Mid-Western Regional Council

Office of the General Manager

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BR: A0420213

7 March 2013

Director General
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Dear Mr Haddad

COBBORA COAL PROJECT

Thank you for the opportunity to provide further input into the Cobbora Coal Project. Please note that the water matters have been referred to Council's consultant for consideration and will be forwarded to you under separate cover.

Road Transport

Changes in the road infrastructure proposed by the PPR include:

- Castlereagh Highway – The rail spur is proposed to pass through a cutting under the Castlereagh Highway with roadwork required when constructing the cutting. A temporary roadwork speed limit (80km/h) for about 1 km for six months was proposed in the original EA. It is now proposed to construct a permanent re-alignment to the west of the highway to allow continued travel at 100 km/h.
- Spring Ridge Road – The main EA proposed closing the northern end of Spring Ridge Road towards the end of construction and replacing it with the Spring Ridge Road diversion. Under this scheme traffic using this road would rejoin the existing Spring Ridge Road immediately south of the mining area. The original proposal also proposed diverting the eastern end of Dapper Road after about Year 8 with a gravel road of a similar standard to the existing road. It is now proposed to join the Spring Ridge Road and Dapper Road diversions during the construction phase to provide an entirely sealed diversion road to allow a speed limited of 100km/h. The diversion will be sealed, including shoulders, and will not have any causeways as now occurs at Laheys Creek. This longer diversion will generally follow route as the Spring Ridge Road diversion between the Golden Highway and Tallawonga Road. It will then continue over mine owned land before joining an upgraded section of Sandy Creek Road. On reaching the western end of Dapper Road, it will generally follow the route of the previously proposed Dapper Road diversion to join Spring Ridge Road south of mining area B. The amended Spring Ridge diversion will be 19 km long.
- Mine access road – the mine road will be about 4 km long from the Spring Ridge Road diversion to the entrance of the mine. Access to the mine will be from the existing Spring Ridge Road before the Spring Ridge diversion is completed.
- Intersection of Castlereagh Highway and Laheys Creek Road will be upgraded to a left turn deceleration lane and basic right turn treatment.

Council requires all roads affected by the project to be upgraded to Austroads standards as per the table below:

	Spring Ridge Road including the diversion and Laheys Creek Road
Traffic Lanes	2 x 3.5 metres
Shoulder (sealed)	2 x 0.5 metres
Shoulder (unsealed)	2 x 1.0 metres
TOTAL CARRIAGEWAY	10.0 metres

Council notes that Cobbora Holding has made a commitment to level crossing upgrades and the upgrade of Spring Ridge Road, Laheys Creek Road in correspondence dated 5 March 2013 (attached) and requests that this commitment forms part of any approval issued. The Council will also require that the road re-alignment of Spring Ridge Road will need to work through the road closure procedure as stipulated in the Local Government Act. The Council will also require that because the roads will become part of Council infrastructure network that all road works is undertaken by Council.

The PPR maintains that car pooling and busing of workers will be successful at Cobbora and that the necessary resources will committed to set up and support a workplace travel plan that will achieve a 50 to 60 % car driver ratio for the shift and mine management work force.

The PPR notes Council concerns regarding the underestimation of traffic volumes heading to Gulgong. It refers to the sensitivity analysis undertaken in the original EA and where the traffic estimate was increase from 10 % to 30 % which indentified additional road upgrades to MWRC roads including widening Spring Ridge Road and Laheys Creek Road route to a minimum of 6 metre sealed width south of the mining area. It notes that the proponent is currently working with Council to achieve upgrades to this road alignment. In addition it is noted that additional road shoulder widening in the section of the Castlereagh Highway that were identified in the sensitivity analysis had already been undertaken in 2010.

In relation to contribution towards maintenance of Spring Ridge Road south of the mining area the PPR states:

Project- related truck traffic on Spring Ridge Road south of the mining area will be restricted by specifying alternate truck access routes in Project supply contracts during both construction and operations. For this reason, the requested future road maintenance funding for Spring Ridge Road, south of the MIA and CHPP worksites, Warrumbungle and MWR LGAs, is not justified for mine-related traffic.

Provided that truck / delivery vehicle is legal then there is an entitlement for that vehicle to use any part of a road network that does not carry a weight restriction, eg a bridge loading. The Laheys Creek / Spring Ridge Road route is not encumbered by weight restrictions and therefore truck traffic would be able to legally use this route. The proposal to control truck movement by the imposition of condition of contracts for supplies is unrealistic and avoidance of the issue. Any suggestion that the mine will police and impose these condition over the full life of the mine is unrealistic and truck traffic is not going to go out of their way to make deliveries when there is perfectly reasonable alternate route that is shorter and therefore this shorter route needs to be upgraded to accommodate the anticipated increase in traffic volumes and loads. This needs to be acknowledged and appropriate mitigation /

remediation measures proposed to upgrade the affected roads, including the unsealed sections of the road network as increased volumes have significant impacts on the deterioration rates of such roads which requires maintenance grading to be carried more frequently. Council maintains that the impact on the road network from Gulgong / Mudgee is still inadequate, and does not take into account the activity of mining related industries that are already located in this region that are likely to service the Cobbora mine.

In addition, the PPR states that the proponent will not undertake the necessary dilapidation report on Spring Ridge Road as again truck traffic will be prohibited from using this route. The PPR report goes on to state:

Since the exhibition of the EA, the future assessed need for the upgrade to the existing width and condition of the Spring Ridge Road route within the MWR LGA was reviewed. CHC is working with the MWRC to establish improvements for the route in combination with a sped limit reduction to improve road safety, as described in Table 11.1. CHC is continuing discussion with the MWRC about the necessary additional road works and their specification in a VPA. Reduction in speed limits in not an option to Council unless required for safety reasons at corners or intersections.

The PPR maintains that accommodation and suppliers will be based in towns north and west of the mine, namely Dubbo, Wellington and Dunedoo. MWRC maintains that this is an unrealistic expectation having regard to the nature of the existing workforce and suppliers within Mudgee and Gulgong. In addition, Mid-Western questions the capability for Dunedoo and Wellington to cater for a substantial level of growth. Mid-Western is planning to accommodate growth and has taken a realistic approach to catering for this growth including upgrade of infrastructure. Council considers that it naive to believe that growth can be directed by the failure of the project to adequately upgrade a road route.

Gulgong level crossing – MWRC submission demanded that the Station Street crossing be upgraded to include half- boom barriers. In response to the submission an additional ARTC assessment has identified half-boom barriers as an appropriate additional safety measure at the Station Street crossing and the upgrade of the crossing will now be included as part of the EA. Council supports this upgrade. The other level crossing treatment indicated in the table above was also identified as part of the reviewed assessment.

Council does opposes the closure of the Tallawang Road crossing but requires realignment to meet safety standards.

In terms of emergency vehicle movements around Gulgong being adversely impacted the PPR states:

There are three level crossings in Gulgong (Station Street, Tallawang Street and Black Lead Road). As these are each at least 500m apart, it is unlikely all three level crossings will be blocked by a moving train simultaneously for more than 30 seconds unless the train is stationary. Emergency services vehicles will have an alternative level crossing location to use at Gulgong when one of the three level crossings is blocked. The previous train operating practices at Gulgong, which were caused by previous signalling arrangement, where a train could be parked for up to 15 minutes across two or more level crossings at Gulgong, no longer apply. Instead the Centralised Train Control (CTC), which operates on the Ulan line further east, will be extended to Tallawang.

Council agrees with this approach.

Council requests that it be required that any road closure follow due process including consultation with adjoining owners and public notification.

Noise and Vibration

In its submission MWRC raised concerns that the Industrial Noise Policy was flawed and did not adequately reflect the true nature of existing background noise.

The PPR response to this issue was:

It is acknowledged that in some rural communities ambient background levels are lower than the 30 dB9A) L90 threshold recommended by the INP. The INP also notes the possibility of lower background levels but nominates 30 dB(A) as the appropriate representative background level for impact assessment purposes.

Long-term ambient noise levels for the Cobbora area were monitored in August 2009 (ERM 2009). The range of rating background noise levels (RBLs) for 10 location in the Cobbora area are: 32 dB(A), 28 dB(A) and 28 dB(A) for day, evening and night respectively. These levels are conservative, as winter is typically the quietest season of the year due to inactivity if insects and other rural sources.

The background noise levels adopted are the lowest recommended of 30 dB9A) in accordance with the INP. This is the base value t which 5 dB(A) is added, resulting in the criteria.

It should be noted that residences in the area predicted to experience between 35 dB(A) and 40 dB(A) fall within the noise management zone whilst only those residences in areas where noise is predicted above 40 dB(A) are within the acquisition zone. Past experience of MWRC is that greater numbers of acquisition occur than that predicted either due to inaccurate modelling or an inability or unwillingness to manage noise correctly. It is considered that the DoPI should impose clear criteria and requirements making it easy for residents to have their properties acquired if impacted by unacceptable noise and vibration.

Economic

In response to concerns raised by Council regarding the predicted domicile for the workforce and the inadequacies of the EA to recognise that it is likely that a large proportion of direct and indirect employment will domicile in the Mid-Western Region the PPR cites the various training schemes that will be used to promote employment from areas outside of Mid-Western. The fundamental flaw in this approach is that the consent runs with the land and whilst the current proponent may have all good intention should the project be sold then Council believes that it will be economic consideration that will determine the location of the workforce and that skilled labour force currently residing in the Mid-Western area will be very attractive to any operator. Mid-Western is not unwilling to host this growth but simply request that realistic estimates be adopted to allow for adequate planning and that funding be available for the adequate provision of infrastructure.

Voluntary Planning Agreements

The main thrust of Council's submission in relation to VPA was that the EA failed to truly indentify the potential impacts on the Mid-Western Region and therefore Council would be disadvantaged in VPA negotiations. It is interesting to note that Dubbo Council have a similar view claiming that more than 60% of the work force will reside in the Dubbo LGA whilst Warrumbungle and Wellington Council claim 25% of the $40 million available under the VPA based on potential infrastructure impacts.

The PPR states in response:

The more equitable and realistic approach is to base VPAs on actual population growth and distribution arising from the Project. As such CHC will monitor and report to the councils on worker intake, source (local or new arrivals, number of dependent and location of residences. Contributions will then be based on a monetary sum for each worker, according to where they live at each census point.

It is considered that this is a reasonable approach. VPA details will be subject to further reports to Council once the details have been negotiated. It is considered that existing residents should only be considered in the methodology where they are sourced from an existing full time position as it is likely that these people will need to be replaced and result in further immigration to the area. In addition apart from the contribution per head, contribution to the maintenance of Spring Ridge Road needs to be incorporated into the VPA as outlined earlier in this report.

Yours Sincerely

per Brad Cam

Warwick L Bennett
GENERAL MANAGER
MID-WESTERN REGIONAL COUNCIL

Attachment:
Copy of Letter from Cobbora Holding dated 5 March 2013
Independent Water Assessment – Gilbert and Sutherland

Cobbora Holding
Company Pty Limited

5 March 2013

Our Ref: M01-CHI-2013-LT-EXE-0007

Mr. W Bennett
General Manager
Mid-Western Regional Council
PO Box 156
MUDGEE NSW 2850

Email: warick.bennett@midwestern.nsw.gov.au

Dear Warwick

RE: Voluntary Planning Agreement and Road Works

I refer to my letter dated 26 February 2013 and attached proposed planning agreement between Cobbora Holding Company Pty Ltd and Council.

The purpose of this letter is to confirm that in addition to the proposed planning agreement CHC is committed to fund the following rail and road works within Mid-Western Regional Council area.

Upgrade Works on the Gulgong Level Crossings assessed in the ALCAM Assessment Report

The scope of the works and funding for the Level Crossing Phase 1 work has been agreed between CHC and ARTC.

ARTC has now engaged local rail contractor, UPS Rail, to undertake a more detailed scope and produce a robust working design for those upgrades.

It is anticipated that all upgrade design work (Phase 1) will be completed within the next 6 to 8 weeks.

Further work will be dependent on CHC and ARTC reaching an agreement on funding.

Upgrade of the Intersection of Laheys Creek Road and the Castlereagh Highway

- Design and construction to be undertaken by Council.

First Floor, 133-135 King Street
Newcastle NSW 2300
Ph: 02 4924 3600 | Fax: 02 4924 3699
www.cobbora.com ABN 28 147 813 125

Upgrade of Spring Ridge Road/Laheys Creek Road

- Upgrade and speed limit reduction on Spring Ridge Road/Laheys Creek Road. This covers 15km of road from the LGA boundary with Warrumbungle to the Castlereagh Highway;
- Design work by CHC in conjunction with Council; and
- Construction by Council.

Yours faithfully

R OUTRIDGE
COMPANY SECRETARY

+GILBERT SUTHERLAND

11 March 2013

The General Manager – Mid-Western Regional Council

86 Market Street

Mudgee NSW 2850

Attention: Catherine Van Laeren – Group Manager

Dear Catherine,

Re: Cobbora Coal Preferred Project Report - Review of surface and groundwater assessment and management proposals

Mid-Western Regional Council commissioned Gilbert & Sutherland Pty Ltd (G&S) to conduct a review of the surface and groundwater related components of the Cobbora Coal Preferred Project Report of February 2013. This report follows on from our preliminary review undertaken in June 2012, and includes a detailed assessment of the groundwater and surface water aspects of the PPR, with consideration to the concerns raised in our earlier review.

Background

In December 2012, the NSW Planning Assessment Commission (PAC) held a public hearing in Dunedoo to aid their review of the merits of the Cobbora Coal Project. On 21 of December 2012, the Director General required that a preferred project report (PPR) under S75H(6) of the EP&A Act be prepared. This was to meet the following requirements:

- Outline the proposed changes to the project that have resulted from numerous stakeholder submissions.
- Provided revised maps for all aspects of the project, including sections of the proposed final landform.
- Include a detailed assessment of the impacts of the proposed changes and updated assessments of the original assessments in the environmental assessment so it is clear what the impacts of the revised project are predicted to be, and these impacts are incorporated into a single document.

- Include a revised statement of commitments for the project.
- Include an updated justification for the revised project.

This report is divided into two broad sections – surface water and groundwater – and assesses the adequacy of these components of the PPR in identifying and assessing the likely impacts of the project.

The key findings of or surface and groundwater reviews are presented below with a more detailed discussion of the findings provided in Sections 1 and 2.

Key outcomes

A comparison of the outcomes of CCP's water balance model in comparison to the modelling undertaken by G&S highlights the following key considerations:

- There is a high degree of uncertainty in the current mine water balance modelling underpinning the development of the mine water management system;
- Consequently, there remains significant uncertainty in the reported levels of impact associated with the mine water management system;
- There is an apparent underestimation of volumes requiring management throughout the mine life based on the adopted assumptions;
- The WMS outcomes are highly sensitive to selected hydrological and tailings water assumptions. Adopted runoff values appear to underestimate the true volumes of runoff resulting in increased volumes of water that will require management over the life of the project;
- There is a potentially significant underestimation (or worse, no recognition at all) of the level of risk associated with periods of 'in-pit flooding' and the potentially significant magnitude water requiring management over what is likely to be extended periods of time;
- As a consequence of these underestimations, there is a high risk of interruption to mining operation due to excessive accumulation of water within the active mining pits;
- Final void water balance modelling appears reasonable and long-term outcomes are not significantly sensitive to selected hydrological assumptions;
- No meaningful post-mine water management strategy proposed. CCP's failure to provide plausible management or mitigation solutions for their end-of-mine proposal is unacceptable and does not provide sufficient information to allow decision makers to reach an informed conclusion as to the long term impact of this mining proposal.

With respect to the groundwater assessment;

- The hydrogeological model is comprehensive and technically sound but the reporting in the PPR fails to translate the technical results into solid groundwater management practices.
- There is a lack of explanation provided in the PPR for various changes to the model that have occurred between the previous EA's and the current PPR. Some modifications to the input data have resulted in changed modelling outcomes but there is little discussion provided as to the importance/impacts of these changes.
- The overly complex nature of the groundwater assessment and general lack of continuity throughout the report makes it difficult to gain an understanding of exactly what the groundwater impacts from the project will be. The presentation of the work will make it difficult for decision makers to reach a conclusion over whether the groundwater impacts posed by the project are acceptable.
- The groundwater management plan/approach presents more as a framework for groundwater management and lacks the necessary detail to provide confidence that the groundwater and associated groundwater dependent ecosystems will be monitored and managed appropriately.
- The relationship between mine water balance, mine water demand (including groundwater take), water licences/allocations (including licensed groundwater take) is confusing and needs to be presented in a clear and transparent way to allow proper assessment of the adequacy of mine water supplies and management.

We trust this is acceptable. Should you have any queries, please do not hesitate to call.

Yours sincerely,

Owen Droop
Director/Principal Water Resource Engineer
BE(Civ)(Hons) BNatRes RPEQ MIEAust

Erin Holton
Director/Senior Environmental Scientist & Engineer
BEnvSc MEng(Env)

Author(s) Owen Droop, Erin Holton and Eric Rooke
Our Reference 10963_EAA_ELH3F.docx
Your Reference
By ☐ Courier ☑ Email ☐ Facsimile ☐ Post
Enclosures

Section 1 - Key surface water related issues

There are several key elements to developing a well-founded project water management plan:

1. Knowledge of the physical constraints of the project site including hydrology, topography, climate, geology and geochemistry.
2. A clear understanding of the likely water inflow sources and magnitudes including rainfall-runoff and groundwater.
3. A set of project specific water management options available to the project over its life, for example storage and/or forms of use or discharge.
4. A clear plan of the changing mine layout over the life of the project.

It is also important to develop this knowledge and understanding of the site in the order listed above as –

(i) A full and comprehensive understanding of site hydrology leads to well supported knowledge of likely inflow volumes and sources,

(ii) the volumes and types of inflows likely to be experienced throughout the project will shape and determine the type and range of management options required to ensure adequate control of the project water balance,

(iii)the combined understanding of the inflows and management options (ie. the water balance), and the sensitivity of the balance to any hydrological assumptions, will shape and impact upon the physical mine planning.

Our review of the water resource assessment report, and in particular the life-of-mine water balance upon which the project's water management plan is based, highlights a number of potential flaws in the approach and/or hydrological assumptions, which underpin the water balance. The implications of this is the potentially significant underestimation of likely volumes of water that would require management throughout the life of the project.

The main issues relating to surface water assessment raised in our preliminary review in June 2012, can be summarised as follows;

- concerns with CCP's mine water balance modelling approach;
- an inadequate level of consideration given to downstream water users, including sensitive environmental receptors;
- downstream impact assessment was based on average rainfall and flow data,

which does not provide an accurate picture of downstream conditions;

- lack of clear and demonstrably effective (e.g. case studies showing successful implementation elsewhere) contingency and mitigation measures for the potential impacts and hazards/risks associated with the proposed project – for example: reliance on future planning to deal with the highly saline water predicted to accumulate within post-operation landforms.

Having now undertaken a comprehensive review of key components of the PPR documents, in our view the responses provided and the approach adopted in the PPR do not adequately address the majority of the issues raised in our preliminary review.

Mine water balance modelling forms the basis upon which impacts to surface water are defined. Without appropriate mine water balance modelling, any predictions as to the following aspects of impact assessment are meaningless:

- quality and quantity of water requiring management throughout the life of the project
- potential impacts on downstream water users
- potential impacts on downstream receiving environments
- mine water supply requirements for operational purposes.

As an illustration of these concerns, Table 1 below summarises the 'site water balance results' provided in the PPR documentation for the '10th percentile dry year' These are values taken directly from the PPR and represent all reported mine water inflow and outflow volumes (i.e. water that is unable to be discharged from the mine site and will therefore require onsite management) for the 111-year simulation of a series of static mine layout 'snapshots'.

Of particular note is the apparent imbalance of some 1,000 ML under Year 12, 16 and 20 mine layouts, that is, the water balance results provided in the PPR imply that under dry conditions the water management system (WMS) would receive some 1,000 ML more inflow to the storages than was used, evaporated or otherwise removed from the system in each of these years. Given that the corresponding graphed results show no ongoing buildup of mine water, these results imply a significant source of outflow from the site's water management system that has either not been reported in the PPR, or has been overlooked and will be affecting the mine water balance model without being accounted for.

Table 1 – Summary of PPR '*Table 6-1 Annual site water balance – 10th percentile dry year*'

	Year 1	Year 4	Year 12	Year 16	Year 20
Inflows					
WMS runoff - Mine water dams and Pits	195	506	862	725	722
Groundwater seepage into Pit	131	1,069	2,446	2,403	1,163
Imported river water	120	1,820	2,600	2,520	3,240
Sedimentation dam water reused on site	26	119	144	161	125
Outflows					
WMS evaporation (net of rainfall)	313	480	492	474	317
CHPP make-up demand	134	2,092	2,524	2,524	2,524
Haul road dust suppression	376	968	1,651	1,603	1,371
Mine infrastructure Area demand	9	140	150	150	150
Potable water demand	5	10	15	15	10
TOTAL INFLOW	**472**	**3,514**	**6,052**	**5,809**	**5,250**
TOTAL OUTFLOW	**837**	**3,690**	**4,832**	**4,766**	**4,372**
NET CHANGE IN MINE WATER BALANCE OVER SELECTED 12-MONTH PERIOD	**-365**	**-176**	**+1,220**	**+1,043**	**+878**

Similar imbalances are present in the reported water balance summary for both the median (1000 to 1400ML) and 90 percent wet years (1500 to 2100ML). It is possible that the information summarised in the PPR (Table 6-1, 6-2 and 6-3) does not include all WMS inflows and outflows and this may account for some of the discrepancies highlighted above, however the magnitude of the inconsistency between the tabulated net inflows, and mine water storage graphs that do not show a buildup of site mine water requires scrutiny and explanation.

To further explore the issues raised above, and illustrate the possible impact of the concerns highlighted above, G&S has undertaken comparative modelling as described below.

Comparative modelling assessment

In order to provide detailed illustration of our concerns regarding the modelling reported in the original EA and not modified following submissions, we have developed a mine water balance for the Cobbora Project using the same hydrological assumptions and climatic data as defined in the PPR surface water assessment. All available mine layout and catchment area data for the evolution of the mine over a projected 21 year mine-life has been incorporated into the G&S model, including storage characteristics and capacity data.

Whilst G&S have adopted the model input data as defined in the PPR, a more robust approach to water balance modelling has been adopted. The G&S model assesses the 'life-of-mine' water balance by applying the climatic data and mine layout details on a continually evolving basis – rather than the climatic and mine layout 'snapshot' approach adopted by CCP. The G&S approach provides a clear picture of the true range of conditions likely to be experienced onsite on a continuous basis over the 21 year life of mine.

For the sake of efficiency and brevity of reporting, we provide a summary of key assumptions and outcomes in this report. A detailed report providing a full description of the methodology, assumptions, input data and results can be provided if required.

We have undertaken three basic scenarios to illustrate (a) the potential mine water management conditions over the life of the mine in a direct and continuous manner, and (b) the sensitivity of modelled outcomes to key assumptions currently adopted in CCP's water balance model. The modelled scenarios are as follows;

- Scenario s102a – base case model adopting assumptions and data consistent with CCP's current water balance model
- Scenario s103a – hydrological sensitivity scenario (active pit and industrial area runoff characteristics)
- Scenario s104a – hydrological and tailings return sensitivity scenario (additional increase in tailings water decant)

The selection of parameters we have included in the sensitivity testing has been based on those of most significance to the outcomes of the site water balance i.e. those that are likely to have the most impact on how water will be managed onsite. Rainfall-runoff accounts for a large proportion of mine water inflows over the life of the project and as such relatively small adjustments to the runoff characteristics assumed by CCP can have significant implications for the mine water management system. While CCP's reported rainfall-runoff assumptions are not unreasonable, runoff from the active Pit and 'industrial'

areas appear to be potentially underestimated (i.e. producing less runoff than is likely to actually occur). G&S have undertaken sensitivity testing to assess the mine water management implications under more realistic assumptions.

The volume of tailings water cycling within the system on a continual basis is highly significant in the context of the available mine water storage, and represents some 2,800 ML pumped (including) tailings to the tailings storage facility (TSF) each year. The inclusion of tailings water within the water balance has seemingly been based on a simple assumption of 'percentage water decanted', with no actual assessment or modelling of the tailings water components of the site water balance. Rather than through rigorous assessment, the tailings characteristics have been based on the following general advice:

> *"Based on experience with similar out of pit tailings emplacements elsewhere, ATC Williams Pty. Limited has advised CHC that recoverable process water will be about 30% of the water contained in the tailings received. This includes an allowance for evaporative and seepage losses. ATC Williams Pty. Limited has advised CHC that for in-pit emplacements the more permeable walls and embankments are expected to result in higher seepage losses. Recoverable process water is estimated to be about 15% of the water contained in the tailings received.*

With the adoption of this overly simplified assumption to what is a highly significant component of the site water balance, the modelling provides no meaningful representation of the likely real-world tailings water management requirements or the consequent effect on the wider mine water management requirements. Considering that an assumed 30% return implies 70% entrained, evaporated or otherwise lost to the system, this represents some 2,500 ML of mine water which has been assumed to effectively disappear every year (or some 50,000 ML over the life of the project). Due to the magnitude of this component of the site water balance, relatively small changes in the actual percentage of decent/entrainment from those assumed could have significant effects on the volume of water requiring management and the behaviour of the MWS. The second of the sensitivity scenarios assessed includes a very basic change in the assumed decent rate to illustrate potential mine water management implications of this assumption.

Results

Results of the G&S modelling exercise indicate that even under base case assumptions (Scenario S102a), there is the potential for significant volumes of water to require storage/management within the mine pits over extended periods of the Project life, as shown in Figure 1. Results also show that the mine water management system is sensitive to the adopted runoff assumptions for the Pit and 'industrial' areas and changes in the amount of water returning from the Tailings Storage Facility.

Results from the base case scenario modelling indicate extended periods where volumes of greater than 2,000 ML are required to be stored within the pits occurring within some 50% of climatic sequences assessed. Similarly, results show required total pit storages of greater than 5000ML in some 15% of climatic sequences. Figure 1 shows an example of life of mine pit water storage behaviour for one such climatic sequence. Of particular importance is the extended and continuous period of more than 10 years with greater than 1500ML, and more than 5 years requiring management of 3000ML or more. Whilst the climatic conditions for this sequence are above average, they could not be considered 'extreme'.

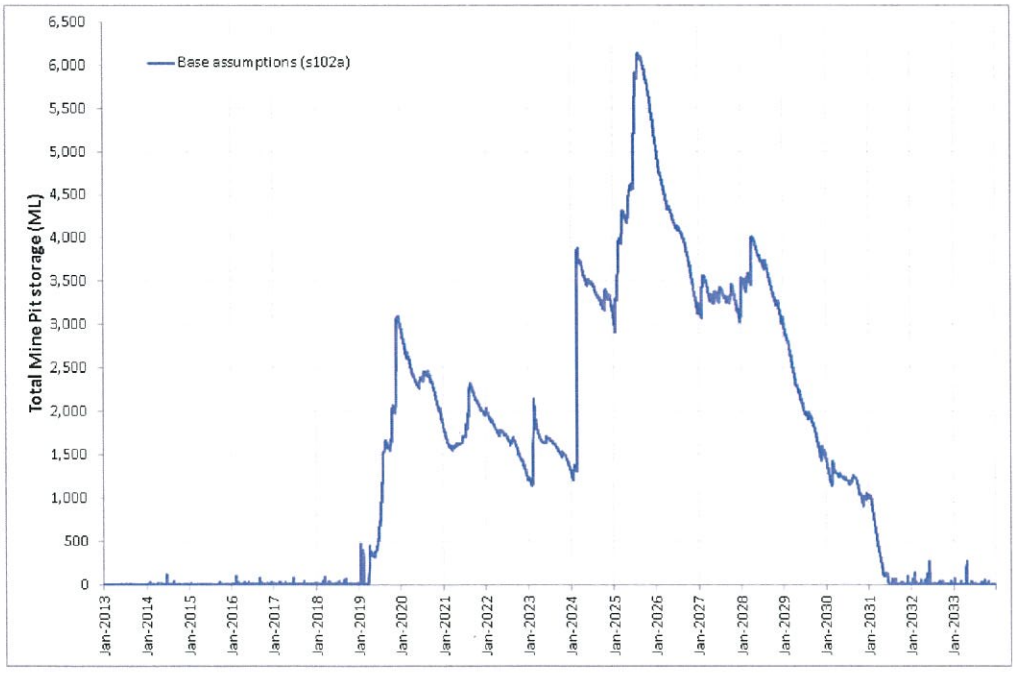

Figure 1: Simulated life-of-mine Pit water storage (1944-1964 climatic sequence)

In short, modelling shows the potential for significant interruption to mining activities due to water stored in Pits, which appears to have not been recognised or acknowledged in the mine water management plan. The storage of significant volumes within the pit is neither highly unlikely nor would it be infrequent as is implied by the PPR. Subsequently, it would appear that the mine water system is designed to operate under favourable (i.e. low to median rainfall) conditions only. The implications of this would be a high risk of significant and prolonged periods of interruptions to mining activities (of an already apparently economically constrained project) and/or a requirement for emergency discharge of stored mine water.

Further, the above results are based on a set of assumptions as adopted in the PPR. Sensitivity testing of a number of key assumptions indicates that the mine WMS is particularly sensitive to changes in the selected runoff characteristics for the active pit and industrial areas, as well as the simple decant rate assumption currently adopted. The degree of sensitivity is shown in Figures 2 – 4, illustrating simulated storage behavior under base case hydrological sensitivity and hydrological plus tailings sensitivity scenarios.

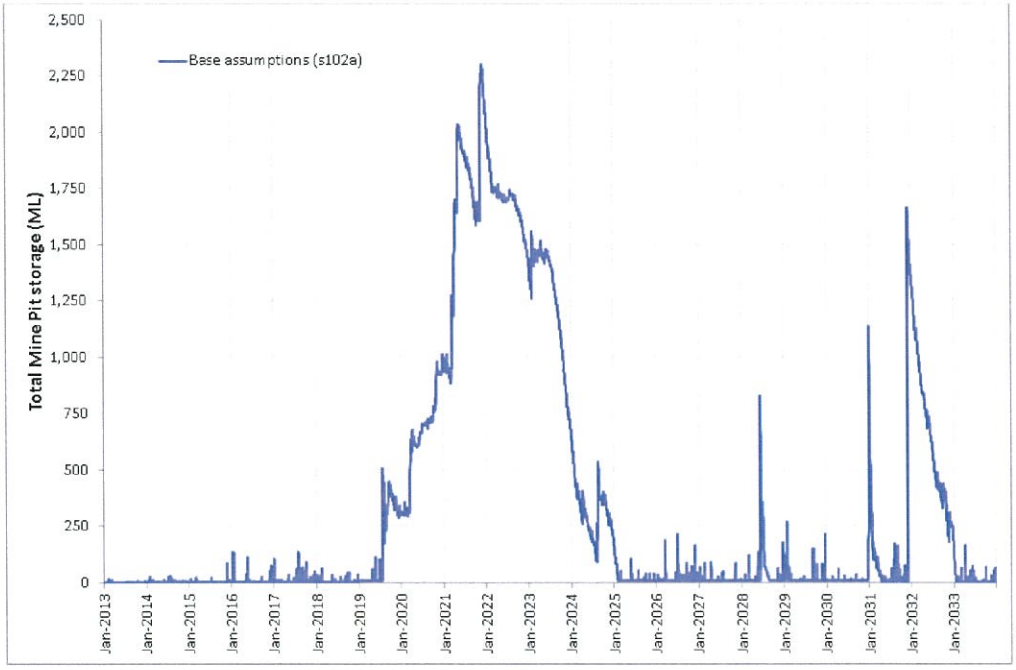

Figure 2: Base case simulated life-of-mine Pit water storage (1992-2012 climatic sequence)

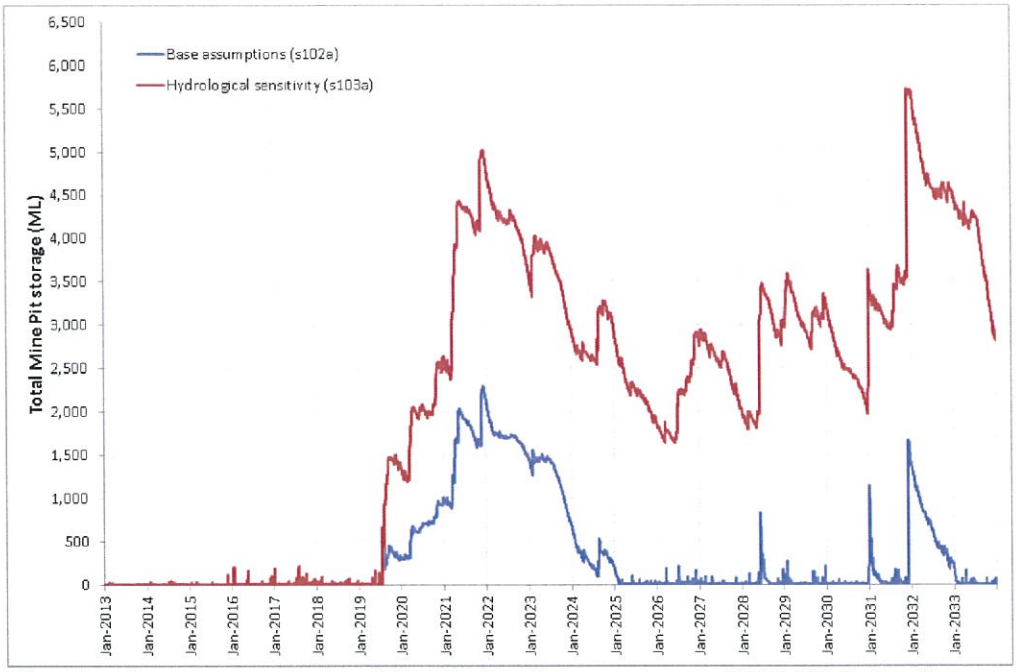

Figure 3: Comparative simulated life-of-mine Pit water storage (1992-2012 climatic sequence)

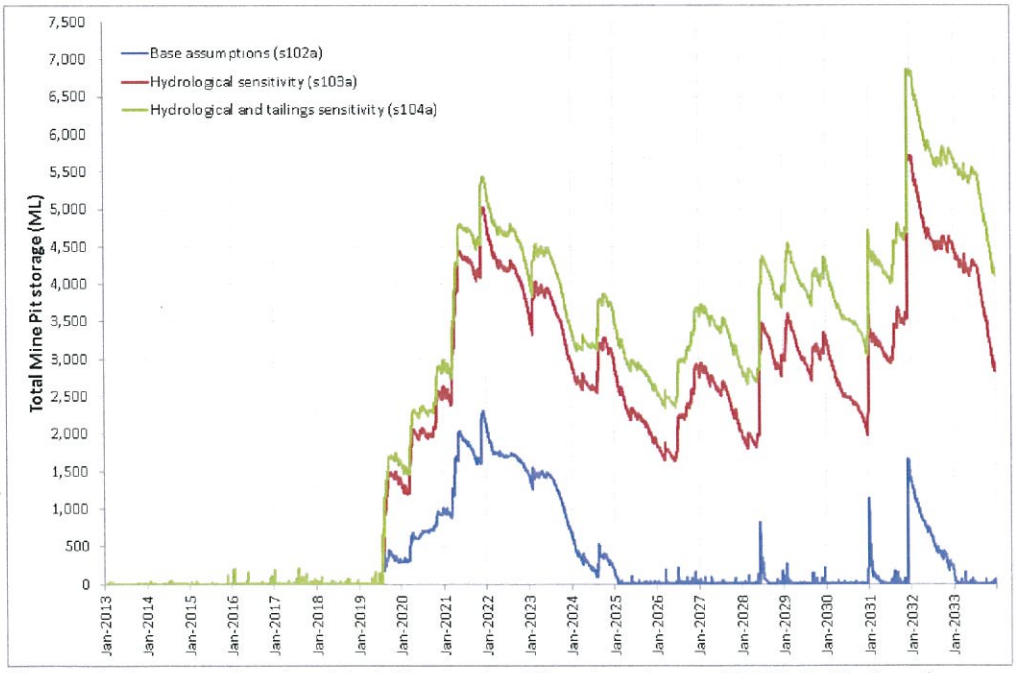

Figure 4: Comparative simulated life-of-mine Pit water storage (1992-2012 climatic sequence)

A point of note is that even under base case assumptions and what could be considered in the main a relatively dry 21 year period (Figure 2) there was still a continuous period of some 3 years were the volume of water requiring storage in the pits was between 1000ML and 2500ML.

Final void management

Our previously stated concerns regarding the formation of a hypersaline lake within the post-mining open voids remain unresolved. CCP has maintained their position that assessment of these issues will be postponed until after the project has been approved and will be undertaken as part of their future preparation of a mine closure plan:

> *"Water quality issues related to a confined stratified hypersaline lake have not been assessed at this stage because this would be undertaken as part of a detailed mine closure plan."*

With the underlying conclusion being that the open void is an outcome of an economically marginal project:

> *"An unavoidable impact will be the formation of an isolated saline lake that cannot be eliminated at an economically viable cost."*

As reported in our previous review, CHC readily acknowledges that the accumulation of large volumes of highly saline water is unacceptable and despite this acknowledgement, offers no plausible solutions or management strategies to prevent or at the very least mitigate the potentially significant and permanent impacts associated with this activity.

CCP's failure to provide plausible management or mitigation solutions for their end-of-mine proposal is unacceptable and does not provide sufficient information to allow decision makers to reach an informed conclusion as to the long term impact of this mining proposal.

Section 2 - Key groundwater related issues

The groundwater assessment presented in the PPR is a comprehensive document and is based on technically sound hydrogeological modelling. This latest round of assessment and reporting incorporates a number of changes since the September 2012 EA in response to various stakeholder submissions. However, there is a lack of explanation in the PPR regarding these changes, which in some instances have altered the scale of impacts likely to result from the project.

A key issue is the complex way in which the modelling has been presented and the general lack of continuity throughout the report. This makes it difficult to gain an understanding of exactly what the groundwater impacts from the project are likely to be. It is our view that the presentation of the work will make it difficult for decision makers to reach a conclusion over whether the groundwater impacts posed by the project are acceptable. The following sections highlight the key concerns with respect to the groundwater related aspects of the PPR.

Groundwater impact assessment

- Pertinent ANZECC/ARMCANZ, NWQMS guidelines and NSW State groundwater policies are listed in the PPR, as being relevant to the groundwater assessment. Our review of the report indicates that consideration of these guidelines is, in fact, limited throughout the assessment. The implications of these guidelines for the project and the project's ability to meet the policy's objectives are not assessed by the report. In its current form, the PPR groundwater assessment does not plainly identify how it meets the requirements of these guidelines.

- There is inadequate consideration in the PPR of the potential impacts of mine water demand on the Murray-Darling Basin (MDB) Porous Rocks Groundwater Source Water Sharing Plan (Gunnedah-Oxley Basin) and in some instances the data presented in the report is contradictory. For example, the executive summary of the PPR states that mine inflow rates are predicted to peak at approximately 2,800ML/a, then states that net usage is predicted to average 2,100ML/a, reaching a maximum 2,202 ML/a. To meet this demand, the PPR claims that 1,924 unit shares are required (this includes a 25% carryover as specified in the Gunnedah Oxley Basin MDB Groundwater Source rules). However, a unit share only equates to a maximum of 1ML/a and may equate to less than a ML depending on governing of the Water Sharing Plan. It would appear that the number of shares acquired is inadequate to meet peak mine inflow rates and may even fall short of the average required rate in the years where the per unit share is reduced.

- Groundwater and surface water linkages/interactions are not adequately addressed in the model, insofar as the modelling includes no consideration of flood induced recharge events, despite recognition of flood-induced infiltration being an important mechanism in recharging the alluvial aquifers.

- Under the revised DGRs the EPBC Act (1999) has been enforced on the project; as such the project is deemed to be a controlled action (under Section 75 of the Act). The controlled action is likely to have an impact under critically endangered woodland and grassland and (assumed) associated fauna (as elucidated in the Attachment A). As such impacts must be assessed under section 75F(3) of the NSW EP&A Act. The potential for altered hydrology/hydrogeology to impact the woodland and grassland survival has not been addressed.

- The description of existing alluvial groundwater quality within the PPR indicates that the quality of these waters is yet to be fully understood. The PPR indicates the existence of legacy land use issues that have the potential to impact on the background groundwater quality. Mining impacts cannot be properly assessed without a clear understanding of the baseline quality of the alluvial groundwater.

- The PPR provides an inadequate and incomplete discussion on potential impacts to environmental flows and groundwater dependent ecosystems, including Naran Springs, from both a water quantity and quality perspective. Under the Murray Darling Basin Porous Rocks Groundwater Source Water Sharing Plan, Naran Springs is identified as a high-priority groundwater dependent ecosystem (GDE). Whilst the PPR suggests that these springs may be hydraulically isolated from the main aquifers and are beyond the extent of predicted aquifer depressurisation, this needs to be demonstrated. The current level of reporting does not provide adequate consideration of this high-priority GDE and as such cannot convincingly dismiss the potential for the mining proposal to impact upon it.

Justification for modelling/conclusions

- The PPR dismisses any potential hydraulic interaction with the adjacent Lachlan Fold Belt (MDB Groundwater Source WSP for the MDB Fractured Rock Groundwater Sources), yet provides no justification for this omission. To properly discount any interaction between this geology and the project further explanation is required.

- The results of the Transient Electromagnetic Groundwater Investigation (whilst commendably executed and technically well documented) are seemingly not integrated into the hydrogeological conceptual model. For example, the implications of 'buried channels' and the lineament aligned with Sandy Creek are not integrated. Any potential hydrogeological implications arising from these aspects require discussion.

- A number of changes to modelling inputs/assumptions (and therefore results) have been incorporated into the latest groundwater assessment. These changes require justification and discussion to ensure transparency in the review and reporting of project impacts. The key changes to modelling are provided in the table below.

Table 1: Comparison of modelling inputs and results across the original Environmental Assessment (EAs) and the current PPR

Reporting	EA June 2012	EA September 2012	PPR January 2013
Modelling inputs- Recharge and hydraulic properties assigned to backfill material	Geometric mean hydraulic conductivity value of **3.2m/d** (Ref: pp. 90 (06/12))	Geometric mean hydraulic conductivity value of **3.2m/d** (Ref: pp. 90 (09/12))	Geometric mean hydraulic conductivity value of **1.5m/d** (Ref: pp. 93 (01/13))
Modelling method	The model recorded simulated flows and groundwater levels: • 4 times each year during the life of the mine • at yearly intervals for a further 50 years after cessation of mining operation (Ref: pp. 91 (06/12))	The model recorded simulated flows and groundwater levels: • 4 times each year during the life of the mine • at yearly intervals for a further 50 years after cessation of mining operation (Ref: pp. 91 (09/12))	The model recorded simulated flows and groundwater levels: • 4 times each year for the life of the mine • at yearly intervals for a further 100 years after cessation of mining operation • at decadal intervals for a further 950 years (Ref: pp. 94 (01/13))
Modelling results - Sources of inflows	The **Ulan & Dapper** hydrostratigraphic units are the biggest contributors to mine inflows in the model, with predicted cumulative **storage losses of up to 2,000ML in each** by the end of mining in 2035. (Ref: pp.93 (06/12))	The **Ulan & Dapper** hydrostratigraphic units are the biggest contributors to mine inflows in the model, with predicted cumulative **storage losses of up to 2,000ML in each** by the end of mining in 2035. (Ref: pp.93 (09/12))	The **Ulan & Dapper** hydrostratigraphic units are the biggest contributors to mine inflows in the model, with predicted cumulative **storage losses of up to 6,500ML and 6,100ML** respectively toward the end of mining. (Ref: pp.97 (01/13))
	Predicted **cumulative storage losses within the alluvium** reach a maximum value of nearly	Predicted **cumulative storage losses within the alluvium** reach a maximum value of nearly	Predicted **cumulative storage losses within the alluvium** reach a maximum value of nearly

Reporting	EA June 2012	EA September 2012	PPR January 2013
	300ML over the total 21 years. (Ref: pp.93 (06/12))	**300ML** over the total 21 years. (Ref: pp.93 (09/12))	**720ML.** (Ref: pp.97 (01/13))
	Maximum **reduction in river flows** of approx. **280ML/a** (Ref: pp.93 (06/12))	Maximum **reduction in river flows** of approx. **280ML/a** (Ref: pp.93 (09/12))	Maximum **reduction in river flows** of approx. **480ML/a** (Ref: pp.97 (01/13))

- As can be seen in Table 1, the PPR states a maximum reduction in river flow of 480ML/a – this is a change in the order of 70% from the original reported figure. Further to this, the predicted cumulative storage losses within the alluvium have increased from 300ML to nearly 720ML over the life of the mine – an increase of 225%.

  Whilst it is possible that the changes may be justifiable, little explanation is provided in the PPR. Further to this, any discussion surrounding the impact of these changes on various stakeholders including the environment is negligible. Without justification, these changes undermine confidence in the model and its prediction of impacts. Again, the ability of the decision makers to reach a conclusion surrounding groundwater impacts is undermined by the lack of explanation and interpretation provided in the groundwater assessment.

- Further changes to modelling results are evidenced in the graphs of mine inflow rates, provided below. Predicted inflow rates have increased since the earlier iterations of the report. The impact of such changes is not clearly described in the PPR.

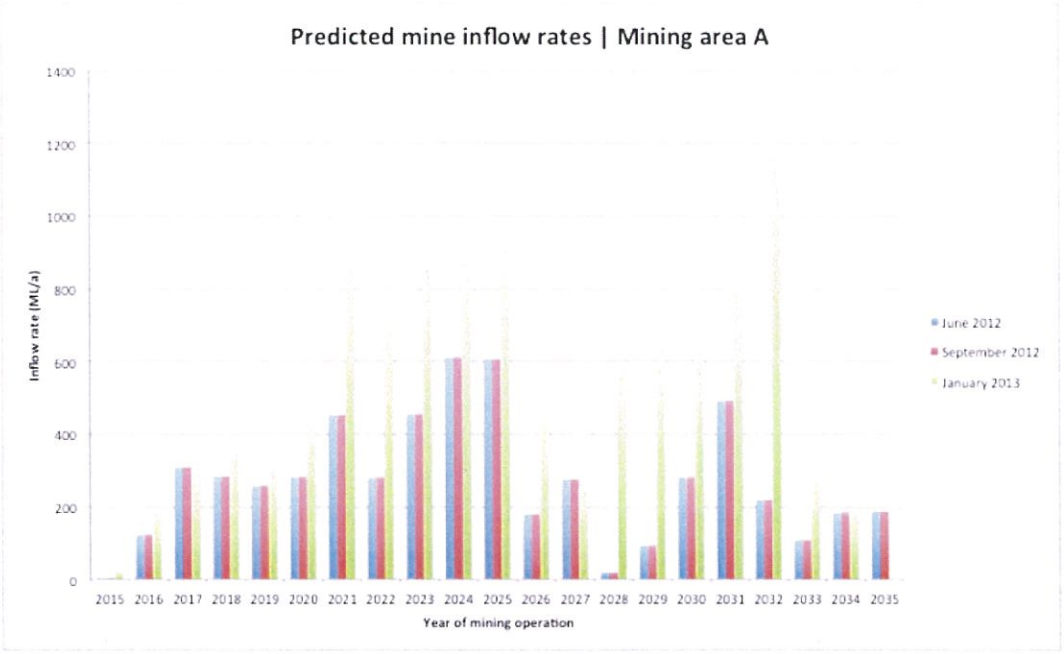

Figure 1: Comparison of groundwater to mine inflow rates in Mining area A

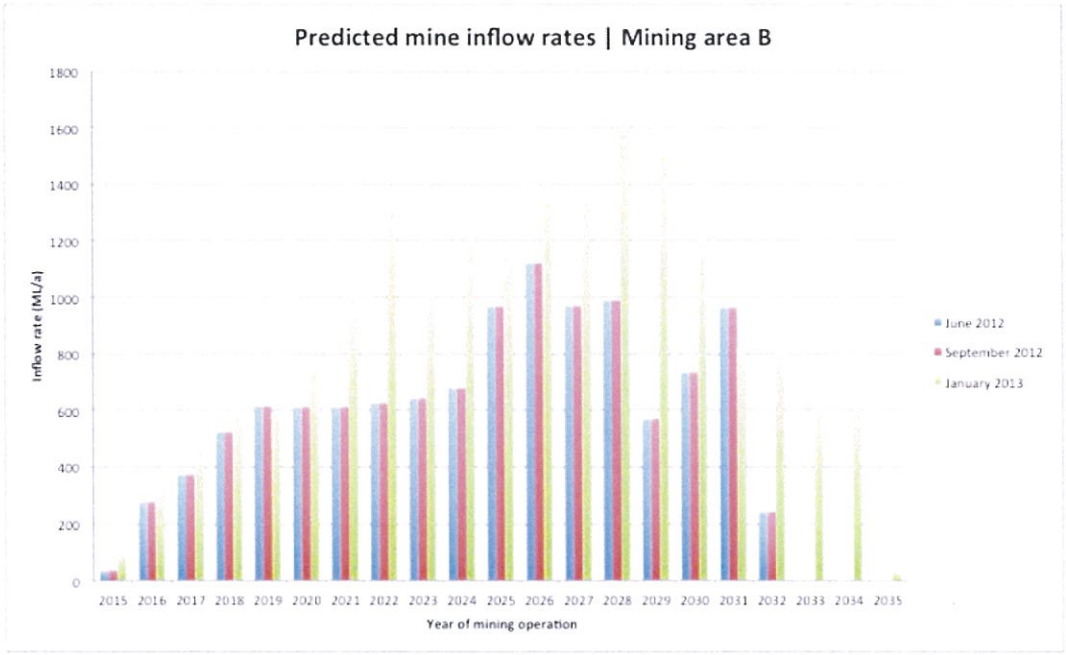

Figure 2: Comparison of groundwater to mine inflow rates in Mining area B

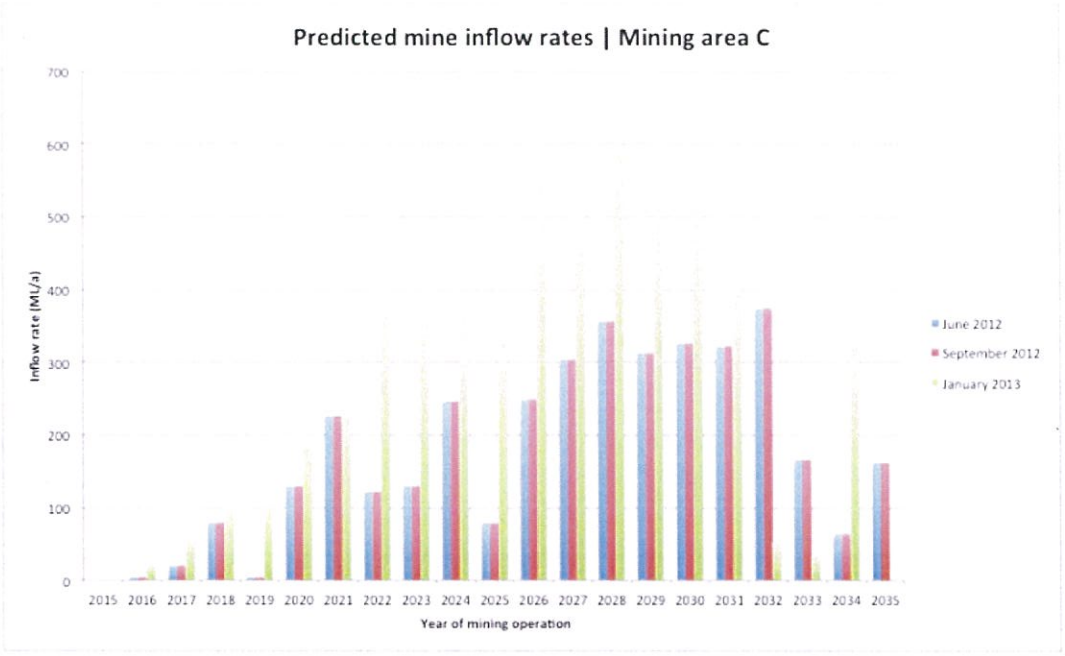

Figure 3: Comparison of groundwater to mine inflow rates in Mining area C

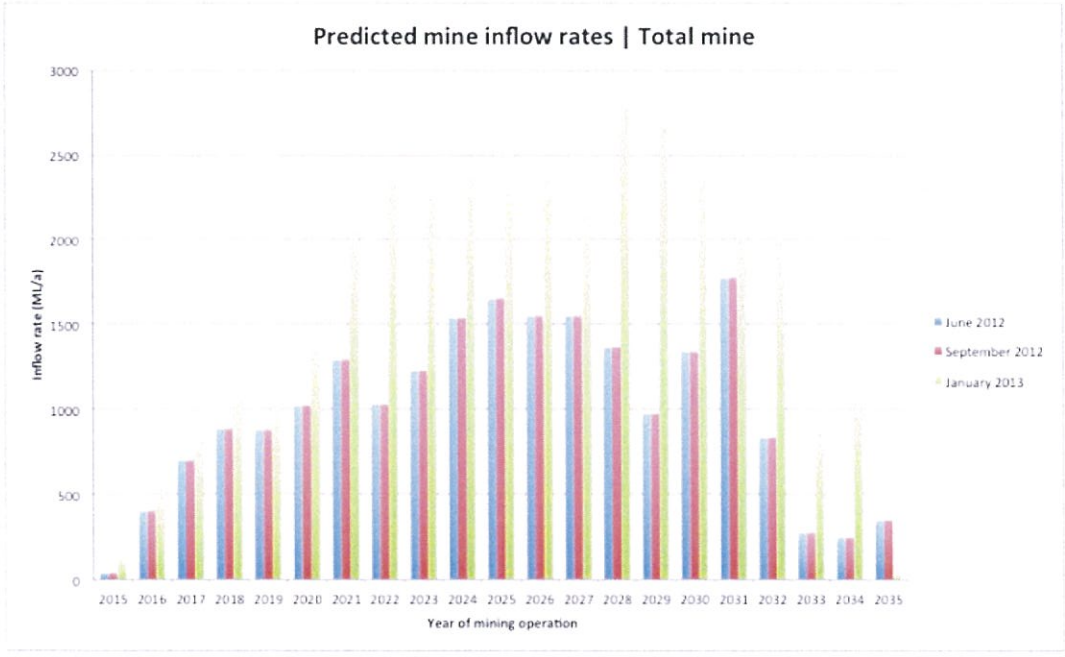

Figure 4: Comparison of groundwater to mine inflow rates in Total mine

Groundwater management

The Groundwater Management Plan (GWMP) presents more as a framework for management rather then a detailed set of guidelines and actions for monitoring and management of groundwater impacts. In its current form, the GWMP does not provide adequate linkages to guidelines and policies to ensure that best practice controls are implemented throughout the life of the Cobbora Coal Project.

The PPR shows that the post-mining groundwater gradient is towards the alluvium to west and north-west of pit voids. This will impact on the quality of water within the alluvium. However, the GWMP contains no management procedures to mitigate these impacts. In addition, handling of post-mining water quality impacts is seemingly deferred to a Year 15 production management plan (Section 9.2 refers). This is not acceptable. Water quality management should be ongoing from Year 1 of the project, if acceptable end of mine outcomes for stakeholders and the environments are to be achieved.