



**SUBSIDENCE
Infrastructure Management Plan
SV-MS-037**

Rev No	Date	Description	Prepared by	Checked by	Approved by
0	September 2006	Subsidence IMP	KP	JM	DC
1	21/08/2009	Subsidence IMP	EW	TSB	TOB

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Department: Technical Services

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1.0 PURPOSE

This system forms part of the ***Springvale Coal Health and Safety Management System SV-MS-001***.

Springvale Colliery is required to establish a Subsidence Infrastructure Management Plan (**IMP**) under the Springvale Subsidence Management Plan (**SMP**) Approval, Conditions 7, 8 and 9. As an integral component of the overall ***Springvale Colliery Environmental Management System (SV-MS-027)***, this management plan aims to highlight the risks posed by subsidence on infrastructure located on the Newnes Plateau and identify control strategies seeking to measure and mitigate such risks.

The purpose of this IMP is to document the protocols to be implemented to the satisfaction of the owners/operators of the said infrastructure. This includes infrastructure owned by Forests NSW and Integral Energy.

2.0 SCOPE

This document describes the inspection program and management responses to manage any effects of subsidence on the infrastructure located on the surface overlying the Springvale SMP Approval area. The IMP aims to ensure the safety and serviceability of any infrastructure and identify appropriate management measures to remediate/mitigate (**Section 8**) any subsidence impacts.

This IMP fulfils the requirements of Conditions 17 of the Springvale Subsidence Management Plan Approval and supersedes the IMP dated September 2006.

This System will apply to all persons involved with the environmental monitoring program on the Newnes Plateau at Springvale Colliery, including employees, contractors and visitors.

3.0 REFERENCES

This document has been developed to comply with the Springvale Subsidence Management Plan Approval issued by the Department of Primary Industries – Mineral Resources (now incorporated into the Department of Industry and Investment).

The controls identified in this document were identified in the Risk Assessment Review originally carried out for the Subsidence Management Plan Application. The original Risk Assessment was carried out in 2005. The Risk Assessment Review (dated December 2007) was carried out by Hawcraft, Miller Swan.

4.0 MANAGEMENT STRUCTURE

Springvale Coal is required to have a Management Structure as part of the Health and Safety Management System under Coal Mines Health & Safety Act 2002 – Clause 23 (3) (c).

Any roles within the ***Subsidence Environmental Monitoring Program*** relate directly to the ***Springvale Coal Health and Safety Management System - Management Structure Chart***.

MANAGEMENT STRUCTURE CHART

The Management Structure Chart is an organisational chart which represents the structure of Springvale Coal's organisation in terms of rank.

An organisational chart graphically shows the name of the position holder within the organisation and their accountabilities.

The Management Structure Chart for Springvale can be referenced @ ***Register of Persons xls*** on Lotus Notes.

In this instance the Senior Mine Official (as indicated by the Management Structure Chart for Springvale) is ultimately accountable for all mine staff/inducted contractor and visitors on site.

5.0 COMMUNICATION AND CONSULTATION

The **Information and Communication System SV-MS-014** forms part of the **Springvale Coal Health and Safety Management System SV-MS-001** and controls all relevant communication processes associated with the Subsidence Infrastructure Management Plan.

The participation of employees and their input is fundamental to the successful implementation and sustainability of the system.

Relevant employees were requested to attend the Subsidence Management Plan risk assessment carried out in 2005 and its review in 2007.

The facilitated risk assessment consisted of the following representatives:

- Environmental Coordinator/Graduate
- Mine Manager
- Technical Services Manager
- Registered Mining Surveyor
- Forest NSW representative
- Groundwater specialist
- Ecology specialist
- Geotechnical specialist
- Risk assessment facilitator

6.0 RISK MANAGEMENT

The purpose of applying a risk management process attempts to proactively and systematically reduce losses and identify hazards.

As a result of the risk assessment review in December 2007, there were two additional risks associated with infrastructure on the Newnes Plateau. The two additional risks related to infrastructure owned by Springvale.

7.0 TRAINING AND COMPETENCIES

Inspections (including photographic monitoring included in SV-MS-036) are to be undertaken by appropriately trained/experienced personnel competent in the identification of subsidence impacts.

Powerline inspections (AmpleTech / Powerserve) are to be undertaken by a licenced Electrician

Subsidence monitoring (Aurecon) is to be undertaken by a Registered Mine Surveyor

8.0 CONTROLS AND RESPONSIBILITIES

8.1 Responsibilities

The Springvale Environment and Community Coordinator is responsible for the implementation of this plan.

The Springvale Registered Mine Surveyor is responsible for co-ordinating the activities of Powerserve and AmpleTech.

The Springvale Mine Manager is responsible for ensuring that sufficient resources are available to implement the requirements of this Plan.

8.2 Controls

Background

Springvale Colliery has been using longwall mining to extract coal from beneath the Newnes Plateau and its surrounds since 1995.

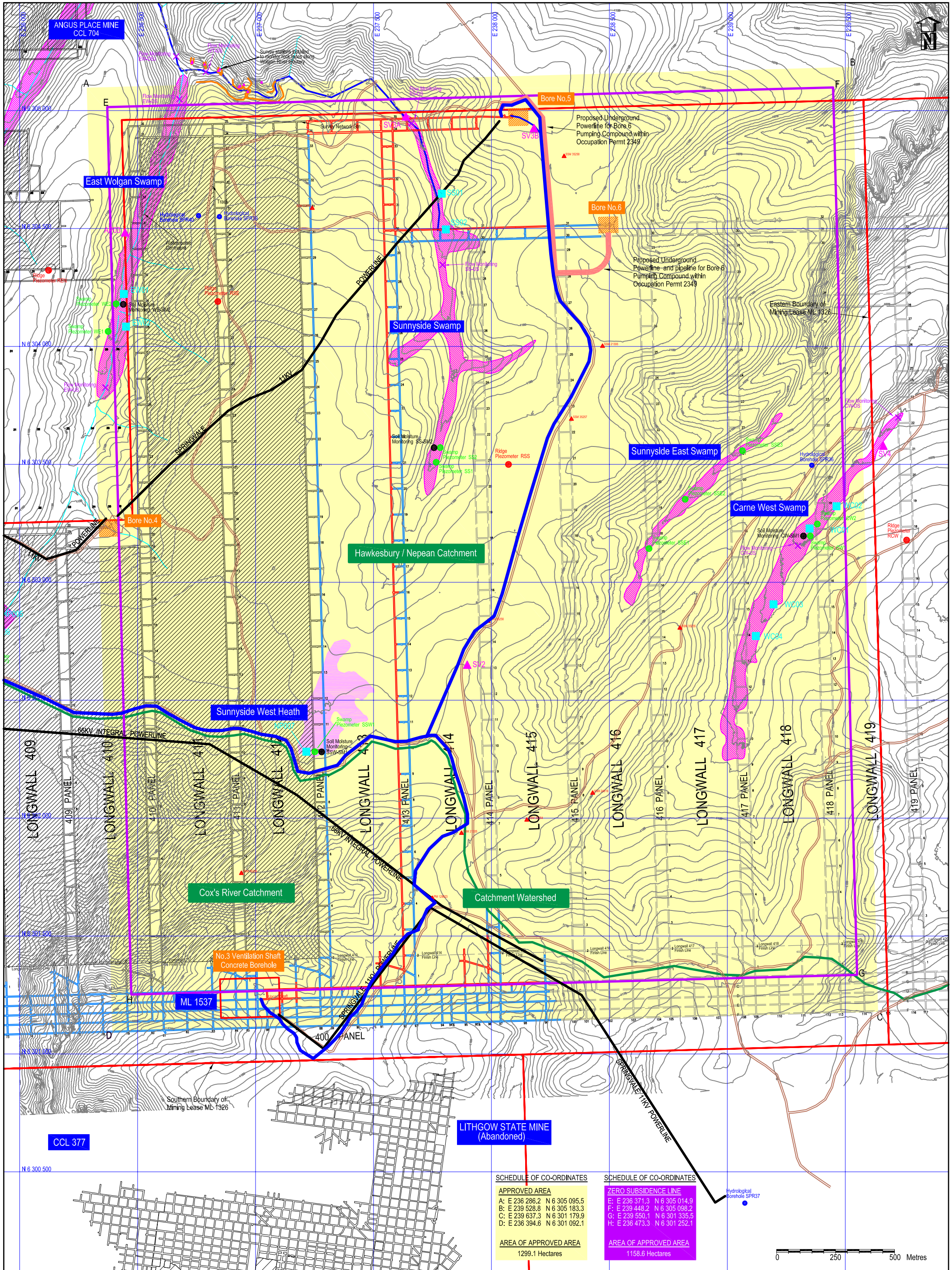
The land overlying the SMP area is State Forest and contains no private landholdings and very little infrastructure. The only public infrastructure above the mining area is Forests NSW roads / 4WD trails (the subject of Management Plan SMP 411 – 418 – 16). Private infrastructure above the mining area consists of :

- Springvale / Delta Water transfer pipeline located over LW 411 – 416,
- Springvale 11Kv power line to No 5 Pumping Borehole over LW 411 – 415,
- Springvale 11Kv power line to No 3 Shaft over LW 411 – 415,
- Springvale 11Kv power line to No 6 Pumping Borehole over LW 415 and 416 (unless underground)
- Springvale No 3 Shaft facility adjacent to LW 411 – 412,
- Integral Energy 66Kv power line over LW 411 – 416,
- Springvale No 5 Pumping Borehole adjacent to LW 415, and
- Springvale No 6 Pumping Borehole adjacent to Longwall 416

The location of these facilities are presented in **Figure 1**.

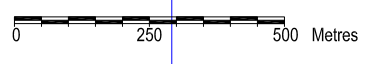
The surface area is managed by Forests NSW, however, occupation permits and/or Mining Leases (as appropriate) over the areas associated with the Springvale infrastructure (above) have been issued to Springvale Colliery.

This Management Plan includes the regular inspection and survey of this infrastructure and outlines actions to be implemented to ensure the safety and serviceability of this infrastructure.



SCHEDULE OF CO-ORDINATES	
APPROVED AREA	
A:	E 236 286.2 N 6 305 095.5
B:	E 239 528.8 N 6 305 183.3
C:	E 239 637.3 N 6 301 179.9
D:	E 236 394.6 N 6 301 092.1
AREA OF APPROVED AREA	
1299.1 Hectares	

SCHEDULE OF CO-ORDINATES	
ZERO SUBSIDENCE LINE	
E:	E 236 371.3 N 6 305 014.9
F:	E 239 448.2 N 6 305 098.2
G:	E 239 550.1 N 6 301 335.5
H:	E 236 473.3 N 6 301 252.1
AREA OF APPROVED AREA	
1158.6 Hectares	



LEGEND			
	SMP Approval Area		Surface Contour Line
	Existing Areas of Extraction		Formed Track
	Existing Zero Subsidence Limit at maximum depth of cover		Dewatering Pipeline
	Permanent State Survey Mark		Existing Powerlines
	Proposed Powerline and Pipeline Route		Surveyed Rock Face
	Fauna Monitoring		Catchment Watershed
	Flora Monitoring		Mining Lease Boundary
	Soil Moisture Monitoring		
	Swamp Pizo		
	Ridge Pizo		
	Water Flow Monitoring		

DRAWN: John Maynard	DATE: 31-July-2009
SCALE: Not to Scale	DRAWING No: Cond.17 Review Fig.1
REVISED:	DATE REVISED:
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SPRINGVALE MINE	
SMP CONDITION 17	
INFRASTRUCTURE MANAGEMENT	
PLAN	
FIGURE No.1	
 SPRINGVALE MINE Liddell NSW 2790 PO Box 198 Wallerawang NSW 2845 Phone: 02-63501600 Fax: 02-63551052	

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8.3 Approach to Safety and Serviceability of Infrastructure

The Mine's overall strategy for management of the safety and serviceability of infrastructure is:

1. **Measure baseline information** – Established background data for the surface above the mining area by inspection and in some cases also subsidence survey.
2. **Monitor the effects of mining** - Continue monitoring and inspection of infrastructure at key times relating to the longwall position
3. **Inspection regime** – Visual inspections and surveys to be carried out as outlined in **Section 8.4**.
4. **Regularly assess and interpret monitoring and inspections** – Monitoring and inspection data is analysed to identify any variations from predictions, unexpected anomalies or visual impact.
5. **Assessment of any impacts** – where variations and/or impacts are greater than predictions made in the SMP, additional assessment/investigation of impacts will be undertaken. This will be carried out by specialist consultants, Springvale personnel and, in the case of the 66KV power line, Integral Energy where required.
6. **Management of Impacts - Identify and implement remedial actions (rehabilitation, remediation, additional management procedure)** –if impacts require remedial action, the initial remedial action will be implemented as outlined in **Section 8.5** in conjunction with Forests NSW and the relevant infrastructure owner with any further actions developed by Springvale in conjunction with Department of Primary Industries - Mineral Resources and the relevant infrastructure owner.

8.4 Inspection and Survey Schedule

8.4.1 Longwall Surface Area

The surface above the SMP Approval area is crossed by various infrastructure (listed above) with the locality of the infrastructure shown on **Figure 1**.

Parameters, Inspections and Frequency

Visual inspections and / or surveys of the relevant sections of this infrastructure will be conducted at regular intervals throughout the extraction of Longwalls 411 – 418 as listed in **Table 1**.

Table 1. Inspection and Survey Schedule

Infrastructure Item	Visual Inspection Frequency	Visual Inspection by	Survey Frequency	Survey by	Comments
• Springvale / Delta Water transfer pipeline	Generally fortnightly, weekly whilst being undermined	Springvale Environment and Community Coordinator	N/A	N/A	Located over LW 411 – 415. Inspection, survey and reporting frequency agreed with Delta
• Springvale 11Kv power line to No 5 Pumping Borehole (until rehabilitated)	As above	Ampletech / Powerserve	N/A	N/A	Located over LW 411 – 415. Springvale owned infrastructure
• Springvale 11Kv power line to No 6 Pumping Borehole	As above	Ampletech (if above ground)	N/A	N/A	Located over LW 415 – 416. Springvale owned infrastructure
• Springvale 11Kv power line to No 3 Shaft	As above	Ampletech	N/A	N/A	Located over LW 411 – 415. Springvale owned infrastructure
• Springvale No 3 Shaft facility	Generally fortnightly	Ampletech/ Powerserve	N/A	N/A	Located adjacent to LW 411 – 412. Springvale owned infrastructure
• Integral Energy 66Kv power line (and sub-station located over LW 408)	Annual (generally fortnightly whilst being undermined)	Powerserve 6 monthly with report to Integral Energy and Springvale	Six monthly	Aurecon (contract survey firm) report to Integral Energy and Springvale	Located over LW 411 – 416. Inspection, survey and reporting frequency agreed with Integral Energy
• Springvale No 5 Pumping Borehole (until rehabilitated)	Generally fortnightly,	Ampletech	N/A	N/A	Located adjacent to LW 415 Springvale owned infrastructure
• Springvale No 6 Pumping Borehole	Generally fortnightly,	Ampletech	N/A	N/A	Located adjacent to LW 416 Springvale owned infrastructure

A report will be completed every four months and results of any impacts will be summarised into the Four Monthly Subsidence Status Report.

8.5 Assessment of Impacts

In previous longwalls at Springvale Colliery adjacent to the current mining area, there has been no recorded impact on infrastructure requiring any remedial works. The monitoring program undertaken for longwalls 411 – 412 has demonstrated this position. Predictions made in the SMP suggest this will continue.

Springvale has installed appropriate signage along Forest NSW roads / trails that notify road users upon entry to the 411 – 418 SMP area that they are entering a mining area and to be cautious of potential subsidence impacts. The objective of the signage is to ensure users of the section of the Newnes State Forest within the current mining area are aware of potential hazards resulting from subsidence.

Visual inspections will most likely identify any impacts on infrastructure. If any impact is noted or reported, a field inspection of the subject area will be carried out by a representative of Forests NSW, the Springvale Environment and Community Coordinator and a representative of the relevant infrastructure owner. The objective of the field inspection will be to determine any adverse consequences.

Following the field inspection a full evaluation will be carried out to determine whether the observed changes represent a temporary or permanent disruption to the infrastructure.

8.6 Remedial Measures

Remedial Measures Springvale infrastructure – Springvale responsibility

Remedial Measures Springvale / Delta infrastructure – Springvale / Delta responsibility

Remedial Measures Integral Energy infrastructure – Remedial works will only be required if tilt of power poles and strain on lines becomes excessive. Any remedial works will be designed by Integral Energy in conjunction with Springvale in accordance with an existing agreement between the parties.

8.7 Reporting

Results of subsidence and the effectiveness of management strategies are to be reported in the four monthly Subsidence Management Status Report and also the Annual Environmental Management Report. Additionally, notification will be provided to relevant Authorities and stakeholders of any occurrence or identification as required under Condition 12 of the SMP Approval.

9.0 DOCUMENT CONTROL

This document is protected by the ***Document Control Policy SVMP-0002***

The Document Control Procedure ensures that:

- Current versions of the documents can be readily located.
- The documents are approved by competent and responsible personnel.
- Obsolete documents are promptly removed.
- Archival documents for legal or knowledge preservation are suitably identified.

10.0 AUDIT AND REVIEW PROCESS

This plan will be reviewed as necessary including:

- In the event that relevant infrastructure owners raise issues that necessitate a review; and/or
- Inspections demonstrate that the impacts are such that a review is warranted.

Any review will be conducted in consultation with the relevant infrastructure owner, Forests NSW and the Department of Primary Industries – Mineral Resources. In the event of the management plan being changed a copy will be sent to the relevant agencies.

Audits required within **Springvale Coal Health and Safety Management System SV-MS-001** and its associated sub-systems are to be set-up in Lotus Notes Audit Module.

The Subsidence Infrastructure Management Plan must be reviewed every three (3) years or immediately after a change in protocol has been announced.

Relevant employees (see Section 5.0) and key external representatives will be given adequate opportunity and encouragement to express their opinion relating to the review of this plan. All future reviews will be conducted using the **Management System Review Proforma**.

11.0 RECORD OF CHANGES TO SYSTEM

The record of changes presented below, relate to the IMP that was approved in 2006.

Document Name:	Subsidence Infrastructure Management Plan
Document Number:	SV-MS-037

Clause	Additional Clauses	Changes
Title page		Removed old title page and updated format of the document to be consistent with the Springvale Coal Health and Safety Management System
1		Inserted "This Infrastructure Management Plan (IMP) fulfils the requirements of Conditions 17 of the Springvale Subsidence Management Plan Approval and supersedes the IMP dated September 2006. "
2		Changed "Environmental Co-ordinator" to "Environment and Community Co-ordinator"
4		Inserted "Springvale 11Kv power line to No 6 Pumping Borehole over LW 415 and 416" Inserted "Springvale No 6 Pumping Borehole adjacent to Longwall 416" Inserted "The location of these facilities are presented in Figure 1 " Inserted Figure 1
		Inserted "The surface area is managed by Forests NSW, however, occupation permits and/or Mining Leases (as appropriate) over the areas associated with the Springvale infrastructure (above) have been issued to Springvale Colliery"
Figure 1		Updated Figure with new infrastructure since 2006. Updated the extraction plan and other environmental monitoring sites
6	Table 1	Inserted new infrastructure including Bore 6 and Bore 6 powerline Updated the responsibilities of current consultants who carry out the inspection regime
7		Inserted "The monitoring program undertaken for longwalls 411 – 412 has demonstrated this position."
		Inserted "Springvale has installed appropriate signage along Forest NSW roads / trails that notify road users upon entry to the 411 – 418 SMP area that they are entering a mining area and to be cautious of potential subsidence impacts. "

