# Appendix 6:

# Annual Rehabilitation Report Summary Table

**Annual Rehabilitation Report Form, Rehabilitation Maps and Rehabilitation Summary**

Annual Rehabilitation Report Form – Mines
Year Ending: 2019
Mine: Mt Thorley Warkworth
Company: Yancoal Australia
Plans Attached:
Mt Thorley Warkworth – AER 2019
Approved Mining Operations Plan:
MTW MOP Amendment B (2015 – 2021) – Approval Date 11/06/2019
Total Area Covered by Mining Operations Plan:
MTW MOP – 6,185ha
Total Area Covered by Mining Lease for This Mine: 6,185ha

**Table 1: Rehabilitation Progress 2019**

| Rehabilitation Activity Type | Domain Identifier | Primary Domain | Secondary Domain | Total Area Last Reported (ha) | Total Area to date (ha) |
|---|---|---|---|---|---|
| 1.1 Active mining and infrastructure area, facilities, including roads and tracks | 1A | Final Void | Final Void | 312.8 | 373.0 |
| | 2C | Water Management Areas | Rehabilitation Area - Grassland | 42.0 | 42.1 |
| | 2E | Water Management Areas | Rehabilitation Area - Woodland EEC | 22.8 | 22.8 |
| | 3C | Infrastructure Area | Rehabilitation Area - Grassland | 100.7 | 100.6 |
| | 3E | Infrastructure Area | Rehabilitation Area - Woodland EEC | 68.6 | 68.5 |
| | 4C | Tailings Storage Facility | Rehabilitation Area - Grassland | 75.7 | 76.4 |
| | 4D | Tailings Storage Facility | Rehabilitation Area - Woodland | 11.7 | 11.7 |
| | 4E | Tailings Storage Facility | Rehabilitation Area - Woodland EEC | 88.3 | 88.3 |
| | 5C | Overburden Emplacement Area | Rehabilitation Area - Grassland | 364.4 | 363.2 |
| | 5D | Overburden Emplacement Area | Rehabilitation Area - Woodland | 256.1 | 242.1 |

| Rehabilitation Activity Type | Domain Identifier | Primary Domain | Secondary Domain | Total Area Last Reported (ha) | Total Area to date (ha) |
|---|---|---|---|---|---|
| | 5E | Overburden Emplacement Area | Rehabilitation Area - Woodland EEC | 1248.1 | 1191.1 |
| | Total Active | | | 2591.2 | 2579.8 |
| 1.2 Decommissioning | Total - Decommissioning | | | 0.0 | 0.0 |
| 1.3 Landform Establishment | 4C | Tailings Storage Facility | Rehabilitation Area - Grassland | | 0.1 |
| | 4E | Tailings Storage Facility | Rehabilitation Area - Woodland EEC | | 0.2 |
| | 5C | Overburden Emplacement Area | Rehabilitation Area - Grassland | | 3.2 |
| | 5D | Overburden Emplacement Area | Rehabilitation Area - Woodland | | 2.7 |
| | 5E | Overburden Emplacement Area | Rehabilitation Area - Woodland EEC | | 18.0 |
| | Total - Landform Establishment | | | 93.1 (included in 1.1) | 24.2 |
| 1.4 Growth Medium Development | 2C | Water Management Areas | Rehabilitation Area - Grassland | | 1.2 |
| | 2E | Water Management Areas | Rehabilitation Area - Woodland EEC | | 2.9 |
| | 4E | Tailings Storage Facility | Rehabilitation Area - Woodland EEC | | 4.0 |
| | 5C | Overburden Emplacement Area | Rehabilitation Area - Grassland | | 18.9 |
| | 5D | Overburden Emplacement Area | Rehabilitation Area - Woodland | | 26.1 |
| | 5E | Overburden Emplacement Area | Rehabilitation Area - Woodland EEC | | 81.8 |
| | Total - Growth Medium Development | | | 4.3 (included in 1.1) | 134.9 |
| 1.5 Ecosystem and Land Use Establishment | 1A | Final Void | Final Void | | 1.5 |
| | 2C | Water Management Areas | Rehabilitation Area - Grassland | 1.2 | 1.6 |
| | 2E | Water Management Areas | Rehabilitation Area - Woodland EEC | 2.9 | 3.3 |
| | 3C | Infrastructure Area | Rehabilitation Area - Grassland | | 5.4 |
| | 3E | Infrastructure Area | Rehabilitation Area - Woodland EEC | | 0.5 |
| | 4C | Tailings Storage Facility | Rehabilitation Area - Grassland | | 26.4 |
| | 4D | Tailings Storage Facility | Rehabilitation Area - Woodland | | 1.4 |

| Rehabilitation Activity Type | Domain Identifier | Primary Domain | Secondary Domain | Total Area Last Reported (ha) | Total Area to date (ha) |
|---|---|---|---|---|---|
| | 4E | Tailings Storage Facility | Rehabilitation Area - Woodland EEC | 4.0 | 35.2 |
| | 5C | Overburden Emplacement Area | Rehabilitation Area - Grassland | 35.9 | 567.5 |
| | 5D | Overburden Emplacement Area | Rehabilitation Area - Woodland | 28.4 | 52.8 |
| | 5E | Overburden Emplacement Area | Rehabilitation Area - Woodland EEC | 95.5 | 446.7 |
| | Total - Ecosystem and Land Use Establishment | | | 167.9 | 1142.3 |
| 1.6 Ecosystem and Land Use Development | 1A | Final Void | Final Void | 1.8 | 0.0 |
| | 2C | Water Management Areas | Rehabilitation Area - Grassland | 1.8 | 0.0 |
| | 2E | Water Management Areas | Rehabilitation Area - Woodland EEC | 3.3 | 0.0 |
| | 3C | Infrastructure Area | Rehabilitation Area - Grassland | 5.4 | 0.0 |
| | 3D | Infrastructure Area | Rehabilitation Area - Woodland | 1.5 | 0.0 |
| | 3E | Infrastructure Area | Rehabilitation Area - Woodland EEC | 0.5 | 0.0 |
| | 4C | Tailings Storage Facility | Rehabilitation Area - Grassland | 27.3 | 0.0 |
| | 4D | Tailings Storage Facility | Rehabilitation Area - Woodland | 1.4 | 0.0 |
| | 4E | Tailings Storage Facility | Rehabilitation Area - Woodland EEC | 35.5 | 0.0 |
| | 5C | Overburden Emplacement Area | Rehabilitation Area - Grassland | 550.4 | 0.0 |
| | 5D | Overburden Emplacement Area | Rehabilitation Area - Woodland | 43.7 | 0.0 |
| | 5E | Overburden Emplacement Area | Rehabilitation Area - Woodland EEC | 395.3 | 0.0 |
| | Total - Ecosystem and Land Use Development | | | 961.1 | 0.0 |
| 1.7 Rehabilitation Complete | Total - Rehabilitation Complete | | | 0.0 | 0.0 |
| 1.8 Total Area Disturbed (items 1.1 to 1.7) | 1A | Final Void | Final Void | 314.6 | 374.5 |
| | 2C | Water Management Areas | Rehabilitation Area - Grassland | 45.0 | 44.9 |
| | 2E | Water Management Areas | Rehabilitation Area - Woodland EEC | 29.0 | 29.0 |
| | 3C | Infrastructure Area | Rehabilitation Area - Grassland | 106.1 | 106.0 |
| | 3D | Infrastructure Area | Rehabilitation Area - Woodland | 1.5 | 0.0 |

| Rehabilitation Activity Type | Domain Identifier | Primary Domain | Secondary Domain | Total Area Last Reported (ha) | Total Area to date (ha) |
|---|---|---|---|---|---|
| | 3E | Infrastructure Area | Rehabilitation Area - Woodland EEC | 69.1 | 69.0 |
| | 4C | Tailings Storage Facility | Rehabilitation Area - Grassland | 103.0 | 102.9 |
| | 4D | Tailings Storage Facility | Rehabilitation Area - Woodland | 13.1 | 13.1 |
| | 4E | Tailings Storage Facility | Rehabilitation Area - Woodland EEC | 127.8 | 127.7 |
| | 5C | Overburden Emplacement Area | Rehabilitation Area - Grassland | 950.7 | 952.8 |
| | 5D | Overburden Emplacement Area | Rehabilitation Area - Woodland | 328.2 | 323.7 |
| | 5E | Overburden Emplacement Area | Rehabilitation Area - Woodland EEC | 1738.9 | 1737.6 |
| | Total Footprint | | | 3827.0 | 3881.2 |

**Table 2: Soil Management and Erosion, 2019**

| Soil Stockpiling/ Use | Soil Used This Period (m3) | Soil Pre-stripped This Period (m3) | Stockpile Inventory to Date (m3) | Soil Stockpiled Last Report (m3) |
|---|---|---|---|---|
| | 68,500 | 40,030 | 660,357 | 688,826 |

| 2.2 Erosion Treatment | Total Area to Date (ha) | Total Area Last Report (ha) | Total Area This Report (ha) | Area Retreated This Period (ha) |
|---|---|---|---|---|
| Approx. area of sheet or gully erosion requiring reshaping topdressing and/or resowing | Not Available | 21.7 | 6.0 | 3.5 |

**Table 3: Weed Control**

| | Area (ha) |
|---|---|
| 3.1 Approx. area adversely affected by weeds as of the date of this report | Not Available |
| 3.2 Area treated for weed control during the period covered by the report | 336.0 |
| 3.3 Give summary of control strategies used and verification by approval agency(s) | |
| Species targeted in rehabilitation areas during 2019 included: *Galenia pubescens*, Rhodes grass, green panic, *Acacia saligna*, mustard weed (Brassica), farmers friend (*Bidens pilosa*) and paddys lucerne (*Sida rhombifolia*). 164.5ha treated for weed control using boom spray or wick wiper treatment; 171.5ha treated for weed control using Quikspray units or backpack sprays. | |

**Table 4: Management of Rehabilitation Areas**

| | |
|---|---|
| 4.1 Area treated with maintenance fertiliser | 0ha |
| 4.2 Area treated by rotational grazing, cropping or slashing | 90ha |
| Give Summary | 90ha Warkworth rehabilitation area licence agreement in place for grazing. |

**Table: 5 Variations to Rehabilitation Program**

| | |
|---|---|
| Has rehabilitation work proceeded generally in accordance with the conditions of an accepted Mining Operations Plan? | Yes |
| If not please cite any approval granted for variations, or briefly describe the seasonal conditions or other reasons for any changes and the nature of any changes which have been made. | NA |

Table 6: Planned Operations During the Next Report Period

| | |
|---|---|
| 6.1 Area estimated to be disturbed | 60ha |
| 6.2 Area estimated to be rehabilitated | 64ha |

# Appendix 7:

# Rehabilitation and Disturbance Summary


YANCOAL
兖煤澳大利亚有限公司

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**MTW**

**MTW**
**Rehabilitation Areas 2019**

| | |
|---|---|
| Date: | 06/03/2020 |
| Produced By: | BB |
| Map Size: | A4 Portrait |
| Coordinate System: | MGA94 Zone 56 |
| Revision | 01 |
| Data Source | Various |

File:MTW Rehab Areas 2019.wor
MTW Rehab Areas 2019.PDF

**MTW Annual Review Appendix 2 – Rehabilitation Summary**

| Rehabilitation Site Name | Type | Coordinates (GDA94) | Area (ha) | *Rehabilitation Summary* |
|---|---|---|---|---|
| **CD RL160 Stockpile Area** | Woodland | 318,885.56 E<br>6,390,194.33 N | 0.7 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform is flat in this area, no aspect.<br>▪ Area is flat and hence not requiring drainage controls.<br>▪ Landform surface preparation comprised minor shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Area was an old topsoil stockpile so there was remaining Clay loam/sandy clay loam topsoil from the floor of the stockpile at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation and aerating as required<br>▪ The area was sown in December with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **CD RL180 Geofluv Topsoil A** | Woodland | 318,926.55 E<br>6,389,856.67 N | 8.0 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform has been designed using a geomorphological landform approach based on alluvial analogues. Typical slope of the landform is 10 to 14 degrees with limited areas at 16 to 18 degrees. The slope has a primarily easterly aspect.<br>▪ Drainage is via rock-lined drainage lines, directing run-off to sediment control structures to the east.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam/sandy clay loam topsoil from existing topsoil stockpiles was spread at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required |

| Rehabilitation Site Name | Type | Coordinates (GDA94) | Area (ha) | *Rehabilitation Summary* |
|---|---|---|---|---|
| | | | | ▪ The area was sown in September with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement.<br>▪ Selective weed control of mainly *Galenia pubescens* was undertaken after desirable native species and weed species had started to germinate. |
| **CD RL180 Geofluv Topsoil B** | Woodland | 319,068.55 E<br>6,389,506.31 N | 0.7 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform has been designed using a geomorphological landform approach based on alluvial analogues. Typical slope of the landform is 10 to 14 degrees with limited areas at 16 to 18 degrees. The slope has a primarily easterly aspect.<br>▪ Drainage is via rock-lined drainage lines, directing run-off to sediment control structures to the east.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam/sandy clay loam topsoil from existing topsoil stockpiles was spread at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in September with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement.<br>▪ Selective weed control of mainly *Galenia pubescens* was undertaken after desirable native species and weed species had started to germinate. |
| **CD RL180 Topsoil A** | Woodland | 319,280.83 E<br>6,389,697.26 | 4.1 | ▪ The landform was constructed from a waste emplacement.<br>▪ Typical slope of the landform is 10 degrees with a primarily northerly aspect.<br>▪ Drainage is via westerly draining contours reporting to an engineered rock-lined chute.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material. |

| Rehabilitation Site Name | Type | Coordinates (GDA94) | Area (ha) | *Rehabilitation Summary* |
|---|---|---|---|---|
| | | | | ▪ Clay loam/sandy clay loam topsoil from existing topsoil stockpiles was spread at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in September with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement.<br>▪ Selective weed control of mainly *Galenia pubescens* was undertaken after desirable native species and weed species had started to germinate. |
| **CD RL180 Topsoil B** | Woodland | 319,221.33 E<br>6,389,562.33 N | 1.3 | ▪ The landform was constructed from a waste emplacement.<br>▪ Typical slope of the landform is 10 degrees with a primarily northerly aspect.<br>▪ Drainage is via westerly draining contours reporting to an engineered rock-lined chute.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam/sandy clay loam topsoil from existing topsoil stockpiles was spread at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in September with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement.<br>▪ Selective weed control of mainly *Galenia pubescens* was undertaken after desirable native species and weed species had started to germinate. |
| **CD RL185** | Woodland | 320,207.39 E<br>6,389,707.77 N | 8.8 | ▪ The landform was constructed from a waste emplacement.<br>▪ Typical slope of the landform is 10 degrees with a primarily southerly aspect.<br>▪ Drainage is via easterly draining contours reporting to adjacent existing contour drainage and then to an engineered rock-lined chute. |

| Rehabilitation Site Name | Type | Coordinates (GDA94) | Area (ha) | *Rehabilitation Summary* |
|---|---|---|---|---|
| | | | | ▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam/sandy clay loam topsoil from existing topsoil stockpiles was spread at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in December with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **CD RL190 Spoil/Compost** | Woodland | 319,632.10 E<br>6,389,688.05 N | 5.2 | ▪ The landform is flat in this area, no aspect.<br>▪ Area is flat and hence not requiring drainage controls.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ No topsoil was added, spoil has been used as the growth medium.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in December with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **CD RL190 Topsoil A** | Woodland | 319,443.37 E<br>6,389,707.77 N | 5.2 | ▪ The landform was constructed from a waste emplacement.<br>▪ Typical slope of the landform is 10 degrees with a primarily northerly aspect.<br>▪ Drainage is via easterly draining contours reporting to an engineered rock-lined chute.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam/sandy clay loam topsoil from existing topsoil stockpiles was spread at a nominal thickness of 100mm. |

| Rehabilitation Site Name | Type | Coordinates (GDA94) | Area (ha) | *Rehabilitation Summary* |
|---|---|---|---|---|
| | | | | ▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in December with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **MTO Geofluv RL130 Topsoil A** | Woodland | 319,784.64 E<br>6,387,557.34 N | 0.1 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform has been designed using a geomorphological landform approach based on alluvial analogues. This small section of landform has a typical slope of 22 degrees. The slope has a primarily northerly aspect.<br>▪ Drainage is via rock-lined drainage lines, directing run-off to sediment control structures to the east.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Sandy topsoil with a high amount of woody mulch was spread directly from stripping areas at a nominal thickness of 100mm.<br>▪ Soil ameliorants were not applied due to the slope being too steep for access by spreaders.<br>▪ The area was sown by hand in December with Diverse Native Woodland at 15.7kg/ha. |
| **MTO Geofluv RL130 Topsoil B** | Woodland | 319,802.28 E<br>6,387,509.92 N | 4.9 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform has been designed using a geomorphological landform approach based on alluvial analogues. Typical slope of the landform is 10 to 14 degrees. The slope has a primarily north-easterly aspect.<br>▪ Drainage is via rock-lined drainage lines, directing run-off to sediment control structures to the north.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam/sandy clay loam topsoil from existing topsoil stockpiles was spread at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively. |

| Rehabilitation Site Name | Type | Coordinates (GDA94) | Area (ha) | *Rehabilitation Summary* |
|---|---|---|---|---|
| | | | | ▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in October with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **MTO RL154 Geofluv Topsoil A** | Woodland | 319,845.67 E<br>6,386,872.08 N | 1.6 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform has been designed using a geomorphological landform approach based on alluvial analogues. This section of the landform is flat and therefore without any aspect.<br>▪ Area is flat and hence not requiring drainage controls.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam/sandy clay loam topsoil from existing topsoil stockpiles was spread at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in October with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **MTO RL154 Geofluv Topsoil B** | Woodland | 320,012.22 E<br>6,387,049.56 N | 12.2 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform has been designed using a geomorphological landform approach based on alluvial analogues. Typical slope of the landform is 10 to 14 degrees. The slope section has a primarily northerly aspect. There is also a flat section of landform above the slope.<br>▪ Drainage is via rock-lined drainage lines, directing run-off to sediment control structures to the north.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam/sandy clay loam topsoil from existing topsoil stockpiles was spread at a nominal thickness of 100mm. |

| Rehabilitation Site Name | Type | Coordinates (GDA94) | Area (ha) | *Rehabilitation Summary* |
|---|---|---|---|---|
| | | | | ▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in October with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **MTO RL154 Geofluv Topsoil C** | Woodland | 320,093.04 E<br>6,387,041.13 N | 1.9 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform has been designed using a geomorphological landform approach based on alluvial analogues. This section of the landform is flat and therefore without any aspect.<br>▪ Area is flat and hence not requiring drainage controls.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam topsoil from stripping areas in West Pit South was spread directly at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in October with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **MTO RL154 Spoil/Compost** | Woodland | 320,311.38 E<br>6,385,990.70 N | 5.1 | ▪ The landform was constructed from a waste emplacement.<br>▪ Typical slope of the landform is 10 degrees with a primarily southerly aspect.<br>▪ Drainage is via westerly draining contours reporting to an engineered rock-lined chute.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ No topsoil was added, spoil has been used as the growth medium.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively. |

| Rehabilitation Site Name | Type | Coordinates (GDA94) | Area (ha) | *Rehabilitation Summary* |
|---|---|---|---|---|
| | | | | ▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in November with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **MTO RL154 Topsoil A** | Woodland | 319,611.14 E<br>6,386,649.08 N | 2.3 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform is flat in this area, no aspect.<br>▪ Area is flat and hence not requiring drainage controls.<br>▪ Landform surface preparation comprised minor shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam topsoil from stripping areas in West Pit South was spread directly at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation and aerating as required<br>▪ The area was sown in October with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **MTO RL154 Topsoil B** | Woodland | 319,538.68 E<br>6,386,642.15 N | 2.1 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform is flat in this area, no aspect.<br>▪ Area is flat and hence not requiring drainage controls.<br>▪ Landform surface preparation comprised minor shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam/sandy clay loam topsoil from existing topsoil stockpiles (sourced from rehabilitation disturbance) was spread at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation and aerating as required |

| Rehabilitation Site Name | Type | Coordinates (GDA94) | Area (ha) | *Rehabilitation Summary* |
|---|---|---|---|---|
| | | | | ▪ The area was sown in October with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **MTO RL154 Topsoil C** | Woodland | 319,613.39 E 6,386,416.30 N | 0.8 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform is flat in this area, no aspect.<br>▪ Area is flat and hence not requiring drainage controls.<br>▪ Landform surface preparation comprised minor shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam topsoil from stripping areas in West Pit South was spread directly at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation and aerating as required<br>▪ The area was sown in November with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **MTO RL154 Topsoil D** | Woodland | 319,747.84 E 6,386,141.08 N | 1.4 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform is flat in this area, no aspect.<br>▪ Area is flat and hence not requiring drainage controls.<br>▪ Landform surface preparation comprised minor shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam/sandy clay loam topsoil from existing topsoil stockpiles (sourced from rehabilitation disturbance) was spread at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation and aerating as required<br>▪ The area was sown in November with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a |

| Rehabilitation Site Name | Type | Coordinates (GDA94) | Area (ha) | *Rehabilitation Summary* |
|---|---|---|---|---|
| | | | | direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **MTO RL154 Topsoil E** | Woodland | 319,821.58 E 6,386,085.74 N | 6.5 | ▪ The landform was constructed from a waste emplacement.<br>▪ Typical slope of the landform is 10 degrees with a primarily southerly aspect.<br>▪ Drainage is via westerly draining contours reporting to an engineered rock-lined chute.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam topsoil from stripping areas in West Pit South was spread directly at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in November with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **NPN RL175 Geofluv** | Woodland | 317,038.19 E 6,392,473.36 N | 3.4 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform has been designed using a geomorphological landform approach based on alluvial analogues. Typical slope of the landform is 10 to 14 degrees with limited areas at 16 to 22 degrees. The slope has a primarily northerly aspect.<br>▪ Drainage is via rock-lined drainage lines, directing run-off to sediment control structures to the north west.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Sandy topsoil with a high amount of woody mulch was spread directly from stripping areas at a nominal thickness of 100mm. High amount of mulch was used for erosion protection on slopes.<br>▪ Soil ameliorant comprising recycled gypsum compost was applied at a rate of 5t/ha. No compost was used due to high organic component in topsoil.<br>▪ Growth medium preparation included ameliorant incorporation, and aerating as required |

| Rehabilitation Site Name | Type | Coordinates (GDA94) | Area (ha) | *Rehabilitation Summary* |
|---|---|---|---|---|
| | | | | ▪ The area was sown in September with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. A small area was hand sown due to the steep slope. |
| **Tailings Dam 2** | Woodland | 319,043.07 E<br>6,392,347.22 | 2.2 | ▪ The landform was constructed from spoil placed as an inert cap over a tailings dam. This section of the tailings dam had a layer of Redbank ash deposited on top of the tailings surface.<br>▪ Typical slope of the landform is 10 degrees with a primarily northerly aspect.<br>▪ Drainage from the slope reports to an engineered rock-lined chute.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ No topsoil was added, capping spoil has been used as the growth medium.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively.<br>▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in September with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |
| **Woodlands RL155** | Woodland | 319,634.08 E<br>6,388,797.99 N | 4.1 | ▪ The landform was constructed from a waste emplacement.<br>▪ The landform has been designed using a geomorphological landform approach based on alluvial analogues. Typical slope of the landform is 6 to 14 degrees. The slope has a primarily north-easterly aspect.<br>▪ Drainage is via rock-lined drainage lines, directing run-off to sediment control structures to the north east.<br>▪ Landform surface preparation comprised bulk shaping, deep ripping, rock raking, and removal of oversize rock material.<br>▪ Clay loam/sandy clay loam topsoil from existing topsoil stockpiles was spread at a nominal thickness of 100mm.<br>▪ Soil ameliorants comprising recycled gypsum and Bettergrow Biomulch compost were applied at rates of 5t/ha and 50t/ha respectively. |

| Rehabilitation Site Name | Type | Coordinates (GDA94) | Area (ha) | *Rehabilitation Summary* |
|---|---|---|---|---|
| | | | | ▪ Growth medium preparation included ameliorant incorporation, rock windrowing, rock picking, and aerating as required<br>▪ The area was sown in October with Diverse Native Woodland at 15.7kg/ha. Non-flowable (grass) seed was spread onto the surface using a direct drill and then the flowable components of the seed mix were spread via an air-seeder mounted on the aerator implement. |

# Appendix 8:

# IEA Action Status Table

**Audit Action Plan Status from MTW IEA 2017 (Rev C)**

| Reference | Non Compliance / MTW Response | Action Status Update | Target Date for Completion |
|---|---|---|---|
| SSD6464 Sch. 3, C24(a)<br>WMP 7.4.3.1 | On the 6th January 2016, a sediment dam overtopped resulting in an uncontrolled discharge.<br><br>**Response/Action Description**<br>An internal investigation was undertaken in response to this incident. The investigation and subsequent action plan has been completed to rectify the issues at this dam and to prevent reoccurrence not only at this dam but other dams being constructed or modified. No further action is required in response to this finding. | Complete. | N/A |
| SSD 6464 Sch.3 C.27(b)(ii)<br>SSD 6465 Sch.3 C.25(b)(ii) | The Surface Water Management Plan does not include detailed performance indicators of management objectives for Final Voids<br><br>**Response/Action Description**<br>MTW to update the WMP to include further detail on the performance objectives and management objectives for Final Voids, as indicated in the development consents and the EIS commitments. | Complete.<br><br>The MTW Mining Operations Plan includes detailed plans and rehabilitation objectives for the site, including for final voids. To address this item, a link to the Mining Operations Plan was included in an update to the Water Management Plan approved by DP&E on 20 September 2018 | N/A |

| Reference | Non Compliance / MTW Response | Action Status Update | Target Date for Completion |
|---|---|---|---|
| MT EIS 2.4.4 (iii) | No ongoing characterisation of overburden materials was conducted.<br><br>**Response/Action Description**<br>Extensive geochemical testing of overburden has been carried out across MTW with results showing very low risk of Acid Rock Drainage (ARD) in the overburden material being mined at MTW. The results of sampling conducted to date will be presented to DP&E to justify why ongoing characterisation of overburden materials across MTW is not required. | Complete.<br><br>Presentation made to DP&E Compliance Team on 09/10/2018 to present results of overburden and interburden ARD assessments and testing conducted at MTW to illustrate why ongoing characterisation of overburden materials across MTW is not required. No further action required. | N/A |
| AHMP 9 | There was no written or electronic record of which personnel had completed site specific environmental training for Cultural Heritage.<br><br>**Response/Action Description**<br>MTW to ensure that the AHMP and the MTW induction will cover all specific Cultural Heritage awareness requirements and that suitable training records are maintained | Complete.<br><br>MTW induction has been updated and now covers all specific Cultural Heritage awareness requirements as prescribed by the AHMP. Training records are maintained by H&S Department. | N/A |
| BMP 5.2.3 | On the 8-06-16 a blast was not monitored by the Bulga Village blast monitor due to a software malfunction.<br><br>**Response/Action Description**<br>An internal investigation identified the cause of the data loss to be isolated to a GPS fault on a single blast monitoring unit. This fault has since been corrected and no further action is required in response to this finding. | Complete. | N/A |

| Reference | Non Compliance / MTW Response | Action Status Update | Target Date for Completion |
|---|---|---|---|
| BMP 5.2.2 | Blasting Controls Training was not documented<br><br>**Response/Action Description**<br>MTW to review process for documenting training records for training required by BMP to ensure that suitable training records are maintained. | In Progress. Action item is included on MTW's action tracking system. | 30/04/2020 |
| NMP 6.2 | There was no substantive evidence of car-pooling encouragement programs at the time of the audit.<br><br>**Response/Action Description**<br>Car-pooling occurs however MTW do not run programs to specifically encourage car-pooling nor is it deemed to be necessary to do so. The Noise Management Plan will be revised to reflect this. | Complete. | N/A |

| Reference | Non Compliance / MTW Response | Action Status Update | Target Date for Completion |
|---|---|---|---|
| 20BL170012 C.9<br>20BL170011 C.9<br>20BL171930 C.8<br>20BL171932 C.8 | Water flow devices used to measure the volume of water extracted were not approved by NOW (DPI – Water). Three bore licences were found to be non-compliant with this condition; however two were decommissioned and are not in use and one related to the bore licence associated with groundwater inflow to the Warkworth Pit.<br><br>**Response/Action Description**<br><br>Following commencement of the North Coast Fractured and Porous Rock Groundwater Sources Water Sharing Plan on 1/7/2016, Licences 20BL170011 and 20BL170012 have been converted to Water Access Licences (WALs 40464 and 40465 respectively). Revised licence conditions issued by DPI Water are to be reviewed; to reflect that groundwater inflows to a pit excavation cannot be measured using a flow meter.<br><br>Licences 20BL171930 and 20BL171932 are related to a historical methane extraction project; the bores are not in use. An investigation will be undertaken to determine if the bores should be formally abandoned and the licences relinquished, or if used for monitoring, an application sought to modify the licence purpose and conditions to reflect no water is to be abstracted. | Complete.<br><br>At this point in time there are no mandatory or discretionary conditions on the works approval 20MW065009 for licenses WAL 40464 or WAL 40465 as advised by the Natural Resource Access Regulator (NRAR) during phone conversation 23/9/2018. NRAR has advised the only WAL with license conditions at this time is WAL 18233. | N/A |

| Reference | Non Compliance / MTW Response | Action Status Update | Target Date for Completion |
|---|---|---|---|
| 20BL170011 C.8 and C.10<br><br>20BL170012 C.8 and C.10 | Water flow devices used to measure the volume of water extracted were not calibrated. This related to the aforementioned bore licences that did not have flow devices attached and as such are not able to be calibrated.<br><br>**Response/Action Description**<br><br>Following commencement of the North Coast Fractured and Porous Rock Groundwater Sources Water Sharing Plan on 1/7/2016, Licences 20BL170011 and 20BL170012 have been converted to Water Access Licences (WALs 40464 and 40465 respectively). Revised licence conditions issued by DPI Water are to be reviewed; to reflect that groundwater inflows to a pit excavation cannot be measured using a flow meter. | Complete.<br><br>At this point in time there are no mandatory or discretionary conditions on the works approval 20MW065009 for licenses WAL 40464 or WAL 40465 as advised by the Natural Resource Access Regulator (NRAR) during phone conversation 23/9/2018. NRAR has advised the only WAL with license conditions at this time is WAL 18233. | N/A |
| **Recommendations** | | | |
| 1. | Complete the Salvage report for salvage work conducted in 2016.<br><br>**Response/Action Description**<br><br>A final report will be compiled to bring together the results and completed compliance actions relating to the MTW 2016 ACH salvage | Complete.<br><br>2016 Compliance and Salvage Report (19 CH sites within the Stage 1 AHMP area) updated and finalised on 21/8/18. | N/A |

| Reference | Non Compliance / MTW Response | Action Status Update | Target Date for Completion |
|---|---|---|---|
| 2. | MTW will determine the Wollombi Brook Probable Maximum Flood (PMF) RL at the Charlton levee and ensure there is 500mm of freeboard (from PMF to levee top RL).<br><br>**Response/Action Description**<br>Determine the Wollombi Brook Probable Maximum Flood (PMF) RL at the Charlton levee and ensure there is 500mm of freeboard (from PMF to levee top RL). | Complete.<br><br>A review of the 2016 flood mapping by WBM BMT for Singleton Council indicates that the PMF flood level around the salt pan creek (tributary of Wollombi Brook) is approx 70.0m AHD.<br>A review of MTW survey data indicates that the Charlton levee crest is maintained above RL 70.5 or higher throughout the levee length as at 17/10/2018. | N/A |
| 3. | All training required by the SSD 6464 and 6465 approvals or as required by the Management Plans required by the approvals should be documented.<br><br>**Response/Action Description**<br>Review process for documenting training records for training required by approvals, Implement process for documenting these training records as required. | In Progress. Action item is included on MTW's action tracking system. | 30/04/2020 |