer below)

<sup>58</sup> The Administrative Guidelines are currently being developed and were not available at the time of developing the draft EIS.

Factor	Significant Residual Impact	Proposed Offsetting
Hydrological Processes	No	No
Inland Water Environmental Quality	No	No
Aquatic Ecosystems	No	No
Coastal Processes	No	No
Marine Environmental Quality	No	No
Marine Ecosystems	No	No
Air Quality	No	No
Atmospheric Processes	No	No
Community and Economy	No	No
Culture and Heritage	No	No
Human Health	No	No

The Project requires a direct terrestrial disturbance of approximately 530 hectares (ha) (direct clearing extent over the 11-year Project life). In addition, up to 15.9 ha of Groundwater Dependent Ecosystems (GDE) may be indirectly impacted outside the disturbance envelope from groundwater drawdown and salinity changes, resulting in a cumulative terrestrial residual impact of 545.9 ha.

Direct and indirect disturbance from marine activities has been assessed at 141.13 ha (cumulative loss), with 16.74 ha classified as moderate to high sensitivity marine habitat (e.g., seagrasses and corals) and the remaining 124.39 ha consisting of low sensitivity bioturbated silt and sand/shell hash. All potential disturbances to marine and benthic habitats are highly localised and have been deemed of low significance due to the widespread occurrence of similar habitats both locally and regionally. Therefore, significant residual impacts from the Project are taken to account for terrestrial disturbances only (refer to Section 14- Conclusion of Predicted Impacts for a summary of predicted impacts and their significance on listed environmental factors).

The entirety of the 545.9 ha is considered habitat for several threatened species listed under the EPBC Act and the *Territory Parks and Wildlife Conservation Act 1976* (TPWC Act), as follows:

- Northern Masked Owl (Vulnerable – EPBC Act and TPWC Act) – 545.9 ha of potential foraging and nesting habitat (habitat for one Northern Masked Owl pair);
- Northern Quoll (Endangered – EPBC Act, Critically Endangered – TPWC Act) – 545.9 ha of potential foraging and nesting habitat; and
- Ghost Bat (Vulnerable – EPBC Act, Near Threatened – TPWC Act) – 545.9 ha of potential foraging habitat.

There were several observational records of Merten's Water Monitor on Winchelsea Island from the Project surveys and Mahney (2009). However, all records are associated with the northern coastline or coastal marine sea caves in rocky shore habitat with no local access to freshwater habitats. There are no known populations within the current proposed development footprint and or the southern draining catchment areas. Therefore, the Project disturbance is not considered to pose a significant residual impact to the Merten's Water Monitor (Vulnerable, TPWC Act).

The Draft Biodiversity Offsets Policy (the Policy) adopts a habitat-focused approach to biodiversity offsets and requires offsets to be applied within the same broad habitat type as the impact that is being offset. The Policy envisages that offset activities will primarily involve the management of priority threats, which are relevant to the habitats in which the offset

is located, and the biodiversity values which have been impacted. The Project is located within the monsoonal north biome and predominately consisting of 'Forest and Woodlands' and 'Shrublands'. As per Schedule 1, Table 2 of the Draft Biodiversity Offsets Technical Guidelines (2022b), the key threats for the relevant habitats are (1) inappropriate fire regimes; (2) feral ungulates; and (3) grassy weeds.

For offsets under the Policy, management of priority threats has the goal of improving habitat condition, ultimately to the point where 'good' habitat condition is restored and can be maintained. Indicative thresholds for effective threat management within different biomes have been developed and these are described in Schedule 2 (DEPWS, 2022b). Biodiversity offset plans should describe how these thresholds will be achieved or provide robust justification for alternative threat reduction targets. Winchelsea Mining will prepare a Biodiversity Offset Plan that utilises management benchmarks for the identified habitat threats for the monsoonal north biome. Additional threats are also relevant to the Groote Archipelago and will be incorporated into the Biodiversity Offset Plan [refer to the Groote Archipelago Threatened Species Management Plan (2019 – 2028) (DEE, 2019)].

The objective of most offsets will be to deliver an improvement in habitat condition within the offset area. Groote Eylandt contains large expanses of equivalent Forest and Woodland; and Shrubland ecosystems proposed to be disturbed for the Project. These equivalent habitats on Groote Eylandt are also known to support the three listed species referenced above and are known to be impacted by degrading influences, where these occur in proximity to anthropogenic activities. As per the Groote Archipelago Threatened Species Management Plan (2019 – 2028) (DEE, 2019), Groote Eylandt and several smaller islands in the archipelago are being impacted by threats such as, inappropriate fire regimes, feral animals (cats, pigs, introduced rodents, dogs), transforming weeds, invasive ants and introduced horticultural plants.

Based on the Draft Biodiversity Offsets Technical Guidelines (DEPWS, 2022b), the total potential loss is taken to be 545.9 ha, or equivalent to 545.9 ecological units. The technical guideline requires a 20% potential gain for habitats in the monsoonal biome. The potential gain is the number of ecological units that will be gained by direct habitat management measures. An additional gain of 10% is required to address the risk of lower than expected gains and where the same offset area is being used to offset more than one value, the 10% gain to compensate for risk applies to each value (i.e., the clearing area constitutes habitat for three listed species resulting in three values). Therefore, it is assumed Winchelsea Mining will identify a single area that provides habitat for the three listed species considered to be significantly impacted by clearing for the Project (i.e., the Northern Masked Owl, Northern Quoll and Ghost Bat). As such, the risk requirement is anticipated to be an additional 30%. An initial calculation of the anticipated offset is as follows:

- Minimum offset area: total potential loss (545.9) / potential gain (0.2) x net gain requirement (1.2) x risk requirement (1.3) = **4,258.02** ha.
- Calculation of minimum total investment:
  - Threat reduction (10 years): minimum offset area 4,258.02 x threat reduction cost/ha<sup>59</sup> **\$10** x threat reduction period 10 = **\$425,802**.
  - Threat maintenance (5 years): minimum offset area 4,258.02 x threat maintenance cost/ha<sup>60</sup> **\$7.5** x threat maintenance period 5 = **\$159,676**.
  - Monitoring: (threat reduction investment **\$425,802** + threat maintenance investment **\$159,676**) x **0.15** = **\$87,822**.
  - Minimum total investment (over 15 years) = threat reduction **\$425,802** + threat maintenance **\$159,676** + monitoring **\$87,822** = **\$673,300**.

---

<sup>59</sup> Annual threat reduction costs - dollar cost per hectare, per year of implementing activities to reduce threats to the required benchmarks.

<sup>60</sup> Annual threat maintenance costs - dollar cost per hectare, per year of implementing activities to maintain threats at the required benchmarks.

As per the Draft Biodiversity Offsets Technical Guidelines (DEPWS, 2022b), the DEPWS are currently assessing landscape scale threat management practices in the NT and cost estimates for a range of activities. At the time of preparing the above estimate, the Guidelines included example values. Winchelsea Mining will update the values to be consistent with the findings of the costing review and final guidelines, once released.

Based on the Draft Biodiversity Offsets Technical Guidelines (DEPWS, 2022b), the minimum time in which the required improvement in habitat condition is likely to occur is 15 years in the monsoonal north biome and the improvement phase may be at least 10 years of that period.

In addition to the direct offsetting, Winchelsea Mining is investigating an added compensatory measure involving a Northern Masked Owl research program inclusive of the known pair on Winchelsea Island and a pair in the northern portion of Groote Eylandt. Both the Northern Territory Offsets Policy and the Commonwealth Government Environmental Offsets Policy (DSEWPC, 2012), provide an option for other compensatory measures including research. As per DSEWPC (2012), the research should improve the viability of the impacted protected matter. Given the general lack of understanding of Northern Masked Owl in the Groote Archipelago, the research would seek to generate data on their feeding habits, how they move about in the environment, confirm nesting locations, determine when may be the least impactful time to remove any nesting trees (noting that they change these periodically), and how they may adapt or be impacted over time. This research would be of direct relevance to the management of the known pair on Winchelsea Island and the species more broadly throughout the Groote Archipelago.

## Section 15 References

### 15.1 Sections 1 to 6

Anindilyakwa Land Council (ALC) (n.d). Anindilyakwa Land Council 15 Year Strategic Plan 2012-2027. ALC, Alyangula, Northern Territory.

Anindilyakwa Land Council (ALC). (2020). Anindilyakwa Land Council Annual Report 2019-20. Anindilyakwa Land Council Annual Report 2019-20, Transparency Portal.

Anindilyakwa Land Council (ALC) (2022a), Sustainable Development, <https://anindilyakwa.com.au/mining-and-environment/sustainable-development/>.

Anindilyakwa Land Council (ALC) (2022b), The Groote Archipelago Region, <https://anindilyakwa.com.au/about/the-groote-archipelago-region/>.

Anindilyakwa Land Council (ALC) (2022c), Invested in Our Future Groote – Building the foundations for a sustainable future cultural economy, <https://anindilyakwa.com.au/app/uploads/2022/06/Invested-in-Our-Future-Groote.pdf>.

Anindilyakwa Land Council (ALC) (2023a), History, <https://anindilyakwa.com.au/about/history/>.

Anindilyakwa Land Council (ALC) (2023b), Traditional Culture, <https://anindilyakwa.com.au/preserving-culture/anthropology/traditional-culture/>

Anindilyakwa Land Council (ALC) (2023c), 6 Local Decision Making Agreements, <https://anindilyakwa.com.au/future-groote/6-local-decision-making-agreements/>.

Ausenco (2020) Winchelsea Project Process Plant Concept Study. Ausenco Pty Ltd. Prepared for Winchelsea Mining Pty Ltd.

Australian Bureau of Statistics (ABS) (2021). 2021 Census QuickStats East Arnhem. Available at: <https://abs.gov.au/census/find-census-data/quickstats/2021/LGA71300>.

Australian Government (2022), Australian Government Climate Change commitments, policies and programs.

Australian Office of Financial Management, Canberra Australia. Viewed 21 April 2023,

[https://www.aofm.gov.au/sites/default/files/2022-11-28/Aust%20Govt%20CC%20Actions%20Update%20November%202022\\_1.pdf](https://www.aofm.gov.au/sites/default/files/2022-11-28/Aust%20Govt%20CC%20Actions%20Update%20November%202022_1.pdf).

Britannica (2023), The Editors of Encyclopaedia. "manganese". *Encyclopedia Britannica*, 2 Mar. 2023, <https://www.britannica.com/science/manganese>.

Clarke, A. (1994). Winds of Change: an archaeology of contact in the Groote Eylandt Archipelago, Northern Australia. Unpublished PhD thesis, Australian National University.

Commonwealth of Australia (2009). National Guidelines for Dredging. Commonwealth of Australia, Canberra.

Commonwealth of Australia (2021). *Bilateral Agreement made under section 45 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) relating to environmental assessment – Commonwealth of Australia and The Northern Territory of Australia*. Commonwealth of Australia, Canberra.

Commonwealth Scientific and Industrial Research Organisation (CSIRO) (2023), Climate Change in Australia: Climate information, projections, tools and data. Canberra, Australia. Viewed 21 April 2023. <https://www.climatechangeinaustralia.gov.au/en/projections-tools/>.

Convention on Migratory Species (CMS) (1979). Convention on Migratory Species of Wild Animals.

Department of Environment and Natural Resources (DENR) (2020). Northern Territory Offsets Principles, V1.0, June 2020. Northern Territory Government. Available [https://depws.nt.gov.au/\\_data/assets/pdf\\_file/0005/901877/nt-offsets-framework-principles.pdf](https://depws.nt.gov.au/_data/assets/pdf_file/0005/901877/nt-offsets-framework-principles.pdf).

DEWHA (Australian Government Department of the Environment, Water, Heritage and the Arts). (2007). Characterisation of the marine environment of the north marine region: outcomes of an expert workshop convened in Darwin., Northern Territory, 2-3 April 2007, DEWHA, Canberra. <http://www.environment.gov.au/resource/characterisation-marine-environment-north-marine-region-outcomes-expert-workshop-2-3-april>.

Department of Foreign Affairs and Trade (DFAT) (2016). Tailings Management: Leading Practice Sustainable Development Program for the Mining Industry. Australian Government.

Department of Lands, Planning and Environment (1999), Water Resources of East Arnhem Land, Viewed 24 April 2023, Available: [https://frackinginquiry.nt.gov.au/\\_data/assets/pdf\\_file/0010/433387/02\\_99D\\_Water-Resources-of-East-Arnhem-Land\\_Main-Report.pdf](https://frackinginquiry.nt.gov.au/_data/assets/pdf_file/0010/433387/02_99D_Water-Resources-of-East-Arnhem-Land_Main-Report.pdf)

Department of Natural Resources, Environment, The Arts and Sport (DNREAS, n.d.), Sites of Conservation Significance- Groote Eylandt Group.

Department of the Environment (DotE) (2013). Matters of National Environmental Significance, significant impact guidelines 1.1 *Environment Protection and Biodiversity Conservation Act 1999*. Australian Government.

EcOz Environmental Consultants (2019). Barge landing benthic impact assessment. (Prepared for ADG Engineering Pty Ltd).

Gardline Marine Sciences Pty Ltd (2011). Groote Eylandt Marine Survey (Exploration Licence Area 27523). Report 8661/Geo(00).

GHAC (2022) *Groote Eylandt Little Paradise Development Master Plan*. Groote Holdings Aboriginal Corporation – July 2022.

Hamm G, Mitchell P, Arnold L, Prideaux J, Questiaux G, Spooner D, Stephenson N (2016). Cultural innovation and megafauna interaction in the early settlement of arid Australia. *Nature*, 539(7628), 280.

International Association for Public Participation (IAP2) (2015). Quality Assurance Standard for Community and Stakeholder Engagement. Available at: <https://iap2a.my.site.com/portal/s/resources>.

International Energy Agency (IEA) (2021), The Role of Critical Minerals in Clean Energy Transitions, IEA, Paris <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>, License: CC BY 4.0

International Erosion Control Association (IECA) Australasia (2008). Best Practice Erosion & Sediment Control. Available at: <https://www.austieca.com.au/publications/best-practice-erosion-and-sediment-control-bpesc-document>.

International Finance Corporation (IFC) (2007). Stakeholder Management: A Good Practice Handbook for Companies Doing Business in Emerging Markets. Available at: <https://www.ifc.org/en/insights-reports/2000/publications-handbook-stakeholderengagement--wci--1319577185063>.

Joint Ore Reserves Committee (JORC) (2012). Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code online.- 2012 Edition. Available from: <http://www.jorc.org> (The Joint Ore Reserve Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Mineral Council of Australia).

Jones, T.S., (1985). Manganese is essential to iron and steel production. No prac. Bulletin, (675), p.483.

Macknight C (1976). *The Voyage to Marege. Macassan Trepangers in Northern Australia.* Melbourne University Press: Melbourne.

Martins S, Soong B, Wong V, Giunti P, Stevanin G, Ranum L, Coutinho P (2012). Mutational origin of Machado-Joseph disease in the Australian Aboriginal communities of Groote Eylandt and Yirrkala. *Archives of neurology*, 69(6), 746-751.

National Indigenous Australians Agency (NIAA) (2023), Anindilyakwa IPA and Rangers. Viewed 20 September 2023, <https://www.niaa.gov.au/indigenous-affairs/environment/anindilyakwa-ipa-and-rangers>.

Northern Territory Environment Protection Authority (NT EPA) (2021a). *Preparing and environmental impact statement (EIS) – Environmental impact assessment guidance for proponents.* Version 1.0. (dated 26 February 2021). NT EPA Darwin.

Northern Territory Environment Protection Authority (NT EPA) (2021b). *Stakeholder Engagement and Consultation – Environmental Impact Assessment Guidance for Proponents.* Version 2.0 (dated 6 January 2021), NT EPA, Darwin.

Northern Territory Environment Protection Authority (NT EPA) (2022). *NT EPA Environmental factors and objectives: Environmental impact assessment – General technical guidance.* Version 3.0 (dated 6 January 2021), NT EPA, Darwin.

Northern Territory Environment Protection Authority (NT EPA) (No Date). *Referring a significant variation to the NT EPA – Environmental impact assessment guidance for proponents.* Draft for consultation, NT EPA, Darwin.

Northern Territory Government (2020). *Northern Territory Offsets Principles.* Department of the Environment and Natural Resources, Flora and Fauna Division, Darwin.

Northern Territory WorkSafe (NTWorkSafe) (2023). *Hazardous Chemicals.* Viewed 21 April 2023. <https://worksafe.nt.gov.au/safety-and-prevention/hazardous-chemicals#:~:text=Chemicals%20are%20considered%20hazardous%20if,of%20solids%2C%20liquids%20or%20gases>.

Northern Territory Government (NT Government) (2020), *Northern Territory Climate Change Response: Towards 2050.*

Northern Territory Government (NT Government) (2019), *Groote Archipelago – Local Decision Making Agreement: Schedule 3.2 – Economic Development Implementation Plan,* [https://ldm.nt.gov.au/\\_data/assets/pdf\\_file/0008/791315/galdm-agreement-edip.pdf](https://ldm.nt.gov.au/_data/assets/pdf_file/0008/791315/galdm-agreement-edip.pdf).

SHIM Consulting (2023). *Akwamburrkba (Winchelsea Island) Cultural Heritage Management Plan.* Report Prepared for Winchelsea Mining Pty Ltd. July 2023.

Spillett P (1989). *Aboriginal - Makassar Relationships: Groote Eylandt.* Paper presented at the State Archives Seminar 4 July 1989.

Summerfield, D. 2021. *Australian Resource Reviews: Manganese Ore 2020.* Geoscience Australia, Canberra.

Theden-Ringl F, Fenner J, Wesley N, and Lamilami R (2011). Buried on foreign shores: isotope analysis of the origin of human remains recovered from a Macassan site in Arnhem Land. *Australian Archaeology*, 73(1), 41-48.

The University of Sydney (2023), *Moiety.* Available at: <https://www.sydney.edu.au/about-us/vision-and-values/our-aboriginal-and-torres-strait-islander-community/kinship-module/learning-module/moiety.html#:~:text=In%20this%20section%20you%20will,and%20patrilineal%20lines%20of%20descent>.

Tindale N (1925). *Natives of Groote Eylandt and of the west coast of the Gulf of Carpentaria.* Records of the South Australian Museum, 3(1), 60-135.

United States Geological Survey (USGS) (2023), *2022 Final List of Critical Minerals.* U.S. Geological Survey, Department of the Interior. Washington DC.

WANT Geotechnics (2023), Report on the Investigation and Testing of a Potential Sandstone Resource: Winchelsea Island, Northern Territory. Prepared for Sitzler.

Williams, D. J (2014). An alternative whole-of-life approach to tailings management. Life-of-Mine 2014, Brisbane, QLD, Australia, 16-18 July 2014. Carlton, VIC, Australia: AUSIMM.

World Heritage Convention (WHC) (1972). Convention Concerning the Protection of the World Cultural and Natural Heritage. Available at: <http://whc.unesco.org/en/conventiontext/>.

## 15.2 Section 7

Anindilyakwa Land Council (ALC). (2019). Anindilyakwa Land Council Annual Report 2018-19. Accessed on 13 August 2020. Available at: <https://www.transparency.gov.au/publications/prime-minister-and-cabinet/anindilyakwa-land-council/anindilyakwa-land-council-annual-report-2019-20/anindilyakwa-land-council>.

Australian Bureau of Statistics (ABS) (2021). 2021 Census Quickstats – Anindilyakwa (Groote). Accessed July 2023.

Australia and New Zealand Guidelines (ANZG). (2018). *Default Guideline Values*. Available at: <https://www.waterquality.gov.au/anz-guidelines/guideline-values/default>. Accessed 10 February 2023.

Australian Institute of Marine Science (AIMS). (2019). Anindilyakwa IPA Sediment Grain Size and Trace Elements. Report Prepared for Anindilyakwa Land Council. Australian Institute of Marine Science, Townsville

Bolton, R. B., Pracejus, B. and Frakes, A. L. (1988). Nature and development of supergene manganese deposits, Groote Eylandt, Northern Territory, Australia. *Science Direct*, 4 (1-2), pg. 71- 98.

Bureau of Meteorology (BoM). (2023a). Climate statistics for Australia Locations – Groote Eylandt Airport. Commonwealth of Australia. Available at: [http://www.bom.gov.au/climate/averages/tables/cw\\_014518.shtml](http://www.bom.gov.au/climate/averages/tables/cw_014518.shtml). Accessed: 28 March 2023.

Bureau of Meteorology (BoM). (2023b). Evaporation: Average Monthly and Annual Evaporation. Australian Government. <http://www.bom.gov.au/watl/evaporation/>. Accessed: 28 March 2023.

Bureau of Meteorology (BoM). (2023c). Wind speed and direction rose – Alyangula Police (014507) [http://www.bom.gov.au/cgi-bin/climate/cgi\\_bin\\_scripts/windrose\\_selector.cgi?period=Annual&type=9&location=14507](http://www.bom.gov.au/cgi-bin/climate/cgi_bin_scripts/windrose_selector.cgi?period=Annual&type=9&location=14507). Accessed 20 February 2023 and 28 March 2023.

CDM Smith (2023). *Winchelsea Manganese Mine – Baseline Marine Quality Sampling 2022*. Prepared for Winchelsea Mining Pty Ltd, March 2023.

Clark, M. and May, K. S. (2013). *Macassan History and Heritage*. Australian National University.

Datry, T., Larned, S.T. and Tockner, K. (2014) Intermittent Rivers: A Challenge for Freshwater Ecology. *BioScience*, 64 (3), March 2014, Pages 229-235. <https://doi.org/10.1093/biosci/bit027>.

Department of Environment (2015) *Wildlife Conservation Plan for Migratory Shorebirds*. Commonwealth of Australia, Canberra.

Department of the Environment (2013). *Matters of National Environmental Significance, significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*. Australian Government.

Department of Environment and Natural Resources (DENR) (2019). *NR Maps Natural Resource Maps*. Accessed January 2019. <http://nrmaps.nt.gov.au/nrmaps.html>.



Ecological Management Services (EMS). (2019). Winchelsea (Akwamburrkba) Island Terrestrial Ecology Assessment EL27521. (Prepared for Winchelsea Mining Pty Ltd, February 2019).

Ecological Management Services (EMS). (2022a). Winchelsea (Akwamburrkba) Island Marine Turtle Nesting 2018-2022 Final Report. Report prepared for Winchelsea Mining Pty Ltd.

Ecological Management Services (EMS). (2022b). Winchelsea (Akwamburrkba) Island Migratory Shorebirds and Wetland Birds 2018-2022 Final Report. Report prepared for Winchelsea Mining Pty Ltd

Ecological Management Services (EMS). (2023). Winchelsea (Akwamburrkba) Island Manganese Mine Project Terrestrial Ecology Technical Report. Report prepared for Winchelsea Mining Pty Ltd.

Ferenczi, P. (2001). Iron ore, Manganese and Bauxite Deposits of the Northern Territory Report 13. NT Government Department of Business Industry and Resource Development, Darwin.

Ferns, L. W. (2016). Coral communities in extreme environmental conditions in Northern Territory, Australia. Northern Territory Naturalist. 27: 84-96

Fisher, A. (2009). Sites of conservation importance in the Northern Territory: Groote Eylandt Group. <https://nt.gov.au/environment/environment-data-maps/important-biodiversity-conservation-sites/conservation-significance-list>.

GHD, 2013. Report for Gulf of Carpentaria Storm Tide and Inundation Study: Stages 1 and 2 Final Report. Prepared by GHD Pty Ltd for the Queensland Department of Science, Information Technology, Innovation and the Arts.

Hoemner, X., Whiting, S.D., Hamman, M., Limpus, C.J., Hindell, M.A. and McMahon, C.R. (2016). High-resolution movements of critically endangered hawksbill turtles help elucidate conservation requirements in northern Australia. Marine and Freshwater Research 67: 1263-1278.

Hunter A, David G, Amir A, Nasir A, von Hippel W, von Hippel F, Angilletta M, and Wilson R, (2018). Bioaccumulation of manganese and its health effects in Anindilyakwa of Groote Eylandt, Australia. University of Queensland Manganese Research.

Info-Pacific Environmental (2019) Benthic Survey of Potential Barge Landing Site at Winchelsea Island. Indo-Pacific Environmental Pty Ltd, Prepared for Winchelsea Mining Pty Ltd.

Katestone (2015). Air Quality Assessment Report for the Eastern Leases Project, Katestone Environmental Pty Ltd, May 2015.

Lynch, B.T. and Wilson, (1998). *Land Systems of Arnhem Land. Report No. R97/1*. Natural Resources Division, Department of Lands, Planning and Environment.

Maher, J., Cribb, H, and Beatty, A. (2011) Monitoring for Marine Pests – Gove Harbour, Groote Eylandt and Melville Island. 2009-10 Report.

Munson, T.J., Ahmad, M. and Dunster, J.N. (2013). Geological and Mineral Resources of the Northern Territory: Chapter 39 Carpentaria Basin. In: Ahmad, M. and Munson, T.J. (2013). *Geology and mineral resources of the Northern Territory*. Northern Territory Geological Survey, Special Publication 5.

Ndevr Environmental (2023), Groote Eylandt Emissions Inventory and Strategic Trajectory.

NT Government Department of Resources. NT Government (2019) Insects of Medical Importance. Northern Territory Government

O2Marine (2022) Conservation Significant Marine Fauna Desktop Assessment: Winchelsea Island Manganese Mine Project EIS. Report to CDM Smith. WA Marine, Fremantle.

Oakwood, M. (2008). Northern quoll, *Dasyurus hallucatus*. In 'The Mammals of Australia', (Eds S Van Dyck and R Strahan), pp. 57-59. New Holland, Sydney.

Oakwood, M., Woinarski, J. & Burnett, S. 2016. *Dasyurus hallucatus*. The IUCN Red List of Threatened Species 2016: e.T6295A21947321. <https://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T6295A21947321.en>.

Pettit, W. and Copley, N. (2017) Groote Eylandt exotic mosquito survey report. NT Department of Health

Roy, S. J. (1981). Manganese Deposits. Academic Press, London.

Seashore Engineering. (2023), Winchelsea Island Manganese Mine Project - Coastal Processes Assessment, Western Australia, Perth.

SHIM Consulting. (2018). Report on the Cultural Heritage of Akwamburrkba (Winchelsea Island). Prepared for Anindilyakwa Land Council.

Taylor, S. (2016). Anindilyakwa Indigenous Protected Area Plan of Management 2016. Anindilyakwa Land Council.

Trott LA (ed) (2012). Milner Bay Project: Marine Environmental Survey. Report produced for GEMCO – BHP Billiton. Australian Institute of Marine Science, Townsville.

Ujvari, B., Oakwood, M. & Madsen, T. (2013). Queensland northern quolls are not immune to cane toad toxin. *Wildlife Research*, 40 (3), 228-231

Woinarski, J.C.Z., Oakwood, M., Winter, J., Burnett, S., Milne, D., Foster, P., Myles, H., and Holmes, B. (2008). Surviving the toads: patterns of persistence of the northern quoll *Dasyurus hallucatus* in Queensland. Report to The Australian Government's Natural Heritage Trust, March 2008.

## 15.3 Section 8

Northern Territory Environment Protection Authority (NT EPA) (2021a). Environmental impact assessment guidance for proponents – Preparing a proponent initiated referral. Version 1.0 (dated 2 June 2021), NT EPA Darwin.

Northern Territory Environment Protection Authority (NT EPA) (2021b). Preparing and environmental impact statement (EIS) – Environmental impact assessment guidance for proponents. Version 1.0 (dated 26 February 2021). NT EPA Darwin.

Northern Territory Environmental Protection Authority (NT EPA) (2022). NT EPA Environmental factors and objectives - Environmental impact assessment: General technical guidance. Version 3.0 (dated 22 May 2022). NT EPA Darwin.

## 15.4 Section 9

### 15.4.1 Section 9.1 (Landforms)

Anindilyakwa Land Council (ALC) (2016). Anindilyakwa Indigenous Protected Area Plan of Management 2016.

Australia and New Zealand Government (ANZG) (2018). Guidelines for Fresh and Marine Water Quality (95%). Australia Government. Available at: <https://www.waterquality.gov.au/anz-guidelines>.

Australian Government (2016). Tailings Management: Leading Practice Sustainable Development Program for the Mining Industry. Available at: <https://www.industry.gov.au/publications/leading-practice-handbooks-sustainable-mining/tailings-management>. Accessed 12 July 2023.

Bland H and Pyne L (2023). ALC Cultural Survey Report Winchelsea Island. A report by the Anindilyakwa Land Council.

British Geological Survey (2023). Weathering: Discovering Geology – Geological processes. Available at: <https://www.bgs.ac.uk/discovering-geology/geological-processes/weathering/#:~:text=Discovering%20Geology%20%E2%80%94%20Geological%20processes,be%20biological%20chemical%20or%20physical>.

Brooks, M. L., D'Antonio, C. M., Richardson D. M., Grace, J., B., Keeley, J. E., Ditomaso, M., Hobbs, R. J, PELLANT, M., and PYKE, D. (2004). Effects of Invasive Alien Plants on Fire Regimes. *BioScience*, Volume 54, Issue 7, July 2004, Pages 677–688, [https://doi.org/10.1641/0006-3568\(2004\)054\[0677:EOIAP0\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2004)054[0677:EOIAP0]2.0.CO;2).

Department of Environment, Water, Heritage, and the Arts (DEWHA) (2008). The north marine bioregional plan bioregional profile. Canberra: DEWHA. Available from: [www.parksaustralia.gov.au](http://www.parksaustralia.gov.au). Accessed 14 October 2022.

Ecological Management Services (EMS) (2023). Winchelsea Island (Akwamburrkba) Manganese Mine Project Terrestrial Ecology Technical Report. Report prepared for Winchelsea Mining Pty Ltd.

Ferns, L.W. (2016). Coral communities in extreme environmental conditions in Northern Territory, Australia. *Northern Territory Naturalist*, 27, pg. 84-96.

International Erosion Control Association (IECA) Australasia (2008). Best Practice Erosion & Sediment Control. Available at: <https://www.austieca.com.au/publications/best-practice-erosion-and-sediment-control-bpesc-document>.

Kenyon R.A., Conacher C.A., and Poiner, I.R. (1997). Seasonal growth and reproduction of *Enhalus acoroides* (L.f.) Royle in a shallow bay in the western Gulf of Carpentaria, Australia. *Australian Journal of Marine and Freshwater Research*, 48, pg. 335-345.

Lal, R. (2001). Soil degradation by erosion. *Land Degradation and Development*, 12, 519-539. <http://dx.doi.org/10.1002/ldr.472>.

Northern Territory Environment Protection Authority (NT EPA) (2017). Northern Territory Contaminated Land Guideline. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0020/434540/guideline\\_contaminated\\_land.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0020/434540/guideline_contaminated_land.pdf).

Northern Territory Environment Protection Authority (NT EPA) (2021). Preparing and environmental impact statement (EIS) – Environmental impact assessment guidance for proponents. Version 1.0 (dated 26 February 2021). NT EPA Darwin

Northern Territory Environmental Protection Authority (NT EPA) (2022). NT EPA Environmental factors and objectives - Environmental impact assessment: General technical guidance. NT Government. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0020/804602/guide-ntepa-environmental-factors-objectives.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0020/804602/guide-ntepa-environmental-factors-objectives.pdf).

Northern Territory Government (NTG) (2018). Rum Jungle mine. Department of Industry, tourism and Trade. Available at: <https://industry.nt.gov.au/industries/mining-and-energy/legacy-mine-rehabilitation/rum-jungle>.

Northern Territory Government (NTG) (2021). Land clearing guidelines: Northern Territory Planning Scheme. Available at: [https://nt.gov.au/\\_data/assets/pdf\\_file/0007/236815/land-clearing-guidelines.pdf](https://nt.gov.au/_data/assets/pdf_file/0007/236815/land-clearing-guidelines.pdf).

Seashore Engineering (2023). Winchelsea Island Manganese Mine Project - Coastal Processes Assessment, Western Australia, Perth.

SHIM Consulting. (2018). Report on the Cultural Heritage of Akwamburrkba (Winchelsea Island). Prepared for Anindilyakwa Land Council.

Territory Groundwater Services (TGS) (2023). Winchelsea Island (Akwamburrkba) Manganese Mine Project, Groundwater Assessment. Report prepared for Winchelsea Mining Pty Ltd.

R. Thackway and I. D. Cresswell (1995) (Eds). An Interim Biogeographic Regionalisation for Australia: a framework for establishing the national system of reserves, Version 4.0. Australian Nature Conservation Agency, Canberra.

Wolchover, N. (2012). How Far Can the Human Eye See?. Live Science, May 2012, viewed 12 April 2023. Available at: <http://www.livescience.com/33895-human-eye.html>.

## 15.4.2 Section 9.2 (Terrestrial Environmental Quality)

Australia and New Zealand Government (ANZG) (2018). Guidelines for Fresh and Marine Water Quality (95%). Australia Government. Available at: <https://www.waterquality.gov.au/anz-guidelines>.

Australian Government (2016). Tailings Managements: Leading Practice Sustainable Development Program for the Mining Industry. Available at: <https://www.industry.gov.au/sites/default/files/2019-04/lpsdp-tailings-management-handbook-english.pdf>.

Australian Soil Resource Information System (ASRIS) (2014). Atlas of Australian Soils. CSIRO. Australian Government. Available at: <https://www.asris.csiro.au/themes/Atlas.html>.

Bolton, R. B., Pracejus, B. and Frakes, A. L. (1988). Nature and development of supergene manganese deposits, Grootte Eylandt, Northern Territory, Australia. Science Direct, 4 (1-2), pg. 71- 98.

CDM Smith (2023). Winchelsea Manganese Mine – Terrestrial Quality Sampling 2022. Report prepared for Winchelsea Mining Pty Ltd. April 2023.

Department of Environment, Parks and Water Security (DEPWS) (2021). Land clearing guidelines. Northern Territory Planning Scheme. Northern Territory Government. Available at: [https://nt.gov.au/\\_data/assets/pdf\\_file/0007/236815/land-clearing-guidelines.pdf](https://nt.gov.au/_data/assets/pdf_file/0007/236815/land-clearing-guidelines.pdf).

Department of Environment, Parks and Water Security (2023). NR Maps Natural Resource Maps. Accessed May 2023. <https://nrmaps.nt.gov.au/>.

Department of Land Resource Management (DLRM) (2021). Soils of the Northern Territory – Factsheet. NT Government. Available at: [https://denr.nt.gov.au/\\_data/assets/pdf\\_file/0016/261061/soils-of-the-nt-factsheet.pdf](https://denr.nt.gov.au/_data/assets/pdf_file/0016/261061/soils-of-the-nt-factsheet.pdf).

Ferenczi, P. (2001). Iron ore, Manganese and Bauxite Deposits of the Northern Territory Report 13. NT Government Department of Business Industry and Resource Development, Darwin.

International Erosion Control Association (IECA) Australasia (2008). Best Practice Erosion & Sediment Control. Available at: <https://www.austieca.com.au/publications/best-practice-erosion-and-sediment-control-bpesc-document>.

Joint Ore Reserve Committee (JORC) (2012). Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code 2012 Edition. Available at: [https://www.jorc.org/docs/JORC\\_code\\_2012.pdf](https://www.jorc.org/docs/JORC_code_2012.pdf).

Lal, R. (2001). Soil degradation by erosion. Land Degradation and Development, 12, 519-539. <http://dx.doi.org/10.1002/ldr.472>.

Land & Water Consulting (LWC) (2023). Preliminary Geochemical Assessment. Winchelsea Manganese Mine, Winchelsea Island, Northern Territory. Report prepared for CDM Smith Australia on behalf of Winchelsea Mining. June 2023.

Nation Environment Protection Measure (NEPM) (2013). Guideline on Investigation Levels for Soil and Groundwater. National Environment Protection Council.

Northern Territory (NT) Government (2018). Rum Jungle mine. Department of Industry, tourism and Trade. Available at: <https://industry.nt.gov.au/industries/mining-and-energy/legacy-mine-rehabilitation/rum-jungle>.

Northern Territory Environmental Protection Authority (NT EPA) (2021). Terms of Reference for an EIS. Winchelsea Island Manganese Mine Project, Winchelsea Mining Pty Ltd, East Arnhem Local Government Area. November 2021.

R. Thackway and I. D. Cresswell (1995) (Eds). An Interim Biogeographic Regionalisation for Australia: a framework for establishing the national system of reserves, Version 4.0. Australian Nature Conservation Agency, Canberra.

Roy, S. J. (1981). *Manganese Deposits*. Academic Press, London.

Territory Groundwater Services (TGS) (2023). Winchelsea Island (Akwamburrkba) Manganese Mine Project, Groundwater Assessment. Report prepared for Winchelsea Mining Pty Ltd.

WANT Geotechnics (WANT) (2023). Report on the Investigation and Testing of a Potential Sandstone Resource Winchelsea Island, Northern Territory. Report prepared for Sitzler, February 2023.

Wantzen, K. and Mol, J. (2013). Soil Erosion from Agriculture and Mining: A Threat to Tropical Stream Ecosystems. *Agriculture* 2013, 3, 660-683; doi:10.3390/agriculture3040660. Available at: <https://www.mdpi.com/2077-0472/3/4/660/pdf-vor>.

WRM Water and Environment (WRM) (2023). Winchelsea Island (Akwamburkba) Manganese Mine Project - Erosion and Sediment Control Standard. Report prepared for Winchelsea Mining Pty Ltd.

Xenith (2020) Winchelsea Manganese Project, Technical Program Mineral Lease Application. Prepared for Winchelsea Mining Pty Ltd.

### 15.4.3 Section 9.3 (Terrestrial Ecosystems)

Animalia (2023). *Arafura fantail*. <https://animalia.bio/arafura-fantail>.

Anindilyakwa Land Council (ALC) (2022). Quarantine and Biosecurity. Available at: <https://anindilyakwa.com.au/land-and-sea/quarantine-and-biosecurity/>.

Atlas of Living Australia (ALA) (2023). Flora & Fauna Atlas search of Winchelsea Island. 5 km search at central point (UTM Zone 53 662984.3, 8479519.5). Accessed February 2023.

Australia and New Zealand Government (ANZG) (2018). Guidelines for Fresh and Marine Water Quality (95%). Australia Government. Available at: <https://www.waterquality.gov.au/anz-guidelines>.

Australian Faunal Directory (AFD) (2010). Australian Faunal Directory. Available from: <https://biodiversity.org.au/afd/home>.

Australian Government (2016). Mine Rehabilitation: Leading Practice Sustainable Development Program for the Mining Industry. Available at: <https://www.industry.gov.au/sites/default/files/2019-04/lpsdp-mine-rehabilitation-handbook-english.pdf>.

Barber-Meyer, SM (2007). Photo pollution impacts on the nocturnal behaviour of the sugar glider (*Petaurus breviceps*). *Pacific Conservation Biology*, vol. 13, pp. 171-176.

Barden, P.A. (2015). Yiningmunbalpa, Yellilya and Wurramalkwa: A Review and Inventory of the Bats of Groote Eylandt and the Anindilyakwa Indigenous Protected Area. MSc Environmental Management Research Project, Charles Sturt University.

Birdlife Australia (2022). Find a Bird. Available at: <https://www.birdlife.org.au/all-about-birds/australias-birds/find-a-bird/Breed, B. and Ford, F. 2007 Native Mice and Rats. CSIRO Publishing, Collingwood Victoria>.

Breed and Ford 2007 Brush-tail Rabbit-rat - Breed, W.G. & Ford, F. (2007) Native mice and rats. CSIRO Publishing, Collingwood, 196 pp

Brooks, M. L., D'Antonio, C. M., Richardson D. M., Grace, J., B., Keeley, J. E., Ditomaso, M., Hobbs, R. J., PELLANT, M., and PYKE, D. (2014). Effects of Invasive Alien Plants on Fire Regimes. *BioScience*, Volume 54, Issue 7, July 2004, Pages 677-688, [https://doi.org/10.1641/0006-3568\(2004\)054\[0677:EOIAP0\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2004)054[0677:EOIAP0]2.0.CO;2).

Bureau of Meteorology (BoM) (2023). *Groundwater Dependent Ecosystems Atlas*. Available at: <http://www.bom.gov.au/water/groundwater/gde/map.shtml> (Accessed on 8 August 2023).

Chaston, K and Doley, D. (2006). Mineral particulates and vegetation: Effects of coal dust, overburden and flyash on light interception and leaf temperature. *Clean Air and Environmental Quality*, vol. 40 1, pp. 40-44.

Christian et al., 2003 Northern Blue-tongue Lizard - Christian, K.A., Webb, J.K. and Schultz, T.J., 2003. Energetics of bluetongue lizards (*Tiliqua scincoides*) in a seasonal tropical environment. *Oecologia*, 136(4), pp.515-523

Christidis, L., (1995). Handbook of Australian, New Zealand and Antarctic Birds. Volume 2, Raptors to Lapwings.

Commonwealth Scientific and Industrial Research Organisation (CSIRO) (2023). Climate Change in Australia: Climate information, projections, tools and data. Available at: <https://www.climatechangeinaustralia.gov.au/en/projections-tools/>. Accessed 21 April 2023.

Cogger 2014 Northern Blue-tongue Lizard - Cogger HG. 2014. Genus *Tiliqua*. In: Reptiles & amphibians of Australia. 7th ed. Collingwood (VIC, Australia): CSIRO Publishing; p. 686-691.

Creuzer, J, Hargiss, C, Norland JE, DeSutter, T, Casey, FX, Dekeyser, E & Ell, M (2016). Does Increased Road Dust Due to Energy Development Impact Wetlands in the Bakken Region?, *Water, Air and Soil Pollution*, DOI: 10.1007/s11270-015-2739-1.

Department of Agriculture, Water and the Environment (DAWE) (2021). Consultation Document on Listing Eligibility and Conservation Actions - *Tiliqua scincoides intermedia* (Northern Blue-tongue Lizard). Available at: <https://www.dcceew.gov.au/sites/default/files/env/consultations/6f4e3fb7-844e-4e3e-8043-6c965a58cff6/files/consultation-document-t-scincoides-intermedia.pdf>.

Department of Agriculture, Water and the Environment (DAWE) (2021). Light pollution - Effects of Wildlife. <https://www.environment.gov.au/biodiversity/conservation/light-pollution>.

Department of Climate Change, Environment, Energy and Water (DCCEEW) (2022). Species Profile and Threats Database, Department of the Environment, Canberra. Available at: <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>.

Department of Climate Change, Environment, Energy and Water (DCCEEW) (2023). National Light Pollution Guidelines for Wildlife. Australian Government. Available at: <https://www.dcceew.gov.au/sites/default/files/documents/national-light-pollution-guidelines-wildlife.pdf>.

Department of Environment (DOE) (2015a). Wildlife Conservation Plan for Migratory Shorebirds. Commonwealth of Australia, Canberra.

Department of Environment (DOE) (2015c). Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species. Commonwealth of Australia, Canberra.

Department of the Environment (DOE) (2016). EPBC Act referral guideline for the endangered northern quoll *Dasyurus hallucatus*. Commonwealth of Australia, Canberra.

Department of Environment, Parks and Water Security (DEPWS) (2021a). Threatened species of the Northern Territory. Northern Territory Government (NTG). Available at: <https://nt.gov.au/environment/animals/threatened-animals>.

Department of Environment, Parks and Water Security (DEPWS) (2021b). Land clearing guidelines. Northern Territory Planning Scheme. Northern Territory Government. Available at: [https://nt.gov.au/\\_data/assets/pdf\\_file/0007/236815/land-clearing-guidelines.pdf](https://nt.gov.au/_data/assets/pdf_file/0007/236815/land-clearing-guidelines.pdf).

Department of Environment, Parks and Water Security (DEPWS) (2023a). Groundwater Dependant Ecosystems Atlas. Northern Territory Government, collated by the Bureau of Meteorology.

Department of Environment, Parks and Water Security (DEPWS) (2023b). NR Maps. Northern Territory Government.

Department of Environment, Water, Heritage and the Arts (DEWHA) (2010a). Survey Guidelines for Australia's Threatened Bats. EPBC Act Survey Guidelines. Commonwealth of Australia, Canberra.

Department of Environment, Water, Heritage and the Arts (DEWHA) (2010b). Survey Guidelines for Australia's Threatened Birds. EPBC Act Survey Guidelines. Commonwealth of Australia, Canberra.

Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) (2011). Survey guidelines for Australia's threatened mammals. Commonwealth of Australia.

Diete, R. L., Meek, P. D., Dickman, C. R., and Leung, L. K.-P. 2014. Burrowing behaviour of the northern hopping-mouse (*Notomys aquilo*): field observations. *Australian Mammalogy* 36: 242–246.

Diete, R.L. 2015. Sampling methodology for the northern hopping-mouse: recommendations for GEMCO preclearance surveys. Report prepared for South32/GEMCO.

Diete, R.L., Meek, P.D., Dickman, C.R. & Leung, L.K.-P. 2016. Ecology and conservation of the northern hopping-mouse (*Notomys aquilo*). *Australian Journal of Zoology*, 64: 21-32.

Ecological Management Services (EMS) (2019). Winchelsea (Akwamburrkba) Island Terrestrial Ecology Survey, EL27521. Final Report. Report prepared for Winchelsea Mining.

Ecological Management Services (EMS) (2023a). Winchelsea Island (Akwamburrkba) Manganese Mine Project Terrestrial Ecology Technical Report. Report prepared for Winchelsea Mining Pty Ltd.

Ecological Management Services (EMS) (2023b). Winchelsea (Akwamburrkba) Island Migratory Shorebirds, Coastal Marine and Wetland Birds 2018-2022 Final Report. Report prepared for Winchelsea Mining Pty Ltd.

Ecological Management Services (EMS) (2023c). Winchelsea (Akwamburrkba) Island Marine Turtle Nesting 2018-2022 Final Report. Report prepared for Winchelsea Mining Pty Ltd.

Farmer, A. M. (1993). The effects of dust on vegetation - A review. *Environmental Pollution*. 79: 63-75. Available at: <https://www.resolutionmineeis.us/sites/default/files/references/farmer-dust-effects-1993.pdf>.

Firth, R.S., Woinarski, J.C. and Noske, R.A. (2006). Home range and den characteristics of the brush-tailed rabbit-rat (*Conilurus penicillatus*) in the monsoonal tropics of the Northern Territory, Australia. *Wildlife Research* 33(5): 397-407.

Gillespie, G. R., Brennan, K., Gentles, T., Hill, B., Low Choy, J., Mahney, T., Stevens, A., and Stokeld, D. (2015). A guide for the use of remote cameras for wildlife survey in northern Australia. National Environmental Research Program, Northern Australia Hub. Charles Darwin University, Casuarina, NT.

Heiniger, J., Cameron, S.F., Madsen, T., Niehaus, A.C., Wilson, R.S. (2020). Demography and spatial requirements of the endangered northern quoll on Groote Eylandt. *Wildlife Research*, 47(3): 224-38.

Higgins, P.J., Peter, J.M. & Cowling, S.J. (2006). Handbook of Australian, New Zealand and Antarctic Birds. In: *Part A. Boatbill to Larks*. Volume 7. Melbourne, Victoria: Oxford University Press.

Hourigan, C. (2011). Targeted species survey guidelines: Northern leaf-nosed bat *Hipposideros stenotis*. Queensland Herbarium, Department of Environment and Science, Brisbane.

International Maritime Organization (IMO) (2011). Guidelines for the Control and Management of Ships Biofouling to Minimise the Transfer of Invasive Aquatic Species. Adopted under Resolution MEPC.207(62) on 15 July 2011. Available at: [https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/RESOLUTION%20MEPC.207\[62\].pdf](https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/RESOLUTION%20MEPC.207[62].pdf).

International Union for Conservation of Nature and Natural Resources (IUCN) (2023). The IUCN Red List of Threatened Species. International Union for Conservation of Nature and Natural Resources. Available at: <https://www.iucnredlist.org/>. Accessed 18 April 2023.

Longcore, T and Rich, C (2004). Ecological light pollution. *Frontiers in Ecology and Environment*, vol. 2, pp. 191-198.

Liddle, D.T., Boggs, D., Hutley, L., Yin Foo, D., Boggs, G., Pearson, D., Cook, P.G., Elliott, L.P., Jungle, B. and Creek, B., (2008). Biophysical modelling of water quality in a Darwin rural area groundwater dependent ecosystem. Northern Territory Government, Darwin.

Matsuki, M, Gardener, MR, Smith, A, Howard, RK & Gove, A (2016). Impacts of dust on plant health, survivorship and plant communities in semi-arid environments. *Austral Ecology*, vol. 41, pp. 417-427.

Mckay, J., Griffiths, A.D. and Crase, B., (2009). Distribution and Habitat Use by 'Hemidactylus frenatus' Dumeril and Bibron (Gekkonidae) in the Northern Territory. *Beagle: Records of the Museums and Art Galleries of the Northern Territory*, 25, pp.107-112.

Mahney, T., McKay, L., Liddle, D., Fisher, A., Westaway, J., Fegan, M. and Dally, G. (2009). Bickerton, Winchelsea and south east Groote Eylandt Wildlife Survey, September 2009. Biodiversity Conservation Division, Department of Natural Resources Environment the Arts and Sport.

North Australia & Rangelands Fire Information (NAFI) (2023). Available at: <https://firenorth.org.au/nafi3/>. Accessed 17 July 2023.

Northern Territory Environmental Protection Authority (NT EPA) (2021). Terms of Reference for an EIS. Winchelsea Island Manganese Mine Project, Winchelsea Mining Pty Ltd, East Arnhem Local Government Area. November 2021.

Noske, R.A. and Johnstone, R.E. (2018). Nest, eggs and breeding season of the Arafura Fantail (*Rhipidura dryas*). *Northern Territory Naturalist* 28: 12-22.

Oakwood, M. (2008). Northern quoll *Dasyurus hallucatus*. In: Van Dyck, S. & R. Strahan, eds. *The Mammals of Australia* (3rd ed). Page(s) 57-59. Reed New Holland, Sydney, NSW.

Parris, K., and McCauley, R., (2016). Noise pollution and the environment. Australian Academy of Science <https://www.science.org.au/curious/earth-environment/noise-pollution-and-environment>.

Perry, G., Buchanan, B. & Fisher, R., Salmon, M. & Wise, S. (2008). Effects of artificial night lighting on amphibians and reptiles in urban environments.

Price-Rees et al., 2013 Northern Blue-tongue Lizard - Price-Rees, S.J., Brown, G.P. & Shine, R. Habitat selection by bluetongue lizards (Tiliqua, Scincidae) in tropical Australia: a study using GPS telemetry. *Anim Biotelemetry* 1, 7 (2013).

Radle, AL (2007). Effect of Noise on Wildlife: A Literature Review. *Geography*.

Rich, C and Longcore, (eds.) T (2006). *Ecological consequences of artificial night lighting*, Island Press, Washington.

Schodde, R. and Mason, I.J. (1999). *The Directory of Australian Birds: Passerines*. Melbourne, Victoria: CSIRO.

Shea 1998 Northern Blue-tongue Lizard - Shea, G (1998). Australian bluetongues. *Nature Australia* 26, 31-39.

Shine 2017 Northern Blue-tongue Lizard - Shine, R (2017). Public nomination of *Tiliqua scincoides intermedia* for Endangered listing under the EPBC Act.

Specialised Zoological and Madani, G. (2023). A comprehensive field survey for bats on Winchelsea Island, Northern Territory. Report prepared Ecological Management Services Pty Ltd, project reference SZ624.

Taylor, S. (2016). Anindilyakwa Indigenous Protected Area Plan of Management 2016. Anindilyakwa Land Council, 2016.

Territory Groundwater Services (TGS) (2023). Winchelsea Island (Akwamburrkba) Manganese Prospect Groundwater Assessment. Report prepared for Winchelsea Mining Company.



Threatened Species Scientific Committee (TSSC) (2005). The biological effects, including lethal toxic ingestion, caused by Cane Toads (*Bufo marinus*). Available at: <https://www.dcceew.gov.au/environment/biodiversity/threatened/key-threatening-processes/biological-effects-cane-toads>.

Threatened Species Scientific Committee (TSSC) (2016a). Conservation Advice *Conilurus penicillatus* brush-tailed rabbit-rat. Commonwealth of Australia, Canberra.

Threatened Species Scientific Committee (TSSC) (2016b). Conservation Advice *Macroderma gigas* ghost bat. Commonwealth of Australia, Canberra.

Threatened Species Scientific Committee (TSSC) (2016c). Conservation Advice *Saccolaimus saccolaimus nudicluniatus* bare-rumped sheath-tail bat. Commonwealth of Australia, Canberra.

Threatened Species Scientific Committee (TSSC) (2021a). Conservation Advice *Notomys aquilo* Northern Hopping-mouse. Commonwealth of Australia, Canberra.

Threatened Species Scientific Committee (TSSC) (2021b). Conservation Advice *Trichosurus vulpecula arnhemensis* Northern Brushtail Possum. Canberra: Department of Agriculture, Water and the Environment. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/83091-conservation-advice-11052021.pdf>.

Ujvari, B., Oakwood, M. and Madsen, T. (2013). Queensland northern quolls are not immune to cane toad toxin. *Wildlife Research*, 40(3):228-231.

van Dyck, S., Gynther, I., and Baker, A. (eds) (2013). *Field Companion to the Mammals of Australia*. New Holland Publishers.

Ward, S., Woinarski, J., Griffiths, T. and McKay, L. (2012). Threatened Species of the Northern Territory. Mertens' Water Monitor *Varanus mertensi*. NT Government Threatened Species Information Sheet.

Watson, D. M. (2003). The 'standardized search': an improved way to conduct bird surveys. *Austral Ecology* 28: 515-525.

Watson, D. M. (2004). Comparative evaluation of new approaches to survey birds. *Wildlife Research* 31: 1-11.

Watson, D. M. (2010). Optimizing inventories of diverse sites: insights from Barro Colorado Island birds. *Methods in Ecology and Evolution* 1: 280-291.

Woinarski, J.C.Z., Oakwood, M., Winter, J., Burnett, S., Milne, D., Foster, P., Myles, H., and Holmes, B. (2008). Surviving the toads: patterns of persistence of the northern quoll *Dasyurus hallucatus* in Queensland. Report prepared for the Natural Heritage Trust Strategic Reserve Program.

Woinarski, J., Russell-Smith, J., Andersen, A. & Brennan, K., (2009). Fire management and biodiversity of the western Arnhem Land Plateau. In: *Culture, Ecology and Economy of Fire Management in North Australian Savannas: Rekindling the Wurrk Tradition* (Eds J Russell-Smith, PJ Whitehead, PM Cooke). Collingwood: CSIRO Publishing.

Young, S. and Hill, B. (2012). Threatened species of the Northern Territory: Pale Field-rat *Rattus tunneyi*. DENR, Darwin. [https://nt.gov.au/\\_data/assets/pdf\\_file/0020/205517/pale-field-rat.pdf](https://nt.gov.au/_data/assets/pdf_file/0020/205517/pale-field-rat.pdf).

#### 15.4.4 Section. 9.4 (Hydrological Processes)

Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), 2000 Zinc in Freshwater. Available at: <https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/toxicants/zinc-2000>. Accessed 8 March 2023.

Australian & New Zealand Guidelines For Fresh & Marine Water Quality (2018). Default Guideline Values. Available at: <https://www.waterquality.gov.au/anz-guidelines/guideline-values/default>. Accessed 10 February 2023.

Boughton, (2004) 'The Australian water balance model, Environmental Modelling and Software', vol. 19, pp. 943-956.

Bureau of Meteorology (BOM) (2023a). Southern hemisphere Tropical Data portal. Available at: <http://www.bom.gov.au/cyclone/tropical-cyclone-knowledge-centre/history/tracks/>. Access on 1 August 2023.

Bureau of Meteorology (BOM) (2023b). *Groundwater Dependent Ecosystems Atlas*. Available at: <http://www.bom.gov.au/water/groundwater/gde/>.

CDM Smith (2020). Referral Document for Winchelsea Island Manganese Mine Project. Available at: <https://ntepa.nt.gov.au/your-business/public-registers/environmental-impact-assessments-register/assessments-in-progress-register/winchelsea-island-manganese-mine-project>. Accessed 26 May 2023.

CDM Smith (2023) Winchelsea Island (Akwamburkba) Manganese Mine: Numerical Groundwater Modelling Report. Prepared for Winchelsea Mining.

Commonwealth Scientific and Industrial Research Organisation (CSIRO) (2023). Climate Change in Australia: Climate information, projections, tools and data. Available at: <https://www.climatechangeinaustralia.gov.au/en/projections-tools/>. Accessed 21 April 2023.

CSIRO (2016) *Proposed methods report for Darwin Catchments*. A report from the CSIRO Northern Australia water Resource Assessment to the Government of Australia, CSIRO.

Department of Environment and Natural Resources (DENR) (2020). Northern Territory Offsets Principles. Northern Territory Government, DENR – Flora and Fauna Division.

Department of Environment, Parks and Water Security (DEPWS) (2021). Land clearing guidelines. Northern Territory Government. TRM number LRM2021/0077-0002.

Falkland, A. (1991) *Hydrology and Water Resources of Small Islands: A Practical Guide*. UNESCO.

Geoscience Australia (2023). *Seawater Intrusion*. Available at: <https://www.ga.gov.au/scientific-topics/water/groundwater/understanding-groundwater-resources/seawater-intrusion>. Accessed 1 June 2023.

Hutley, L.B., O'Grady, A.P., Eamus, D. (2000) *Evapotranspiration from Eucalypt Open-Forest Savanna of Northern Australia*. Functional Ecology. Vol.14, No.2.

Koppen, W. (1936) *The geographic system of climates*. *Hanbuch der Klimatologie*, Vol.1. Berlin: Borntraeger.

Liddle, D.T., Boggs, D., Hutley, L., Yin Foo, D., Boggs, G., Pearson, D., Cook, P.G., and Elliott, L.P. (2008) *Biophysical modelling of water quality in a Darwin rural area groundwater dependent ecosystem*. Report of the NT NRMB, NHT Project 2005/133. NRETAS.

NESP Earth Systems and Climate Change Hub (2020), *Climate change in the Northern Territory: state of the science and climate change impacts*. NESP ESCC Hub, Melbourne.

Northern Territory Government (1998). *Northern Territory Government gazette : no. G9*. Updated 25 March 1998 *Government Gazette G211*. Updated 27 May 1998 *Government Gazette G20*. Available at: <https://hdl.handle.net/10070/684392>. Accessed 22 May 2023.

Northern Territory Government (NTG) (2022). *Northern Territory Declared Water Control Districts*. Updated October 2022. Available at: [https://www.ntlis.nt.gov.au/mpds/get\\_file?file\\_id=4072](https://www.ntlis.nt.gov.au/mpds/get_file?file_id=4072). Accessed 22 May 2023

Northern Territory Government (NTG) (2023). *NT Water Allocation Planning Areas. Updated April 2023*. Available at: [https://www.ntlis.nt.gov.au/mpds/get\\_file?file\\_id=6262](https://www.ntlis.nt.gov.au/mpds/get_file?file_id=6262). Accessed 22 May 2023.

Northern Territory Government (NTG) (2023). *Beneficial Water Use*. Available at <https://nt.gov.au/environment/water/management-security/water-allocation/beneficial-water-use>. Accessed 22 May 2023

Prowse, G., Zaar, U., Tickell, S., Matthews, I., (1999) Water resources of East Arnhem Land. Publication of the Northern Territory Department of Lands, Planning and Environment. NRD.

Queensland Department of Environment and Science (2022). *SIL0 - Australian climate data from 1889 to yesterday*. Available at: <https://www.longpaddock.qld.gov.au/silo/>.

Russell-Smith, J. (1991) *Classification, species richness, and environmental relations of Monsoon Rainforest in Northern Australia*. Journal of Vegetation Science 2, 259-278.

Smith, M., Harper, B., Mason, L., Schwartz, R. and Acworth, C (2013). *Gulf of Carpentaria Storm Tide and Inundation Study*. Available at: <http://www.systemsengineeringaustralia.com.au/download/Smith%20et%20al-%20GulfOfCarpentariaStormTide.pdf>. Accessed 26 May 2023.

Territory Groundwater Services Pty Ltd (TGS) (2022) Winchelsea Island (Akwamburkba), Manganese Prospect, Groundwater Assessment. 18 November 2022. Report prepared by Maria Woodgate (TGS Consulting Hydrogeologist) for GHAC/ AAAC/Winchelsea Mining Pty Ltd.

Territory Groundwater Services, Pty Ltd (TGS) (2023) *Winchelsea Island (Akwamburkba) Manganese Mine Project, Groundwater Assessment*. Prepared for Winchelsea Mining 12 April 2023. Note this is an Appendix.

United States Geological Survey (USGS) (2019). Saltwater Intrusion. Updated 2 March 2019. Available at: <https://www.usgs.gov/mission-areas/water-resources/science/saltwater-intrusion>. Accessed 1 June 2023.

WRM (2023). Winchelsea Island (Akwamburkba) Manganese Mine Project Surface Water Assessment. Prepared for Winchelsea Mining Pty Ltd. 23 June 2023. Note this is an Appendix.

Xenith (2020) Winchelsea Manganese Project, Technical Program Mineral Lease Application. Prepared for Winchelsea Mining Pty Ltd.

### 15.4.5 Section 9.5 (Inland Water Environmental Quality)

Abarca, E.,C,J., Sánchez-Vila, X. and Voss, C.I. (2007). Quasi-horizontal circulation cells in 3D seawater intrusion. Journal of Hydrology, 339(3-4), pp.118-129.

ADG Engineers (ADG) (2018). Winchelsea Island Northern Territory Flood Constraints Analysis. Report prepared for Winchelsea Mining. November 2018.

ANZECC & ARMCANZ (2000a). Australian and New Zealand Guidelines for Fresh and Marine Water Quality. National Water Quality Management Strategy. October 2000.

ANZECC & ARMCANZ (2000b). Zinc in Freshwater. Available at: <https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/toxicants/zinc-2000>. Accessed 8 March 2023.

Australian Government (2016). Tailings Managements: Leading Practice Sustainable Development Program for the Mining Industry. Available at: <https://www.industry.gov.au/sites/default/files/2019-04/lpsdp-tailings-management-handbook-english.pdf>.

Australia and New Zealand Government (ANZG) (2018). Guidelines for Fresh and Marine Water Quality (95%). Australia Government. Available at: <https://www.waterquality.gov.au/anz-guidelines>.

CDM Smith (2023). Winchelsea Manganese Mine – Terrestrial Quality Sampling 2022. Report prepared for Winchelsea Mining Pty Ltd. April 2023.

Commonwealth Scientific and Industrial Research Organisation (CSIRO) (2023). Climate Change in Australia: Climate information, projections, tools and data. Canberra, Australia. Viewed 21 April 2023. <https://www.climatechangeinaustralia.gov.au/en/projections-tools/>.

Department of Environment, Parks and Water Security (DEPWS) (2021a). Beneficial use declarations. Northern Territory Government. Available at: <https://nt.gov.au/environment/water/management-security/water-allocation/beneficial-water-use>.

Department of Environment, Parks and Water Security (DEPWS) (2021b). Land clearing guidelines. Northern Territory Planning Scheme. Northern Territory Government. Available at: [https://nt.gov.au/\\_data/assets/pdf\\_file/0007/236815/land-clearing-guidelines.pdf](https://nt.gov.au/_data/assets/pdf_file/0007/236815/land-clearing-guidelines.pdf).

Gingerich, S.B., Voss, C.I. and Johnson, A.G., (2017). Seawater-flooding events and impact on freshwater lenses of low-lying islands: Controlling factors, basic management and mitigation. *Journal of Hydrology*, 551, pp.676-688.

International Erosion Control Association (IECA) Australasia (2008). Best Practice Erosion & Sediment Control. Available at: <https://www.austieca.com.au/publications/best-practice-erosion-and-sediment-control-bpesc-document>.

Jeffrey, S.J., Carter, J.O., Moodie, K.M and Beswick, A.R (2001). Using spatial interpolation to construct a comprehensive archive of Australian climate data', *Environmental Modelling and Software*. Vol 16/4, pp 309-330, 2001.

National Environmental Science Program (2020). Earth Systems and Climate Change Hub - Climate change in the Northern Territory. State of the Science and Climate Change Impacts. September 2020.

Northern Territory Environment Protection Authority (NT EPA) (2013). Guidelines on Conceptual Site Models. NT Government. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0007/904327/draft\\_guidelines\\_conceptual\\_site\\_models.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0007/904327/draft_guidelines_conceptual_site_models.pdf).

Northern Territory Environmental Protection Authority (NT EPA) (2021). Terms of Reference for an EIS. Winchelsea Island Manganese Mine Project, Winchelsea Mining Pty Ltd, East Arnhem Local Government Area. November 2021.

Territory Groundwater Services (TGS) (2023). Winchelsea Island (Akwamburrkba) Manganese Mine Project, Groundwater Assessment. Report prepared for Winchelsea Mining. April 2023.

Werner, A.D., Bakker, M., Post, V.E., Vandenbohede, A., Lu, C., Ataie-Ashtiani, B., Simmons, C.T. and Barry, D.A. (2013). Seawater intrusion processes, investigation and management: recent advances and future challenges. *Advances in water resources*, 51, pp.3-26.

WRM (2023). Winchelsea Island (Akwamburrkba) Manganese Mine Project Surface Water Assessment. Prepared for Winchelsea Mining Pty Ltd. 23 June 2023.

#### 15.4.6 Section 9.6 (Aquatic Ecosystems)

Australia and New Zealand Environment and Conservation Council (ANZECC) (2000). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. National Water Quality Management Strategy. October 2000.

Australia and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (ANZECC and ARMCANZ) (2000). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality – Volume 2*.

Australia and New Zealand Guidelines (ANZG) (2018). *Default Guideline Values*. Available at: <https://www.waterquality.gov.au/anz-guidelines/guideline-values/default>. Accessed 10 February 2023.

Australian Government (2016). *Tailings Management: Leading Practice Sustainable Development Program for the Mining Industry*. Available at: <https://www.industry.gov.au/publications/leading-practice-handbooks-sustainable-mining/tailings-management>. Accessed 12 July 2023.

Bureau of Meteorology (BoM) (2023). *Groundwater Dependent Ecosystems Atlas*. Available at: <http://www.bom.gov.au/water/groundwater/gde/map.shtml>. Accessed on 8 August 2023.

Bilton, D.T., Freeland, J.R., and Okamura, B. (2001). *Dispersal in freshwater invertebrates*. Annual review of ecology and systematics, 32(1), pp.159-181.

Cameron, A. G. and Lemcke, B. (2008). *Para Grass*. Available at: [https://industry.nt.gov.au/\\_data/assets/pdf\\_file/0006/233259/285.pdf](https://industry.nt.gov.au/_data/assets/pdf_file/0006/233259/285.pdf). Accessed on 13 July 2023.

Commonwealth Scientific and Industry Research Organisation (CSIRO) (2016). *Proposed methods report for Darwin Catchments*. A report from the CSIRO Northern Australia water Resource Assessment to the Government of Australia, CSIRO.

Department of Agriculture and Fisheries (DAF) (2020). *Invasive Plant: Para Grass Urochloa mutica*. Available at: [https://www.daf.qld.gov.au/\\_data/assets/pdf\\_file/0015/55302/para-grass.pdf](https://www.daf.qld.gov.au/_data/assets/pdf_file/0015/55302/para-grass.pdf). Accessed 13 July 2023.

Department of Agriculture and Fisheries (DAF) (2022). *Restrictive Invasive Plant: Hymenachne or olive hymenachne – Hymenachne amplexicaulis and hybrids*. Available at: [https://www.daf.qld.gov.au/\\_data/assets/pdf\\_file/0007/77092/hymenachne.pdf](https://www.daf.qld.gov.au/_data/assets/pdf_file/0007/77092/hymenachne.pdf). Accessed on 13 July 2023.

Department of Environment, Parks and Water Security (DEPWS) (2021). *Land Clearing Guidelines – Northern Territory Planning Scheme*. Available at: <https://nt.gov.au/property/land-clearing/freehold-land/apply-to-clear-freehold-land>. Accessed 12 July 2023.

Department of Environment and Natural Resources (DENR) (2020). *Northern Territory Offsets Principles*. Northern Territory Government, DENR – Flora and Fauna Division.

Department of Environment and Natural Resources (DENR) (2017). *Para Grass Urochloa mutica (formerly Bracharia mutica)*. Available at: [https://denr.nt.gov.au/\\_data/assets/pdf\\_file/0005/407435/Para-grass-weed-note-2017.pdf](https://denr.nt.gov.au/_data/assets/pdf_file/0005/407435/Para-grass-weed-note-2017.pdf). Accessed on 13 July 2023.

Ecological Management Services (EMS) (2023). *Winchelsea Mining Project Terrestrial Ecology Technical Report 2023*. Prepared for Winchelsea Mining Pty Ltd, May 2023.

Hutley, L.B., O'Grady, A.P., and Eamus, D. (2000). *Evapotranspiration from Eucalypt Open-Forest Savanna of Northern Australia*. Functional Ecology, 14(2).

Land and Water Consulting (LWC) (2023). *Preliminary Geochemical Assessment – Winchelsea Manganese Mine, Winchelsea Island, Northern Territory*. Prepared for CDM Smith, June 2023.

Liddle, D.T., Boggs, D., Hutley, L., Yin Foo, D., Boggs, G., Pearson, D., Cook, P.G., and Elliott, L.P. (2008). *Biophysical modelling of water quality in a Darwin rural area groundwater dependent ecosystem*. Report of the NT NRMB, NHT Project 2005/133. NRETAS.

National Environment Protection Measure (NEPM) (2013). *Guideline on Investigation Levels for Soil and Groundwater*. National Environment Protection Council.

Northern Territory Government (NTG) (2022). *Olive hymenachne*. Available at: <https://nt.gov.au/environment/weeds/weeds-in-the-nt/A-Z-list-of-weeds-in-the-NT/olive-hymenachne>. Accessed 13 July 2023.

Russell-Smith, J. (1991). Classification, species richness, and environmental relations of Monsoon Rainforest in Northern Australia. *Journal of Vegetation Science* 2, 259-278.

Territory Groundwater Services (TGS) (2023). *Winchelsea Island (Akwamburrkba) Manganese Mine Project, Groundwater Assessment*. Prepared for Winchelsea Mining Pty Ltd, April 2023.

### 15.4.7 Section 9.7 (Coastal Processes)

Ausenco (2023). Winchelsea Manganese FS – Feasibility Study Report: April 2023. Prepared for Xenith Consulting.

Bureau of Meteorology (BoM) (2022). Climate Summary Statistics: Groote Eylandt Airport, Site number 014518, Australian Government, [http://www.bom.gov.au/climate/averages/tables/cw\\_014518.shtml](http://www.bom.gov.au/climate/averages/tables/cw_014518.shtml).

Callaghan J (2011a). Known Tropical Cyclone Impacts in the Gulf of Carpentaria. Bureau of Meteorology, Queensland Regional Office, Brisbane, Australia.

CDM Smith, (2023). Winchelsea Island (Akwamburkba) Sediment Transport Modelling Report. Prepared for Winchelsea Mining Pty Ltd.

Cheng, NA, (1997). Simplified Settling Velocity Formula for Sediment Particles. *Journal of Hydraulic Engineering*, 123, pp 149-152.

Church JA & Forbes AMG (1983a). Circulation in the Gulf of Carpentaria. Direct observations of currents in the south-east corner of the Gulf of Carpentaria. *Australian Journal of Marine and Freshwater Research*, 34(1) 1 – 10.

Church JA & Forbes AMG (1983b). Circulation in the Gulf of Carpentaria. II. Residual currents and mean sea level. *Australian Journal of Marine and Freshwater Research*, 34(1), 11 – 22.

Drosowsky, W (1996). Variability of the Australian Summer Monsoon at Darwin: 1957-1992. *Journal of Climate*, 9(1), 85-96.

Australian Government Department of the Environment, Water, Heritage and the Arts (DEWHA) (2007). Characterisation of the marine environment of the north marine region: outcomes of an expert workshop convened in Darwin., Northern Territory, 2-3 April 2007, DEWHA, Canberra. Available at: <http://www.environment.gov.au/resource/characterisation-marine-environment-north-marine-region-outcomes-expert-workshop-2-3-april>.

EcOz Environmental Consultants (2019). *Barge landing benthic impact assessment*. (Prepared for ADG Engineering Pty Ltd).

Gardline Marine Sciences Pty Ltd (2011). Groote Eylandt Marine Survey (Exploration Licence Area 27523). Report 8661/Geo(00).

Geoscience Australia (2009a). *Australian Bathymetry and Topography Grid, June 2009* [Digital Datasets]. Record 2009/21, Australian Government, Geoscience Australia, Accessed November 2019.

Geoscience Australia (2009b). *The Australian Coastal Smartline Geomorphic and Stability Map Version 1* [Digital Dataset]. Australian Government, Geoscience Australia, Accessed November 2019.

Geoscience Australia (2011). *1 second SRTM Digital Elevation Model (DEM)* [Digital Datasets]. Accessed November 2019.

Geoscience Australia (2012). *Surface Geology of Australia* [Digital Dataset]. Australian Government,

Geoscience Australia (2019). In collaboration with state and territory geological survey agencies of Australia. Accessed November 2019.

Geoscience Australia (2013). *National Coastal Geomorphology - Surface Geology Reclassified 1:250,000* [Digital Dataset]. Geoscience Australia, Record 2013/35. Accessed November 2019.

Haigh ID, Eliot M & Pattiaratchi C (2011). Global influences of the 18.61 year nodal cycle and 8.85 year cycle of lunar perigee on high tidal levels. *Journal of Geophysical Research*, 116, C06025, doi:10.1029/2010JC006645.

Info-Pacific Environmental (2019). Benthic Survey of Potential Barge Landing Site at Winchelsea Island. Indo-Pacific Environmental Pty Ltd, Prepared for Winchelsea Mining Pty Ltd.

Kullgren, K., and Kim, K.-Y (2006). Physical mechanisms of the Australian summer monsoon: 1. Seasonal cycle, *Journal of Geophysical Research*, 111.

Maher, J., Cribb, H, and Beatty, A (2011). Monitoring for Marine Pests – Gove Harbour, Groote Eylandt and Melville Island. 2009-10 Report.

O2 Marine (2023). Winchelsea Island Manganese Mine Project – Subtidal Benthic Communities and Habitat. Prepared for CDM Smith Australia Pty Ltd.

Oliver E & Thompson K (2011). Sea level and circulation variability of the Gulf of Carpentaria: Influence of the Madden-Julian Oscillation and the adjacent deep ocean. *Journal of Geophysical Research*, 116 (C02019).

Seashore Engineering (2023). *Winchelsea Island Manganese Mine Project Coastal Processes Assessment*. Prepared for CDM Smith.

Sun C, Branson PM, Mills D (2020). Guideline on Dredge Plume Modelling for Environmental Impact Assessment. Prepared for the Dredging Science Node, Western Australian Marine Science Institution (WAMSI), Perth, Western Australia. Pp.73.

Tran, D and K Strom (2019). Floc Sizes and Resuspension Rates from Fresh Deposits: Influences of Suspended Sediment Concentration, Turbulence, and Deposition Time. *Estuarine, Coastal and Shelf Science*, 229:106397.

United States Army Corps of Engineers (USACE) (1978). Prediction and Control of Dredged Material Dispersion Around Dredging and Open-Water Pipeline Disposal Operations. Technical Report DS-78-13, U. S. Army Engineer Waterways Experiment Station, Environmental Laboratory, Vicksburg, Mississippi.

United States Army Corps of Engineers (USACE) (2015). Dredging and Dredged Material Management. Engineer Manual. EM 1110-2-5025.

van Rijn LC (1989). Handbook Sediment Transport by Currents and Waves. Report H461. Delft Hydraulics.

WANT Geotechnics (2023). Preliminary Geotechnical Investigation Report For the Proposed Winchelsea Mine, Little Paradise and Bartalumba Bay Marine Sites Groote Eylandt, Northern Territory. Prepared for Sitzler Project NTG20223096A Rev 0.

WANT Geotechnics (2019). *Geotechnical Investigation Report For the Second Visit Winchelsea Island Resource Planning Study*. Prepared for GHD Pty Ltd.

Winterwerp, JC (2002). On the Flocculation and Settling Velocity of Estuarine Mud. *Continental Shelf Research*, 22, pp 1339-1360.

Wolanski E (1993). Water circulation in the Gulf of Carpentaria. *Journal of Marine Systems*, 4(5), 401 – 420.

### **15.4.8 Section 9.8 (Marine Environment Quality)**

Australian Institute of Marine Science (AIMS) (2013). Milner Bay Project: Marine Environmental Survey. Report prepared for GEMCO – BHP Billiton, March 2013.

Australia and New Zealand Environment and Conservation Council (ANZECC) (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality. National Water Quality Management Strategy, October 2000.

Australia and New Zealand Guidelines (ANZG) (2018). Default Guideline Values. Available at: <https://www.waterquality.gov.au/anz-guidelines/guideline-values/default>. Accessed 10 February 2023.

Benthic Australia (2022). Benthic Australia Report. Prepared for CDM Smith, July 2022.

Cardno (2022). Sediment Transport Report – New Marine Facilities to Service Mandorah and Cox Peninsula. Prepared for the Department of Infrastructure, Planning, and Logistics, February 2022.

CDM Smith (2023a). Winchelsea Manganese Mine – Baseline Marine Quality Sampling 2022. Prepared for Winchelsea Mining Pty Ltd, March 2023.

CDM Smith (2023b). Winchelsea Island (Akwamburkba) Sediment Transport modelling Report. Prepared for Winchelsea Mining Pty Ltd, June 2023.

Commonwealth Scientific and Industrial Research Organisation (CSIRO) (2023). Climate Change in Australia: Climate information, projections, tools and data. Available at: <https://www.climatechangeinaustralia.gov.au/en/projections-tools/>. Accessed 21 April 2023.

Department of Environment and Natural Resources (DENR) (2020). Northern Territory Offsets Principles. Northern Territory Government, DENR – Flora and Fauna Division.

Environmental Protection Authority (EPA) (2016). Technical Guidance – Environmental Impact Assessment of Marine Dredging Proposals. EPA, Western Australia.

Ferns, L.W (2016). Coral communities in extreme environmental conditions in Northern Territory, Australia. Northern Territory Naturalist, 27, pg. 84-96.

Fisher, R., Jones, R., and Bessell-Browne, P (2019). Effects of dredging related activities on water quality: Impacts on coral mortality and threshold development. WAMSI Dredging Science Node.

Garai, P., Banerjee, P., Mondal, P., and Saha, N (2021). Effect of Heavy Metals on Fishes: Toxicity and Bioaccumulation. Journal of Clinical Toxicology, 11 (S18).

Groote Eylandt Mining Company (GEMCO) (2023). Bartalumba Bay reference site monitoring data. Provided to Winchelsea Mining, March 2023.

INPEX (2022). Appendix A: A Draft Maintenance Dredging and Spoil Disposal Management Plan (2023-2027). Prepared for the Ichthys LNG Project, August 2022.

Kenyon R.A., Conacher C.A., and Poiner, I.R (1997). Seasonal growth and reproduction of *Enhalus acoroides* (L.f.) Royle in a shallow bay in the western Gulf of Carpentaria, Australia. Australian Journal of Marine and Freshwater Research, 48, pg. 335-345.

Land and Water Consulting (LWC) (2023). Preliminary Geochemical Assessment Winchelsea Manganese Mine, Winchelsea Island, Northern Territory. Prepared for CDM Smith Australia, June 2023.

Lavery, P., McMahon, K., Statton, J., Vanderklift, M., Strydom, A., and Kendrick, A (2019). Defining thresholds and indicators or primary producer response to dredging-related pressures. Synthesis report. WAMSI Dredging Science Node, Theme 5 Report, March 2019.

Maher, J., Cribb, H., and Beatty, A (2011). Monitoring for Marine Pests – Gove Harbour, Groote Eylandt and Melville Island: 2009-2010 Report. Department of Resources, Darwin, NT.

Marine Traffic (2023). Global Ship Tracking – Density Maps. Available at: <https://www.marinetraffic.com/en/ais/home/centerx:136.4/centery:-13.7/zoom:11>. Accessed 11 May 2023.

McKenzie, L.J (2003). Guidelines for the Rapid Assessment and Mapping of Tropical Seagrass Habitats. Department of Primary Industries, Queensland.

Northern Territory Government (NTG) (2020). Northern Territory Climate Change Response: Towards 2050. Available at: <https://climatechange.nt.gov.au/nt-climate-change-response/northern-territory-climate-change-response-towards-2050>. Accessed 9 June 2023.



O2 Marine (2023). Winchelsea Island Manganese Mine Project, Sediment Sampling and Analysis Plan Implementation Report, Report No: R220246

Ontario Ministry of the Environment (OMOE) (2011). Evaluating Construction Activities Impacting on Water Resources Part III B. Standards Development Branch Ontario Ministry of the Environment, February 1991, revised February 1994, updated January 2011.

Queensland Department of Environment and Science (QDES) (2018). Guidance on using Photosynthetically Active Radiation (PAR) as a method to measure light availability for aquatic photosynthetic organisms facing acute impacts. Environmental Protection (Water) Policy 2009 – Monitoring and Sampling Manual, version February 2018.

Seashore Engineering (2023). Winchelsea Island Marine Project Coastal Processes Assessment. Prepared for CDM Smith and Winchelsea Mining Pty Ltd, May 2023.

Sun, C., Branson, P.M., Mills, D. (2020). Guideline on Dredge Plume Modelling for Environmental Impact Assessment. Prepared WAMSI Dredging Science Node, Perth, Western Australia. pp.73.

Tsang, J.J., Udyawer, V., and Butler, E.C.V. (2019). Groote Eylandt Sediment Grain Size and Trace Elements. Report prepared for Anindilyakwa Land Council. Australian Institute of Marine Science.

URS (2011a). Marine Noise Assessment. Prepared for the Northern Territory Department of Lands and Planning, February 2011.

URS (2011b). Ichthys Gas Field Development Project – Summary of the Long-Term Water-Quality Program for Darwin Harbour. Prepared for INPEX Browse Ltd, March 2011.

WANT Geotechnics (2023). Preliminary Geotechnical Investigation Report for the Proposed Winchelsea Mine, Little Paradise and Bartalumba Bay Marine Sites Groote Eylandt, Northern Territory. Prepared for Sitzler, February 2023.

### 15.4.9 Section 9.9 (Marine Ecosystems)

Althaus, F., Hill, N., Edwards, L., and Ferrari, R. (2013). CATAMI Classification Scheme for scoring marine biota and substrata in underwater imagery – A pictorial guide to the Collaborative and Annotation Tools for Analysis of Marine Imagery and Video (CATAMI) classification scheme. Version 1. Available at: [https://catami.org/wp-content/uploads/sites/2/2023/03/CATAMI\\_Classification\\_Scheme\\_v1.4\\_Technical\\_document.pdf](https://catami.org/wp-content/uploads/sites/2/2023/03/CATAMI_Classification_Scheme_v1.4_Technical_document.pdf). Accessed 29 June 2022.

Atlas of Living Australia (ALA) (2022). *Flora and Fauna Atlas search of Winchelsea Island*. 10 km search at central point (UTM 662782.65 m E, 8479585.74 m S). Available at: <https://www.ala.org.au/>. Accessed 14 October 2022.

Atlas of Living Australia (ALA) (2023). *Thalasseus bengalensis – Lesser Crested Tern*. Available at: <https://bie.ala.org.au/species/https://biodiversity.org.au/afd/taxa/ba921bc4-0962-4607-bda5-5a85a9c4c0cc>. Accessed 20 June 2023.

Australian Bird Study Association (ABSA) (2020). *Australian Gull-billed Tern Gelocheidon macrotarsa*. In *Bird in the Hand (Second Edition)*, compiled with permission from BirdLife Australia. Available at: <https://absa.asn.au/bird-in-the-hand-2nd-edition/>. Accessed 13 October 2022.

Australian Institute of Marine Science (AIMS) (2013). *Milner Bay Project: Marine Environmental Survey*. Report prepared for GEMCO – BHP Billiton, March 2013.

Barden, P. (2022). *Winchelsea (Akwamburrkba) Island Marine Turtle Nesting 2018-2022 – Final Report*. Report prepared for Winchelsea Mining Pty Ltd. Ecological Management Services (EMS), Coolum Beach QLD.

Benthic Australia (2022). Laboratory taxonomy, statistical analysis, results and dot-point discussion for marine macro-invertebrate community composition. Report prepared for CDM Smith. Benthic Australia Pty Ltd, Gladstone, QLD.

BirdLife Australia. (2022). *Birds in Backyards: Bird Finder*. Available at: <https://www.birdsinbackyards.net/finder>. Accessed 14 October 2022.

BirdLife International (2018). *Gelochelidon macrotarsa*. The IUCN Red List of Threatened Species 2018: e.T62026537A132671766. Available at: <https://www.iucnredlist.org/species/62026537/132671766>. Accessed 8 March 2023).

BirdLife International (2023). *Data Zone: Species search*. IUCN Red List of Threatened Species. Available at: <http://datazone.birdlife.org/species/search>. Accessed 8 March 2023.

Bray, D.J. (2020). *Fishes of Australia: Manta Ray, Mobula alfredi (Krefft 1868)*. Museums Victoria and OzFishNet. Available at: <https://fishesofaustralia.net.au/home/species/2738#moreinfo>. Accessed 29 June 2022.

Bureau of Meteorology (BOM) (2022). *Climate Summary Statistics: Groote Eylandt Airport, Site number 014518*. Australian Government. Available at: [http://www.bom.gov.au/climate/averages/tables/cw\\_014518.shtml](http://www.bom.gov.au/climate/averages/tables/cw_014518.shtml). Accessed 29 June 2022.

Cagnazzi D. (2010). Conservation Status of Australian snubfin dolphin, *Orcaella heinsohni*, and Indo-Pacific humpback dolphin, *Sousa chinensis*, in the Capricorn Coast, Central Queensland, Australia. PhD Thesis, Southern Cross University.

CDM Smith (2023). *Winchelsea Island (Akwamburkba) Sediment Transport modelling Report*. Prepared for Winchelsea Mining Pty Ltd, June 2023.

Chatto, R., and Baker, B. (2008). *The distribution and status of marine turtle nesting in the Northern Territory*. Technical Report 77. Parks and Wildlife Service, Department of Natural Resources, Environment, the Arts and Sport. Darwin, NT.

Commonwealth Scientific and Industrial Research Organisation (CSIRO) (2023). *Climate Change in Australia: Climate information, projections, tools and data*. Available at: <https://www.climatechangeinaustralia.gov.au/en/projections-tools/>. Accessed 21 April 2023.

Compagno L.J.V. (1984). *Part 1 – Hexanchiformes to Lamniformes*. FAO Species Catalogue, Vol. 4., Sharks of the World. An Annotated and Illustrated Catalogue of Sharks Known to Date. FAO Fisheries Synopsis. 4(1):1-249.

Corkeron, P, Morissette, N.M., Porter, L., and Marsh, H. (1997). *Distribution and status and of humpbacked dolphins, Sousa chinensis, in Australian waters*. Asian Marine Biology 14: 49-59.

Department of Climate Change, Environment, Energy and Water (DCCEEW) (2023). *Species Profile and Threats Database, Department of the Environment, Canberra*. Available from: <https://www.environment.gov.au/sprat>. Accessed 14 June 2023.

Department of Environment, Parks and Water Security (DEPWS) (2021). *Threatened Species of the Northern Territory*. Available at: <https://nt.gov.au/environment/animals/threatened-animals>. Accessed 14 June 2023.

Department of Environment, Parks and Water Security (DEPWS) (2022). *NR Maps Natural Resource Maps Northern Territory Fauna Atlas*. Available at: <https://nrmaps.nt.gov.au/nrmaps.html>. Accessed 14 October 2022.

Department of Environment, Water, Heritage, and the Arts (DEWHA) (2008). *The north marine bioregional plan bioregional profile*. Canberra: DEWHA. Available from: <https://parksaustralia.gov.au/>. Accessed 14 October 2022.

Department of Environment and Natural Resources (DENR) (2020). *Northern Territory Offsets Principles*. Northern Territory Government, DENR – Flora and Fauna Division.

Department of Primary Industries (DPI) (2023). *Scalloped Hammerhead Shark*. Available at: <https://www.dpi.nsw.gov.au/fishing/threatened-species/what-current/endangered-species2/scalloped-hammerhead-shark>. Accessed 19 July 2023.

Dolphin Research Australia (2022). *Dolphin and Whale Species Fact Files*. Available at: <https://www.dolphinresearchaustralia.org/learn-about-dolphin-whales/dolphin-whale-species-fact-files/>. Accessed 16 June 2023.

eBird. (2023). *Lesser Frigatebird Fregata ariel*. The Cornell Lab of Ornithology. Available at: [https://ebird.org/species/lesfri?siteLanguage=en\\_AU](https://ebird.org/species/lesfri?siteLanguage=en_AU). Accessed 14 October 2022.

Ecological Management Services (EMS) (2023). *Winchelsea (Akwamburrkba) Island Migratory Shorebirds, Coastal Marine and Wetland Birds 2018-2022*. Prepared for Winchelsea Mining Pty Ltd, February 2023.

Ferns, L.W. (2016). *Coral communities in extreme environmental conditions in Northern Territory, Australia*. Northern Territory Naturalist, 27, pg. 84-96.

Government of South Australia (2022). *Greater Crested Tern Thalasseus bergi*. Available at: [https://www.victor.sa.gov.au/\\_data/assets/pdf\\_file/0032/443993/greater-crested-tern-bio-region-fact.pdf](https://www.victor.sa.gov.au/_data/assets/pdf_file/0032/443993/greater-crested-tern-bio-region-fact.pdf). Accessed 13 October 2022.

Griffiths, A.D., Groom, R.A. and Dunshea, G. (2020). *Dugong distribution and abundance in the Gulf of Carpentaria, NT: October 2019*. Department of Environment, Parks and Water Security, NT Government.

Harrison, L.R. and Dulvy, N.K. (2014). *Sawfish: A global strategy for conservation*. IUCN species commission's shark specialist group, Vancouver, Canada.

Higgins, P.J., and Davies, S.J.J.F. eds. (1996). *Handbook of Australian, New Zealand and Antarctic Birds. Volume Three - Snipe to Pigeons*. Melbourne, Victoria: Oxford University Press.

Jefferson, T.A., and Rosenbaum, H.C. (2014). *Taxonomic revision of the humpback dolphins (Sousa spp.), and description of a new species from Australia*. Marine Mammal Science 30, 1494-1541. Available at: <https://programs.wcs.org/data/doi/ctl/view/mid/33065/pubid/PUB15165.aspx>. Accessed 14 June 2023.

Kenyon R.A., Conacher C.A., and Poiner, I.R. (1997). *Seasonal growth and reproduction of Enhalus acoroides (L.f.) Royle in a shallow bay in the western Gulf of Carpentaria, Australia*. Australian Journal of Marine and Freshwater Research, 48, pg. 335-345.

Last, P.R., and Stevens, J.D. (2009). *Sharks and Rays of Australia (Second Edition)*. CSIRO Publishing, Melbourne.

Limpus, C.J. (2009). *A Biological Review of Australian Marine Turtles*. Brisbane, Queensland. Queensland Government Environmental Protection Agency. pp 324.

Marchant, S., and Higgins, P.J. eds. (1993). *Handbook of Australian, New Zealand and Antarctic Birds. Volume 2 - Raptors to Lapwings*. Melbourne, Victoria: Oxford University Press.

Marine Traffic (2023). *Global Ship Tracking - Density Maps*. Available at: <https://www.marinetraffic.com/en/ais/home/centerx:136.4/centery:-13.7/zoom:11>. Accessed 11 May 2023.

McKenzie, L.J. (2003). *Guidelines for the Rapid Assessment and Mapping of Tropical Seagrass Habitats*. Department of Primary Industries, Queensland.

Northern Territory Government (NTG) (2020). *Northern Territory Climate Change Response: Towards 2050*. Available at: <https://climatechange.nt.gov.au/nt-climate-change-response/northern-territory-climate-change-response-towards-2050>. Accessed 9 June 2023.

O2 Marine (O2M) (2022). *Conservation Significant Marine Fauna Desktop Assessment: Winchelsea Island Manganese Mine Project EIS*. Report prepared for CDM Smith. O2 Marine and WA Marine, Fremantle, WA.

O2 Marine (O2M) (2023a). *Winchelsea Island Manganese Mine Project: Subtidal Benthic Communities and Habitat*. Report prepared for CDM Smith. O2 Marine and WA Marine, Fremantle, WA.

O2 Marine (O2M) (2023b). *Winchelsea Project: Loss Assessment – Benthic Communities and Habitat*. Report prepared for CDM Smith. O2 Marine and WA Marine, Fremantle, WA.

Palmer, C., Parra, G.J., Rogers, T. and Woinarski, J. (2014). Collation and review of sightings and distribution of three coastal dolphin species in waters of the NT, Australia. *Pacific Conservation Biology*, 20(1): 116-125.

Parra, G.J., Corkeron, P.J. and Marsh, H. (2004). The Indo-Pacific humpback dolphins, *Sousa chinensis* (Osbeck, 1765), in Australian waters: A summary of current knowledge. *Aquatic Mammals* 30(1): 197-206.

Parra, G.J., Schick, R. and Corkeron, P.J. (2006). Spatial distribution and environmental correlates of Australian snubfin and Indo-Pacific humpback dolphins. *Ecography*, 29:396–406.

Pierce, S.J. and Norman, B.M. (2016). *Rhincodon typus*. The IUCN Red List of Threatened Species, 8235(1), e.T19488A2365291. Available at: <http://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T19488A2365291.en>. Accessed on 13 October 2022.

Seashore Engineering (2023). *Winchelsea Island Marine Project Coastal Processes Assessment*. Prepared for CDM Smith and Winchelsea Mining Pty Ltd. May 2023.

Stevens, J.D., Simpfendorfer, C.A., Pillans, R.D., McAuley, R.B. (2008). *Spatial Distribution and habitat utilisation of sawfish (Pristis spp) in relation to fishing in northern Australia*. Report prepared for Department of the Environment, Water, Heritage and the Arts.

Threatened Species Scientific Committee (TSSC) (2015). *Conservation Advice Numenius madagascariensis Eastern Curlew*. Available at: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/847-conservation-advice.pdf>. Accessed 19 July 2023.

Watson, D.M. (2003). The 'standardized search': an improved way to conduct bird surveys. *Austral Ecology*. 28: 515-525.

Watson, D.M. (2004). Comparative evaluation of new approaches to survey birds. *Wildlife Research*. 31: 1-11.

Wilson, S.G., Polovina, J.J., Stewart, B.S., and Meekan, M.G. (2006). *Movements of Whale Sharks (Rhincodon typus) tagged at Ningaloo Reef, Western Australia*. *Marine Biology*. 148:1157-1166.

## 15.4.10 Section 9.10 (Air Quality)

Bureau of Meteorology (BoM) (2022) Climate Summary Statistics: Groote Eylandt Airport, Site number 014518, Australian Government, [http://www.bom.gov.au/climate/averages/tables/cw\\_014518.shtml](http://www.bom.gov.au/climate/averages/tables/cw_014518.shtml)

Callaghan J. (2011a). Known Tropical Cyclone Impacts in the Gulf of Carpentaria. Bureau of Meteorology, Queensland Regional Office, Brisbane, Australia.

Commonwealth Scientific Industrial Research Organisation (CSIRO) (2023), Northern Territory's Changing Climate, Available: <https://www.climatechangeinaustralia.gov.au/en/changing-climate/state-climate-statements/northern-territory/>.

Australian Government Department of the Environment, Water, Heritage and the Arts (DEWHA). (2007). Characterisation of the marine environment of the north marine region: outcomes of an expert workshop convened in Darwin., Northern Territory, 2-3 April 2007, DEWHA, Canberra. <https://parksaustralia.gov.au/marine/management/resources/scientific-publications/characterisation-marine-environment-north-marine-region-outcomes-expert-workshop-2-3-april/>.

Drosowsky, W. (1996). Variability of the Australian Summer Monsoon at Darwin: 1957-1992. *Journal of Climate*, 9(1), 85-96.

Hunter A, David G, Amir A, Nasir A, von Hippel W, von Hippel F, Angilletta M, and Wilson R, (2018). Bioaccumulation of manganese and its health effects in Anindilyakwa of Groote Eylandt, Australia. University of Queensland Manganese Research.

Katestone (2015). Air Quality Assessment Report for the Eastern Leases Project, Katestone Environmental Pty Ltd, May 2015.

Katestone Environmental Pty Ltd (2023a). Winchelsea Island Manganese Project: Air Quality and Greenhouse Gas Assessment.

Katestone (2023b). Assessment of the Winchelsea Updated Mining Schedule.

Matsuki, M, Gardener, M, Smith, A, Howard, R, Gove, A. (2016). Impacts of dust on plant health, survivorship and plant communities in semi-arid environments. *Austral Ecology*. 41. n/a-n/a. 10.1111/aec.12328.

National Pollution Inventory (NPI) (2022). Substance Fact Sheets - Manganese & Compounds. Accessed 2 February 2023.

Rodrigues JL, Batista BL, Nunes JA, Passos CJS, Barbosa F. Evaluation of the use of human hair for biomonitoring the deficiency of essential and exposure to toxic elements. *Science of The Total Environment* 2008;405:370-6. <https://doi.org/10.1016/j.scitotenv.2008.06.002>.

SHIM Consulting. (2018). Report on the Cultural Heritage of Akwamburrkba (Winchelsea Island). Prepared for Anindilyakwa Land Council.

Torres-Agustín R, Rodríguez-Agudelo Y, Schilmann A, Solís-Vivanco R, Montes S, Riojas-Rodríguez H, et al. Effect of environmental manganese exposure on verbal learning and memory in Mexican children. *Environmental Research* 2013;121:39-44. <https://doi.org/10.1016/j.envres.2012.10.007>.

#### 15.4.11 Section 9.11 (Atmospheric Processes)

Department of Climate Change, Energy, the Environment, Water (DCCEEW) (2023), State and territory greenhouse gas inventories: annual emissions, Canberra, Australia.

Katestone Environmental Pty Ltd (2023). Winchelsea Island Manganese Project: Air Quality and Greenhouse Gas Assessment.

Ndevr Environmental (2023). Groote Eylandt Emission Inventory and Strategy Trajectory, July 2023.

#### 15.4.12 Section 9.12 (Community and Economy)

Anindilyakwa Land Council (ALC) (2019). Annual Report 2018-19. Available at: [https://anindilyakwa.com.au/app/uploads/2021/02/ALC\\_AnnualReport\\_2018-2019\\_LR.pdf](https://anindilyakwa.com.au/app/uploads/2021/02/ALC_AnnualReport_2018-2019_LR.pdf).

Anindilyakwa Land Council (ALC) (2021) Annual Report 2020-21, Retrieved April 4, 2023. Available at: <https://www.transparency.gov.au/publications/prime-minister-and-cabinet/anindilyakwa-land-council/anindilyakwa-land-council-annual-report-2020-21>.

Anindilyakwa Land Council (ALC) (2023a). Land Access Permits. Retrieved April 4, 2023. Available at: <https://anindilyakwa.com.au/land-and-sea/permits/>.

Anindilyakwa Land Council (ALC) (2023b). Indigenous Protected Area. Retrieved April 4, 2023. Available at: <https://anindilyakwa.com.au/land-and-sea/indigenous-protected-area/>.

Anindilyakwa Land Council (ALC) (2023c). Recreation Permit. Retrieved April 7, 2023. Available at: <https://anindilyakwa.com.au/land-and-sea/recreation/>.

Australian Bureau of Statistics (2018). Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016. Available at: <https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/2033.0.55.001~2016-Main%20Features-IRSAD~20#:~:text=The%20Index%20of%20Relative%20Socio,relative%20advantage%20and%20disadvantage%20measures>.

Australian Bureau of Statistics (ABS) (2021a). 2021 Census QuickStats East Arnhem. Available at: <https://abs.gov.au/census/find-census-data/quickstats/2021/LGA71300>.

Australian Bureau of Statistics (ABS) (2021b). Region summary: Anindilyakwa. Available at: <https://dbr.abs.gov.au/region.html?lyr=sa2&rgn=702041062>.

Australian Bureau of Statistics (ABS) (2021c). Anindilyakwa (Groote) - Census of Population and Housing 2021.

Australian Bureau of Statistics (ABS) (2022). Counts of Australian Businesses, including Entries and Exits. Available at: <https://www.abs.gov.au/statistics/economy/business-indicators/counts-australian-businesses-including-entries-and-exits/latest-release>.

Australian Institute of Health and Welfare (2022). Social determinants of health, Retrieved January 18, 2023. Available at: <https://www.aihw.gov.au/reports/australias-health/social-determinants-of-health>.

Brassard F, Pettit MJ, Murphy BP, Andersen AN (2023). Fire influences ant diversity by modifying vegetation structure in an Australian tropical savanna. Ecology. 2023 Jul 20:e4143. doi: 10.1002/ecy.4143. Epub ahead of print. PMID: 37471112.

Katestone (2022). Winchelsea Island Manganese Project: Air Quality and Greenhouse Gas Assessment. Prepared for CDM Smith on behalf of Winchelsea Mining Pty Ltd.

Miwatj Health Aboriginal Corporation (2023). Angurugu. Available at: <https://www.miwatj.com.au/project/angurugu/>.

Northern Territory Environment Protection Authority (NT EPA) (2013). Guidelines for the Preparation of an Economic and Social Impact Assessment. Version 2.0 (dated November 2013), NT EPA, Darwin. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0006/287430/guideline\\_assessment\\_economic\\_social\\_impact.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0006/287430/guideline_assessment_economic_social_impact.pdf).

Northern Territory Environmental Protection Authority (NT EPA) (2014). Recommendations on the Environmental Assessment and Regulation of Mine Sites. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0008/284741/recommendations\\_environment\\_assess\\_mine\\_sites.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0008/284741/recommendations_environment_assess_mine_sites.pdf)

Northern Territory Environment Protection Authority (NT EPA) (2018). Opportunities and timeframes for community engagement in the environmental impact assessment process: Information for proponents and the public. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0008/284741/recommendations\\_environment\\_assess\\_mine\\_sites.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0008/284741/recommendations_environment_assess_mine_sites.pdf)

Northern Territory Environment Protection Authority (NT EPA) (2021a). Stakeholder Engagement and Consultation – Environmental Impact Assessment Guidance for Proponents. Version 2.0 (dated 6 January 2021), NT EPA, Darwin. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0005/884696/guidance-proponents-stakeholder-engagement-and-consultation.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0005/884696/guidance-proponents-stakeholder-engagement-and-consultation.pdf).

Northern Territory Environment Protection Authority (NT EPA) (2021b). Preparing an Environmental Impact Statement: Environmental impact assessment guidance for proponents. NT Government. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0009/818217/preparing-an-environmental-impact-statements.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0009/818217/preparing-an-environmental-impact-statements.pdf).

Northern Territory Environment Protection Authority (NT EPA) (2021c). NT EPA Environmental factors and objectives - Environmental impact assessment: General technical guidance. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0020/804602/guide-ntepa-environmental-factors-objectives.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0020/804602/guide-ntepa-environmental-factors-objectives.pdf).

Northern Territory Government (NTG) (2022). Groote Archipelago Local Decision Making Agreement – Schedule 3.5 – Health and Wellbeing Implementation Plan. Available at: [https://ldm.nt.gov.au/\\_data/assets/pdf\\_file/0008/1168973/groote-archipelago-health-and-wellbeing-implementation-plan.pdf](https://ldm.nt.gov.au/_data/assets/pdf_file/0008/1168973/groote-archipelago-health-and-wellbeing-implementation-plan.pdf).

Taylor J, Gray E, Houle B, Lafferty J, McDougal J and Morphy F (2022). Anindilyakwa Population Trends, Data Governance, and Local Decision Making in the Groote Archipelago: A Report to the Anindilyakwa Land Council, Australian National University, Canberra.

Wolchover, N. (2012). How Far Can the Human Eye See?. Live Science, May 2012, viewed 12 April 2023. Available at: <http://www.livescience.com/33895-human-eye.html>.

### 15.4.13 Section 9.13 (Culture and Heritage)

Anindilyakwa Land Council (ALC) (2023a). Land Access Permits. Retrieved April 4, 2023. Available at: <https://anindilyakwa.com.au/land-and-sea/permits/>.

Anindilyakwa Land Council (ALC) (2023b). Indigenous Protected Area. Retrieved April 4, 2023. Available at: <https://anindilyakwa.com.au/land-and-sea/indigenous-protected-area/>.

Anindilyakwa Land Council (ALC) (2023c). Preserving Culture. Retrieved May 2, 2023. Available at: <https://anindilyakwa.com.au/preserving-culture/>.

Bland H and Pyne L (2023) ALC Cultural Survey Report Winchelsea Island. A report by the Anindilyakwa Land Council.

Brassard F, Pettit MJ, Murphy BP, Andersen AN (2023). Fire influences ant diversity by modifying vegetation structure in an Australian tropical savanna. Ecology. 2023 Jul 20:e4143. doi: 10.1002/ecy.4143. Epub ahead of print. PMID: 37471112.

Brown, A (2009). Matthew Flinders in the Gulf of Carpentaria. Australian Heritage(3), 33-62.

Burke H and Smith C (2004). The Archaeologists Field Handbook, Unwin & Allen, Sydney.

Bourke P, Brockwell S, Clarke A, Crassweller C, Faulkner P, Guse D and Sim R (2009). Radiocarbon dates from the top end: a cultural chronology for the Northern Territory coastal plains. Australian Aboriginal Studies, 2009.

Byrne D (1983). The five forests: an archaeological and anthropological investigation. National Parks and Wildlife Service of New South Wales, Sydney.

Clegg J (1983). From the study of Aboriginal art to the archaeology of prehistoric pictures. Australian Archaeology, no.16, 87-91.

Cole N. and Buhrich A (2012). Endangered Rock Art: Forty years of cultural heritage management in the Quinkan region, Cape York Peninsula. Australian Archaeology 75, December, 2012.

Cosmos Archaeology (2017). Underwater Cultural Heritage and Seabed Mining in the Northern Territory, with applicability to other marine industries – Strategy for Management. Prepared for Heritage Branch, Department of Tourism and Culture, Northern Territory, Darwin, Retrieved May 3, 2023. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0011/932267/appendix-6-seabed-mining-nt-underwater-cultural-heritage-cosmos-july-2017.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0011/932267/appendix-6-seabed-mining-nt-underwater-cultural-heritage-cosmos-july-2017.pdf).

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2023). Australasian Underwater Cultural Heritage Database.

Fagan B (2001). People of the Earth: An Introduction to World Prehistory Prentice Hall.

Flinders M (1814). A voyage to Terra Australis: undertaken for the purpose of completing the discovery of that vast country, and prosecuted in the years 1801, 1802, 1803 in His Majesty's Ship the Investigator. London: Libraries Board of South Australia.

Foley, R (1981). Off-site archaeology: an alternative approach for the short-sited, in: Hodder, I., Isaac, G. & N. Hammond (eds.), Patterns of the Past: Studies in Honour of David Clarke, Cambridge, pp. 157-183.

Godwin L (1992). Inside information: Settlement and alliance in the late Holocene of northeastern New South Wales. University of New England, Armidale.

Groote Holdings Aboriginal Corporation (GHAC) (2022). Groote Eylandt Little Paradise Development Master Plan. July 2022.

Hamm G, Mitchell P, Arnold L, Prideaux J, Questiaux G, Spooner D, Stephenson N (2016). Cultural innovation and megafauna interaction in the early settlement of arid Australia. *Nature*, 539(7628), 280.

Katestone (2022). Winchelsea Island Manganese Project: Air Quality and Greenhouse Gas Assessment. Prepared for CDM Smith on behalf of Winchelsea Mining Pty Ltd.

Lau D, Ramanaidou E, Furman S, Cole I, Hughes T and Hoobin, P (2007). Field Studies of Rock Art Appearance. Final Report: Fumigation and Dust Deposition. Progress Report: Colour Change & Spectral Mineralogy.

Macknight C (1976). *The Voyage to Marege. Macassan Trepangers in Northern Australia*. Melbourne University Press: Melbourne.

Martins S, Soong B, Wong V, Giunti P, Stevanin G, Ranum L, Coutinho P (2012). Mutational origin of Machado-Joseph disease in the Australian Aboriginal communities of Groote Eylandt and Yirrkala. *Archives of neurology*, 69(6), 746-751.

Minc L (1986). Scarcity and Survival: The role of Oral Tradition in Mediating Subsistence Crises. *Journal Of Anthropological Archaeology*, 5, 39-113.

Northern Territory Environment Protection Authority (NT EPA) (2013). Guidelines for the Preparation of an Economic and Social Impact Assessment. Version 2.0 (dated November 2013), NT EPA, Darwin. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0006/287430/guideline\\_assessment\\_economic\\_social\\_impact.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0006/287430/guideline_assessment_economic_social_impact.pdf).

Northern Territory Environment Protection Authority (NT EPA) (2021a). Stakeholder Engagement and Consultation – Environmental Impact Assessment Guidance for Proponents. Version 2.0 (dated 6 January 2021), NT EPA, Darwin. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0005/884696/guidance-proponents-stakeholder-engagement-and-consultation.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0005/884696/guidance-proponents-stakeholder-engagement-and-consultation.pdf).

Northern Territory Environment Protection Authority (NT EPA) (2021b). Preparing an Environmental Impact Statement: Environmental impact assessment guidance for proponents. NT Government. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0009/818217/preparing-an-environmental-impact-statements.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0009/818217/preparing-an-environmental-impact-statements.pdf).

Northern Territory Environment Protection Authority (NT EPA) (2022). Draft Environmental factor guidance: Culture and Heritage. Version 0.1 (dated 17 May 2022), NT EPA, Darwin. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0005/884696/guidance-proponents-stakeholder-engagement-and-consultation.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0005/884696/guidance-proponents-stakeholder-engagement-and-consultation.pdf).

Seashore Engineering (2023). *Winchelsea Island Marine Project Coastal Processes Assessment*. Prepared for CDM Smith and Winchelsea Mining Pty Ltd, May 2023.

SHIM (2018). Report on the Cultural Heritage of Akwamburrkba (Winchelsea Island). Report prepared for Anindilyakwa Land Council. February 2018.

SHIM (2023). Akwamburrkba (Winchelsea Island) Cultural Heritage Management Plan. Report Prepared for Winchelsea Mining Pty Ltd. July 2023.

Spillett P (1989). Aboriginal - Makassar Relationships: Groote Eylandt. Paper presented at the State Archives Seminar 4 July 1989.

Theden-Ringl F, Fenner J, Wesley N, and Lamilami R (2011). Buried on foreign shores: isotope analysis of the origin of human remains recovered from a Macassan site in Arnhem Land. *Australian Archaeology*, 73(1), 41-48.

Tindale N (1925). Natives of Groote Eylandt and of the west coast of the Gulf of Carpentaria. *Records of the South Australian Museum*, 3(1), 60-135.



Wesley D (2014). Bayini, Macassans, Balanda, and Bininj: Defining the Indigenous past of Arnhem Land Through Culture Contact. (PhD), Australian National University.

#### 15.4.14 Section 9.14 (Human Health)

Anindilyakwa Land Council (ALC) (2023h). Quarantine and Biosecurity. Available at: <https://anindilyakwa.com.au/land-and-sea/quarantine-and-biosecurity/>.

Aschner M, Guilarte TR, Schneider JS, Zheng W (2007). Manganese: Recent advances in understanding its transport and neurotoxicity. *Toxicology and Applied Pharmacology*;221:131–47. <https://doi.org/10.1016/j.taap.2007.03.001>.

Australian Institute of Health and Welfare (AIHW) (2022). Australia's Mothers and Babies: Web Report, AIHW, Canberra.

Carr J, Lalara J, Lalara Ga, Lalara Gw, Daniels B, Clough A, Lowell A and Barker R (2020). Staying Strong Toolbox: Co-design of a physical activity and lifestyle program for Aboriginal families with Machado-Joseph disease in the Top End of Australia. *PLoS ONE* 16(2): e024431.

Centre for Disease Control (CDC) (2021a). *Ross River Virus*. Centre for Disease Control, Department of Health (NT), last accessed 09 April 2022. Available at: <https://nt.gov.au/wellbeing/health-conditions-treatments/viral/ross-river-virus>.

Centre for Disease Control (CDC) (2021b). *Barmah Forest virus*. Centre for Disease Control, Department of Health (NT), last accessed 09 April 2022. Available at: [https://nt.gov.au/wellbeing/health-conditions-treatments/viral/barmah-forest-virus#:~:text=Barmah%20Forest%20virus%20\(BFV\)%20disease.Symptoms%20usually%20settle%20by%20themselves](https://nt.gov.au/wellbeing/health-conditions-treatments/viral/barmah-forest-virus#:~:text=Barmah%20Forest%20virus%20(BFV)%20disease.Symptoms%20usually%20settle%20by%20themselves).

Centre for Disease Control (CDC) (2023). Murray Valley Encephalitis (MVE). Centre for Disease Control, Department of Health (NT). Available at: <https://nt.gov.au/wellbeing/health-conditions-treatments/viral/murray-valley-encephalitis>.

Chen P, Chakraborty S, Peres TV, Bowman AB and Aschner M (2015). Manganese-induced neurotoxicity: from *C. elegans* to humans. *Toxicology Research*;4:191–202. <https://doi.org/10.1039/C4TX00127C>.

Dorman D and Foster M (2014). Olfactory Transport of Manganese: Implications for Neurotoxicity. *Manganese in Health and Disease*, Royal Society of Chemistry.

Garai P., Banerjee P., Mondal P and Saha N.C (2021). Effect of Heavy Metals on Fishes: Toxicity and Bioaccumulation. *J Clin Toxicol*. S18:001. Available at: <https://www.longdom.org/open-access/effect-of-heavy-metals-on-fishes-toxicity-and-bioaccumulation.pdf>.

Hunter A, David G, Amir A, Nasir A, von Hippel W, von Hippel F, Angilletta M, and Wilson R, (2022). Bioaccumulation of manganese and its health effects in Anindilyakwa of Groote Eylandt, Australia. University of Queensland Manganese Research.

Katestone Environmental Pty Ltd (2015). Air Quality Assessment Report for the Eastern Leases Project.

Katestone Environmental Pty Ltd (2023a). Winchelsea Island Manganese Project: Air Quality and Greenhouse Gas Assessment. Prepared for CDM Smith on behalf of Winchelsea Mining Pty Ltd.

Katestone (2023b). Assessment of the Winchelsea Updated Mining Schedule. Prepared for CDM Smith on behalf of Winchelsea Mining Pty Ltd.

Martins, S., Soong, B-W., Wong, V., Giunti, P., Stevanin, G., Ranum, L., Sasaki, H., Riess, O., Tsuji, S., Coutinho, P., Amorim, A., Sequeiros, J., and Nicholson, G.A. (2012). Mutational origin of Machado-Joseph disease in the Australian Aboriginal communities of Groote Eylandt and Yirrkala, *Archives of Neurology*, 69(6): 746–751.

Machado Joseph Disease Foundation (MJDF) (2012). MJD Foundation Input into the Anindilyakwa Land Council's Strategic Plan for Disability Care, MJDF, Angurugu.

Northern Territory Department of Health and Families (DHF) (2005), Guidelines for Preventing Mosquito Breeding Sites Associated with Mining Sites. Available at: <https://hdl.handle.net/10137/1029>.

Northern Territory Health (2022), Winchelsea Island and Groote Eylandt Biting Insect Assessment. Medical Entomology - Centre for Disease Control, Darwin.

Northern Territory Environmental Protection Authority (NT EPA) (2021a). Stakeholder Engagement and Consultation - Environmental Impact Assessment Guidance for Proponents.

Northern Territory Environmental Protection Authority (NT EPA) (2021b). Preparing an Environmental Impact Statement: Environmental impact assessment guidance for proponents.

Northern Territory Health (NT Health), Aboriginal Cultural Security Framework 2016 to 2026, Available at: <https://digitallibrary.health.nt.gov.au/prodjspui/bitstream/10137/730/8/Northern%20Territory%20Health%20Aboriginal%20Cultural%20Security%20Framework%202016-2026.pdf>.

National Pollution Inventory (2022). Substance Fact Sheets - Manganese & Compounds.

Pettit, W. and Copley, N. (2017). Groote Eylandt exotic mosquito survey report. NT Department of Health, Darwin.

Russell, R., and Kay, B. (2004). Medical entomology: changes in the spectrum of mosquito-borne disease in Australia and other vector threats and risks, 1972-2004. Australian Journal of Entomology. Vol. 43. No. 3, pp. 271-282.

Taylor J, Gray E, Houle B, Lafferty J, McDougal J and Morphy F (2022). Anindilyakwa Population Trends, Data Governance, and Local Decision Making in the Groote Archipelago: A Report to the Anindilyakwa Land Council, Australian National University, Canberra.

Trott LA (2012). Milner Bay Project: Marine Environmental Survey. Report produced for GEMCO - BHP Billiton. Australian Institute of Marine Science, Townsville. 204 pp.

United States Environmental Protection Agency (US EPA) (2023). Health and Environmental Effects of Particulate Matter. Available: <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm>.

Whelan, P. I. (1995). Malaria and the receptive area of the Northern Territory, Medical Entomology Branch, Department of Health and Community Services.

Whelan, P., Marianos, A., Hayes, G., and Kraus, V. (1997a). Ross river virus transmission in Darwin, Northern Territory, Australia. In "Arbovirus Research in Australia". Vol. 7. Proceedings of the Seventh Arbovirus Research in Australia Symposium, and Second Mosquito Control Association of Australia Conference, 1996. Pp. 337-345.

Whelan, P.I. (1997b). Problem mosquito species in the Top End of the NT - Pest and vector status, habitat and breeding sites, Medical Entomology Branch, Department of Health and Community Services. Trachoma. Northern Territory Government.

## 15.5 Section 10 to 14

AH Hunter, GK David, AF Amir Abdul Nasir, W von Hippel, FA von Hippel, M Angilletta, and RS Wilson (2022) Bioaccumulation of manganese and its health effects in the Anindilyakwa of Groote Eylandt, Australia.

Baker, A. (1990). Whales and Dolphins of Australia and New Zealand: An Identification Guide. Page(s) 133 pp. Wellington, New Zealand: Victoria University Press

Bannister, J.L., C.M. Kemper & R.M. Warneke (1996). The Action Plan for Australian Cetaceans. Canberra: Australian Nature Conservation Agency. Available from: <http://www.environment.gov.au/resource/action-plan-australian-cetaceans>.

Bejder L, Samuels A, Whitehead H, Gales N and others (2006) Decline in relative abundance of bottlenose dolphins exposed to long-term disturbance. *Conserv Biol* 20:1791–1798

Braulik G, Natoli A, Kiszka J, Parra G, Plön S and Smith BD (2019) *Tursiops aduncus*. The IUCN Red List of Threatened Species 2019: e.T41714A50381127. <http://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T41714A50381127.en>.

Brown, A., Kent, C., Smith, J and Marley, S. (2017). Relative abundance, population genetic structure and passive acoustic monitoring of Australian snubfin and humpback dolphins in regions within the Kimberley, WAMSI Kimberley Marine Research Program Final Report Project 1.2.4. Available at: [https://www.researchgate.net/publication/319236723\\_Relative\\_abundance\\_population\\_genetic\\_structure\\_and\\_passive\\_acoustic\\_monitoring\\_of\\_Australian\\_snubfin\\_and\\_humpback\\_dolphins\\_in\\_regions\\_within\\_the\\_Kimberley](https://www.researchgate.net/publication/319236723_Relative_abundance_population_genetic_structure_and_passive_acoustic_monitoring_of_Australian_snubfin_and_humpback_dolphins_in_regions_within_the_Kimberley).

Carvalho CF, Menezes-Filho JA, Matos VP de, Bessa JR, Coelho-Santos J, Viana GFS, Argollo, N, and Abreu, N (2014). Elevated airborne manganese and low executive function in school-aged children in Brazil. *NeuroToxicology* 2014;45:301–8. Available at: <https://doi.org/10.1016/j.neuro.2013.11.006>.

D'Anastasi B, Simpfendorfer C and van Herwerden L (2013) *Anoxypristis cuspidata* (errata version published in (2019). The IUCN Red List of Threatened Species 2013: e.T39389A141789456. Available at: <https://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T39389A141789456.en>. Accessed June 2022.

Department of Environment and Natural Resources (DENR) (2021). Land clearing guidelines: Northern Territory Planning Scheme. Available at: [https://nt.gov.au/\\_data/assets/pdf\\_file/0007/236815/land-clearing-guidelines.pdf](https://nt.gov.au/_data/assets/pdf_file/0007/236815/land-clearing-guidelines.pdf).

Dunn, J. L., Buck, J. D. and Robeck, T. R. 2001. Bacterial diseases of cetaceans and pinnipeds. pp. 309–335. In: *CRC Handbook of Marine Mammal Medicine*, 2nd ed (Dierauf, L. A. and Gulland, M. D. eds.), CRC Press, Boca Raton

Fair, P. A., and P. R. Becker. 2000. Review of stress in marine mammals. *Journal of Aquatic Ecosystem Stress Recovery* 7:335–354.

Farmer, A.M. (1993) The effects of dust on vegetation - A review. *Environmental Pollution* 79 (1993) P 63-75.

Haynes, D., Carter, S., Gaus, C., Muller, J. & Dennison, W. (2005). Organochlorine and heavy metal concentrations in blubber and liver tissue collected from Queensland (Australia) Dugong (*Dugong dugon*). Hutchings, P. & Haynes, D., eds. *Marine Pollution Bulletin*. 51:361-369. Elsevier, Oxford, England.

Katestone Environmental Pty Ltd (2015). Air Quality Assessment Report for the Eastern Leases Project

Katestone Environmental Pty Ltd (2023a). Winchelsea Island Manganese Project: Air Quality and Greenhouse Gas Assessment.

Katestone (2023b). Assessment of the Winchelsea Updated Mining Schedule.

Kessel ST, Elamin NA, Yurkowski DJ, Chekchak T, Walter RP, Klaus R, et al. (2017) Conservation of reef manta rays (*Manta alfredi*) in a UNESCO World Heritage Site: Large-scale island development or sustainable tourism? *PLoS ONE* 12(10): e0185419. Available at: <https://doi.org/10.1371/journal.pone.0185419>.

Lynch, B.T. and Wilson, (1998). Land Systems of Arnhem Land. Report No. R97/1. Natural Resources Division, Department of Lands, Planning and Environment.

Marsh, H., H. Penrose, C. Eros & J. Hugues (2002). Dugong Status Report and Action Plans for Countries and Territories. Early Warning Assessment Reports. United Nations Environment Programme, Nairobi.

Marsh H, O'Shea TJ and Reynolds JE (2011) Ecology and conservation of the Sirenia: Dugongs and manatees (No. 18). Cambridge University Press.

Marshall A, Barreto R, Carlson J, Fernando D, Fordham S, Francis MP, Herman K, Jabado RW, Liu KM, Pacoureaux N, Rigby CL, Romanov E, and Sherley RB (2019). *Mobula alfredi*. The IUCN Red List of Threatened Species, e.T195459A, 19.

- Marshall AD, Dudgeon CL, Bennett MB. 2011b. Size and structure of a photographically identified population of manta rays *Manta alfredi* in southern Mozambique. *Marine Biology* 158:1111-1124.
- Martineau, D. 2007. Potential synergism between stress and contaminants in free-ranging cetaceans. *International Journal of Comparative Psychology* 20:194-216.
- Matsuki, M., Gardner, M., Smith, A., Howard, R. K., and Gove, A (2016) Impacts of dust on plant health, survivorship and plant communities in semi-arid environments. *Austral Ecology*
- Migaki G, Valerio MG, Irvine B, Garner FM (1971) Lobo's disease in an Atlantic bottle-nosed dolphin. *J Am Vet Med Assoc* 159:578-582.
- Munson, T.J., Ahmad, M. and Dunster, J.N. (2013). Geological and Mineral Resources of the Northern Territory: Chapter 39 Carpentaria Basin. In: Ahmad, M. and Munson, T.J. (2013). *Geology and mineral resources of the Northern Territory*. Northern Territory Geological Survey, Special Publication 5.
- Nasir et al., 2017. Manganese accumulates in the brain of northern quolls (*Dasyurus hallucatus*) living near an active mine. *Environmental Pollution* 233 (2018) 377-386.
- National Pollution Inventory (2022). Substance Fact Sheets - Manganese & Compounds. Accessed 2 February 2023
- Northern Territory Environmental Protection Authority (NT EPA) (2022). NT EPA Environmental factors and objectives - Environmental impact assessment: General technical guidance. NT Government. Available at: [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0020/804602/guide-ntepa-environmental-factors-objectives.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0020/804602/guide-ntepa-environmental-factors-objectives.pdf).
- Palmer C, Baird RW, Webster DL, Edwards AC, Patterson R, Withers A, Withers E; Groom R and Woinarski, JCZ (2017) A preliminary study of the movement patterns of false killer whales (*Pseudorca crassidens*) in coastal and pelagic waters of the Northern Territory, Australia. *Marine and Freshwater Research*, 68(9), 1726-. Available at: <https://doi.org/10.1071/mf16296>.
- Palmer C, Fitzgerald P, Wood A, Harley S and McKenzie A (2009) False Killer Whales *Pseudorca crassidens*: regular visitors to Port Essington and Darwin Harbour in the Northern Territory, Australia. *Northern Territory Naturalist*. 21:49-53.
- Palmer C, Parra GJ, Rogers T and Woinarski J (2014b) Collation and review of sightings and distribution of three coastal dolphin species in waters of the NT, Australia. *Pacific Conservation Biology*, 20(1): 116-125.
- Parra, G.J. (2006). Resource partitioning in sympatric delphinids: Space use and habitat preferences of Australian snubfin and Indo-Pacific humpback dolphins. *Journal of Animal Ecology*. 75:862-874.
- Purves, P.E. & G. Pilleri (1978). The functional anatomy and general biology of *Pseudorca crassidens* (Owen) with a review of the hydrodynamics and acoustics in cetacea. *Investigations on Cetacea*. 9:67-230.
- Reif JS, Peden-Adams MM, Romano TA, Rice CD, Fair PA, Bossart GD (2008) Immune dysfunction in Atlantic bottlenose dolphins (*Tursiops truncatus*) with lobomycosis. *Med Mycol* 47:125-135
- Reiss A., Jackson B., Gillespie, G., Stokeld D. and K. Warren (2015). Investigation of Potential Diseases Associated with Northern Territory Mammal Declines. Final report for NERP Project 4.1: June 2015
- Rodrigues JL, Batista BL, Nunes JA, Passos CJS, Barbosa F. Evaluation of the use of human hair for biomonitoring the deficiency of essential and exposure to toxic elements. *Science of The Total Environment* 2008;405:370-6. Available at: <https://doi.org/10.1016/j.scitotenv.2008.06.002>.
- Ross GJB (2006) Review of the conservation status of Australia's smaller whales and dolphins, Australian Government, Canberra.
- Seashore Engineering. (2023), Winchelsea Island Manganese Mine Project - Coastal Processes Assessment, Western Australia, Perth.

- Smith J, Brown AM, Salgado Kent C, Marley S, Allen SJ, Thiele D, Bedjer L, Erbe C, Chabanne D (2016) Relative abundance, population genetic structure and passive acoustic monitoring of Australian snubfin and humpback dolphins in regions within the Kimberley. WAMSI Kimberley Marine Research Program. Final Report. Project 1.2.4.
- Stacey, P.J. & R.W. Baird (1991). Status of the False Killer Whale, *Pseudorca crassidens*, in Canada. *Canadian Field-Naturalist*. 105(2):189-197
- Stevens, J.D., R.D. Pillans & J. Salini (2005). Conservation Assessment of *Glyphis* sp. A (Speartooth Shark), *Glyphis* sp. C (Northern River Shark), *Pristis microdon* (Freshwater Sawfish) and *Pristis zijsron* (Green Sawfish). Hobart, Tasmania: CSIRO Marine Research. Available at: <http://www.environment.gov.au/coasts/publications/pubs/assessment-glyphis.pdf>.
- Stobutzki, I.C., J.M. Miller, D.S. Heales & D.T. Brewer (2002). Sustainability of Elasmobranchs Caught as By-catch in a Tropical Prawn (Shrimp) Fishery. *Fishery Bulletin*. 100:800-821.
- Torres-Agustín R, Rodríguez-Agudelo Y, Schilmann A, Solís-Vivanco R, Montes S, Riojas-Rodríguez H, Cortez-Lugo M and Rios C (2013). Effect of environmental manganese exposure on verbal learning and memory in Mexican children. *Environmental Research* 2013;121:39-44. Available at: <https://doi.org/10.1016/j.envres.2012.10.007>.
- United States Environmental Protection Agency (USEPA). 1998, Western surface coal mining, AP-42,
- United States Environmental Protection Agency (USEPA). Office of Air Quality Planning and Standards.
- Walker, T.I. (1998). Can shark resources be harvested sustainably? A question revisited with a review of shark fisheries. *Marine and Freshwater Research*. 49:553-572.
- Woinarski, J.C.Z., Hill, B.M, and Ward, S. 2017. Recovery, Management and Monitoring Plan for the Brush-tailed Rabbit-rat *Conilurus penicillatus*. Department of Environment and Natural Resources, Darwin.
- Woinarski, J.C.Z., Burbidge, A.A. and Harrison, P.L. (2014). The Action Plan for Australian Mammals. CSIRO Publishing.
- Wolchover, N. (2012). How Far Can the Human Eye See?. *Live Science*, May 2012, viewed 12 April 2023. Available at: <http://www.livescience.com/33895-human-eye.html>.