



Department of Primary Industries

OUT14/15747

Ms Margaret Kirton
Mining Projects
NSW Department of Planning and Environment
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SYDNEY NSW 2001

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10 JUN 2014

Dear Ms Kirton,

Angus Place coal mine extension (SSD 5602) Response to exhibition of Environmental Impact Statement

I refer to your email dated 11 April 2014 requesting advice from the Department of Primary Industries (DPI) in respect to the above matter.

Comment by NSW Office of Water

The NSW Office of Water has reviewed the EIS for the proposed Angus Place Extension Project and provides the following advice for consideration. Detailed comments on assessment against Aquifer Interference Policy and hydrogeological aspects are provided in Attachment A. NSW Office of Water Licence Requirements are provided in Attachment B.

Aquifer Interference

In general, the impact assessment on aquifers has been carried out to a high standard, including preparation of a large and complex groundwater model by CSIRO. The most sensitive receptors in the area are the protected Temperate Highland Peat Swamps on Sandstone, for which longwall mining has been declared a key threatening process under the *Threatened Species Conservation Act 1995*. A great deal of attention has been paid in the EIS to demonstrate that the proposed extensions will not significantly harm overlying swamps and no specific shortcomings have been found in this assessment.

The EIS predicts that the mine inflows into the disturbed areas above the Angus Place longwalls from the (Sydney Basin) Richmond Groundwater Source will reach a maximum of 9,690 ML/year by 2033, and the current licensed entitlement is only 2,523 units where currently 1 unit equals 1 ML. The proponent is aware of the deficit but has not addressed this issue in the EIS, and it is recommended that the proponent meet with the Office of Water at the earliest possible opportunity.

Options that the proponent should consider in relation to the Angus Place proposal include (but are not limited to):

- Modification of the mine plan to reduce the volume of groundwater take
- Integrated water management with Springvale and any other relevant mines and share access licences.
- Demonstrate the feasibility of and a strategy for the acquisition of sufficient entitlement from the Richmond Groundwater Source.

The expansion of the groundwater monitoring network, and the associated monitoring schedules to be updated in the Water Management Plan (WMP), should be carried out in consultation with the Office of Water.

The modelling used to support the EIS should be regularly updated to enable confirmation that the predicted mine water takes are not exceeding, and are not likely to exceed, the predictions made in the EIS. These periodic reviews should be incorporated within the overall annual environmental monitoring plan and the results made available to NOW in a suitable electronic format.

Water licensing

Surface Water

As identified in the Office of Water's earlier advice on the draft EIS, licensing the take of surface water requires further assessment. Assessment should consider:

- Capture of surface run off from dams
- Indirect losses or reduction in surface water flows due to impacts from underground mining
- Reduction of storages of swamps due to impacts from underground mining.

The EIS does not include details of any unregulated category licences held by the proponent or any discussion on how they are planning to comply with the WMA requirements. The proponent must identify licensable take and hold unregulated category access licences from the relevant water source of the *Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011*.

General

Any ongoing take of water post-closure of the mine will need to be accounted for by holding or maintaining licences.

The proponent must maintain records of annual water take from water sources impacted by the development and reported in the annual environmental report.

Management plans & monitoring

The proposed surface water and groundwater management plans should identify critical impact thresholds in groundwater levels and quality and surface water flows and water quality to enable adaptive response and management of operations within the proposed Surface and Groundwater Management Plan. A mechanism for identifying and reporting variations from predictions should be clearly stated within the Plan.

Note: To improve the coverage of baseline characterisation data, it is recommended data loggers be installed in key monitoring bores to enable continuous monitoring of groundwater levels in response to rainfall events.

For further information please contact Hemantha Desilva, Senior Water Regulation Officer (Newcastle Office) on 4904 2525 or at hemantha.desilva@water.nsw.gov.au

Comment by Crown Lands

A review by Crown Lands of the Project Application form has noted that Section 7, Landowner's consent, has not been completed. As Crown land Lot 7318 DP 1149348, Lot 7300 DP 1139065, Lot 7001 DP 1055079, Lot 7006 DP 1055080, Lots 7002, 7003 DP 1026540, Lot 60 DP 751636, Lot 62 DP 751636, Lot 77 DP 751636, Lot 78 DP 751636, Lot 79 DP 751636, Lot 423 DP 751651, Lots 431, 432 DP 821852, Lot 133 DP 751651 together with a number of Crown Roads are located within the Project Boundary Application Area, the Applicant would need to seek consent from Crown Lands.

Crown Lands recognise that no direct impacts would occur on Crown land by the proposed continuation of mining. A review of the *Environmental Impact Statement* has indicated that all relevant Crown land issues have been adequately described and no further comment is provided.

For further information please contact Rebecca Johnson, Co-ordinator Client Services, (Newcastle Office) on 4920 5040 or at rebecca.johnson@lands.nsw.gov.au.

Yours sincerely



Kristian Holz
Director, Policy Coordination, Corporate Planning & Governance

Attachment A

Angus Place coal mine extension (SSD 5602) Response to exhibition of EIS - NSW Office of Water Assessment against the NSW Aquifer Interference Policy

Table 1. Does the activity require detailed assessment under the AIP?

Consideration	Response
1 Is the activity defined as an aquifer interference activity?	Yes
2 Is the activity a defined minimal impact aquifer interference activity according to section 3.3 of the AIP?	No

1. Accounting for, or preventing, the take of water

Has the proponent:

AIP Requirement	Proponent response	NSW Office of Water comment
1 Described the water source (s) the activity will take water from?	<p>The proposed extension to the Angus Place mine straddles the boundary of the Sydney Basin Coxs River Groundwater Source and the Sydney Basin Richmond Groundwater Source (see Figure attached), which both lie within the Greater Metropolitan Region WSP.</p> <p>The main aquifer sources can be geologically subdivided into the Lithgow Coal Seam (part of the Illawarra Coal Measures) and the overlying Narrabeen-Wianamatta Group, both being fractured rock sources rated as "less productive" and both included in the modelling assessment.</p>	Agree with description
2 Predicted the total amount of water that will be taken from each connected groundwater or surface water source on an annual basis as a result of the activity?	<p>Numerical modelling by CSIRO was used to predict annual mine inflows (take) until cessation of mining in 2037 and an approximation was then made of the proportions of this annual take between the two WSP sources (Table 8.2 of EIA). Table 8.2 provides groundwater take estimates for each mining year from each of the two groundwater sources. The maximum predicted take is 1,813 ML/y from the Sydney Basin Coxs River Groundwater Source in 2013. The maximum predicted take from the Sydney Basin Richmond River Groundwater Source is 9,690 ML/y in 2033.</p>	<p>Adequate predictions.</p> <p>The relative volumes of take from the two groundwater sources on an annual basis has been estimated using a finite-element "COSFLOW" groundwater model prepared by CSIRO.</p> <p>The modelling was reviewed and considered to be appropriate for use in assessing aquifer behaviour.</p> <p>The specific impacts of the</p>

	AIP Requirement	Proponent response	NSW Office of Water comment
		<p>In Section 8.2 of the GIA, the proponent acknowledges that under the WSP for the Greater Metropolitan Region Unregulated River Water Sources, any take of surface water / baseflow as a result of depressurisation of deeper aquifers will require a surface water licence. Predicted volumes involved in this take are provided in Table 8.5 of the GIA.</p> <p>The modelling predicts that, as none of the externally owned wells where predicted drawdowns of greater than 2 m are known to be water supply wells, no significant impacts are predicted.</p> <p>A range of baseflow impacts on surface waters and swamps are predicted and tabulated in the GIA Table 7.2.</p>	<p>permanent reductions (and in some cases increases) in baseflow to local swamps and surface streams are not discussed in the hydrogeological impacts report. These impacts are not discussed at all in the Surface Water Impact Study but are included in the ecological assessments.</p> <p>It is not clear from the EIA/GIA documentation that the losses of surface baseflow have been included in the total estimate of groundwater take. This should be clarified during licensing.</p> <p>With the exception of the above point, predictions appear reasonable and predicted impacts are generally within Level 1 of the Minimal Impact Considerations.</p>
3	<p>Predicted the total amount of water that will be taken from each connected groundwater or surface water source after the closure of the activity?</p>	<p>CSIRO includes predictions of post-mining recovery in their model report, provided in Section 5.1.1 (Water balance during the recovery period) of Appendix K to the GIA.</p> <p>The predictions suggest that the upper "perched" aquifer will recover to around 97% of its original levels within 50 years after mine closure. Levels within the mined Lithgow seam stabilise only, gradually reducing a large unsaturated zone beneath the Mt York Claystone until the "deep" aquifer stabilises at around 96% of its pre-mining water content after around 350 years of recovery (note that the model considered mining from both Angus Place and Springvale in this prediction).</p>	<p>Adequate predictions</p> <p>In the model, the proponent has reasonably assumed that the two groundwater sources from which dewatering will occur are the only "connected" groundwater source.</p>
4	<p>Made these predictions in accordance with Section 3.2.3 of the AIP? (refer to Table 2, below)</p> <p>a) Establish baseline conditions:</p> <p>b) Strategy or commitment to</p>	<p>a) A wide variety of groundwater monitoring infrastructure has been operated at the existing mine, including a number of wireline piezos (level measurements but no sampling possible) in deep and shallow</p>	<p>Adequate predictions</p> <p>a) Further detail will need to be included in upgraded Water Management Plan – seek NOW and EPA concurrence on adequacy of the proposed monitoring system. Minimum 2 year</p>

	AIP Requirement	Proponent response	NSW Office of Water comment						
	<p>comply with water access rules:</p> <p>c) Predictions of AI impacts to specified receptors – water levels/pressures at nearest supply; GDEs, surface waters:</p> <p>d) Predicts whether hydraulic connections between aquifers will be caused or enhanced:</p> <p>e) Comments on potential for river bank or high wall instability:</p> <p>f) Details of the method for disposing of extracted (CSG) waters:</p>	<p>aquifers. Statement that there are standpipe piezos screened in “perched aquifer” ridgeline locations – data provided in presentation but not in EIA. Commitment in EIA and GIA for expansion of groundwater monitoring system but no numbers or details provided.</p> <p>b) GIA Table 8.4 reproduces the relevant WSP rules for the affected water sources.</p> <p>c) Groundwater modelling has been used to make detailed predictions of impacts to nominated receptors in GIA Section 7.</p> <p>d) Detailed projections have been made by CSIRO of the heights of the various subsidence impact zones above the longwall panels.</p> <p>e) No river bank or high wall instability is predicted.</p> <p>f) Not relevant</p>	<p>baseline data to be applied for all GDE sites within range of longwall panels.</p> <p>b) Satisfactory however suggest commitment to comply with WSP in Statement of Commitments.</p> <p>c) Good clear expression of predicted impacts.</p> <p>d) Satisfactory</p> <p>e) Satisfactory</p> <p>f) Satisfactory</p>						
5	Described how and in what proportions this take will be assigned to the affected aquifers and connected surface water sources?	See response to Question 2 above.	Satisfactory						
6	Described how any licence exemptions might apply?	No licence exemptions expected to apply	Satisfactory						
7	Described the characteristics of the water requirements?	See response to Question 3 above.	Satisfactory						
8	Determined if there are sufficient water entitlements and water allocations that are able to be obtained for the activity?	<p>GIA Section 8 provides details of predicted take and current licence allocations. It is helpful at this point to include the summary statistics for both Angus Place and Springvale mines:</p> <p>Angus Place Colliery Projections (in ML/year):</p> <table border="1" data-bbox="555 1877 1042 2074"> <thead> <tr> <th></th> <th>Coxs River GW Source</th> <th>Richmond GW Source</th> </tr> </thead> <tbody> <tr> <td>Current licensed</td> <td>2,701</td> <td>2,523</td> </tr> </tbody> </table>		Coxs River GW Source	Richmond GW Source	Current licensed	2,701	2,523	<p>Not adequately addressed</p> <p>As acknowledged in both the EIS and GIA for Angus Place, there is a projected deficit of over 7 GL/year at the time of projected peak groundwater take in Centennial’s currently licensed allocation within the Richmond Groundwater Source at Angus Place. Other than acknowledging that “additional groundwater licenses will be required in the</p>
	Coxs River GW Source	Richmond GW Source							
Current licensed	2,701	2,523							

AIP Requirement	Proponent response	NSW Office of Water comment			
	<p>allocation</p> <hr/> <table data-bbox="571 344 1031 439"> <tr> <td>Maximum annual GW take</td> <td>1,813</td> <td>9,690</td> </tr> </table> <hr/>	Maximum annual GW take	1,813	9,690	<p>Richmond River water source", the proponents have not demonstrated the ability to obtain the necessary licences in order to account for the take of water from any relevant water source" as required in Section 3.2.1(a) of the AI Policy.</p> <p>According to the 2013 report card for Richmond Groundwater Sources, there was assessed to be 3.6 GL/y unassigned and potentially available to be purchased if made available through future Controlled Allocation Orders and Centennial are able to purchase all allocation, leaving a difference of around 3.6 GL/year which would presumably need to be bought in the market by the maximum projected year of 2033 (or be reinjected if Office of Water is able to credit such water volumes). This residual deficit could be reduced to 2.7 GL by transferring excess licence allocation from the Springvale licences within the same source, which is allowable under WSP rules.</p> <p>Using the projected takes provided in GIA Table 8.2, the current licence allocation in the Richmond GW source for Angus Place would be exceeded by 2016, even if they transferred their excess licence capacity from Springvale.</p> <p>Without demonstration of their ability to source licence allocation for the Richmond Groundwater Source during and after mining, the availability of groundwater licences poses a serious constraint to the project as proposed.</p>
Maximum annual GW take	1,813	9,690			

AIP Requirement		Proponent response	NSW Office of Water comment
9	Considered the rules of the relevant water sharing plan and if it can meet these rules?	Considered in GIA Section 7.3.12.	Satisfactory
10	Determined how it will obtain the required water?	See response to Question 8 above.	See response to Question 8 above.
11	Considered the effect that activation of existing entitlement may have on future available water determinations?	Some consideration of future entitlements and allocations is provided in the "Western Coalfield Water Balance", provided as an appendix to the Surface Water Impact Assessment report.	See response to Question 8 above.
12	Considered actions required both during and post-closure to minimize the risk of inflows to a mine void as a result of flooding?	No methods known to prevent or reduce inflows into goaf; dewatering will be irreversible	Satisfactory
13	Developed a strategy to account for any water taken beyond the life of the operation of the project?	No methods known to prevent or reduce inflows into goaf	Satisfactory
	<i>Will uncertainty in the predicted inflows have a significant impact on the environment or other authorized water users? Items 14-16 must be addressed if so.</i>	Uncertainty in modelling is discussed fairly briefly in Section 6.7 of the GIA and in more detail in its Appendix K, with conclusions that predicted impacts are not highly sensitive to the likely range of key variables, meaning that confidence in impact predictions to environment and other water users is fairly high.	Satisfactory

2. Determining water predictions in accordance with Section 3.2.3 (complete one row only – consider both during and following completion of activity)

AIP Requirement		Proponent response	NSW Office of Water comment
1	For the Gateway process: Is the estimate based on a simple modelling platform, using suitable baseline data, that is fit-for-purpose?	N/A	N/A
2	For SSD or mining or CSG production, is the estimate	Yes, complex modelling completed by	Adequately addressed

	<p>based on a complex modelling platform that is:</p> <p>Calibrated against suitable baseline data, and in the case of a <i>reliable water source</i>, over at least two years?</p> <p>Consistent with the Australian Modelling Guidelines?</p> <p>Independently reviewed, robust and reliable, and deemed fit-for-purpose?</p>	CSIRO.	
3	<p>In all other processes, estimated based on a desk-top analysis that is:</p> <p>Developed using the available baseline data that has been collected at an appropriate frequency and scale; and</p> <p>Fit-for-purpose?</p>	N/A	N/A

3. Minimal Impact Considerations for Aquifer Interference activities

The predicted impacts from the project have been assessed in the GIA, with the results presented in its Appendix O. The impacts have been assessed as Level 1 Impacts, which are defined as acceptable by the NSW Aquifer Interference Policy. Based on the information provided in the EIA, the Office of Water concurs with this assessment.

End Attachment A

ATTACHMENT B

Angus Place coal mine extension (SSD 5602) Response to exhibition of EIS - NSW Office of Water Licence Requirements

Water Act 1912

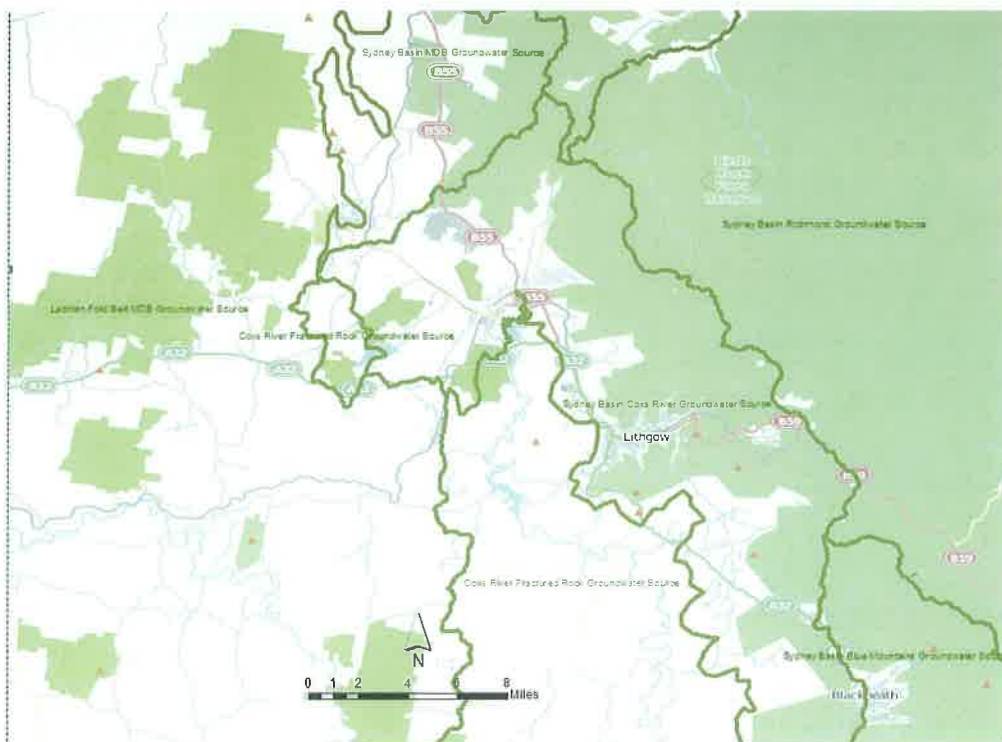
- Monitoring bores require licensing under Part 5 of the *Water Act 1912* unless the bores meet the criteria for exempt monitoring bores as defined in the *Water Management (General) Regulation 2011*.
- Flood control works require licensing under Part 8 of the *Water Act 1912*.

Application forms for licences and approvals are available on the internet at www.water.nsw.gov.au/Water-licensing/Applications-and-fees/Applications/default.aspx

Water Management Act 2000

- An access licence nominated to a water supply work is required to take from any water source managed under the *Water Management Act 2000* (WMA).
- Exemptions for access licences are provided in Clause 18 and the Schedule 5 of the *Water Management (General) Regulation 2011*.
www.legislation.nsw.gov.au/maintop/view/inforce/subordleg+469+2011+cd+0+N
- Section 54 of the WMA provides details on harvestable rights.
- Requirements for access licence dealings are provided in the following documents:
 - Section 71 of WMA
 - Access Licence Dealing Principles
www.legislation.nsw.gov.au/maintop/view/inforce/subordleg+433+2004+cd+0+N
 - Access licence dealing rules of the relevant water sharing plan

Application forms for access licence and access licence dealings are available on the intranet at www.water.nsw.gov.au/Water-licensing/Applications-and-fees/Applications/default.aspx



Groundwater Sources



Surface Water Sources

End Attachment B