DONALDSON COAL PTY LIMITED

TASMAN MINE

Subsidence Management Plan

Public Safety Management Plan
Panel 5

August 2008
# Public Safety Management Plan

**To manage public safety in any surface areas that may be affected by subsidence from Panel 5 at Tasman Mine**

## Key Support Documents
- Tasman Mine SMP

## Approvals

**ORIGINATOR**
- Kevin Price, Consultant, Brunskill Pty Limited

**REVIEWED**
- Tony Sutherland, Position Manager of Mining Engineering

**APPROVED**
- Tony Sutherland, Position Manager of Mining Engineering

**APPROVED**
- Rob Regan, Position Director Mine Safety Operations, NSW Department of Primary Industries, Mineral Resources

## Revisions

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<th>Version #</th>
<th>Date</th>
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The nominated Coordinator for this document is Manager of Mining Engineering.

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**Prepared by**
- Kevin Price

**Document No.**
- SMP- Panel 5

**Approved by**
- Tony Sutherland

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- 1

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1 PURPOSE AND SCOPE

This Management Plan describes the processes developed, including identification of key risks and proposed management strategies, to manage Public Safety in any surface areas that may be affected by subsidence arising from mining (pillar extraction) by Tasman Mine in the Subsidence Management Plan area (Panel 5).

2 RESPONSIBILITIES AND RESOURCES

The Tasman Environmental Officer is responsible for monitoring the implementation of this plan.

The Tasman Manager of Mining Engineering is responsible for ensuring that sufficient resources are available to implement the requirements of this Plan.

Each of the management strategies developed to manage subsidence allocates responsibilities in relation to their implementation. Relevant personnel will be provided with a copy of appropriate documents. Training will be provided.

3 SUBMISSION

This plan is submitted to the Director Mine Safety Operations for approval.

4 BACKGROUND

Construction of the Tasman mine infrastructure commenced in January 2006 and underground development commenced, in accordance with the approved Mining Operations Plan, in September 2006. Surface construction was essentially completed by October 2006 and the Initial Development phase was completed by September 2007. Tasman uses the bord and pillar method of mining and development of mining panels which could support secondary extraction. The SMP Application has been lodged for approval of this secondary pillar reduction / extraction and approval has been granted for the extraction of Panels 1 to 4.

The land overlying Panel 5 of the SMP area is contained within the Sugarloaf State Conservation Area, within the Lake Macquarie Local Government Area.

The surface area is predominately bushland containing several one minor cliff line, and an unsealed track.

The cliff line has been assessed as part of the SMP application. Vehicular and pedestrian access to the crest of the cliff is possible, while access to the base of the cliff and the top ais generally poor. Results of assessment of impact ranking due to mine subsidence at 85% extraction was considered to be Moderate and it is considered that Moderate impact ranked cliffs will not require subsidence controls. Extraction under and adjacent to these cliff lines will be less than 60%, however appropriate subsidence monitoring and management controls will be required.

This Management Plan for Panel 5 includes the regular inspection of surface areas, subsidence monitoring and outlines procedures and actions to be implemented to
manage the safety of the general public in the surface areas of the SMP application area that may be affected by subsidence resulting from Tasman mining (pillar extraction).

5 APPROACH TO PUBLIC SAFETY MANAGEMENT

The Mine’s overall strategy to ensure Public Safety relating to the surface areas that may be affected by subsidence arising from pillar extraction is:

1. **Measure baseline information** – Established background data for the surface above the mining area by inspection and in certain areas also subsidence survey.

2. **Regular Monitoring of the effects of mining** - Continue monitoring and inspection of identified key positions relating to the extraction position.

3. **Regularly assess and interpret monitoring and inspections** – Monitoring and inspection data is analysed to identify any variations from predictions, unexpected anomalies, visual impact or items presenting potential impact on Public Safety.

4. **Implement Immediate Responses** – If potential impact on Public Safety is observed or reported implement an immediate response including public notification.

5. **Re-assess 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, Tasman personnel and appropriate stakeholders where required.

6. **Identify and implement remedial actions** – if impacts require further remedial action, remedial action will be implemented in conjunction with the landholder and appropriate relevant stakeholder.

6 IDENTIFICATION OF RISKS

The surface to be undermined is described in Section 4.

As part of the application process a Risk Assessment was conducted to examine the potential impact created by subsidence on the mining area. No public safety risks in the high risk category were identified. All risks identified had either existing controls or additional controls / further actions which have been implemented or are available to identify, control or remediate these risks. The possible Public Safety risks are listed below with a summary of the Risk Assessment results relating to surface features attached as Appendix A.

- Damage (cracking) to roads / trails;
- Damage (cracking) to general surface;
- Minor rock falls or weakening of rock faces; and
- Tree falls due to subsidence (above access road cutting)
Controls, monitoring and remedial actions identified as core items have been addressed in this Management Plan including,

- Regular monitoring of areas posing potential safety risks – monitoring introduced though no high risk areas identified.

- Erection of warning signs along access roads and walkways – to include mine contact numbers to report damage and be installed prior to commencement of pillar extraction.

- Entry restrictions – identified as part of management actions and remedial measures if Public Safety Risk identified.

- Backfilling of dangerous surface cracks – noted as remedial measure if identified.

- Securing of unstable rockmass where required and appropriate – noted as field inspection and remedial measure (if required) after identification.

- Provision of timely notification of mining progress to the community and any other stakeholders where management of Public Safety is required – noted as part of management actions.

7 NOTIFICATION, MONITORING AND INSPECTION SCHEDULE

The subsidence from mining, in the SMP Application Area (Panel 5), is not expected to have a major impact on the surface. Management of Public Safety is largely controlled by programmed and targeted inspection as well as reviewing predicted subsidence against actual subsidence.

7.1 Notification

Notifications to any landholders, the general public, relevant stakeholders and appropriate authorities either have or will be provided. These include.

- Newspaper advertisements relating to the SMP Application.
- Signposting of mining area.

7.2 Subsidence Monitoring

A description of the surface, relevant features and improvements above the proposed extraction area is contained in Section 4 with locations of these items including shown on Plan 2 of the SMP Application.

Monitoring is conducted as per the various Management Plans and Programs submitted, consisting of a combination of subsidence surveys, surface and underground monitoring and inspections and monitoring of ecological conditions.

These Plans and Programs generally focus on intensive monitoring in the initial stages of pillar extraction and the long term monitoring of subsidence effects that may develop over time.
7.3 **Subsidence Inspections**

Inspections are to be conducted as per the various Management Plans and Programs submitted, consisting of a combination of visual and photographic inspections as detailed in the Management Plans and Programs and referenced in Table 1.

7.4 **Scope and Frequency of Inspections**

Regular inspections, at frequencies detailed in the Management Plans and Programs are to be initially concentrated on the current mining area (Panel 5 mining location and subsidence area of 26.5 degrees angle of draw). Inspections are concentrated on items identified in the initial pre-mining survey.

Inspections are carried out by experienced persons and follow an inspection checklist to include the items noted above.

At the completion of mining in each panel a full surface inspection will be conducted and results included in a Panel Report.

Listed below is a schedule of inspections and subsidence survey frequencies of areas of potential Public Safety risk (Table 1).
Table 1: Inspection and Survey Schedule

<table>
<thead>
<tr>
<th>Infrastructure Item</th>
<th>Visual Inspection Frequency</th>
<th>Visual Inspection by</th>
<th>Photographic Monitoring Frequency</th>
<th>Photographic Monitoring by</th>
<th>Subsidence Survey Frequency</th>
<th>Subsidence Survey by</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>• General surface over SMP area</td>
<td>Pre and post mining</td>
<td>Tasman Environmental Officer or nomination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Specific surface features over current extraction area (including cliff line)</td>
<td>Pre and post mining plus fortnightly during mining</td>
<td>As above</td>
<td>Pre and post mining plus fortnightly during mining</td>
<td>Tasman Environmental Officer or nomination</td>
<td>Pre and post mining (cliff line) as detailed in approved Subsidence and Underground Monitoring Program</td>
<td>Tasman survey staff or external survey contractor</td>
<td></td>
</tr>
<tr>
<td>• Roads / trails</td>
<td>Pre and post mining. Fortnightly while undermined.</td>
<td>As above</td>
<td>Pre and post mining plus of changes noted on visual inspections.</td>
<td>As above</td>
<td>Pre and post mining (Mount Sugarloaf Lookout Road) as detailed in approved Subsidence and Underground Monitoring Program</td>
<td>As above</td>
<td></td>
</tr>
</tbody>
</table>

Results of each survey will be forwarded promptly following completion to the Principal Subsidence Engineer.
8 ACTIONS AND REMEDIAL MEASURES

Tasman will install appropriate warning signage, positioned along access roads and walkways, prior to the commencement of pillar extraction, advising of the potential for subsidence impacts. The objective of the signage is to ensure public users of the access roads, walkways and surrounding area are aware of potential hazards resulting from subsidence. Mine contact details shall be included to enable any damage to be reported.

Visual inspections will identify impacts on access roads or natural features.

8.1 Public Safety Issues Identified During Inspections or Monitoring

If these inspections reveal any Public Safety issue (see Table 2) that requires remedial works to ensure Public Safety the person conducting the inspection shall:

- Immediately notify the Manager of Mining Engineering and/or Environmental Officer of the findings.
- Erect “NO ROAD” or barrier tape and warning signs if immediate remediation is not possible
- The Manager of Mining Engineering shall immediately notify the District Inspector of Coal Mines and landholder.

8.2 Remediation of Public Safety Issues

Following completion of the above the Manager of Mining Engineering or his nominee shall:

- Arrange inspections of area at regular intervals including installation of appropriate barriers if required, until remediation works are carried out.
- Arrange for remediation works as detailed in Table 2. This may require consultation with the landholder, Department of Primary Industries – Mineral Resources and possibly specialist consultants and appropriate stakeholder, as noted in current Management Plans and Programs, to prepare appropriate remediation plan relating to the particular item. Notification to the general public may form a part of the remediation plan.
Table 2: Triggers, Actions and Management Responses – Public Safety

<table>
<thead>
<tr>
<th>Monitoring / Surface Element</th>
<th>Trigger / Response</th>
<th>Results within predicted / acceptable range</th>
<th>Irregular result - Director Mine Safety Operations and District Inspector of Coal Mines to be notified</th>
<th>Increased irregular result - Director Mine Safety Operations and District Inspector of Coal Mines to be notified</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subsidence Monitoring</strong></td>
<td>Trigger</td>
<td>Subsidence results are not greater than 15% above predictions</td>
<td>Subsidence results are greater than 15% but less than 25% above predictions or visible surface impacts above predictions</td>
<td>Subsidence results are greater than 25% above predictions</td>
</tr>
<tr>
<td></td>
<td>Response</td>
<td>Continue to monitor at specified frequency</td>
<td>Notify DPI – Mineral Resources Principal Subsidence Engineer (PSE) and appropriate parties under Condition 16 of the SMP Approval. Field inspections. Review predictions. Obtain opinion from appropriate consultant, review program and consult with PSE.</td>
<td>Notify DPI – Mineral Resources Principal Subsidence Engineer (PSE) and appropriate parties under Condition 16 of the SMP Approval. Review predictions. Review program and obtain opinion from appropriate consultant. Review mine plan in relation to surface features in consultation with DPI.</td>
</tr>
<tr>
<td><strong>Surface cracking on roads / trails</strong></td>
<td>Trigger</td>
<td>Surface cracking 20 - 200mm</td>
<td>Surface cracking 200-300mm</td>
<td>Surface cracking &gt; 300mm</td>
</tr>
<tr>
<td></td>
<td>Response</td>
<td>Maintain warning signs</td>
<td>Notify DPI – Mineral Resources Principal Subsidence Engineer (PSE) and appropriate parties under Condition 16 of the SMP Approval. Maintain warning signs and erect additional signs in immediate area. Arrange inspection with landholder or relevant controlling organization (LMCC or DECC) Repair by grading</td>
<td>Notify DPI – Mineral Resources Principal Subsidence Engineer (PSE) and appropriate parties under Condition 16 of the SMP Approval. Maintain warning signs and erect additional signs in immediate area including NO ROAD signs if required Arrange inspection with landholder or relevant controlling organization (LMCC or DECC) Repair cracks by excavation, fill, compaction and grading following consultation with appropriate authorities and consultants</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Visual Inspection / Photographic Monitoring</th>
<th>Trigger / Response</th>
<th>Results within predicted / acceptable range</th>
<th>Irregular result - Director Mine Safety Operations and District Inspector of Coal Mines to be notified</th>
<th>Increased irregular result- Director Mine Safety Operations and District Inspector of Coal Mines to be notified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface cracking in vegetated areas</td>
<td>Trigger</td>
<td>Surface cracking &lt; 250mm</td>
<td>Surface cracking 250-350mm</td>
<td>Surface cracking &gt; 350mm</td>
</tr>
<tr>
<td></td>
<td>Response</td>
<td>Maintain warning signs</td>
<td>Notify DPI – Mineral Resources Principal Subsidence Engineer (PSE) and appropriate parties under Condition 16 of the SMP Approval. Maintain warning signs and erect additional signs if necessary Monitor cracks over following 12 months and repair if necessary</td>
<td>Notify DPI – Mineral Resources Principal Subsidence Engineer (PSE) and appropriate parties under Condition 16 of the SMP Approval. Maintain warning signs and erect additional signs in immediate area including barrier tape if required Arrange inspection with landholder or relevant controlling organization (LMCC or DECC) Repair cracks by either fill or excavation, fill and compaction following consultation with appropriate authorities and consultants where practical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Monitor cracks over following 12 months and repair if necessary</td>
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<td>Visual Inspection / Photographic Monitoring</td>
<td>Trigger / Response</td>
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<td>Irregular result - Director Mine Safety Operations and District Inspector of Coal Mines to be notified</td>
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</tr>
<tr>
<td>Rock mass / steep slopes damage or instability</td>
<td>Trigger</td>
<td>Visual inspection or monitoring reveals minor cracking (&lt;50mm)</td>
<td>Surface cracking 50 – 100mm or visible instability</td>
<td>Surface cracking &gt;100mm / Visible instability / rock fall.</td>
</tr>
</tbody>
</table>
|                                           | Response           | Field Inspections to assess requirements for additional / increased frequency monitoring | Notify DPI – Mineral Resources Principal Subsidence Engineer (PSE) and appropriate parties under Condition 16 of the SMP Approval.  
Erect warning signs and barrier tape in immediate area.  
Suitably qualified external consultant to inspect and advise on further action including possible remedial / stabilisation works. | Notify DPI – Mineral Resources Principal Subsidence Engineer (PSE) and appropriate parties under Condition 16 of the SMP Approval.  
Erect warning signs and barrier tape in immediate area.  
Arrange inspection with landholder or relevant controlling organization (LMCC or DECC)  
Suitably qualified external consultant to inspect and advise on further action including possible remedial / stabilisation works. |
9 REPORTING

Results of subsidence surveys, visual inspections and photographic monitoring are to be reported at each survey to the Principal Subsidence Engineer and also in the four monthly Subsidence Management Status reports and the Annual Environmental Management Report.

Additionally, notification will be provided to relevant Authorities of any incident or occurrence as detailed in the Triggers Actions and Management Responses.

10 REVIEW

This plan will be reviewed as necessary including:

- In the event that the Director Mine Safety Operations raise issues that necessitate a review;
- In the event that the landholder or relevant controlling organisation (LMCC or DECC) raise issues that necessitate a review;
- Inspections or monitoring demonstrate that the impacts are such that a review is warranted and/or

Any review will be conducted in consultation with the Director Mine Safety Operations and landholder or relevant controlling organization (LMCC or DECC). In the event of the management plan being changed a copy will be sent to the relevant agencies.
### APPENDIX A – RISK ASSESSMENT RESULTS TABLE – NATURAL FEATURES AND SURFACE IMPROVEMENTS

<table>
<thead>
<tr>
<th>Risk Reference Number</th>
<th>Potential Issue / Risk</th>
<th>Existing Controls / Existing or Planned Management Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R001</strong></td>
<td>Cracks may appear along roadways and walking tracks within the SMP area. There is the potential for people to injure themselves or damage equipment if they fall into cracks. Subsidence may cause cracking or depressions in the land at the surface that is not visible and may present a risk to persons driving or walking across site (i.e. access through the State Forest, etc).</td>
<td>1. <em>Note:</em> Subsidence profiling suggests that cracking (and stepping) will be less than 100mm (20mm on average). 2. Conduct a Subsidence Impact Assessment of SMP area to determine likelihood of impacts 3. Establish a Public Safety &amp; Access Plan to advise the public and employees of potential adverse impacts (e.g. signs in public access areas). 4. Undertake necessary consultation with the relevant stakeholders to ensure appropriate awareness of issues. 5. Regular inspections and monitoring - which may result in the requirement for remediation works (as required).</td>
</tr>
<tr>
<td><strong>R002</strong></td>
<td>Subsidence may cause minor rock falls in the areas where exposed sandstone rock formations are present. These areas may also be weakened by subsidence, but not fall immediately and therefore present a public safety risk.</td>
<td>1. Mine planning control (a comprehensive cliff line impact statement has been prepared which has identified areas requiring subsidence control or rock roll out protection. The mining layout under some areas some areas has been planned such that subsidence will be minimised). 2. Conduct a Subsidence Impact Assessment of proposed application area to determine likelihood of impacts 3. Review Public Safety &amp; Access Plan as to ensure safety of public and employees from potential adverse impacts 4. Undertake necessary consultation to ensure appropriate awareness to matter</td>
</tr>
<tr>
<td><strong>R003</strong></td>
<td>Tree falls due to subsidence (above access road cutting)</td>
<td>1. Remove the risk prior to mining - remove the trees identified as presenting a risk (where appropriate). 2. Install appropriate warning signage</td>
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