

# Abel Upgrade Modification Environmental Assessment



Response to Submissions

July 2013

## RESPONSE TO SUBMISSIONS

Donaldson Coal Pty Limited (Donaldson Coal) a wholly owned subsidiary of Yancoal Australia Limited, prepared the *Abel Upgrade Modification Environmental Assessment* (EA) for the Abel Upgrade Modification (the Modification), which is a modification of Project Approval 05\_0136 under section 75W of the New South Wales (NSW) *Environmental Planning and Assessment Act, 1979*.

The EA was placed on public exhibition by the NSW Department of Planning and Infrastructure (DP&I) from 26 February 2013 to 19 March 2013.

Table 1 provides a reconciliation of the submissions received from State and Local Government agencies. Table 2 provides a reconciliation of public submissions, including submissions from special interest groups.

**Table 1**  
**Reconciliation of Agency Submissions**

Agency	Date
Fisheries, Crown Lands and NSW Office of Water (NOW) within the Department of Primary Industries (DPI)	29 May 2013
NSW Office of Environment and Heritage (OEH)	20 March 2013 & 17 May 2013
Division of Resources and Energy (DRE) within the NSW Department of Trade and Investment, Regional Infrastructure and Services (NSW Trade & Investment)	19 April 2013
NSW Environment Protection Authority (EPA)	20 March 2013
NSW Mine Subsidence Board (MSB)	5 March 2013
Office of Agricultural Sustainability and Food Security within the Department of Primary Industries (DPI)	19 March 2013
Hunter New England Population Health	15 March 2013
Australian Rail Track Corporation (ARTC)	11 March 2013
NSW Rural Fire Service (RFS)	6 March 2013
NSW Roads and Maritime Services (RMS)	9 April 2013
Transport for NSW (TfNSW)	30 April 2013

**Table 2**  
**Reconciliation of Public Submissions**

Name	Date	Nature of Submission
Construction Forestry Mining and Energy Union (Mining and Energy Division) Northern District Branch	19 March 2013	Support
Name withheld	-	Objection/Concerns raised
B and L Livingstone	26 March 2013	Support
L Grant	13 March 2013	Support

In accordance with a request from the DP&I on 25 March 2013, Donaldson Coal has prepared a response to the issues raised in the submissions. Responses to submissions made by Government agencies and the public are provided in Tables 3 and 4, respectively.

***Removal of Alterations to the Bloomfield U Cut South Void from Modification Application***

During the life of the Modification, tailings from the Bloomfield CHPP would be disposed at existing approved and new storage facilities, as described in the Modification EA.

The EA described that alterations to the Bloomfield U Cut south void would be made, if required, to increase its storage capacity for tailings disposal.

Since lodgement of the Modification EA, Donaldson Coal and Bloomfield Collieries Pty Ltd have reviewed the tailings disposal strategy developed for the Modification, and the alterations to the Bloomfield U Cut South Void are no longer required. Donaldson Coal confirms it has completed mining the Donaldson Square Pit. As such, the Donaldson Square Pit is immediately available for tailings disposal. On this basis, Donaldson Coal and Bloomfield Collieries Pty Ltd would use the Donaldson Square Pit sooner than indicated in the Modification EA. As such, Donaldson Coal is not seeking approval for the alterations to the Bloomfield U Cut South Void as a component of the Modification application.

**Table 3**  
**Response to Agency Submissions**

Comment	Response
<i>Fisheries NSW</i>	
<p>Fisheries NSW stated:</p> <p><i>Fisheries NSW has reviewed this proposal and, based on the Subsidence Management Commitments under Schedule 2 streams and the modified mine layout that has no mining beneath these streams, the Department has no objections to the planned increase in production.</i></p>	Noted.
<i>Crown Lands</i>	
<p>Crown Lands stated:</p> <p><i>Crown Lands advise no issues</i></p>	Noted.
<i>NSW Office of Water (NOW)</i>	
<p>The NOW stated:</p> <p><i>The mining modification is located in an area previously mined in the West Borehole Seam</i></p> <p>...</p> <p><i>The EA provides an assessment of multi-seam subsidence consequences on two existing quarries (Black Hill and Stockrington), and local roads crossing the alignments of the short wall panels. The EA does not clearly assess the potential impacts of multi-seam extraction beyond conventional subsidence effects along valley lines, Blue Gum Creek or on the Pambalong Nature Reserve or Hexham Swamp.</i></p>	<p>There are no Schedule 2 streams (3rd order or above streams) located above the Borehole Seam workings, nor is Blue Gum Creek alluvium located above the Borehole Seam workings. Pambalong Nature Reserve and Hexham Swamp are located some distance (i.e. greater than 1 km at the closest distance) from the Borehole Seam workings.</p> <p>It should be noted that the Subsidence Assessment assessed an upperbound subsidence resulting from the reactivation of the historic workings in the Borehole Seam of approximately 1,300 mm.</p> <p>MSEC (2012) noted that whilst there is some uncertainty with the maximum predicted subsidence, due to the conditions of the historic workings in the overlying Borehole Seam, the surface above the proposed panels mostly comprises natural bushland with limited surface features. Surface features were identified by Strata Engineering (2006) and refined by MSEC (2012). Surface features above the historic workings in the Borehole Seam include:</p> <ul style="list-style-type: none"> <li>• six principal residences;</li> <li>• eight sheds;</li> <li>• fourteen dams;</li> <li>• Black Hill Quarry;</li> <li>• Stockrington Quarry;</li> <li>• three unsealed public access roads;</li> <li>• privately owned fences;</li> <li>• two survey control marks;</li> <li>• three buried Telstra communications lines;</li> <li>• two suspended Ausgrid low voltage powerlines; and</li> <li>• steep slopes.</li> </ul>

Comment	Response
(continued)	<p>Project Approval 05_0136 (Attachment 2 of the EA) currently includes 'subsidence impact limits' to protect key surface features (including Schedule 2 streams, the Blue Gum Creek alluvium and Pambalong Nature Reserve), specifically:</p> <ul style="list-style-type: none"> <li>• The Abel Underground Mine does not result in any subsidence impacts on: <ul style="list-style-type: none"> <li>- Pambalong Nature Reserve; and</li> <li>- the surface of the F3 Freeway.</li> </ul> </li> <li>• Mining is limited to first workings beneath, and designed to ensure that mining causes no subsidence impacts requiring mitigation works on: <ul style="list-style-type: none"> <li>- principal residences and other specified structures (without the approval of the relevant landowner);</li> <li>- Black Hill Public School;</li> <li>- Black Hill Church and cemetery;</li> <li>- Schedule 2 streams (i.e. 3rd order and above streams);</li> <li>- rainforest areas; and</li> <li>- Blue Gum Creek alluvium.</li> </ul> </li> </ul> <p>Donaldson Coal considers that it can manage the potential for irregular subsidence impacting sensitive features through the Extraction Plan process, particularly as mining beneath the most sensitive features would be limited to first workings. The mine plan and mitigation measures presented in the Extraction Plan would be required to demonstrate that any subsidence impact limits or subsidence performance measures can be met.</p> <p>Investigations of historic workings in the Borehole Seam would be included as part of future Extraction Plans and SMPs, and would include:</p> <ul style="list-style-type: none"> <li>• detailed review of record tracings held by the Division of Resources and Energy;</li> <li>• inspection of the condition of pillars based on downhole cameras into the historic workings;</li> <li>• determination of the factor of safety for pillars based on the UNSW Pillar Design Procedure and the level of confidence in the accuracy of the record tracings; and</li> <li>• where there is the potential for pillar failure and/or pillar run, development of any additional mitigation measures required to maintain existing subsidence management commitments.</li> </ul> <p>Mitigation measures that may be implemented include grouting of the Borehole Seam workings, backfill of the void space in the Lower Donaldson Seam and/or increasing the size of pillars left in the Lower Donaldson Seam to protect key surface features (i.e. increasing the subsidence control zone around key surface features to account for potential additional subsidence associated with the reactivation of the Borehole Seam workings).</p>

Comment	Response
<p>The NOW stated that Donaldson Coal will be required to hold water access licences to account for any conduit drainage or displacement of water from the Newcastle Water Source of the WSP.</p> <p>In addition, the NOW stated that it requires demonstration of the ability to obtain sufficient access entitlements to meet water licensing requirements for the <i>Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources, 2009</i> (the HUAWSP) and under the <i>Water Act, 1912</i> (for the porous rock system)</p>	<p>Donaldson Coal currently holds bore licence number 20BL171935 under Part 5 of the <i>Water Act, 1912</i> to account for groundwater inflow from the porous rock aquifer system in the coal measures within the Abel Underground Mine area.</p> <p>No water sharing plan currently applies to this water source.</p> <p>Donaldson Coal is in the process of applying for a revision to bore license number 20BL171935 to account for the maximum predicted annual groundwater inflows for the Modification.</p> <p>Donaldson Coal is also in the process of applying for water access licenses within the Newcastle Water Source under the HUAWSP. This is to account for the predicted 11.4 ML/annum take from connected surface water sources due to baseflow losses. By comparison, the Newcastle Water Source has a total entitlement of 551 ML/annum, including 480 ML of surface water (unregulated river) licenses (i.e. the predicted 11.4 ML/annum take from connected surface water sources represents approximately 2% of the total surface water [unregulated river] licenses).</p> <p>Trading of surface water entitlements is permitted in the Newcastle Water Source and Donaldson Coal will purchase necessary surface water entitlements to account for predicted surface water losses.</p>
<p>The NOW stated that the Abel Underground Mine is exempt from the requirement to obtain a water supply work approval under the <i>Water Management Act, 2000</i>, however, the NOW recommended that Donaldson Coal be required to consider the distance restrictions under Clause 41 of the HUAWSP, and where feasible, modify proposed activities to align with these restrictions.</p>	<p>As noted by the NOW, the Abel Underground Mine is exempt from the requirement to obtain a water supply work approval under the <i>Water Management Act, 2000</i> (as the Abel Underground Mine is approved under Part 3A of the EP&amp;A Act).</p> <p>Notwithstanding, Clause 41 of the HUAWSP lists separation distances between high priority groundwater dependent ecosystems and water supply works (i.e. a distance of 200 m where the water supply work is not to be used solely to take water pursuant to basic landholder rights).</p> <p>It should be noted that ML 1618 was designed to avoid Pambalong Nature Reserve and Hexham Swamp (which are identified as high priority groundwater dependent ecosystems). There would be no change to ML 1618 for the Modification (i.e. all underground mining would continue to occur within ML 1618).</p> <p>Mining activities at the Abel Underground Mine would be at least 200 m away from any high priority groundwater dependent ecosystems at the closest point.</p>

Comment	Response
<p>The NOW stated that:</p> <p><i>Although direct inter-connection between the mine workings and surface and shallow alluvial water sources is not likely, the potential exists for indirect drainage and persistent drawdown in the alluvial system of Blue Gum Creek which may lead to reduced baseflows and drainage into the Pambalong Nature Reserve and to Hexham Swamp.</i></p> <p>...</p> <p><i>No separation distance from the shortwall panels to the defined edge of alluvium is presented, though a subsidence protection zone appears to limit second workings to an area approximately 75 metres from the 'inner' zone of alluvium associated with Blue Gum Creek. The separation distance between the shortwall second workings and the mapped boundary to the Pambalong/Hexham wetland systems appears to be 250 metres.</i></p> <p><i>The EA provides that subsidence related impacts will be managed by the adoption of 'subsidence control zones' around watercourses including Blue Gum Creek and setbacks from second workings extraction to groundwater dependent ecosystems (GDEs) to achieve nominated subsidence performance measures.</i></p> <p><i>The Office of Water requests a review of multi-seam subsidence predictions, which incorporates best practice multi-seam predictive modelling, adopting the relevant standards and field verification developed by NSW Dept of Trade and Investment. This should consider the effect of first workings extraction beneath the Blue Gum Creek and second workings extraction adjacent to the alluvium.</i></p> <p><i>If the proposed project is approved it is recommended the subsidence performance measures for watercourses and GDEs be included in the conditions of approval.</i></p>	<p>There is no change to the existing subsidence impact limits specified in Project Approval 05_0136 proposed for the Modification.</p> <p>The mine plan for the Modification has been designed to meet existing subsidence impact limits through the adoption of performance measures, as opposed to specified offset distances.</p> <p>To meet the existing subsidence impact limit for the Blue Gum Creek alluvium specified in Project Approval 05_0136, the Modification mine layout has been designed so that longwall and shortwall mining would not occur beneath the Blue Gum Creek alluvium (Figures 7 and 8 of the EA), such that no more than 20 mm of subsidence would occur within 40 m of the limit of the alluvium boundary.</p> <p>Similarly, to maintain the existing subsidence impact limit for Schedule 2 streams specified in Project Approval 05_0136, the Modification mine layout has been designed so that longwall and shortwall mining would not occur beneath Schedule 2 streams (Figures 7 and 8 of the EA) such that the 20 mm line of subsidence would be at least 40 m from the banks of any Schedule 2 streams.</p> <p>As described above and in the EA, further detailed review of multi-seam subsidence predictions will be conducted, to the satisfaction of the DRE, as part of the Extraction Plan/SMP process for each mining area.</p> <p>These investigations would be conducted to demonstrate that Donaldson Coal can manage the potential for irregular subsidence within the subsidence impact limits specified in Project Approval 05_0136.</p> <p>Donaldson Coal notes the NOW recommendation that subsidence performance measures be included in any conditions of approval for the Modification.</p>



Comment	Response
<p>The NOW requested that the nature of baseflow losses described in the Groundwater Assessment prepared for the Modification be clarified.</p>	<p>The reported baseflow loss of &gt;2,500 ML/annum (Appendix B to the EA) represents the natural processes occurring in the swamps. Surface water that collects in Hexham Swamp flows to the underlying alluvial aquifer. Water is then lost from the alluvial aquifer from a number of sources, primarily evapotranspiration. Hexham Swamp has been modelled by RPS Aquaterra (2013) as an alluvial aquifer layer overlaid by a surface water body represented as river cells in MODFLOW.</p> <p>Tables 7.5 and 7.6 of the Groundwater Assessment present modelled baseflow/stream leakage for a number of surface water bodies at the start of the prediction period (following transient calibration), during mining and following recovery. These tables demonstrate that under baseline conditions a significant amount of surface water recharges the alluvium associated with Hexham Swamp. It is considered that this adequately represents real conditions given the large surface area of Hexham Swamp (refer Figure 4.2 of Appendix B of the EA).</p> <p>Water would be lost from the Hexham Swamp alluvium through evapotranspiration; baseflow to the Hunter River; and recharge of the underlying Permian aquifer (noting there is predicted to be very low connectivity between the alluvium and the Permian aquifers). The model water balance presented in Table 7.3 of Appendix B shows that evapotranspiration is the main contributor to outflows from the model.</p> <p>The Hexham Swamp alluvium can be conceptualised as a dynamic system, with high levels of surface water leakage/rainfall recharge during wet periods and evapotranspiration during drier periods.</p> <p>This is consistent with the conceptualisation of the surface water and groundwater interactions at Hexham Swamp and Pambalong Nature Reserve described in Table 5.4 of the Groundwater Assessment:</p> <p><i>There is believed to be relatively free interchange of water between the alluvium and the surface water bodies, with some discharge from the alluvium to the surface during drier periods, and flows from the swamps to the alluvium during wetter periods.</i></p>
<p>The NOW stated that based on the information provided in the EA that the Modification would fall within Level 1 of the minimal impact considerations of the Aquifer Interference Policy.</p> <p>In addition, the NOW requested that ongoing monitoring is conducted to assist with validation and verification of the modelling and to quantify any impact in terms of water take volumes, water level impacts and ecological impacts resulting from connection to or induced drainage from the alluvium and surface water sources.</p>	<p>Noted.</p> <p>Ongoing monitoring would be conducted in accordance with the Water Management Plan for the Abel Underground Mine (as updated in accordance with any revised conditions of approval for the Modification).</p> <p>In addition, ecological monitoring would be conducted as part of the flora and fauna management commitments specified in the existing Abel Underground Mine Statement of Commitments (Appendix 3 of Project Approval 05_0136).</p> <p>Detailed impact assessment and associated monitoring/mitigation measures will also be conducted as part of the Extraction Plan/SMP process for each mining area.</p>



Comment	Response
<p>The NOW reviewed the groundwater model developed for the Modification.</p> <p>The NOW stated:</p> <p><i>It is considered that the steady state and transient model calibrations are adequate, based on the calibration statistics.</i></p> <p>...</p> <p><i>Ongoing monitoring and validation of the transient model predictions will be required to ensure that the proponent has sufficient access entitlement to account for the take of the mining operation.</i></p>	<p>The NOW's review of the groundwater model is noted.</p> <p>As described above, ongoing monitoring would be conducted in accordance with the Water Management Plan for the Abel Underground Mine.</p>
<p>The NOW stated that:</p> <p><i>The EIS describes that surface water storages in the proposed pit top facility would collect dirty runoff and that their primary purpose is pollution control. Any clean runoff captured by these surface water storages in excess of the Maximum Harvestable Right Dam Capacity must be authorised by a water access licence.</i></p>	<p>The Modification would involve the continued use of the existing Abel Underground Mine pit top facility.</p> <p>There would be no change to the surface water management at the pit top for the Modification. A design feature of the surface water management system is the separation of clean and dirty runoff, with the capture of clean runoff minimised.</p> <p>Any capture of clean runoff in excess of maximum harvestable rights would be licensed as required.</p>
<p>The NOW recommended that mining not commence under any watercourse until a stability assessment of the watercourse has been undertaken.</p>	<p>Existing subsidence impact limits (as specified in Project Approval 05_0136) require that subsidence does not cause impacts to Schedule 2 streams (i.e. 3rd order or above streams).</p> <p>The mine plan for the Modification has been designed to maintain this commitment.</p> <p>As such, no additional impacts to Schedule 2 streams associated with the Modification are predicted, and therefore, the existing monitoring and management measures, as specified in the Statement of Commitments for the Abel Underground Mine (Appendix 3 of Project Approval 05_00136), are considered to be suitable for the Modification.</p> <p>Further demonstration that these subsidence impact limits can be achieved would be required as part of the Extraction Plan/SMP process for each mining area.</p> <p>While longwall/shortwall mining would occur beneath Schedule 1 streams for the Modification, full extraction in these is approved for the existing Abel Underground Mine (subject to compliance with existing subsidence impact limits).</p> <p>Therefore, the existing monitoring and management measures for Schedule 1 streams are also considered to be suitable for the Modification.</p> <p>On this basis, Donaldson Coal does not consider that an additional requirement for stability assessments of watercourses prior to mining is required for the Modification.</p>

Comment	Response
<p>The NOW recommended conditions of approval for the Modification relating to:</p> <ul style="list-style-type: none"> <li>• Water supply;</li> <li>• Minimise impacts;</li> <li>• Subsidence performance criteria;</li> <li>• Stability assessment;</li> <li>• Baseflow offset; and</li> <li>• Water Management Plan.</li> </ul>	<p>Noted.</p> <p>Donaldson Coal accepts the NOW's recommended conditions of approval, with the exception of the requirement to undertake a stability assessment of all watercourses prior to undermining, for the reasons described in the response above.</p>
<p><i>NSW Office of Environment and Heritage (OEH) (submission dated 17 May 2013)</i></p>	
<p>OEH noted that there are differences in the vegetation mapped on the project area between the Lower-Hunter-Central Coast Regional Environmental Management Strategy and the vegetation map prepared by Donaldson Coal leading to different estimates in the area of endangered ecological community (EEC) vegetation on the project footprint.</p>	<p>The LHCCREMS map was produced by modelling sample sites against environment and climate variables. A review of this product conducted by Nichols <i>et al.</i> (2002) concluded that the sampling used was a bare minimum for the region and that at the local scale the model should be tested through on-site inspection.</p> <p>Vegetation mapping for the Abel Underground Mine area was based on 370 ground-truth data points performed by Hunter Eco for the approved EA (Donaldson Coal, 2006). Vegetation community classification was conducted using similarity analysis of 31 floristic data points (Donaldson Coal, 2006).</p> <p>A sample plot was used to assess the vegetation at the proposed downcast ventilation shaft in accordance with the assessment procedure recommended by OEH (Appendix I to the EA).</p>
<p>OEH acknowledged that the site of the proposed Downcast Ventilation Shaft is unlikely to adversely affect threatened biodiversity and thus does not need to be offset, and that there is a current requirement to offset EEC vegetation for the approved overland conveyor.</p>	<p>Noted.</p>
<p>OEH acknowledged that the EA predicts mine subsidence to be minor and that it will not adversely affect biodiversity. OEH requested that Donaldson Coal commit to offsetting unexpected subsidence impacts.</p>	<p>Donaldson Coal considers that the existing subsidence management commitments and Project Approval conditions (including as modified, should the Modification be approved) will provide sufficient certainty of the environmental outcomes associated the Modification.</p> <p>The existing Project Approval includes subsidence impact limits designed to protect key natural surface features, including rainforest areas. The mine plan for the Modification has been designed to maintain these existing subsidence impact limits.</p> <p>In addition, and further to the subsidence predictions presented in the Modification EA, subsidence predictions in each mining area will be detailed in the relevant Extraction Plan/SMP.</p> <p>Should unexpected subsidence result in non-compliance of Project Approval subsidence impact limits and/or exceedance of the subsidence levels predicted in the Extraction Plan/SMP, the DP&amp;I and DRE would be notified.</p> <p>Should any such non-compliance/exceedance result in additional environmental consequences to biodiversity (i.e. in addition to those predicted and approved for the Abel Underground Mine), amelioration measures would be developed in consultation with the DP&amp;I, DRE and OEH.</p>

Comment	Response
<p><i>NSW Office of Environment and Heritage (OEH) (submission dated 20 March 2013)</i></p> <p>The OEH stated that, contrary to Section 4.8.2, large parts of the vegetation communities mapped in the Modification area are endangered ecological communities (EECs).</p>	<p>Section 4.8.2 does not state that EECs are not present in the Modification area.</p> <p>Section 4.8.2 summarises the aspects of the Modification that would have the potential to result in additional ecological impacts in comparison to the approved Abel Underground Mine.</p> <p>These aspects are:</p> <ul style="list-style-type: none"> <li>• vegetation clearance associated with construction of the downcast ventilation shaft;</li> <li>• vegetation clearance associated with the revised alignment of the approved conveyor route; and</li> <li>• subsidence related effects associated with changes in the mining method in the longwall and shortwall areas.</li> </ul> <p>Accordingly, the EA described the potential ecological impacts for each of these relevant impacts (including potential impacts to EECs where relevant), as well as describing mitigation and management measures.</p> <p><b>Downcast Ventilation Shaft</b></p> <p>The location of the downcast ventilation shaft was chosen to avoid EECs. HunterEco (2012) surveyed the proposed location and described the vegetation as “<i>typical of MU12 Hunter valley Moist Forrest and this community does not fit the description of any EEC</i>” (Appendix I of the EA).</p> <p><b>Approved Overland Conveyor – Revised Alignment</b></p> <p>Construction of the overland conveyor along the approved alignment would result in minor clearing of the <i>Lower Hunter Spotted Gum – Ironbark Forest</i> EEC. Schedule 4, Condition 17 of Project Approval 05_0136 for the Abel Underground Mine currently contains an offset requirement for this clearance.</p> <p>The revised alignment would result in a minor reduction in clearance of the <i>Lower Hunter Spotted Gum – Ironbark Forest</i> EEC (Appendix I of the EA).</p> <p><b>Changes in Mining Method</b></p> <p>Appendix I of the EA shows mapped EECs in the Abel Underground Mining area. However, HunterEco (2012) predicted that the Modification would not have greater surface impacts in comparison to those currently approved for the Abel Underground Mine.</p> <p>Appendix I of the EA states:</p> <p><i>It was demonstrated in the environmental assessment for the current approval that subsidence would not have a significant impact on surface flora, fauna or vegetation communities</i></p> <p>...</p> <p><i>The approved mine plan incorporated measures to minimise subsidence impacts on sensitive areas such as major gullies, streams, exposed escarpments and cliff lines. Under the proposed modification these sensitive areas would retain the same level of protection and therefore would not be impacted.</i></p> <p>...</p>

Comment	Response
(continued)	<p><i>The MSEC (2012) report notes that while absolute subsidence will increase because of more coal being removed, tilts, strains and curvature will not vary greatly from those predicted for the original mine plan. This means that the proposed modified mine plan would not have a greater impact on surface habitat than the currently approved mine plan.</i></p>
<p>The OEH recommended the following condition of approval:</p> <p><i>That any vegetation clearing or impacts of underground coal mining that impacts on threatened species, populations or communities, or their habitats, for this development outside any other existing consents must be offset in accordance with OEH offsetting policy...</i></p>	<p>Noted.</p> <p>With the removal of the alterations of the Bloomfield U Cut south void from the Modification description, no offset would be required for the Modification.</p> <p>As noted by the OEH (refer submission dated 17 May 2013, as described above) the clearing associated with the downcast ventilation shaft and the revised overland conveyor alignment are not required to be offset for the Modification.</p> <p>As described in the response to the OEH's submission dated 17 May 2013, should any non-compliance/exceedance of subsidence impact limits or predictions result in additional environmental consequences to biodiversity (i.e. in addition to those predicted and approved for the Abel Underground Mine), amelioration measures would be developed in consultation with the DP&amp;I, DRE and OEH.</p>
<p>The OEH provided comments on the draft revision to the Abel Aboriginal Heritage Management Plan.</p>	<p>The OEH's comments are noted.</p> <p>Should the Modification be approved, Donaldson coal would seek approval for the revised AHMP with the OEH and DP&amp;I.</p> <p>The AHMP submitted to the OEH and DP&amp;I for approval will be further revised in consideration of the comments provided by the OEH.</p>
<p>With reference to Section 4.9.3 of the EA, the OEH notes that following baseline recording of all grinding groove sites, Donaldson Coal has not committed to any additional management actions at grinding groove sites assessed as being of low significance or those sites where subsidence impacts are assessed as unlikely or very unlikely to occur. The OEH notes that this appears to be indirect contract to Section 11.10 of the Amended Statement of Commitments (SoCs) dated 28/05/2007, prepared for the Abel Underground Mine.</p>	<p>Section 11.10 of the Statement of Commitments states:</p> <p><i>All Aboriginal heritage sites for which it is inferred that undermining may result in impacts (i.e. rock shelter and grinding groove sites) will be monitored before and after undermining in their vicinity to ensure the adequacy of conservation measures around those sites.</i></p> <p>...</p> <p>The draft revised Aboriginal Heritage Management Plan (Appendix 8 of Appendix F of the EA) is consistent with this commitment and states:</p> <p><i>Monitoring will occur for all Aboriginal sites within the Abel Underground Area and Tasman Underground Area for which subsidence related impacts may occur in order to ensure the adequacy of conservation measures</i></p> <p>....</p> <p><i>The inspections will occur prior to undermining and approximately three months after undermining.</i></p> <p>....</p>

Comment	Response
(continued)	<p>However, the draft revised Aboriginal Heritage Management Plan developed in consultation with relevant Aboriginal groups allows for impacts to grinding groove sites of assessed as being of “low” cultural significance. The Aboriginal Heritage Management Plan states:</p> <p><i>For open grinding groove sites assessed as being of low significance, following detailed recording of the evidence, impacts will be permitted to occur without further action</i></p> <p>...</p> <p>Monitoring of grinding groove sites assessed as being of “low” cultural significance would occur following undermining, however, as described in the draft revised Aboriginal Heritage Management Plan, no additional mitigation measures are proposed should the monitoring indicate that impacts have occurred.</p> <p>For grinding groove sites assessed as being of “low to moderate”, “moderate” or “high” cultural significance, an assessment of potential impacts will be undertaken by a suitable qualified subsidence expert. As described in the draft revised Aboriginal Heritage Management Plan, where potential impacts from undermining may occur (i.e. greater than “unlikely” possibility of impacts), the following mitigation measures would be undertaken:</p> <ul style="list-style-type: none"> <li>• further investigation (e.g. residue and use-wear analysis); and</li> <li>• for grinding groove sites of “high” significance, measures such as slotting of bedrock around the grinding groove site would be considered.</li> </ul>
<p>The OEH refers to Section 11.10 of the Amended Statement of Commitments, dated 28/05/2007, noting that Donaldson Coal intended to prepare annual reports documenting the results of the Aboriginal cultural heritage monitoring commitments on an annual basis. These annual reports were to be provided to the relevant Local Aboriginal Land Council and OEH once prepared. A search of OEH’s records could not locate a copy of each annual monitoring report following the project approval in 2007.</p>	<p>Section 4.9 of the <i>Aboriginal Heritage Management Plan</i> (Appendix 8 of Appendix F of the EA) outlines Donaldson Coals commitment to present the results of Aboriginal heritage monitoring within annual reports.</p> <p>Donaldson Coal has not commenced undermining of any areas containing identified Aboriginal heritage sites. Consequently, no results of Aboriginal cultural heritage monitoring have been recorded in any of the annual reports to date. Monitoring would commence prior to undermining Aboriginal sites for which subsidence impacts may occur, with the results to be included within annual reports and provided to the relevant Aboriginal Local Land Council.</p>
<p><i>Division of Resources and Energy (DRE) (within NSW Trade &amp; Investment)</i></p>	
<p>DRE notes that under the <i>Mining Act, 1992</i> mining and rehabilitation are regulated by conditions included in the mining lease, including requirements for the submission of a Mining Operations Plan (MOP) and a Subsidence Management Plan (SMP) prior to the commencement of operations, and subsequent Annual Environmental Management Reports (AEMR).</p>	<p>Noted. Donaldson Coal will continue to operate the Abel Underground Mine in accordance with the requirements and conditions of the <i>Mining Act, 1992</i> for the Modification.</p>
<p>DRE notes that the Modification proposes multi-seam mining, in both the Lower Donaldson Seam and Upper Donaldson Seam in the same areas. As the two seams are separated by approximately 15 metres (m) of interburden, DRE considers it likely the workings will interact where mining in both seams is proposed, including where first workings only take place. DRE notes that the EA does not include specific geotechnical engineering assessment of the proposed workings in the two seams.</p>	<p>The subsidence impacts predicted by MSEC (2012) for the longwall and shortwall areas considered multi-seam mining, as the predictions consider the extraction of coal from the both the Lower Donaldson Seam (i.e. longwall areas) and Upper Donaldson Seam (i.e. secondary extraction in the thin seam workings).</p>

Comment	Response
<p>Given the above, the DRE notes that no subsidence assessment has been conducted by Donaldson Coal for areas of proposed multi-seam mining (i.e. where geotechnical instability may lead to additional subsidence).</p>	<p>Secondary extraction of the thin seam workings in the Upper Donaldson Seam would only occur in sections that overly the longwall panels proposed in the Lower Donaldson Seam. In all other areas, the thin seam workings would involve non-subsiding first workings only.</p> <p>As such, MSEC (2012) predicted that, in comparison to the existing approved mine layout for the Abel Underground Mine, changes in subsidence effects would be limited to the longwall and shortwall areas.</p> <p>In areas outside of the longwall and shortwall areas, the thin seams workings overlying the Lower Donaldson Seam would be designed to be non-subsiding, and as such, were not predicted to result in additional subsidence in comparison to the approved mine plan.</p> <p>One of the DRE's concerns relates to subsidence associated with mining in the Lower Donaldson Seam creating instability leading to pillar failure in areas of the overlying thin seam workings despite the thin seam workings being designed to be non-subsiding.</p> <p>In response to the DRE's concern, MSEC has conservatively estimated potential additional subsidence associated with the worst-case scenario of complete pillar failure in the thin seam workings due to mining in the underlying Lower Donaldson Seam (Attachment 1). If all pillars in the thin seam workings (i.e. first workings only) were to completely collapse, due to mining in the underlying Lower Donaldson Seam, the maximum additional subsidence (based on 20 by 20 m pillars, 5.5 m wide roadways, 1.5 m mining height in the thin seam workings and 60 percent [%] bulking factor) would be approximately 0.35 m. As such, this worst-case scenario would result in 20% additional subsidence compared to the maximum predicted subsidence of 1.7 m due to mining in the Lower Donaldson Seam alone.</p> <p>MSEC has also assessed potential impacts to natural and built surface features associated with the additional worst-case subsidence of 0.35 m. In summary, MSEC considers that no change to existing management measures, or management measures proposed for the Modification, would be required to account for potential impacts to relevant natural and built surface features associated with the additional worst-case subsidence of 0.35 m</p>

Comment	Response
(continued)	<p>MSEC also recommended that, while no additional subsidence due to multi-seam interactions is predicted for principal residences, geotechnical assessments of the first workings in the thin seam workings beneath the principal residences should be undertaken at the Extraction Plan stage, and if these assessments identify any risks to the principal residences due to pillar instability in the thin seam workings, the subsidence control zones around the principal residences should be increased to protect these structures.</p> <p>In response to the DRE's concern and MSEC's recommendation, Donaldson Coal commits to undertake as part of the Extraction Plan process an assessment of geotechnical stability of the interburden separating the Upper and Lower Donaldson Seams prior to the commencement of mining in the Lower Donaldson Seam (in any area underlying thin seam workings in the Upper Donaldson Seam) to confirm whether first workings in the thin seam workings would be non-subsiding.</p> <p>The DRE also expressed concern about the potential for increased abutment loading on first workings in the Lower Donaldson Seam due to the first workings in the Upper Donaldson Seam. As described above, Donaldson Coal commits to undertake geotechnical stability assessments as part of the Extraction Plan process. The geotechnical stability assessments would guide the design of first working in the Upper and Lower Donaldson Seams to minimise abutment loads on pillars in the Lower Donaldson Seam to mitigate the risk of pillar failure.</p> <p>Notwithstanding the above, Donaldson Coal will maintain existing subsidence management commitments designed to protect surface features (e.g. principal residences, Schedule 2 streams, the Blue Gum Creek alluvium and cliff lines). Should it be determined during the Extraction Plan process that additional subsidence associated with pillar failure is possible, mitigation measures would be implemented to maintain existing subsidence management commitments designed to protect key surface features. This may include increasing the size of the pillars in the Lower Donaldson Seam to manage subsidence such that the total cumulative subsidence does not exceed the subsidence impact limits currently approved under Project Approval 05_0136.</p>



Comment	Response
<p>DRE considers that the current subsidence assessment does not give adequate consideration to the potential for irregular subsidence and for pillar run leading to subsidence outside the angle of draw in areas where old bord and pillar workings are present in the Borehole Seam (i.e. propagation of instability of old bord and pillar workings beyond the normal subsidence limit above the proposed mining).</p> <p>DRE also notes that there is considerable uncertainty in relation to the current condition of old bord and pillar workings in the Borehole Seam including the accuracy of official records and plan of the workings.</p> <p>In addition, the DRE noted that its input into the Director General Requirements specifically recommended the assessment and investigation of old bord and pillar workings in relation to any identified significant surface features. However, the DRE noted that, while no assessment and investigation of old pillar workings has been undertaken for the EA, the subsidence consultant's report in the EA recommends this should be done.</p>	<p>The Subsidence Assessment prepared for the EA (MSEC, 2012) considered the potential for reactivation of the historic workings in the Borehole Seam and pillar run outside the angle of draw.</p> <p>Section 6.3 of the Subsidence Assessment considers the reactivation of the historic Borehole Seam workings in regard to the Hunter Expressway, and states:</p> <p><i>The Hunter Expressway is being constructed above the historic workings in the Borehole Seam. It is unlikely that the proposed mining would reactivate the historic workings beneath the expressway due to the distance from the proposed mining. The potential for pillar run is also limited due to the discontinuous nature of the historic workings between the expressway and the proposed mining.</i></p> <p>In addition, Section 4.2.6 of the Subsidence Assessment states:</p> <p><i>The predicted limit of subsidence [taken as the predicted 20 mm subsidence contour] could extend further than shown in this drawing, however, if pillar run were to occur in the historic workings in the Borehole Seam. It can be seen from Drawing No. MSEC492-11, however, that the historic workings only partially extend beyond the eastern and southern sides of the proposed longwalls and only partially beyond the eastern and northern sides of the proposed shortwalls in the Lower Donaldson Seam. Also, the record tracings indicate that total pillar extraction has occurred in the historic workings on the northern side of the proposed longwalls and that the historic workings are discontinuous with some barrier pillars on the western sides of the proposed longwalls and the proposed shortwalls in the Lower Donaldson Seam.</i></p> <p><i>The potential for pillar run outside the extents of the proposed thin seam pillar extraction panels, proposed longwalls and the northern ends of the proposed shortwalls in the Lower Donaldson Seam, therefore, is reduced due to the limited extents and discontinuity of the historic workings. It is recommended, that the historic workings in the Borehole Seam are investigated further, as part of the Extraction Plan Applications for the thin seam extraction panels, shortwalls and longwalls, to confirm the existing conditions of these workings. It is also recommended that pillar stability assessments are undertaken, based on the findings of these investigations, so that the potential for pillar run can be better defined.</i></p>

Comment	Response
(continued)	<p>Based on the recommendation by MSEC (2012), the Modification EA describes Donaldson Coal's commitment to undertake investigations regarding the existing conditions of the historic workings in the Borehole Seam as part of the Extraction Plan process, prior to the commencement of proposed mining in the underlying areas (Section 6.1.2 of the EA).</p> <p>This would include inspection of the condition of the Borehole Seam historic workings through the use of cameras placed in the historic workings via drill holes.</p> <p>If this investigation indicates that potential reactivation of the Borehole Seam workings could occur due to mining at the Abel Underground Mine (i.e. if record tracing are shown to be inaccurate) then additional mitigation measures would be implemented to maintain existing subsidence management commitments designed to protect key surface features. This may include, as required, grouting of the Borehole Seam workings, backfill of the void space in the Lower Donaldson Seam and/or increasing the size of pillars left in the Lower Donaldson Seam to protect key surface features (i.e. increasing the subsidence control zone around key surface features to account for potential additional subsidence associated with the reactivation of the Borehole Seam workings).</p> <p>Further description of the proposed investigation of the Borehole Seam workings was provided by Donaldson Coal to the DP&amp;I in a letter dated 31 May 2013 (Attachment 2).</p>
<p>Where significant surface features, such as Principal Residences, are identified over areas of multi-seam mining, particularly old bord and pillar mine workings, DRE recommends that Donaldson Coal be required to:</p> <ul style="list-style-type: none"> <li>• undertake site specific investigations of identified old workings to assess the potential for irregular subsidence movements and pillar-run, i.e. propagation of instability of old bord and pillar workings beyond the normal subsidence limit; and</li> <li>• assess the feasibility of the proposed mine layout in relation to multi-seam subsidence effects.</li> </ul>	<p>As described above, Donaldson Coal commits to undertake investigations regarding the existing conditions of the historic workings in the Borehole Seam as part of the Extraction Plan process, prior to the commencement of proposed mining in the underlying areas (Section 6.1.2 of the EA).</p> <p>The findings of these investigations would be used to assess the feasibility of the mine plan in regard to meeting existing subsidence management commitments (including for principal residence) as part of the Extraction Plan process.</p>

Comment	Response
<p>DRE considers the proposed methodology for managing subsidence impacts to the high voltage transmission line as unlikely to be effective due to the presence of angle towers in sections of the line.</p> <p>DRE recommended that Donaldson Coal be required to assess the feasibility of the proposed mine plan in relation to potential subsidence impacts to high voltage line angle towers.</p>	<p>The potential impacts of the Modification mine layout on transmission towers was assessed in the Subsidence Assessment prepared for the EA (MSEC, 2012).</p> <p>The maximum predicted subsidence parameters for the 330 kilovolt (kV) transmission line for the Modification mine plan are substantially less than those predicted for the approved mine plan.</p> <p>MSEC (2012) predicted the maximum conventional strains for the transmission towers are less than survey tolerance (i.e. negligible subsidence impacts to transmission towers were predicted due to the Modification mine plan).</p> <p>Notwithstanding, the Statement of Commitments for the Abel Underground Mine (Attachment 3 to the EA) specifically commits to maintaining the safety and serviceability of electrical infrastructure in the Abel Underground Mine area:</p> <p><i>The Company shall prepare and implement a plan of management as part of the SMP process which will ensure the safety and serviceability of powerlines.</i></p> <p>The commitment above would be maintained for the Modification, and as such, an assessment of the feasibility of the proposed mine plan in relation to potential subsidence impacts to transmission towers would be conducted as part of the Extraction Plan process.</p> <p>Donaldson Coal has developed management plans for Transgrid 330 kV transmission towers as part of SMP process for Area 1 and Area 2 at the Abel Underground Mine. As part of the Extraction Plan process, Donaldson Coal would revise the successful Transgrid management plans already in place.</p>
<b>NSW Environment Protection Authority (EPA)</b>	
<p>The EPA advised that Donaldson Coal would need to make an application to the EPA to increase the scale of coal production authorised by the current Environment Protection Licence for the Abel Underground Mine.</p>	<p>Noted.</p>
<p>The EPA stated that “the air quality impact assessment provided in the EA has been conducted in accordance with the requirements of the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW” and that “no additional recommended conditions of approval are subsequently considered necessary”.</p>	<p>Noted.</p>
<p>The EPA noted that it is able to licence operational noise impacts at all assessed sensitive receivers based on the prediction made in the Noise Impact Assessment provided in the EA.</p>	<p>Noted.</p>
<p>The EPA requested that a detailed Construction Noise Management Plan be prepared and implemented prior to commencement of construction activities associated with the downcast ventilation shaft.</p>	<p>Noted.</p> <p>Donaldson Coal will prepare and implement a Construction Noise Management Plan prior to commencement of construction activities associated with the downcast ventilation shaft.</p>
<p>The EPA recommended that Donaldson Coal monitor the presence of inversion conditions using the sigma-theta method.</p>	<p>The existing site meteorological station measures sigma theta, and will continue to be used to determine the presence of temperature inversions.</p>

Comment	Response
The EPA recommended to the DP&I conditions of approval relating to noise, blasting and meteorological monitoring.	Noted.
<i>NSW Mine Subsidence Board (MSB)</i>	
<p>The MSB stated that it had no objection to the Modification.</p> <p>The MSB requested that Donaldson Coal advise the MSB prior to undermining improvements associated with the following:</p> <ul style="list-style-type: none"> <li>• principal residences;</li> <li>• out-buildings;</li> <li>• dams;</li> <li>• roads (sealed and unsealed);</li> <li>• powerlines; and</li> <li>• fibre optical and copper telecommunications cables.</li> </ul>	<p>Noted.</p> <p>Donaldson Coal will consult with the MSB regarding undermining improvements as part of the Extraction Plan process.</p>
<i>Office of Agricultural Sustainability and Food Security within DPI</i>	
<p>The Office of Agricultural Sustainability and Food Security stated that the EA adequately addressed the agricultural issues regarding:</p> <ul style="list-style-type: none"> <li>• mine subsidence rectification;</li> <li>• rehabilitation of land post extraction to the current level of land capability; and</li> <li>• potential risk to surface water and groundwater for existing agricultural users.</li> </ul>	Noted.
<p>The Office of Agricultural Sustainability and Food Security noted that there is some land within the underground mining area that is classified as class 2, and recommended that mining activities remain outside the identified as land capability class 2 land to limit the risk of reducing the value of the agricultural resource.</p>	<p>The class 2 land within the underground mining area is outside the areas associated with the Modification (i.e. proposed longwall and shortwall mining areas) (Figure 12 of the EA). Therefore, there would be no additional potential impacts to class 2 land associated with the Modification in comparison to those associated with the approved Abel Underground Mine.</p> <p>Notwithstanding, the class 2 land within the underground mining area is associated with Buttai Creek (a schedule 2 stream) and would be protected by existing subsidence management commitments for schedule 2 streams (i.e. the provision of a minimum barrier of 40 m between the 20 millimetre line of subsidence and the bank of the Buttai Creek).</p>

Comment	Response
<i>Hunter New England New England Population Health</i>	
The Hunter New England Population Health noted that the increased rail movements from an average of three to six rail movements per day to a peak of 12 rail movements per day may heighten the concerns of the Hunter Valley residents along the coal corridor with regard to the cumulative impacts of particulate matter from coal dust on human health.	Noted.  Todoroski Air Sciences (2012) prepared an Air Quality and Greenhouse Gas Assessment for the Modification (Appendix E of the EA). Based on the site specific product coal testing, and the results of studies conducted to assess the potential air quality impacts from coal transport by trains, Todoroski Air Sciences (2012) concluded there would be no potential for the Modification to result in adverse health impacts due to coal dust emissions from trains inside or outside the of the rail corridor when assessed against relevant air quality criteria (Appendix E of the EA).
The Hunter New England Population Health advised that the 4 kilometre (km) of sealed internal roads used to transport the coal from the run-of-mine (ROM) stockpile to the Bloomfield Coal Handling and Preparing Plant (CHPP) will need to be maintained to the required standards to aid in controlling the dust from the increased movements of haulage vehicles.	Noted.  The sealed internal roads used to transport coal from the ROM stockpile to the Bloomfield CHPP will be maintained. In addition, water trucks are used to clean the internal sealed road.
<i>Australian Rail Track Corporation (ARTC)</i>	
The ARTC advised that Donaldson Coal will be required to undertake and submit modelling to the ARTC to determine the impacts on the overall operations of the Hunter Valley rail network resulting from the proposed increase in capacity of the Modification.	Noted.  Additional modelling for the proposed increase in capacity on the rail network on the overall operations of the Hunter Valley rail network will be undertaken and provided to the ARTC as required.
<i>NSW Rural Fire Service (RFS)</i>	
The RFS stated that it had no comments or objections to the Modification.	Noted.
<i>NSW Roads and Maritime Services (RMS)</i>	
The RMS stated that is has no objections to or requirements for the Modification, as it is considered that the proposal will not have a significant impact of the classified (State) road network.	Noted.
The RMS notes that Cessnock City Council is the roads authority for John Renshaw Drive at the intersection of the Abel mine access road and Maitland Council is the roads authority for the New England highway at the Four Mile Creek intersection. The RMS advises that these authorities should be consulted for their requirements regarding any potential impacts on the road network as required under <i>State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007</i>	Noted.  Consultation has been conducted with both the Cessnock City Council and Maitland Council for the Modification.
<i>Transport for NSW (TfNSW)</i>	
TfNSW recommended that Donaldson Coal provide evidence of communication with the ARTC confirming that there is sufficient capacity on the rail network.	Donaldson Coal consulted with the ARTC for the Modification (Section 1.3 of the EA). In correspondence to Donaldson Coal dated 12 July 2012, the ARTC indicated that sufficient rail capacity would be available to accommodate peak rail movements, subject to demonstration of sufficient network exit capacity (Section 1.3 of the EA). The ARTC's submission to the Modification is provided above.

**Table 4**  
**Response to Public Submissions**

Name	Comment	Response
Construction Forestry Mining and Energy Union (Mining and Energy Division) Northern District Branch	Noted support on balance for the Modification, in consideration of the consistency with the currently approved Development Consent objectives.	Noted.
Private submission [name withheld]	Raised concerns regarding the noise impacts associated with the Modification, with particular concern focusing on evening and night noise from the Bloomfield CHPP.	<p>Noise modelling for the Modification was conducted by SLR Consulting (2012) and is presented in Appendix D to the EA.</p> <p>The noise modelling predicted no exceedances of the existing noise limits specified in Project Approval 05_0136 for the Abel Underground Mine at any receiver location, including receiver location L (Kilshanny Avenue, Ashtonfield) (which has an existing noise limit of 46 dBA <math>L_{Aeq,15minute}</math> during the evening and 40 dBA <math>L_{Aeq,15minute}</math> during the night). The noise modelling considered all operations associated with the Abel Underground Mine, inclusive of activities associated with the Modification (e.g. increased coal processing at the Bloomfield CHPP and increased rail loadout).</p> <p>Donaldson Coal commits to maintaining noise levels within the existing noise limits specified in Project Approval 05_0136 at all receiver locations.</p> <p>In addition, SLR Consulting (2012) predicted cumulative noise levels from the operations of the Abel Underground Mine and Bloomfield Colliery. No exceedances of amenity criteria levels were predicted at any private receiver.</p> <p>It should be noted that while the Modification would increase the intensity of operations in some years, due to the increase in ROM coal production, the Modification would not change the currently approved operating hours of the Abel Underground Mine or Bloomfield CHPP (i.e. 24 hours per day, seven days per week).</p> <p>The noise modelling conducted for the Modification included 24 hour per day operations of the Bloomfield CHPP and rail loadout facility.</p>

Name	Comment	Response
(continued)	<p>Noted non-compliances of the Bloomfield Colliery noise limits, as reported in the Bloomfield Colliery Annual Environmental Management Report 2011-2012, and stated that they are unaware of any remedial actions or consequences resulting from the exceedances.</p>	<p>Attended and unattended noise monitoring for the Abel Underground Mine operations (including the Bloomfield CHPP and rail loadout) has been conducted in accordance with Project Approval 05_0136 since 2008.</p> <p>To date, the noise monitoring has not recorded any non-compliances with the noise limits specified in Project Approval 05_0136 for the Abel Underground Mine.</p> <p>It should be noted that the operation of the Bloomfield Colliery does not form part of the Modification or the Abel Underground Mine. While Project Approval 05_0136 for the Abel Underground Mine includes the operation of the Bloomfield CHPP and rail loadout facility, the Bloomfield Colliery (i.e. open cut mining operations) is separately approved to operate under Project Approval 07_0087.</p> <p>As such, noise monitoring results reported in the Bloomfield Colliery Annual Environmental Management Report 2011-2012 are relevant to the operations approved under Project Approval 07_0087 for the Bloomfield Colliery, and not the operations of the Abel Underground Mine.</p> <p>The Bloomfield Colliery Annual Environmental Management Report 2011-2012 does report attended monitoring results above relevant noise limits at receiver location L for June 2011 (evening) and September 2011(night).</p> <p>However, in both instances the reported noise levels were not more than 2 dBA above the relevant noise limit (35 dBA <math>L_{Aeq,15minute}</math> for both the evening and night), and therefore, in accordance with Section 11.1.3 of the NSW Industrial Noise Policy (INP), these noise levels are not non-compliances of the Project Approval 07_0087 noise limits.</p>
	<p>Made personal observations of noise at their residence, based on spot measurements of noise using a noise monitoring instrument.</p>	<p>Donaldson Coal does not question the accuracy of the spot measurements of noise reported in the private submission.</p> <p>However, the spot measurements do not distinguish background noise (e.g. from the New England Highway, insects or other sources) from mine-related noise. Only mine-related noise associated with Abel Underground Mine mining operations (including the Bloomfield CHPP and rail loadout facility) is relevant to the noise limits specified in Project Approval 05_0136.</p> <p>Noise monitoring conducted for the Abel Underground Mine reports that background noise levels are significant at receiver location L. Attended noise monitoring results for the period June 2010 to March 2013 indicate noise levels of up to 83 dBA during the evening and 77 dBA during the night at receiver location L.</p> <p>However, the Abel Underground Mine was audible at receiver location L during only two of the 12 monitoring periods conducted since 2012, and during all monitoring periods the Abel Underground Mine was in compliance with the noise limits specified in Project Approval 05_0136 at receiver location L.</p>



Name	Comment	Response
(continued)	<p>Recommended the additional consent measures, as follows:</p> <ul style="list-style-type: none"> <li>• Should exceedances of noise limits occur, increasing the penalty for non-compliance and/or reduce the allowable noise limits.</li> <li>• Establishing additional noise monitoring protocols, including consideration of additional attended monitoring, unattended monitoring, permanent monitoring and monitoring sites closer to the Bloomfield Colliery.</li> <li>• Providing greater community contact and engagement through a targeted regular newsletter that publishes compliances, exceedances, remedial actions and penalties.</li> </ul>	<p>As noted above, Donaldson Coal commits to maintaining noise levels at, or below, the existing noise limits specified in Project Approval 05_0136 at all receiver locations.</p> <p>Donaldson Coal will maintain existing noise monitoring commitments for the Modification, which include quarterly attended monitoring at receiver locations to determine compliance with noise limits.</p> <p>In addition, the quarterly attended monitoring is supported by unattended monitoring, which involves continuous noise monitoring at receiver locations over a seven day period coinciding with the attended noise monitoring. Unattended noise monitoring would continue for the Modification.</p> <p>The Bloomfield Colliery Project Approval 07_0087 also contains a condition requiring attended and unattended noise monitoring at receiver location L.</p> <p>The Abel Underground Mine Annual Environmental Management Reports (AEMRs) describe the environmental performance of the Abel Underground Mine, including noise compliance. The AEMRs, along with other environmental monitoring and management reports, are published on the Donaldson Coal website: <a href="http://www.doncoal.com.au">http://www.doncoal.com.au</a></p> <p>The Donaldson Coal website also provides contact details for the Donaldson Coal Environmental Officer, with whom any complaints or issues from the community can be raised.</p> <p>In addition to the above, Donaldson Coal offers the following consultation with the private resident who authored the submission:</p> <ul style="list-style-type: none"> <li>• Provide copies of the Abel Underground Mine quarterly noise monitoring reports to the private resident upon request.</li> <li>• Donaldson Coal representatives will meet with the private resident to discuss the findings of the noise monitoring reports if requested.</li> </ul>
B and L Livingstone	Stated support for the Modification on the basis that the Modification would aid in the growth of the area, provide jobs and improve the economy.	Noted.
L Grant	Stated support for the Modification.	Noted.

## REFERENCES

- Bloomfield Collieries Pty Ltd (2008) *Bloomfield Colliery Completion of Mining and Rehabilitation Part 3A Environmental Assessment*.
- Department of Environment and Climate Change (2009) *Interim Construction Noise Guideline*.
- Department of Environment and Conservation (2005) *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*.
- Donaldson Coal Pty Limited (2006) *Abel Underground Mine – Part 3A Environmental Assessment*.
- EcoBiological (2008) *Bloomfield Collieries Flora, Fauna and Threatened Species Assessment*.
- Environment Protection Authority (2000) *NSW Industrial Noise Policy*.
- Hunter Eco (2012) *Abel Upgrade Modification Ecology Assessment*.
- Mine Subsidence Engineering Consultants (2012) *Abel Underground Mine: Abel Upgrade Modification – Proposed Modification of Workings in ML 1618 Subsidence Predictions and Impact Assessments for the Natural Features and Surface Infrastructure in Support of the Section 75W Modification Application*.
- SLR Consulting Australia Pty Ltd (2012) *Abel Upgrade Modification Noise Impact Assessment*.
- Todoroski Air Sciences (2012) *Air Quality Impact and Greenhouse Gas Assessment – Abel Underground Mine*.

## ATTACHMENT 1

21<sup>st</sup> May 2013

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Donaldson Coal Pty Limited  
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Attention: Tony Sutherland, Technical Services Manager – Underground Operations

Dear Tony,

**Donaldson Coal - Abel Upgrade Modification (ML1618)  
Potential for Additional Subsidence due to Multi-seam Interaction with the  
Proposed Thin-seam First Workings in the Upper Donaldson Seam**

Mine Subsidence Engineering Consultants Pty Ltd (MSEC) was previously engaged by Donaldson Coal Pty Ltd to prepare subsidence predictions and impact assessments for the proposed Abel Upgrade Modification (ML1618), which proposes to modify the method of extraction to include shortwalls and longwalls in the Upper and Lower Donaldson Seams, and additional thin-seam first workings and pillar extraction in the Upper Donaldson Seam. Report No. MSEC492 (Rev. B) was issued in August 2012, which supported the Modification Application (the Modification).

The Department of Trade and Investment, Regional Infrastructure and Services – Division of Resources and Energy (DRE), in their letter dated the 19<sup>th</sup> April 2013 to the Department of Planning and Infrastructure, provided the following comment where the proposed thin-seam first workings are located above the proposed shortwalls in the Lower Donaldson Seam:-

*“This current proposed modification proposes multi-seam mining, in both the Lower Donaldson Seam and Upper Donaldson Seam in the same areas. As the two seams are separated by approximately 15m of interburden DRE considers that it is highly likely the workings will interact where mining in both seams is proposed, including where first workings only take place. The EA does not include a specific geotechnical engineering assessment of the potential interaction between the relevant proposed workings in the two seams”.*

DRE also provided the following comment where the proposed thin-seam first workings are located above the approved bord and pillar secondary extraction areas in the Lower Donaldson Seam:-

*“No subsidence assessment has been conducted by the proponent for areas of proposed multi-seam mining, i.e. where mining is proposed in the Upper Donaldson Seam over previously approved bord and pillar mining in the Lower Donaldson Seam even though these mining areas are clearly noted as part of the proposed modification in the main report of the EA”.*

It has been recommended that Donaldson Coal undertake geotechnical assessments of the thin-seam first workings as part of the Extraction Plan applications. If these assessments were to find that the thin-seam first workings were to become unstable, due to mining beneath in the Lower Donaldson Seam, the potential for additional subsidence would be considered as part of these applications.

The maximum additional subsidence due to the multi-seam interaction would be limited by the available voids (i.e. the roadways) into which the thin-seam pillars could spall. This can be represented by the following equation:-

**Equation 1**  $S_{\text{additional}} = B * R * T$

where B = the bulking factor, taken as 60 %,  
R = the planar ratio of the void (i.e. headings) to solid (i.e. pillars), and  
T = thickness of the Upper Donaldson Seam, which is 1.5 metres.

The thin-seam first workings typically have 20 metre by 20 metre solid pillars and 5.5 metre wide roadways. The planar void to solid ratio for these first workings is:-

**Equation 2** 
$$R = 1.0 - \frac{20 * 20}{(20 + 5.5) * (20 + 5.5)} = 0.38 \quad (\text{i.e. } 38 \% \text{ void area})$$

The maximum predicted additional subsidence assuming the complete collapse of the thin-seam first workings, due to mining beneath in the Lower Donaldson Seam is, therefore, as follows:-

**Equation 3** 
$$S_{\text{additional}} = 0.60 * 0.38 * 1.5 = 0.35m \quad (\text{i.e. up to } 350 \text{ mm additional subsidence})$$

That is, the maximum predicted additional subsidence due to the multi-seam interaction would be around 0.35 metres, or 20% additional subsidence when compared to the maximum predicted subsidence of 1.7 metres due to mining the Lower Donaldson Seam alone, as provided in Table 4.2 in Report No. MSEC492. The Extraction Plan applications would consider any additional subsidence based on the outcomes of the geotechnical assessments of the thin-seam first workings.

It is noted, that Report No. MSEC492 considered the interaction between the thin-seam second working areas in the Upper Donaldson Seam and the longwalls in the Lower Donaldson Seam, as well as the historic workings in the overlying Borehole Seam. The subsidence predictions were increased based on these multi-seam interactions as described in Section 3.8.2 of the subsidence report.

Discussions on the impact assessments and the recommended management strategies for the natural and built features, based the potential for an additional subsidence up to 0.35 metres due to the interaction between the thin-seam first workings in the Upper Donaldson Seam and the proposed shortwalls and the approved bord and pillar workings in the Lower Donaldson Seam, are provided in Table 1 below.

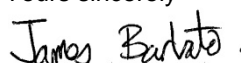
**Table 1 – Effects of Potential Additional Subsidence due to Multi-seam Interaction on the Impact Assessments and Management Strategies for the Surface Features**

Feature	Location Relative to Proposed Shortwalls in the Lower Donaldson Seam	Location Relative to Approved Bord and Pillar Panels in Lower Donaldson Seam	Effects of the Potential Multi-seam Interaction on the Subsidence Predictions, Impact Assessments and Recommended Management Strategies
Schedule 1 Streams	Located directly above the proposed shortwalls	Located directly above the proposed panels	Up to 20 % additional subsidence when compared to the predicted maximum subsidence of 1.7 metres as provided in Report No. MSEC492. The potential for localised ponding and surface cracking would slightly increase, but the recommended management strategies described in the Modification Application would not change.
Schedule 2 Streams	No secondary extraction (i.e. proposed shortwalls or approved bord and pillar) within the Subsidence Control Zones which are based on 40 metre buffers from the Schedule 2 streams		No potential for additional subsidence due to multi-seam interactions.
Cliffs	Located more than 1 kilometre west of the proposed shortwalls	Located more than 130 metres west of approved panels	No potential for additional subsidence due to multi-seam interactions.
Steep Slopes	Directly above proposed shortwalls	Directly above proposed panels	Up to 20 % additional subsidence when compared to the predicted maximum subsidence of 1.7 metres as provided in Report No. MSEC492. The potential for surface cracking would slightly increase, but the recommended remediation measures described in Modification Application would not change.

Feature	Location Relative to Proposed Shortwalls in the Lower Donaldson Seam	Location Relative to Approved Bord and Pillar Panels in Lower Donaldson Seam	Effects of the Potential Multi-seam Interaction on the Subsidence Predictions, Impact Assessments and Recommended Management Strategies
330 kV Transmission Line	Located more than 350 metres south of the proposed shortwalls	Four towers located directly above both the approved panels in the location of the proposed thin-seam first workings	Up to 19 % additional subsidence (above the approved bord and pillar panels only) when compared to the predicted maximum subsidence of 1.82 metres as provided in the 2006 Part 3A Environmental Assessment. The recommended management strategies for these towers would not change, which could include the installation of cable rollers or cruciform bases for the suspension towers, and the consideration of subsidence control measures for the tension tower. These strategies would be developed, in consultation with TransGrid, during the Extraction Plan stages.
132 kV Transmission Line	Directly above proposed shortwalls	Directly above proposed panels, but no thin-seam first workings in this location	Up to 37 % additional subsidence (above proposed shortwalls only) when compared to the predicted maximum subsidence of 0.95 metres as provided in Report No. MSEC492. The recommended management strategies described in the Modification Application would not change, which could include the installation of cable rollers, guy wires or additional poles, where required.
Low Voltage Powerlines	Directly above proposed shortwalls	Directly above proposed panels	Up to 20 % additional subsidence when compared to the predicted maximum subsidence of 1.7 metres as provided in Report No. MSEC492. The recommended management strategies described in the Modification Application would not change, which could include the installation of cable rollers, guy wires or additional poles, where required.
Rural Building Structures	Directly above proposed shortwalls	Directly above proposed panels	Up to 20 % additional subsidence when compared to the predicted maximum subsidence of 1.7 metres as provided in Report No. MSEC492. The management strategies described in the Modification Application would not change and any impacts would be remediated by the MSB.
Farm Dams	Directly above proposed shortwalls	Directly above proposed panels	
Principal Residences	No secondary extraction (i.e. proposed shortwalls or approved bord and pillar) within the Subsidence Control Zones which are based on 26.5 degree angles of draw around the principal residences		No potential for additional subsidence due to multi-seam interactions. It is recommended, however, that geotechnical assessments of the thin-seam first workings beneath the principal residences are undertaken at the Extraction Plan stages. If these assessments identify any risks to the principal residences, due to pillar instability in the thin-seam workings, these structures could be protected by increasing the subsidence control zones.
Archaeological Sites	One artefact scatter site, one grinding groove site and the Black Hill Locality and Black Hill Pathway located directly above the proposed shortwalls	Various archaeological sites and the Black Hill Ceremonial Area located directly above the approved panels	Up to 20 % additional subsidence when compared to the predicted maximum subsidence of 1.7 metres as provided in Report No. MSEC492. The potential for surface cracking would slightly increase, but the recommended management strategies described in the Modification Application would not change.

If you require any further information, please do not hesitate to contact me.

Yours sincerely



James Barbato  
Mine Subsidence Engineering Consultants

## ATTACHMENT 2



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31 May 2013

Manager, Mining Projects  
Major Projects Assessment  
Department of Planning and Infrastructure  
GPO Box 39  
SYDNEY NSW 2001

Attention: Mr Howard Reed

Dear Mr Reed

## **RE: ABEL UPGRADE MODIFICATION – PROPOSED INVESTIGATIONS OF BOREHOLE SEAM WORKINGS**

This letter has been prepared in response to a request from the Department of Planning and Infrastructure (DP&I) to provide additional background on the historic workings in the Borehole Seam and outline Donaldson Coal Pty Limited's (Donaldson Coal's) proposed investigations of these workings as part of the Extraction Plan and Subsidence Management Plan (SMP) processes.

Donaldson Coal expects the revised Project Approval conditions to specify subsidence performance measures that the mine plan must achieve. Donaldson Coal considers that further engineering investigations can be conducted as part of the Extraction Plan and SMP processes to validate the precise location and geotechnical characteristics of the historical workings. Donaldson Coal made this commitment in the Abel Upgrade Modification Environmental Assessment (Section 6.1.2).

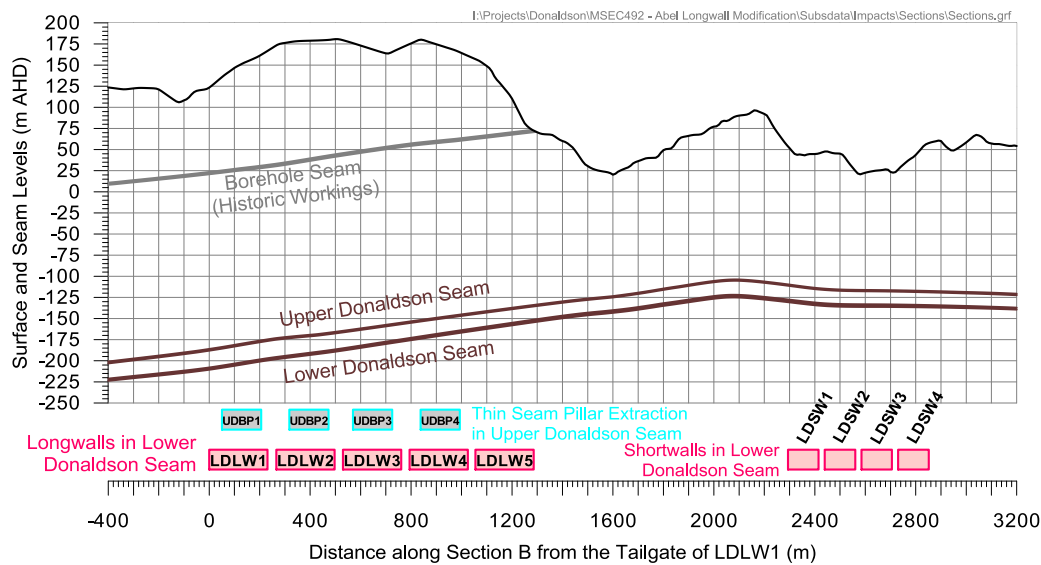
This is consistent with the approach described in Strata Engineering (2006) in the Abel Underground Mine Environmental Assessment that further studies on the possible impacts will need to be completed during the development of the individual SMPs.

### ***Background on the Borehole Seam Workings***

The longwalls in the Lower Donaldson Seam and thin seam pillar extraction panels in the Upper Donaldson Seam are proposed to be extracted beneath the historic workings in the overlying Borehole Seam. The interburden thickness between the Upper Donaldson Seam and the historic workings varies between approximately 200 m and 220 m.

The northern ends of the proposed shortwalls in the Lower Donaldson Seam are also partially located beneath the historic workings in the Borehole Seam. The interburden thickness between the historic workings and the Lower Donaldson Seam is around 225 m in this location (see cross-section below).

The historic workings have depths of cover from the outcrop up to 112 m (refer to enclosed plan).



The historic workings in the Borehole Seam date back to the mid 1940s, with a number of old entries and the majority of coal worked in the 1940s and 1950s. Some of workings associated with the Stockrington No. 2 Colliery are as recent as the 1970s. Based on record tracings, the workings appear to have been mined using the Welsh Bord extraction method.

### ***Potential for Irregular Subsidence***

The Subsidence Assessment assessed an upperbound subsidence resulting from the reactivation of the historic workings in the Borehole Seam of approximately 1,300 mm.

MSEC (2012) noted that whilst there is some uncertainty with the maximum predicted subsidence, due to the conditions of the historic workings in the overlying Borehole Seam, the surface above the proposed panels mostly comprises natural bushland with limited surface features. Surface features were identified by Strata Engineering (2006) and refined by MSEC (2012). Surface features above the historic workings in the Borehole Seam include:

- six principal residences;
- eight sheds;
- fourteen dams;
- Black Hill Quarry;
- Stockrington Quarry;
- three unsealed public access roads;
- privately owned fences;
- two survey control marks;
- three buried Telstra communications lines;
- two suspended Ausgrid low voltage powerlines; and
- steep slopes.

There are no Schedule 2 stream (third order or above streams) located above the Borehole Seam workings.

Pot hole development is considered possible where the depth of cover above the Borehole Seam is less than approximately 50 m. Pot hole subsidence has already occurred in these areas and it is possible that the approved and modified mining layouts could cause additional pot hole subsidence to develop.

In other areas there may be irregular subsidence due to plug failure of the Borehole Seam workings, however the magnitude and location of irregular subsidence is difficult to determine.

Project Approval 05\_0136 currently includes 'subsidence impact limits', specifically:

- The Abel Underground Mine does not result in any subsidence impacts on:
  - Pambalong Nature Reserve; and
  - the surface of the F3 Freeway.
- Mining is limited to first workings beneath, and designed to ensure that mining causes no subsidence impacts requiring mitigation works on:
  - principal residences and other specified structures (without the approval of the relevant landowner);
  - Black Hill Public School;
  - Black Hill Church and cemetery;
  - Schedule 2 streams (i.e. 3rd order and above streams);
  - rainforest areas; and
  - Blue Gum Creek alluvium.

Donaldson Coal considers that it can manage the potential for irregular subsidence impacting sensitive features through the Extraction Plan process, particularly as mining beneath the most sensitive features would be limited to first workings. The mine plan and mitigation measures presented in the Extraction Plan would be required to demonstrate that any subsidence impact limits or subsidence performance measures can be met.

### ***Potential for Pillar Run***

MSEC (2012) notes that the predicted limit of subsidence may extend further if pillar run were to occur in the historic workings in the Borehole Seam.

However, the historic workings only partially extend beyond the eastern and southern sides of the proposed longwalls and only partially beyond the eastern and northern sides of the proposed shortwalls in the Lower Donaldson Seam (refer to enclosed plan). Also, the record tracings indicate that total pillar extraction has occurred in the historic workings on the northern side of the proposed longwalls and that the historic workings are discontinuous with some barrier pillars on the western sides of the proposed longwalls and the proposed shortwalls in the Lower Donaldson Seam.

MSEC (2013) consider the potential for pillar run outside the extents of the proposed thin seam pillar extraction panels, proposed longwalls and the northern ends of the proposed shortwalls in the Lower Donaldson Seam, therefore, is reduced due to the limited extents and discontinuity of the historic workings (Section 4.5.6 of the Subsidence Assessment).

The Hunter Expressway is being constructed above the historic workings in the Borehole Seam. It is unlikely that the proposed mining would reactivate the historic workings beneath the expressway due to the distance from the proposed mining. The potential for pillar run is also limited due to the discontinuous nature of the historic workings between the expressway and the proposed mining (Section 6.3 of the Subsidence Assessment).

Notwithstanding, as part of the Extraction Plan and SMP processes Donaldson Coal would conduct further engineering investigations to validate the precise location and geotechnical characteristics of the historical workings. This is discussed further below.

### ***Proposed Extraction Plan Investigations***

The Extraction Plan and SMP applications would require Donaldson Coal to demonstrate that the conditions of the Project Approval and Donaldson Coal's subsidence management commitments can be achieved.

The investigations of historic workings in the Borehole Seam for future Extraction Plans and SMP would include:

- detailed review of record tracings held by the Division of Resources and Energy;
- inspection of the condition of pillars based on downhole cameras into the historic workings;
- determination of the factor of safety for pillars based on the UNSW Pillar Design Procedure and the level of confidence in the accuracy of the record tracings; and
- where there is the potential for pillar failure and/or pillar run, development of any additional mitigation measures required to maintain existing subsidence management commitments.

Mitigation measures that may be implemented include grouting of the Borehole Seam workings, backfill of the void space in the Lower Donaldson Seam and/or increasing the size of pillars left in the Lower Donaldson Seam to protect key surface features (i.e. increasing the subsidence control zone around key surface features to account for potential additional subsidence associated with the reactivation of the Borehole Seam workings).

Donaldson Coal considers that the existing subsidence management commitments and the Project Approval provide sufficient certainty of the environmental outcomes and that no further investigations are required to modify the Project Approval.

Please do not hesitate to contact the undersigned on (02) 4015 1105 if you have any queries or would like to discuss.

*Yours sincerely,*



**Tony Sutherland**  
*Technical Services Manager – Underground Operations*



