

The background is a landscape photograph of a rural area with rolling hills, a small farmstead with a barn, and a line of trees. A semi-transparent blue overlay covers the entire image. On the right side, there is a large, dark blue square. A white L-shaped line is positioned around the top-right corner of this square. Inside the top-right corner of the square, the letter 'A' is written in a large, white, serif font.

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Summary of Key Issues and Responses

1 SUMMARY OF KEY ISSUES AND RESPONSES

Table 1 provides a summary of the issues referred to by the Planning Assessment Commission and the proposed resolution of each issue by KEPCO Bylong Australia.

Table 1
Summary of Key Issues Raised and Response Summary

Issue Ref	Issue Raised by PAC Review Report	Section of Response to PAC Review Report	Response Summary
Planning Assessment Commission: Public Hearing			
1.	A list of 44 speakers that presented to the Commission, all on 11 May, is provided in Appendix 2. A summary of the issues raised by the speakers and provided in written submissions is provided in Appendix 3.	Section 1.3	- Responses to issues raised by speakers are provided in Hansen Bailey Response to PAC Hearing Document dated 19 May 2017. - KEPCO notes that 31 of 44 (71%) of the presentations to the PAC were in support of the Project.
2.	The Commission notes that several community members and groups elected not to attend the hearing and to protest outside the hearing venue. Written submissions from the community have been provided and considered by the Commission.	Section 1.3	- Details of the hearing are provided in Hansen Bailey Response to PAC Hearing Document dated 19 May 2017. - KEPCO notes a number of individuals and groups who were outside the hearing venue were protesting against a prior decision the PAC had made on another matter. They were not protesting specifically about the Bylong Coal Project. They were protesting about the removal of the Merit Appeal rights process which is in place as a result of the holding of a PAC Public Hearing. - There were also 69 written submissions received by the PAC, with 29 of these supporting the Project. - The 'Do Gooder' website was also utilised to garner 468 pro-forma objections to the Project. The majority of these originated from

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			individuals who do not reside in the Bylong Valley.
Planning Assessment Commission: Briefing from Mid-Western Regional Council			
3.	Council raised issues regarding the worker's accommodation facility, traffic and road safety along with potential impacts for Tarwyn Park and associated NSF areas in its meeting with the PAC.	Appendix B, Appendix D, Appendix Q, Appendix V	• MWRC provided a letter to the NSW Minister of Planning, dated 8 August 2017, emphasising its support for the Project and highlighting the significance of the Project to the local community. • KEPCO held meetings with MWRC both via teleconference and in Mudgee on 11 August 2017 and 18 October 2017, respectively, to discuss the findings of the PAC Review Report and other associated matters. It is understood that MWRC was satisfied with the outcome of the meetings. KEPCO also met with MWRC on 5 December and has exchanged correspondence agreeing to cooperatively engage to house construction workers within the LGA and without a site based WAF. • KEPCO has undertaken additional accommodation availability surveys in consultation with MWRC and local accommodation and hospitality providers. Following the analysis of these results, and with the support of the MWRC, KEPCO has removed the Workers Accommodation Facility (WAF) from its mine plan and will now utilise local accommodation resources within MWRC LGA. • KEPCO has continued to consult with MWRC over road safety and subsidence issues along Bylong Valley Way. KEPCO maintains its commitment to repair any surface damage associated with the subsidence impacts associated with Bylong Valley Way and the

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			surrounding public road network. KEPCO maintains its commitment to consult with local bus companies and adjust mine associated travel with the school bus timetable. • KEPCO maintains its commitment to continue utilising its land for agricultural purposes, in line with the Central and Orana Regional Plan as well as encouraging academic study at Tarwyn Park and the associative Natural Sequence Farming.
Planning Assessment Commission: Independent advice on the heritage values of Tarwyn Park and Iron Tank			
4.	The Commission Secretariat engaged a reputable heritage consultant to prepare a heritage report. This report, by consultants GML Heritage, was delivered on 18 May 2017, and published on the Commission's website. As the time of the report's publication was after the public hearing into the project held by the Commission, the Commission is cognisant that a full opportunity for public and agency review and response has not been possible. Accordingly, while the Commission has considered the report in its review, it notes that a formal opportunity for submissions on this matter should be provided prior to the decision about the project.	Section 4.4, Appendix J	• KEPCO has previously responded to this document in their Response to PAC Public Hearing Document on 19 May 2017. • KEPCO has received notification from DP&E indicating it does not propose to publicly exhibit the GML Heritage report. Whilst noting the generalist nature of the report, KEPCO would welcome the opportunity to respond to additional submissions regarding this report, should the Commission receive any further submissions regarding the GML Heritage report. • A thorough assessment of the conservation values of the Tarwyn Park Farm Complex and other sites within the Study Area has been commissioned by KEPCO. The assessment concluded that the Tarwyn Park Farm Complex is of local historical, associative, technical, social, contributory, rarity and representative significance. • Whilst there is some discrepancy in the assessment of historical significance, KEPCO acknowledges the importance of maintaining the heritage values of Tarwyn Park and Iron Tank. To this end and in response to issues raised by the PAC Review Report, a

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			comprehensive draft Historic Heritage Management Plan (HHMP) has been prepared for the Project (see Appendix J) to document the proposed management and protection measures to preserve the heritage values of Tarwyn Park. The draft HHMP also addresses the relevant conditions of the DP&E Recommended Development Consent.
Planning Assessment Commission: Water Resources			
5.	The submissions highlighted the degree of uncertainty around the availability of water in the alluvium. Some indicated personal experience with an inability to extract water from the aquifer at times and raised concern about the risks to water availability posed by climate change and climatic fluctuations for the duration of mining and after it is complete. There was frustration with the absence of certain, specific and enforceable arrangements to prevent impacts to the availability of water supply for agriculture. The submissions noted that the Department appeared to rely on post approval management plans to finalise the expected groundwater impacts, make-up water supply for the mine, and make-good arrangements for water supply to other landowners, instead of resolving these matters before any decision about the project. Submissions argued that this was an inadequate response to the risks acknowledged in the various peer reviews to the groundwater assessment and they expressed a lack of confidence that this approach would provide the certainty	Section 4.2, Appendix F, Appendix K, Appendix M	• KEPCO has considered the impact of the Project on neighbouring private water bores in Appendix M of the EIS. • KEPCO undertook additional modelling which reconfirmed that no privately-owned bores are considered likely to be impacted by the Project. Updated modelling results were previously provided in Appendix H of the RTS and Appendix J of the Supplementary RTS. • The additional water modelling has also reconfirmed that bore water availability on neighbouring properties will not be affected by the Project. Nevertheless, in response to the concerns raised by the PAC, KEPCO has commenced negotiations with and will enter into Compensatory Water Supply Agreements for the life of the Project with landholders with concerns regarding the loss of bore water supply. These agreements will ensure that a process is in place to provide compensation in the highly unlikely and unforeseen event that the Project affects the availability of neighbouring water supply. • KEPCO has prepared a summary of the groundwater modelling and monitoring undertaken for the Project to date. This summary provides a simplified overview for a non-specialist audience as well

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	required by local landholders that future impacts would be promptly and effectively addressed.		as providing further context to modelling and monitoring results following the most recent collection of data. This summary is provided in Appendix K .
6.	Several submissions raised concern about cumulative impacts to the Goulburn River catchment, which has been historically modified, initially due to agriculture and more recently due to mining, and which, the submissions argued, is now vulnerable to changes relating to inflows and salinity.	Section 4.2, Appendix M	- KEPCO have previously provided comment on the associated submissions in Section 4.9 of the Response to PAC Public Hearing document dated 19 May 2017. - KEPCO has provided a further response in this report on the cumulative impacts on the Goulburn River, reaffirming that the Project will have no impact on the River.
7.	The submissions observed that spatial and temporal data of water quality in the catchment, and assessment of potential impacts to the catchment, was lacking.	Section 4.2, Appendix F, Appendix K	- An extensive water monitoring program has been in place since 2011. This program has expanded over time to gain substantial information on the hydrological regime with the Bylong River catchment and regional hydrological regime. This monitoring program will continue as outlined in the Draft Water Management Plan (WMP), prepared subsequent to release of the PAC Review Report and provided in Appendix F. - KEPCO has developed a summary of the groundwater modelling and monitoring undertaken for the Project to date that aims to clarify and explain Project water issues for a non-specialist reader. This summary is provided in Appendix K.
8.	The submissions also argued that the main contribution to salinity in the catchment is now the export of salts from mining in the Permian coal measures.	Section 4.2, Appendix M	The issue of salt migration and salinity from the overburden, coal measures and the final void have been previously analysed in Section 5.24.3 of RTS and the Geochemical Impact Assessment (GIA) provided in Appendix AB of the EIS. The GIA determined that overall, the risk of potential impact on the quality of surface and

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			groundwater from the Project is expected to be low for coal and mining waste materials, when the recommended management measures for coal reject materials are implemented. • This submission appeared to be concerned with other mines discharging saline water into the river system and not necessarily the export of salts from mining, as interpreted in the PAC Report. The proposed Water Management System for the Project has been developed to mitigate impacts on downstream water quality, as discussed in Section 5.7.6 of the RTS and the Surface Water Impact Assessment included in Appendix L of the EIS. The Project is not proposing to discharge any contaminated or salt laden water off site to receiving watercourses. • WRM completed a review of historical salinity data in the Goulburn River and concluded there is no obvious trend of increasing salinity in the Goulburn River in response to mining or other land uses (Appendix M).
9.	Submissions showed little confidence that the mine could be adaptively managed to avoid mine water discharges during and after mining.	Section 4.2, Appendix F, Appendix M, Appendix N	• The comprehensive water balance modelling completed to date has demonstrated that the water management system will be adequate to retain all mine water on the site throughout the life of the Project. These assessments are based on historical rainfall conditions experienced between 1889 and 2013 and thus include a consideration of all extreme wet and dry periods on record. • Additional water balance sensitivity analysis has been undertaken WRM following release of the PAC Review Report and is provided in Appendix M. A peer review of the water balance model has also been undertaken by HEC and is included in Appendix N. The peer

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			review comments have been addressed and incorporated into WRM's response report (Appendix M). • The additional water balance sensitivity analysis reconfirms that there is a high level of confidence that the system can be adaptively managed over the life of the Project to prevent discharge of mine-affected water. • KEPCO has developed a WMP, which outlines the objectives and principles for the management of mine water within mining areas. The WMP is provided in Appendix F of this report.
10.	The submissions also outlined concern about the proposed approach for managing subsidence impacts, arguing that limited information was provided in relation to direct remediation of subsidence impacts, which were deemed essential.	Section 4.6, Appendix V	• KEPCO and MSEC attended a meeting with MWRC on 18 October 2017 in regard to managing subsidence impacts along the Bylong Valley Way. KEPCO notes that MWRC were satisfied with KEPCO's proposed approach for managing subsidence impacts. • MSEC has provided a summary of the management and mitigation strategies for subsidence associated with the Project, which will be detailed in Extraction Plans. The summary further compares case studies of previous mining operations indicating how subsidence associated issues will be managed for the life of the Project. The summary is provided in Appendix V of this Report. • Subsidence impacts and mitigation measures are discussed in Section 7.1.4 of the EIS. Extraction Plans will be prepared to provide specific mitigation measures to manage and remediate subsidence impacts. • The Extraction Plan will include detailed management plans addressing predicted impacts to all natural and built features, which will be developed in consultation with relevant regulators and

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			infrastructure owners.
11.	The Commission notes that the many documents, peer reviews and counter responses may have been difficult for non-specialist observers to follow. For transparency, a summary that outlines the course of particular issues, as they received increasingly detailed attention, would be beneficial.	Section 4.2, Appendix K	At the PAC's suggestion, AGE have prepared a summary of the groundwater modelling and monitoring undertaken for the Project to date. This summary provides a simplified overview for a non-specialist audience and provides further context to the evolution of the groundwater model following the collection of further monitoring results and data. This summary is provided in Appendix K.
12.	The Commission also highlights that while there has been extensive review of the numerical groundwater model and the physical conditions affecting water resource behaviour, there has been little critical review of the water balance. The water balance provides several of the critical inputs for the prediction of impacts.	Section 4.2, Appendix M, Appendix N,	KEPCO engaged HEC to undertake a peer review of the water balance model to address the PAC's observation (Appendix N). All matters raised from the peer review have been addressed and incorporated into WRM's response report, along with the results of additional water balance sensitivity modelling. (Appendix M). It confirms that there is a high level of confidence that the system can be managed over the life of the Project to prevent discharge of mine-affected water.
13.	The final groundwater model predicted that the proposed bore field would result in minimal drawdown at the nearest privately-owned bore, which is located on the Eagle Hill property adjacent to the project site, such that the project could comply with the NSW Aquifer Interference Policy. Other properties previously predicted to experience drawdown impacts, including most recently, Tinka Tong, have been acquired by the applicant and are now part of the applicant's project area.	Section 4.2, Appendix F, Appendix K,	- KEPCO maintains that the Project is not anticipated to affect bore water availability on neighbouring properties. KEPCO has commenced negotiations with and will enter into Compensatory Water Supply Agreements for the life of the Project with landholders with concerns regarding the loss of bore water supply. These agreements will ensure that a process is in place to provide compensation in the highly unlikely and unforeseen event that the Project affects the availability of neighbouring water supply. - It is also noted that the Project relies on the alluvial borefield as its

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			principal water source from Project Years 3 to 10 and in other years will have substantially reduced draw on the alluvial aquifer.
14.	The applicant acknowledged there may be conditions, described as 'severe', where the proposed bore field is unable to provide make-up water. The applicant considers these to be improbable scenarios. It says that <i>"in the unlikely event that the bore field fails to supply make up water, it can be augmented with additional bore sites within the alluvial aquifer".</i> The applicant adds that it could also curtail agricultural operations and curtail coal production to reduce water demand. To the extent that any additional take from the alluvium requires additional water shares, both the applicant and the Department argue that <i>"there is sufficient depth in the market to accommodate the water take for the project".</i>	Section 4.2, Appendix K	- The extensive alluvial pump test program, which was incorporated into the Supplementary RTS modelling, confirmed that the potential for the borefield to supply Project water demands increases significantly when compared to the earlier modelling scenarios. - Through both land acquisition and licence availability on the market, KEPCO has now acquired additional WALs to more than account for the required takes from the Project. - KEPCO confirms it has ample water shares to account for takes from the alluvium for the Project.
15.	The Department recommended that the applicant be required to demonstrate that it has adequate water supply prior to commencing operations. The Department also recommended further groundwater monitoring to calibrate the groundwater model and validate its predictions so that compensatory water supply could be provided in what the Department considers an unlikely event that there are impacts from the project on private water users.	Section 4.2, Appendix F, Appendix K	- Additional groundwater monitoring and investigation have been undertaken by KEPCO to further validate the groundwater model and confirm the availability of adequate water supply. This is summarised in Appendix K. - KEPCO has commenced negotiations with and will enter into Compensatory Water Supply Agreements for the life of the Project with landholders who have concerns regarding the loss of bore water supply. These agreements will ensure that a process is in

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			place to provide compensation in the highly unlikely and unforeseen event that the Project affects the availability of neighbouring water supply.
16.	Department of Primary Industries advised that surface water losses may not have been correctly accounted for. It says, for example, that loss of surface flow to the alluvium (induced by aquifer pumping) would peak in year nine of the mine's operation, and in the 99th percentile scenario, could amount to 2.7 megalitres per day (i.e. 986 megalitres per year). The applicant's water shares in the alluvial resource would need to account for this additional loss.	Section 4.2, Appendix L	• KEPCO has previously provided DPI-Water the accounting methodology and results in Section 4.3 of RTS and Appendix J of Supplementary RTS. • KEPCO attended a meeting with DPI-Water on 7 November 2017. This meeting confirmed that the alluvial and surface water are part of the same water source. DPI-Water confirmed that the proposed approach by KEPCO is appropriate to avoid the double accounting of water takes from the same water source. • KEPCO confirms that it has ample water licences to account for takes from the alluvium for the Project.
17.	Multiple closely reviewed iterations of the groundwater model have been undertaken, all of which highlight uncertainty regarding the performance of and impacts on the alluvium. As such the Commission notes that doubt persists regarding the evidence and arguments on groundwater impacts and management strategies.	Section 4.2, Appendix K	• KEPCO previously confirmed in Appendix J of the Supplementary RTS that the hydraulic conductivity of the alluvium in the borefield was higher than that assumed for in the EIS and RTS modelling scenarios and hence the potential and certainty for the borefield to supply Project water demands has increased significantly. • Updated hydraulic properties determined from the alluvial pump testing program provides even greater confidence that it is highly unlikely that the Project will impact on the alluvial water resources on privately owned properties. • Supplementary RTS modelling and associated uncertainty analysis confirmed that it was improbable that the Project would adversely impact neighbouring private landholder bores.

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18.	The Commission is mindful of the risk profile of the applicant's water make-up contingencies. The alluvial resource is small and volatile, as is evidenced by the widely ranging permeability, storage and rates of recharge represented in the data. Consequently, the aquifer's response to water extraction or saline intrusion is difficult to predict, which is indicated by the wide range of scenarios in the applicant's sensitivity testing. The Commission finds it difficult to accept the applicant's and the Department's assertions that there is a low probability of dry periods over the life of the mine, which would lead to impacts that only need to be identified and managed post approval. The Commission's view is that the available evidence of existing variability in the alluvial aquifers, as well as potential effects of climatic variability, suggest that there continues to be significant uncertainty about potential consequences. This necessitates that the risk of impacts requires very careful consideration before a decision is made about the project.	Section 4.2, Appendix F, Appendix K	- As KEPCO previously mentioned in Appendix J of the Supplementary RTS, the certainty around potential impacts of the Project greatly improved with the inclusion of results from the alluvial pump testing program. - The Supplementary RTS confirmed the eight bores proposed within the Bylong River and Lee Creek alluvium will be capable of supplying the water demands for the substantial majority of climatic conditions and uncertainty modelling scenarios. Although a further requirement is highly improbable, this could be supplemented with an additional one or two bores within the productive parts of the alluvial aquifer to meet a shortfall in water demand during extreme dry weather periods. - KEPCO has developed a WMP which outlines the objectives and principles for the management of mine water within mining areas, subject to any development consent for the Project. This WMP also contains Trigger Action Response Plans which detail the appropriate responses to extreme climatic conditions. A Draft WMP is provided in Appendix F.
19.	The applicant should be required to demonstrate to the Secretary that there are adequate water supplies, impact mitigation and make-good strategies before mining can commence. However, the Commission is concerned that this might defer appropriately detailed consideration of contingency plans and potential impacts on agricultural pursuits and other water users	Section 4.2, Appendix F Appendix K	- Through both land acquisition and licence availability on the market, KEPCO has now acquired additional WALs to more than meet the required alluvial take of the Project. - There are considerable water licences available within the Permian system (79,000 ML) for licensing. This water source is not typically utilised for agricultural pursuits. This is particularly the case within the predicted zone of depressurisation and immediately surrounding areas (too deep and low yielding).

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	until after the application is decided.		KEPCO has developed a draft Compensatory Water Supply Agreement and commenced discussions with concerned landholders to establish agreements whereby KEPCO will provide compensation in the highly unlikely and unforeseen event that the Project causes any loss to water supply at neighbouring properties (Appendix F).
20.	Department of Primary Industries suggested that the applicant should identify a non-alluvial make up water source to serve as a contingency against potential shortfalls in water availability.	Section 4.2, Appendix F, Appendix K	KEPCO has commenced negotiations with and will enter into Compensatory Water Supply Agreements for the life of the Project with landholders with concerns regarding the loss of bore water supply. These agreements will ensure that a process is in place to provide compensation in the highly unlikely and unforeseen event that the Project affects the availability of neighbouring water supply (other than a negligible impact). This includes the provision of trucked water supply for livestock as a contingency and emergency water supply for livestock and domestic purposes.
21.	The Department's preliminary assessment report observed that the applicant has applied for shares in the Permian resource totalling 2,504 megalitres per year, which would be sufficient to account for median inflows until year 19 and 99th percentile inflows to year nine of the mine's operation. The Department notes that the applicant will ultimately require 4,100 megalitres per year to account for the maximum median inflow predicted in year 23 of the mine's operation, and that there is "sufficient depth in the market" to accommodate this inflow. The Department says access to the water shares is a	Section 4.2, Appendix K	- KEPCO engaged AGE to develop a summary of the groundwater modelling and monitoring undertaken for the Project to date. This provides further context to the modelling and monitoring results following the most recent collection of data and further puts into context what the 99th percentile model scenario represents. This summary is provided in Appendix K. - KEPCO notes the condition 26 of schedule 4 of the Recommended Development Consent requires KEPCO to confirm that it holds adequate water access licences to account for the maximum predicted volume of water to be used by the Project prior to

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	commercial risk for the applicant.		commencing longwall mining activities in Year 9 of the Project. • KEPCO confirmed with DPI-Water that there are an adequate number of water licences available within the North Coast Permian Water Sharing Plan, as discussed during a meeting held on the 7 November 2017. • The water allocations under this water source will be available on the open market into the future. DPI-Water further confirmed that there is also the potential for a Controlled Allocation Order for this water source, whereby KEPCO can apply to DPI-Water for further water allocations.
22.	The Commission notes the applicant's expert advice that the groundwater drawdown associated with inflows and extraction from the Permian aquifer is; relatively limited in extent and unlikely to lead to measurable adverse consequences downstream. The Commission also notes that there are 79,660 shares available in the Sydney Basin North Coast Groundwater Source, and, according to the Department, no other known users of this resource in the area.	Section 4.2, Appendix K	• There are no known water users within close proximity to the Project which will be affected by the depressurisation predicted within the hardrock aquifers.
23.	The Commission is not yet persuaded that the adequacy of the applicant's water holdings is exclusively a commercial risk for the applicant. The Commission is hesitant to accept that an assessment of the matters required to obtain shares in the Permian resource can be deferred until after a decision is made about the project.	Section 4.2, Appendix K	• KEPCO confirmed with DPI-Water there are an adequate number of water licences (79,660 units of allocation) available within the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016 (North Coast WSP). • KEPCO currently holds two licences amounting to 411 units and has a valid application in with the NSW Government for a further 2,093 units (to be granted following approval of Project) for water from the

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			Sydney Basin – North Coast Groundwater Source (North Coast groundwater source) under the North Coast WSP. • An additional 1,596 units of water allocation from the North Coast Groundwater Source is required prior to Project Year 23, which will be sought on the open market in the future. This equates to only 2% (1,596 units) out of the 79,660 units of water licences available within this Groundwater Source. • KEPCO will consider the early acquisition of water shares as they become available within this water source and are engaging a water broker to commence securing water allocation from the water market. However, the intent of the WSP's and associated regulations is to ensure equitable sharing of the water resources between users and the environment.
24.	The Department suggested that in-pit storage capacity is theoretically sufficient in all climatic scenarios, although it also noted that the water storage may approach capacity towards the end of mining, which, depending on the prevailing weather, may create operational or other technical issues. The Department went on to say that one obvious solution in this case would be to discharge some of the excess water to the catchment following treatment. The Department noted that it had not assessed any discharge option, but also said it would appear a feasible option to consider as mining progresses, given the reasonably good quality water in the aquifers.	Section 4.2, Appendix M, Appendix N	• KEPCO engaged WRM to validate staged annual mine plans to ensure additional data collected from recent monitoring supported the appropriate void capacities over staged years of the Project. • Water balance modelling of the proposed water management system (including extreme sensitivity scenarios) continues to demonstrate that there is a high level of confidence that the system can be managed over the life of the Project to prevent discharge of mine-affected water. As such there will be no need for a licence to discharge water under the POEO Act. Additional modelling results are provided in Appendix M of this report. • KEPCO engaged HEC to undertake a peer review of the water balance model; whose comments have been incorporated in WRM's response report and additional water balance sensitivity modelling

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			(see Appendix N). The HEC peer review supported the findings of the water modelling results.
25.	EPA advice on the matter is more cautious. While the EPA acknowledges the water balance model as being "wide ranging" in respect of the climatic conditions in historical records, it also asserts that the worst case dry and wet years should have been modelled. This is particularly important, the EPA notes, because the mine water may have elevated electrical conductivity (i.e. salinity) and other contaminants, which may require treatment if mine water discharge becomes necessary during wet periods.	Appendix F, Appendix M, Appendix O	• KEPCO attended a meeting with EPA in Bathurst, NSW on 26 October 2017 to discuss the findings of the PAC Review Report. It was acknowledged that correspondence from EPA acknowledging EPA's satisfaction with information addressed within the Supplementary RTS did not reach the PAC review team in the previous consultation window. • KEPCO has since provided a letter report to the EPA outlining the matters discussed in this meeting and is further provided in Appendix O of this report. • Additional water balance modelling has been undertaken for worst-case dry and wet years. This is discussed in Appendix M. • Water balance modelling of the proposed water management system (including extreme sensitivity scenarios) continues to demonstrate that there is a high level of confidence that the system can be managed over the life of the Project to prevent discharge of mine-affected water. • KEPCO has developed a Draft WMP which outlines the objectives and principles for the management of mine water within mining areas, subject to any development consent for the Project. This Draft WMP is provided in Appendix F.
26.	The Commission notes that uncertainty remains around the proposed nil-discharge mine design. The asserted contingency to discharge raises doubt for the Commission about the	Section 4.2, Appendix K, Appendix M	• Further sensitivity analysis has been completed on the mine water balance. This is provided in Appendix M. • HEC completed a peer review of the water balance model, including

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	evidence supporting the applicant's proposed approaches to mine water management.		the additional sensitivity analysis (Appendix K). All comments and issues raised in the Peer Review have been considered and incorporated into WRM's response report and additional water balance sensitivity modelling provided in Appendix M of this report. Water balance modelling of the proposed water management system (including extreme sensitivity scenarios) continues to demonstrate that there is a high level of confidence that the system can be managed over the life of the Project to prevent discharge of mine-affected water.
27.	The applicant did not provide detailed evidence regarding how any overflow would be managed. While the total mine water capacity in the final void was specified, there is no indication of available storage capacity, or of any potential consequences to open cut mining operations (and water re-use), if the need to store water there arises earlier in the operation. There are no depictions of water storage in the void in any of the applicant's indicative mine plans. The analysis reports there is a small chance (of the order of 1%) that the project may experience climatic conditions outside the range of the historical climate record. The Commission is reluctant to accept that these probabilities and the potential consequences are remote or trivial. Rather, these statistics show that if the mine encounters wet conditions early on, part of the void may be required for mine water storage and the amount of storage required could be significant	Section 4.2, Appendix M	- KEPCO engaged WRM to validate staged annual mine plans to ensure additional data collected from recent monitoring supported the appropriate void capacities over staged years of the Project. KEPCO further engaged WRM to undertake additional water balance sensitivity modelling, which is provided in Appendix M of this document. - The Supplementary RTS concluded that the open cut mining area could manage excess mine water during the open cut mining stage. - The revised water balance modelling completed by WRM has confirmed the available capacities for mine water storage are more than adequate even under extreme wet conditions. - KEPCO notes that truck and excavator open cut mining methods are dynamic such that the operational areas can be adjusted to account for the storage of excess mine water during extreme wet weather conditions. This is standard practice for mining operations throughout NSW and beyond.

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	enough to require some adjustments to open cut mining.		
28.	The potential impacts of mine water discharge have not been assessed and the Commission does not presently share the Department's confidence that discharge is a reasonable and feasible option for mine water accumulation in this relatively fragile environmental context. The Commission is doubtful that adaptive management is an appropriate or effective approach to mine water accumulation. The applicant's proposal to vary storage conditions according to climatic conditions might be regarded as <i>active management</i> of mine water. However, the ways in which the mine might <i>adapt its operation</i> to solve the problem of potential water accumulation may need to be clarified before a decision is made about the Project. The Commission notes that the water balance information and proposed management arrangements raise uncertainties about whether the proposed nil-discharge mine may quickly revert to a discharge mine if wet conditions are encountered either shortly after mining commences or toward the end of mine life. Should mine water discharges continue to be a contingency, then potential discharge impacts should be fully assessed and appropriate discharge parameters established before a decision is made about the Project.	Section 4.2, Appendix F, Appendix M	• Further water balance modelling and sensitivity has been undertaken to confirm how mine water is able to be managed within the mining areas throughout the life of the Project. • Water balance modelling of the proposed water management system (including extreme sensitivity scenarios) continues to demonstrate that there is a high level of confidence that the system can be managed over the life of the Project life to prevent discharge of mine-affected water. • Further contingency measures have been identified for managing mine water in the highly unlikely event that extreme rainfall conditions prevail (i.e. the 1% conditions). Such measures include the sealing of gateroads in the completed underground mine goaf area, which would provide large capacity for storage of any excess water. • With the implementation of these contingency plans, KEPCO maintains the objective of being a nil discharge mine will continue to be met even under the very unlikely groundwater monitoring scenario and extreme rainfall conditions. • KEPCO has developed a WMP which outlines the objectives and principles for the management of mine water within mining areas, including the proposed contingency measures. This WMP is provided in Appendix F.

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29.	The Commission notes that the Department's conclusions on several other water resource matters will require detailed evaluation before any decision about the project. These include claims that: • the project area is a relatively small portion of the Lee, Bylong, and Growee catchments and it is not expected to have significant impacts on catchment hydrology; • loss of surface flows in Dry Creek resulting from subsidence deformations and cracking is not expected to be significant, and many physical impacts would be remediated; • based on nil-discharge mine design, the residual salt loads that are exported from the site are not expected to result in significant impacts on catchment water quality; • overflow of water from sediment dams during wet periods that exceed the relevant design standard of the sediment control system would be governed by the Environment Protection Licence for the project; • the open cut pits and surface facilities are largely outside flood affected areas; • potential impacts to flooding behaviour from two haul-road watercourse crossings would be confined to the project area; • there are no high priority groundwater dependent ecosystems, while those present are unlikely to be highly reliant on groundwater, nor significantly affected by the project; and	Section 4.2	• Section 4.2.1.11 of this report provides a summary of where these issues have been previously addressed by the Project. • KEPCO has consulted with the relevant regulators referenced in the PAC Review Report and considers all queries and requests by regulators to be satisfactorily met.

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	• stygofauna species that are present are not endemic, and impacts to local populations are unlikely to be significant to those species.		
30.	The Commission notes that the Triassic basalt aquifers above the underground mine are unlikely to be high yielding aquifers owing to their hard-rock geology, any mine inflow from them will nevertheless need to be accounted for by the applicant, as indicated by the Department of Primary Industries.	Section 4.2, Appendix K	• A response to this issue raised by the PAC has been previously provided in Section 6.4.7 of Appendix A inside Appendix J of the Supplementary RTS and response to DPI-Water's submission dated 17 August 2016. This highlights that the groundwater inflows to the underground have already accounted for the inflows from the Triassic basalt aquifers.
Planning Assessment Commission: Agricultural Resources			
31.	The Central West and Orana Regional Plan, released by the NSW Government in June 2017, identifies competing land use interests in the Bylong Valley. Solar access resources, agricultural land and the applicant's coal exploration title are all mapped. The plan does not make any statutory provisions in respect of the proposed project, although it does illuminate the nature of competing land use objectives in the region.	Section 4.2, Appendix B, Appendix Q	• MWRC sent letter to NSW Minister of Planning, dated 8 August 2017 emphasising the significance of the Project to the local community and economy. This is provided in Appendix B. • Scott Barnett and Associates (SBA) has provided a comparative analysis of the extent of the agricultural industry across NSW, Central West and Orana Region and adjoining LGAs (Appendix Q). Mining is identified as the largest Gross Regional Product (GRP) Contributor in the Central West and Orana Region, providing \$2.5 billion (B) and 5% of jobs, when surveyed at the time of drafting the regional plan. • It is noted Goal 1 of the Central West and Orana Regional Plan is to achieve 'The most diverse regional economy in NSW'. Under the details listed under Goal 1, mining activities is acknowledged for continuing to drive growth in the region.

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32.	The applicant has acquired significant land holdings in the valley, currently comprising approximately 13,229 hectares of land that is in large part, productive agricultural land at present. These holdings include approximately 7,835 hectares of land adjoining the project site. The Upper Hunter Strategic Land Use Plan, released by the NSW Government in September 2012, maps an equine Critical Industry Cluster (equine CIC) and biophysical strategic agricultural land (BSAL) in the Bylong Valley. The extent of equine CIC within the project area is 1,933 hectares, and designated BSAL covers 1,711 hectares. A further 407.4 hectares of BSAL and 584 hectares of equine CIC have been identified in the proposed biodiversity offset areas. The equine CIC and BSAL in these areas overlap. The occurrence of this mapped land on the project site triggered a statutory referral to the NSW Mining and Petroleum Gateway Panel and the grant of a conditional Gateway Certificate on 15 April 2014.		• Noted. • KEPCO has made inquiries with Hunter Valley broodmare farms in an endeavour to provide opportunities to utilise the equine facilities available on KEPCO's agricultural holdings in the Bylong Valley. At the time of this submission there has been little interest to offers of occupancy due to remoteness from core of CIC and surplus facilities currently available in the Upper Hunter.
33.	Submissions from both local farmers and residents expressed concern about the consequences of the current and escalating impacts to agricultural productivity in the region and highlighted the importance of the Bylong Valley including the presence of the equine CIC and BSAL. The submissions expressed considerable doubt about the applicant's statements that the project could coexist with agriculture in the Bylong Valley.	Section 4.2, Appendix H, Appendix Q	• KEPCO have previously acknowledged the importance of agricultural productivity in the Bylong Valley and has committed to continuing to utilise land for agricultural pursuits, contributing to the objectives listed within the Central West and Orana Regional Plan. • KEPCO have developed a Draft Farm Management Plan (FMP) which outlines the objectives of KEPCO's agricultural enterprises and land management measures. The FMP is provided in

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			Appendix H of this document. KEPCO has undertaken a comparative analysis of the extent of the agricultural industry across NSW and local region. This study further compares examples of co-existing mining and agricultural operations in other LGAs. This study is provided in Appendix Q of this document.
34.	Submissions stressed the importance of suitable groundwater resources for maintaining agricultural production in the valley, and particularly for agricultural properties near the project. These submissions highlighted the short timeframe between the loss of water and impacts to production through stock death (as little as two days) and impacts on crop health. The submissions also raised concerns about the impacts of water availability on the natural sequence farming techniques established at the Tarwyn Park and Iron Tank properties.	Section 4.2, Appendix K	- It is not anticipated bore water availability on neighbouring properties will be affected by the Project. KEPCO has commenced negotiations with and will enter into Compensatory Water Supply Agreements for the life of the Project with landholders with concerns regarding the loss of bore water supply. These agreements will ensure that a process is in place to provide compensation in the highly unlikely and unforeseen event that the Project affects the availability (other than a negligible impact) of neighbouring water supply. - The mine plan has been designed to avoid direct impacts to the Bylong River floodplain, being the main areas utilised for the NSF land management technique. The majority of the Natural Sequence Farming land and infrastructure will remain intact and undisturbed within the Project area.
35.	Submissions expressed significant concern in relation to the reliance on rehabilitation of mined areas as a strategy for managing these impacts, arguing that little supporting evidence or comparable precedents had been provided by the applicant. The submissions highlighted the conceptual nature of the	Section 4.2, Appendix G, Appendix P	KEPCO engaged SLR to complete a comparative study of mine site rehabilitation in the Hunter Region, highlighting where agricultural production objectives have been achieved on active mining sites. This study further highlights the agricultural capacity of landscapes adjoining to BSAL areas. The results of this study are provided in

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	restoration practices to be employed for the project to remediate impacts to BSAL and held a general view that once mined the production value of those areas would not be able to be restored.		Appendix P. Based on the PAC's feedback, KEPCO has developed a Draft Rehabilitation Management Plan (RMP) which outlines the objectives and principles for the management and mitigation measures and contingency measures in place in order to achieve rehabilitation objectives onsite. The Draft RMP further highlights the active rehabilitation monitoring program to be employed during the life of the Project to re-establish the pre-mining land capability of disturbed areas. The Draft RMP is provided in Appendix G.
36.	The applicant suggested that these areas are not prime examples of BSAL and Equine CIC lands. The applicant noted that areas of verified BSAL likely to be impacted are generally on lower soil capability, class three land, while areas of equine CIC are no longer operational and located on the geographical margins of the 'cluster', with the nearest related facilities 30-minutes' drive away.	Section 4.2, Appendix P, Appendix Q	- KEPCO reiterates that onsite analysis has verified Class 3, 4, 5 and 6 BSAL lands within the Project area. Whilst Class 3 BSAL lands are identified as suitable for cropping activities, there are still a number of large constraints limiting the productivity of Class 3 lands in comparison to BSAL Class 1 and 2 lands. SBA and SLR have provided additional context and information regarding land use classification and its capability (Appendix P and Appendix Q, respectively). - KEPCO notes that there is no strategy within the Central West Orana Regional Plan to encourage Equine CIC growth within the region, whereas the Hunter Regional Plan actively promotes the protection and expansion of the Equine CIC within the Hunter Valley. - KEPCO notes that the Project does not change the quantity of Equine CIC land available following the Project.
37.	The project disturbance area would impact 1,160 hectares of	Section 4.2,	Appendix Q confirms the areas mapped as BSAL and equine CIC

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	agricultural land, including 451 hectares of arable land (suitable for cropping), 694 hectares of grazing land and 15 hectares of heavily wooded land. The impacted agricultural land is estimated to include 700 hectares of the Equine CIC and 440.8 hectares of mapped BSAL. The Department's report also identified 3,800 hectares of agricultural land, including 1,158 hectares of arable land and 1,318 hectares of grazing land, within the proposed offset areas which would be managed for conservation outcomes of the areas to be utilised for biodiversity offsets, 287.8 hectares are mapped as BSAL and an additional 515 hectares are mapped as part of the equine CIC.	Appendix Q	within the Project Disturbance Boundary and puts this into context in regard to the impact this will have on the total BSAL areas in the region. The Project will impact on 2.4% of total area of BSAL within the MWRC LGA. • Appendix Q also outlines the limited impact that the Project will have on the total BSAL areas across the region. • As KEPCO originally identified within the EIS, approximately 451 ha of arable land is located within the Project Disturbance Boundary. This land has not been utilised for cropping for some time and has historically been utilised for grazing purposes.
38.	The applicant noted that subsidence might lead to minor cracks, erosion and ponding on agricultural land, but argued that these impacts would be minor and not require remediation.	Appendix V	• KEPCO met with MWRC on 18 October 2017 in regard to managing subsidence impacts associated with the Project. It is noted that MWRC were satisfied with the outcome of the meeting and that any subsidence related impacts will be duly repaired. • As originally identified in Appendix X of the EIS, KEPCO maintains that agricultural land associated with subsidence will be able to retain its pre-mining land capability characteristics.
39.	The applicant considered the impacts to agriculture production potential within its total land holdings (but outside the disturbance area) based upon an assumed cost to agricultural production per megalitres of water removed from the system. Based on the utilisation of the full water entitlement for mining (but not additional purchase of entitlements during mining), the	Section 4.2, Appendix F, Appendix K	• KEPCO has previously considered the impact of the Project on neighbouring private water bores in Appendix M of the EIS. • KEPCO undertook additional modelling which indicated that no privately-owned bores are considered likely to be impacted by the Project. Updated modelling results were originally presented in Appendix H of the RTS.

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	applicant estimated a net value of lost agricultural production from diverted water to be \$AUD 101 per megalitres, with a peak lost value of \$AUD 410,562 per annum during open cut only operation. The applicant suggested that the project would not result in a reduction of agricultural production outside of the project site owing to the confinement of draw down impacts in the alluvium to its land holdings. The applicant also reiterated that the predicted water usages from the alluvium would be in accordance with water shares held by the applicant and that no neighbouring private bores, including those at Cherrydale Park and Timnath Pty Ltd, are predicted to be impacted.		It is not anticipated that agricultural productivity on neighbouring properties will be affected by the Project. Nevertheless, in response to the concerns raised by the PAC, KEPCO has commenced negotiations with and will enter into Compensatory Water Supply Agreements for the life of the Project with landholders with concerns regarding the loss of bore water supply. These agreements will ensure that a process is in place to provide compensation in the highly unlikely and unforeseen event that the Project affects the availability of neighbouring water supply.
40.	Overall, the applicant estimated the total lost value of the agricultural production from all impacts, including lost production and water diversion, at \$ AUD 2.7 million per annum.	Appendix Q	- KEPCO reiterates this only represents 4.12% of the total agricultural production of the MWRC LGA, 0.02% of NSW and 0.005% of Australia's agricultural production. - KEPCO reiterates that this peak potential per annum impact occurs for a limited period during the open cut operation as this is when the alluvial aquifer is most relied upon.
41.	The applicant also proposed to rehabilitate the soils in mined areas to a BSAL-equivalent standard in accordance with criteria for fertility and productivity standards. The conceptual rehabilitation strategy would involve segregating and stockpiling soil resources, reshaping and forming the landscape and re introducing soil resources. These areas would then be planted	Section 4.2, Appendix P, Appendix G	A Draft RMP has been developed and is included in Appendix G. The Draft RMP provide details of all phases of rehabilitation including pre-clearance protocols, soil stripping and handling processes, managing soil stockpiles, landform reshaping, soil replacement techniques and establishment of vegetation to achieve final rehabilitation. The Draft RMP further highlights the active

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	with pasture cover and managed to re-establish soil function and profiles. The stated intent is to re-establish BSAL equivalent landscapes, with a land soil capability equivalent to class three and four, consistent with the function and soil capability of the areas directly and indirectly disturbed.		rehabilitation monitoring program to be employed during the life of the Project to ensure rehabilitation objectives are achieved. • SLR has also recently conducted an investigation at a NSW Mine to confirm whether an area of mine rehabilitation which has been established specifically to conform to LSC Class 3 also meets the relevant criteria to constitute BSAL. A report outlining the details of this investigation is included within Appendix P. • The results of the assessment internal assessment at a NSW mine demonstrate to SLR that BSAL quality land can be established on mine sites in line with the Interim Protocol. The methodologies employed at this site are consistent with those proposed for the Bylong Project.
42.	The Commission is reluctant to accept that the importance of verified lands is reduced based upon their location (with respect to the equine CIC) and land soil capability (with respect to BSAL). Each of the verified and mapped areas of strategic agricultural land has been verified as meeting the requirements of the respective agricultural categories in the <i>Upper Hunter Strategic Land Use Plan</i> . While the Commission acknowledges that the plan provides limited guidance on how to strategically manage the coexistence of mining and agriculture, it does provide a contemporary approach to defining rare and valuable agricultural land attributes.	Section 4.2, Appendix P	• KEPCO maintains the Project has been designed to avoid areas defined as BSAL, alluvial lands and Equine CIC as much as practicable. • Further explanation of the process for identifying and determining the land soil capability and the BSAL verification process has been provided by SLR in Appendix P. • BSAL can be identified and mapped over a wide range of areas of varying agricultural quality and productivity. Across NSW some areas mapped as BSAL are very high quality LSC Class 1 and 2, whilst other areas of BSAL are identified in LSC Class 3, 4 and 5 land which have limitations to agricultural productivity. • Consultation by KEPCO has confirmed that no thoroughbred activities or related activities occur within the Bylong Valley. • KEPCO has made inquiries with Hunter Valley broodmare farms in

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			an endeavour to provide opportunities to utilise the equine facilities available on KEPCO's agricultural holdings in the Bylong Valley.
43.	The Commission notes that while the comparative studies undertaken by the applicant to assess the role of natural sequence farming do highlight the similar overall nature of natural sequence farming managed areas to adjacent, non-managed areas, the assessment provided no real consideration of the (pre-natural sequence farming) baseline condition of the surveyed properties.	Appendix P	KEPCO engaged SLR to undertake a Comparative Agricultural Productivity Assessment between Tarwyn Park and neighbouring properties. Scientific baseline data on the status of the Tarwyn Park soils, pasture and agricultural productivity potential were not available prior to the implementation of NSF on the property. Results from the Comparative Agricultural Productivity Assessment are provided in Appendix P of this report.
44.	The Commission also notes that some mapped agricultural land occurs above the underground mine and could be affected by subsidence, while other mapped agricultural land would be lost through the establishment of biodiversity offsets for the project.	Appendix P, Appendix Q	- As originally identified in Appendix X of the EIS, KEPCO maintains that agricultural land associated with subsidence will be able to retain its pre-mining land capability characteristics. - KEPCO reiterates that Biodiversity Offset Areas will be managed for Biodiversity Values. The physical structure of the associated land will not change, and as a result will continue to meet BSAL and Equine CIC criteria.
45.	The Commission has previously highlighted uncertainty in relation to the usage and security of the groundwater resources, particularly the alluvium utilised for agricultural production. These risks to groundwater resources could have an indirect impact on BSAL landscapes. Consistent with this view, the Commission is concerned that the project may not be able to entirely avoid off-site agricultural impacts, including to agricultural operations which are not	Section 4.2, Appendix F, Appendix K	- KEPCO has previously considered the impact of the Project on neighbouring private water bores in Appendix M of the EIS. - KEPCO undertook additional modelling which indicated that no privately-owned bores are considered likely to be impacted by the Project. Updated modelling results were originally presented in Appendix H of the RTS. - It is not anticipated that agricultural productivity on neighbouring properties will be affected by the Project. Nevertheless, in response to the concerns raised by the PAC, KEPCO has commenced

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	currently owned by the applicant. While the proposed conditions do require the establishment of a water sharing scheme and the provision of compensation requirements, there is significant uncertainty associated with the form and function of these provisions. A prominent issue in the submissions was that the timeframes for monitoring and mitigating potential impacts are unsuitable for a working agricultural enterprise.		negotiations with and will enter into Compensatory Water Supply Agreements for the life of the Project with landholders with concerns regarding the loss of bore water supply. These agreements will ensure that a process is in place to provide compensation in the highly unlikely and unforeseen event that the Project affects the availability of neighbouring water supply.
46.	The Commission notes the risk that specific types of agricultural enterprise may result in production systems that are unable to appropriately respond to climatic and industry constraints and requirements. While the generic processes and commitments have been described by the applicant, detailed analysis of what shape these process; and commitments would take is absent. As the maintenance of agricultural production has been identified as a principal and clear objective of the project, the Commission questions why it is not a binding commitment on the applicant.	Section 4, Appendix H, Appendix Q	- KEPCO remains committed to maintaining agricultural production on land which is not required for the Project. This has been re-emphasised, and detailed measures outlined, in the preparation of the draft FMP (Appendix H). - KEPCO maintains its commitment to Schedule 4, Conditions 67 and 68 of the Recommended Development Consent.
47.	The Commission notes that the reestablishment of a sustainable agricultural landscape is a complex process. Beyond the process of redistributing soil resources, considerable time and effort is required to restore the function, structure and cycles (both biotic and abiotic) present in functioning BSAL. Even with careful consideration of these aspects, success is uncertain, infrequently achieved, and	Appendix G, Appendix P	- KEPCO has developed a Draft RMP which outlines the objectives and principles for the management and mitigation measures and contingency measures in place in order to achieve rehabilitation objectives onsite. The Draft RMP further highlights the active rehabilitation monitoring program to be employed during the life of the Project. The Draft RMP is provided in Appendix G. - KEPCO engaged SLR to complete a comparative study of mine site

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	contingent upon favourable climatic conditions.		rehabilitation in the Hunter Region, highlighting where agricultural production objectives have been achieved on active mining sites. This study further highlights the agricultural capacity of landscapes adjoining to BSAL areas. The results of this study are provided in Appendix P .
48.	The Commission notes that the NSW Department of Primary Industries highlighted in its submission dated 12 May 2016 several long-term soil production and resilience parameters that should be incorporated into the rehabilitation strategy. While the applicant and the Department subsequently addressed some of those concerns, the focus has so far been on the physical nature of the rehabilitation strategy, such as the slope and soil depth (i.e. 'inherent fertility' parameters), and there is little consideration in the material provided to the Commission of the wider range of factors that would be important to restoring the long term agricultural function of the landscape.	Section 4.2, Appendix G, Appendix P	• KEPCO responded to this submission in a letter dated 17 August 2016 (also provided in Appendix K of the Supplementary RTS). A response was provided from DPI-Agriculture requesting further information in a letter dated 7 November 2016. KEPCO responded with this additional information as requested in a letter dated 22 November 2016. It is understood that DPI-Agriculture was satisfied with the response outlined in this letter. • A summary of the information contained in this submission was further relayed to the PAC during the PAC Review Site Visit and Public Hearing by SLR on 10 and 11 May 2017. A summary of these issues is further provided in Section 3.1 of the PAC Public Hearing Response dated 19 May 2017. • KEPCO's proposal to reinstate BSAL on the post-mining landform includes the same measurable, evidence based parameters included in the BSAL protocol that was used to identify and map the pre-mining BSAL area. • As identified in the Draft RMP (Appendix G) and as is general practice in the coal mining industry, additional rehabilitation assessment methods will be applied to ensure a stable, non-polluting and sustainably productive landform is achieved post-mining. This will involve the use of analogue reference sites and will

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			measure parameters including soil function, soil resilience, agricultural productivity, species composition and density, and ecological succession. This will be separate from the BSAL and LSC assessments on the mine rehabilitation. - The inclusion of additional parameters on top of those imposed on the LSC or BSAL assessments would not meet scientific rigour standards and would not be valid. This is due to the fact that the additional parameters are not recognised in the government established criteria that is and were used to identify and map pre-mining LSC and BSAL. - Further details on this issue is discussed in Appendix P.
49.	The applicant acknowledged that, due to the recent introduction of the BSAL standard for assessing soil quality, no mines in NSW have, to date, returned agricultural land or soil profiles to equivalence, but argued that examples of mine rehabilitation returning mined land to a productive agricultural use post-mining do exist. While the applicant referenced examples of success in this area, the Commission has not been provided with sufficient evidence to be satisfied that sustainable rehabilitation to the BSAL-equivalent land will be achieved. To assist in evaluating whether there is a reasonable chance of success, a more clearly defined picture of how success will be measured at a local level, particularly how success in restoring soil	Section 4.2, Appendix P	- KEPCO did not state that 'no mines within NSW have to date <i>returned agricultural land or soil profiles to equivalence</i>'. Whilst there are numerous examples of mine rehabilitation being returned to agricultural land use post mining, up until recently there have been no examples where rehabilitation has been assessed to determine if it meets the BSAL criteria, due to the BSAL terminology and criteria only being introduced in 2012, along with the current Interim guidelines for verifying BSAL released in April 2013. - A recent internal technical investigation has been undertaken at a NSW Mine by SLR. This has confirmed that BSAL can be recreated as part of a well-planned and executed mine rehabilitation program. - Whether or not the mine rehabilitation program associated with the Project does or does not achieve the nominated BSAL criteria, will not influence the ability of the final landform to be utilised for cattle grazing as is currently the case.

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	functionality will be defined and measured would be useful. The Commission notes that these risks potentially exacerbate the overall agricultural impacts of the project because the applicant has placed a high reliance on the rehabilitation of a post mining landscape to a highly functioning agricultural landscape as part of its impact mitigation strategy.		• The Upper Hunter Mining Dialogue Grazing Study, which commenced in June 2014, to investigate whether rehabilitated mine land can sustainably support productive and profitable grazing in the Upper Hunter, released results in December 2016. This trial is showing encouraging results which point to a sustainable use of mine lands as commercially productive pastures after mining has ended. • A similar cattle grazing trial was established at Liddell open cut coal mine located in the Upper Hunter, in December 2012. The trial objectives were to assess and compare performance of a rehabilitation grazing site against an adjoining un-mined grazing site. Details of the trial are provided in Appendix P. The results of the trial demonstrated that over the first 18 months of the trial the 'rehabilitation' cattle grew significantly quicker and overall average weight difference at the end of this period was rehabilitation cattle +68.5kg over cattle grazing unmined pastures.
50.	The Commission notes the release of the <i>Central West and Orana Regional Plan 2036 (2017)</i>. The regional plan re-affirms the identified importance of agriculture to the regional economy as set out in the <i>Upper Hunter Strategic Land Use Plan</i>.	Section 4.2	• KEPCO maintains that the proposed rehabilitation strategy aims to meet the objectives and principles of the Central West and Orana Regional Plan, including contributing to a strong diversified regional economy. • MWRC provided a letter to NSW Minister of Planning dated 8 August 2017 emphasising the significance of the Project to the local community and economy. • Within the Central West and Orana Regional Plan, Mining is identified as the largest Gross Regional Product (GRP) Contributor in the Central West and Orana Region, providing \$2.5 billion (B) and

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			5% of jobs. - It is noted Goal 1 of the Central West and Orana Regional Plan is to achieve '<i>The most diverse regional economy in NSW</i>'. Under the details listed under Goal 1, mining activities are acknowledged for continuing to drive growth in the region. - It is clear from the goals and directions within the Central West and Orana Regional Plan of the intention to promote and encourage both agriculture and mining in the region.
51.	The Commission recognises the relationship between the management of impacts to groundwater resources and the retention of agricultural productivity. This relationship makes the establishment of an effective water sharing and compensation program, including appropriate make good components, essential in limiting the impacts of the project on agricultural enterprises, and ensuring sustainable land use co-existence outcomes. These issues require further detailed consideration before a decision is made about the Project. However, the conclusion that might be reached is that any approval of the Project would represent a fundamental shift in the Valley in favour of mining as opposed to agricultural pursuits, and that the water security on which agricultural depends, may be jeopardised, particularly during extended dry periods. The potential for this outcome should be considered in any decision about the Project.	Section 4.2, Appendix F Appendix K	- KEPCO maintains it is not anticipated that agricultural productivity on neighbouring properties will be affected by the Project. Nevertheless, in response to the concerns raised by the PAC, KEPCO has commenced negotiations with and will enter into Compensatory Water Supply Agreements for the life of the Project with landholders with concerns regarding the loss of bore water supply. These agreements will ensure that a process is in place to provide compensation in the highly unlikely and unforeseen event that the Project affects the availability of neighbouring water supply. The Compensatory Water Supply Agreements are included in the Water Management Plan provided in Appendix F. - Mining has always been an interim land use and in this instance, the period of open cut mining, being eight years, is relatively short. - KEPCO is committed to maintaining agricultural productivity, with farming activities occurring before, during and following mining. Throughout the 19 years of underground mining activities, cattle grazing will continue unabated in the land surrounding the mine infrastructure facilities.

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			The Development Application for the Project as proposed would not represent a shift in favour of mining over agriculture as both mining and agricultural pursuits can be developed within the region without fundamentally impacting or excluding the other.
Planning Assessment Commission: Social Impacts on the Bylong Village and Surrounds			
52.	Mining projects can lead to acute social impacts in the localities where they occur, particularly when mining activities result in the displacement of local populations as well as physical changes to the environment. Socio-economic issues for the wider region, and particular social impact in the Bylong Valley were prominently featured at the public hearing and in written submissions. The Commission's focus here is the particular social impacts on the Bylong Village and surrounds, as requested in the Minister's terms of reference. Socio-economic issues for the wider region are discussed in Section 3.5.7 of this report.	Section 2.1, Section 4.3.1, Appendix D	- It is noted a large proportion of submissions to the PAC were from stakeholders who were not based within the MWRC LGA and have focussed their concerns on the local community of Wollar, not within the locality of Bylong Valley. Where local community members of Bylong Village have raised issues, they have largely pertained to the long-term water availability for agricultural resources. KEPCO has previously committed to ensure concerned landholders are appropriately compensated should unexpected impacts occur. - The population of the Bylong Valley and the wider local community has experienced growth and decline throughout its history. A historical timeline of the important socio-economic influences which has shaped the Valley over the past 100 years is provided in Appendix D of this report. - KEPCO has sought to comprehensively identify and understand social impacts and opportunities, as well as defining a range of mitigation and management measures. This includes a Preliminary Social Impact Management Plan (SIMP), which has been developed in advance of project approval in acknowledgement of the issue raised by the PAC.

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53.	The submissions raised issues with the social impacts that have already occurred in the Bylong Valley and those that might occur because of the project. The submissions observed that "only a skeleton community remains" and argued that the community had "disintegrated", largely because of the applicant's property acquisitions. The submissions noted a strong sense of loss caused by population decline, and expressed profound regret that the movement of long term residents away from established homes had affected local community organisations such as the Rural Fire Service as well as the village churches and school. The latter was placed into recess at the end of 2014 and later closed in 2015. It has since been acquired by the applicant. Profound sadness was also expressed regarding the loss of local cultural traditions, including the cancellation of the Bylong Mouse Races in 2014. This 25-year-old, annual charitable event was once nominated for 'Community Event of the Year on Australia Day', and posted record proceeds and charitable donations as recently as 2013. Residents also wrote about the personal stress that has resulted from uncertainty around the location, timing and impacts of mining, while both residents and people from further afield wrote about their devastation at losing long and enduring family ties to the valley.	Section 2.1, Section 4.3, Appendix D	• KEPCO has developed a Preliminary SIMP in consultation with MWRC. The Preliminary SIMP addresses community issues present within Bylong Valley and MWRC LGA and provides a framework for developing appropriate management and mitigation measures for the Bylong Valley. This Preliminary SIMP is provided in Appendix D. • KEPCO notes the Bylong Valley population has experienced a range of growth and decline over the past 100 years. A summary of the history of the Bylong Valley is provided in the Preliminary SIMP. The SIMP concludes that the population and general social fabric of the Valley has been in gradual decline since the completion of the railway works in the 1980's. • KEPCO first began acquiring properties in 2011, in line with best practice and the recommendations of the NSW DP&E. A full list of properties acquired by KEPCO as part of the Bylong Coal Project is provided in Figure 7 and Figure 9 of the Preliminary SIMP. Figure 9 illustrates a number of property amalgamations, including Wallings Pastoral Company, Accomac Holdings and the Fuller family holdings, occurred prior to KEPCO's entrance into the Valley. • KEPCO has previously agreed to a range of commitments to manage and mitigate impacts within the MWRC LGA and Bylong Valley locality. Following an extensive community consultation period in October 2017 in Bylong Valley and MWRC LGA, KEPCO has further committed to additional actions to provide ongoing support to the local community. These commitments are provided in Appendix D.

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			Prior to the cancellation of the Bylong Mouse Races in 2014, as part of the Bylong Coal Project's Community Investment fund, KEPCO was a major sponsor of the event, contributing to the record proceeds and contributions in 2013. KEPCO continues to be active within the Bylong Community and the larger MWRC LGA.
54.	People wrote about the social consequences of physical changes to the valley should mining proceed. The industrialisation of scenic, productive and historically important landscapes was described as significant and the irreversible loss of the valley's rural character and 'place' value was highlighted in submissions. It was noted that the physical impacts of mining could also further marginalise remaining private landholdings while the removal or relocation of social fabric such as churches, graveyards (including exhumation of historic graves), the school, and meeting places would irreversibly erode social connections with the place.	Section 4.3, Appendix D	- KEPCO is committed to minimising any visually intrusive elements of the Project from Bylong Village and users of the public road network along Bylong Valley Way. - KEPCO is committed to rehabilitating mine affected lands as soon as practicable (Year 3 of the Project) to a post mining agricultural landscape in line with BSAL restoration commitments. - KEPCO maintains the Project will halt the current trend of population decline in the Bylong Valley and will further underpin long term sustainability within the Bylong Valley community. - KEPCO will encourage employees and their families to take up permanent residence in the Bylong Valley and MWRC LGA. - Following additional accommodation availability surveys conducted in consultation with MWRC in October 2017, KEPCO has removed the WAF from its mine plan and will utilise and encourage local accommodation resources. - The Preliminary SIMP identifies mitigation and management measures to address social and community concerns (Appendix D).
55.	The depth of social concerns resulted in the Department commissioning a peer review of the applicant's social impact	Section 4.3, Appendix D	KEPCO has previously responded to the Peer Review commissioned by DP&E of the Social Impact Assessment in a letter

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	assessment. This review found that local social issues and concerns had been given relatively superficial treatment by the applicant considering how profound the impact had been, and continues to be, on valley residents. The peer review highlighted that: • several key social impacts on community structure had been overlooked, including the significant effects of property acquisitions and the community engagement process itself; • the engagement process had fallen short, of accepted standards for accuracy, completeness and transparency. Many residents would have been unable to contribute views about the impacts on their lives and daily activities; and • there was no information on community health, little discussion of impacts arising from bio physical factors (dust, noise, traffic, visual changes, water supplies), a lack of an evidence base from other mining projects, and a poor understanding of the processes and significance of cumulative change.		dated 6 October 2016. • KEPCO has addressed peer reviewer recommendations in this response and Preliminary SIMP. KEPCO has also provided a list of additional commitments, in response to the DP&E peer review recommendations and additional stakeholder consultation. The Preliminary SIMP is provided in Appendix D.
56.	While the applicant challenged the peer review findings, the Commission also received various submissions outlining concerns with the applicant's social impact assessment methodology. Those concerns include claims that: • baseline data for the assessment had been obscured by the applicant's property acquisitions; • social impacts had already occurred, and people who had	Appendix D	• KEPCO has previously responded to DP&E's Peer Review of the Social Impact Assessment in a letter dated 6 October 2016. • KEPCO has addressed peer reviewer recommendations in this report and Preliminary SIMP. KEPCO has also provided a list of additional commitments by responding to DP&E peer review recommendations and additional stakeholder consultation. The Preliminary SIMP is provided in Appendix D.

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	already moved on may not have had opportunity to speak about those impacts; • there was no rating or assessment of impacts against a defined assessment matrix and consequently the severity, extent and temporality of the impacts had been poorly evaluated; • regional economic benefits had been emphasised, rather than local social impacts. Nonmonetary and human values had been discounted; • there was an inadequate assessment or of cumulative social impacts resulting from the interconnection of other small rural villages and existing mines; • there was an inadequate assessment of social impacts related to the resettlement of residents; and\ • there was an inadequate assessment of impacts on wellbeing resulting from the extended period of uncertainty with the exploration and application process.		• KEPCO engaged Elliott Whiteing to complete a peer review of the Preliminary SIMP (Appendix D). The Peer Review concluded the Preliminary SIMP reflects a best practice approach to social impact management, including a focus on impacts of moderate to high significance, consideration of stakeholder views, clear link between impacts and mitigations, and the provision of detailed management strategies.
57.	The Department recommended several mitigation measures to support what remains of the local community. These include that the applicant should: • make every effort to provide funding to local community projects; • retain agricultural productivity, where possible, within the project area and return disturbed areas to an agricultural land	Appendix D	• As noted in DP&E's Preliminary Assessment Report, DP&E engaged Elton Consulting to undertake an independent peer review of the SIA, concluding its adequacy following the uptake of a number of residual recommendations. • KEPCO reiterates its commitment to the Recommended Development Consent which provides the ability to remain responsive and flexible to community needs and adaptable to suit emerging issues and community priorities.

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	use following mining; • afford acquisition and/or mitigation rights to the remaining noise affected residents; • establish a Community Consultative Committee to ensure that the views and concerns of the community through its representatives are considered during the life of the project; • undertake an oral history of the area, preparing archival documentation, relocating where possible important local historical items of importance to the local community and managing impacts on heritage items, including on Tarwyn Park; • prepare a Burial Management Plan for exhumations from the church grounds; and • assist the Rural Fire Service, and ensure there mine is equipped for fire-fighting		• KEPCO has developed a Preliminary SIMP in consultation with MWRC and local community members. The Preliminary SIMP addresses community issues present within the Bylong Valley and MWRC LGA and provides a framework for developing appropriate management and mitigation measures. The Preliminary SIMP further expands on the recommendations made in the DP&E Preliminary Environmental Assessment following supplementary community consultation in Bylong and MWRC LGA in October 2017. The Preliminary SIMP is provided in Appendix D.
58.	The Commission is, however, concerned that the importance of social impacts may be diminished if there is a view that they are an inevitable consequence of the occurrence of a mineable resource. This concern is reflected in the Department's peer review, and in numerous submissions, which indicate that the severity of the impacts that have already occurred have been overlooked, and that the community has not been properly engaged on the extent and temporality of the impacts that have occurred and that might be exacerbated should the project proceed.	Section 4.3.2, Appendix D	• KEPCO notes that the village of Bylong and the wider local community has experienced periods of growth and decline in population throughout its history. A historical timeline, including important socio-economic influences which have shaped the social fabric of the Valley is appended to the Preliminary SIMP (Appendix D). It concludes that the Village has been in decline since 1980s. • KEPCO first began acquiring properties in 2011 in line with best practice and the recommendations of the NSW DP&E. A full list of properties acquired by KEPCO as part of the Bylong Coal Project is provided in Figure 7 and Figure 9 of the Preliminary SIMP. Figure 9

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			illustrates a number of property amalgamations, including Wallings Pastoral Company, Accomac Holdings and the Fuller family holdings, occurred prior to KEPCO's entrance into the Valley. • Extensive consultation has been undertaken to-date to identify and assess the potential social impacts of the Project, with further consultation undertaken during the preparation of the Preliminary SIMP. • The Preliminary SIMP is informed through the findings of the Project SIA and the associated EIS and SIA consultation processes, and the issues and concerns raised by stakeholders in response to the public exhibition of the EIS in 2015 and the PAC Public Hearing in 2017. It is also informed by work completed as part of the RTS and Supplementary RTS. • The Preliminary SIMP addresses community issues present within Bylong Valley and MWRC LGA and documents the opportunities, management and mitigation measures that will be implemented by the Project. • Responses contributing to the preliminary SIMP include references to positive social impacts sought from the Project.
59.	The Commission is concerned with the Department's explanation that some social impacts have already occurred owing to open market processes considering that several public submissions indicate that some sellers may have felt that they had no 'option but to sell, and that there was a possibility that, having sold, the landowners may have no longer felt able to participate in the planning process, or may have been excluded	Section 2.1, Section 4.3.2, Appendix D Appendix K	• KEPCO acknowledges that property acquisitions activities, under the voluntary property acquisition process, particularly activities during 2014-2015, while motivated by best practice and a desire to limit impact on local resident amenity, resulted in the departure of a number of residents, some of whom were active and leading members of the Bylong Valley community. • Residents located outside the voluntary acquisition zone who have

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	from such processes by contractual provisions.		concerns with the Project are primarily referring to off-site water impacts. KEPCO has sought to allay these concerns through its willingness to enter into Compensatory Water Supply Agreements and to provide them with certainty.
60.	The Commission is also concerned that there does not appear to be any evaluation of the sufficiency of the mitigation measures proposed by the applicant and recommended by the Department. Indeed, some of the peer reviewer's recommendations appear to have been weakened in the Department's conditions, which require only that the applicant "make every effort" to contribute to local community projects, and maintain agriculture, but only "where possible". These terms seem to reinforce the Department's acceptance of the inevitability of local social impacts and reliance of open market conditions to protect the interests of impacted people without recognising the full significance of community impacts. The Commission considers, as a result, that there are several inadequacies in the social impact assessment of the project, and as a consequence, the severity of the social impact cannot be adequately determined. In the absence of this information, any future evaluative judgement on the social benefits and social costs of the project will be impaired.	Appendix D	- The Preliminary SIMP developed for the Project outlines a suite of appropriate management and mitigation measures that will be implemented to address potential social issues in the Bylong Valley. The Preliminary SIMP is provided in Appendix D. - A Peer Review was undertaken of the SIMP and is included in Appendix D. The Peer Review concluded that Preliminary SIMP reflects best practice approach to social impact management. - In addition to the supplementary list of commitments as part of its Community Investment Strategy, KEPCO reiterates its acceptance of the Recommended Development Consent in its current form. KEPCO believes the Recommended Development Consent conditions provides the ability to remain responsive and flexible to the community needs and adapt to suit emerging issues and priorities identified within the community. - KEPCO notes that there are substantial socio-economic and other benefits which are set to flow to the Bylong Valley if development consent is granted for the Project. Conversely, these benefits will largely evaporate, if development consent is not granted for the Project.

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Planning Assessment Commission: Heritage values associated with Tarwyn Park and Iron Tank			
61.	While acknowledged by the applicant to have some intrinsic heritage significance, neither property is currently listed locally or at State level for its heritage values. The applicant suggested that the properties have local historical, associative, technical, social, contributory, rarity and representative significance. The GML report asserted that both the Tarwyn Park and Iron Tank properties satisfied several heritage significance criteria at State level, primarily for their associations with significant people in history, pastoralism, thoroughbred breeding, and natural sequence farming. GML accordingly placed greater heritage value on the properties than previously articulated.	Section 4.4, Appendix I, Appendix J	- KEPCO has previously responded to GML Heritage's report in the Hansen Bailey Response to PAC Hearing Document dated 19 May 2017. - KEPCO has prepared a Draft HHMP detailing the extensive list of mitigation and management measures currently being undertaken and those proposed for the life of the Project (see Appendix J). - KEPCO has prepared a Draft Conservation Management Plan (CMP) to specifically manage the impacts associated with Tarwyn Park and associated heritage features and further includes an historical account of the Tarwyn Park Farm Complex, assessment of significance and a Draft Blast Management Strategy detailing the management and mitigation strategies to be put in place to limit blasting impacts to sensitive features. The Draft CMP for the Project is included as Appendix I.
62.	The applicant responded to the GML report (Appendix 7), disputing its findings about heritage significance and reiterating proposed (but not committing to any additional) heritage mitigation measures. In summary, those measures seek to minimise direct impacts to Tarwyn Park house and its stables, provide ongoing management of the buildings, the continuation of natural sequence farming (unless shown to be unviable, or where water supplies are prioritised for mining), management of	Section 4.4, Appendix I, Appendix J	Refer to above.

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	the horse burials, and by making the property available for external study.		
63.	The Commission notes that both Tarwyn Park and Iron Tank form part of the project area, proximate to open cut activities, with parts of each property within the actual project disturbance area. The project disturbance area includes the entrance and part of the driveway to Tarwyn Park, interrupting the property's historical connections to the village, church and other elements of the landscape. Tarwyn Park would be accessed through the open cut pit, effectively isolating the property. The natural sequence farming areas and racehorse burial sites would also be directly impacted. Remaining farm buildings would be subject to visual impacts and vibration impacts.	Section 4.4.1 Appendix I Appendix J	- The Project has been specifically designed to avoid, as far as possible, any impacts to the heritage values of Tarwyn Park and Iron Tank. This includes designing the mine plan to avoid direct impacts to the Bylong River floodplain and the main areas utilised for the Natural Sequence Farming. - Ongoing access to the Tarwyn Park homestead will be maintained at all times, including the eight-year open cut mining period and beyond via a new driveway and access track. - An Interpretation Plan will be prepared in accordance with Condition 46c of Schedule 4 of the Recommended Development Consent. This Plan will further mitigate the impacts on historical connections of the Tarwyn Park property with neighbouring items of heritage value that will be removed by the Project. - Following expert advice that the Tarwyn Park homestead would be best preserved by the building having an ongoing use, KEPCO is consulting with a number of academic and educational institutions over the scope to establish the property and parts of the homestead building as the Tarwyn Park Collaborative Research and Education Centre. Protocols are being developed and planning is underway in this regard. In the event that it is not used for this purpose it will be made available and maintained for other beneficial uses.
64.	The Commission notes the differences between the applicant's position on the heritage significance of Tarwyn Park and Iron	Section 4.4, Appendix I,	KEPCO has engaged AECOM to undertake a Supplementary Significance Assessment of Tarwyn Park, which concludes that

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	Tank, and the GML report, with GML according a higher significance to the heritage values of the properties than the applicant. The Commission is persuaded that the properties have greater heritage significance than has been previously documented by the applicant, or considered by the Department or Heritage Council. As such, it is clear to the Commission that the documented impacts and mitigation measures to the properties need to be re-evaluated taking account of the potential for greater heritage significance.	Appendix R	Tarwyn Park has some State Significant features. KEPCO has further prepared a Draft CMP to manage the impacts and preserve the heritage features associated with the Tarwyn Park Farm Complex on this basis. The Draft CMP is provided as Appendix I. • A Peer Review of the HHMP and CMP was undertaken and is included in Appendix R. • The Peer Review concluded that the final draft CMP is a well laid-out, well-illustrated and comprehensive conservation management document which has been prepared in accordance with the relevant methodology, rigorously assesses significance using appropriate criteria and guidelines, analyses the relevant issues, provides clear conservation management policies and identifies priority works. • The Peer Review also concluded that the draft HHMP is a well-illustrated, comprehensive, plain English report with thorough analyses of data and rigorous assessments of heritage values. The report addresses the concerns raised by the PAC following their review of the State Significant development application and will provide those responsible for the management of the historic heritage of the Project area with sound guidance.
65.	The Commission also notes that assessment of the values of, impacts to and mitigation measures for the setting of the properties, which is currently part of the proposed disturbance area, is largely absent. The importance of the landscape setting is moreover elevated by the value placed on it by the community, and the designation of a Bylong Landscape Conservation Area by the National Trust. As the natural beauty	Section 4.4, Section 4.6, Appendix I, Appendix R	• KEPCO has developed a detailed Landscape and Visual Analysis to review sensitive viewing locations and potential landscape impacts from the Tarwyn Park Farm Complex. This Landscape and Visual Analysis is included within the larger CMP, provided in Appendix I of this document, and characterises these impacts as manageable with appropriate mitigation measures. • The Peer Review of the CMP was undertaken (Appendix R), which

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	of the area is widely recognised, the extent of its interruption by the project requires evaluation.		included a review of the assessment of the heritage significance of the Bylong Landscape Conservation Area. The Peer review concluded the assessment sensibly adopts a Cultural Landscape Management Approach for the area. The history of natural and cultural attributes are well analysed and a table measures the area against a number of comparable precincts and areas listed on the State Heritage Register (SHR). There is a comprehensive and robust assessment of the area's values against the standard criteria using the inclusion and exclusion guidelines, concluding that the Bylong Landscape Conservation Area is of State significance as measured against a number of the assessment criteria. • KEPCO has also developed a 3D interactive model which vividly and realistically illustrates the minimal impacts the Project will have on the greater Bylong Landscape Conservation Area.
66.	Although the GML report has been made publicly available, the Commission recognises that the timing of its publication (and the peer review that the applicant subsequently elected to submit) has meant that both public and agency responses to the findings and recommendations of the report have not been possible during the review period. The Commission considers that formal opportunity for public and agency review is essential prior to any determination.	Section 4.4	• KEPCO has previously responded to this document in its Response to PAC Public Hearing Document on 19 May 2017. • KEPCO has received notification from DP&E indicating it does not propose to publicly exhibit the GML Heritage's report. Whilst noting the generalist nature of the report, KEPCO would welcome the opportunity to respond to additional submissions regarding this report, should the Commission decide to make the document available for public and agency review. • Further discussion of the values of heritage items within the Tarwyn Park Farm Complex is included in Section 4.4 of this report.
67.	The Commission notes that while the GML report makes	Section 4.4,	• Noted.

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	findings on heritage listing criteria for Tarwyn Park and Iron Tank, eligibility for listing is a matter for the Heritage Council and Minister for Heritage rather than for this review.	Appendix J.	
Planning Assessment Commission: Mine Justification			
68.	The Bylong coal project has been presented for review by the Commission as an integrated open cut and underground mine. The applicant asserts that both the open cut and underground components are necessary for the mine to proceed and this is reflected in the proposed mine plan. While, the Minister's terms of reference request the Commission "to assess the merits of the project as a whole... paying particular attention to the justification for the open cut stage of the project", neither the applicant nor the Department have provided separate assessments of either component.	Appendix W	- It is noted that the State Significant Development Application lodged for the Project relates to an integrated Open Cut and Underground Mining Project with associated activities. - KEPCO has provided an extensive list of information and justification as to why the Bylong Coal Project is presented as an Integrated Project within the Gateway Certificate Application, Background Document, EIS, RTS, Supplementary RTS, DP&E Assessment Report and Response to PAC Public Hearing. In response to the PAC's comments, the critical importance of the open cut component of the Project to its economic feasibility has been provided in an additional peer review (see Appendix W).
69.	The submissions described significant concern about the suitability of the project site for either open cut or underground mining. The submissions highlight the open cut's comparatively high level of environmental impacts, and the irreversible effects on the landscape, water and agricultural resources, as well as fauna and flora.	Section 4, Section 5, Appendix W	- The peer review commissioned by KEPCO also considers the merits of the integrated Project, including mining planning, environment, economic and socio-economic impacts and is provided in Appendix W of this report. - KEPCO acknowledges that environmental impacts will be present during the open cut stage of the mine. KEPCO reiterates these impacts will be managed and mitigated throughout the life of the Project via the commitments made throughout the EIS, RTS,

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			Supplementary RTS and this report.
70.	Some submissions also highlighted the project's dependence on future coal prices and the demand for thermal coal in South Korea, with the consequent risk that the Bylong Coal Project may become a 'stranded asset', and an ongoing maintenance or rehabilitation legacy for the community.	Section 4.6.7 – Section 4.6.9, Appendix C	• KEPCO has received written confirmation from KEPCO Korea indicating 100% of the coal recovered from the Project will be used in South Korea for the life of the Project, and providing a contextual basis for this commitment. This provides a high degree of confidence as to the investment in, and completion of the entire tenure of the Project (See Appendix C). • KEPCO has committed to the progressive rehabilitation of disturbance over the life of the Project, with rehabilitation commencing in Year 3 of the Project. • KEPCO reiterates that the Project is partially owned by the Korean Government (51.5% ownership) and the primary purpose of the Project is to ensure South Korea is supplied with an intergenerational supply of product.
71.	The applicant argued that the open cut and underground would depend upon each other in the operational mining sequence, and that early coal recovery from shallow coal measures by way of open cut mining would contribute to project feasibility.	Section 4.5 Appendix W	• Noted. This proposition is clearly verified in the expert review commission by KEPCO.
72.	The applicant asserted that it had carried out a broad consideration of the estimated level of environmental impact and the likely extent and recoverability of the coal resource in relation to five potential development scenarios, including the current mine plan. The applicant argued that, from its perspective, the current mine plan provides the best	Section 4.5 Appendix W	• Noted. This evaluation process is further discussed and its appropriateness confirmed in the expert peer review.

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	compromise between feasible resource recovery and environmental impacts.		
73.	The Commission recognises that the layout of the project represents a contemporary conceptual design. The integration of the open cut with the underground mines to ensure there is no final void is an advance on many mining operations throughout the Hunter Valley, although the Commission notes that this does not avoid permanent change in the landscape. The Commission also recognises that the conceptual mine plan has undergone significant revision to reduce landscape impacts.	Section 4.5	Noted.
74.	The Commission is not yet persuaded by "all-or-none" arguments for the open cut and underground asserted by the applicant because they are at this stage, largely unsupported by probative evidence. The applicant stated that four other mine development scenarios had been considered in developing the proposed mine plan, leading it to conclude that the development of the underground component in isolation would still require the disturbance of 400 hectares of land	Section 4.5, Appendix W	- KEPCO has provided extensive information and justification as to why the Bylong Coal Project is presented as an Integrated Project within the Gateway Certificate Application, Background Document, EIS, RTS, Supplementary RTS, DP&E Assessment Report and Response to PAC Public Hearing. - In response to the PAC's concerns, the critical importance of the open cut component of the Project has been further analysed and confirmed in an additional peer review of the viability of the integrated Project. This includes analysis of a hypothetical underground-only project, which is determined to be economically unviable and inferior in a range of economic and non-economic respects (see Appendix W). - KEPCO maintains it has developed a robust and systematically designed mine plan for the Project and has leveraged the

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			operational opportunities of the integrated Project to cumulatively benefit the Project and Bylong Valley as a whole.
75.	The applicant provided information that pointed to the financial benefits of an integrated operation compared with alternative development scenarios, but this information is not sufficient to support a definitive view on the case for the integrated project compared with an underground operation alone, or no project at all, given the range of other factors, such as landscape disturbance, water impacts and visual amenity, that would need to be considered. The Commission is also reluctant to accept an argument that avoidance of the need to disturb 400 hectares for the underground alone is a compelling justification to disturb an additional 600 hectares of land for the combined operation.	Section 4.2, Section 4.5, Section 4.6.7 – 4.6.9, Appendix W	Additional economic modelling and peer review has confirmed the critical importance of the open cut component of the Project and has been provided in an additional peer review of the viability of the integrated Project. This includes analysis of a hypothetical underground-only project, which is determined to be economically unviable and inferior in a range of economic and non-economic respects (see Appendix W).
76.	The Commission notes that a large proportion of the adverse impacts of the project are associated with the open cut portion of the project. The development of the open cut component would significantly increase the risk of water resource impacts, agricultural impacts, noise and dust impacts, as well as impacts on visual amenity, and endangered native species and vegetation. The open cut would also generate a significant part of the requirement for surface rehabilitation, which carries a high level of cost, uncertainty and consequence.	Section 4.2, Section 4.5, Section 4.6.7 – 4.6.9, Appendix W	- KEPCO maintains it has developed a robust and systematically designed integrated mine plan for the Project that successfully balances extraction of a State-significant mineral resource with a sensitive and sustainable approach to the management of environmental, social and economic issues. The net result will cumulatively benefit the Bylong Valley and the region more broadly. - KEPCO has prepared a supplementary Cost Benefit Analysis for the Project, reviewing the costs and benefits associated with the open cut phase, open cut/underground phase and the underground only phase and is provided in Appendix W.

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77.	While the Commission acknowledges that solely developing the underground portion of the project would result in environmental risk and impact, sufficient information was not provided to support a comparative evaluation of the relative levels of impact, risk, environmental costs (including mitigation and remediation). The Commission would expect that the overall environmental and other impacts arising from the project would be reduced if the open cut portion of the project was not developed, but is not in any way in a position to assess the extent to which this would be the case, or whether such a more limited development would be in the public interest.	Appendix W	- It is noted that the State Significant Development Application lodged for the Project relates to an integrated Open Cut and Underground Mining Operation with associated activities. - KEPCO has provided an extensive list of information and justification as to why the Bylong Coal Project is presented as an Integrated Project within the Gateway Certificate Application, Background Document, EIS, RTS, Supplementary RTS, DP&E Assessment Report and Response to PAC Public Hearing. - The critical importance of the open cut component of the Project has been evaluated and confirmed in an additional peer review of the viability of the integrated Project (see Appendix W).
78.	The applicant's stated reason for developing the project is to increase the level of resource security for electricity generation in South Korean markets. The applicant also claims that the feasibility of the whole project falls into question based on the reduced net present value estimates that result from developing the underground mine only. However, the applicant has made conflicting assertions; on the one hand arguing net present value would be negative, while the peer reviewer suggested it would be positive, but small, and in any case, the business case for the mine needs no scrutiny. The Commission notes that the target open cut coal seams provide only moderate quality coal, which despite having low sulphur content contains a moderate to high ash content. In addition, the open cut is targeting a relatively small proportion	Appendix C Appendix W	- KEPCO has received written confirmation from KEPCO Korea indicating 100% of the coal recovered from the Project will be used in South Korea for the life of the Project, and providing a contextual basis for this commitment. This provides a high degree of confidence as to the investment in, and completion of, the Project (see Appendix C). - The open cut resource has been substantially explored and coal quality and strip ratios are known. The overburden to coal ratio is such that it is well within the economically viable margins. There is no uncertainty about the critical contribution of the open cut components to the Project as a whole. Additional economic modelling and peer review has confirmed the critical importance of the open cut component of the Project has been provided in an additional peer review of the viability of the integrated Project. This includes analysis of a hypothetical underground-only project, which

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	(only 8%) of the identified resource accessible by open cut operations and 26% of the estimated total project production. The applicant explained that if the low strip ratio of overburden to coal resource were higher, the measured quality of the coal would not be sufficient to warrant mining, indicating the possibility that the open cut is a marginal case and increasing concern regarding the high level of importance placed on this component of the project.		is determined to be economically unviable and inferior in a range of economic and non-economic respects (see Appendix W).
79.	While the Commission acknowledges that policy commitments can change, these developments do raise a question about the risks attached to the project and the overall merit of an open cut operation that front-end loads the adverse impacts and costs; associated with the project.	Section 4.5, Section 4.6.7 – 4.6.9, Appendix W	- KEPCO maintains it has developed a robust and systematically designed mine plan for the Project and has leveraged the operational opportunities of the integrated Project to cumulatively benefit the Project and Bylong Valley as a whole. - KEPCO has prepared a supplementary Cost Benefit Analysis for the Project, reviewing the costs and benefits associated with the open cut phase, open cut/underground phase and the underground only phase and is provided in Appendix W.
80.	The Commission notes that the project as it stands is based on an integrated open cut and underground operations. Neither the applicant nor the Department have provided adequate information or analysis that would allow the benefits and costs of the open cut to be isolated from other elements of the project. The information that is provided is moreover incomplete and at times contradictory.	Appendix W	- It is noted that the State Significant Development Application lodged for the Project relates to an integrated Open Cut and Underground Mining Project with associated activities. - KEPCO maintains it has developed a robust and systematically designed mine plan for the Project and has leveraged the operational opportunities of the integrated Project to cumulatively benefit the Project and Bylong Valley as a whole. This has been verified by an additional peer review of the viability of the integrated

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	As it stands, there is insufficient evidence to conclude that the open cut is vital to the project, or that an alternative development without the open cut would not be in the public interest.		Project (see Appendix W). KEPCO has prepared a supplementary Cost Benefit Analysis for the Project, reviewing the costs and benefits associated with the open cut phase, open cut/underground phase and the underground only phase and is provided in Appendix W.
Planning Assessment Commission: Landscape and Visual Impacts			
81.	The submissions emphasised the proposed change from a rural agricultural setting to an open cut mining industrialised landscape. There were also concerns regarding the irreversibility of these changes, and whether the visual impacts could be suitably remediated. Potential damage to the cliff lines in and near the project site because of subsidence due to underground mining operations is a further concern.	Section 4.6.1, Section 4.6.4, Appendix I, Appendix J	- KEPCO engaged AECOM to complete a Significant Assessment of the Bylong Landscape Conservation Area and this has been appended to the Draft HHMP. These reports conclude that the rural character of the Bylong Valley landscape will not be irreversibly lost due to the Bylong Coal Project. - KEPCO acknowledges industry as an addition to the landscape and may be present in part of the Bylong Valley for the initial 10 years of operations, however an effective tree screening and progressive rehabilitation program focusing on returning lands fit for agricultural purposes will effectively minimise the industrialised setting as referenced by the Commission. - Furthermore, the surface components of the Project have been specifically designed to utilise the existing topography, trees and vegetation to shield open views from the Bylong Valley Way and other sensitive public and private viewing locations. - KEPCO further acknowledges, that whilst the post-mining landform will be modified, the landscape will comprise of the same visual characteristics of Tal Tal Mountain, alluvial flats and the lower slopes. Its fundamental topography and rural character will be

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			retained. KEPCO will develop Extraction Plans prior to the commencement of each longwall panel, which will include monitoring data along cliff lines. In line with the commitments made in the EIS, KEPCO will use this data to decide whether an increase in panel setback length is required to ensure the mine layout is providing effective protection to significant cliffs in the area.
82.	Forty-one cliffs were identified within the subsidence zone. Of these, 30 cliffs directly overlie longwall panels and are forecast to experience a maximum total subsidence of 3.3 metres, resulting in rock falls along up to 20% of the length of the cliffs, and visible subsidence movements and cracking along up to 50-70% of the cliffs. The predicted levels of strain and far field movements for cliffs outside the longwall mining area, including the six prominent cliffs, are predicted to be minor, resulting in relatively small impacts, such as minor cracks and rock falls	Section 4.6.1, Appendix V	- KEPCO reiterates that further assessment was undertaken in the RTS stage of the Project and provided site specific predictions for subsidence movements for each of the cliffs. - KEPCO will develop Extraction Plans prior to the commencement of each longwall panel, which will include monitoring data along cliff lines. In line with the commitments made in the EIS, KEPCO will use this data to decide whether an increase in panel setback length is required to ensure the mine layout is providing effective protection to significant cliffs in the area.
83.	The Department acknowledged that the project would result in changes to the visual landscape of the Bylong valley. However, the Department considered that these impacts would be localised and generally screened from public view by the surrounding landscape. The Department concluded that while the project would transform the local landscape from a rural setting into a mining/industrial setting, longer term project landscape treatments would generally return the site to a rural setting.	Section 4.6.1, Section 4.6.4, Appendix I, Appendix J	KEPCO supports the management measures suggested by DP&E in the Recommended Development Consent Conditions.

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	To manage this transformation the Department recommended conditions requiring the applicant to implement mitigation measures to reduce the visibility of the mine operations on privately-owned receivers that have direct views of the mining operations. This includes screening along affected roadsides as well as other measures to reduce visual impacts.		
84.	The Commission notes that the transformation of the Bylong valley landscape would be in large part, irreversible, and that it is not possible for landscape treatments to return the valley to its current appearance. The Commission considers that the project would result in a shift from an agricultural landscape, recognised as exceptional by the National Trust, to an industrial setting. The Commission recognises that the landscape treatment of mine voids and OEAs is intended by the applicant to manage and minimise the impacts to the landscape of the Bylong Valley. However, while the physical reshaping of the disturbed landscape may mitigate the severest of impacts, the revised landform will be substantially different to the current valley morphology.	Section 4.6.1, Section 4.6.4, Appendix I, Appendix J	• KEPCO engaged AECOM to complete a Significant Assessment of the Bylong Landscape Conservation Area and this has been appended to the Draft HHMP. This report concluded that the rural character of the Bylong Valley landscape as identified by the BCLA will not be irreversibly lost by the Project. • KEPCO acknowledges the addition of industry to the landscape may be present in part of the Bylong Valley for the initial 10 years of operations, however an effective tree screening and progressive rehabilitation program focusing on returning lands fit for agricultural purposes will effectively minimise the shift away from an agricultural setting as referenced by the Commission. • Furthermore, the surface components of the Project have been specifically designed to utilise the existing topography, trees and vegetation to shield open views from the Bylong Valley Way and other sensitive public and private viewing locations. • KEPCO further acknowledges, that whilst the post-mining landform will be modified, the landscape will comprise of the same visual characteristics/elements of Tal Tal Mountain, alluvial flats and the lower slopes. Its fundamental topography and rural character will be retained.

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85.	The Commission also notes the applicant has proposed to 'enhance' screening: provided by the topography of the valley through vegetation planting, to reduce the visual impacts to sensitive receptors. As with revegetation on rehabilitated areas, these plantings are expected to take several years to grow to a suitable size to act as effective screens. The Commission considers that even with these landform and landscape treatments, some visual impacts would be permanent, while others would be long lasting.	Section 4.6.1, Section 4.6.4, Appendix I, Appendix S	• KEPCO has developed a number of photomontages to demonstrate the effectiveness of the tree screening program and other visual mitigation practices. A Landscape and Visual Analysis for Tarwyn Park recommends a targeted screening program which has been included the developed photomontages. • KEPCO has further developed a realistic visual model, including an indicative drive-through of Bylong Valley Way during the Open Cut stage of the Project. • KEPCO acknowledges there will be some visual impact to selective areas, however the progressive rehabilitation programme developed for the Project will materially reduce these impacts and lead to minimal visual impact over the life of the Project. • KEPCO engaged AECOM to complete a Significant Assessment of the Bylong Landscape Conservation Area and has been appended into the Draft HHMP. This report concluded that the rural character of the Bylong Valley landscape will not be irreversibly lost by the Project. • A detailed Landscape Plan for the Project will be finalised in consultation with the owner of a privately owned residence or other relevant agencies, in accordance with Conditions 57 and 58 of Schedule 4 of the Recommended Development Consent.
86.	The Commission notes that the applicant committed to developing a cliff subsidence management plan, including measures to monitor ground movements and the condition of	Section 4.6.1, Section 4.6.5, Appendix V	• As noted by the Commission, the refinement of the subsidence model will be based upon real data as mining operations progress and the initial mining activities within LW101 do not propose to mine

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	the cliffs as each longwall panel is extracted. The Commission supports in principle the refinement of the subsidence model based upon real data, however the Commission notes the potential for greater than anticipated change to result in irreversible damage to the cliff lines.		below any prominent cliff lines. KEPCO further notes that the potential impacts to cliff lines resulting from subsidence are consistent with what is able to occur naturally. An Extraction Plan will be prepared to prior to the commencement of longwall mining activities. The Extraction Plan will also include management plans addressing predicted impacts to all natural features including cliffs. The Extraction Plan (and associated management plans) will be developed in consultation with relevant regulators and infrastructure owners, in accordance with Condition 6 of Schedule 3 of the Recommended Development Consent.
87.	The Commission notes that the stated level of lighting impact and proposed management strategy for both direct and diffuse light impacts may not have been considered against the NSW Government's Dark Sky Planning Guideline, particularly in relation to cumulative impacts with mines between the project site and the Siding Spring Observatory.	Section 4.6.1.1	- The Dark Sky Planning Guideline supports the design and operation of significant developments within 200km of Siding Spring Observatory, which is located approximately 170km from Project. The guideline further informs the application of lighting to be directed below the horizontal plane to minimise the potential of skyglow in the region. This is consistent with Condition 57 of Schedule 4 of the Recommended Development and Australian Standard 4282 (1997). - KEPCO's compliance with the Recommended Development Consent will ensure the Project does not impact on skyglow. - Further information is provided in Section 4.6.1.1 of this document.
Planning Assessment Commission: Biodiversity Impacts			
88.	The submissions highlighted the importance of conserving the biodiversity in the Bylong Valley and concern that the NSW Major Projects Offset Policy and supporting Framework for	Section 4.6.2	KEPCO received a letter from OEH confirming its satisfaction regarding the NSW Major Projects Offset Policy and Framework for Biodiversity Assessment.

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	Biodiversity Assessment (FBA) had not been applied appropriately. The submissions raised specific issues about whether impacts to the Brush-tailed Rock Wallaby, or to the regionally significant Regent Honeyeater had been adequately assessed, and whether exemptions and transitional arrangements had been properly applied in the assessment of the project.		KEPCO notes the Project was treated as a 'transitional' project under the Biodiversity Offsets Policy for Major Projects and was therefore afforded a level of flexibility. Despite this, KEPCO has previously completed an analysis under this Policy, which is provided in Appendix B of the RTS.
89.	The Commission notes that the finalisation of a significant area of biodiversity offsets (i.e. the areas in Offset 5 impacted by subsidence) would occur after the commencement of the project. The appropriateness of this approach should be considered in any future decision about the project.	Section 4.6.2	- KEPCO has actively consulted OEH and DP&E over the appropriate mechanism to secure Project Biodiversity Offset Areas in perpetuity. - KEPCO maintains the Recommended Development Consent Conditions 32-35 of Schedule 4 recommended by DP&E provide an appropriate level of certainty for the future of the Project. - KEPCO also maintains its previous commitment to provide upfront funding contributions for the conservation of the Regent Honeyeater and Brush-tailed Rock Wallaby.
90.	The Commission also notes a number of matters that will require careful consideration prior to a decision about the project, including: - impacts associated with subsidence deformation in relation to the structure and form of native vegetation, which might need to be managed alongside subsidence remediation; - potentially observable impacts to identified groundwater dependent ecosystems enough though they are unlikely as they occur in the riparian corridors of the creeks that are largely ephemeral and already subject to natural variations in flow.	Section 4.6.2, Appendix G	- As previously stated, KEPCO will develop Extraction Plans to manage, mitigate and outline remediation measures to be implemented for potential subsidence impacts, including the potential subsidence impacts to native vegetation. - KEPCO has previously stated in Section 7.2.4 of the EIS that the watercourses located within the Study Areas are largely ephemeral in nature and not likely to be impacted. - KEPCO maintains that the Project's rehabilitation objectives, will meet the established criteria and performance measures as provided in the Draft Rehabilitation Management Plan (see

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	Such impacts may nevertheless need to be very carefully monitored and managed; • verifying that areas of vegetation consistent with the total areas proposed to be cleared are present as offsets in suitable locations, quantities and qualities to maintain landscape connectivity; and • being satisfied that disturbed areas are expected to be rehabilitated and result in the successful establishment of suitable vegetation communities.		Appendix G).
Planning Assessment Commission: Aboriginal Heritage			
91.	The Department reported that a total of 144 Aboriginal cultural heritage sites would be impacted by the project with 102 within the disturbance area, and 42 within subsidence or blasting impact zones. Many of the sites with moderate or high significance, including rock shelters, are situated in the subsidence zone where it coincides with the elevated, wooded landscape of the Bylong State Forest.	Appendix U	• Mitigation and management measures to minimise, manage or avoid potential impacts to Aboriginal heritage are discussed in Section 7.11.4 of the EIS.
92.	The Office of Environment and Heritage (OEH) noted the independent rock art specialist report engaged by the applicant, and raised issues with the attributes and potential significance of an ochre site that occurs within the subsidence zone. The OEH also noted the lack of assessment of some Aboriginal sites as well as the need to consider the level of cumulative impacts to Aboriginal heritage with the expansion of mining	Section 4.6.3	• KEPCO has actively engaged OEH throughout all stages of the approvals process. Most recently, KEPCO met with Cultural Heritage Officers within OEH on 26 September 2017 to discuss the findings of the PAC Review report and to confirm the approach proposed by KEPCO was acceptable to meet the Recommended Development Consent. • OEH confirmed in a letter to DP&E, dated 31 October 2017 that

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	interests in the region. The Department reported that the applicant agreed to resolve the OEH issues and included a consent condition requiring the applicant to prepare; and implement an Aboriginal cultural heritage management plan. The plan is to be prepared in consultation with the OEH and registered Aboriginal parties. It would deal with, among other things, the salvage of impacted sites, archival recordings and further investigation of unassessed sites and re-evaluation of the ochre site.		KEPCO's approach was consistent with the requirements of the Recommended Development Consent. KEPCO confirmed in a letter dated 7 November 2017 it agreed with the recommendations made by OEH from its letter to DP&E dated 31 October 2017. • KEPCO will prepared an Aboriginal Heritage Management Plan will in accordance with Condition 44 of Schedule 4 of the Recommended Development Consent.
93.	The Commission notes that the applicant considered it "unreasonable" for the OEH to expect the cumulative assessment to use the same methodology as others, and that in providing its comments, the OEH had not considered the occurrence of Aboriginal heritage in the "vast areas of land covered by National Parks and Nature Reserves". While the applicant explained that it would prepare methods of cumulative assessment in line with the OEH advice, as well as carry out a more detailed assessment of the ochre site and Aboriginal sites within the biodiversity offset areas, it is unclear to the Commission whether there is agreement on the method and scope of work to be done. It appears to the Commission that further investigation remains to be completed to properly assess the expected impacts to Aboriginal cultural heritage. The work will also require an agreed approach among the relevant parties, including the	Section 4.6.3 Appendix U	• KEPCO and its Project team held meetings with Cultural Heritage Officers within OEH in Dubbo, NSW on 26 September 2017 to discuss the findings of the PAC Review report and other associated matters detailed within. • A letter from OEH to DP&E, dated 31 October 2017, provides a proposal to progress Condition 44 (d) of the Recommended Development Consent conditions, which is consistent with the outcomes agreed to in a recent meeting. KEPCO has provided a letter in response to OEH, dated 7 November 2017, accepting the actions as stipulated. A copy of the letter from OEH and KEPCO's response is provided in Appendix U.

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	OEH.		
Planning Assessment Commission: Historic Heritage			
94.	Several submissions highlighted concern regarding impacts to the heritage features of the Bylong village and its surrounds. Much of this concern focused on impacts to Tarwyn Park and Iron Tank properties as discussed earlier in Section 3.3. However, there was also concern for visual impacts to the landscape of the valley, the removal or relocation of some of its historic buildings and the disruption of traditional visual and landscape links between the buildings that are to remain. Particular concern was expressed for the applicant's proposal to exhume graves from the curtilage of the Sacred Heart Catholic Church.	Section 4.4 and 4.6.4 Appendix I Appendix J	- A draft HHMP (Appendix J) has been prepared to address issues raised by the PAC and to identify appropriate management and protection measures to be implemented to mitigate and preserve heritage values and specific heritage items located in proximity to the Project - KEPCO has further developed a Landscape and Visual Analysis to assess sensitive viewing locations from Tarwyn Park Homestead and associated buildings. This Landscape and Visual Analysis is provided in Appendix I, and characterises these impacts as manageable with appropriate mitigation measures. - KEPCO will prepare and implement a Burials Management Plan will in accordance with Condition 46 of Schedule 4 of the Recommended Development Consent. - Detailed procedures for the exhumation of human remains have been provided in the Archaeological Assessment for Historical Burials (Edward Higginbotham & Associates Pty Ltd, 2015b), completed for the EIS (Appendix U of the EIS). These best practice contemporary procedures include details on community liaison, relocation and reburial, and applications for exhumation. A Burials Management Plan will be finalised to document these procedures, as required by Schedule 4, Condition 46(c)(iii) of the Recommended Development Consent conditions.

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95.	The Department concluded that the impacts to these heritage sites were acceptable and could be appropriately managed through the applicant's proposed strategy. It reported that the Heritage Branch of the Office of Environment and Heritage did not raise particular concerns, but suggested a number of additional mitigation measures, which included the preparation of an interpretation plan for the valley, conservation management plans for the heritage buildings that are to remain or be relocated, and the erection of a memorial in the local area for any exhumed graves that are to be re-buried outside the local area. These are included in the Department's recommended conditions.	Section 4.4, Appendix I, Appendix J	- KEPCO has developed a Draft CMP to manage the impacts associated with Tarwyn Park and associated heritage features (see Appendix I and Appendix J). - In line with the Recommended Development Consent, KEPCO maintains its commitment to erect a memorial in the local area in the event reburials occur outside the Village of Bylong.
96.	The Commission acknowledges that some aspects of locally significant heritage will be impacted by the development of the project. The Commission acknowledges that the applicant and the Department have worked with the Mid-Western Regional Council and the Office of Environment and Heritage to develop a strategy to manage the impacts to items of local heritage significance. However, the Commission considers that these impacts potentially have a significant interaction with the social impacts of the project.	Appendix D	KEPCO acknowledges some impacts of the Project on heritage values will impact upon the social values of Bylong Valley. KEPCO is committed to managing and mitigating these impacts. A full list of mitigation and management commitments for the Project are provided in the Preliminary SIMP (see Appendix D).
Planning Assessment Commission: Transport and Traffic			
97.	The Commission notes that funding arrangements for road upgrades and maintenance would be agreed between the applicant and Council in time for those agreements to be	Section 4.6.5, Appendix B	MWRC sent a letter to NSW Minister of Planning dated 8 August 2017 emphasising significance of the Project to the local community.

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	scrutinised as part of any future decision about the project. Similarly, the details and timing for realignment works to maintain access continuity in the local road network should also be available to inform any future decision on the project.		• KEPCO and its Project team WPS \ held meetings with MWRC both via teleconference and in Mudgee on 11 August 2017 and 18 October 2017, respectively to discuss the findings of the PAC report and other associated matters. KEPCO notes MWRC were satisfied with the meeting outcomes. • KEPCO, and its Project team have continued to consult with MWRC over road safety and subsidence issues along Bylong Valley Way. KEPCO maintains its commitment to repair any surface damage associated with the Project on Bylong Valley Way within Muswellbrook Shire. • KEPCO has reached an agreement with MWRC and is committed to provide funding for road upgrades, in addition to the agreed upon identified in Condition 54 of Schedule 4 of the Recommended Development Consent.
98.	However, the Commission notes that the applicant's commitments around commuter safety and haul road usage remain uncertain. Muswellbrook Shire Council highlighted concerns in relation to the likelihood of mine traffic originating within Muswellbrook Shire, which is geographically closer to the project than Mudgee and was argued to have a higher capability to provide the materials and labour likely to be required by the project.	Section 4.6.5, Appendix X	• KEPCO notes that commitments regarding commuter safety and heavy vehicle restrictions have been transferred into Recommended Development Consent Conditions and 'Statement of Commitments', which will be appended to the final Development Consent document for the Project. A full list of the Project's commitments is provided in Appendix X. • Supplementary accommodation availability surveys were undertaken in October 2017, survey results indicate Denman and Sandy Hollow (in Muswellbrook Shire) have limited accommodation available to support a non-local workforce. • Given the existing mining operations currently undertaken within the MWRC LGA, KEPCO maintain there are sufficient suppliers within

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			the MWRC LGA to service open cut and underground mining operations. KEPSCO reiterates that all heavy vehicle traffic will be directed via approved heavy vehicle routes.
99.	Muswellbrook Shire Council provided an independent appraisal of the applicant's traffic assessment, which challenged elements of the applicant's analysis, including delivery routes, timetables, material quantities, and mine worker origin/destination assumptions. The report examines the occurrence of mine traffic on roads in the Muswellbrook Shire that ostensibly have mine traffic restrictions and it highlights the risk in setting conditions of consent to regulate third parties, such as by way of directing mine employees and contractors on their modes of transport and the routes they must take. The applicant elected to submit a further 'peer review' of Muswellbrook Shire Council's independent report (Appendix 9), although the Commission notes that it relied on earlier material provided by the applicant.	Section 4.6.5	- KEPCO provided a response to matters raised specifically by MSC in relation to traffic in Appendix F of the Supplementary RTS, which reconfirmed findings and assumptions from the revised Traffic and Transport Impact Assessment (Appendix D of the RTS). - KEPCO maintains that the assumptions utilised within the revised Traffic and Transport Impact Assessment remain appropriate with the Project's workforce residing predominantly within the MWRC LGA. - Given the existing mining operations currently undertaken within the MWRC LGA, KEPSCO maintain there are sufficient suppliers within the MWRC LGA to service open cut and underground mining operations. KEPSCO reiterates that all heavy vehicles traffic will be directed via approved heavy vehicle routes. - KEPCO's offer of funding to MSC for safety improvements on Bylong Valley Way within in Muswellbrook Shire remains current.
100.	The Commission is concerned about the ongoing management of subsidence impacts to the Bylong Valley Way from a public safety perspective. The Commission notes that the Bylong Valley Way is likely to experience an overall increase in traffic, including mine related traffic, and that the predicted levels of subsidence and surface cracking could have an impact on the safe operation of the Bylong Valley Way.	Section 4.6.5, Appendix V	- KEPCO and its Project team attended a meeting with MWRC on 18 October 2017 in regards to managing subsidence impacts along the Bylong Valley Way. It is noted, MWRC were satisfied with the outcome of the meeting. - KEPCO has a firm commitment to manage and repair subsidence related impacts to the Bylong Valley Way, to ensure public safety is maintained at all times (see Section 4.6.5).

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	The Commission notes subsidence impact; have been successfully managed in other road networks, including the Charlton Road, Hume Highway and Appin Road as referenced by the applicant. However, the Commission considers that for this to be successfully achieved, binding and comprehensive commitments need to be established and implemented relating to timely monitoring of impacts on the road surface attributable to subsidence and prompt remediation action to ensure road safety.		MSEC has developed a briefing note regarding the subsidence related issues associated with the PAC Review Report and this is provided in Appendix V.
101.	The Commission also notes that the impacts of increased traffic movements in relation to school bus services was not considered in respect of heavy vehicles other than B-doubles. The applicant identified a significant change in the volume of heavy vehicle traffic, particularly between Mudgee and the project site, which has the potential to coincide with the operation of school bus services.	Section 4.6.5	- KEPCO is committed to managing risks associated with heavy vehicle movements in relation to the local school bus service. Conditions 49 and 53 of Schedule 4 of the Recommended Development Consent provide assurances to avoid scheduling shift changes and school bus hours and restricting heavy vehicle access to certain road. - KEPCO has previously committed that all oversize or over-mass heavy vehicles will require a Journey Management Plan to ensure vehicles will utilise the correct routes.
Planning Assessment Commission: Amenity Impacts – Air Quality, Blasting and Noise			
102.	The Commission notes a submission on behalf of the landowner of nearby 'Cherrydale Park', which disputes the Department's exclusion of the property from the application of the VLAMP, and whether there is a need for other air quality mitigation measures.	Section 4.6.6	As identified in the Air Quality Impact Assessment, Appendix O of the EIS, the identified air quality impacts to this property are consistent with the terms of the VLAMP and compliant with the recommended conditions of the development consent.

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103.	The Commission notes that the Department recommended several residual matters be dealt with in post-approval arrangements. However, the suitability of this approach will require careful consideration before a decision is made about the project. It appears to the Commission that there is residual uncertainty around the: • mitigation measures that could reasonably be deployed to minimise diesel emissions (as raised by the EPA); • suitability of background data used in the air quality model; • incomplete analysis of the low frequency noise spectrum and third octave bands under the modified UK Department of Environment, Food and Rural Affairs' method of assessment; and • noise and air quality impacts that approach the limits of acceptability for receivers that have not been nominated under the VLAMP for acquisition, particularly Cherrydale Park.	Appendix O	• KEPCO, and its Project team held meetings with the EPA in Bathurst and via teleconference on 26 October 2017 to discuss the findings of the PAC report and other associated matters detailed within. • It is noted that correspondence dated 27 October 2016 had not been passed on from DP&E to the PAC resolving matters referenced in the PAC Review Report, including references to diesel emissions, background data used within the air quality model and low frequency noise. A letter response from KEPCO to EPA is provided in Appendix O.
104.	The Commission is concerned about the Department's recommended approach to blast impacts on heritage features and sensitive sites, including Tarwyn Park. It appears to accept either blast specifications that will not cause impacts, or blast specifications that are likely to cause impacts, provided any subsequent damage is remediated. This either/or approach will require careful consideration before a decision is made about the project, particularly in light of the potential for Tarwyn Park to be judged to have greater heritage significance than	Appendix I	• KEPCO has prepared a Draft Blast Management Strategy which details management and mitigation strategies to be put in place to limit potential overpressure and vibration impacts to sensitive heritage items, including the Tarwyn Park Homestead. The Draft Blast Management Strategy details monitoring programs to be undertaken, including dilapidation surveys and long-term maintenance objectives, to ensure the sensitive items remain available for use in a post-mining landscape. The Draft Blast Management Strategy is available in the CMP in Appendix I.

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	previously thought. If damage is to be permitted to occur by way of a management plan, the particulars of likely damage and proposed remediation measures ought to be available to the determining authority and not simply deferred to post approval arrangements.		
Planning Assessment Commission: Additional Socio-Economic Issues			
105.	The Commission also heard concerns at the public hearing that the mine would not be viable due to declining coal prices and demand. A verbal submission indicated that industry analysts are sceptical of the need for new mining projects generally, and especially on greenfield sites. The submissions noted that the project could now be in doubt because of the recent South Korean presidential election and that there would be a significant negative social and environmental legacy of an approved but uncommenced or partially commenced project, or a discontinuation of mining.	Section 4.5 Appendix T	• KEPCO has provided further justification in this report over the long-term viability of the Project in Section 4.5 and Appendix T. • KEPCO has provided further confirmation on the exclusive demand for coal product recovered from the Project for used by electricity generation companies in South Korea (see Appendix C). • A supplementary Economic Impact Assessment has been undertaken by Cadence Economics (2017), focussing on utilising the CGE modelling framework. The results from these additional assessments have provided further justification over the viability of the Project. This CGE assessment is provided in Appendix W.
106.	While the applicant's business case for the mine is not a relevant matter for a decision about the project, the Commission notes that the project will lead to substantial and irreversible social and environmental impacts, while there is a risk that its stated benefits may only be partially realised, or not realised at all. The risk of project failure, especially if the project has a non-commercial imperative, is likely to continue to be a particular concern for the community, as has been represented	Section 4.6.7 Section 4.6.9 Appendix C Appendix W	• KEPCO has prepared a supplementary Cost Benefit Analysis for the Project; this analysis contains revised coal prices, exchange rate forecasts and updated costs associated with heritage values and public infrastructure. The results from this report provide further justification that the Project will be of net benefit to the region and state of NSW. This report is provided in Appendix W. • Review of the timing of impacts and benefits demonstrate that they generally align and there is not a risk of impacts occurring without benefits accruing.

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	in submissions.		KEPCO has provided further confirmation that all coal product recovered from the Project will be transported and used exclusively by electricity generation companies in South Korea (see Appendix C).
Planning Assessment Commission: Cost Benefit Analysis			
107.	The applicant claimed that the project would provide production benefits to NSW over the life of the project of \$846 million in nominal dollar terms, consisting of \$756 million in company tax payments, \$763 million in royalties and \$9 million in payments under voluntary planning agreements. The cost benefit analysis submitted by the applicant identified net benefits to NSW over the life of the project of \$314 million in net present value terms. The peer review of the economic assessment conducted for the Department by the Centre for International Economics raised questions about aspects of the analysis that generated these results, but nonetheless acknowledged a minimum potential net economic benefit from royalties of \$177 million (present value). While it acknowledged the complexity of estimating the net benefits of projects, the Department accepted the view of the peer reviewer that the project's economic benefits would significantly outweigh its costs, from an economic perspective.	Section 4.6.7 - Section 4.6.9, Appendix W	KEPCO has previously provided comment and clarified these discrepancies in the EIS and RTS. Further economic modelling using the CGE methodology has been undertaken, and this strongly reinforces the significant regional and State wide net benefits of the Project.

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108.	Several submissions explained that the region had undergone a period of decline, particularly around Kandos and Rylstone with the closure Kandos Cement, Sibelco's lime plant and the Charbon colliery. These speakers said that diversifying the economy with additional mining inputs was important to maintain economic growth. The Bylong Coal Project would provide direct and indirect employment and its capital investment would result in royalty and tax revenue for the State. However, a number of submissions noted that the main economic benefits would flow to South Korea, while impacts would accrue locally.	Section 4.6.7 - Section 4.6.9, Appendix W	KEPCO has prepared a supplementary Cost Benefit Analysis for the Project, which contains revised figures identifying the additional revenue brought to the regional and state economy. It is simply not accurate to characterise South Korea as the main economic beneficiary from the Project; it is the region and the State that overwhelmingly benefits. This is summarised in Section 4.6.7 to 4.6.9 of this report.
109.	The Commission also heard concerns that the cost benefit analysis did not accurately reflect the likely economic costs and benefits of the project. The submissions challenged the coal price assumptions in the cost benefit analysis and argued that the sensitivity analysis was flawed. Other submissions noted that the cost benefit analysis for the project assumed that mitigation and offset measures would entirely offset the project's impacts, which they argued was an unrealistic assumption that serves to overstate the value of the project. Other speakers challenged the methodology by which the greenhouse costs associated with the project were valued at close to zero.	Section 4.6.8	KEPCO has undertaken supplementary sensitivity analyses on the Benefit Cost Analysis to provide further clarity over the likely economic costs and benefits of the Project.
110.	The input-output methodology that generated the applicant's estimates of local economic impacts was also challenged. The	Section 4.6.9, Appendix W	A supplementary Economic Impact Assessment has been undertaken by Cadence Economics (2017), focussing on utilising the

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	peer reviewer considered that the estimates of regional effects should be regarded as an upper bound and pointed to alternative measures of regional flow-on benefits derived from Computable General Equilibrium (CGE) modelling. Another expert submission argued that the input-output analysis is based on multipliers that are mathematically certain to overstate the employment impacts of a project and suggested that the impact analysis assessment should be read with the knowledge that it is likely to significantly overstate the positive impacts of the project.		CGE modelling framework, as recommended by PAC. The results from this additional assessment strongly reinforce the regional and State wide benefits arising from the Project estimated in the existing input-output modelling. This CGE assessment is provided in Appendix W .
111.	The Commission notes that the assumptions under-pinning the cost benefit analysis for the project were not fully transparent and in some cases, could be problematic. Submissions argued that the coal price assumptions in the economic assessment were optimistic. The peer reviewer also noted that the cost benefit analysis uses a US/AUD exchange rate higher than is currently the case. Another expert submission argued that the methodology for the sensitivity analysis lacked transparency and that the results could not be replicated.	Section 4.6.8, Section 4.6.9, Appendix W	- KEPCO has prepared a supplementary Cost Benefit Analysis for the Project; this analysis contains revised coal prices, exchange rate forecasts and updated costs associated with heritage values and public infrastructure. The results from this report strongly reinforce the regional and State wide benefits arising from the Project estimated in the existing input-output modelling. This report is provided in Appendix W. - KEPCO has provided a number of sensitivity scenarios in Section 4.6.9 of this report to demonstrate the wide range of assumptions that have been considered in preparation of this Project.
112.	The Commission is concerned about the relatively narrow range of assumptions in the calculation and the exclusion of some potentially negative impacts. Consideration of the proposal across a wider range of price and exchange rate values would generate different outcomes. A different approach	Section 4.6.8, Section 4.6.9, Appendix W	KEPCO maintains the inclusion of government funding is consistent with the NSW Government (2016) <i>Guidelines for economic assessment of mining and coal seam gas</i>. Nevertheless, KEPCO has prepared a supplementary Cost Benefit Analysis for the Project, containing revised coal prices, exchange rate forecasts and updated

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	to externalities would potentially reduce the calculated benefits. Some specific externalities include the greenhouse and transport (accident) costs. There is also arguably a case for reconsideration of the loss of heritage values associated with Tarwyn Park and other heritage items within the valley. The inclusion of government funding, for example, for the Bylong-Wollar Road, would also reduce the calculated benefits. While these factors may not produce a negative net present value in a cost benefit analysis, they should be included in the analysis to support transparent decision making.		costs associated with heritage items and public infrastructure. The results from this report provide further justification that the Project will be of net benefit to the region and State of NSW. This report is provided in Appendix W. • KEPCO has further provided a number of sensitivity scenarios in Section 4.6.9 of this report to demonstrate the wide range of assumptions that have been considered in preparation of this Project.
113.	While the Commission notes that input-output analysis is recognised as an appropriate methodology for the assessment of local area economic impacts in the relevant NSW Treasury Guidelines, it also notes that the Guidelines warn that this approach has been criticised for overstating positive impacts. The Commission suggests that an assessment based on alternative measures derived from Computable General Equilibrium (CGE) modelling would help to calibrate the expected welfare gain to the community.	Section 4.6.9, Appendix W	• A supplementary Economic Impact Assessment has been undertaken by Cadence Economics (2017), focussing on utilising the CGE modelling framework, as recommended by PAC. The results from this additional assessment strongly reinforce the regional and State wide benefits arising from the Project estimated in the existing input-output modelling. This CGE assessment is provided in Appendix W.
114.	The Commission notes that the claimed benefits to the State are relatively small in each year of the project, and would not flow until sometime after initial adverse impacts are incurred. The critical issue for a proper assessment is not the nominal value of the gross benefits claimed for the project over its entire life, but the extent to which the claimed benefits exceed the	Section 4.6.8, Appendix W	• KEPCO has prepared a supplementary Cost Benefit Analysis for the Project, reviewing the costs and benefits associated with the open cut phase, open cut/underground phase and the underground only phase (see Appendix W). This report further reiterates the benefits of the integrated Project on both a local, regional and state economic scale.

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	costs, including the unquantified externalities and costs not included in the analysis, such as the permanent, irreparable change to a valuable rural landscape with roots in Australia's agriculture and equine heritage, and the risks attached to the achievement of those benefits. The Commission considers the economic assessments provided by the applicant currently lack the comprehensiveness, rigour and transparency required to enable a decision-maker to make a fully informed judgment about the mix of input assumptions that generate the claimed net benefits for the State and the probabilities attached to those assumptions.		Should the Project be approved, KEPCO will enter into the relevant rehabilitation bonds required by DRG prior to any operational or extractive activities taking place. Rehabilitation bonds (the method for calculation of which has been relatively recently updated by the NSW government) will be used to manage the certainty of impacts from the initial operational impact.