ENVSTD4.3.03.01.02.012

LONGWALLS BSLW1 – BSLW6 BLAKEFIELD SOUTH MINING AREA

SURFACE & PUBLIC SAFETY

SUBSIDENCE MANAGEMENT PLAN

May 2010

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1 INTRODUCTION

This Surface and Public Safety Subsidence Management Plan addresses the management of the potential impacts of underground mining in Longwalls BSLW1 to BSLW6 of the Blakefield South seam on the natural surface features and associated infrastructure, and minimise surface safety risks to the public during mining. This plan has been prepared in accordance with the NSW Department of Mineral Resources (now known as Industry and Investment NSW) *Guideline for Subsidence Management Approvals (2003)*. The guideline requires specific management plans to be developed to manage subsidence impacts which may have a high level of risk or consequence. Approval of the SMP (submitted in July 2008), including the Surface Safety Subsidence Management Plan) was issued by I&I NSW in April 2009.

Following minor modifications to the mine plan in 2010 due to geological constraints (narrowing and minor shortening of two panels) as outlined in Section 4 below, this plan has been reviewed accordingly.

2 PURPOSE

The purpose of this plan is to outline the management measures to be implemented to minimise surface safety risks to the public during mining of Longwalls BSLW1 to BSLW6 in the Blakefield seam. Required actions and responsibilities are defined to ensure detection of any potential safety hazards from mining induced subsidence impacts.

This plan has been revised to meet the requirements of condition 15 of the Beltana Mining Blakefield South BS 1-6 Secondary extraction approval (File No 04/1676) dated 30th April 2009.

3 SCOPE

This plan applies to Longwalls BSLW1 - BSLW6 of the Blakefield seam at the Bulga Underground Mine (SMP area).

The management of key surface infrastructure including public roads, private properties, powerlines, telecommunications infrastructure and water pipelines are outlined in separate plans and are therefore not covered by this plan.

4 MINE PLAN

The majority of the SMP area (refer to **Figure 1**) is located within land owned by Bulga Joint Venture (BJV), which is currently utilised for mining purposes. The BJV owned land has been de-stocked and is being revegetated. The remainder of the SMP area is located under privately owned land predominantly utilised for grazing and rural activities. The surface of the land within the application area is generally flat to undulating with vegetation dominated by pasture and woodland species (refer to **Figure 2**).

Due to the limitations of geological faults identified in the vicinity of Longwalls 1 and 2, the mine plan extents have changed from those originally approved in the SMP application submitted in July 2008. The BSLW1 void width has been narrowed by 80m and slightly shortened by 30m. Also the commencing end (south-western) of BSLW2 has been shortened by 155m. The revised current mine plan is shown in **Figure 1**. Accordingly, updated subsidence reports for longwalls BSLW1 and BSLW2 have been provided by MSEC (MSEC393 March 2010 & MSEC452 March 2010, respectively) for the revision of this plan.

The depth of cover to the seam varies between approximately 130 metres at the eastern end of Longwall BSLW1 to approximately 335 metres at the maingate of Longwall BSLW6. The seam floor within the SMP area generally dips from the north to the south. The seam thickness varies between a minimum of 2.2 metres near the western end of BSLW1 to a maximum of 3.65 metres at the maingate of BSLW6.

The longwalls will be extracted below the previously extracted Whybrow seam. The interburden thickness between the Whybrow and Blakefield seams varies between 70 metres and 100 metres.

First workings for the Blakefield seam commenced in mid 2008, with Longwall BSLW1 extraction to commence in June 2010 and Longwall BSLW6 scheduled to be completed during mid 2014. The mining sequence will progress from north (BSLW1) to south (BSLW6), with the longwall face expected to advance at a rate of approximately 100 metres per week.

5 SUBSIDENCE DEFINITIONS

Subsidence, tilt and strain are the subsidence parameters normally used to define the extent of the surface movements that will occur as mining proceeds.

Subsidence is the vertical distance (usually measured in millimetres) that the ground surface lowers as a result of mining, and depends on the depth of the coal seam, the thickness of the seam, the width of the extraction area and the characteristics of the overburden.

Tilt is calculated as the change in subsidence between two points divided by the distance between those points (i.e. change in slope of the surface landform as a result of mining). Tilt is usually expressed in millimetres per metre.

Strain results from horizontal movements in the strata. Strain is determined from monitoring survey data by calculating the change in the horizontal length of a section of a subsidence profile and dividing this by the initial horizontal length of that section. If the section has been extended, the ground is in tension and the change in length and resulting strain are both positive. If the section has been shortened, the ground is in compression and the change in length and strain are both negative. Strain is usually expressed in millimetres per metre.

6 POTENTIAL SAFETY RISKS LONGWALLS BSLW1 TO BSLW6

It is not expected that mining of Longwalls BSLW1 to BSLW6 in the Blakefield South seam will pose a significant risk to public safety with the implementation of the appropriate management strategies. The majority of the surface holdings where

the subsidence impacts are expected to pose a potential risk to public safety are owned by the BJV.

The key potential surface safety risks identified during the Blakefield South SMP risk assessment held on 14 November 2007 were;

- surface cracking;
- ephemeral drainage lines;
- dam safety risks;
- natural vegetation;
- steep slopes;
- roads;
- impacts on buildings;
- fences; and
- access.

A summary of the potential surface safety risks resulting from subsidence is provided below. Further detail regarding subsidence predictions is contained in the subsidence report prepared by MSEC (2008). The proposed management strategies for each of the identified surface safety risks are outlined in **Section 7**.

6.1 Surface Cracking

As subsidence occurs, surface cracks generally appear in the tensile zone, i.e. within 0.1 to 0.4 times the depth of cover from the longwall perimeters (MSEC 2008). However, most cracks appear within 0.1 times the depth of cover from the longwall perimeters (MSEC 2008). The cracks are generally parallel to the longitudinal edges of the longwalls, except at the ends of the longwalls, where the cracks are generally parallel to the ends of the longwalls (MSEC 2008).

At shallow depths of cover, it is also likely that transient surface cracks will occur above and parallel to the moving extraction face, i.e. at right angles to the longitudinal edges of the longwall, as the subsidence trough develops (MSEC 2008). This cracking, however, tends to be transient, since the tensile phase of the travelling wave, which causes the cracks to open up, is generally followed by a compressive phase, which closes them. It has been observed in the past, however, that surface cracks which occur during the tensile phase of the travelling wave do not fully close during the compressive phase, and tend to form compressive ridges at the surface (MSEC 2008).

At shallow depths of cover, therefore, surface cracking and heaving can potentially occur in any location above the extracted goaf areas of the proposed longwalls. The larger and more permanent cracks, however, are usually located in the final tensile zones around the perimeters of the longwalls (MSEC 2008). Open fractures and heaving, however, can also occur due to the buckling of surface beds that are subject to compressive strains (MSEC 2008).

The incidence of surface cracking is dependent on the location relative to the extracted longwall goaf edges, the depth of cover, the extracted seam thickness and the thickness and inherent plasticity of the soils that overlie the bedrock (MSEC 2008). The surface soils above the proposed longwalls are generally weathered. The widths and frequencies of the cracks are also dependent upon the pre-existing jointing patterns in the bedrock (MSEC 2008). Large joint spacing can lead to concentrations of strain and possibly the development of fissures at rockhead, which are not necessarily coincident with the joints (MSEC 2008).

The incidence of cracking and stepping at the surface, in this case, will also be dependant on the multi-seam interaction due to the presence of the previously extracted longwalls in the overlying Whybrow Seam (MSEC 2008). It is possible that cracking and stepping in the surface could occur where the chain pillars in the overlying Whybrow Seam are affected by the extraction of the proposed longwalls in the Blakefield Seam (MSEC 2008).

The extents of cracking and stepping at the surface are extremely difficult to assess due to the complexity of multi-seam interactions and due to the complexities of the longwall geometries, which includes the oblique angle between the longwall layouts and the varying widths of the previously extracted longwalls in the overlying Whybrow Seam (MSEC 2008).

It is expected that surface crack widths in the order of 50 to 150 mm and step heights in the order of 100 to 200 mm could occur as a result of the extraction of the proposed longwalls (MSEC 2008). The greatest surface crack widths and step heights are expected to occur where the predicted ground strains are the greatest, in the locations of the shallowest depths of cover and in the locations where the chain pillars in the Blakefield Seam are beneath the chain pillars in the overlying Whybrow Seam, as well as in the locations of the natural joints (MSEC 2008).

The larger surface cracking and stepping, resulting from the extraction of the proposed longwalls, could be remediated by regrading, recompacting and, where required, revegetating the surface (MSEC 2008). The smaller surface cracking could also be remediated by locally infilling with soil or other suitable materials (MSEC 2008). The remediation of surface cracking and stepping has successfully undertaken above the previously extracted longwalls in the overlying Whybrow Seam and above the previously extracted longwalls in the Whybrow Seam within the Central Mining Area (MSEC 2008).

6.2 Drainage Line Safety Risks

Several ephemeral drainage lines (Drainage Lines 10-13) (part of the Southern Drainage Line) are to be undermined by Longwalls BSLW1– BSLW6 (MSEC 2008). While cracking in the drainage lines need to be managed for environmental reasons it is improbable that subsidence of these drainage lines will cause a significant risk to public safety, as the majority of the land within the SMP area is owned by BJV. There is also a wet soak caused by the limited drainage associated with the intersection of Broke and Charlton Roads that lies partly within the SMP area.

The maximum predicted systematic subsidence along Drainage Lines 10, 11, 12 and 13 resulting from the extraction of the proposed longwalls are 2900 mm, 2975 mm, 3725 mm and 3000 mm, respectively (MSEC 2008). The maximum predicted systematic tilts along the alignments of the drainage lines vary between 85 mm/m and greater than 100 mm/m, or changes in grade between 1 in 12 and greater than 1 in 10 (MSEC 2008).

As the predicted changes in grade along the drainage lines are greater than the natural grades, it is expected that subsidence-induced ponding will occur along the drainage lines, primarily upstream of longwall tailgates (MSEC 2008). Currently all drainage lines are eroding as a function of historical land clearing and agricultural activities.

The subsidence will induce ponding and sedimentation in some portions of the affected drainages and cause enhanced erosion in other sections of the drainage lines.

The impacts of subsidence on surface drainage will be assessed on a case by case basis. The current drainage subsidence rehabilitation approach implemented at Beltana is based on minimal disturbance. This approach has been adopted because experience in earlier longwalls has shown that disturbance caused by the repairs (loss of delicate topsoil and vegetative cover) is often less desirable than the initial subsidence impact. The practice of minimal disturbance will be implemented for the rehabilitation of the drainage lines affected by mining in the Blakefield seam. Cracks within drainage lines will be sealed by filling and compacting and the resultant impact of the subsidence (ponding and erosion) on the drainage line will be monitored and rehabilitated if necessary.

Gradients along drainage lines may be considerably increased downstream of maingates of the proposed longwalls (MSEC 2008). Increased bed scouring may occur in these areas during times of high water flows (MSEC 2008). If significant levels of scouring occur it will be necessary to remediate the affected areas (MSEC 2008).

The maximum predicted systematic tensile and compressive strains at the drainage lines are greater than 50mm/m (MSEC 2008). It is therefore expected that fracturing and dilation of the upper bedrock would occur, which will reach the surface due to the thin alluvial beds (MSEC 2008). In times of heavy rainfall, the majority of runoff would flow over the surface cracks, however in times of low flow some of the surface water could be diverted into the strata below the beds (MSEC 2008). Water diverted below ground could affect the quality and quantity of surface water flowing in drainage lines (MSEC 2008). It is anticipated that fractures in the upper bedrock would be filled with alluvial materials during subsequent flow events; remediation works will be required where this does not occur (MSEC 2008).

The maximum predicted systematic tilt at the wet soak is 2.2mm/m, which is unlikely to result in any significantly impact (MSEC 2008). The maximum predicted systematic tensile and compressive strains at the wet soak are 0.6mm/m and 0.3mm/m respectively (MSEC 2008). It is possible that these levels of strain could result in some minor fracturing in the upper bedrock (MSEC 2008). It is expected that any associated surface cracking would be minor and not result in any surface water loss (MSEC 2008).

6.3 Dams Safety Risks

There are 31 farm dams (excluding the tailings dam) of various sizes within the SMP area. The majority of the farm dams are located on BJV owned land. The sizes of the farm dams range from approximately 93m^2 to 23313m^2. The management strategies for dams on private properties are detailed in the respective Private Property Management Plans.

The majority of the dams are earth dams, which have been established within the surface soils, on the lines of natural watercourses, using the excavated materials to form the dam walls, although a number of dams within the flatter low-lying areas are 'turkey's-nest' dams. Most of the dams are relatively shallow with depths less than three metres.

The maximum predicted systematic tilts at the farm dams vary between a minimum of less than 1mm/m and a maximum of 100mm/m (MSEC 2008). Mining induced tilts can affect the water levels around the perimeters of farm dams, with the freeboard increasing on one side and decreasing on the other (MSEC 2008). Large tilts can potentially reduce the storage capacity of farm dams, resulting in them to overflow, or affect the stability of the dam walls (MSEC 2008).

There are 13 farm dams predicted to experience changes in freeboard greater than 1000mm (MSEC 2008). Of these, six dams (d15, d19, d26, d28, d34 and d37) freeboard will decrease (i.e. water level will increase) by more than 1000mm, which could affect the stability of dam walls or cause them to overflow when full.

The maximum predicted systematic strains, tensile or compressive, at the farm dams vary between a minimum of less than 0.5 mm/m to a maximum greater than 50 mm/m (MSEC 2008).

It is possible that higher ground strains could be experienced at some of the farm dams due to irregular subsidence movements resulting from the multi-seam conditions. Irregular subsidence movements could result in considerable cracking or stepping in the surface, if coincident with the farm dams, could result in impact (MSEC 2008).

It is expected that some cracking and leakage of water could occur at the farm dams which are subjected to the greater strains, though, any cracking can be readily identified and repaired (MSEC 2008).

The majority of the farm dams within the SMP area are located on BJV owned land and have been previously undermined by the South Bulga Whybrow Longwalls. There are only two privately owned farm dams, d10 and d39, which located above the proposed Blakefield seam longwalls. Cracking and water leakage could occur at these privately owned dams (MSEC 2008).

6.4 Tailing Dam

A disused tailings dam is located over the northern section of BSLW5. The tailings dam has previously been undermined by South Bulga Whybrow Longwalls as shown on **Figure 2**. No more tailings have been placed in the tailings dam subsequent to it being undermined. Prior to the tailings dam being undermined by Blakefield South Longwall BSLW5 a risk assessment will be completed to ensure that appropriate investigations and mitigating measures are put in place prior to the dam being undermined.

6.5 Natural Vegetation

The natural vegetation within the SMP area is predominantly comprised of pastoral grassland with patches of woodland interspersed throughout the area (Umwelt

2007). The natural vegetation of the SMP area may be affected by surface remediation activities (e.g. works along drainage lines).

6.6 Steep Slopes

A steep slope has been defined as an area of land having a gradient between 1 in 3 and 2 in 1 (MSEC 2008). Steep slopes are identified as areas where the existing ground slopes are considered to be marginally stable (MSEC 2008). However the stability of natural slopes varies depending on soil or rock type and natural slopes can be stable at gradients much higher than 1 in 3.

Isolated steep slopes have been identified above the proposed longwalls associated with the spoil heap, the disused tailings dam and along the banks of some drainage lines (MSEC 2008). The spoil heap and tailings dam are located on BJV owned land and will be managed in accordance with Beltana procedures. The banks of the drainage lines within the SMP area are small, typically less than 3 metres and are unlikely to be impacted by soil slumping as a result of the extraction of the proposed longwalls (MSEC 2008).

6.7 Roads

The proposed mine plan will involve undermining of three public roads: Broke, Charlton and Fordwich Roads (refer to **Figure 1**). Whilst it will not be directly undermined, a small section of Butlers lane may potentially be affected by the extraction of the Blakefield seam longwalls. The public roads will be managed in accordance with the Public Road Safety Subsidence Management Plan.

Several private unsealed roads within the SMP application area will also be monitored as part of the SMP process, these roads are detailed in the respective Private Property Subsidence Management Plans.

6.8 Impacts on Buildings

There are three houses within the SMP area (refer to **Figure 2**):

- McInerney (24a) house;
- BJV II (25a) house; and
- BJV (27a) house.

There are also nine rural building structures within the SMP area, which includes garages, sheds and other non-residential structures (MSEC 2008). A Private Property Subsidence Management Plan (PPSMP), outlining the management of subsidence impacts, has been developed for each of the above listed houses (and associated non-residential structures).

6.9 Fences

A number of fences are located within the SMP area, the majority of which are constructed from timber or steel posts with fencing wire or timber railings (MSEC 2008). The fences are located throughout the SMP area and are likely to be subject to the full range of subsidence movements (MSEC 2008). The maximum predicted systematic tilts and strains resulting from mining of the proposed longwalls are

greater than those which can typically be tolerated by fences (MSEC 2008). It is likely that some sections of fence will be impacted by predicted subsidence movements.

6.10 Access Safety Risks – BJV Land

To minimise safety risks from the public entering BJV subsidence affected land, audits of access to BJV owned land including security on gates and fences will be regularly carried out as described in **Section 7**. Beltana has also removed stock from the SMP area, which will reduce the number of personnel accessing the mining area.

7 MANAGEMENT MEASURES

The management measures required for each surface safety risk are listed in **Table 7.1** below. All inspections outlined in **Table 7.1** will be documented and photos taken where appropriate.

Table 7.1 Surface Safety Management Measures

Surface Safety Risk	ACTION	TIMING	PERSON RESPONSIBLE
Surface Cracking	Visual inspection of areas potentially subject to cracking to identify condition, potential safety risks and any existing surface cracks.	One week prior to commencing Longwall mining.	Beltana Environment and Community Co-ordinator.
	Undertake regular inspections over surface being mined to monitor for signs of cracking.	During Longwall mining.	Beltana Environment and Community Co-ordinator.
	Visual inspection of surface cracking areas post subsidence.	Post mining.	Beltana Environment and Community Co-ordinator.
	Undertake surface remediation works as required. Any remediation works required will be determined in consultation with the private landholders. Possible remediation techniques for soil cracking may involve the following: • Digging of area to bedrock (only if shallow) and use of PUR to seal cracking, then topsoil and seed; • Using sheep's foot roller to compact and repair any upsidence; • seeding and fertilising the tilled surface followed by light rolling to seal any remaining surface cracks. (Umwelt 2003b). • regrade, infill and compact as necessary. • *Note: Rehabilitation works will involve the use of small machinery to minimise disturbance and be to a standard as stipulated by the sites standards or the expectations of the private property owner..*	As soon as practicable after occurring on privately owned land.	Beltana Environment and Community Co-ordinator.
	Visual inspections of subsidence remediation to assess effectiveness of remediation works.	Three-monthly intervals during the first six months after mining or after heavy rainfall.	Beltana Environment and Community Co-ordinator.

Surface Safety Risk	ACTION	TIMING	PERSON RESPONSIBLE
Drainage Lines and Steep Slopes	Drainage lines ,swampy area and steep slopes above Longwalls to be inspected prior to commencement of mining to identify condition, water level and any cracks.	One week prior to commencing Longwall mining.	Beltana Environment and Community Co-ordinator.
	Inspection of drainage lines to identify potential safety risks and cracking.	During Longwall mining.	Beltana Environment and Community Co-ordinator.
	Visual inspection of drainage lines, steep slopes and wet soak post subsidence.	Post mining.	Beltana Environment and Community Co-ordinator.
	Cracking in drainage lines will be remediated where required. This may include the regrading of drainage line beds if subsidence-induced ponding is unacceptable. Erosion mitigation measures (battering and re-vegetation of banks emplacement of rip-rap) will be carried out in areas of subsidence-induced scouring, where required.	As soon as practicable following subsidence occurring on private land.	Beltana Environment and Community Co-ordinator.
	Visual inspections of drainage line remediation to assess effectiveness of remediation works.	Three-monthly intervals during the first six months after mining beneath the area or after heavy rainfall.	Beltana Environment and Community Co-ordinator.
Dam Safety	Dams above longwalls to be inspected prior to commencement of mining to identify condition, water level and any cracks.	One week prior to commencing Longwall mining.	Beltana Environment and Community Co-ordinator.
	Farm dams levels to be inspected prior to mining and dam drained if public safety risk identified.	Prior to commencing Longwall mining.	Beltana Environment and Community Co-ordinator.
	Regular monitoring of dam levels to identify any cracks/leakages and to assess whether there is a risk of uncontrolled failure (for larger dams).	During Longwall mining.	Beltana Environment and Community Co-ordinator.
	Post subsidence inspection of dams, remediation of cracks/leakages if required and replacement of water drained if needed.	Where required, within one month of subsidence occurring on private land.	Beltana Environment and Community Co-ordinator.
	Visual inspection of dam remediation to assess effectiveness of remediation works.	Six months post subsidence on private land.	Beltana Environment and Community Co-ordinator.

Surface Safety Risk	ACTION	TIMING	PERSON RESPONSIBLE
Tailings Dam	Conduct geotechnical inspection, risk assessment and design and implement necessary mitigation strategies.	Six months prior to undermining (BSLW5)	Beltana Environment and Community Co-ordinator
Natural Vegetation	If any clearing of vegetation is required for subsidence remediation works, clearing will be undertaken in accordance with the site Multi Work Permit Process and the Flora and Fauna Management Plan.	Post subsidence, where required.	Beltana Environment and Community Co-ordinator.
Steep Slopes	The steep slopes associated with the tailings dam and spoil heap will be managed in accordance with a Complex Plan (open cut and underground) to be developed.	Six months prior to undermining (BSLW5)	Beltana Environment and Community Co-ordinator
Roads	The public roads will be managed in accordance with the Public Road Safety Subsidence Management Plan The private roads will be managed in accordance with the respective Private Property Subsidence Management Plans		
Buildings	Buildings and associated non-residential infrastructure will be managed in accordance with the relevant Private Property Subsidence Management Plans.		
Fences	Undertake a visual assessment the condition of fences.	Prior to the commencement of Longwall mining.	Beltana Environment and Community Co-ordinator and MSB.
	Regular inspections of fences, and replace or repair by re-tensioning wire/straightening posts as necessary to maintain the integrity of the fences.	Throughout Longwall mining.	Beltana Environment and Community Co-ordinator and MSB.
	Final inspection of fences and replacement/repair.	Post subsidence.	Beltana Environment and Community Co-ordinator and Mine Subsidence Board (MSB).
Access to BJV Land	Determine the area required for public exclusion based on anticipated cracking and depth of cover.	Prior to the commencement of Longwall mining.	Beltana Environment and Community Co-ordinator.

Surface Safety Risk	ACTION	TIMING	PERSON RESPONSIBLE
	Audit of fences and gates to identify, type, condition, and security.	Prior to the commencement of Longwall mining.	Beltana Environment and Community Co-ordinator.
	Fences to be repaired and gates locked to prevent public access.	Prior to the commencement of Longwall mining.	Beltana Environment and Community Co-ordinator.
	Signs warning of mine area instructing "*No Unauthorised Entry*" are to be installed on the perimeter fencing.	Prior to the commencement of Longwall mining.	Beltana Environment and Community Co-ordinator.
	Regular inspections of fences, warning signposts and gates, checking security and serviceability. Replace or repair fences where required.	Throughout longwall mining.	Beltana Environment and Community Co-ordinator and MSB.
	Maintain security of site until surface remediation works are complete and the surface is safe.	As required.	Beltana Environment and Community Co-ordinator.

8 REPORTING

The results of inspections will be documented. The effectiveness of the Longwalls BSLW1-BSLW6 Surface Safety Management Plan in managing public safety risks will be reported in the Quarterly SMP Status Report and the Annual Environmental Management Report.

9 REVIEW

This plan is to be reviewed after the completion of each longwall or as a result of an incident or inspection.

10 REFERENCES

- Umwelt 2003. Bulga Coal Continued Underground Operations EIS July 2003
- SEE for the Bulga Underground - Southern Mining Area Modification - Section 96(2) Application to Modify Consent DA 376-8-2003.
- MSEC 2008. Mine Subsidence Engineering Consultants Report Number MSEC334, Revision C.
- MSEC 2010a – Mine Subsidence Engineering Consultants Report Number MSEC393, Revision B.
- MSEC 2010b – Mine Subsidence Engineering Consultants Report Number MSEC452, Revision A.
- SCT 2008 – Strata Control Technology Report Number BEL3288, April 2008.
- Galvin 2008 – Galvin and Associates Report Number 0908/6-1b, November 2008.
- Subsidence Risk Assessment Associated with Mining Longwalls BSLW1-BSLW6 of the Blakefield South Seam November 2007

11 APPENDICES

Appendix 1 Bulga Underground Longwalls BSLW1 – BSLW6 Surface Safety Management Plan – Audit and Inspection Performa

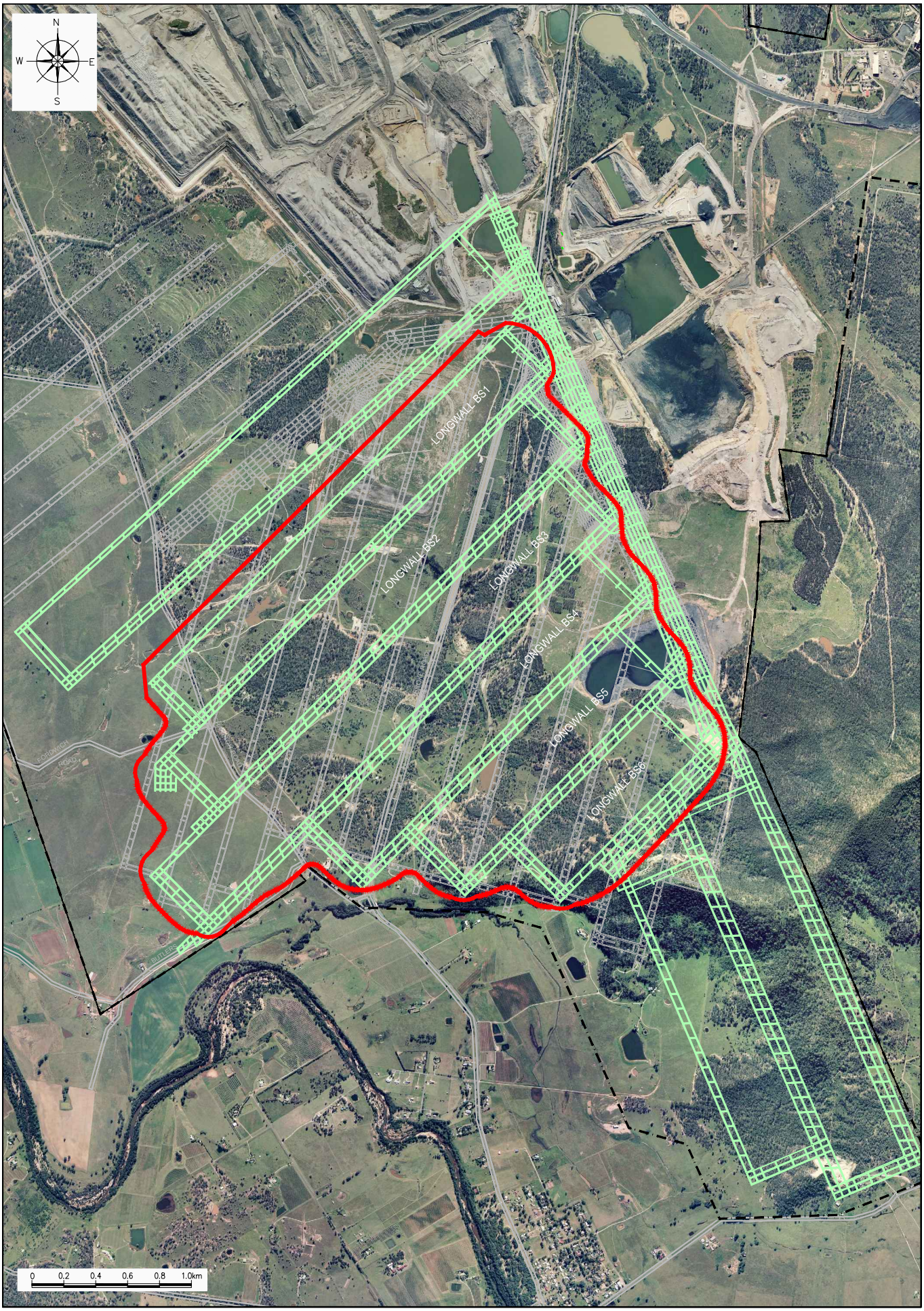
APPENDIX 1 BULGA UNDERGROUND LONGWALLS BSLW1 - BSLW6 PUBLIC SURFACE SAFETY MANAGEMENT PLAN – AUDIT AND INSPECTION PERFORMA

INSPECTED BY : _____ **DATE :** _____

ACCOMPANIED BY: _____

LONGWALL(S):		**LOCATION:**	
LONGWALL POSITION:			

	Status or Comments	**Required or Recommended Action(s)**	**Date to be Completed**
SURFACE CRACKING RISKS			
Current Condition:			
Potential Risks:			
DRAINAGE LINES, STEEP SLOPES AND DAM SAFETY RISKS			
Current Condition:			
Potential Risks:			
ACCESS AND FENCING SAFETY RISKS			
Current Condition:			
Potential Risks:			

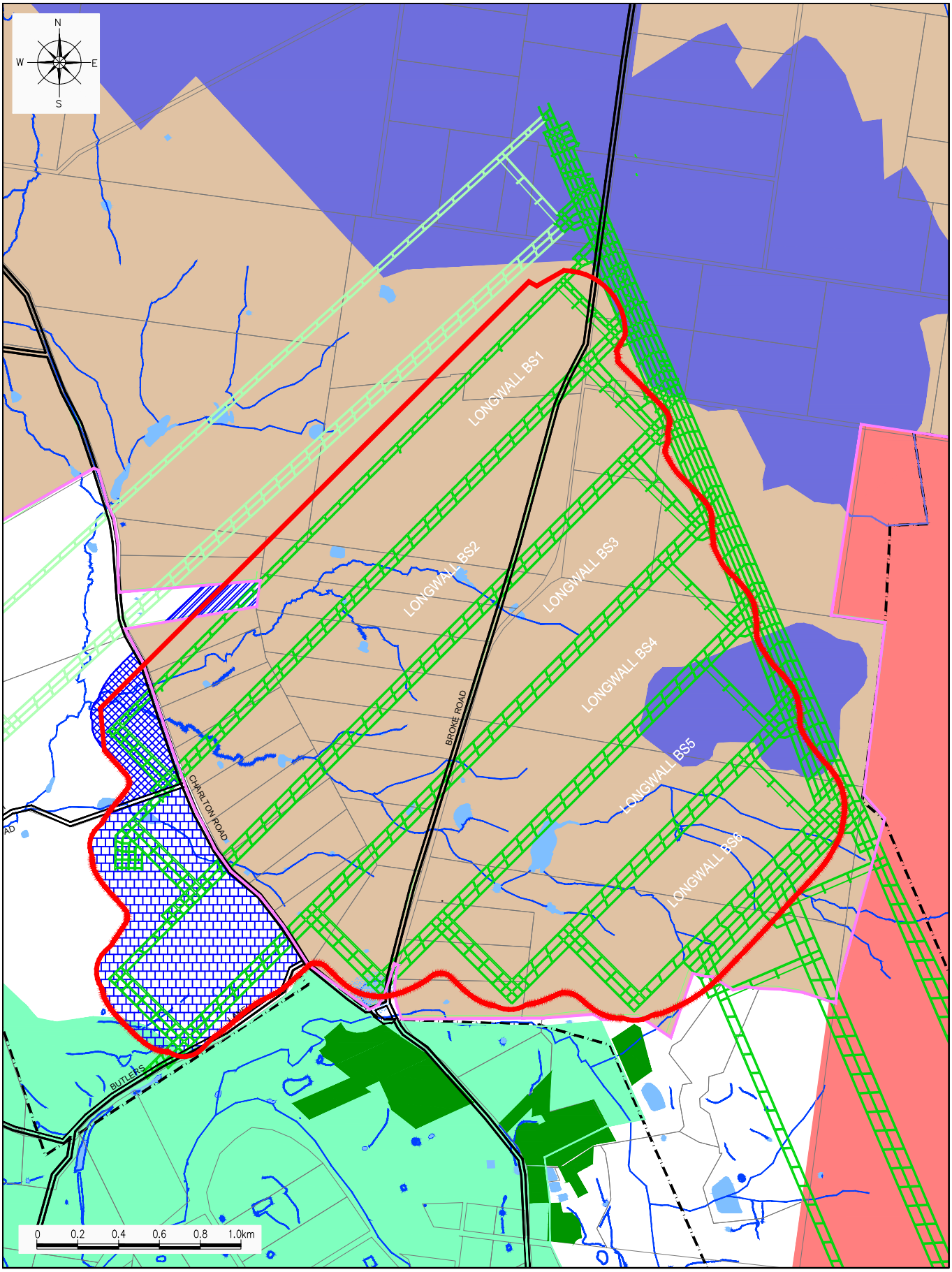


Legend

- Development Consent Boundary
- Blakefield South Seam Workings
- Whybrow Seam Workings
- SMP Boundary (as approved 2009)

Blakefield South SMP Area

Figure 1



Legend

- Development Consent Boundary
- Blakefield South Seam Workings
- SMP Boundary (as approved 2009)
- Bulga Open Cut Mining & Surface Infrastructure
- Vineyards (mapped from 2009 aerial photo)
- 2008 SMP Application Area as approved
- Public Road
- Land Owned By Bulga Joint Venture
- Other Cropping Land
- Bulga IV Rural Grazing
- Rural Grazing
- Lewis Property
- McInerney Property
- Bird Property
- Creek

Land Ownership & Use

Figure 2