

Volume

1

COBBORA COAL PROJECT

Preferred Project Report and Response to Submissions

Prepared for Cobbora Holding Company Pty Limited
February 2013



Volume 1

Main report

Part A - Introduction

Part B - Assessment of project changes and response to submissions

Part C - Updated commitments

Appendix A - Submissions summary

Appendix B - Tailings storage facilities management plan

Appendix C - Dewatering options report
- comparison of options for tailings dewatering

Appendix D - Crown land

Appendix E - Groundwater assessment (Part A)

Volume 2

Appendix E - Groundwater assessment (Part B)

Appendix F - Surface water assessment

Volume 3

Appendix G - Mine rehabilitation strategy

Appendix H - Updated biodiversity offset strategy

Appendix I - Noise and vibration assessment for out of hours construction

Appendix J - Aboriginal cultural heritage test excavation report





MAIN REPORT

Cobbora Coal Project

Final

Report J11030RP17 | Prepared for Cobbora Holding Company Pty Limited | 4 February 2013

Prepared by **Philip Towler**

Approved by **Paul Mitchell**

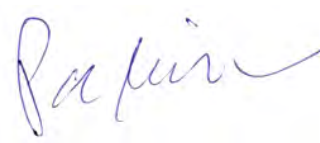
Position Associate Director

Position Associate Director

Signature



Signature



Date 4 February 2013

Date 4 February 2013

This report has been prepared in accordance with the brief provided by the client and has relied upon the information collected at or under the times and conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of the client and no responsibility will be taken for its use by other parties. The client may, at its discretion, use the report to inform regulators and the public.

© Reproduction of this report for educational or other non-commercial purposes is authorised without prior written permission from EMM provided the source is fully acknowledged. Reproduction of this report for resale or other commercial purposes is prohibited without EMM's prior written permission.

Document Control

| Version | Date | Prepared by | Reviewed by |
|---------|-----------------|---------------|---------------|
| V1 | 4 February 2013 | Philip Towler | Paul Mitchell |



T +61 (0)2 9493 9500 | F +61 (0)2 9493 9599

Ground Floor | Suite 01 | 20 Chandos Street | St Leonards | New South Wales | 2065 | Australia

emgamm.com

Table of Contents

PART A Introduction

| | | |
|------------------|---------------------------------------|-----------|
| Chapter 1 | Introduction | 1 |
| 1.1 | Background | 1 |
| 1.2 | Project determination process | 1 |
| 1.3 | Changes to the Project | 2 |
| Chapter 2 | Submissions summary | 5 |
| 2.1 | Submissions received | 5 |
| 2.2 | Summary of issues | 7 |
| 2.3 | Response method | 7 |
| Chapter 3 | Project changes | 11 |
| 3.1 | Project summary | 11 |
| 3.2 | Disturbance footprint and mining area | 12 |
| 3.3 | Tailings management | 13 |
| 3.3.1 | Out-of-pit tailings emplacements | 16 |
| 3.3.2 | In-pit tailings emplacements | 17 |
| 3.3.3 | Tailings emplacements rehabilitation | 18 |
| 3.3.4 | Tailings management options | 30 |
| 3.4 | Water | 30 |
| 3.4.1 | Water dams | 30 |
| 3.4.2 | Water pipelines | 30 |
| 3.4.3 | Water balance | 32 |
| 3.5 | Out-of-pit waste rock emplacements | 32 |
| 3.6 | Rail spur | 32 |
| 3.7 | Coal handling and preparation plant | 32 |
| 3.8 | Buildings and structures | 33 |
| 3.9 | Roads | 33 |
| 3.9.1 | Castlereagh Highway | 33 |
| 3.9.2 | Local roads | 35 |
| 3.9.3 | Spring Ridge Road and Dapper Road | 35 |
| 3.9.4 | Mine access road | 35 |
| 3.9.5 | Brooklyn Road and Suzanne Road | 37 |
| 3.9.6 | Haul roads | 37 |
| 3.10 | Construction | 37 |
| 3.10.1 | Construction fleet and activities | 37 |
| 3.10.2 | Construction accommodation village | 37 |

Table of Contents *(Cont'd)*

| | | |
|------------------|--|-----------|
| PART B | Assessment of project changes and response to submissions | |
| Chapter 4 | Environmental Assessment – general submission issues | 41 |
| 4.1 | Introduction | 41 |
| 4.2 | Response to general issues in submissions | 41 |
| 4.2.1 | Support for the Project | 41 |
| 4.2.2 | In principle support for Project | 42 |
| 4.2.3 | Consultation and additional review time | 42 |
| 4.2.4 | Exhibition period | 42 |
| 4.2.5 | Overall adequacy of EA and project justification | 43 |
| 4.2.6 | Map scale | 43 |
| 4.2.7 | Crown lands | 43 |
| 4.2.8 | Waste disposal | 45 |
| 4.2.9 | Hazardous chemical and waste management | 45 |
| 4.2.10 | Land contamination | 45 |
| 4.2.11 | Mining beyond the project life | 46 |
| 4.2.12 | Emergency response | 46 |
| 4.2.13 | Safeguards | 47 |
| 4.2.14 | Wider environmental issues | 47 |
| Chapter 5 | Geochemistry | 49 |
| 5.1 | Assessment of project changes | 49 |
| 5.2 | Response to submissions | 49 |
| 5.2.1 | Sample coverage | 49 |
| 5.2.2 | Whaka coal seam acid generation | 50 |
| 5.2.3 | Preparation of an acid mine drainage management plan | 51 |
| 5.3 | Conclusion | 51 |
| Chapter 6 | Groundwater | 53 |
| 6.1 | Project changes and assessment | 53 |
| 6.2 | Response to submissions | 53 |
| 6.2.1 | Adequacy of impact assessment | 53 |
| 6.2.2 | Groundwater modelling | 53 |
| 6.2.3 | Threat to other industries | 54 |
| 6.2.4 | Groundwater licensing | 54 |
| 6.2.5 | Salinity | 55 |
| 6.2.6 | Impact to groundwater systems | 55 |
| 6.2.7 | Contamination of groundwater by tailings | 56 |
| 6.2.8 | Groundwater monitoring | 57 |
| 6.2.9 | Groundwater dependent ecosystems | 57 |

Table of Contents *(Cont'd)*

| | | |
|------------------|--|-----------|
| 6.2.10 | Bore impact threshold | 58 |
| 6.2.11 | Post-mining groundwater recovery | 59 |
| 6.2.12 | Groundwater management and use | 60 |
| 6.2.13 | Beneficial use | 60 |
| 6.3 | Conclusions | 61 |
| Chapter 7 | Surface water | 63 |
| 7.1 | Project changes and assessment | 63 |
| 7.2 | Response to submissions | 63 |
| 7.2.1 | Modelling method | 63 |
| 7.2.2 | Flow assessment | 64 |
| 7.2.3 | Downstream impacts including on semi-permanent pools | 65 |
| 7.2.4 | Macquarie Marshes | 66 |
| 7.2.5 | Water supply | 68 |
| 7.2.6 | Construction water | 69 |
| 7.2.7 | Threats of drought and global warming | 69 |
| 7.2.8 | Climate change | 70 |
| 7.2.9 | Water balance | 71 |
| 7.2.10 | Raw water dam and harvestable rights | 72 |
| 7.2.11 | Woolandra Dam | 73 |
| 7.2.12 | Geomorphology | 74 |
| 7.2.13 | Water contamination | 74 |
| 7.2.14 | Water quality objectives | 75 |
| 7.2.15 | Total dissolved solids | 75 |
| 7.2.16 | Total suspended solids | 76 |
| 7.2.17 | Metals and acidity | 76 |
| 7.2.18 | Flocculants | 77 |
| 7.2.19 | Void water quality | 77 |
| 7.2.20 | Final landform | 78 |
| 7.2.21 | Void geometry | 79 |
| 7.2.22 | Flood impact assessment | 79 |
| 7.2.23 | Infrastructure crossings | 80 |
| 7.2.24 | Activities on waterfront land | 80 |
| 7.2.25 | Erosion and sediment controls | 81 |
| 7.2.26 | Adequacy of monitoring | 81 |
| 7.2.27 | Water Industry Competition Act | 82 |
| 7.3 | Conclusion | 82 |
| Chapter 8 | Soils and agriculture | 83 |
| 8.1 | Project changes and assessment | 83 |

Table of Contents *(Cont'd)*

| | | |
|------------------|---|-----------|
| 8.1.1 | Assessment method | 83 |
| 8.1.2 | Environmental management | 83 |
| 8.1.3 | Impacts | 83 |
| 8.2 | Response to submissions | 84 |
| 8.2.1 | Assessment of the loss of agricultural resources | 84 |
| 8.2.2 | Soil surveys | 88 |
| 8.2.3 | Impacts on the agriculture sector | 88 |
| 8.2.4 | Removal of farmland | 92 |
| 8.2.5 | Agricultural production on CHC-owned land | 92 |
| 8.2.6 | Food security | 92 |
| 8.2.7 | Soil availability for rehabilitation | 93 |
| 8.2.8 | Impact of climate change on rehabilitation | 93 |
| 8.2.9 | Rehabilitation success for agricultural land | 94 |
| 8.2.10 | Final slopes and contours | 94 |
| 8.2.11 | Soils stripped during construction of linear infrastructure | 95 |
| 8.2.12 | Rehabilitation plan | 95 |
| 8.2.13 | Long-term release of contaminants | 96 |
| 8.2.14 | Removal rail bridges/embankments at road crossings | 96 |
| 8.3 | Conclusion | 97 |
| Chapter 9 | Ecology | 99 |
| 9.1 | Terrestrial ecology assessment of project changes | 99 |
| 9.1.1 | Relevant project changes | 99 |
| 9.1.2 | Assessment method | 99 |
| 9.1.3 | Environmental management | 100 |
| 9.1.4 | Impacts | 100 |
| 9.2 | Response to submissions | 110 |
| 9.2.1 | Survey effort for vegetation plots and mapping delineation | 110 |
| 9.2.2 | Survey effort for threatened flora species | 112 |
| 9.2.3 | Survey effort for fauna species | 113 |
| 9.2.4 | Survey results | 114 |
| 9.2.5 | Assessment of grasslands | 115 |
| 9.2.6 | Vegetation and habitat removal | 115 |
| 9.2.7 | National significance of temperate woodlands | 117 |
| 9.2.8 | Impacts on flora | 117 |
| 9.2.9 | Rehabilitation | 118 |
| 9.2.10 | Fauna-related impacts | 119 |
| 9.2.11 | Impacts on bats | 119 |
| 9.2.12 | Impacts on birds | 120 |
| 9.2.13 | Impacts on groundwater dependent ecosystems | 121 |

Table of Contents *(Cont'd)*

| | | |
|-------------------|---|------------|
| 9.2.14 | Cumulative impacts | 121 |
| 9.2.15 | Biodiversity corridors | 122 |
| 9.2.16 | Office for Environment and Heritage Estate | 123 |
| 9.2.17 | Nature of mounds in the Project area | 124 |
| 9.2.18 | Offset design | 125 |
| 9.2.19 | Offset areas | 125 |
| 9.2.20 | Rehabilitation in the offsets | 126 |
| 9.2.21 | Long-term protection of offsets | 126 |
| 9.2.22 | Finalisation of the offset strategy | 127 |
| 9.2.23 | Offset adequacy | 127 |
| 9.2.24 | Offset outcomes | 128 |
| 9.2.25 | Grassland impacts not considered | 128 |
| 9.2.26 | Indirect offsets | 129 |
| 9.2.27 | Use of Biobanking assessment methodology | 129 |
| 9.2.28 | OEH offset policy | 130 |
| 9.2.29 | Threatened species credits | 131 |
| 9.2.30 | Ecosystem credit outcomes | 131 |
| 9.3 | SWEPaC submissions | 132 |
| 9.3.1 | Impacts on EPBC Act listed ecological communities (general) | 132 |
| 9.3.2 | Avoidance, mitigation and offsets (general) | 132 |
| 9.3.3 | Grassland surveys | 136 |
| 9.3.4 | Grassland survey data | 137 |
| 9.3.5 | Endangered ecological communities | 138 |
| 9.3.6 | Threatened species | 140 |
| 9.3.7 | Threatened flora | 141 |
| 9.3.8 | Offset strategy | 142 |
| 9.4 | Conclusion | 142 |
| 9.5 | Aquatic ecology assessment of project changes | 142 |
| 9.5.1 | Relevant project changes | 142 |
| 9.5.2 | Assessment method | 143 |
| 9.5.3 | Environmental management | 143 |
| 9.5.4 | Impacts | 144 |
| 9.5.5 | Response to submissions | 144 |
| 9.6 | Conclusion | 147 |
| Chapter 10 | Bushfire | 149 |
| 10.1 | Project changes and assessment | 149 |
| 10.2 | Response to submissions | 149 |
| 10.2.1 | Bushfire management across the Project application area | 149 |
| 10.2.2 | Bushfire threat to property | 151 |

Table of Contents *(Cont'd)*

| | | |
|-------------------|--|------------|
| 10.2.3 | Temporary construction accommodation village | 151 |
| 10.2.4 | Asset protection zones | 152 |
| 10.2.5 | Bushfire in the preliminary hazard assessment | 153 |
| 10.2.6 | Threatened species | 153 |
| 10.2.7 | Adequacy of bushfire assessment | 153 |
| 10.2.8 | Conditions | 154 |
| 10.3 | Conclusion | 155 |
| Chapter 11 | Road transport | 157 |
| 11.1 | Project changes | 157 |
| 11.1.1 | Castlereagh Highway realignment | 157 |
| 11.1.2 | Local road detours | 157 |
| 11.1.3 | Mine access road and haul roads | 157 |
| 11.1.4 | Construction accommodation village | 157 |
| 11.1.5 | Assessment method | 158 |
| 11.1.6 | Environmental management | 158 |
| 11.1.7 | Impacts | 159 |
| 11.2 | Response to submissions | 160 |
| 11.2.1 | Traffic counts on the southern access road | 160 |
| 11.2.2 | Workforce location modelling | 160 |
| 11.2.3 | Car pooling | 161 |
| 11.2.4 | Traffic volume estimates | 161 |
| 11.2.5 | Construction traffic estimates | 162 |
| 11.2.6 | Golden Highway level of service | 163 |
| 11.2.7 | Traffic analysis on rural roads | 164 |
| 11.2.8 | Traffic on other rural roads in the Wellington Council area | 164 |
| 11.2.9 | Traffic on the Cobbora Road (north) route to Mendooran | 165 |
| 11.2.10 | Cobbora Road (MR 353) upgrade works | 165 |
| 11.2.11 | Spring Ridge Road upgrade works | 165 |
| 11.2.12 | Dilapidation survey and maintenance of the Spring Ridge Road and Laheys Creek Road route | 166 |
| 11.2.13 | Local traffic movements | 167 |
| 11.2.14 | Impact of train movements on the road system | 168 |
| 11.2.15 | Road underpass | 169 |
| 11.2.16 | Impacts on road traffic in the Mudgee region | 169 |
| 11.2.17 | Service industry travel patterns | 169 |
| 11.2.18 | Cumulative impact | 170 |
| 11.2.19 | Traffic management plan | 171 |
| 11.2.20 | Road safety audits | 171 |
| 11.2.21 | Heavy vehicle access routes | 171 |

Table of Contents *(Cont'd)*

| | | |
|-------------------|---|------------|
| 11.2.22 | Golden Highway access via Dunedoo | 172 |
| 11.2.23 | Oversize vehicle movements | 173 |
| 11.2.24 | Social impacts of increased traffic and road changes | 173 |
| 11.2.25 | Financial contribution to road upgrades | 174 |
| 11.2.26 | Pavement design standards | 175 |
| 11.2.27 | Construction requirements | 176 |
| 11.2.28 | Security deposit | 176 |
| 11.2.29 | Intersection improvements | 177 |
| 11.2.30 | Intersection of Spring Ridge Road and the construction village | 178 |
| 11.2.31 | Intersection of Spring Ridge Road and Danabar Road | 178 |
| 11.2.32 | Intersection of Spring Ridge Road with the MIA and CHPP access roads | 178 |
| 11.2.33 | Spring Ridge Road asset value | 179 |
| 11.2.34 | Spring Ridge Road and Sandy Creek Road intersection closures | 179 |
| 11.2.35 | Sandy Creek bridge design | 180 |
| 11.2.36 | Haul road crossings | 180 |
| 11.2.37 | Ash waste | 181 |
| 11.2.38 | Traffic health impacts | 181 |
| 11.2.39 | Road underpass | 181 |
| 11.3 | Conclusion | 182 |
| Chapter 12 | Rail transport | 183 |
| 12.1 | Project changes | 183 |
| 12.1.1 | Assessment method | 183 |
| 12.1.2 | Environmental management | 183 |
| 12.1.3 | Impacts | 185 |
| 12.2 | Response to submissions | 185 |
| 12.2.1 | Strains on the existing rail and road systems | 185 |
| 12.2.2 | Central Coast power stations rail loops | 186 |
| 12.2.3 | Cumulative rail traffic | 187 |
| 12.2.4 | Impacts on rail commuter transport | 188 |
| 12.2.5 | Impacts to the Hunter rail corridor | 188 |
| 12.2.6 | Impacts of train movements on Gulgong | 189 |
| 12.2.7 | Train movements in Newcastle | 189 |
| 12.2.8 | Cope Road rail crossing | 190 |
| 12.2.9 | Gulgong level crossings | 191 |
| 12.2.10 | Coal transport to Port Kembla | 192 |
| 12.2.11 | Rail transport air quality and noise impacts | 192 |
| 12.2.12 | Rail infrastructure improvements | 193 |
| 12.2.13 | Rail spur connection | 193 |
| 12.2.14 | Consultation with ARTC regarding Gulgong area level crossing upgrades | 194 |

Table of Contents *(Cont'd)*

| | | |
|-------------------|--|-----|
| | 12.2.15 Upgrades at Awaba north and Vales Point Power Station rail loops | 194 |
| 12.3 | Conclusion | 195 |
| Chapter 13 | Air quality | 197 |
| 13.1 | Project changes | 197 |
| 13.2 | Response to submissions | 197 |
| 13.2.1 | Baseline environment – meteorology | 197 |
| 13.2.2 | Baseline environment – air quality | 199 |
| 13.2.3 | Multiple mining areas | 201 |
| 13.2.4 | Health impacts – general | 201 |
| 13.2.5 | Dust deposition | 202 |
| 13.2.6 | Dust from coal transport | 203 |
| 13.2.7 | Impacts to Siding Spring Observatory – dust increasing light spill | 205 |
| 13.2.8 | Dust levels at Siding Springs Observatory | 205 |
| 13.2.9 | Australian Astronomical Observatory requested conditions | 205 |
| 13.2.10 | Mitigation measures | 207 |
| 13.2.11 | Mitigation measures | 207 |
| 13.2.12 | Real-time response system | 209 |
| 13.3 | Conclusion | 209 |
| Chapter 14 | Greenhouse gases | 211 |
| 14.1 | Project changes | 211 |
| 14.2 | Response to submissions | 211 |
| 14.2.1 | Greenhouse gas assessment | 211 |
| 14.2.2 | Costs of greenhouse gas emissions | 211 |
| 14.2.3 | Contribution to climate change | 212 |
| 14.2.4 | Alternative electricity generation methods | 213 |
| 14.2.5 | Government emission reduction programs | 215 |
| 14.2.6 | Greenhouse gas emission reductions | 216 |
| 14.2.7 | Carbon capture and storage | 217 |
| 14.3 | Conclusion | 217 |
| Chapter 15 | Noise and vibration | 219 |
| 15.1 | Project changes and assessment | 219 |
| 15.1.1 | Relevant Project changes | 219 |
| 15.1.2 | Assessment method | 219 |
| 15.1.3 | Environmental management | 223 |
| 15.2 | Response to submissions | 230 |
| 15.2.1 | Background levels and criteria | 230 |
| 15.2.2 | Meteorological parameters | 231 |

Table of Contents *(Cont'd)*

| | | |
|-------------------|---|------------|
| 15.2.3 | Modelling methodology and results | 232 |
| 15.2.4 | Mine noise impacts | 234 |
| 15.2.5 | Onsite rail noise | 237 |
| 15.2.6 | Off-site rail noise | 238 |
| 15.2.7 | Management measures | 240 |
| 15.2.8 | Health impacts | 241 |
| 15.2.9 | Construction impacts | 241 |
| 15.2.10 | Road noise | 242 |
| 15.3 | Conclusions | 243 |
| Chapter 16 | Visual and lighting | 245 |
| 16.1 | Project changes and assessment | 245 |
| 16.1.1 | Relevant project changes | 245 |
| 16.1.2 | Assessment method | 245 |
| 16.1.3 | Environmental management | 245 |
| 16.1.4 | Impacts | 246 |
| 16.2 | Response to submissions | 250 |
| 16.2.1 | Visual impacts to surrounding land/houses | 250 |
| 16.2.2 | Impact on tourism | 250 |
| 16.2.3 | Night-sky friendly lighting | 251 |
| 16.2.4 | Dust-reflected light impacts on the observatory | 251 |
| 16.2.5 | Lighting management plan | 252 |
| 16.3 | Conclusion | 252 |
| Chapter 17 | Aboriginal heritage | 253 |
| 17.1 | Project changes | 253 |
| 17.1.1 | Assessment method | 253 |
| 17.1.2 | Environmental management | 253 |
| 17.1.3 | Impacts | 254 |
| 17.2 | Response to submissions | 260 |
| 17.2.1 | Impacts to Aboriginal cultural heritage sites | 260 |
| 17.2.2 | Survey effort | 261 |
| 17.2.3 | Adequacy of management and impact mitigation measures | 262 |
| 17.2.4 | Research | 263 |
| 17.2.5 | Consultation with the Aboriginal community | 264 |
| 17.2.6 | Aboriginal community employment and training | 264 |
| 17.2.7 | Monitoring | 265 |
| 17.2.8 | Adequacy of assessment | 265 |
| 17.2.9 | Cumulative impact | 266 |
| 17.3 | Conclusion | 267 |

Table of Contents *(Cont'd)*

| | | |
|-------------------|--|------------|
| Chapter 18 | Historic heritage | 269 |
| 18.1 | Project changes | 269 |
| 18.2 | Response to submissions | 269 |
| 18.2.1 | Impacts of the Project on historic heritage items | 269 |
| 18.2.2 | Residences | 269 |
| 18.2.3 | Nature of mounds in the PAA | 270 |
| 18.3 | Conclusion | 271 |
| Chapter 19 | Economics | 273 |
| 19.1 | Assessment of Project changes | 273 |
| 19.2 | Economic issues | 273 |
| 19.2.1 | Project viability questioned | 273 |
| 19.2.2 | Cost-benefit analysis questioned | 275 |
| 19.2.3 | Regional economic impacts | 281 |
| 19.2.4 | Declining demand for coal | 283 |
| 19.2.5 | Coal-fired versus renewable energy | 285 |
| 19.2.6 | Effects of mine closure | 286 |
| 19.2.7 | Lower electricity prices questioned | 286 |
| 19.3 | Conclusions | 288 |
| Chapter 20 | Social | 289 |
| 20.1 | Project changes and assessment | 289 |
| 20.2 | Response to submissions | 289 |
| 20.2.1 | Positive effects on local economy and community | 289 |
| 20.2.2 | Overestimate of local employment and capacity of local workforce | 289 |
| 20.2.3 | Loss of agricultural output | 292 |
| 20.2.4 | Disruption of the local community | 292 |
| 20.2.5 | Impact on Ballimore | 294 |
| 20.2.6 | Property devaluation | 294 |
| 20.2.7 | Construction workforce recruitment | 295 |
| 20.2.8 | Residential distribution of operations workforce | 296 |
| 20.2.9 | Inadequate community facilities and services | 297 |
| 20.2.10 | Access to health services | 298 |
| 20.2.11 | Housing supply and affordability | 298 |
| 20.2.12 | Privatisation | 300 |
| 20.2.13 | Questionable results of community consultation | 301 |
| 20.2.14 | Health impacts | 301 |
| 20.2.15 | Social impacts on Dubbo | 302 |
| 20.2.16 | Insufficient capacity at Dubbo airport | 302 |
| 20.2.17 | Negative impacts on Mid-Western Region and local towns | 303 |

Table of Contents *(Cont'd)*

| | | |
|-------------------|--|------------|
| 20.2.18 | Voluntary planning agreement | 304 |
| 20.2.19 | Other financial contributions | 307 |
| 20.2.20 | Council capacity building | 307 |
| 20.2.21 | Social impact management plan | 308 |
| 20.3 | Conclusions | 308 |
| PART C | Updated commitments | |
| Chapter 21 | Statement of commitments | 311 |
| 21.1 | Environmental management system | 311 |
| 21.1.1 | Construction environmental management | 311 |
| 21.1.2 | Operations environmental management plan | 311 |
| 21.2 | Commitments summary | 312 |
| Acronyms | | |
| References | | |

Appendices

| | | |
|---|---|--|
| A | Submissions summary | |
| B | Tailings storage facilities management plan | |
| C | Dewatering options report - comparison of options for tailings dewatering | |
| D | Crown land | |
| E | Groundwater assessment | |
| F | Surface water assessment | |
| G | Mine rehabilitation strategy | |
| H | Updated biodiversity offset strategy | |
| I | Noise and vibration assessment for out of hours construction | |
| J | Aboriginal cultural heritage test excavation report | |

Tables

| | | |
|-----|--|----|
| 2.1 | Origin of submissions | 7 |
| 3.1 | Project summary | 11 |
| 3.2 | Estimated in-pit tailings emplacement capacities | 17 |
| 3.3 | Tailings placement schedule | 18 |

Tables

| | | |
|-------|--|-----|
| 3.4 | Final land use of mining areas | 19 |
| 8.1 | Post-mining rural land capability – disturbance footprint | 84 |
| 8.2 | Existing Rural Land Capability Class | 89 |
| 8.3 | Existing Agricultural Suitability Class | 90 |
| 8.4 | Regional economic impacts of the Project and displaced agriculture | 91 |
| 9.1 | Vegetation impacts from Project changes | 103 |
| 9.2 | Summary of impacts to threatened species and communities from Project changes | 105 |
| 9.3 | Effects of Project changes on threatened flora | 106 |
| 9.4 | Effect of Project changes on threatened fauna | 106 |
| 9.5 | Stratification units and number of survey plots | 111 |
| 9.6 | Fauna survey effort | 114 |
| 9.7 | Avoidance and mitigation measures for matters of NES that will be significantly impacted by the Project | 134 |
| 9.8 | Stratification units and number of survey plots | 137 |
| 9.9 | ERM grassland plot results against the EPBC Act criteria | 138 |
| 9.10 | Threatened ecological community assessment | 139 |
| 11.1 | Summary of external road works for the project | 158 |
| 12.1 | ARTC recommended Gulgong area level crossing safety improvements | 183 |
| 12.2 | Calculated minimum level crossing closure times for southbound loaded coal trains | 184 |
| 14.1 | Capital costs for coal projects similar to Cobbora Project | 214 |
| 14.2 | Operation costs for coal projects similar to Cobbora Project | 214 |
| 15.1 | Changes to the rail spur noise criteria | 220 |
| 15.2 | Revised distances of private residences to the rail spur and modelled onsite L_{eq} rail noise comparison | 222 |
| 15.3 | Revised distances of private residences to the rail spur and modelled onsite L_{max} rail noise comparison | 223 |
| 15.4 | Ideal dimensions of barrier and indicative costing | 226 |
| 15.5 | Result comparisons of barrier scenarios | 227 |
| 15.6 | Indicative costs of architectural acoustic treatments per dwelling | 230 |
| 15.7 | Prevailing winds | 232 |
| 15.8 | Current management and acquisition status | 236 |
| 15.9 | Summary of vacant aggregated land identified to be within the affectation zone (private ownership) | 237 |
| 15.10 | Summary of train movements and Project related increase – 2017 | 239 |
| 15.11 | Summary of train movements and Project related increase – 2021 | 239 |
| 15.12 | Noise increases from additional train movements – Muswellbrook to Antiene | 240 |
| 16.1 | Visual impacts and mitigation commitments | 247 |
| 17.1 | Aboriginal sites addressed by each management measure | 253 |
| 17.2 | Impacts to Aboriginal heritage | 254 |

Tables

| | | |
|------|-----------------------------|-----|
| 17.3 | Impacts to Aboriginal sites | 255 |
| 20.1 | Forecasts of future growth | 304 |
| 21.1 | Summary of key commitments | 313 |
| A.1 | Submissions summary | A.1 |

Figures

| | | |
|------|---|-----|
| 1.1 | Project Determination Process | 3 |
| 2.1 | Origin of Submissions in NSW | 8 |
| 2.2 | Number of Submissions by Topic | 9 |
| 3.1 | Mining Operations and Infrastructure Areas | 14 |
| 3.2 | Indicative Infrastructure Area Layout | 15 |
| 3.3 | Indicative Mine Plan – Year 1 | 20 |
| 3.4 | Indicative Mine Plan – Year 2 | 21 |
| 3.5 | Indicative Mine Plan – Year 4 | 22 |
| 3.6 | Indicative Mine Plan – Year 8 | 23 |
| 3.7 | Indicative Mine Plan – Year 12 | 24 |
| 3.8 | Indicative Mine Plan – Year 16 | 25 |
| 3.9 | Indicative Mine Plan – Year 20 | 26 |
| 3.10 | Indicative Mine Plan – Year 21 | 27 |
| 3.11 | Final Land Use | 28 |
| 3.12 | Final Landform Cross-sections | 29 |
| 3.13 | Pipeline Route | 31 |
| 3.14 | Rail Spur | 34 |
| 3.15 | Road Diversions | 36 |
| 3.16 | Construction Accommodation Village | 38 |
| 8.1 | Rehabilitated Landform – View to the North-east | 85 |
| 8.2 | Rehabilitated Landform – View to the South | 86 |
| 8.3 | Rehabilitated Landform – View to the North-west | 87 |
| 9.1 | Refined Project impact areas and vegetation | 101 |
| 9.2 | Significant ecological features | 102 |
| 13.1 | Comparison of Dunedoo, Gulgong and MET01 Wind Roses – 9 am and 3 pm | 200 |
| 15.1 | Results of Barrier Scenarios (Receivers 3108 and 5001) | 228 |
| 15.2 | Results of Barrier Scenarios (Receiver 3062) | 229 |

Photographs

- 1 Rapid grassland assessment points showing Box Gum Woodland DNG (January 2013) 136

PART A

Introduction



1 Introduction

1.1 Background

The Cobbora Coal Project (the Project) is a coal mine that will be developed by Cobbora Holding Company Pty Limited (CHC). It is near Cobbora in Central Western NSW. The planned output is 20 million tonnes per annum (Mtpa), which, after processing, will provide about 12 Mtpa of product coal. Most of this will be sold to Macquarie Generation, Origin Energy and Delta Electricity and used to generate electricity in four of the state's major power stations.

The Project's key elements are: three open cut mining areas; a coal handling and preparation plant (CHPP); a rail spur and train loading facility; a mine infrastructure area; access roads; water supply and storage facilities; electricity supply infrastructure; and a temporary mine construction workers' village. The mine will operate for 21 years and will be rehabilitated during and beyond this period.

1.2 Project determination process

Approval for the Project is being sought under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Project is being assessed under transitional arrangements for a Part 3A Major Project application under the EP&A Act. The application originally was lodged with the Department of Planning on 5 January 2010. On 27 September 2012, an environmental assessment (EA) for the Project was submitted to the now Department of Planning and Infrastructure (DP&I).

On 29 November 2011, the Commonwealth Department of Sustainability, Environment, Water, Communities and Population (SEWPaC) determined the Project will require approval as a 'controlled action' under the EPBC Act. On 29 November 2011, SEWPaC accredited the Part 3A assessment process as its pathway for the Project.

An EA was prepared by EMGA Mitchell McLennan Pty Limited (EMM), with input from external specialists. It was prepared in accordance with the requirements of SEWPaC, the DP&I and other government agencies, as given in the Director-General's Requirements (DGRs) issued on 4 March 2010 and modified on 14 October 2011 and 23 December 2011.

The EA was placed on public exhibition for six weeks between 5 October 2012 and 16 November 2012. Hard copies were displayed at the DP&I in Sydney, Warrumbungle Council's offices in Coolah and Dunedoo, at Mid-Western Regional Council Offices in Mudgee and Gulgong, at the offices of Dubbo and Wellington Councils, and at the Nature Conservation Council in Newtown. Electronic copies of the EA were available from the DP&I and CHC websites.

DP&I received 232 submissions on the Project. The issues raised in the submissions are summarised in Chapter 2 and a list of where all submissions are addressed in this report is provided in Appendix A.

The NSW Planning Assessment Commission (PAC) is reviewing the merits of the Project, which included a public hearing in Dunedoo on 10 December 2012. The PAC review report will be provided to the DP&I, which will prepare the Director-General's Environmental Assessment Report and a set of potential approval conditions. These will be provided to the PAC, which will determine whether the Project will proceed and, if so, the conditions of the Project Approval.

Following approval under state legislation, the Commonwealth Environment Minister will then determine the Project under the EPBC Act.

The assessment and determination process is illustrated in Figure 1.1.

1.3 Changes to the Project

As described in the main EA (Section 3.21), the Project's design has evolved since planning began in 2009, with changes and refinements progressively occurring as coal resource and environmental features become better understood and as a result of ongoing consultation with stakeholders. The submissions on the EA have provided further understanding of stakeholder concerns. In response, the Project design has been further refined to minimise environmental impacts and to incorporate engineering improvements. In spite of this the Project — particularly its layout and footprint — remains consistent with that described in the EA.

On 21 December 2011, the Director General required that a preferred project report (PPR) under s75H(6) of the EP&A Act be prepared. This was to meet the following requirements:

- outline the proposed changes to the Project;
- provide revised maps for all aspects of the Project, including sections of the proposed final landform;
- include a detailed assessment of the impacts of the proposed changes, and updated assessments of the original assessments in the Environmental Assessment (EA) so it is clear what the impacts of the revised project are predicted to be, and these impacts are incorporated into a single document (instead of being spread between the EA and PPR);
- include a revised statement of commitments for the project; and
- include an updated justification for the revised project.

The changes to the Project are described in Chapter 3. Each of these changes has been considered by appropriate technical specialists and assessments revised where required. The suitability of the management and monitoring measures has also been reviewed. The environmental assessment of these changes is provided in Chapters 4 to 21.



Project Determination Process

Cobbora Coal Project - Preferred Project Report and Response to Submissions

Figure 1.1

