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# **ASHTON COAL PROJECT**

## **PUBLIC SAFETY MANAGEMENT PLAN UPPER LIDDELL SEAM LONGWALLS 1 - 8**

Version Date: 01/08/2012

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**Version History**

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				Name/Position	Date
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**External Consultation**

Org.	Nominated Rep.	Version	Date Issued	Comments
DP&I	Howard Reed	17/07/2012	18/07/2012	27/07/2012
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## 1 INTRODUCTION

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This Public Safety Management Plan has been prepared to identify and mitigate potential risks to public safety that may result from underground mining at the Ashton Coal Project (ACP). The scope of this management plan is limited to second workings associated with LW 1 - 8 in the Upper Liddell (ULD) Seam.

The Ashton Coal Environmental Management Strategy (see **Figure 1** of the Built Features Management Plan) provides the strategic context for the environmental management of the ACP. Extraction Plans form part of the Environmental Management Strategy and are required by the ACP development consent. Each Extraction Plan provides a framework for the management of subsidence impacts associated with Ashton Coal Operation Limited's (ACOL) underground mining activities. The Extraction Plans detail the proposed workings, including dimensions, overburden depth and a proposed mining schedule.

Land affected by ACOL's underground mine operations includes land owned by private corporations, a private landholder and a public road reserve associated with the New England Highway. Subsidence movements are limited to land owned by ACOL, a private landholder and Macquarie Generation (MacGen). The affected land is not publicly accessible but is accessed by staff and contractors of ACOL, Property 130, MacGen, Ravensworth Operations and Ravensworth Underground Mine. Potential safety risks that may occur as a result of subsidence include:

- Surface cracking;
- Ground deformations; and
- Damaged infrastructure (i.e. electricity transmission lines, damaged roads).

Management actions relevant to built features are summarised in this management plan, however the actual management controls and incident response is addressed in the relevant Asset Management Plans. Monitoring and repairs of surface cracking is covered by the Land Management Plan. The primary risk management controls under this Public Safety Management Plan include regular communication with relevant stakeholders, daily monitoring of subsidence effects where necessary, and provision of appropriate warning signage at each site entrance.

This plan has been prepared in accordance with the Development Consent conditions (as modified), the supporting Bowmans Creek Diversion Environmental Assessment (Evans & Peck, 2009) and relevant legislation and guidelines.

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## 2 STATUTORY REQUIREMENTS

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This document has been prepared in accordance with the consent conditions, relevant legislation and guidelines, and in consultation with relevant government agencies and affected infrastructure owners as discussed below.

### 2.1 DEVELOPMENT CONSENT

Condition 3.12(g) requires that ACOL prepare a Public Safety Management Plan to the satisfaction of the Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS) (formerly the Department of Industry & Investment) *"to ensure public safety in the mining area."*

Condition 3.10 of the development consent requires that *"no additional risk"* be posed to public safety as a result of underground mining activities. The consent also notes that *"Requirements regarding "safe" or "serviceable" do not prevent preventative or mitigatory actions being taken prior to or during mining in order to achieve or maintain these outcomes."*

With respect to the planned Lemington Road re-alignment Condition 7.15 specifies that *"The Applicant shall be responsible for implementing controls to ensure road traffic safety (including monitoring, maintenance and repairs of subsidence impacts) during any longwall extraction which may cause subsidence impacts to Brunkers Lane/Lemington Road."* The consent also notes that *"This responsibility for implementing controls exists notwithstanding that funding of these controls may come from other parties, such as the owner of the Ravensworth Operations Project or the MSB."*

Additionally under Schedule C, Item 3 of the development consent, ACOL's commitments include: *"Existing surface infrastructure **will be maintained to be safe, serviceable and repairable** manner unless the owner agrees otherwise in writing"* and *"Damage to existing third party-owned infrastructure due to the ACOL induced subsidence will be mitigated or remediated."*

### 2.2 CONSULTATION REQUIREMENTS

Should significant amendments to this document be required prior to implementation, the amendments will be made in consultation with relevant stakeholders and to the satisfaction of DTIRIS (Resources & Energy). Contact details of the relevant stakeholders are listed in **Table 1**.

**Table 1 Relevant Stakeholders and Representatives**

Organisation	Representative	Phone	Address
Macquarie Generation (Landowner – Property 153)	Production Manager	(02) 6542 0711	Private Mail Bag 2 Muswellbrook NSW 2333
Xstrata – Ravensworth Operations (Landowner – Property 155)	Technical Services Manager	(02) 6570 0700	PO Box 294 Muswellbrook NSW 2333
Xstrata – Ravensworth Underground Mine	Technical Services Manager	(02) 6576 1500	PO Box 294 Muswellbrook NSW 2333
(DTIRIS), Resources and Energy	Director, Mine Safety Operations	(02) 4931 6644	PO Box 344 Hunter Regional Mail Centre, NSW 2310
Property 130 Landowner	See Ashton Contacts Register	See Ashton Contacts Register	See Ashton Contacts Register



### 3 SCOPE

This management plan addresses potential public safety risks associated with subsidence impacts as a result of underground mining (secondary extraction) of LW 1-8 in the Upper Liddell (ULD) Seam only.

Surface areas directly affected by subsidence from extraction of these longwall panels include:

- Land owned by ACOL;
- Land owned by Macquarie Generation (MacGen) – Property 153; and
- Privately owned land – Property 130.

The affected land is private land, however it is not gated. It is accessed by:

- ACOL;
- MacGen;
- Xstrata – Ravensworth Underground Mine (to gain access to the surface area above their underground workings);
- Xstrata – Ravensworth Operations Pty Ltd – Property 153 as an alternative access to the rear of their site (Property No. 155); and
- Private residents (Property 130) and contractors e.g. Milk Trucks.

The subsidence predictions, affected assets and likely safety risks are summarised below.

#### 3.1 PREDICTED SUBSIDENCE – ULD SEAM

Subsidence behaviour resulting from extraction of LW 1-8 in the ULD Seam is variable based on the width of the panel, overburden depth and chain pillar barrier widths. Maximum predicted subsidence values (worst case scenarios) for extraction of these panels, as presented in

**Table 2**, have been adopted for the purposes of this management plan.

**Table 2 Maximum Incremental Subsidence Predictions (ULD Seam only)**

Panel	Maximum Subsidence (m)	Maximum Tilt (mm/m)	Maximum Strain (mm/m)
LW1	2.9	183	73
LW2	2.5	139	55
LW3	2.5	119	48
LW4A	2.4	93	37
LW4B	2.4	110	44
LW5	2.5	76	30
LW6A	2.5	73	29
LW6B	2.8	101	41
LW7A	2.5	66	26
LW7B	3.0	91	36
LW8	3.4	98	39

Source: Subsidence Assessment of Upper Liddell Seam, Longwalls 1-8 Extraction Plan' SCT (2011)

Extraction of the upper and lower coal seams is not currently covered in this management plan, however, it should be noted that the values shown in **Table 2** are not the final subsidence values for the site.

### 3.2 POTENTIAL RISKS & PROPOSED CONTROLS

An externally facilitated subsidence impacts risk assessment has been prepared and is included as an appendix to the Extraction Plan (**Volume 2**). Additionally a public safety risk assessment has been carried out to underpin this management plan. For each of the risks identified within these documents in respect to public safety, controls have been developed to ensure that the level of risk is reduced to as low as reasonably achievable (controls are described in **Sections 4 and 5**).

Surface infrastructure affected by the extraction of ULD LW 1-8 that may pose a threat to safety if damaged by subsidence, is summarised in **Table 3** below. **Table 4** outlines the proposed management control for each identified potential safety risk. Many of these controls are documented in the Asset Management Plans (sub-plans to the Built Features Management Plan). Any controls that specifically fall under the scope of this Public Safety Management Plan are highlighted in orange, and are further detailed and documented in **Section 5**.

**Table 3 Subsidence Effects and Potential Risks**

Surface Feature	Potential Subsidence Effect	Potential Safety Risk	Asset Owner / Stakeholder(s)	Control Measure	Relevant Section or Reference Document
Land surface	Subsidence cracking and tilts.	Personal injury - trip/fall hazard, vehicle hazard. Trees may fall over.	ACOL, MacGen, Property 130	<b>Warning signage</b>	<b>Section 5</b>
				<b>Temporary Fencing</b>	<b>Section 5</b>
				Visual monitoring of the active subsidence zone and repair of surface cracks.	Extraction Land Management Plan
New England Highway	Above first workings therefore not affected by longwall subsidence. Surface (subsidence) pothole following underground roof collapse.	Traffic hazard – vehicle accidents	Roads & Maritime Services (previously RTA)	First workings are designed to remain long-term stable. Technical assessment completed.	SCT 2011 <sup>1</sup>
				TARP developed for managing underground workings and roof stability.	ACOL Pothole Management Plan
				Inspection and survey monitoring of Highway.	RMS Asset Management Plan
132kV Transmission Line – Southern Major Interconnector	Expected to experience the full range of subsidence movements and will require modification to remain serviceable.	Damaged cables – electrocution risk	Ausgrid (previously Energy Australia)	Monitoring of all lines for tilt, strain and line clearance. Will require modification to remain serviceable. Modifications are assessed and recommended by technical report and any works will be undertaken in consultation with Ausgrid. Trigger Action Response Plan (TARP) developed for managing incident response.	Ausgrid Asset Management Plan

<sup>1</sup> SCT (2011) **Subsidence Assessment for Ashton Coal Mine Longwalls 1-8 in the Upper Liddell Seam** prepared for Ashton Coal Mine, Strata Control Technology Operations Pty Ltd, Wollongong, NSW, Australia

Surface Feature	Potential Subsidence Effect	Potential Safety Risk	Asset Owner / Stakeholder(s)	Control Measure	Relevant Section or Reference Document
11kV Traversing the ACP	Expected to experience the full range of subsidence movements and will require modification to remain serviceable.	Damaged cables – electrocution risk.	Ausgrid (previously Energy Australia)	Monitoring of all lines for tilt, strain and line clearance. Installation of additional stays, rollers and support - as required. TARP developed for managing incident response.	Ausgrid Asset Management Plan
Combined 66/11kV and a 132kV electricity transmission lines located parallel to the New England Highway	Located above first workings therefore not affected by longwall subsidence.  Surface (subsidence) pothole following underground roof collapse.	Damaged cables – electrocution risk.	Ausgrid (previously Energy Australia)	Monitoring of all lines for tilt, strain and line clearance. TARP developed for managing incident response.	Ausgrid Asset Management Plan
				First workings are designed to remain long-term stable. Technical assessment completed.	SCT 2011 <sup>1</sup>
				TARP developed for managing underground workings and roof stability.	ACOL Pothole Management Plan
Private access roads	Ground deformation: surface cracking, formation of compression humps and dips and changes to drainage patterns.	Traffic hazard – vehicle accidents.	MacGen, ACOL, Property 130, Xstrata (RavOps) & Xstrata (RUM)	<b>Warning signage</b>	<b>Section 5</b>
				Visual monitoring and diversions repairs where required.	ACOL, Property 130 and MacGen Asset Management Plan
Existing 33kV electricity transmission line	Tilting of poles.	Reduced line clearances, fallen power lines.	Xstrata (RavOps)	Assessment and mitigation works prior to subsidence, remediation and survey post subsidence to check line clearance. Incident response and repairs if damaged.  TARP developed – refer Xstrata (RavOps) Asset Management Plan.	Xstrata (RavOps) Asset Management Plan

Surface Feature	Potential Subsidence Effect	Potential Safety Risk	Asset Owner / Stakeholder(s)	Control Measure	Relevant Section or Reference Document
Water or sedimentation dams	Cracking of dam walls.	Dam wall failure resulting sudden release of water. Cracking of dam base– inrush into underground workings.	MacGen, ACOL, Property 130	Pre-mining dam assessment, draining of dams if required, and post-subsidence repair.	MacGen, Property 130 and ACOL Asset Management Plans
Pipelines	Cracking or breakage.	Sudden release of water, personal injury. Traffic hazard – plant and vehicle incidents	ACOL, Xstrata (RavOps)	Flows are monitored. If flow deviates from baseline flows will be halted and damage investigated and appropriately mitigated or remediated.	Xstrata RavOps and ACOL Asset Management Plans
Dilapidated farm building	Further structural instability.	Further building collapse – personal injury.	MacGen	Building not currently functional or used - No proposed controls.	–
Farm dwellings and farm machinery storage sheds	Potential structural instability rendering building unserviceable.	Building collapse or uneven structure– personal injury.	ACOL	<b>Restrict access to building until confirmed structurally sound</b>	<b>Section 5</b>
Fences and gates	Tilted fences / wire breakage / gates unable to open/close.	Livestock escape (i.e. onto New England Highway).	ACOL, Xstrata (RavOps), MacGen	Move livestock out of potentially affected paddocks prior to impacts.	ACOL, Property 130, Xstrata (RavOps) and MacGen Asset Management Plans
				<b>Temporary fencing</b>	<b>Section 5</b>
Proposed Lemington Road (during construction)	Surface cracking and ground deformation.	Traffic hazard – plant and vehicle incidents, trip/fall hazard – personal injury.	Xstrata (RavOps), MacGen	<b>Prepare management plan for construction, to be based on a construction risk assessment.</b>	<b>Section 5</b>
Proposed Lemington Road (if dedicated as a public road)	Ground deformation: surface cracking, formation of compression humps and dips and changes to drainage patterns.	Traffic hazard – vehicle accidents.	Singleton Shire Council, Xstrata (RavOps)	<b>Undertake risk assessment and prepare management plan as per DC cond. 17.14. Safety measures per DC cond. 17.5.</b>	<b>Section 5</b>
Proposed 330kV electricity transmission line	Negligible impact expected – outside predicted 20mm subsidence contour.	None identified	Xstrata (RavOps)	Ongoing liaison with RavOps to ensure any potential issues are identified and addressed.	Xstrata (RavOps) Asset Management Plan

Surface Feature	Potential Subsidence Effect	Potential Safety Risk	Asset Owner / Stakeholder(s)	Control Measure	Relevant Section or Reference Document
Proposed Relocation of 132kV and 66kV Transmission Lines	Located beyond first workings and beyond the eastern end of LW 1, outside of the subsidence zone, where tilts and strains are expected to be insignificant.	None identified	Ausgrid (previously Energy Australia)	Monitoring of all lines for tilt, strain and line clearance. TARP developed for managing incident response.	Ausgrid Asset Management Plan
Proposed 11kV Transmission Line	Expected to experience the full range of subsidence movements and will require modification to remain serviceable.	Damaged cables – electrocution risk	Ausgrid (previously Energy Australia)	Monitoring of all lines for tilt, strain and line clearance. Installation of additional stays, rollers and support - as required. TARP developed for managing incident response.	Ausgrid Asset Management Plan

## 4 OBJECTIVES

The overall objectives for the management of subsidence impacts to infrastructure and public safety issues associated with the Ashton Underground mine are contained within the following documents:

- Ashton Coal Environmental Management Strategy; and
- Ashton Coal Safety, Health, Environment and Community Management System.

Specific objectives and performance outcomes that have been developed for the management of public safety are summarised below.

**Table 4 Public Safety Management Objectives**

Objectives	Performance Measure
<ul style="list-style-type: none"> <li>• No additional (safety) risk (per DC cdn. 3.10 Table 2).</li> <li>• To prevent personal injury as a result of subsidence impacts.</li> </ul>	<ul style="list-style-type: none"> <li>• No risk to public safety as a result of mining operations.</li> <li>• No injuries or accidents occur as a result of subsidence impacts or subsidence damage.</li> <li>• All identified public safety risks are managed quickly and appropriately to avoid injury.</li> <li>• Safety incidents recorded within the ACOL SCHECM system.</li> </ul>

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## 5 MANAGEMENT, MITIGATION & RESPONSIBILITIES

The actions that ACOL undertakes to fulfil the consent conditions outlined in **Section 2** and to meet the performance measures outlined in **Section 4** are shown in **Table 5**. These actions have been categorised into Monitoring, Management, Incident Response and Notification/Consultation.

**Table 5 Management, Monitoring and Responsibilities**

Item	Action	Trigger/Timing	Responsibility	Reporting
1.0	<b>Monitoring</b>			
<i>Relevant monitoring activities are detailed within the Extraction Land Management Plan and the individual Asset Management Plans.</i>				
2.0	<b>Management</b>			
2.01	Maintain the permanent signage that has been placed near the property entrance to ACOL's landholdings.	Ongoing	Ashton Underground Mining Engineer	Nil
2.02	Temporary signage will be erected at the property entry (from the New England Highway – with owners consent) advising of potential subsidence risks. The signage will be removed following the completion of active subsidence and subsequent remediation works.	Prior to longwall progressing below Property No. 155.	Ashton Underground Mining Engineer	Fortnightly Status Report
2.03	Residential buildings within Ashton's landholdings will be vacated prior to subsidence impacts occurring. These buildings will then be secured to prevent unauthorised access or use.	Prior to subsidence impact	Ashton Underground Mining Engineer	Nil
2.04	Entry to all farm machinery and storage sheds potentially affected by subsidence will be restricted (e.g. fencing).	For the period of active subsidence.	Ashton Underground Mining Engineer	Nil
2.05	Site buildings may be inspected by a suitably qualified engineer to assess the structural stability of the buildings. Buildings will only be returned to use once it is confirmed that the structures are sound and fit for purpose.	Following active subsidence.	Ashton Underground Mining Engineer	Nil
2.06	Temporary fencing of some areas will be installed to exclude stock and people from areas that are predicted to be subject to substantial surface cracking and this fencing will remain in place until such time that the surface cracking has been remediated.	Prior to and until completion of active subsidence.	Ashton Underground Mining Engineer	Fortnightly Status Report

Item	Action	Trigger/Timing	Responsibility	Reporting
2.07	Maintain a risk assessment to review and risk rank public safety risks. Review RA prior to LW 5-8 being extracted.	Prior to subsidence impacts associated with this Extraction Plan.	Ashton Underground Mining Engineer	Nil
2.08	ACOL to liaise with Ravensworth Operations regarding a management plan for construction, to be based on a construction risk assessment.	If construction starts prior to Mining.	Ashton Underground Mining Engineer	Nil
2.09	ACOL to liaise with Ravensworth Operations regarding a risk assessment and management plan.	If dedicated as a public road.	Ashton Underground Mining Engineer	Nil
2.10	All staff are inducted prior to accessing MacGen land or are escorted by inducted personnel.	Ongoing	Ashton Underground Mining Engineer	Nil
<b>3.0</b>	<b>Incident Response</b>			
3.1	All safety incidents at the ACP will be handled in accordance with ACOL's Health and Safety procedures and WorkCover requirements (if appropriate).	Near miss or injury.	All staff	In accordance with ACOL's health and safety procedures.
<b>4.0</b>	<b>Notification, Consultation &amp; Reporting</b>			
4.1	Forward information to relevant stakeholders regarding progress of the longwall and any relevant subsidence management actions.	Fortnightly	Ashton Underground Mining Engineer	Fortnightly Status Report
4.2	Notify affected stakeholders if public safety risks resulting from ACOL's operations are identified.	In response to monitoring.	Ashton Underground Mining Engineer	Nil
4.3	Owners of Properties No. 153 and 155 will be notified at least one month prior to longwall mining affecting Property No. 155 or the access road to Property No. 153.	One month prior to longwall progressing below Property No. 155.	Ashton Underground Mining Engineer	Fortnightly Status Report

## 6 IMPLEMENTATION AND OPERATION

ACOL have adopted a structured and systematic approach to the management of safety, health, environment and community relations to specifically meet the needs of the operation. The policies and procedures that have been developed by ACOL are to protect the health and safety of employees, contractors, sub-contractors, visitors and the general public, to protect the environment and to ensure compliance with all relevant legislation.

### 6.1 RESOURCES & RESPONSIBILITIES

To ensure adequate implementation of this management plan, responsibilities have been assigned to relevant ACOL personnel (see **Table 5** and **Table 6**).

**Table 6 Roles and Responsibilities**

Roles	Responsibilities
Underground Mine Manager	<ul style="list-style-type: none"> <li>Ensure this Public Safety Management Plan is implemented and adhered to.</li> </ul>
	<ul style="list-style-type: none"> <li>Ensure that adequate resources are available to ACOL personnel to facilitate the completion of their responsibilities under this management plan.</li> </ul>
Technical Services Manager	<ul style="list-style-type: none"> <li>Ensure that all monitoring and reporting is carried out within the timeframes specified, checked, processed and filed appropriately.</li> </ul>
	<ul style="list-style-type: none"> <li>Liaise with stakeholders regarding subsidence impact management.</li> </ul>

### 6.2 REPORTING

Each of the reporting requirements listed in **Section 5** are detailed in the Built Features Management Plan and Environmental Management Strategy.

Further reporting requirements relating to recording and notification of safety incidents are contained under ACOL's health and safety procedures.

### 6.3 AUDIT AND REVIEW

An internal review of this Public Safety Management Plan will be conducted in response to:

- An incident recorded as a result of the operations that affects safety;
- A significant change in operation that may affect public safety risks;
- Statutory requirements or directions/conditions of approvals requiring such action; or
- Recommendations as a result of internal or external audits.

This plan may be audited (if required) under the scope of any external environmental compliance audits or safety audits.

A complete review and update of the plan will be undertaken prior to second workings progressing in subsequent seams or as necessitated by operation requirements.

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