



# Office of Environment & Heritage

Your reference: MP 09-0203 Mod 1  
Our reference: DOC14/19578-01; EF14/2866  
Contact: Steve Lewer, 4908 6814

Ms Jessie Giblett  
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Planning and Infrastructure  
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Dear Ms Giblett

## RE: REVIEW OF PROPOSED LONGWALLS 51 AND 52 – WEST WALLSEND COLLIERY ENVIRONMENTAL ASSESSMENT – MODIFICATION 1 TO THE WEST WALLSEND CONTINUED OPERATIONS PROJECT (MP 09-0203 MOD 1)

I refer to your email dated 19 February 2014 requesting comments on the Proposed Longwalls 51 and 52 – West Wallsend Colliery Environmental Assessment (EA) which represents a modification to the approved 'West Wallsend Continued Operations Project' project approval (MP 09-0203 Mod 1). The Office of Environment and Heritage (OEH) understands that the proposed modification involves the extension of the Southern Domain underground mining area, and that the EA has not been placed on public exhibition to date.

OEH has undertaken a review of the EA titled 'Proposed Longwalls 51 & 52 – West Wallsend Colliery', (including appendices 1-7) prepared for West Wallsend Underground, Glencore by Umwelt (Australia) Pty Limited and dated January 2014. OEH's detailed comments are provided in **Attachment A**.

In summary, OEH has concerns with some sections of the EA with respect to subsidence impacts and associated flow-on effects to the management of the Sugarloaf State Conservation Area and to threatened species. OEH requests that these concerns be appropriately addressed prior to recommended conditions of approval being provided.

If you require any further information regarding this matter please contact Steve Lewer, Regional Biodiversity Conservation Officer, on 4908 6814.

Yours sincerely

21 MAR 2014

**RICHARD BATH**  
Senior Team Leader Planning, Hunter Central Coast Region  
Regional Operations

Enclosure: Attachment A

**ATTACHMENT A: OEH REVIEW OF PROPOSED LONGWALLS 51 & 52 – WEST WALLSEND COLLIERY ENVIRONMENTAL ASSESSMENT: MODIFICATION 1 TO THE WEST WALLSEND CONTINUED OPERATIONS PROJECT (MP 09-0203 MOD 1)**

**SUBSIDENCE**

**Background**

Oceanic Coal Australia Pty Ltd is seeking a modification for its West Wallsend Colliery to develop two longwalls (LW 51 & 52) that are not currently covered by the existing mining approval. These longwalls lie almost entirely under the Sugarloaf State Conservation Area (SCA).

**Definitions**

The definition of cliff, cliff terrace, minor cliff or rock face feature in the proposal have an arbitrary length specification of 20m before any features qualifies. There is no science validating such an arbitrary definition related to length and no evidence that a cliff feature of 15m (or lower) will respond in a different way to a cliff of 20m length when undermined. The specification that a cliff, cliff terrace, minor cliff or rock face feature must be greater than 20m means that there are potentially numerous features in the project area which have not received adequate assessment for impact in the current proposal, simply because they are less than the 20m threshold length. Due to the arbitrary nature of such definitions, OEH has a concern about the current conditions of consent for the West Wallsend Colliery which state:

<b>Land</b>	<b>underground workings</b>
Cliffs	Minor environmental consequences (that is occasional rockfalls, displacement or dislodgement of boulders or slabs, or fracturing, that in total do not impact more than 3% of the total face area of cliffs within the mining area).
Minor cliffs and cliff terraces	Minor environmental consequences (that is occasional rockfalls, displacement or dislodgement of boulders or slabs, or fracturing, that in total do not impact more than 5% of the total face area of such features within the mining area).
Rock face features and steep slopes	Minor environmental consequences (that is occasional rockfalls, displacement or dislodgement of boulders or slabs, or fracturing, that in total do not impact more than 7% of the total face area of such features within the mining area)

Such conditions are considered arbitrary, unenforceable and inconsistent with conditions of consent at other mines such as the Tasman Underground Coal Mine, which also undermines Sugarloaf SCA, and has a negligible impact condition for cliffs and steep slopes:

<b>Land</b>	<b>underground workings</b>
Major cliffs, minor cliffs, and steep slopes	<ul style="list-style-type: none"> <li>• Negligible environmental consequences (including rock falls, displacement or dislodgement of boulders or slabs, or fracturing)</li> </ul>

OEH questions why such inconsistencies occur between different mines when they both undermine Sugarloaf SCA and the justification/equity of having different conditions for different mines (one far more lenient and potentially damaging than the other).

**Mining Dimensions and Subsidence**

Longwall panels 51 & 52 are proposed to be 178.8m and 206.6m wide. The latter panel represents an increase of 12% over the existing width of longwalls at West Wallsend Mine, which have already resulted in considerable damage to Sugarloaf SCA. Cover depth for the proposal is relatively shallow, ranging from 80m to 140m. Experience in this and other areas (including over the existing West Wallsend mine)

suggests that significant impacts are likely due to the shallow depth of cover and width of the planned longwalls.

## Subsidence

Subsidence is predicted to be between 2.41m and 2.61m; tilts are estimated to range from 48 to 97mm; maximum tensile strains are predicted to range between 11mm/m and 50mm/m; and maximum compressive strains are predicted to range between 13mm/m and 61mm/m. However, the methodology used for this assessment is based on a mean (and 95% confidence on the mean) and not a maximum. This means that maximum subsidence levels could well be much higher than even these very high predicted subsidence estimates. OEH notes that subsidence using the same methodology for the earlier longwalls at West Wallsend Colliery underestimated subsidence by up to 30%. Given that the Bulli Seam Planning Assessment Commission used values of 0.5mm/m tensile stress and 2mm/m compressive stress as thresholds above which rock fracturing was likely, the extremely high stresses and tilts predicted for LW 51 & 52 are likely to lead to widespread bedrock fracturing above the longwall panels. The subsidence levels predicted for this mine layout are actually the highest that OEH has previously reviewed and have major implications for public safety, public access and the conservation values of Sugarloaf SCA.

## Impacts

The following potential impacts are specifically identified in the EA:

- surface cracks of between 110mm and 250mm in areas of moderately undulating terrain (slopes <18°)
- cracks up to 833mm wide near ridge crests (slopes >26.5°)
- vertical block movements are possible (i.e. landslip/slide)
- cracks of 50mm to 1400mm on slope crests
- localised sub-surface fracturing and flow re-routing in watercourses
- increased erosion and sedimentation in watercourses
- en-masse slip of hills or ridges on weakened bedding partings (if cracking is not 'repaired')
- local instability and erosion on steep slopes due to shear scarps and down slope cracking
- rock fall and rock rollout
- connective fracturing from 65m to 116m (called A-zone fracturing in the EA)
- constrained fracturing for a further 12m to 44m (called B-zone fracturing in the EA)
- surface fracturing of 10m to 20m.

The EA itself identifies a very high level of subsidence damage to the surface and sub-surface features within Sugarloaf SCA.

## Consequences

Experience with earlier longwalls at West Wallsend Colliery clearly demonstrates the damage that such mining will cause. Early longwalls at West Wallsend Colliery fractured and drained areas of Diega Creek. Large areas of the SCA are currently either fenced off or closed entirely to public access. In addition, 24 hour security guards currently prevent access to some areas of Sugarloaf SCA above the mine due to concerns about public safety. Instead of reducing the potential for such impacts in the current proposal for LW 51 & 52, the mine is likely to increase their effects due to the 12% increase in the width of LW52.

Widespread fracturing is predicted for this mine plan and it is notable that only a fraction of the existing fracture networks have been remediated over completed West Wallsend longwalls. In addition, there are likely to be many fractures in the bedrock that have not been identified. A recent OEH site inspection (3 February 2014) identified numerous fractures and holes on steep slopes that had not been remediated and no clear risk management plan for selection of fractures for remediation. There was also no clear evidence that cement grouting would actually prevent a landslip in the future due to the existence of fractures upslope of the remediation areas. The long-term effectiveness of this remediation is therefore questionable.

Many cliff/steep slope features have also not been assessed because of the arbitrary 20m length definition identified earlier. There is a clear risk of landslip in the current proposal with vertical block movements (VBM) identified as a potential result of the proposed mining. In assessments for earlier longwalls and for Longwalls 42 & 43, Ditton Geotechnical Services (DgS) Pty Ltd has previously suggested that:

*"VBM have been observed to occur in four of the ten ridge spurs mined to date and DgS have predicted a 40% chance of VBMs occurring in locations with similar geology*

*Hence, it is considered that if they occur, large block slides would probably have tension crack depths ranging from about 7 m to 34 m*

*In the longer term the tension cracks and shears associated with the VBM have the potential to become transient water filled 'tension cracks' on the upslope side of a sliding block failure."*

If the probability of a vertical block movement (VBM) of 40% is used to estimate risk in the current proposal, then binomial probability theory suggests that a landslip event would potentially be predicted to be in the 'possible' to 'likely' category (see Table 7 in DgS 2013). DgS suggests that this can be reduced if remediation is applied, however, given the uncertainty in remediation effectiveness OEH requests that it be reduced/eliminated altogether through modification of the mine plan where it occurs under steep slopes at risk of VBM.

### Connective Fracturing

In earlier comments on the West Wallsend mine OEH has previously advised:

*"OEH still has concerns about the impact of potential surface and/or connective cracking from mine subsidence on local surface and ground water resources that support the Endangered Ecological Community (EEC) along Diega Creek."*

While the proposed LW 51 & 52 are outside of the Diega Creek catchment they are located in the Ryhope and Palmers Creek catchments which also have areas of alluvial aquifers which have previously been identified as important groundwater resources for the Newcastle/Lake Macquarie Area (Forster et al. 2004). Mining predictions suggest that connective fracturing (A-zone) is likely to be in the range of 65m to 116m, there is a constrained fracturing zone (B-zone) of 12m to 44m and a surface fracturing zone of 10m to 20m. If there is any interaction of the fractured, constrained and surface zones then it is clear that surface to seam fracturing is a very real possibility for the proposed layout. If this occurs aquifers (such as the soil/rock aquifer identified by Aurecon) is likely to drain down the fracture network and potentially emerge in a lower aquifer or into the mine itself. OEH notes that there is no proposed monitoring of any aquifer or the extent of connective fracturing for the proposed longwalls.

It is noted that under the current conditions of consent for West Wallsend mine there is to be no connective fracturing between the surface and the mine for Diega, Cockle and Bangalow Creeks. No such protection currently exists for Palmers Creek and Ryhope Creek even though the potential influence of such mining on the alluvial aquifers of these creeks is clear. Due to the magnitude of existing and predicted fracturing it is highly likely that the groundwater flow paths will be altered by mining, potentially affecting baseflows and aquifer recharge characteristics. If there is surface to seam connective fracturing then water which previously replenished the alluvial aquifers is likely to drain into the mine. The company has informed OEH there is no data available on the connection of the groundwater alluvium in Ryhope Creek with other aquifers or stream flow within affected catchments. OEH believes it is the proponents' responsibility to undertake the research required to support major decisions on mining that will impact on Sugarloaf SCA and its catchments. The EA is considered deficient because of this lack of knowledge (or any monitoring to fill such a knowledge gap) and the lack of assessment of interconnection between sub-surface aquifers (i.e. soil/rock interface aquifer), alluvial aquifers and surface stream flow. The proposal is also considered to be deficient in regards to groundwater monitoring and assessment. Without adequate fracture connectivity

monitoring and aquifer monitoring over the longwalls there is no capacity for the measuring of compliance with existing conditions of consent.

## Conclusion

The proposal for longwalls 51 & 52 are likely to result in a high level of damage and has not sought to reduce impacts on the basis of previous experience of impacts on Sugarloaf SCA. This could be achieved through narrowing pillars and widening panels (approaches adopted in other parts of the mine), but instead the current proposal increases the width of longwall 52 by 12% over existing longwall panel widths. Any trade-offs between extraction of coal and public safety, public access and the conservation values of Sugarloaf SCA need to be explicit. The social and environmental consequences of this damage to the SCA are considered to potentially be understated in the EA and there is a lack of appropriate monitoring of groundwater aquifer levels or connective fracturing above the proposed longwalls. In addition, the public safety, public access and conservation values of Sugarloaf SCA have not received any appropriate valuation for the proposal and are not included in any part of the cost-benefit analysis for the proposal.

## References

Dilton Geotechnical Services 2013. West Wallsend Colliery. Subsidence Predictions and General Impact Assessment of the proposed Southern Domain Longwalls 51 and 52, West Wallsend Colliery. DGS Report No. WWD-012/16. 15 December 2013.

Forster I., Beikoff, S. and Amidy, P. 2004. Hydrogeological impact of shallow longwall mining at West Wallsend Colliery. Mine Subsidence Technological Society. Sixth Triennial Conference on Mine Subsidence, Maitland, 31st October to 2nd November 2004.

## OEH ESTATE

OEH's National Parks and Wildlife Service (Hunter Area) have reviewed the EA with respect to impacts of the proposed 'Mining of Longwalls 51 & 52' on OEH conservation estate, namely Sugarloaf SCA. They have noted the following concerns:

### **Executive Summary Table 1 (Page ii) – No mention of impact on SCA and park users**

The Executive Summary (Pages, i, and iii) indicates the EA "provides a detailed assessment of the potential environmental and social impacts associated with the Project...". However, little detail has been provided on the impact of the project on the recreational users of Sugarloaf SCA. In fact, no analysis has been presented regarding the potential effect of mining impacts such as subsidence, surface cracking and cliff instability on the recreational opportunities for park users. (Section 6.7.5 – Socio-economics page 71). The effect upon routine National Parks and Wildlife reserve management operations such as fire fighting may be significant due to increased safety risks. Recent rock fall events and surface cracking and slumping associated with previous and current mining operations, indicate there is the potential for more areas to be made 'exclusion zones' and no information has been presented that analyses the effect on park users such as mountain bike riders, orienteering clubs, commercial operators and casual park users.

The Stakeholder Consultation (Community Consultation page 26) indicates community consultation was restricted to the community surrounding West Wallsend Colliery and adjoining landowners. No evidence has been presented that consultation with any park users, such as mountain bikers, orienteers and casual users has occurred. Broader Consultation beyond the local area should occur, as typically park users can travel long distances to utilise SCA's.

### **Depth of cover – The potential for connective cracking at 80m**

The EA (pages 33-41, and Appendix 3) indicates that connective cracking at cover depths of 80m is "unlikely" if the mining height is reduced to 3.6m in LW51. However, the data presented does not appear to support this conclusion. Appendix 3, page 60, indicates the minimum A-Zone fracture heights above LW51 (at mining height of 3.6m) is 55-66m, while the B-Zone thickness values range between 21-24m and the D-Zone surface cracking depths are estimated to range between 10-12m. These data indicate a likely

potential for connective cracking. Even the U95%CL graph presented in Appendix 3, Figure 26b indicates the height of the continuous cracking lies very close to the 12m below surface line which is the estimated distance of surface cracking. This regression equation within the U95%CL graphs (Appendix 3, 26a & 26B) is dependent upon the three measured variables, all of which have been taken at cover depths between approximately 97m to 155m depth of cover so the cover depth estimations at 80m and 90m are extrapolations of the data and hence the predictions are less reliable in this section of the curve.

Further details should be provided to justify that connective cracking should not occur as a result of longwall mining as detailed in the EA.

### **Surface crack remediation (Page 15) – No details**

The EA indicates surface cracks will be remediated according to existing WWC Subsidence Crack Remediation Procedures. However, the treatment of the existing procedures has come into question, and the existing Public Safety Management Plan for LW41 has been determined as inadequate by DRE and OEH. Oceanic Coal has yet to provide an updated public safety governance process for OEH to review.

The EA also indicates (p. 45) that “OCAL does not envisage that large scale remediation works will be required to be undertaken within the Project Area”, however, the Subsidence Predictions Report (Appendix 3, pages iv and vi) indicates it is possible that cracking up to 1400mm wide on the ridges could occur and cracks of up to 833mm wide are predicted near ridge crests. Oceanic Coal have also recently supplied a “Risk Assessment of Subsidence Cracks Less than 100 mm in Width, Within Remote Areas and Access by OEH Personnel and Bushwalkers” (Douglas Partners) which indicates all cracks greater than 100mm should be filled to mitigate against potential risk to bushwalkers and NPWS park workers. Given the magnitude of the surface cracking predictions, it is difficult to understand how large-scale remediation could not occur.

### **Public amenity – No mention of public safety and temporary closure of reserve sections**

The EA indicates approximately 0.01% of the total Sugarloaf SCA area will be undermined by the longwall extraction of the project and when the ‘Potential Crack Development Zone’ of 26m outside of the of the limits of the panel limits (Appendix 3, p. vii) is taken into account, the potential impact area within Sugarloaf SCA is approximately 43 hectares. The EA indicates this area is likely to be closed from public access for approximately six months as a result of the operation. However, reserve closures due to land slips and remediation activities from existing operations are taken into account, a much greater area of the reserve is being excluded from public access.

The EA also indicates that 8.3 hectares (19.4%) of the ‘Potential Crack Development Zone’, has steep slopes (18-30 degrees) and the slopes are predicted to increase by four degrees on the western side of LW51 and four degrees on the eastern side of LW52. The EA indicates en-mass slip of hills or ridges is considered unlikely, provided the cracking is repaired with crushed rock or environmentally approved cementitious grout. However, OEH are still concerned regarding the potential risk to public safety in the longer term on these steep slopes particularly because the procedure for crack repairs is still being developed, and the utilisation of crushed rock is not being considered for remediation at the present time.

### **THREATENED SPECIES**

OEH has undertaken a review of Appendix 5 of EA. The EA indicates that the following threatened species (as listed under the *Threatened Species Conservation Act 1995*) were identified within the ‘Project Area (LW51 and LW52)’: *Grevillea parviflora* subsp. *parviflora*, *Tetraptheca juncea*, Eastern Bent-wing Bat, Eastern Free-tail Bat, Greater Broad-nosed Bat, Grey-headed Flying-fox, Large-eared Pied Bat, Little Bent-wing Bat and Little Lorikeet. No State listed threatened populations or ecological communities were identified within the Project Area.

OEH notes the following concerns:

## Adequacy of flora and fauna surveys

In general, OEH is unsure whether or not the baseline flora and fauna survey components undertaken for the proposal are adequate, and whether or not they have been conducted in accordance with OEH guidelines (DEC 2004 and DECC 2009a). OEH acknowledges that the proposal does not involve the direct clearing / removal of native vegetation or habitat, however, potential effects associated with any subsidence (as stated above) may adversely impact threatened species habitat. As such, OEH is of the opinion that appropriate above surface surveying, in accordance with accepted guidelines, must be undertaken to determine all likely fauna and flora, notably threatened that occurs within the Project Area to which may be impacted upon. In light of this, OEH notes that both the flora and fauna surveying (based on Figures 3.1 and 3.2) appears to concentrate on central and southern portions of the Project Area, with no survey sites (including quadrats and random meanders) in the northern or north-eastern parts of the study area. OEH considers this a potential major failing of the EA in that this covers most of LW52, and therefore it appears that very little baseline surveying was undertaken in this area to ascertain the biological values of this area.

As such OEH is concerned that the apparent lack of surveying in these areas has ramifications on how the EA has fully assessed impacts on all potential threatened species, given that additional species and/or habitat may occur in these areas that remain undetected, and additionally how reliable is the mapping of the vegetation communities, which have been used as a surrogate for determining habitat, given the lack of floristic quadrats or random meanders to verify mapping. OEH recommends that appropriate surveying in accordance with accepted guidelines be undertaken in these areas, unless other data sources are provided. OEH notes that Section 3.4 (Summary and Adequacy of Flora Field Survey Effort) of Appendix 5 states that the mapping conducted by Bell and Driscoll (2009) of Sugarloaf SCA was used given its accuracy, but fails indicate if survey sites undertaken for this mapping fall within the Project Area (i.e. quadrats) and whether they were used to verify the vegetation communities.

Furthermore, given that the EA and Appendices (notably Appendix 5) appear not to state that areal extent of the Project Area, this further adds to OEH inability to determine whether or not the baseline surveys are adequate. OEH estimates that LW51 and LW52 panels cover an above surface area of approximately 34 hectares. With respect to general baseline and targeted surveys, OEH must be satisfied that the following issues have been adequately addressed with respect to survey effort:

- a suitable survey design was adopted
- appropriate survey methodologies were utilised (as specified in the guidelines) and applied at a scale commensurate to detect the target species or guild
- targeted surveys were adequate and the subject species chosen were appropriate
- all surveys were conducted at the appropriate time with respect to seasonality and weather conditions (e.g. flower phenology)
- all surveys / methodologies adequately cover the study area, including all vegetation / habitat types and indirect impact areas.

OEH acknowledges that the EA states that the surveying was based on stratification and that appropriate survey methods, as per OEH guidelines where generally implemented (e.g. Section 3.5), however OEH is unable to assess the veracity of this. To ensure that the flora and fauna surveys are compliant with OEH guidelines, OEH believes that further clarification of the sampling stratification units is required. Specifically, how they were determined and how the survey design was applied to these units would lend greater support to the baseline survey effort conducted to date. This will also help alleviate any future concerns regarding lack of sampling effort for some units. OEH acknowledges that Section 3.2.2 of Appendix 5 provides some detail on the stratification process, but this does indicate how the surveying achieves the appropriate survey effort per stratification unit and incorporation of all applicable survey methods. As such, OEH suggests that the proponent provide a table that details sampling methods and survey effort per stratification unit, including size of each unit, timing of surveys (not just the survey, but each specific component), prevailing climatic conditions at time of survey, and how they meet the minimum requirements in OEH survey guidelines (DEC, 2004). A map overlaying the survey details over the stratification units / vegetation types must also be included in any future versions of the EA. This will also help determine the

adequacy with respect to sampling techniques, methodologies utilised, and whether the minimum effort has been applied. A separate map for both flora and fauna is recommended. Additionally, all threatened species should be schematically shown. If such details reveal that certain aspects of the surveying (including coverage [i.e. north/north-eastern corner of Project Area]) have not been adequately addressed, then further sampling may be required and/or justification as to why the current surveys are adequate for the proposal.

### Threatened species assessment

OEH has not completed a detailed review of the threatened species assessment section of the EA, as there are concerns about some of the surveying. Once this information is provided in future correspondence, OEH will be in a position to provide an adequate appraisal of any threatened species section, including the assessment of any compensatory conservation measures. Nevertheless, OEH acknowledges that the EA has provided a detailed assessment on threatened species and their habitat. OEH concurs that in general the proposal is unlikely to have a significant impact on these given that the proposal is devoid of any direct clearing or removal of native vegetation and habitat. However, adverse indirect impacts associated with subsidence (as stated above), namely surface cracking, landslip / slide, rock fall and rock rollout, localised damage to watercourses, local instability and erosion on steep slopes. These impacts have the ability to adversely affect threatened species habitat, such as loss or damage to rocky outcrops / cliffs, loss of hollow-bearing, roosting and forage habitat via tree fall, and damage to riparian areas. Section 5.1 of Appendix 5 details potential subsidence impacts, noting that (i) vertical and horizontal displacement is likely, predominantly over the centre of the longwall panels in a range of 2.41 to 2.61 metres, (ii) subsidence cracking will occur, and (iii) tree fall is expected on ground affected by subsidence or on steep slopes in high tilt and tension zones (i.e. on the eastern and western edges). OEH is of the opinion that these impacts could adversely affect threatened species and their habitat within the Project Area.

In light of the potential impacts that subsidence may cause to threatened species habitat, OEH is of the opinion that if the impacts are significant the proponent should be responsible in providing appropriate compensatory habitat. Although the EA indicates that it will monitor subsidence and implement remediation measures where required, it fails to address what measures will be implemented if remediation fails or it is unable to replace certain habitat features with adequate surrogate options (e.g. fallen large mature trees which are hollow-bearing). As such OEH is of the opinion that appropriate offset measures should be applied to areas and/or habitat features that cannot be remediated or replaced in a reasonable timeframe to prevent long-term loss (e.g. fallen hollow-bearing trees which cannot be replaced in the short-term by replanting). In these instances an offset package should:

a. Meet either:

- (i) the requirements of the BioBanking Assessment Methodology (DECC 2008) utilising the 'BioBanking Assessment Methodology and Credit Calculator Operational Manual' (DECC 2009b) [www.environment.nsw.gov.au/resources/biobanking/09181biopsman.pdf](http://www.environment.nsw.gov.au/resources/biobanking/09181biopsman.pdf), the Assessors' guide to using the BioBanking Credit Calculator v.2 (OEH 2012) [www.environment.nsw.gov.au/resources/biobanking/120182AssessGdeBBCC.pdf](http://www.environment.nsw.gov.au/resources/biobanking/120182AssessGdeBBCC.pdf), and OEH's 2011 policy, 'NSW OEH Interim policy on assessing and offsetting biodiversity impacts of Part 3A, State Significant Development (SSD) and State Significant Infrastructure (SSI) projects' (OEH 2011);

OR

- (ii) OEH's NSW offset principles for major projects (state significant development and state significant infrastructure), which are available at: [www.environment.nsw.gov.au/biocertification/offsets.htm](http://www.environment.nsw.gov.au/biocertification/offsets.htm)

b. Identify the conservation mechanisms to be used to ensure the long term protection and management of the offset sites.

c. Include an appropriate Management Plan (such as vegetation or habitat) that has been developed as a key amelioration measure to ensure any proposed compensatory offsets, retained habitat enhancement features within the development footprint and/or impact mitigation measures (including proposed rehabilitation and/or monitoring programs) are appropriately managed and funded.

**Note:** The BioBanking Assessment Methodology can be used either to obtain a BioBanking statement, or to assess impacts of a proposal and to determine required offsets without obtaining a statement. In the latter instances, if the required credits are not available for offsetting, appropriate alternative options may be developed in consultation with the OEH and in accordance with OEH policy.

With respect to managing and conserving any proposed offset in perpetuity, OEH considers and supports the following as appropriate conservation mechanisms:

- the establishment of BioBanking sites with BioBanking agreements under the Threatened Species Conservation Act 1995
- the dedication of land under the NPW Act
- a Conservation Agreement under the NPW Act
- a Trust Agreement under the Nature Conservation Trust Act 2001
- a Planning Agreement under s93F of the EP&A Act.

**Note:**

- OEH no longer supports public positive covenant under s88E of the *Conveyancing Act 1919* as an appropriate conservation mechanism to secure and/or manage biodiversity offsets.
- OEH has previously supported the use of conservation agreements under the NPW Act as one of the acceptable offsetting mechanisms. However, it should be noted that OEH's position on the use of conservation agreements for development applications is currently under review and this approach may no longer be an acceptable conservation outcome for this project. The Conservation Partners Program section of OEH administer the use of conservation agreements and have recently advised that for commercial developments, the preferred method of securing an offset is under the BioBanking provisions of the *Threatened Species Conservation Act 1995* (i.e. a registered BioBanking Agreement site). OEH recommends that the proponent either consider the use of a BioBanking Agreement or contact OEH's Conservation Partners Program group to determine whether or not the use of a conservation agreement for the proposed biodiversity offset area would be supported.

OEH also notes that the proposed longwall panels will partly undermine (south-western part of the Project Area) a proposed Lake Macquarie Council (Council) biodiversity offset located at Ryhope, to offset the impact on *Grevillea parviflora* subsp. *parviflora* from a development site in the Council's local government area. As such OEH recommend that the proponent consult with Council to ensure that this offset site is not adversely impacted upon by the proposal.

**References**

Bell, S.A.J. and Driscoll, C. (2009) *Vegetation and Floristics of Sugarloaf State Conservation Area, Lake Macquarie, New South Wales*. Unpublished report and map for the Department of Environment, Climate Change and Water.

DEC (2004) *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities*. Draft, Department of Environment and Conservation, Hurstville; available at: [www.environment.nsw.gov.au/resources/nature/TBSAGuidelinesDraft.pdf](http://www.environment.nsw.gov.au/resources/nature/TBSAGuidelinesDraft.pdf).

DECC (2008) *BioBanking Assessment Methodology*. Department of Environment and Climate Change NSW, detailed at: [www.environment.nsw.gov.au/biobanking/index.htm](http://www.environment.nsw.gov.au/biobanking/index.htm).

DECC (2009a) *Threatened Species Survey and Assessment Guidelines: Field Survey Methods for Fauna – Amphibians*. April 2009. Department of Environment and Climate Change (NSW), Goulburn Street, Sydney.

DECC (2009b) *BioBanking Assessment Methodology and Credit Calculator Operational Manual*. DECC 2009/181, Department of Environment and Climate Change (NSW), Goulburn Street, Sydney, available at: [www.environment.nsw.gov.au/resources/biobanking/09181bioopsman.pdf](http://www.environment.nsw.gov.au/resources/biobanking/09181bioopsman.pdf).

OEH (2011) *NSW OEH interim policy on assessing and offsetting biodiversity impacts of Part 3A, State significant development (SSD) and State significant infrastructure (SSI) projects*. NSW Office of Environment and Heritage, Sydney, June 2011.

OEH (2012) *Assessors' Guide To Using The BioBanking Credit Calculator V2*. Office of Environment and Heritage NSW, Sydney; April 2012, available at: [www.environment.nsw.gov.au/resources/biobanking/120182AssessGdeBBCC.pdf](http://www.environment.nsw.gov.au/resources/biobanking/120182AssessGdeBBCC.pdf).

## ABORIGINAL CULTURAL HERITAGE ASSESSMENT

OEH has reviewed 'Appendix 6 - Aboriginal Archaeological and Cultural Heritage Assessment' (dated December 2013) prepared by Umwelt on behalf of Oceanic Coal Australia Pty Limited. OEH notes the following concerns:

- In Section 6.4, OEH notes the discussion in Section 6.4 (pages 47 & 48) regarding the consultation process. OEH understands the value in long-term consultative processes both for effective management of Aboriginal cultural heritage issues and relationship building. OEH also notes the inclusion of the recently registered Native Title claimant group. Although OEH confirms the validity of these approaches, OEH would like to highlight the fact that Aboriginal representative groups are highly dynamic and some facility should be provided on a regular basis for newly identified Aboriginal stakeholders to be included in projects. Some form of public notification should be undertaken at the beginning of the consultation phase of any major modification to an existing project. This will ensure that any Aboriginal knowledge not already engaged in the process have an equitable opportunity to become part of any existing consultation process or working group.
- With regard to the proposed various alternative management processes for the scarred tree (Palmers Creek Scarred Tree 1) OEH concurs with the first two management options (a. & b.) outlined on Page 53 of the EA. OEH also concurs that, in the event irreversible harm occurs to the tree as a result of the proposed works, salvage of the scarred section is appropriate, however, OEH considers more detailed recording should take place. OEH requests that prior to the commencement of works the following recording measures are completed for the tree:
  - complete photographic recording of the entire tree from four cardinal directions
  - contextual photographic showing surrounding landscape including the tree itself
  - detailed sketch of the tree and scar including dimensions
  - close up photographs of the scar itself.

The recording of this information will ensure that in the event that unlikely but irreversible damage is done to the tree, and management option 'c'. is necessary, a full and clear recording of the tree, the cultural feature and the landscape context of the tree will be available to be incorporated in to any display that is made of the salvaged section.

- OEH notes that in a number of submissions from Registered Aboriginal Parties some issues were raised (email from Awabakal Local Aboriginal Land Council (ALALC) 12 September 2013 and letter from Awabakal Descendants Traditional Owners Aboriginal Corporation (ADTOAC) 29 August 2013). OEH cannot see any evidence that the concerns raised in this correspondence have been addressed. In particular:
  - the letter from ADTOAC notes the proximity of 38-4-1279 to predicted subsidence impacts and the conflict with the predicted low chance of impact to this site
  - a number of incidences of alleged failure to comply with the approved Aboriginal Cultural Heritage Management Plan are noted in the ALALC email of 12 September 2013.
- OEH considers that the EA should include responses from the consultant to the concerns raised in order to inform the determination process.
- OEH supports the claim by ALALC that foreign material (i.e. crushed basalt) should not be utilised for road works or associated activities where those activities impact on known Aboriginal sites. OEH concurs with ALALC that, at those locations, crushed rock or gravel sourced from locally available raw materials should be used.

## **FLOODPLAIN MANAGEMENT**

OEH's Water Floodplains and Coast – Hunter Unit have reviewed the EA with respect to any impacts on floodplains and note the following:

- The project subject to approval does not propose to change the surface infrastructure that supports the longwall mining operations.
- There are potential subsidence impacts on the first and second order tributaries of Palmers Creek. The impacts reported in EA are deemed minor and do not affect any existing development. It should be noted that only the results are included in the EA, the parameters used in the modelling are not included, so a thorough review of the surface impacts cannot be undertaken. OEH request that such data should be included to enable a comprehensive review.
- OEH has no comments with respect to surface flooding issues for the proposed underground longwall mine at West Wallsend Colliery.

**OEH – MARCH 2014**

