Appendix B

Common Boundary Rehabilitation Plan

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Common Boundary Rehabilitation Plan

Bulga Coal Complex and Mount Thorley Warkworth

February 2013

633.10001

GSS Environmental a Division of SLR Consulting Australia Pty Ltd
(ABN 29 001 584 612) Effective 3 November 2012

SLR

GSS ENVIRONMENTAL
Environmental, Land and Project Management Consultants

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ABBREVIATIONS

ACHMP	Aboriginal Cultural Heritage Management Plan
ACHMS	Aboriginal Cultural Heritage Management System
AHD	Australian Height Datum
ARI	Annual Recurrence Interval
BCC	Bulga Coal Complex
BCM	Bulga Coal Management Pty Ltd
BSO	Bulga Surface Operations
C&A	Coal and Allied
CBRP	Common Boundary Rehabilitation Plan
CCL	Consolidated Coal Lease
CEMP	Construction Environmental Management Plan
CL	Coal Lease
CMA	Catchment Management Authority
CMS	Construction Method Statement
DA	Development Application
DECC	Department of Environment and Climate Change
DP&I	Department of Planning and Infrastructure
DRE	Division of Resources and Energy
DTIRIS	Department of Trade and Investment, Regional Infrastructure and Services
EA	Environmental Assessment

EEC	Endangered Ecological Community
EMP	Environmental management Plan
EMS	Environmental Management System
EPA	Environmental Protection Authority
EPBC	Environmental Protection and Biodiversity Conservation Act 1999
EPL	Environment Protection Licence
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
GDP	Ground Disturbance Permit
ITP	Inspection Test Plan
LMP	Landscape Management Plan
MBCM	Million bank cubic metres
ML	Mining Lease
MOP	Mining Operations Plan
MTO	Mount Thorley Operations
MTW	Mount Thorley Warkworth
NIA	Noise Impact Assessment
NSW	New South Wales
OEH	Office of Environment and Heritage
PA	Project Approval
RTCA	Rio Tinto Coal Australia
SMTA	Singleton Military Training Area
WML	Warkworth Mining Limited
XCN	Xstrata Coal NSW

1.0 INTRODUCTION

Mount Thorley Warkworth (MTW) is an amalgamation of two separate joint venture coal mining operations, majority owned and managed by Coal & Allied Operations Pty Limited (C&A), which in turn is managed by Rio Tinto Coal Australia (RTCA).

These two mines, Mt Thorley Operations (MTO) and Warkworth Mining Limited (WML), were integrated into one operation in February 2004 to form MTW. MTW is located approximately 14 kilometres (km) southwest of Singleton, in the upper Hunter Valley of New South Wales (NSW).

The Bulga Coal Complex (BCC) comprises two coal mining operations; Bulga Surface Operations (BSO) and Bulga Underground Operations. BCC is located immediately south of MTW, approximately 12km southwest of Singleton, and is majority owned by Xstrata Coal Australia and managed by Bulga Coal Management Pty Ltd (BCM) (refer to **Figure 1**).

MTW and BCC share a common boundary between Coal Lease (CL) 219 (MTW) and Mine Lease (ML) 1547 (BCC). MTW and BCC propose to develop a shared overburden emplacement area located across the eastern section of the common boundary referred to as the 'Common Boundary' (**Figure 1**: Location Plan). The Common Boundary is required by both MTW and BCC to provide sufficient capacity for out of pit overburden emplacement to provide for continuation of mining activities as currently approved.

Both BCC and MTW propose to alternately dump overburden in staged dumping sequence to construct an integrated final landform for the Common Boundary, consistent with the regulatory requirements and statutory approvals for both MTW and BCC.

1.1 Purpose

This Common Boundary Rehabilitation Plan (CBRP) has been prepared at the direction of the Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS) to be consistent with the requirements of the approved Mining Operations Plans (MOPs) for both BSO and MTW, and to form an appendix to both the current MTW and BSO MOPs.

This plan documents the proposed operational and environmental management activities for the Common Boundary for the period 2013 to 2016.

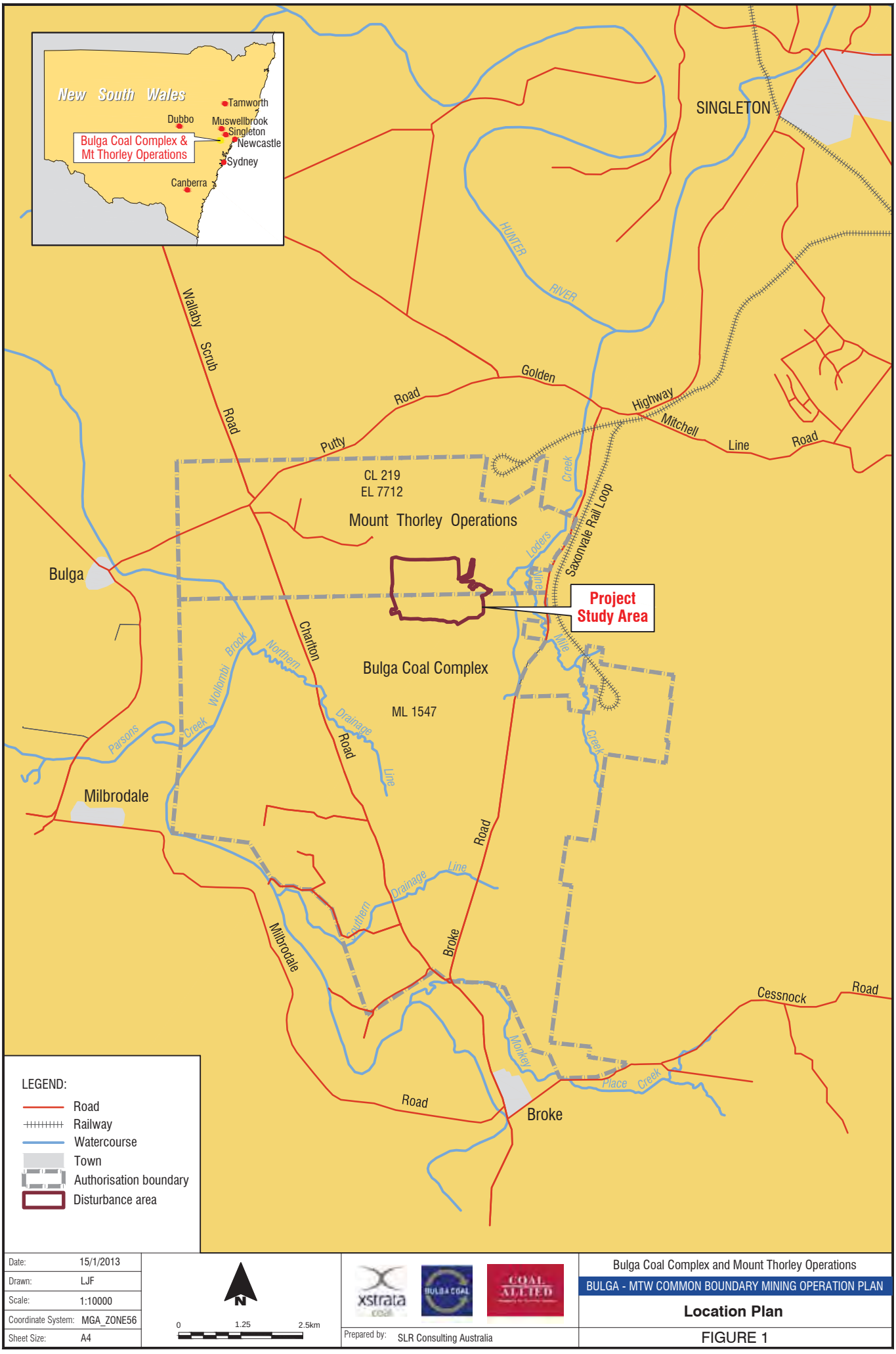
This plan:

- Describes the activities associated with the Common Boundary project during the period of this CBRP;
- Develops and document the environmental management responsibilities and actions associated with operational activities and rehabilitation works specific to the Common Boundary; and
- Describes and displays (in the form of a series of rehabilitation maps consistent with the statutory MOP Rehabilitation Maps) the staged disturbance and rehabilitation phase sequence and final landform proposed for the Common Boundary.

1.2 Scope of the CBRP

MTW and BCC have consulted with the DTIRIS regarding the scope of this plan. Subsequently, this CBRP has been prepared to be consistent with the objectives of the *Working Draft MOP Guideline* (DTIRIS 2012). The scope of this plan includes the operational and environmental management activities associated with:

- Construction and operation of ancillary infrastructure required for the Common Boundary including water management structures for operations and the final landform;



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Prepared by: SLR Consulting Australia

Bulga Coal Complex and Mount Thorley Operations

BULGA - MTW COMMON BOUNDARY MINING OPERATION PLAN

Location Plan

FIGURE 1

- Overburden emplacement activities by MTW and BCC at the Common Boundary; and
- Rehabilitation works to be undertaken by MTW and BCC for:
    - Landform Establishment (including surface drainage features); and
    - Growth Media Development rehabilitation phases.

The period for this CBRP is four years. Active dumping is expected to be undertaken for approximately three years.

1.3 Consents, Authorisations and Licences

BSO operates under Development Approval (DA) 41-03-99 (as modified). The Department of Planning and Infrastructure (DP&I) is currently assessing an application to modify DA 41-03-99; the Western Mining Limit Modification (Modification 7). Development approval for the Common Boundary project is addressed in the Modification 7 application.

MTW operates under two development consents; Development Approval (DA) 34/95 (as modified) (MTO) and Project Approval (PA) 09_0202 (Warkworth). The proposed final landform and land use for the Common Boundary is consistent with the final landform and landuse as approved under DA 34/95

Consents, authorisations and licences applicable to the Common Boundary are listed in **Tables 1 and 2** below.

1.3.1 Ramp 22 Dam Development Approval

The Common Boundary project will require construction of a sediment dam at the eastern perimeter of the Common Boundary footprint (refer to **Figure 3a** and **Section 3.2.2**). The Ramp 22 Dam has not been considered in BCC's Modification 7 application. Subsequently, BCC are preparing an application to modify DA 41-03-99 to construct and operate the Ramp 22 sediment dam.

Table 1: MTW Approvals, Leases and Licences relevant to the Common Boundary

Approval / Licence	Description	Issued	Expires
Mount Thorley			
DA 34/95 (as modified)	Development Approval (Section 75W)	22 June 1996	22 June 2017
CL 219	Coal Lease	23 Sept 1981	23 Sept 2023
(Part) ML 1547	Mine Lease	Registered to 31 Dec 2015	
EPL 24	Environment Protection Licence	Review due 7 March 2014	
EPL 1976	Environment Protection Licence	Review due 16 Sept 2014	
Warkworth			

PA 09_0202	Project Approval (Section 75J)	03 Feb 2012	31 March 2013
EPBC 2002/629 v3	EPBC Act Approval	19 Nov 2004	25 Feb 2039
CCL 753	Consolidation Coal Lease	17 Feb 2002	17 Feb 2023
ML 1412	Mine Lease	11 Jan 1997`	10 Jan 2018
ML1590	Mine Lease	27 Feb 2007	26 Feb 2028
EPL 1376	Environment Protection Licence	Review due 1 Nov 2014	

Table 2: BCC Approvals, Leases and Licences applicable to the Common Boundary

Approval / Licence	Description	Expires
DA 41-03-99 (as modified)	Development Approval	2025
ML 1547	Mine Lease	4 April 2017
ML 1494	Mine Lease	20 Sept 2027
(Part) CL 219	Coal Lease – Sublease from MTW	23 April 2017
ML 1674	Mine Lease	22 March 2033
CL 224	Coal Lease	23 Dec 2023
EL 5461	Exploration Licence	2 April 2013
EL 5277	Exploration Licence	6 April 2010(application to renew made to DTIRIS)
A447	Assessment Lease	30 Dec 2013
A450	Assessment Lease	30 Dec 2013
EPL 563	Environment Protection Licence	Anniversary Date: 20 July. Review Due: 21 Dec 2016

1.4 Land Ownership and Land Use

The Common Boundary project lies wholly within the Singleton Shire Council area. WML and MTO, and BCC, own the majority of the land within the MTW and BCC mines respectively. The majority of land adjoining the two mines is privately owned freehold land. Schedules of land ownership are available in:

- MTW MOP Appendix A (Development Consent DA09_0202: Appendix 1); and
- BSO MOP Appendix 3: Schedule of Land Ownership.

1.4.1 Common Boundary Agreement

MTW and BCC have implemented a boundary agreement (the Common Boundary Agreement) that facilitates both mines optimising coal recovery and operations along the boundary between CL 219 and ML 1547. The Common Boundary Agreement stipulates that BCC and MTW will identify and document tenement requirements for each party to undertake future filling within the Common Boundary footprint within this Common Boundary Rehabilitation Plan. BCC and MTW agree that during each stage of works (construction, active dumping and rehabilitation works) each party will amend their Colliery Holdings Boundary to ensure that all operational areas within the Common Boundary footprint are encompassed within the Colliery Holdings Boundary of the mine undertaking the activity. **Figures 3a to 3i** reflect the changes to the Colliery Holdings Boundary to reflect access and tenement arrangements for each operational stage of the Common Boundary project.

1.5 Stakeholder Consultation

Extensive stakeholder engagement regarding the Common Boundary was undertaken by both sites during recent consent modification approval processes. Activities associated with the Common Boundary project and the proposed final landform was addressed in BCC's Western Mining Limit Modification (DA 41-03-99 Mod 7). The proposed final landform for the Common Boundary area is also addressed in MTW's recent modification, DA 9_0202 Mod 7.

Specific consultation undertaken for the preparation of this MOP is listed below.

1.5.1 Consultation with the DTIRIS

Meeting 20/09/2012 and 14/11/2012

A meeting was held on 20/09/2012 between BCC (Paul Amidy), MTW (Bill Baxter) and the DTIRIS (Greg Summerhayes) to discuss the Common Boundary project and the DTIRIS' expectations regarding environmental management and rehabilitation for the Common Boundary. A further meeting was held on the 14/11/2012 with both Greg Summerhayes and Simon Lund regarding the modified final landform.

2.0 PROPOSED OPERATIONS

2.1 Project Description

As outlined in **Section 1.0**, the Common Boundary project constitutes a shared overburden emplacement area straddling the common mine lease boundary between MTW and BCC (**Figure 1**). The overburden emplacement area and associated infrastructure (including access ramps and surface water infrastructure) will be developed on rehabilitated land disturbed for previous mining activities (refer to **Figure 2**). The Common Boundary project will provide both MTW and BCC sufficient capacity for out of pit overburden emplacement for continuation of mining activities as currently approved.

The Common Boundary project, including construction, operations and rehabilitation works is anticipated to be four years, and be completed by 2016. As described in **Section 1.2**, the Common Boundary project will conclude at the successful completion of Growth Media Development rehabilitation phase for all areas within the Common Boundary sub-lease boundary. Rehabilitation works for ecosystem establishment and development will be undertaken by MTW and BCC independently in accordance with each site's approved MOP.

Staged clearing and topsoil stripping of previously rehabilitated land (dehab) and the staged dump sequencing, is summarised in **Table 3**.

2.2 Activities over the term of the CBRP

By agreement, BCC and MTW will:

- Construct infrastructure (surface water management infrastructure and access ramps) for the Common Boundary;
- Clear and strip topsoil from previously rehabilitated spoil dumps within the Common Boundary (where appropriate);
- Alternately dump overburden in accordance with an agreed dump sequencing schedule; and
- Rehabilitate the Common Boundary in accordance with the methodology and performance criteria described in this plan.

2.2.1 Construction

Construction activities associated with the Common Boundary project include:

- Construction of access ramps for both BCC and MTW (refer to **Figures 3a and 3b**); and
- Constructing surface water management infrastructure.

Subject to approval, BCC propose to construct an additional sedimentation dam (see **Figure 3a**: proposed Ramp 22 Dam) to capture dirty water runoff from the Common Boundary footprint during dumping and rehabilitation phases. It is proposed to retain this dam in the final landform as a clean water dam for potential use as a farm dam. The proposed Ramp 22 Dam concept design is appended to this plan (**Appendix 4**).

It is anticipated that the Ramp 22 Dam will be constructed and operational within 12 months of commencement of dumping. Subsequently, interim erosion and sediment controls will be implemented to manage dirty water runoff from disturbed areas prior to the construction and commissioning of Ramp 22 Dam including a temporary sediment dam to be constructed in the valley void (**Figure 3a**).

Proposed construction of water management infrastructure is discussed further in **Sections 3.2.1 and 3.2.2**.

2.2.2 Clearing and Topsoil Stripping Rehabilitation Areas (Rehabilitation Disturbance)

Approximately 148ha of previously rehabilitated land will be disturbed for the Common Boundary project. Previously rehabilitated areas are displayed in **Figure 2**. Rehabilitation disturbance for each year of the Common Boundary project is summarised in **Table 9**. Where overburden will be emplaced on previously rehabilitated land; topsoil will be assessed (and where appropriate) stripped and stockpiled ahead of dumping for re-use in rehabilitation.

2.2.3 Overburden Dumping

The Common Boundary emplacement area will accommodate approximately 42 million bank cubic metres (MBCM) of overburden. **Table 3** shows the forecast annual volumes of overburden dumping and topsoil stripping. The disturbance and overburden dumping staging is displayed on **Figures 3a to 3i**.

Dump sequencing has been developed to:

- Provide (approximately) equivalent dump volumes to MTW and BCC; and
- Provide for both MTW and BCC to undertake dumping to meet their respective mine planning needs.

Each dump stage will be undertaken to facilitate commencement of the following stage(s) in accordance with each mine's mine plan. For example, Stage 4 operations (**Map 3d**) will prioritise completing dumping within ML1547 to facilitate BCC dumping over the ML1547 area in Stage 6 **(Map 3f**) as per the proposed dump sequence (i.e. year 2014).

Table 3: Disturbance and Overburden Dumping Schedule

Material	**Unit**	**BCC**				**MTW**			
Material	**Unit**	**2013**	**2014**	**2015**	**2016**	**2013**	**2014**	**2015**	**2016**
Overburden	Mbcm	10.9	9.9	0	0	0.5	11.0	10.6	0
Stripped Topsoil	cm	49700	0	0	0	62800	47600	0	0

2.2.4 Rehabilitation

The primary objective of rehabilitation for the Common Boundary is to construct an integrated final landform for the Common Boundary, consistent with the regulatory requirements and statutory approvals for both MTW and BCC. MTW and BCC propose to create one continuous landform, rehabilitated with similar native vegetation communities. A significant benefit of this strategy will be to remove the existing 'valley void' along the shared lease-line, that would remain if the two mines dump independently to the shared mine lease boundary.

The final landuse objective of the Common Boundary project is aligned with the primary rehabilitation objective of both MTW and BCC; to enhance native vegetation and fauna habitat linkages and create a north/south conservation corridor linking MTW, BCC and existing native vegetation at the Singleton Military Training Area (SMTA) to the south.

Rehabilitation will be undertaken progressively when active dumping is complete in a specific area.

Rehabilitation Responsibilities on the Other Mine's Land

By agreement, regardless of the location of an area with respect to the mine lease boundary, the mine that undertakes the final active dumping operation in a given area will be responsible for:

- Shaping and constructing surface drainage structures (Landform Establishment rehabilitation phase); and
- Topsoil emplacement, topsoil and spoil amelioration, and (where required) stabilisation with sterile cover crops (Growth Media Development phase of rehabilitation).

Where final dumping is undertaken by either MTW or BCC in a given area on the other mine's land, specifications for shaping, surface drainage structures, topsoil emplacement and amelioration will be developed to reflect the Landform Establishment and Growth Media Development rehabilitation commitments of the mine that owns the land. Specifications for particular elements of rehabilitation works, such as spoil amelioration, will be developed and agreed in accordance with the Current MTW and BSO MOPs and consider variables such as soil and spoil characterisation and final land use objectives.

Following verification that all works in the area have been undertaken in accordance with the agreed specifications, responsibility for the area reverts to the mine lease holder, to progress rehabilitation in accordance with the mine's approved MOP. Further discussion on rehabilitation methodology and specifications for Landform Establishment and Growth Media Development is provided in **Sections 5.5.1 and 5.5.2**.

3.0 ENVIRONMENTAL ISSUES MANAGEMENT

3.1 Risk Assessment

Generally, environmental risks associated with the proposed MTW and BCC activities have been identified in recent environmental risk assessment workshops undertaken by the mines including:

- MTW 2012 – 2016 Broad Brush Risk Assessment; and
- BCC 2012 Environment and Community Broad Brush Risk Assessment.

Additional environmental risks specific to the Common Boundary project were identified in an Environmental Broad Brush Risk Assessment (BBRA) workshop held on 7th December 2012 with key personnel from BCC, MTW and GSSE.

3.2 Risk Management

Environmental risk will be managed in accordance with the MTW and BCC approved Environmental Management Systems (EMSs), Environmental Management Plans (EMPs) and regulatory requirements. Where works are undertaken by either MTW or BCC on the other mine's land, all operational controls will be in accordance with the EMPs and regulatory requirements of the mine leaseholder.

The MTW and BSO MOPs summarise the risk management approach, and relevant EMPs, for each key risk area such as operational noise, flora and fauna and air quality. For further information regarding general risk management requirements associated with the Common Boundary refer to the MTW and BSO MOPs and EMPs.

Environmental risks that are specific to the Common Boundary (as identified in the Common Boundary BBRA) require supplementary controls in addition to those described in the mines' EMPs. Additional risk management controls have been developed in this plan and are summarised in the sections below. These additional risk management measures are required to address potential cumulative impacts of the Common Boundary project activities and to clearly define the responsibilities of MTW and BCC in the shared Common Boundary footprint.

The additional risk management measures described in this plan are intended to complement the existing site EMPs, and maintain consistency with the objectives and requirements of both MTW and BCC EMPs and corporate standards.

3.2.1 Surface Water

Although the Common Boundary project proposes to infill the existing valley void between the sites, there is minimal change in the total catchment area reporting to Loders Creek from either the MTW or BCC mines. However additional surface water management measures have been developed in this plan to manage water quality discharge from areas disturbed by the Common Boundary project, and address surface water drainage for the Common Boundary final landform.

The conceptual final landform drainage layout is displayed in **Figure 4**. The Final Landform Drainage Design (**Appendix 3**) provides locations and sizes / capacities for all proposed ESC structures required for MTW and BCC to meet regulatory and approval requirements.

Surface water management for disturbance areas is discussed in the following section.

3.2.2 Erosion and Sedimentation

Erosion and sediment control at the Common Boundary will be managed in accordance with the requirements of:

- Rio Tinto Environmental Standard E10 – Water Use and Quality Control;
- C&A Environmental Procedure 7.1 – Water Management;
- MTW Erosion and Sediment Control Plan;
- XCN STD ANN 0077 – Erosion and Sediment Control; and
- BCC Erosion and Sediment Control Plan.

Potential offsite water pollution due to dirty water runoff from the Common Boundary during dumping is considered a key risk during the Common Boundary Project. Existing sedimentation dams for the existing partially rehabilitated catchment are inadequate to manage surface water runoff for the disturbed catchment during operations.

MTW and BCC will implement additional erosion and sediment controls (ESC) for operational stages of the project to manage runoff in accordance with the MTW and BCC Erosion and Sediment Control Plans and EPL conditions (EPL 1976 and 563).

Runoff from the Common Boundary catchment currently reports to two existing sedimentation dams located downstream of the project footprint (Refer to **Figure 2**). As outlined in **Section 1.3.1** BCC are applying to modify DA 41-03-99 to approve constructing the Ramp 22 Dam to capture dirty water runoff from the maximum projected area of disturbance. Ramp 22 Dam will be constructed to provide capacity to manage surface water runoff from the Common Boundary footprint in accordance with regulatory requirements and RTCA / XCN corporate standards.

Interim Erosion and Sediment Control Plan

As outlined in **Section 2.2.1**, commencement of dumping is anticipated prior to the construction of Ramp 22 Dam. An interim Erosion and Sediment Control Plan (ESCP) has been developed to manage erosion and sedimentation prior to the anticipated completion of Ramp 22 Dam (**Appendix 2**). The objective of the interim ESCP is to minimise the potential discharge of sediment laden or saline runoff to downstream waters during mining by implementing best management practices.

The interim ESCP has been developed to:

- Meet the requirements of the development consents for both the BSO and MTW;
- Meet the requirements of *Managing Urban Stormwater: Soils and Construction (the Blue Book), Volume 1 and Volume 2E – Mines and Quarries* (Landcom, 2004 and Department of Environment and Climate Change (DECC), 2008);
- Meet the requirements of the EPL No. 568 and EPL No. 1976, particularly with regards to total suspended solids;
- Describe the location, function, and capacity of interim ESC structures; and
- Provide an effective monitoring and maintenance program specific to the Common Boundary.

The interim ESCP includes drawings to specify the type and location of ESC structures for Stages 1 to 3 of the Common Boundary project. This is anticipated to address all ESC requirements up to completion of the proposed Ramp 22 Dam. The interim ESCP will be reviewed in 12 months and, if required, additional ESC measures will be developed in the event that the Ramp 22 Dam is not completed prior to the completion of the Stage 3 dumping operation (**Figure 3c**).

3.2.3 Operational Noise

BCC engaged specialist acoustics consultants (Global Acoustics Pty Ltd) to undertake a Noise Impact Assessment (NIA) for the Bulga Open Cut Western Mining Limit Modification Environmental Assessment (Modification 7 EA) (refer to the Modification 7 EA, Section 6.2.5). The NIA modelled cumulative noise impacts generated by simultaneous operation at BCC and MTW mines, including planned activities at the Common Boundary.

The NIA modelling of the worst case scenario for simultaneous operations (during unfavourable meteorological conditions) predicts that the likelihood of MTW and BCC operations resulting in a daytime exceedance at the nearest residential receivers (Bulga Village) is highly unlikely. The modelling predicts there is potential for minor night time exceedances of the cumulative noise criterion.

Generally, potential noise impacts will be managed in accordance with:

- Rio Tinto Environmental Standard E6 – Noise and Vibration Control;
- C&A Environmental Procedure 9.1 Noise;
- MTW Noise Management Plan; and
- BCM Noise Management Plan.

Additionally, MTW and BCC will manage operations to mitigate potential cumulative noise impacts by allocating day time and night time dumping locations to minimise exposure of night time dumping locations (where possible) and/or shielding dumping above RL 125 m.

3.2.4 Air Quality

Air quality will be managed in accordance with relevant MTW and BCC management plans and standards as listed below:

- Rio Tinto Environmental Standard E2, Air Quality Control;
- C&A Environmental Procedure 8.2 – Dust Management – Mobile Equipment; and
- Bulga Air Quality Monitoring Program.

Control measures to minimise dust generation resulting from the Common Boundary project include:

- Disturb only the areas required for overburden dumping and associated infrastructure;
- Use water carts to manage dust areas on access ramps;
- Reshape, topsoil and rehabilitate completed overburden areas as soon as practicable; and]
- Seed overburden emplacement areas that will be inactive for a period in excess of 3 months with sterile cover crops.

3.2.5 Aboriginal Heritage

Aboriginal cultural heritage at the Common Boundary will be managed in accordance with:

- Rio Tinto Environmental Standard E9 – Land Use Stewardship;
- Rio Tinto Aboriginal Cultural Heritage Management System (ACHMS);
- C&A Environmental Procedure 2.1 – Cultural Heritage Management; and

- MTW Aboriginal and Cultural Heritage Management Plan (ACHMP);

BCC will undertake an Aboriginal Archaeological Investigation as part of the environmental assessment to support the application to modify DA 41-03-99 for the Ramp 22 Dam. The Ramp 22 Dam will require disturbing previously undisturbed land within CL 219 only. Accordingly, MTW will manage any Aboriginal Heritage issues identified in the archaeological investigation in accordance with the MTW ACHMS and ACHMP.

Any Aboriginal Heritage management and mitigation measures associated with the Ramp 22 Dam construction will be incorporated into a Construction Environmental Management Plan (CEMP) and implemented using the site Ground Disturbance Permit (GDP) system.

3.2.6 Ecology

Flora and Fauna at the Common Boundary will be managed in accordance with:

- Rio Tinto Environmental Standard E9 – Land Use Stewardship;
- C&A Environmental Procedure 5.1 – Disturbance and Rehabilitation
- C&A Environmental Procedure 10.2 – Flora and Fauna

An ecological assessment for the Ramp 22 Dam will be undertaken to support the application to modify DA 41-03-99. Any ecological management and mitigation measures recommended in the ecological assessment will be incorporated into the CEMP and site GDP.

4.0 POST MINING LAND USE

4.1 Regulatory Requirements

The regulatory requirements specific to the Common Boundary post-mining land use are summarised in Table 4.

Table 4: Post Mining Land Use Regulatory Requirements

Source	Area	Requirement
MTW		
PA 09_0202 Schedule 3 Condition 33	Rehabilitation Areas	Vegetation to be established, with the restoration of at least 2,114 ha of Central Hunter Grey Box-Ironbark Woodland and/or Central Hunter Ironbark-Spotted Gum-Grey Box Forest EECs.
PA 09_0202 Schedule 3 Condition 34	Rehabilitation Areas	By the end of July 2012, unless the Director-General agrees otherwise, the Proponent shall update the biodiversity offset strategy referred to above, in consultation with the Department, EPA and CMA, to the satisfaction of the Director-General. The updated strategy must include the specific details on the Additional Biodiversity Offset Area, and include the additional land to be added to the Southern Biodiversity Area under condition 53 of schedule 3 (see Figure 12 of Appendix 6).
PA 09_0202 Schedule 3 Condition 35	Rehabilitation and Biodiversity Areas	The Proponent shall ensure that the biodiversity offset strategy and/or rehabilitation strategy is focused on the re-establishment of: (a) the following endangered ecological communities:

		• Warkworth Sands Woodland; • Central Hunter Grey Box–Ironbark Woodland; and • Central Hunter Ironbark–Spotted Gum–Grey Box Forest; and (b) habitat for threatened fauna species, including the: • Regent Honey Eater, Swift Parrot, Glossy Black Cockatoo, Brown Treecreeper, Diamond Firetail, Grey-crowned Babbler, Hooded Robin, Little Lorikeet, Varied Sittella, Spotted Harrier, and Speckled Warbler; and • Eastern Bent-wing Bat, Eastern Freetail Bat, Large-eared Pied Bat, Little Bentwing Bat, Large-footed Myotis and Squirrel Glider.
PA 09_0202 Schedule 3 Condition 36	Rehabilitation and Biodiversity Areas	By the end of March 2026, unless the Director-General agrees otherwise, the Proponent shall commission suitably qualified, experienced and independent persons - whose appointment has been approved by the Director-General - to undertake an audit of the revegetation of the rehabilitation area to the satisfaction of the Director-General. This audit must: (a) include consultation with OEH and DRE; (b) assess the performance of the Central Hunter Grey Box–Ironbark Woodland and/or Central Hunter Ironbark–Spotted Gum–Grey Box Forest EEC revegetation in the rehabilitation area completed to date against the detailed performance and completion criteria in both the Biodiversity Management Plan and Rehabilitation Management Plan; (c) identify any measures that should be implemented to improve the performance of the rehabilitation; and (d) if the completion criteria have not been met, or are not adequately trending towards being met, determine the likely ecological value of the rehabilitation once completed, and recommend additional measures to augment the offset strategy to ensure that it adequately offsets the project's impacts on these EECs. If the audit recommends the implementation of additional measures to augment the offset strategy in accordance with (d) above, then within 6 months of the completion of the audit the Proponent shall revise the biodiversity offset strategy, in consultation with the Department and OEH, to the satisfaction of the Director-General
PA 09_0202 Schedule 3 Condition 38	Rehabilitation Area	By the end of March 2033, unless the Director-General agrees otherwise, the Proponent shall enter into a conservation agreement pursuant to section 69B of the National Parks and Wildlife Act 1974 for the Rehabilitation Area in the Biodiversity Offset Strategy, recording the obligations assumed by the Proponent under the conditions of this approval in relation to this area, and register this agreement pursuant to section 69F of the National Parks and Wildlife Act 1974. The conservation agreement must remain in force in perpetuity
PA 09_0202 Schedule 3 Condition 51	Biodiversity Areas and Rehabilitation Area	The Proponent shall prepare and implement a Biodiversity Management Plan for the project to the satisfaction of the Director-General
PA 09_0202 Schedule 3 Condition 71	Biodiversity Areas and Rehabilitation Area	The Proponent shall prepare and implement a Visual Impact Management Plan for the project to the satisfaction of the Director-General.
PA 09_0202 Schedule 3 Condition 76	Rehabilitation Areas	The Proponent shall rehabilitate the site to the satisfaction of the Executive Director, Mineral Resources in DRE. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the EA (and depicted conceptually in the figures in Appendix 9), and comply with the objectives in Table 16.

PA 09_0202 Schedule 3 Condition 77	Rehabilitation Areas	The Proponent shall rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. Note: It is accepted that some parts of the site that are progressively rehabilitated maybe subject to further disturbance at some later stage of the project
PA 09_0202 Schedule 3 Condition 78	Rehabilitation Areas	The Proponent shall prepare and implement a Rehabilitation Management Plan for the project to the satisfaction of the Executive Director, Mineral Resources in DRE
Statement of Commitment	Rehabilitation Areas	WML commits to an offset strategy to compensate for the disturbance of EECs consisting of the following: Rehabilitation of mine lands – progressively establish some 2,116.6ha of Central Hunter Grey Box-Ironbark-Spotted Gum woodland communities, 305ha of trees on grassland and the residual being rehabilitated to grassland.
		Overburden will be rehabilitated with grasses and woodland. Woodland planting will be extended on the eastern face to achieve a similar mosaic to the existing rehabilitation on the landscape.
		The overburden heights will be maintained on average at current consent limits, which are RL 160m AHD for Warkworth Mine and RL 155m AHD for Mount Thorley Mine.
CL 219 & CCL 753 Condition 21	Coal Lease area	If so directed by the Minister the lease holder shall rehabilitate to the satisfaction of the Minister any lands within the subject area which may have been disturbed by the lease holder.
CL 219 & CCL 753 Condition 22	Coal Lease area	Upon completion of operations on the surface of the subject area or upon the expiry or sooner determination of this authority or any renewal thereof, the lease holder shall remove from such surface such buildings, machinery, plant, equipment, constructions and works as may be directed by the Minister and such surface shall be rehabilitated and left in a clean, tidy and safe condition to the satisfaction of the Minister.
CL 219 & CCL 753 Condition 23	Coal Lease area	If so directed by the Minister the lease holder shall rehabilitate to the satisfaction of the Minister and within such time as may be allowed by the Minister any lands within the subject area which may have been disturbed by mining or prospecting operations whether such operations were or were not carried out by the lease holder.
BSO		
DA 41-03-99 Clause 3.6 (b)	Rehabilitation and Offset Areas	The Rehabilitation and Offset Management Plan must include: i. The objectives for rehabilitation of the site and vegetation offsets ii. A description of the short, medium, and long term measures that would be implemented to rehabilitate the site, manage the remnant vegetation and habitat on site and implement vegetation offsets iii. Detailed performance and completion criteria for the rehabilitation of site and implementation of the vegetation offsets

		iv. A detailed description of how the performance of the rehabilitation of the mine would be monitored over time in order to demonstrate achievement of the stated objectives v. A detailed description of what measures would be implemented over the next 3 years, including for: • Minimising and rehabilitating disturbed areas • Implementing vegetation offsets\ • Protecting vegetation and soil outside disturbance areas • Undertaking pre-clearance surveys • Managing impacts of fauna • Landscaping the site to minimise visual impacts • Conserving and reusing topsoil • Collecting and propagating seed for rehabilitation works • Salvaging and reusing material from the site fir habitat enhancement • Controlling weeds and feral pests • Controlling access; and • Bushfire management vi. A program to monitor the effectiveness of the measures, and progress against the performance and completion criteria vii. A description of the potential risks to successful rehabilitation and/or revegetation, and a description of the contingency measures that would be implemented to mitigate these risks viii. Details of who is responsible for monitoring, reviewing and implementing the plan.
ML1547 Condition 21	Rehabilitation Areas	If so directed by the Minister the leaseholder shall rehabilitate to the satisfaction of the Minister any lands within the subject area which may have been disturbed by the leaseholder
ML1547 Condition 22		Upon completion of operations on the surface of the subject areas or upon expiry or sooner determination of this authority or any renewal thereof, the leaseholder shall remove from such surface such buildings, machinery, plant, equipment, constructions and works as may be directed by the Minister and such surface shall be rehabilitated and left clean, tidy and safe condition to the satisfaction of the Minister
ML1547 Condition 23		If so directed by the Minister the lease holder shall rehabilitate to the satisfaction of the Minister and within such time as may be allowed by the Minister any lands within the subject area which may have been disturbed by mining or prospecting operations whether such operations were or were not carried out by the lease holder

4.2 Post-Mining Land Use Vision

4.2.1 Final Land Use

The final landuse objective for the Common Boundary is consistent with the final landuse objectives of both MTW and BCC, being to integrate post mining areas into the surrounding landscape. The pre-mining landscape at both MTW and BCC was predominantly low-intensity grazing, however the post-mining land capability is constrained by the dispersive properties of spoils and soils, and grazing pasture is not generally a sustainable land use for emplacement areas at BCC and MTW.

MTW and BCC Final Land Use Integration

The Common Boundary will have a primary land use of open woodland communities commensurate with adjacent undisturbed vegetation communities, and some pasture areas, vegetated with native and exotic pasture species where appropriate (**Figure 4**).

Figure 4 also shows the post mining final land use adjacent to the Common Boundary project area to provide context. This includes the north-south conservation corridor proposed to extend through MTA and BCC and ultimately link to undisturbed native vegetation at the SMTA.

A conveyance channel is proposed to be located along the shared mine lease boundary (see **Figure 4**), and will be vegetated with riparian species in accordance with the MTW MOP and BCC LMP. To enhance habitat connectivity across the Common Boundary, vegetation communities adjacent to the shared boundary will transition into the riparian zone.

4.3 Common Boundary Rehabilitation Objectives

The Common Boundary forms an integral link in the overarching project rehabilitation objectives for both MTW and BCC, being to increase regional native vegetation and native fauna habitat by establishing a north/south connecting corridor through the rehabilitation areas of the MTW and BCC mines, ultimately linking with undisturbed native vegetation at the SMTA.

Primary and Secondary Domain rehabilitation objectives are listed in **Table 5.** Rehabilitation objectives specific to the Landform Establishment and Growth Media Development phases of rehabilitation are listed in **Tables 6 and 7**.

5.0 REHABILITATION PLANNING

5.1 Domain Selection

Domains have been defined in accordance with the methodology prescribed in the *Working Draft MOP Guideline* (DTIRIS 2012). Primary Domains are defined as the set of discrete areas that have a particular operational or functional purpose. Land management units with similar operational function are likely to have similar geophysical features and constraints /opportunities for rehabilitation.

Secondary Domains are land management units with similar post-mining land use objectives, such as woodland communities and native grasslands. Primary and Secondary Domains associated with the Common Boundary are listed in **Table 5** and discussed in the following sections.

Table 5: Primary and Secondary Domains

Primary Domain	Code	Secondary Domain	Code
Water Management Area – Footprint for water management structures (e.g. drains,	3	Water Management Area – Footprint of water management structures retained in the final	A

channels, dams).		landform.	
		Rehabilitation Area: Derived Native Grassland – Grassland communities with a native component.	B
Overburden Emplacement. Disturbance footprint for active dumping.	4	Rehabilitation Area: Woodland – woodland association conforming to Central Hunter Grey Box – Ironbark woodland.	C
		Rehabilitation Area: Trees over grassland – woodland trees within pasture areas but not necessarily conforming to Central Hunter Grey Box – Ironbark woodlands	D

5.2 Domain Rehabilitation Objectives

The Domain rehabilitation objectives in this plan have been developed to be consistent with the existing MTW and BCC rehabilitation objectives associated with rehabilitation of overburden dumps to sustainable ecological communities. Domain rehabilitation objectives are described in **Table 6**.

Table 6: Domain Rehabilitation Objectives

Domain	Rehabilitation Objective
Primary Domains	
Water Management Area	The final landform drainage will be designed to integrate with the surrounding catchments and be revegetated to achieve long term stability and minimise erosion.
Overburden Emplacement Area	• The final landform will be developed with recognition of the pre-mining landform and landuse • The final landform will be an undulating, free draining landform, with features consistent with those of the surrounding landscapes.
Secondary Domains	
Water Management Areas	As per Primary Domain
Native Grassland	Recreating grassland communities with a native species component.
Trees over Grassland	Establishing trees over grassland areas, but not necessarily conforming to any particular vegetation community.
Woodland	• Establishing open woodland communities to a standard comparable to similar reference EEC communities (Central Hunter Grey Box–Ironbark Woodland). • Establishing a network of tree corridors to ensure connectivity of woodland community areas.

	• Provide additional habitat for threatened species. • Create an additional north/south wildlife corridor providing connectivity to other habitat.

5.3 Performance Criteria and Indicators

The performance criteria and indicators in this plan have been developed to be consistent with the performance criteria and indicators for comparable domains in the MTW and BSO current MOPs. The performance criteria and indicators in this plan reference industry standards, Xstrata and Rio Tinto corporate standards and scientific literature. The intent of this plan is to provide a rehabilitation framework for the Common Boundary that reflects industry best practice. Consequently, the indicators and performance criteria may be revised subject to future developments in the scientific literature or due to the outcomes of monitoring programs and research programs conducted by MTW and BCC.

5.4 Rehabilitation Phases

This CBRP includes encompasses the rehabilitation up to the growth medium development phase for the Common Boundary overburden emplacement area only; the Ecosystem Establishment and Ecosystem Development rehabilitation activities are not relevant to this plan.

Because rehabilitation works will be undertaken progressively in accordance with the site MOPs, there will however be areas within the Common Boundary that progress to Landform Establishment and Landform Development during the term of this plan. Accordingly, progression to these phases is reflected on **Figures 3a to 3i** and summarised in **Table 10**.

Since water management structures are to be retained in the final landform; the objectives, performance indicators and completion criteria described in the following sections apply to the Overburden Emplacement Area domain only.

5.4.1 Landform Establishment

Landform Establishment constitutes the activities required to produce landforms which are compatible with regulatory requirements and the post-mining landuse objectives. In the context of this plan, Landform Establishment involves the process required to achieve a final landform that:

- Is stable, with slopes and rates of erosion that are comparable to surrounding landforms;
- Incorporates effective surface water drainage that minimise potential water pollution; and
- Supports the desired native vegetation communities and optimises integration with adjacent undisturbed native vegetation.

Where either MTW or BCC are required to rehabilitate the other mine's land, the land owner will provide a Construction Method Statement (CMS) to detail the work specifications and an Inspection and Test Plan (ITP) to be implemented to verify works are constructed to the agreed specifications

Agreed specifications for Landform Establishment phase are included in the Final Landform Drainage Design (**Appendix 3**). Due to the variability in topsoil / spoil characteristics, specifications for Growth Media Development will be finalised and agreed prior to topsoil emplacement.

The objectives, indicators and completion criteria for the Landform Establishment phase for each rehabilitation Domain are provided in **Table 7**.

Table 7: Landform Establishment

Domain Objective	Performance Indicator	Completion Criteria	Source/ Justification
Final landform will be suitable for the intended final land use and match surrounding landforms as much as possible	Landforms are shaped to include undulating, informal profiles visually compatible with the surrounding environment.	Landform is generally compatible within the context of the local topography.	MTW MOP Table 23
Final landforms including slopes and drainage will be designed to be safe, stable and non-polluting	Landform is regraded to a stable grade.	Slopes less than 10 degrees unless otherwise agreed.	BCC LMP MTW MOP Table 23
	There is an absence of slumping or uncontrolled erosion.	Gullies and rills occurring in 50m transects are assessed to be limited and stabilising.	BCC LMP
		No rills > 200mm deep	BCC LMP
	Active erosion is minimal.	Soil loss due to gullying and rilling is assessed and determined to be limited and stabilising.	MTW MOP Table 23
	Sediment control structures are in accordance with the relevant site management plans and standards.	Drainage structures are stable with no active gully heads, tunnel erosion or bank failure.	MTW MOP Table 23
		Drainage structures are designed in accordance with agreed design specifications: • Drop structures designed to convey 1:50ARI • Channel banks and drains designed to convey 1:20ARI with max slope 1% (unless lined)	BCC LMP Appendix 3

Domain Objective	Performance Indicator	Completion Criteria	Source/ Justification
	Surface water quality is non-polluting and suitable for conservation end land use	Discharge water quality is in compliance with EPL 563 and EPL 1976	EPL 563 and EPL 1976
		No carbonaceous material (coarse or fine rejects) are disposed in the Common Boundary unless agreed and in accordance with relevant EMS and/or site specific standard.	
		No net acid generating materials will be dumped in the Common Boundary unless agreed and in accordance with relevant EMS and/or site specific standard.	Rio Tinto Performance Standards E3 – Acid Rock Drainage Prediction and Control, E8 – Mineral Waste Management BCC LMP Appendix 3

5.4.2 Growth Media Development

For the purposes of this plan, Growth Media Development encompasses the activities associated with emplacing growth media (topsoils and topsoil substitutes) with the appropriate physical, chemical and biological properties to support the establishment of the desired vegetation communities.

As outlined in **Section 2.2.4**, the scope of this CBRP is to define the rehabilitation works to the agreed handover stage which is the emplacement and amelioration of growth media (and stabilisation with sterile cover crops where required). Ongoing management actions to develop self-sustaining soil profiles that trend toward the indicators for Growth Media Development described in the MTW and BCC MOPs are outside the scope of this plan and will be managed independently by MTW and BCC.

Topsoils at both MTW and BCC has been characterised as poor due to sodicity, dispersive behaviour, low organic content and presence of weeds. Where soil resources are anticipated to be insufficient for rehabilitation or unsuitable due to weed infestation, spoils will be characterised and selectively handled and ameliorated to provide suitable topsoil substitutes for the desired final landuse.

Prior to reuse, soils and spoils will be tested to determine the appropriate amelioration to achieve the desired growth media properties for the intended final landuse, as defined in the MTW and BSO MOPs. Where works are conducted by BCC or MTW on the other mine's land, specifications for soil/spoil emplacement and amelioration will be documented in a CMS, including an ITP to verify works have been undertaken in accordance with the agreed specifications.

Soils and spoils will typically require amelioration with:

- Gypsum to rectify calcium / magnesium to sodium ratios, improve structure and water holding capacity, and reduce dispersivity;
- Composts to increase organic content, biological health, nutrient retention and water holding capacity;
- Fertilisers to provide nutrients and wetting agents in hydrophobic soils/spoils.

Objectives, indicators and completion criteria for Growth Media Development phase for the Overburden Emplacement Area domain are provided in **Table 8**.

Table 8: Growth Media Development

Domain Objective	Preliminary Indicator	Completion Criteria	Source/ Justification
Growth media resources are retained and stockpiled to retain structure, chemical and biological properties.	Topsoil from rehabilitated areas in the Common Boundary is stripped and stockpiled by MTW and BCC for their own land within the Common Boundary (where applicable, for re-use within their own lands in the Common Boundary.		BCC LMP, MTW MOP
Suitability of soils characteristics for the establishment of the desired vegetation community is assessed prior to spreading.	Tests are undertaken to assess topsoil and/or spoil: • Physical properties (texture, structure and Emerson Aggregate assessment); • Chemical properties (pH, salinity, nitrogen, potassium and phosphorous.); and • Biological properties and organic content	Assessment results complete	MTW MOP Table 24
	Develop recommended amelioration (ameliorants and application rates) to provide soil characteristics suitable for the desired vegetation community. Note: for works to be undertaken by either MTW or BCC outside their own mine lease, the mine leaseholder will provide a Construction Method Statement with specifications, hold points and verification requirements to undertake the soil/spoil amelioration in accordance with the mine leaseholders MOP objectives and indicators.	Work Method Statement agreed and accepted by MTW and BCC	
Topsoil / topsoil substitutes are spread.	Topsoil is re-spread directly onto reshaped landforms where possible at an average depth of 10cm.		MTW MOP, BCC LMP
Topsoil / spoil is ameliorated.	Soil ameliorants such as gypsum, wood and straw mulch, biosolids, municipal waste composts and other organic wastes are utilised based on soil/spoil characterisation tests.	Independent verification that soil ameliorants are incorporated into the growth medium.	MTW MOP

6.0 REHABILITATION IMPLEMENTATION

6.1 Financial Resources and Timing for Rehabilitation

As outlined in **Section 2.2.4** each party will be responsible to undertake rehabilitation activities up to and including emplacement and amelioration of topsoil to agreed specifications that meet the relevant Growth Media Development criteria for the proposed final land use. Rehabilitation will be undertaken progressively, and commence as soon as practicable in areas where dumping is complete.

Additionally, MTW and BCC agree that:

- Significant surface drainage features in the final landform (**Figure 4**: conveyance channel and rock drop structure) will be constructed progressively at the completion of active dumping by the mine undertaking the final dumping stage; and

- Where mine planning results in dump areas remaining inactive for a period of 3 months or more temporary rehabilitation (for example aerial seeding with sterile cover crops) will be undertaken.

Xstrata Coal NSW HSEC standard *STD 5.12 Mine Closure Planning* and Rio Tinto Closure Standard describes the requirements for Xstrata Coal NSW and Rio Tinto mines to ensure sufficient financial resources are allocated to achieve mine closure obligations. Both MTW and BCC commit to funding and undertaking the rehabilitation activities described in this plan in general accordance with the timings proposed in **Tables 9 and 10** and displayed in **Figures 3a to 3i**. The cost estimates for rehabilitation activities described in this plan have been calculated using the DTIRIS's *ESB26 Rehabilitation Cost Estimate Tool.*

6.2 Rehabilitation Status at CBRP commencement

As outlined in **Section 2.1** at the commencement of the project the majority of land in the Common Boundary footprint has previously been used for overburden emplacement. The majority of land within the Common Boundary has previously been rehabilitated and is currently in Ecosystem Development phase (**Figure 2**).

6.3 Proposed Rehabilitation Activities during the term of this CBRP

Previously rehabilitated areas in the Common Boundary will be re-disturbed

The areas to be rehabilitated during the term of this plan are shown on **Figures 3a to 3i**, and summarised in **Table 9**.

Table 9: Common Boundary Rehabilitation and Disturbance 2013 – 2016

Year	Stage	Rehabilitation (ha)		Disturbance (ha)		Rehabilitation Disturbance (ha)	
		BCC	MTW	BCC	MTW	BCC	MTW
2013	Stage 1	0	0	0	0	5.57	58.07
2013	Stage 2	0	0	0	0	0	0
2013	Stage 3	0	0	0.81	4.76	43.34	0

Year	Stage	Rehabilitation (ha)		Disturbance (ha)		Rehabilitation Disturbance (ha)	
2014	Stage 4	23.27	9.93	0	0	0	37.28
2014	Stage 5	0	0	0	0	0	10.33
2014	Stage 6	0	0	0	0	0	0
2015	Stage 7	0	93.6	0	0	0	0
2016	Stage 8	65.66	0	0	0	0	0

6.4 Rehabilitation Summary Table

The change in areas disturbed (active) and progressing through rehabilitation areas for each domain is summarised in **Table 10**.

Table 10: Summary of Forecast Rehabilitation during the CBRP Term

Domain	Total Area CBRP Start		Total Area CBRP End	
	BCC	MTW	BCC	MTW
Overburden Emplacement				
Active (Disturbed)	39.9	12.4	0	0
Landform Establishment	0	0	65.7	0
Growth Media Development	0	0	0	0
Ecosystem Establishment	0	0	0	96.7
Ecosystem Development	48.9	94.1	23.3	9.7
Water Management Area				
Active (Disturbed)	0.3	1.0	0.8	4.8
Landform Establishment	0	0	0	0
Growth Media Development	0	0	0	0

Ecosystem Establishment	0	0	0	0
Ecosystem Development	0	0	0	0

7.0 REHABILITATION MONITORING, MAINTENANCE AND VERIFICATION

7.1 Monitoring

Rehabilitation monitoring will generally be undertaken in accordance the MTW and BCC MOPs. Additional monitoring requirements associated with managing surface water and erosion and sedimentation prior to the commissioning of the proposed Ramp 22 Dam are documented in the Interim ESCP (**Appendix 2**). Additional monitoring requirements for surface water management following the commissioning of the Ramp 22 Dam will be detailed in the Ramp 22 Dam Detailed Design.

7.2 Maintenance

As described in **Section 3.2**, environmental management, including maintenance work will be the responsibility of the mine operating in a given area within the Common Boundary. During active dumping and rehabilitation works described in this plan, the area will be incorporated into the Colliery Holding Boundary of the mine operating the area and maintenance will generally be constructed in accordance with the mine's MOP and maintenance plans.

Specific maintenance requirements associated with interim ESC structures is documented in the interim ESCP (**Appendix 2**). Maintenance requirements associated with permanent ESC conveyances and the Ramp 22 Dam will be detailed in the Ramp 22 Dam Detailed Design Report.

7.3 Verification

As described in **Section 5.5** works conducted by MTW or BCC on each other's land will require independent verification to confirm works have been completed in accordance with all completion criteria detailed in **Tables 7 and 8**, including additional specifications and QA requirements to be documented in agreed Work Method Statements. Upon satisfactory completion of the completion criteria documented in this plan, responsibility for a given area will be handed back to the mine leaseholder and the Colliery Holdings Boundary amended accordingly.

8.0 REVIEW AND IMPLEMENTATION

8.1 Review

Reviews will be conducted to assess the effectiveness of this plan. Generally this plan will be reviewed, and if necessary revised as mutually agreed, by both MTW and BCC each 12 months from the date of approval by the DTIRIS.

Additionally, this plan will be reviewed, and if necessary revised, within three months of the submission of an:

- Incident report related to activities associated with the Common Boundary;
- MTW or BCC Audit recommendations associated with activities at the Common Boundary; or

- Application to modify Approvals DA 41-03-99 or PA 09_0202.

This plan may also be revised due to:

- Deficiencies being identified;
- Recommendations resulting from MTW and BCC monitoring programs;
- Changes to environmental requirements due to (for example) changed legislation or regulatory requirements;
- Changes in the activities or operations associated with the Common Boundary; and
- Amendments to the MTW or BSO MOPs.

8.2 Implementation

MTW and BSO personnel responsible for the monitoring, review and implementation of this plan are defined in **Table 11**.

Table 11: Responsibilities for Implementation of the CBRP

Title (MTW and BSO for all roles)	Responsibility
Mine Manager	• Implement the procedures and plans referenced in this CBRP • Undertake training in the relevant management plans and procedures as required • Provide resources and support required to implement this plan • Construct the Common Boundary landform in accordance with this plan • Develop dumping strategies to allow for the surface water management and progressive rehabilitation on accordance with this plan
Technical Services Manager	• Implement the procedures and plans referenced in this CBRP • Undertake training in the relevant management plans and procedures as required • Allocate resources to implement this plan • Develop mine plans to manage surface water and allow for progressive rehabilitation in accordance with this plan • Prepare the required Work Method Statements required to implement this plan
Environmental Manager / Environmental Specialist	• Prepare the required Work Method Statements required to implement this plan

Title (MTW and BSO for all roles)	Responsibility
	• Implement, monitor and review the programs and procedures associated with this plan • Consult with regulatory authorities as required • Undertake maintenance as required • Provide environmental training and support to personnel undertaking works in association with the Common Boundary • Report the progress of rehabilitation in the MTW / BCC AEMR
Environmental Officer / Advisor	• Provide support for the implementation of the Environmental Manager / Environmental Specialist where required

9.0 REFERENCES

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Coal & Allied, *Environmental Procedure 5.1 – Disturbance and Rehabilitation.*

Coal & Allied, *Environmental Procedure 7.1 – Water Management.*

Coal & Allied, *Environmental Procedure 8.2 – Dust Management – Mobile Equipment.*

Coal & Allied, *Environmental Procedure 9.1 – Noise.*

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Rio Tinto, 2012, *Performance Standards E8 – Mineral Waste Management.*

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Rio Tinto, 2008, *Environmental Standard E10 – Water Use and Quality Control.*

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Xstrata Coal, 2012, *Noise Management Plan (BUL SD PLN 0032).*

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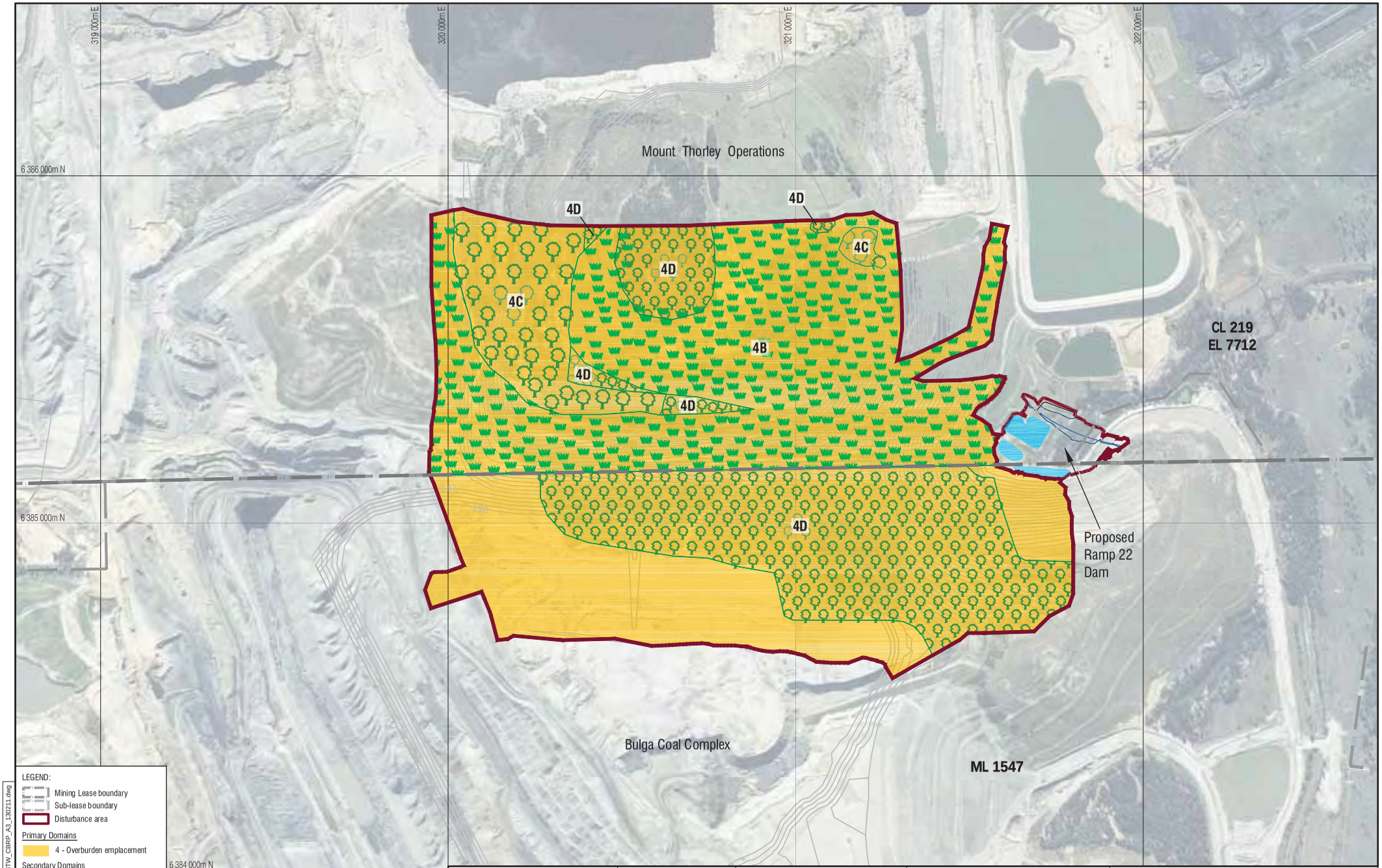
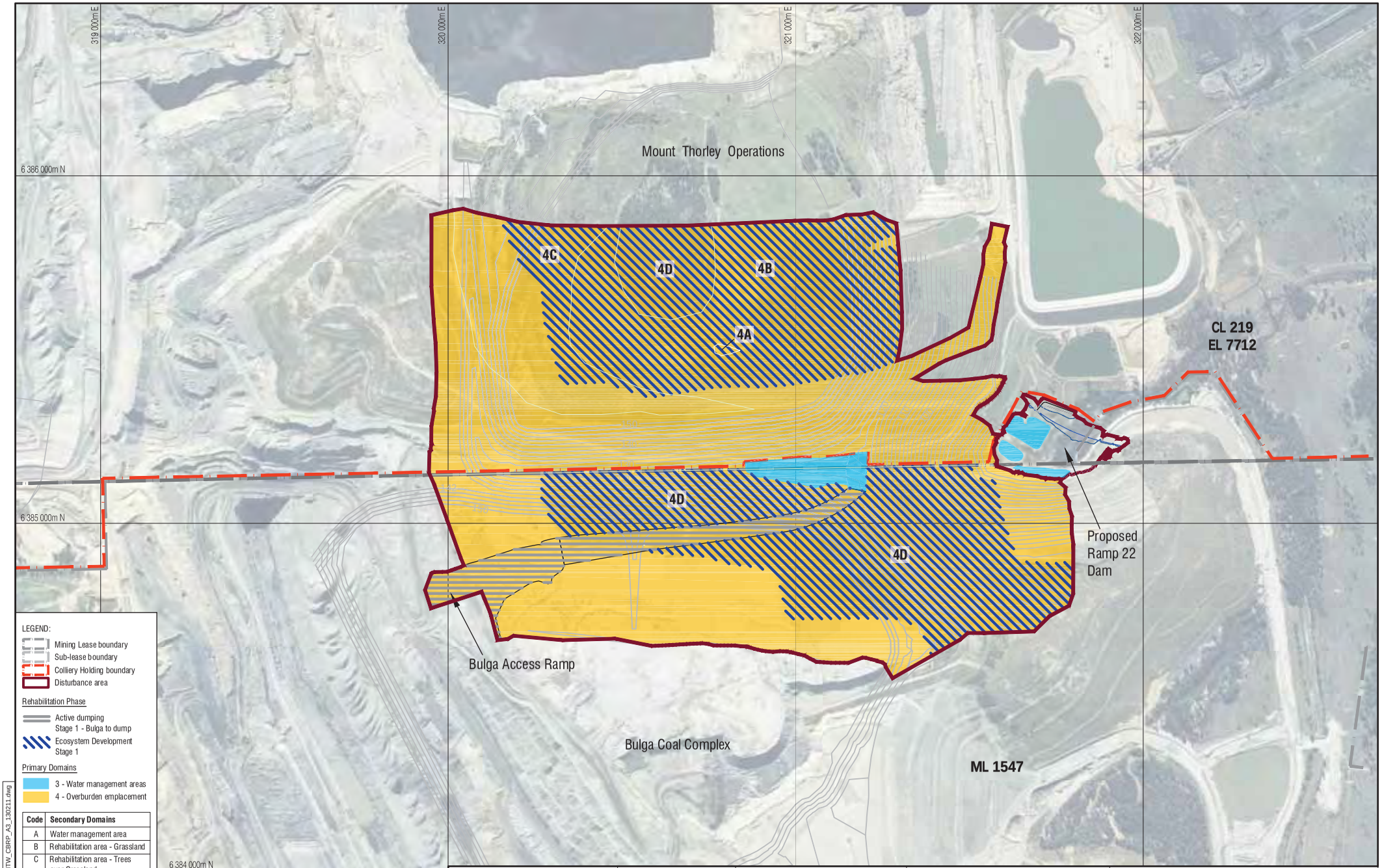
Rehabilitation Maps


319 000m E
320 000m E
321 000m E
322 000m E
6 386 000m N
6 385 000m N
6 384 000m N
Mount Thorley Operations
4D
4C
4B
CL 219
EL 7712
Proposed
Ramp 22
Dam
Bulga Coal Complex
ML 1547
LEGEND:
Mining Lease boundary
Sub-lease boundary
Disturbance area
Primary Domains
4 - Overburden emplacement
Secondary Domains
A - Water management areas
B - Rehabilitation area - Grassland
C - Rehabilitation area - Trees over Grassland
D - Rehabilitation area - Woodland
Source: Aerial photo supplied by Bulga - flown July 2011
I, , the Mine Manager, certify that the information on this plan is a true indication of the proposed development.
Mine Manager
Date
Date: 11/2/2013
Drawn: LJF
Scale: 1:10000
Coordinate System: MGA_ZONE56
Sheet Size: A3
N
0
200
400m
Prepared by: SLR Consulting Australia
Bulga Coal Complex and Mount Thorley Operations
BULGA - MTW COMMON BOUNDARY REHABILITATION PLAN
Mine Domains at Commencement of MOP
FIGURE 2
MAP2_633.10001_BulgaMTW_CBRP_A3_130211.dwg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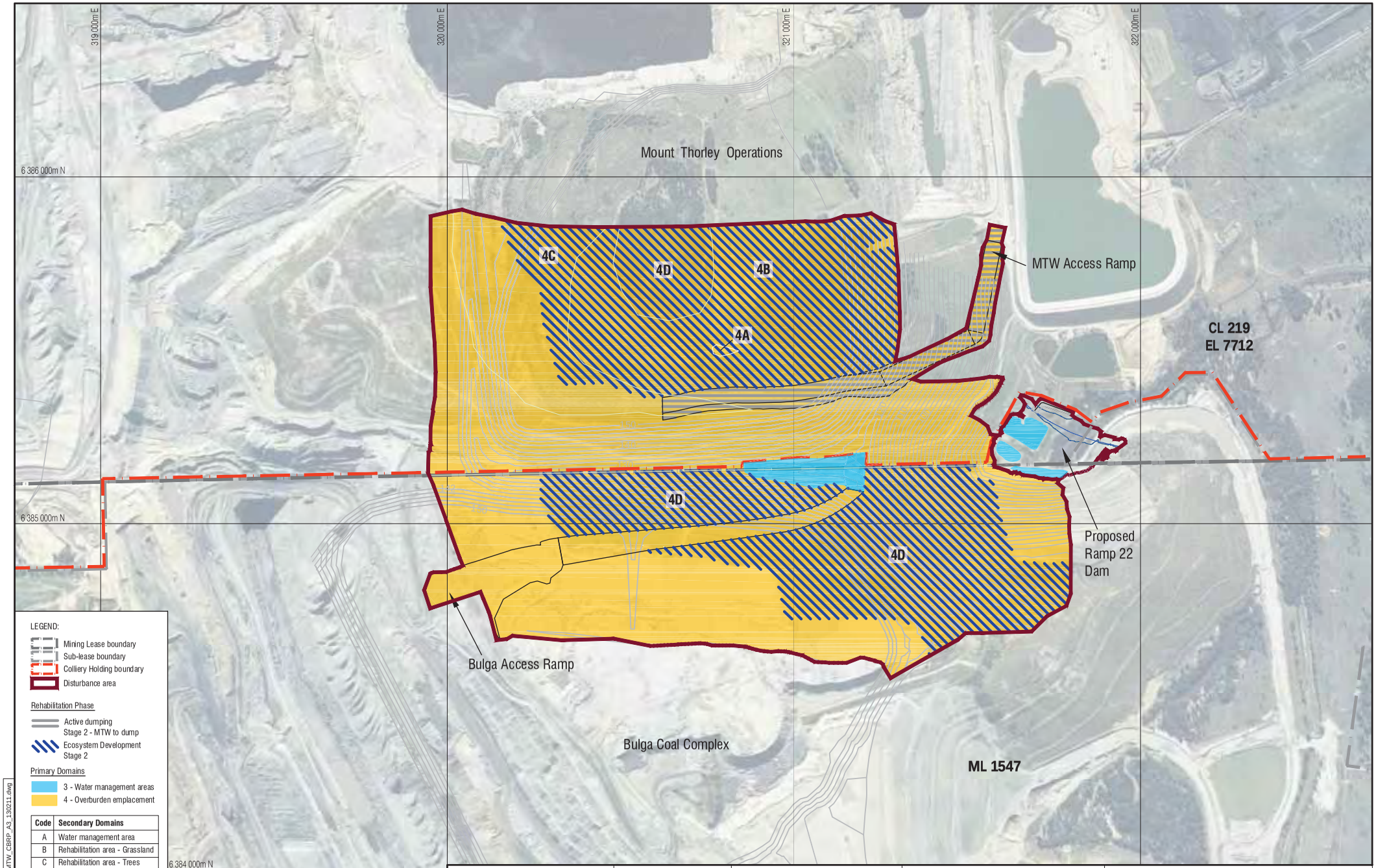
321 000m E
322 000m E
6 386 000m N
6 385 000m N
6 384 000m N
Mount Thorley Operations
4C
4D
4B
4A
4D
4D
CL 219
EL 7712
Proposed
Ramp 22
Dam
Bulga Access Ramp
Bulga Coal Complex
ML 1547
LEGEND:
Mining Lease boundary
Sub-lease boundary
Colliery Holding boundary
Disturbance area
Rehabilitation Phase
Active dumping
Stage 1 - Bulga to dump
Ecosystem Development
Stage 1
Primary Domains
3 - Water management areas
4 - Overburden emplacement
Code
Secondary Domains
A
Water management area
B
Rehabilitation area - Grassland
C
Rehabilitation area - Trees over Grassland
D
Rehabilitation area - Woodland
Note:
Stage 1: BCC RL125 Access Ramp
Stage Volume 651,000m3
Source: Aerial photo supplied by Bulga - flown July 2011
I, , the Mine Manager, certify that the information on this plan is a true indication of the proposed development.
Mine Manager
Date
Date: 5/2/2013
Drawn: LJF
Scale: 1:10000
Coordinate System: MGA_ZONE56
Sheet Size: A3
N
0
200
400m
Prepared by: SLR Consulting Australia
Bulga Coal Complex and Mount Thorley Operations
BULGA - MTW COMMON BOUNDARY REHABILITATION PLAN
Mining and Rehabilitation - Stage 1
Year 2013
FIGURE 3A
MAP3_633.10001_BulgaMTW_CBRP_A3_130211.dwg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Mount Thorley Operations
4C
4D
4B
4A
4D
4D
MTW Access Ramp
CL 219
EL 7712
Proposed
Ramp 22
Dam
Bulga Access Ramp
Bulga Coal Complex
ML 1547
LEGEND:
Mining Lease boundary
Sub-lease boundary
Colliery Holding boundary
Disturbance area
Rehabilitation Phase
Active dumping
Stage 2 - MTW to dump
Ecosystem Development
Stage 2
Primary Domains
3 - Water management areas
4 - Overburden emplacement
Code
Secondary Domains
A
Water management area
B
Rehabilitation area - Grassland
C
Rehabilitation area - Trees over Grassland
D
Rehabilitation area - Woodland
Note:
Stage 2: MTW RL125 Access Ramp
Stage Volume: 457,089 m³
Source: Aerial photo supplied by Bulga - flown July 2011
I, , the Mine Manager, certify that the information on this plan is a true indication of the proposed development.
Mine Manager
Date
Date: 5/2/2013
Drawn: LJF
Scale: 1:10000
Coordinate System: MGA_ZONE56
Sheet Size: A3
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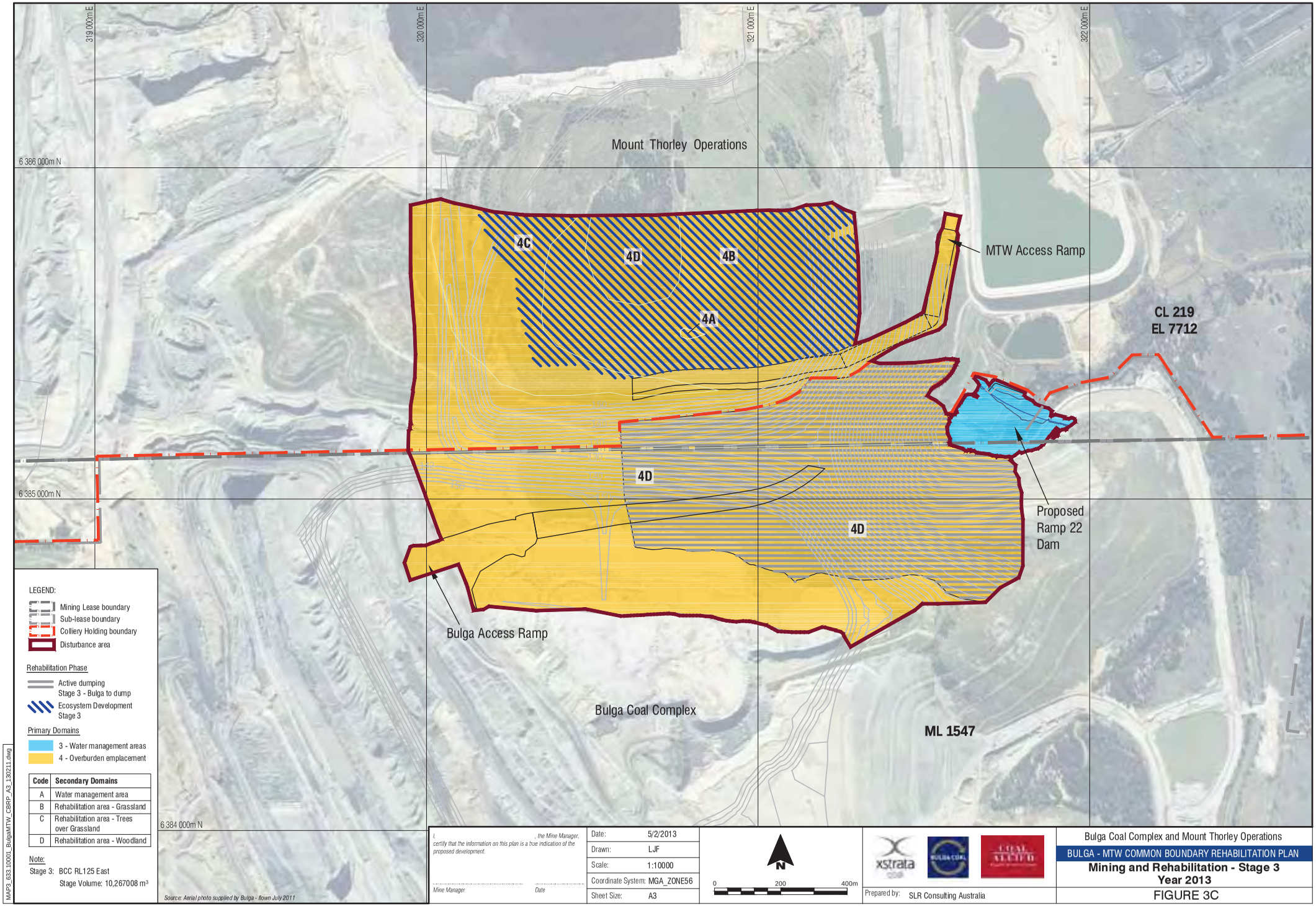
200
400m
Prepared by: SLR Consulting Australia
Bulga Coal Complex and Mount Thorley Operations
BULGA - MTW COMMON BOUNDARY REHABILITATION PLAN
Mining and Rehabilitation - Stage 2
Year 2013
FIGURE 3B
MAP3_633.10001_BulgaMTW_CBRP_A3_130211.dwg


319 000m E
320 000m E
321 000m E
322 000m E
6 386 000m N
6 385 000m N
6 384 000m N
Mount Thorley Operations
4C
4D
4B
4A
4D
4D
MTW Access Ramp
CL 219
EL 7712
Proposed
Ramp 22
Dam
Bulga Access Ramp
Bulga Coal Complex
ML 1547
LEGEND:
Mining Lease boundary
Sub-lease boundary
Colliery Holding boundary
Disturbance area
Rehabilitation Phase
Active dumping
Stage 3 - Bulga to dump
Ecosystem Development
Stage 3
Primary Domains
3 - Water management areas
4 - Overburden emplacement
Code
Secondary Domains
A
Water management area
B
Rehabilitation area - Grassland
C
Rehabilitation area - Trees over Grassland
D
Rehabilitation area - Woodland
Note:
Stage 3: BCC RL125 East
Stage Volume: 10,267008 m³
Source: Aerial photo supplied by Bulga - flown July 2011
I, , the Mine Manager, certify that the information on this plan is a true indication of the proposed development.
Mine Manager
Date
Date: 5/2/2013
Drawn: LJF
Scale: 1:10000
Coordinate System: MGA_ZONE56
Sheet Size: A3
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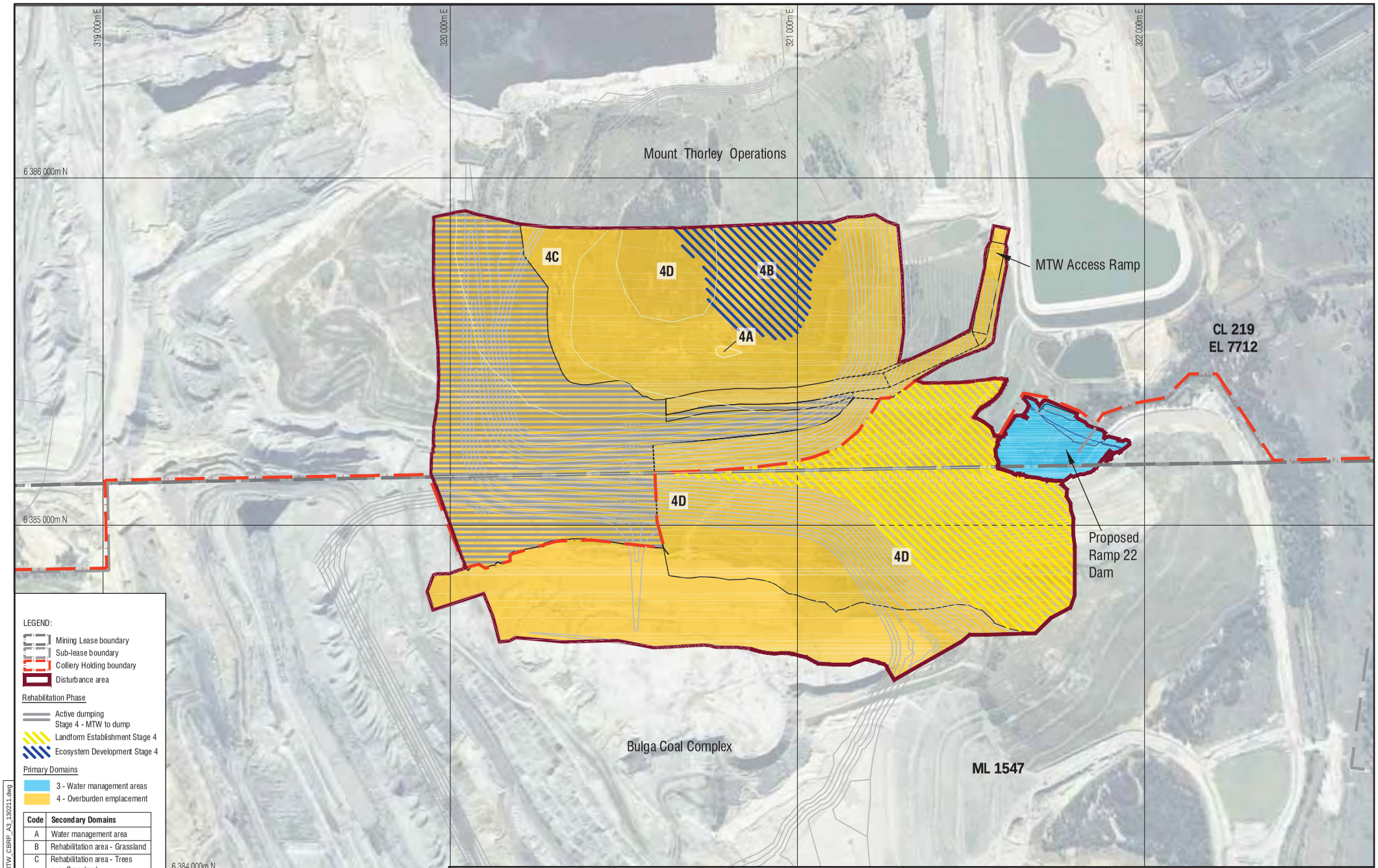
0
200
400m
Prepared by: SLR Consulting Australia
Bulga Coal Complex and Mount Thorley Operations
BULGA - MTW COMMON BOUNDARY REHABILITATION PLAN
Mining and Rehabilitation - Stage 3
Year 2013
FIGURE 3C
MAP3_633.10001_BulgaMTW_CBRP_A3_130211.dwg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320 000m E
321 000m E
322 000m E
6 386 000m N
6 385 000m N
6 384 000m N
Mount Thorley Operations
4C
4D
4B
4A
4D
4D
MTW Access Ramp
CL 219
EL 7712
Proposed
Ramp 22
Dam
Bulga Coal Complex
ML 1547
LEGEND:
Mining Lease boundary
Sub-lease boundary
Colliery Holding boundary
Disturbance area
Rehabilitation Phase
Active dumping
Stage 4 - MTW to dump
Landform Establishment Stage 4
Ecosystem Development Stage 4
Primary Domains
3 - Water management areas
4 - Overburden emplacement
Code | Secondary Domains
A | Water management area
B | Rehabilitation area - Grassland
C | Rehabilitation area - Trees over Grassland
D | Rehabilitation area - Woodland
Note:
Stage 4: MTW RL125 West
Stage Volume: 10,663,042 m³
Source: Aerial photo supplied by Bulga - flown July 2011
MAP3_633.10001_BulgaMTW_CBRP_A3_130211.dwg
I, , the Mine Manager, certify that the information on this plan is a true indication of the proposed development.
Mine Manager
Date
Date: 5/2/2013
Drawn: LJF
Scale: 1:10000
Coordinate System: MGA_ZONE56
Sheet Size: A3
N
0
200
400m
Prepared by: SLR Consulting Australia
Bulga Coal Complex and Mount Thorley Operations
BULGA - MTW COMMON BOUNDARY REHABILITATION PLAN
Mining and Rehabilitation - Stage 4
Year 2014
FIGURE 3D