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Department of Planning and Environment

KA Review of AGE Groundwater Modelling Impact Assessment

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Background

The Department of Planning and Environment (DPE) commissioned Kalf and Associates Pty Ltd (Dr F. Kalf) to review the groundwater assessment for the Bylong Coal Mine Project, in particular to determine:

- *whether assumptions used in the groundwater impact assessment, in particular the groundwater modelling, are reasonable, appropriate and suitably justified;*
- *the suitability and extent of the assessment methodology/modelling/consultation, and if necessary, identifying gaps in the documentation that may prevent a proper assessment of the project;*
- *the significance of impacts, key environmental risks and issues for consideration during the merit review/assessment process;*
- *suitability of the proposed mitigation and/or management and/or protection measures;*
- *recommended conditions (where appropriate).*

Review Documents

The information provided for the review included the following:

- ***Bylong Coal Project Sep 2015 – Environmental Impact Statement (EIS) - sections relevant to the groundwater assessment.***
- ***Appendix M of the EIS – Bylong Coal Project, Groundwater Impact Assessment – June 2015,* AGE.**
- ***Appendix N of the EIS – Bylong Coal Project, Groundwater Impact Assessment Peer Review, July, HydroSimulations***

The review is based on an examination of the data, methods, results and consequences in these reports as well as information in additional references listed at the end of this report. This review does not include a modelling audit.

Hydrogeological Setting Summary

The Bylong Coal Project is to establish two open cut mines (the Eastern and West pits) that are to be located along the Lee Creek and Bylong River Valley, and an underground longwall mine beneath elevated topography slightly further downstream along the eastern border elevated topography of that Valley.

Both the Eastern and Western proposed pits are to mine the 2m to 5m thick Coggan coal seam that lies within the Permian hard rock strata at a depth of about 60m below ground surface.

The Longwall mine would comprise 14 panels, each under 350m in width, extending in a north-east direction to a distance between just under 2km at the southern end and 4km at the northern end of the mining zone. The longwall panels would lie some 150m to more than 250m below ground level (Figure 2.3 AGE 2015, Figure 9 page 27 Geology Report, Worley Parsons 2015).

Both the Eastern and Western proposed pits would lie outside of, but adjacent to alluvial sediments deposited by Lee Creek in the case of the Western Pit and both Lee Creek and the Bylong River in the case of the Eastern pit.

The mining project is to be conducted over a period of 25 years (23 years of actual mining operation) within a groundwater salinity environment that varies between potable and brackish.

Comments and Minor Issues

1. Overall the hydrogeological description of the region and modelling work described in the AGE (2015) report is detailed and extensive.

2. AGE has described the hydrogeological conditions in the elevated plateau terrain that overlies the proposed longwall operations as not representing 'highly productive groundwater zone' as suggested by NOW. KA is in agreement with this conclusion based the data presented and a hydrogeological inspection conducted by Dr F. Kalf of this area and the mine site and its surroundings. There is no alluvium of any significance developed along the course of Dry Creek and a tributary channel overlying the proposed mining zone area. The basalt hard rock layer forming the top of the northerly sloping topographic plateau overlying the underground mining zone has a perched water bearing zone and is considered to have meagre long term groundwater potential. Alluvial development occurs further downstream in Dry Creek outside the underground mining zone but this area is considered to have generally poor groundwater potential both in regard to yield and groundwater quality.

3. Figure 7.21 *'Schematic section showing conceptual hydrogeology'* shows a West to East section and therefore looking in a northerly direction. The Eastern and Western pits are depicted as small red parabolic curves, one positioned in the central hard rock 'island' and the second representing the western pit on the edge of the Bylong State Forest Hard rock outcrop. The Eastern pit of course should occupy the majority of the rock outcrop island and the Western pit should be positioned on the western side of Lee Creek alluvium and not the western side of the escarpment adjacent to the Bylong River. The changes will not have any consequences to the methodology or conclusions in the report.

4. AGE is to be commended in the main text for having adopted the Australian traditional nomenclature of bores and wells as opposed to the American use of the blanket term 'wells'. A bore being a smaller diameter construction as distinct from a very much larger diameter well that is often timber or concrete lined. However, later in the report there is inconsistent mixed usage even for the same structures that may cause mild confusion. It would have been useful to have maintained the Australian nomenclature throughout the text

5. Appendix F page 33. Figures F26 and F27 show the predicted pressure head sections. It is not clear what parameter values vadose or otherwise were used in the model that generated these section diagrams. It was assumed that they are the 'base case' but the paragraph on page 33 states with regard to Figures F26 and F27 that they are : *"Similar to the base case, the sections shows that the mining areas are completely desaturated....."*. The question arises in what manner were these sections similar to the base case and therefore the predicted drawdowns.

Modelling Assumptions

Overall the modelling setup was conducted within the procedures accepted in modelling practice. The numerical modelling code MODFLOW-SURFACT (MS) was used to determine the likely drawdown of the water table within the alluvial sediments and pressure levels

within the deeper Permian hard rock interburden and Coggan Coal seam. In addition the model was also run using MODFLOW USG (USG) code during sensitivity runs.

The modelling assumptions employed were based predominately on standard procedures. The model employed 10 separate layers representing various strata in the geological profile. Model layer hydraulic data was obtained from various hydraulic tests conducted in the region.

The modelling assumptions however were tempered by the approach used for numerical solution as discussed in the following section.

Modelling Methodology

HydroSimulations' Principal, Noel Merrick, in his peer review of the AGE modelling work has provided a discussion regarding the modelling methodology used by AGE and its' implications. The core issue is the use of what (MER 2014, KA 2014) have described as the Vadose Zone using Van Genuchten (VG) parameters as opposed to the Pseudo-Soil (PS) approach. In the MS code the VG parameter approach requires three parameters to simulate the soil-moisture characteristics of the unsaturated zone. AGE and HydroSimulations consultants maintain that PS method can lead to non-convergence (i.e. the model is not capable of reaching a numerical solution) and "instability", but that use of VG parameters achieves a solution when substituted for the PS method. On the other hand MER (2014) and KA (2014) have stated that in their modelling experience non-convergence can be overcome. KA experience suggests that the reasons for non-convergence can generally be found in possible ill-conditioned model in some part(s) either by some problematic internal structure, such as grid refinement; boundary conditions or other setup conditions applied; and/or the solution option selected; the improper settings of the large number of options for the solution code and/or automatic time step settings. Dr Mackie of MER is in agreement with these comments as he maintains he has never had a non-convergence that could not be solved using the PS approach and the numerous options available for numerical solution. It is of interest in the AGE report Appendix F page 10 paragraph 1 to note that even using larger values of the VG parameter alpha caused non-convergence in the model solution.

In addition Dr Merrick has quoted the information KA received (KA 2014) from Hydrogeologic (the modelling code authors) whose advice was that PS method should be used for regional models as opposed to the Vadose method. As noted in their report AGE correspondence with the lead author of MS has him quoted as saying that on *" grids that are thick as the aquifer layer do not provide a correct solution"* and that *"it can be done but there needs to be a check on the correctness of the solution".*

Therefore it can be concluded that the use of VG parameters for thick layers in regional models (and in the current Bylong model) are in most cases simply an aid in allowing convergence that cannot be otherwise achieved according to the modeller. Under these circumstances these vadose parameters do not necessarily have any direct physical meaning regarding the characteristics of the strata to which they are applied but act as "smoothing" solution parameters. However, they do not ensure that the drawdown extent is necessarily correct.

My detailed discussion with Dr Merrick during this review has indicated that non-convergence was a real problem for them using pseudo-soil method on several different models despite having exhausted the options available for solution. I accept his comments

and expertise, but at this stage the reasons for the non-convergence but successful solutions using vadose parameters for their (HydroSimulations) models are unknown and have not been thoroughly investigated. Dr Merrick nevertheless agrees that such

parameters do not represent physical properties of the strata but are simply a device for achieving convergence to a solution. HydroSimulations have since moved on to using MODFLOW USG[1] not necessarily because of convergence issues but because this code provides several advantages in mesh flexibility and savings in the total number of modelling cells used. AGE has also recently converted to the USG code.

Dr Merrick with regard to the suitability of VG parameters to desaturation at depth associated with the sub-surface coal seam mining concludes "*this reviewer expects the drain boundary condition applied to a mined cell, coupled with adopted vertical hydraulic conductivity in the fractured zone, would over whelm any sensitivity to VG parameters."* While this may well be correct, there is currently no evidence available to KA to confirm this view. Certainly it was not the case with the AGE Watermark open cuts model where the large decrease in VG alpha parameter had a significant effect on drawdown extent. In this regard there is agreement with Merrick that the AGE base model with an alpha value 0.02 m^{-1} is too low. This value is very close to that used previously by AGE in the Watermark case of an effective 0.01 m^{-1} while giving more rapid solution overestimated the drawdown extent.

Page 77 in the AGE main report states that *"a sensitivity analysis was conducted on the unsaturated zone parameters (Section 11.3)[2]. This included the Brooks and Corey options and the upstream weighting option, which is equivalent to the pseudo-soil function and available in MODFLOW USG."* Upstream weighting is the default in MS and does not mean it is equivalent to the pseudo-soil function in either MS or USG (saturated version). Upstream weighting is only a requirement for pseudo-soil (PS) function in MS. PS is separate function as outlined in the Merrick report.

The ultimate question that arises from all of the above discussion is whether the model simulations conducted by AGE are valid or not. Although modelling drawdown results presented in their report appear to be plausible, KA at present cannot definitely say whether the predictions overestimate or underestimate the drawdown predictions. This is owing to the uncertainty surrounding the model solution methodology described and lack of clarity in the AGE report regarding, in particular, the vadose parameters used for the predictions. However, if the base case with a small alpha value (0.02 m^{-1}) was used then it is very likely that the model has overestimated the drawdown extent. However, the conclusion that this is indeed the base case is confounded by item 5 given above that suggests otherwise.

To resolve this matter more convincingly AGE should indicate and conduct the following:

1. Indicate whether the 'base case' was conducted with a VG value of 0.02 m^{-1} or not for determining the current regional drawdown predictions.

2. Indicate in what way the pressure sections shown in Figure F26, F27 (Appendix F page 33) were *"similar"* to the 'base case'. That is, what variable saturation parameters (VG etc.) were used presumably for these sections that are different to the base case.

3. It is assumed that the MODFLOW-USG saturated code for unconfined conditions (not variably saturated USG-Beta) was used in the sensitivity analysis. It should be clearly stated and shown how the drawdowns determined by the saturated USG code compare with the adopted current drawdown predictions for the open cut pits and longwall mining.

[1] A version known as MODFLOW USG-Beta that includes treatment of variable saturation.
[2] There is no Section 11.3 in the main report. Sensitivity is discussed in Appendix F of the AGE report.

Impact Significance, Risks and Issues

If the model results are accepted as shown in the AGE report then they indicate that mine drawdown within the alluvial sediments and at any private bore/well will be much less than 2m allowable under the AIP policy. It is assumed, although not specifically stated, that this would also include groundwater pumping from mine bores in the alluvium.

Given the drawdown due to the mine and the mine borefield, there is currently no estimation of the throughflow volumetric rate that the drawdown in the alluvium that would be arrested. That is, groundwater flow through the alluvial sediments surrounding the mine pits towards the alluvium further downstream where groundwater is used for irrigation and agriculture; and whether this throughflow loss would be significant.

Also stream flow in the Bylong River and Lee Creek was simulated using the Modflow-Surfact 'river package'. This package in the case of the Bylong model uses a variable stage height to simulate river and creek flow. Using just stage heights will always assume a possible infinite supply of surface water for a positive stage height greater than zero over a given period that is independent of the streamflow/groundwater interaction and water balance. While this is suitable for perennial flowing rivers, in the case of ephemeral stream behaviour it is better and more accurate to simulate steam flow behaviour using the 'streamflow' package in the Modflow code (whether MS or USG). This package in the model routes the actual volume of stream flow through the channel and interacts directly with the groundwater watertable. As a consequence, drawdown will influence the flow rates and therefore stream flow volumes. The consultants should examine, as part of the first model review, or preferably earlier, the feasibility of using the Modflow 'streamflow' package at the Bylong site.

The AGE groundwater report (Section 12.2.4) indicates that during longwall mining there would be a void remaining within the Eastern pit that would be progressively filled with overburden and fine and coarse reject materials. Further details should be provided regarding this proposal with regard to likely void water levels over the time of operation and whether it would at any time exceed the local surrounding watertable.

The AGE report (Section 12.2.4) also has indicated that following complete filling and rehabilitation of the pits that: "*A simple water and salinity balance indicated that post mining, pore water from the backfilled overburden and coarse and fine rejects will flow into the alluvial aquifer, and there is potential for an increase in salinity within the alluvium and the connected surface waters of Bylong River and Lee Creek. Despite this potential for an increase, the salinity balance suggests the environmental value and beneficial use of the water within the alluvium and interconnected surface water would not change due to the project."* More specific analysis is considered necessary to determine the salinity levels that could occur over time and also salinity levels versus migration distance from the pits into the alluvium and streams using analytical or solute transport methods. The need for monitoring specifically such salinity changes should also be addressed.

Suitability of Mitigation/Management/Protection Measures

AGE have outlined in Section 13 Monitoring networks and trigger criteria for both water quality and water levels. KA is in agreement with the proposed methodology for water quality. For water levels they propose a specific trigger level of *"…. the 5th percentile*

established from the preceding 24 months for a period of 30 days or over, a triggering event occurs". However, an additional approach is suggested to analyse the available water level record (i.e. the bore water level hydrograph). This would involve making a comparison

between the water level record and the rainfall mass curve (sum of deviations of the monthly rainfall) over the same time period. This would provide a means of immediately separating out rainfall excess and deficits which are known to be closely related to increases and decreases respectively in bore water levels. Clearly metering of groundwater pumping in the vicinity of the proposed mine would also allow any pumping component of drawdown to be accounted for in such an analysis. In addition stream flow records also should be kept up to date.

There is agreement with AGE with regard to their proposed mine water seepage monitoring (Sections 13.5).

For a borefield (up to 15 bores) then it will be necessary to also have in place specific monitoring bores between this field and any distant and/or surrounding irrigation bores or those used for agriculture in order to determine the magnitude of any drawdown interference. It is understood that such monitoring is to be conducted.

The AGE Section 13.7 report has indicated a review of the hydrogeological data 2 years after the commencement of mining and model comparisons made against water level measurements every 5 years. KA supports such reviews. It would also support a review as suggested by AGE of the impact, specifically the drawdown/pressure head created, by longwall mining during and after the construction of the first panel. KA is in agreement with AGE's mitigation measures should they be required as set out in their Section 13.9.

References

Australasian Groundwater and Environmental Consultants Pty Ltd (AGE), 2015, *Bylong Coal Project Groundwater Impact Assessment. Report prepared for Hansen Bailey Pty Ltd,10 June,162p +6 Appendices.*

HydroSimulations (Heritage Computing Pty Ltd) (HS), 2015, *Peer Review- Bylong Coal project Groundwater Impact Assessment. Report prepared by Dr N Merrick for Hansen Bailey.17 July.*

Kalf and Associates Pty Ltd (KA), 2014, *Watermark Coal project. KA comments on the MER Model audit and AGE Revised Modelling. Letter report to the NSW Department of Planning and Environment, 23 October 2014, 5p.*

Mackie Environmental Research Pty Ltd (MER), 2014, *Independent Expert Advice to the (Planning Assessment) Commission by Dr Colin Mackie. Letter report to PAC, 14 August 2014, 13p.*

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Bylong Project
KA Comments on AGE Response to Submissions
Groundwater and Model Assessment

Background

The Department of Planning and Environment (DPE) commissioned Kalf and Associates Pty Ltd (Dr F. Kalf) to review the groundwater assessment for the Bylong Coal Mine Project, in particular to determine:

- *whether assumptions used in the groundwater impact assessment, in particular the groundwater modelling, are reasonable, appropriate and suitably justified;*
- *the suitability and extent of the assessment methodology/modelling/consultation, and if necessary, identifying gaps in the documentation that may prevent a proper assessment of the project;*
- *the significance of impacts, key environmental risks and issues for consideration during the merit review/assessment process;*
- *suitability of the proposed mitigation and/or management and/or protection measures;*
- *recommended conditions (where appropriate).*

The review items presented herein are based on an examination of the available reported data, methods, results and consequences provided from information in the references listed at the end of this report. This review does not include a modelling audit.

Comments

1. KA has concerns regarding the comparison made between the MODFLOW-SURFACT (MS) used for the EIS and MODFLOW-USG (USG) used for the AGE modelling update. The updated report by AGE indicates that USG code produces less drawdown than MS in the alluvium (page 49 last paragraph - Bylong Coal RTS Appendix H Part 1):

   "Two drawdown scenarios are presented for the USG model, being the mean and 95th percentile drawdown predicted by the uncertainty analysis. Figure 26 shows the MODFLOW USG model predicts significantly less drawdown within the alluvium than the MODFLOW SURFACT model. When interpreting this result, it is important to note there are some differences between the models, particularly the rate of landholder pumping which is explained within the EIS. However, despite these differences, Figure 26 shows MODFLOW SURFACT predicts significantly more drawdown vertically and laterally within the alluvium, and therefore was a conservative approach to assessing impacts for the EIS."

Irrespective of pumping influence, AGE contend that MS shows much greater drawdown both vertically and laterally than does USG. (Figure 26 'Bylong Coal RTS – Appendix H Part 1 indicates of between 4m to 10m difference over a large area of Lee Creek and Bylong River alluvium adjacent to and further downstream of the proposed main and western pits).

An independent verification of the MS code and USG was recently carried out by *HydroSimulations* under the direction of Dr Merrick that was recommended by Dr F. Kalf as part of a peer review in another project. The comparison was comprehensive and those results indicated that similar drawdown responses were obtained using either MS or USG. Hence the relatively large differences in drawdown reported by AGE between the EIS MS code and the updated modelling using USG indicate that there is a need for a much more detailed investigation to determine cause or causes for these drawdown differences.

It is not possible to conclude at present that MS was *"conservative"* in determining drawdown response in the alluvium as indicated in AGE's recent report. However, conversely given the controversy previously regarding AGE's use of particular low value used for one of the vadose (VG) parameters in MS that overestimated drawdown in the Watermark Project, excessive drawdown in MS may well be true. This may have in part been resolved if AGE had responded to the question in the previous KA EIS groundwater modelling peer review for the DPE (KA 2015): *"Indicate whether the base case was conducted with a VG value of 0.02 m^{-1} or not for determining the current regional drawdown predictions".* Using this parameter value together with MS yields drawdowns which are excessive.

In the current updated AGE modelling report Section 5.1 AGE indicate they used the variably saturated MODFLOW-USG-Beta code and 'upstream weighting' option which they contend is similar to 'pseudo-soil' function in MODFLOW-SURFACT. In addition they state they therefore removed the need for "unsaturated flow" in USG-Beta using that method. In addition there are other claims made in the dot points that are part of Section 5.2.1. that requires further examination as outlined in item 4 below.

2. Section 5.2.2 Appendix H Part 1 includes a discussion regarding the manner in which "baseflow" and "streamflow" was represented in the EIS and an alternative method adopted using the new USG model as outlined in the response document.

   "A stakeholder commented that it would be more appropriate to use a modelling package that also represented measured stream flow volumetrically. This was considered, but determined not to be appropriate given the water table was falling below the bed of the streams during periods of low rainfall. The constant head of water within the streams was removed from the river package to allow the watertable to fall below the river bed. The river package therefore allowed water to enter the streams when the water table was relatively elevated, and fall below the bed of the river when rainfall recharge was low."

   The stakeholder would have meant the use of the model MODFLOW 'streamflow routing package' often just referred to as the 'streamflow package'. The above AGE statement indicates that for the recent USG model the 'drain' approach (i.e. only "baseflow sink" is simulated but no surface

stream stage included) was used rather than the two other methods. These include a constant head (stream stage) above the streambed using the river package (used in the EIS) or routing stream flow through the channels using the model MODFLOW 'streamflow package'.

It appears the 'river package' was set up with an "imaginary" stage at the base of the streambed allowing it to act as 'drain' to groundwater inflow with no outflow possible from the stream channel to the surrounding groundwater system. That interpretation is based on the statement: "*The river package therefore allowed water to enter the streams when the water table was relatively elevated, and fall below the bed of the river when rainfall recharge was low".* It needs to be pointed out of course that groundwater does not enter the streams as flow in the model when watertables are high but is lost from the groundwater system as an outflow 'sink'.

It is not known whether AGE has had previous experience with the use of the MODFLOW 'streamflow package'. But there is a misunderstanding that using the streamflow package would not be *"appropriate"* because *"the water table was falling below the bed of the streams during periods of low rainfall".* This is incorrect. The streamflow package inputs both measured or generated surface flows to the stream channel by the modeller and also includes the inflow component (baseflow) in the channel when watertables are high. When surface flow ceases (based on field measured stream flow or generated surface flow by other means e.g. AWBM) and model baseflow inflow ceases then the package allows the watertable to fall below the streambed (i.e. a dry channel until the next period of high rainfall and runoff input). Therefore this approach more realistically models aquifer-stream interaction than either of the two more simplistic methods.

It is acknowledged that using the streamflow package is more difficult and involved than the alternative more simplistic approaches that include the one adopted by AGE using the USG model. The end result of using the current approach (where the stream channel is modelled effectively as a 'baseflow sink', as is often done with minor modelled ephemeral streams) means that stream flow runoff is not included and therefore recharge to the groundwater system by surface stream flow (and baseflow) is not modelled. However, this means that drawdown due to the mine and/or mine bore pumping would tend to be conservative (i.e. greater drawdown in the alluvium) due to this omission.

It would have been better to have indicated that explanation in the report.

But the drawdown conservatism due to omission of Bylong River and presumably Lee Creek stream recharge in the current model would of course been modified by adjustment of rainfall recharge, evapotranspiration and perhaps boundary conditions and to some extent hydraulic parameters to achieve calibration.

There is a need to determine the difference in water levels and water balance between a constant head stream stage and 'baseflow sink' approaches. In reality actual intermittent stream flow effects would be expected to lie somewhere between these two approaches. If necessary a 'streamflow package' analysis should be conducted.

3. The water balance given in Table 3 needs to be examined more closely in relation to both the EIS MODFLOW-SUFACT and the current MODFLOW – USG-Beta input and outcomes. While it would seem that the water balances for the EIS and the current USG model are similar, the EIS model 'river recharge' would have contained a significant component of recharge from the modelled Bylong River and presumably Lee Creek set up with a constant stream stage. The report indicates on page 56 (AGE 2016) a much higher 'river recharge' component in the USG model water balance than for the MS model in Table 3:

   "There is an increase in river leakage, but as leakage is not active in the Project Boundary this leakage only occurs within the Goulburn River area where large unrefined cells are present within the MODFLOW USG version of the model. There is also a reduced rate of discharge from the aquifers to the streams due to lower groundwater levels, but this is offset by an increase in evapotranspiration."

   Hence there was no recharge from these local streams using the USG model where the "baseflow sink" option was used in the Bylong region but a much higher recharge compensation (it would seem) may have been applied to the Goulburn River. The Goulburn River however is more than 10kms distant from the proposed mine sites (Figure 27 AGE 2016) and therefore should not have any significant influence on the groundwater system in the Bylong area. Were the *"lower groundwater levels"* in the quote above the result of using the 'baseflow sink' method or not?

4. The issues described above in items 1, 2 and 3 cannot be resolved from reports available and therefore there is no other alternative but <u>to recommend an independent model audit of the current USG and MS results in order to confirm whether the drawdown differences using MS or USG codes are valid or not, and to investigate various aspects of the modelling methodology used by AGE, their effects and validity.</u>

   HydroSimulations (HS) consulting group under the direction of Dr Merrick currently have the greatest experience in the use of the USG program (both standard USG and USG-Beta) as well as having developed the mesh generator for this code used by AGE. It is relevant also that HydroSimulations carried out the peer review of the modelling conducted by AGE for the EIS and therefore are aware of the modelling results that were presented using the original MS code for the Bylong Project (HS 2015). A model audit would require AGE to provide HydroSimulations with both the Bylong MODFLOW SURFACT and USG models and data files to enable these models to be run on HS computers.

5. With regard to proposed mitigation and management provided in Section 7 of the AGE (2016) report KA is in agreement with measures documented in addition to those given below in items 6, 7 and 8.

6. It is understood that *"several test wells"* (Section 13.6 EIS- should probably read *"several test bores*") are to be constructed to determine the sustainability of the proposed bore field. KA supports this initiative to use these tests to validate the model alluvial hydraulic parameters and response once the issues discussed in items 1 to 4 are resolved. It is assumed for the validation that during the pumping period and recovery, drawdown hydrographs from non-pumping bores, wells and observation bores will be compared to

hydrographs obtained by simulation of pumping/recovery by the groundwater model.

7. In order to facilitate the determination of any interference drawdown over time monitoring of water levels and where possible metering of pumping rates versus time in private bores/wells should be initiated before the mine bore field is commissioned or mining commences at Bylong. This will aid in determining the extent of any mine and mine pumping bore induced drawdown interference. This would also include mine pumping bores.

8. In addition to item 7 above. There needs to be available a series of observation bores in areas between the proposed northern mine pumping bores, the southern proposed borefield and the private bores (GW022518, GW047394, GW047395, GW047396) in order to provide additional response of drawdown-with-distance created by the mine pumping bores and mining. Approximate positions for observation bore sites are shown in Figure 1 below as Ob 1 to Ob 8. Exact positions would be subject to a field inspection by AGE for selecting suitable accessible locations for a drilling rig.

   Observation bores should drilled to the full depth of the alluvium and 'screens' and gravel pack positioned in the most significant permeable sections of the alluvium encountered. These observation bores should be constructed and measurements commenced well before the bore field operation or mining commences (that is, at least monthly for a minimum period of 12 months observation) in order to provide baseline water level variation under pre-mine conditions and subsequently under mining conditions. When mine bore pumping and/or mining commences frequency of measurement of these observation bores should increase.

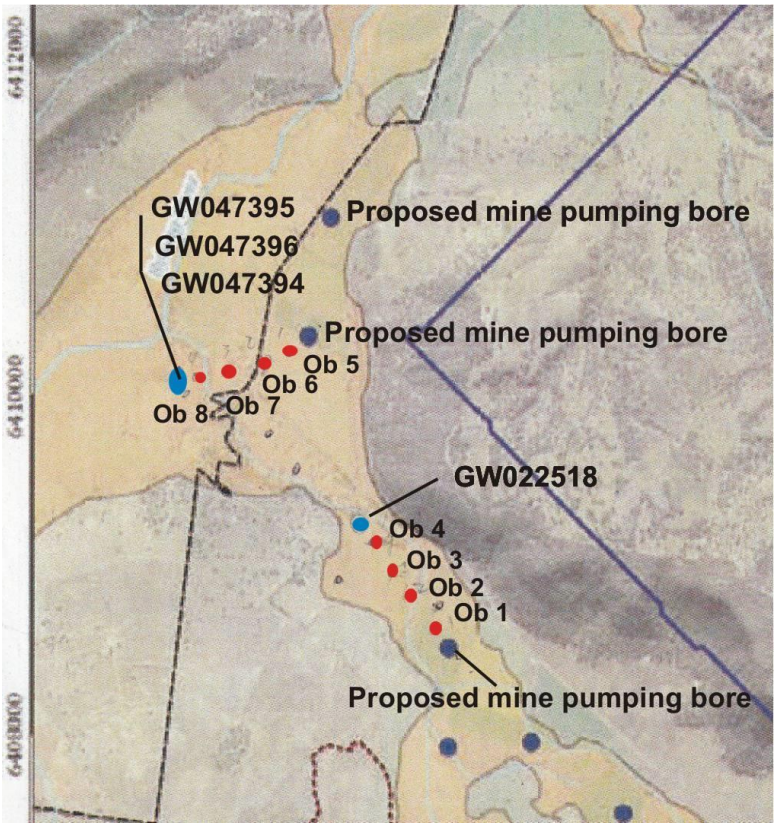

Figure 1 - modified part of Figure 38 Bylong Coal RTS Appendix H Part 1.

References

Australasian Groundwater and Environmental Consultants Pty Ltd (AGE), 2015, *Bylong Coal Project Groundwater Impact Assessment. Report prepared for Hansen Bailey Pty Ltd,10 June,162p +6 Appendices.*

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Bylong Coal Project
KA Comments on the HydroSimulations Model Audit and AGE RTS2 Groundwater Modelling Assessment

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31 August 2016

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Appendix: Model Appraisal 8

Background

The Introduction of the most recent HS audit report (HS 2016) states that:

"The main concern expressed by Dr Kalf is a discrepancy in predicted drawdown between different versions of the groundwater model, in particular between MODFLOW-SURFACT (MS) and MODFLOW-USG (USG) versions, as they differ in mathematical fundamentals. There is an expectation that the MS and USG versions should give the same predictions for the same model parameterisation and model stresses."

While this statement is valid with regard to the HS hypothetical models that constitute the audit analysis, the KA main concern was with drawdown differences generated d by the AGE Bylong MS and USG regional models that indicated much greater drawdown over the mine site alluvium and elsewhere with the MS code using vadose parameters than using the USG code 'upstream weighting'. In the review report KA (2016a item 1) indicated that:

> *"KA has concerns regarding the comparison made between the MODFLOW-SURFACT (MS) used for the EIS and MODFLOW-USG (USG) used for the AGE modelling update. The updated report by AGE indicates that USG code produces less drawdown than MS in the alluvium (page 49 last paragraph – AGE Bylong Coal RTS Appendix H Part 1) as follows:*
>
> *"Two drawdown scenarios are presented for the USG model, being the mean and 95th percentile drawdown predicted by the uncertainty analysis. Figure 26 shows the MODFLOW USG model predicts significantly less drawdown within the alluvium than the MODFLOW SURFACT model. When interpreting this result, it is important to note there are some differences between the models, particularly the rate of landholder pumping which is explained within the EIS. However, despite these differences, Figure 26 shows MODFLOW SURFACT predicts significantly more drawdown vertically and laterally within the alluvium, and therefore was a conservative approach to assessing impacts for the EIS."*
>
> *Irrespective of pumping influence, AGE contend that MS shows much greater drawdown both vertically and laterally than does USG. (Figure 26 AGE 'Bylong Coal RTS – Appendix H Part 1 indicates of between 4m to 10m difference over a large area of Lee Creek and Bylong River alluvium adjacent to and further downstream of the proposed main and western pits)."*

Hence AGE concluded that the MS code produced *"conservative"* predictions of drawdown compared to USG model predictions. The ultimate aim of the proposed analysis was therefore to determine the reason for this disparity. While HS was to conduct comparisons of the two codes for hypothetical examples, the main objective of the analysis was also for HS to assist AGE to run the codes and provide reasons for the drawdown and other differences obtained in their regional modelling using both MS and USG codes that simulated mining of the Bylong groundwater system. This part was to be the verification phase as proposed by HS (HS 6 June, 2016.) in their statement*:*

"The model audit should consist of a traditional audit phase and a verification phase. The audit phase would consist of an examination of the electronic files for models A and C, focusing on model assumptions and selected model options. The verification phase would focus on getting MS and USG models to give the same results for the same assumptions. The audit phase should be done by HS. The various tasks in the verification phase should be shared between AGE and HS."

In addition to the issue of differences in drawdown using the MS and USG codes KA also recommended the use of the 'stream flow package' rather than the 'river package' available in both MS and USG codes. In addition concerns were raised by KA regarding the use of excessively large cells along the Goulburn River by AGE that may have led to water balance errors.

HydroSimulations Model Audit

HS has provided a detailed audit analysis of the models used by AGE and also the setting up and running of synthetic 3D models in order to determine the differences and suitability of using MS and USG codes with vadose and *pseudo-soil* methodology. A large number of alternative model situations and the consequent responses has been presented and the results provide an important ongoing understanding of the applicability of solution options in the MS and USG codes.

It is pleasing to see that despite earlier inability of AGE and HS to achieve convergence using the *pseudo-soil* option in MS, convergence was finally achieved after advice received from HydroGeologic authors of the MS code. Successful convergence using *pseudo-soil* and MS has been the experience of both MER[1] and KA in the past.

One of the difficulties in more complex models (even synthetic types) is always separating out the interaction of numerous factors that can obscure cause and effect. The conclusion provided in Section 8.5 (HS 2016) is therefore not unexpected: "*Our finding is that the results are not always similar, and the size and the direction of the discrepancy between model results has no pattern that can be anticipated reliably. Overall, it has not been possible to state that either of the two software packages (SURFACT and USG) is more suitable than the other or that vadose (using Richards equation) versus pseudo-soils (or upstream weighting) simulations are more suitable than the other."*

HS continue with: *"There is a need however, when using vadose methods, that the settings address the important physical phenomena in a reasonable way, such as setting alpha, beta within expected limits and then conducting sensitivity analysis to assess the significance of these parameters on predictions."*

Recent independent simulations conducted by KA as part of this review (but not reported herein nor completed owing to a limited time constraint) have confirmed that use of the vadose (VG) parameter approach is unreliable in establishing the zero pressure head (watertable) in a regional model. This is so even though it may seem to generate a plausible solution and provide better convergence under certain circumstances. Some time ago during the Watermark modelling work when Dr Kalf contacted HydroGeologic staff in the US that supply the MS code about using the vadose approach in regional models they responded:

"Theoretically, the VG method is scale-independent. However, high vertical resolution is required to describe the vertical variation of moisture. Time steps may have to be very small to track the movement of the front accurately. Because of the high degree of non-linearity, a large number of iterations may be necessary. Therefore it is not practical for regional models."

KA simulations reveal that for moderate to larger values of *alpha* the characteristic relative permeability versus soil moisture tension (K_r versus negative pressure head) curve declines sharply and can lead to watertable instability and position when applied in thick model layers. Smaller values of *alpha* combined with moderate values of *beta* lead to a more gradual and smoother transition and can aid convergence. While it is possible to achieve similar results using vadose approach and the *pseudo-soil* method it is difficult to manage in practice. Under most modelling conditions the *alpha* and *beta* vadose parameters should not be expected to have any relation to the media properties to which they are applied.

This is so in regional models where *alpha* and *beta* values are most often set as constant values and applied for numerous different lithologies that may include alluvial gravels, sands, silts, clays and hard rock sedimentary, metamorphic and volcanic strata in the model. Under

[1] MER: Mackie Environmental Research.

such circumstances the vadose parameters would therefore have no real physical correspondence and become essentially solution convergence parameters - unless of course a uniform material is being simulated (e.g. sand, loam, clay etc.) for which vadose parameters have been established. But the potential numerical instability of watertable position prediction remains in regional models where layer thicknesses are substantial and where the relative permeability curve decreases rapidly under increasing negative pressure head.

Conventional wisdom suggests that using a value of *alpha* = 0.02 m^{-1} and *beta* = 7 used by AGE in the EIS assessment would be too low and beyond the values suggested as realistic in literature. Recent simulations of regional sections by KA have shown that the choice of lower *alpha* values provide a more stable representation of the watertable position. Lower values produce a smoother and less rapid decline leading to a more stable watertable position. The downside is that it can also lead to greater drawdown in the model with distance. Based currently on incomplete model KA analysis it seems that this behaviour may possibly explain the greater drawdown obtained previously by AGE using the MS code in the EIS compared to the USG code with *upstream weighting*. Greater drawdown at distance with low value *alpha* vadose parameter is also supported by HS (2016 - Sections 7.2 .7.4, 8.4).

Further independent model analysis by KA is required but it is unlikely to change the findings as discussed above.

With regard to the choice of modelling code, KA agrees with HS that both USG and MS codes can be applied for model application but that there will be differences depending on how they are applied and what method is used to represent unsaturated conditions. We concur with HS statement (Section 8.5 HS 2016):
"Therefore, modelling assessments need to consider and acknowledge this source of uncertainty, additional to the other inherent sources of uncertainty associated with estimation or simulation of subsurface conditions and groundwater behaviour. The choice of model code, given the lack of a definitive finding on suitability here, therefore remains with the modeller and the other perceived benefits of the software (e.g. cost, familiarity, boundary condition types, functionality".

AGE Second Response to Submissions (RTS2) Assessment

Hydrogeological and Modelling Description

The more recent report prepared by AGE in their Response to Submissions (AGE 2016) provides a hydrogeology description of the region and modelling work that is detailed and comprehensive. KA considers that it now provides a much more suitable and more extensive update of the modelling work conducted previously. It overcomes much of the uncertainty that was previously presented in earlier reports.

Model Conceptualisation and Simulation Methods

KA is pleased to note that AGE contacted the lead author of both MODFLOW-SURFACT (MS) and MODFLOW-USG (USG) Dr Sorab Panday. He recommended that the MODFLOW-USG code, which AGE had converted to recently, is suitable for regional models when combined with the *upstream weighting* option as opposed to the use of the vadose parameter approach. HS has demonstrated elsewhere that *upstream weighting* used in USG is equivalent to the *pseudo-soil* approach in MS.

AGE (2016) have now included significant improvements and refinements in their modelling approach for the Bylong Coal Project as outlined in their Section 6.2. In particular this work

has included higher resolution of the cell mesh in and around pumping bore sites, the Goulburn River stream channel and within the alluvial aquifer system, (Figure 6-1 AGE 2016). In addition alluvial aquifer thickness within the region has also been updated.

AGE have also incorporated the *stream flow package* as recommended by KA to model recharge to the groundwater system via volumetric streamflow generated with AWBM rainfall runoff model rather than the use of the static *river package* based only on stream stage height (Table 6-1, Figure 6-2, AGE 2016).

Model Calibration and Predictions

The MODFLOW-USG model has been updated and re-calibrated with higher hydraulic alluvial hydraulic conductivity based on the results from pumping tests conducted, changes to recharge rates in response to stream channel recharge and simulation of recharge event during the December 2015 and January 2016 period.

AGE (2016) have also provided calibration comparison of the alluvial sediments hydraulic conductivity and storage characteristics for the EIS, RTS and updated RTS2 (Table 6-2). The values listed for RTS2 appear plausible.

AGE has also allowed the alluvium to connect directly with the coal seam in the subcrop in response to a DPI Water suggestion.

Rainfall recharge has also been modified because of increased hydraulic conductivity in the model. In addition the KA concern regarding the large river rates of inflow and outflow have also been paired back substantially no doubt due greater mesh River resolution but also in part due to the use of the *stream flow package* (Table 6-4) with an overall substantial decrease in the total water balance.

A comparison of all observed and simulated groundwater levels is provided in Figure 6-5 and is considered to be quite reasonable. It would have been useful however if a calibration fit statistic had been quoted for the comparison.

Comparisons made between measured and modelled hydrographs are considered to be fair to good and acceptable.

Model Uncertainty and Sensitivity

AGE has elected to use non-linear methodology for uncertainty analysis (Table 6-6) as an update to linear analysis used in the RTS document. The table presents the Upper and Lower bound and Mean of the hydrogeological units for the current RTS2 analysis compared to the previous RTS estimates. This has also provided a range of predicted seepage rates to both the open cut and underground mining areas (Figure 6-19 AGE 2016). In addition graphical displays of the probable range of maximum drawdown in the alluvium, Cogan coal seam have also been included showing the differences in drawdown in the RTS2 assessment for USG *upstream weighting* and USG VG solutions. These drawdown estimates provide a suitable range of possible conditions for planning purposes.

Groundwater Monitoring and Mitigation

KA is in agreement with the proposed management plan proposed as set out in the AGE report. In particular, the installation of flow meters and water level loggers in selected KEPCO agricultural bores and the proposed bore field and on surrounding agricultural properties. In addition it would include measurement of inflow to both the open cut and underground mine.

Mine pumping bores have been positioned according to the rules of the Hunter Unregulated and Alluvial Water Sources Water Sharing Plan. However, these are arbitrary determined fixed distances independent of site specific hydrogeological conditions. Hence there should be adequate monitoring bores available between the pumping regime and any existing privately owned water supply bore(s) in order to allow for any future drawdown interference, should it occur, to be determined even though the maximum drawdown interference is currently predicted to be less than 1m. AGE indicate that any additional monitoring bores would be included in the Water Management Plan.

KA is in agreement with AGE's mitigation measures as outlined in their original report should they be required as set out in the Section 13.9 (AGE 2015).

Conclusions and Considerations

Overall the updated model changes and analysis has provided greater confidence in the predicted outcomes supported by the uncertainty analysis. AGE model prediction of higher recharge to the alluvium should improve the capacity for bore make-up water during dry periods of reduced surface water flow.

AGE have previously indicated a review of the hydrogeological data 2 years after the commencement of mining and model comparisons made against water levels measurements ever 5years. KA supports such reviews.

References

Australasian Groundwater and Environmental Consultants Pty Ltd (AGE). 2015 *Report on Bylong Coal Project Groundwater Impact Assessment. Report prepared for Hansen Bailey. June.*

Australasian Groundwater and Environmental Consultants Pty Ltd (AGE). 2016. Report on *Bylong Coal Project. Response to Submissions on Groundwater. Project No 1606. July.*

HydroSimulations (HS) 2016. *Groundwater Model Audit. Project No: BY001. Report HC2016/33. August.*

AGE RTS2 MODEL APPRAISAL

	ISSUES	Not applicable or Unknown					COMMENTS
1.0	**THE REPORT**						
1.1	Is there a clear statement of project objectives in the modelling report?		Missing	Deficient	Adequate	Very good	
1.2	Is the level of model complexity clear or acknowledged?		Missing	No	Yes		
1.3	Is a water or mass balance reported?		Missing	Deficient	Adequate	Very good	
1.4	Has the modelling study satisfied project objectives?		Missing	Deficient	Adequate	Very good	
1.5	Are the model results of any practical use?			No	Maybe	Yes	
2.0	**DATA ANALYSIS**						
2.1	Has hydrogeology data been collected and analysed?		Missing	Deficient	Adequate	Very good	
2.2	Are groundwater contours or flow directions presented?		Missing	Deficient	Adequate	Very good	
2.3	Has all relevant potential recharge data been collected and analysed?		Missing	Deficient	Adequate	Very good	
2.4	Has all relevant potential discharge data been collected and analysed?		Missing	Deficient	Adequate	Very good	
2.5	Have the recharge and discharge datasets been analysed for their groundwater response?		Missing	Deficient	Adequate	Very good	
2.6	Are groundwater hydrographs used for calibration?			No	Maybe	Yes	
2.7	Have consistent data and standard elevation units been used?			No	Yes		
3.0	**CONCEPTUALISATION**						
3.1	Is the conceptual model consistent with project objectives and the required model complexity?		Unknown	No	Maybe	Yes	
3.2	Is there a clear description of the conceptual model?		Missing	Deficient	Adequate	Very good	
3.3	Is there a graphical representation of the modeller's conceptualisation?		Missing	Deficient	Adequate	Very good	
3.4	Is the conceptual model unnecessarily simple or unnecessarily complex?			Yes	No		
4.0	**MODEL DESIGN**						
4.1	Is the spatial extent of the model appropriate?			No	Maybe	Yes	
4.2	Are the applied boundary conditions plausible and unrestrictive?		Missing	Deficient	Adequate	Very good	
4.3	Is the software appropriate for the objectives of the study?			No	Maybe	Yes	
5.0	**CALIBRATION**						
5.1	Is there sufficient evidence provided for model calibration?		Missing	Deficient	Adequate	Very good	
5.2	Is the model sufficiently calibrated against spatial observations?		Missing	Deficient	Adequate	Very good	

5.3	Is the model sufficiently calibrated against temporal observations?		Missing	Deficient	Adequate	Very good	
5.4	Are calibrated parameter distributions and ranges plausible?		Missing	No	Maybe	Yes	
5.5	Does the calibration statistic satisfy agreed performance criteria?		Missing	Deficient	Adequate	Very good	
5.6	Are there good reasons for not meeting agreed performance criteria?		Missing	Deficient	Adequate	Very good	Performance criteria have been met
6.0	**VERIFICATION**						
6.1	Is there sufficient evidence provided for model verification?		Missing	Deficient	Adequate	Very good	Verification will occur with ongoing monitoring
6.2	Does the reserved dataset include stresses consistent with the prediction scenarios?		Unknown	No	Maybe	Yes	
6.3	Are there good reasons for an unsatisfactory verification?		Missing	Deficient	Adequate	Very good	
7.0	**PREDICTION**						
7.1	Have multiple scenarios been run for climate variability?		Missing	Deficient	Adequate	Very good	ENSO variability low and high rainfall
7.2	Have multiple scenarios been run for operational management alternatives?		No	Deficient	Adequate	Very good	
7.3	Is the time period for prediction comparable with the duration of the calibration period?		Missing	Greater than	Similar to	Less than	
7.4	Are the model predictions plausible?			No	Maybe	Yes	
8.0	**SENSITIVITY ANALYSIS**						
8.1	Is the sensitivity analysis sufficiently intensive for key parameters/		Missing	Deficient	Adequate	Very good	
8.2	Are sensitivity results used to qualify the reliability of model calibration?		Missing	Deficient	Adequate	Very good	
8.3	Are sensitivity results used to qualify the accuracy of model prediction?		Missing	Deficient	Adequate	Very good	
9.0	**UNCERTAINTY ANALYSIS**						
9.1	If required by the project brief, is uncertainty quantified in any way?		Missing	No	Adequate	Yes	
9.2	**Is the model 'fit-for-purpose'?**			No		Yes	

COMMERCIAL IN CONFIDENCE

REPORT

Peer review of economic assessment

Bylong Coal project

Prepared for
NSW Department of Planning and Environment

1 December 2015

THE CENTRE FOR INTERNATIONAL ECONOMICS
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Summary

The CIE has been engaged by the NSW Department of Planning and the Environment (the Department) to peer review the Economic Impact Assessment produced by Gillespie Economics of the Bylong Coal Project. The Project is to construct and operate a green fields mine at Upper Bylong in NSW. The CIE's review tests the *reasonableness* of the analysis undertaken by Gillespie Economics and its consistency with NSW Government guidelines in relation to undertaking CBAs.

Gillespie Economics have undertaken the CBA at the national scale but have included sufficient detail in the distributional assessment to enable assessment of the benefits and costs to NSW residents as specified in *Guideline for the use of Cost Benefit Analysis in mining and coal seam gas proposals.* Gillespie Economics consider the benefits accruing to Australian residents and compare these with the unmitigated public costs incurred by residents of Australia and NSW.

The benefits considered are royalties accruing to the NSW government, company tax accruing the Australia government and component expended in NSW and a voluntary contribution made to the local community and, in one scenario, the non-market employment benefits (table 1).

1 Costs and benefits for Australia and NSW

	NSW	Australia
	$m	$m
Net production benefits to KEPCO	0	0
Net production benefits to the Commonwealth government	21	302
Net production benefits to the state government	290	290
Voluntary contributions	4	4
Non-market benefits of employment	165	165
Total benefits	**315**	**596**
Greenhouse gas emissions	0	0
Historic heritage	1	4
Total costs	**1**	**4**
Net benefits NSW (excluding non-market benefits of employment)	**314**	**592**
Net benefits Australia (including non-market benefits of employment)	**479**	**757**

Source: Gillespie Economics (2015), Bylong Coal Project Economic Impact Assessment, p.44.

On the cost side, there are a range of impacts that are mitigated under the Project. These actions lower the profit generated by the mine. In Gillespie Economics' analysis the unmitigated impacts are minimal. The quantified unmitigated impacts relate to historic heritage as well as carbon pollution.

Gillespie Economics estimates that the Project will deliver net social benefits of between $592 and $757 million to Australia over the project life and between $314 and $479 million net benefits to NSW residents.

While there are a range of benefits estimated, the net benefits from the Project are largely attributed to the royalty payments to the NSW Government of $290 million in present value terms. The estimated level of royalties is dependent on a range of factors, most notably, the coal price received for the product. This depends on global commodity prices (in US dollar terms) as well as the prevailing US/Australian dollar exchange rate.

- **Based on alternative assumptions of global coal prices, we estimate that the expected royalties could range between $253m and $345m. The estimates presented by Gillespie Economics, therefore, appears reasonable.**

The other key benefits are associated with the distribution of company taxes (paid to the Australian Government) allocated to NSW level, estimated at $21 million in present value terms and an estimated $165 million associated with non-market employment benefits.

The inclusion of the non-market employment benefits is contentious. While the community is theoretically likely to place a value having people employed, the quantum of this value is challenging to estimate. In regards to the company tax paid, it is also difficult to test Gillespie Economics' estimates. Estimating the accounting profit would require a range of confidential cost data which is not available.

- **It is difficult to verify the benefits associated with the estimated company tax paid and the community value of employment. Nevertheless, for the purposes of the CBA, focusing on the royalties generated provides a minimum level of benefits that can be expected to the community (the 'minimum threshold' approach).**

This minimum level of benefits to the community can be compared against the expected unmitigated public costs resulting from the Project. For many costs, Gillespie Economics notes that there are a range of actions undertaken by the Proponent which fully mitigate the impacts. The unmitigated residual costs relate to historic heritage and carbon pollution. In regards to carbon pollution this is conditional on the level of carbon emissions incorporated into the analysis and the assumed cost to society per tonne of emissions.

- **There is some uncertainty regarding the potential social costs of carbon emissions. Alternative estimates of the social cost of carbon emissions range between $23m and $76m, depending on the assumptions used.**

This suggests the expected revenue from royalties would outweigh the unmitigated social costs of carbon emissions. The other unmitigated costs associated with historic heritage are relatively small and alternative estimates would not significant change the quantum of impacts.

There are additional costs associated with air pollution that should also be incorporated into the analysis. Gillespie Economics assumes that air pollution costs are zero because the Project meets the current regulatory requirements. There could be air pollution costs even where regulated standard has been met.

- **Based on available information we estimate the air pollution cost to be $0.3m.**

Based on the inclusion of additional public costs associated with air pollution ($0.3m) and carbon emissions ($23-76m), using the 'minimum threshold' approach there is still a net benefit from the Project associated with royalty payments to NSW. There are likely to be additional benefits associated with company tax and non-market employment benefits but these are difficult to verify.

- **At a minimum it is reasonable to expect net benefits to NSW, associated with royalty payments, of above $177m (under high-side cost estimates). In addition to this there are public benefits associated with income tax payments to the Australian Government (some of which is distributed to NSW) and broader employment benefits to the community, although the quantum of these benefits is more difficult to estimate.**

The estimated net social benefits of the Project is conditional on the assumptions that the majority of potential impacts of the mine are mitigated by actions taken by the Proponent. These costs of mitigation activities are bundled together making validation challenging. There is value in having a greater transparency of the costs of the proposed mitigation actions to understand, at a later stage, the extent to which planned actions have been adhered to.

- **CIE recommends Gillespie Economic s separately report the mitigation costs currently included in the Proponents operating and capital costs.**

It is important to recognise that the analysis conducted in this report are dependent on the analysis presented in the EIS. To the extent that there are changes to the quantum of impacts presented in the EIS this may need to be reflected in CBA.

1 Introduction

About the Project

The Bylong Coal project (the Project) will take place over 25 years, comprising 2 years of construction and 23 years of operation. Rehabilitation and decommissioning will take place during and after the Project.

The Proponent intends to achieve a combine maximum extraction rate of 6.5 Mt per annum ROM coal from two open cut mines and an underground mine. Open cut mining will occur for ten years beginning at the start of mining operations. Construction and operation of the underground mine will begin around year 7.[1]

The Project involves a number of infrastructure upgrades, including:

- construction of a coal handling and preparation plant
- upgrade of the Upper Bylong Road and construction of a mine access road
- construction of a rail loop and associated rail load out facility.

Hansen Bailey Environmental Consultants commissioned Gillespie Economics to undertake an economic impact assessment (EIA) for the Project on behalf of the Proponent of the Project, KEPCO Bylong Australia Pty Ltd. The EIA forms part of the environmental impact statement (EIS).

Scope of review

The CIE has been engaged by the NSW Department of Planning and the Environment (The Department) to peer review the EIA produced by Gillespie Economics for the Project. The scope of the review includes an assessment of:

- whether assumptions presented are reasonable, appropriate and suitably justified,
- whether the cost benefit analysis aligns with current best practice,
- the adequacy of the methodology, analysis and assessment presented in evaluating the economic costs and benefits of the proposed development (for the Proponent, local, region and State),
- the identification of any areas of deficiency (including inconsistencies, overlaps or "double counting") and recommendations to improve or resolve these issues in the assessment, and
- consistency of the assessment with any relevant Government guidelines (e.g. NSW Treasury (2007) Guidelines for economic appraisal and/or the NSW Government (2012) Guideline for the use of CBA in mining and coal seam gas proposals).

---

1 Gillespie Economics (2015), *Bylong Coal Project: economic impact assessment,* prepared for KEPCO Bylong Australia Pty Ltd, p. 10.

Cost Benefit Analysis

Features of a CBA

A CBA framework is a widely used tool for deciding *ex-ante* between alternative options (policies or projects). It allows decision makers to consider trade-offs arising from different options in order to assist decisions of whether community as a whole is better off or worse off by adopting an option.

A CBA framework is focussed on the aggregate welfare of the community, rather than the welfare of individual groups. It should take account of the full range of potential benefits and costs of the options, including environmental, health and other social impacts as well as the economic impacts. Where benefits exceed costs, the options are deemed to deliver a net benefit to the community as a whole.

Impacts are often not known with certainty.[2] In these circumstances the CBA needs to be presented as an expected value taking account of the range of possible outcomes (each with a known probability of occurrence). In some circumstances, not all impacts can be readily quantified and valued in a robust manner. Decision makers will need to draw on other information to complement the result of the CBA and to assist in deciding on whether society is better off from adopting an option.

The NSW Government's November 2012 Guidelines specifies the key features of a CBA in mining and coal seam gas proposals. These are summarised in Box 2.

2 For the purposes of our analysis, we use the term risk and uncertainty interchangeably. In theory, risk refers to events where a probability distribution can be developed whereas uncertainty refers to situations where the probability of outcomes cannot be estimated.

2 Key features of a CBA[3]

- Scope – A CBA should include all first round (primary) impacts both direct and indirect but not secondary impacts.
- Estimating costs and benefits – A net public benefit or cost of a project can be calculated through the net benefit of a project less any associated public expenditure and any negative social, health or environmental impacts.
- Discount rate - A discount rate of 7 percent per annum with sensitivity testing at 4 per cent and 10 per cent per annum.
- Timeframe - A term that reflects the time horizon of the impacts of a proposal. Long-term projects should use a 50-year timeframe and a residual value where applicable, but this does not preclude a longer timeframe.
- Risk and Uncertainty - A 'risk neutral' approach to expected costs and benefits.
- Unquantified factors - Decisions based on the quantified expected net benefits in conjunction with information on any impacts that cannot be valued

Defining the scope of the Project

The NSW Government's Guidelines for Economic Appraisal provides the following guidance for defining the scope of a project:[4]

> The scope of the project to be evaluated is also an important issue. Projects or programs will contain a range of elements related to one another and the point at which a discrete project can be identified will require careful judgement.

Taking this into consideration, our review of the definition of the scope of the project is guided by four questions:

- Was the scope of the CBA appropriate?
- How was the project defined and was this reasonable?
- Were the characteristics and elements of the project identified in sufficient detail to enable a robust analysis?
- Were alternative scenarios identified and considered?

Scope of the CBA

The NSW Government Guidelines provide the following guidance for defining the scope of the CBA:[5]

---

3 NSW Government (2012), *Guideline for the use of Cost Benefit Analysis in mining and coal seam gas proposals*, November, p2.

4 NSW Treasury, NSW Government Guidelines for Economic Appraisal, 2007.

5 NSW Government, Guidelines for the use of Cost Benefit Analysis in mining and coal seam gas proposals, 2012, p.5.

> These benefits and costs should be estimated where possible as those that accrue to New South Wales. In the first instance, it will generally be most practical to assess all major costs and benefits to whoever they accrue and then adjust to estimate the proportion of these attributable to residents of the State.

The scope of the CBA should include all first round effects but not second round impacts.

Gillespie Economics present the overall net benefits to Australia in accordance with their definition of standard practice in a CBA. However, the report provides sufficient information regarding the distribution of costs and benefits at the global, state and local scales to enable assessment of the net benefits to NSW residents.

In particular, the report includes royalties and the share of company tax revenue attributable to NSW residents.

Gillespie Economics include only first round effects at global, national and state scales. Second round effects are included at the local scale.

- **The scope of the CBA generally focuses on the net benefit to Australia as a whole, rather than NSW. The report, however, does identifies costs and benefits to NSW residents.**
- **The analysis considers only first round effects at the state scale but first and second round effects at the local scale.**

Project definition

The definition of the Project includes the construction and operation of the mine as well as a number of on-site and off-site infrastructure projects. In particular, the project scope included but was not limited to:

- the construction and operation of the mine,
- infrastructure constructed within the Mine Area,
- rail loop and train loading infrastructure,
- the upgrade of local roads.

Detail of project characteristics

The characteristics and elements of the Project that were included in the articulation of the proposal included the:

- mine's location
- type of mine
- duration of the construction and operation phases
- expected extraction rates
- a range of on-site infrastructure projects
- rehabilitation and decommissioning activities.

In particular, the construction phase spans two years with the operating phase extending a further 23 years.

Alternative scenarios

Gillespie Economics considers only the baseline scenario and the proposed project in this analysis. The report notes that Proponent considered a range of project options when developing the Project. The Proponent considered the Project

> 'to be the most feasible alternative for minimising environmental, cultural and social impacts whilst maximising resource recovery and operational efficiency.'[6]

- **The CIE is unable to verify the costs and benefits to NSW residents of the alternative projects, therefore, conclusions presented here should be considered with that proviso.**

Quantifying and valuing the changes

Our review of the values attributed to cost and benefit categories identified is guided by the following four questions.

- Was the baseline adequately established?
- What cost and benefit categories were identified, and were these appropriate?
- What cost and benefit categories quantified and valued and how was this done?
- Were the estimated values benchmarked?

Establishing the baseline

The NSW Government Guidelines provide the following definition of the baseline or 'base case':

> The 'base case' is typically a projection of the current land use case including current and committed policy settings. The base case effectively describes a business as usual scenario.

The base case as described by Gillespie Economics consists of ongoing agriculture activity on the land affected by the Project. The predominant use of the land is beef cattle grazing. The baseline does not include any economic activity related to the buildings affected by the Project.

- **Gillespie Economics reasonably define the base case to be the current agricultural activity.**

Cost and benefit categories identified

The NSW Government Guidelines include a list of cost and benefit categories that determine the net public benefit of a major project. [7] Table 3 compares this list to the cost

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6 Gillespie Economics (2015), *Bylong Coal Project: economic impact assessment,* prepared for KEPCO Bylong Australia Pty Ltd, p. 30.

7 NSW Government (2012), Guidelines for the use of Cost Benefit Analysis in mining and coal seam gas proposal, p.5.

and benefit categories identified, valued and reported by Gillespie Economics and table 4 provides estimates of those benefits and costs valued above zero.

Gillespie Economics identified, valued and reported key production costs and benefits including gross value of mining operating, capital investment and rehabilitation costs. Of the social costs, Gillespie Economics only report carbon pollution and heritage costs. Biodiversity, noise pollution and increases in mineworkers' wages are included in the analysis but aggregated into development and operating costs. Gillespie Economics appear to allow for an aggregate $84 million to account for these costs.[8] Costs related to air pollution relate to mitigation measures to meet regulatory standards and unmitigated impacts below the standard were not valued.

3 Benchmarking the identified costs and benefits

NSW Guidelines	Gillespie Economics	
	Identified	Valued
Benefits		
Gross mining	Yes	Yes
Costs		
Exploration costs	No	No
Capital investment costs	Yes	Yes
Operating costs	Yes	Yes
Rehabilitation costs	Yes	Yes
Public expenditure		
Public expenditure relative to base case	No	No
Environmental and social impacts		
Water quality	No	No
Streams, alluvial aquifers, or alluvial soils	No	No
Air pollution	Yes	No
Noise pollution	Yes	Yes
Visual amenity	Yes	No
Traffic impacts	Yes	No
Carbon emissions	Yes	Yes
Biodiversity	Yes	Yes
Conservation	No	NA
Quality of open spaces	No	NA
Rural amenity and culture	No	No
Aboriginal heritage	Yes	No

8 Gillespie Economics (2015), Bylong Coal Project Economic Impact Assessment, table 4.2, p. 33.

NSW Guidelines	Gillespie Economics	
	Identified	Valued
Historical heritage	Yes	Yes
Increase in mine workers' wages	Yes	Yes
Profits of mine suppliers	No	NA
Impacts on farmers not elsewhere included	Yes	No
Impact on labour supply	No	NA
Tourism	No	NA
Other effects identified		
Decommissioning costs	Yes	Yes
Subsidence	Yes	Yes
Blasting	Yes	Yes
Non-market value of employment	Yes	Yes
Other onsite revenue	Yes	Yes
Residual land and water value	Yes	Yes
Residual capital value	Yes	Yes

Sources: NSW Government (2012), Guidelines for the use of Cost Benefit Analysis in mining and coal seam gas proposals, Gillespie Economics (2015), *Bylong Coal Project: economic impact assessment*.

4 Magnitude of the incremental costs and benefits quantified

Parameter	Proposed NPV
	$ million
Gross mining revenue	4 025
Operating costs	2 258
Capital investment costs	855
Carbon emissions	38
Rehabilitation and decommissioning	9
Residue value of land	8

Source: Gillespie Economics (2015), Bylong Coal Project Economic Impact Assessment

In regard to unquantified social and environmental factors, the NSW Government Guidelines state that:

> As has been stressed, some impacts may not be quantified. For example it may be very hard to quantify the amenity effects of a change in land use from a traditional rural use to a mining one. Unquantified impacts should be discussed in the CBA report. However, it should be stressed that these impacts should be viewed in the context of the quantified net public benefit or cost. If there is an estimated net public benefit, do these factors offset this benefit? It would be inappropriate to set up an arbitrary point scoring system as an alternative measure of the net public benefit or cost. The preparation of a CBA report should be explicit regarding assumptions and include discussion of any qualitative impacts.

Gillespie Economics do not consider, even qualitatively, some other costs, including water quality and health. The impact of not valuing the social and environmental categories above on the final cost benefit ratio depends in part on the potential scale of

the impacts and the extent to which mitigation programs developed by the Proponent may help to offset these costs

- **The CBA identifies and values the major costs and benefits.**
- **Gillespie Economics do not separately report mitigation costs. The Proponent is assumed to mitigate fully a large number of environmental impacts so the net public benefits are heavily reliant on the success of these mitigation activities.**
- **Gillespie Economics do not qualitatively assess the effects of the Project on water quality, health and conservation. Based on the EIS, CIE consider it unlikely that these costs would outweigh the Project benefits.**

Valuing cost and benefit categories

A review of the values attributed to the cost and benefit categories involve assessing the methodology, assumptions, and data sources used to value the categories. Table 5 shows the methodology, assumptions and data sources used to estimate the value of cost and benefit categories identified above. Most of the revenue and financial cost forecasts used in the CBA were sourced directly from the Proponent. The environmental impacts separately reported were carbon emissions and historical heritage.

5 Cost and benefit categories identified

Costs and benefits quantified	Methodology	Key assumptions	Sources of data
Benefits			
Gross mining/onsite revenue	▪ Product of price and production forecasts.	▪ All coal production will be thermal coal ▪ The maximum rate is 6.5 Mtpa ROM. ▪ The assumed USDF/AUD exchange rate is 0.84. ▪ Coal prices are not provided.	▪ KEPCO ▪ Wood McKenzie ▪ Westpac
Costs			
Capital investment costs	▪ Includes roads, rail, storage facilities, and exploration costs.	▪ Investment phase is 2015 to 2017. ▪ Investments total $1 331 million in the Project scenario.	▪ Umwelt
Operating costs	▪ Includes rehabilitation costs, and excludes royalties, council rates or taxes. ▪ Measured as $ per tonne	▪ Operating costs range between $54 and $88 Project scenario.	▪ KEPCO
Decommissioning costs	▪ Assumed to be $50 million.	▪ Includes all mine sites.	KEPCO

Costs and benefits quantified	Methodology	Key assumptions	Sources of data
Agricultural land	▪ Valued at the market value of the land	▪ Unit costs not explicitly given	
Related public expenditure	▪ Valued at 0.	▪ Costs deemed insignificant.	
Traffic	▪ Assumed to be equal to the mitigation cost of upgrading a local road.	▪ Included in the capital costs of the Project but not separately identified.	▪
Air pollution – carbon emissions	▪ Calculate the product of the quantity of carbon emissions and the cost these emissions.	▪ A constant price of $AUD 23 per tonne of emissions. ▪ Includes Scope 1, Scope 2 and some Scope 3 emissions.	▪ Australian Treasury
Residual land value	▪ Estimate the change in land value associated with mining activities	▪ Considers both agricultural and native vegetation values	▪ NSW Office of Environment and Heritage Biobank ▪ Derived from NSW Department of Primary Industry
Air pollution – particulate matter	▪ Valued at 0.		▪
Noise pollution	▪ Valued at the costs of acquisition and mitigation ▪ Assumed no residual impacts	▪ Assumptions are not cited because they are considered commercial in confidence.	▪ KEPCO
Visual impacts	▪ Valued at the Proponent's mitigation costs.	▪ Assumptions are not cited.	▪ KEPCO
Water Quantity impact	▪ Valued at its opportunity cost.	▪ Assumed to be equal to market value of $3 000 per ML. ▪ KEPCO hold 2 535 units	▪ KEPCO ▪ National Water Commission
Biodiversity	▪ Costs of managing proposed Biodiversity Offset Area considered only.	▪ Upfront and management costs are included in Project capital and operating costs respectively ▪ The area of land purchased for biosecurity offsets is 3 800 ha.	▪ Scott Barnett and Associates (2015)
Historic heritage	▪ Benefit transfer	▪ Assumed $5.53 per person for every 1 000 places	▪ Allens Consulting Pty Ltd (2005)

Costs and benefits quantified	Methodology	Key assumptions	Sources of data
		protected	
Non-market value of employment	▪ Benefit transfer	▪ Assumed 290 employees over 23 years	▪ Gillespie Economics (2009)

Source: Gillespie Economics (2015) Bylong Coal Project Economic Impact Assessment

- **CIE consider the methodologies reasonably sound subject to the caveats described below.**
- **Gillespie Economics assume that mitigation costs equal social costs for many categories. That is, there are no unmitigated social costs arising in these circumstances.**
- **The consolidation of many social costs into aggregate operating and capital costs make validation difficult. This, in part, is likely to reflect the challenge in reporting confidential data.**

Benefits category

The benefits of the Project arise from the amount of saleable coal and the price of this coal.

Production volumes

Gillespie Economics project the Project will result in 77.20 Mt of saleable coal during its 23 years of operation. There is no coal production under the base case because this is a green fields project. The mine produces only thermal coal.

The expected production profile from the mine will depend on a range of factors including the expected demand for the coal as well as the price for coal.

There is considerable uncertainty around the *extent* to which global demand for coal will continue to increase as the world's energy requirements grow. Over the past decade, coal has 'met nearly half of the rise in global energy demand' and grew faster even than total renewables.[9] However, overall energy demand and the role of coal-fired electricity in the energy mix depends heavily on the greenhouse gas emissions policy decisions made by countries, particularly India and China, which account for almost three quarters of projected non-OECD coal demand growth.

- **While there is uncertainty regarding the future production profile from the mine, it is expected that there will be a sustained demand for the product over the timeframe of the Project.**

Coal prices

Coal prices determine the revenue received from the sale of the coal. They can also affect the production profile, given their impact on the profitability of the mines.

9 International Energy Agency (2012), *World Energy Outlook 2012.*

Gillespie Economics state they source coal price estimates from Wood McKenzie but do not provide these estimates. The USD/AUD exchange rate is assumed to be 0.84.

Long-term forecasts of coal prices are hard to benchmark given the limited availability of publicly available forecasts. Recently, both coal prices and the Australian exchange rate have been trending down.

The Bureau of Resources and Energy Economics (BREE) provides the most recent forecast of future coal prices, although these forecasts only extend to 2019.

The key uncertainty in the royalty calculation is likely to be the world coal export price. In its recent assessment of the Mount Owen mine extension, for example, the NSW Department of Trade and Investment has used

> …. the current low short term coal prices and medium to long term export thermal prices in the range of $A97 to $117 per tonne.[10]

Independent data from the Australian Government's Department of Industry provides another point of comparison. In regards to thermal coal, it indicates that

> Benchmark prices for the Japanese Fiscal Year 2015 (JFY, April 2015 to March 2016) settled at US$67.80……..Benchmark prices for JFY 2016 are forecast to settle at 9 per cent lower at around US$62 a tonne, underpinned by continued oversupply and an assumed depreciation of the Australian dollar.[11]

This equates to around US$61 per tonne, in real terms.[12] Based on the current exchange rate (as at 4 September 2015) of AUD 0.70 per US dollar, forecast prices in 2015/16 would be around A$87 per tonne for export thermal coal.[13]

In regards to thermal coal, BREE notes that at current spot prices (around US$73 per tonne),

> Many producers are unprofitable, which is expected to support further cost-cutting measures and signals the risk of more mine closures or production curtailments over the remainder of the year.[14]

Gillespie Economics does not separately identify the coal price assumptions used in the CBA. However, using the royalties estimates (discussed below), this would imply an average price of between A$90 to A$100 per tonne for thermal coal. This is broadly consistent with the NSW DTI's previous advice on expected future thermal coal prices.

- **While there are significant uncertainties regarding future prices, the implied coal price of A$90- A$100 per tonne for export thermal coal prices used in the CBA is reasonable.**

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10 NSW Department of Trade and Investment 2015, *Mount Owen continued operations project (SSD 5850) Review of Environmental Impact Assessment,* OUT 15/4442, Sydney.

11 Australian Department of Industry, (2015) *Resources and Energy Quarterly*, June 2015, p.28.

12 Australian Department of Industry, (2015) *Resources and Energy Quarterly*, June 2015, Figure 4.2.

13 http://www.rba.gov.au/statistics/frequency/exchange-rates.html

14 Australian Department of Industry, (2015) *Resources and Energy Quarterly*, June 2015. p.45.

Royalties

The minimum benefit to NSW residents of the Project is the royalties paid to the NSW government. Based on the Proponent's production and price assumptions, Gillespie Economics estimates the total royalty payment to be $290m in present value terms.

Using a coal price of between A$87-A$117 per tonne and assuming maximum deductions $4.50 per tonne implies a royalty range of $253m to $345m in present value terms over the life of the Project.

- **For the purposes of the CBA it is reasonable to assume royalties of around $290m in present value terms over the life of the Project.**

Residual values for land

Gillespie Economics has calculated residual values for land as its current agricultural value of $47 million. This implicitly assume that mitigation efforts restore the land to its current productivity and attributes a willingness to pay value to the land. CIE agree with the comments of BDA in their peer review that there is a wide body of literature suggesting that willingness to accept is higher than willingness to pay including Sayman and Oncular (2002).[15] However, the magnitude of the difference is not easily determined and any increase in residual value only increases the benefits from the Project.

- **CIE consider the estimate for the residual value of the land to be conservative but reasonable.**

Cost category

Operating costs

Gillespie Economics has sourced their estimates of operating and capital costs from the Proponent. Total operating costs are estimated to be 2 258 million in NPV terms. CIE estimate this implies an average cost of $59 per tonne of product based on the available information.

Operating costs used in other studies provide some opportunity for comparison. Gillespie Economics (2012), for example, presents the findings from two studies:

- Marston (2010) which estimates the free on board cash cost of mining of approximately A$51 per tonne (in 2010 dollars).[16]
- Ernst and Young (2010) which estimates the operating costs per saleable tonne across all Centennial mines at A$53.6 per tonne (in 2010) of product coal. This includes the costs of levels and royalties, amongst other things, but excludes capital costs.

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15 Sayman, S and Oncular, A (2002), *A meta analysis of the willingness to pay and willingness to accept disparity*, available at http://www.insead.edu/facultyresearch/research/doc.cfm?did=47652

16 Based on a cost of US$45 per tonne and converted to Australian dollars using an exchange rate of $0.88.

In 2014 dollars terms, this equates to between A$56 and $60 per tonne of saleable coal. The Australia Institute (2013), on the other hand, argues that the costs are closer to A$90 per tonne (in 2013 dollars).[17] In the absence of specific data on the operating costs of the mines, it is difficult to test the operating cost estimates utilised in the Gillespie Economics study.

- **Without detailed data from independent sources it is difficult to test the validity of the operating cost assumptions used. The Proponent should be requested to separately itemise the costs associated the mitigation activities to provide greater transparency on the actions proposed.**

Capital costs

Gillespie Economics, appropriately, has sourced capital costs from the Proponent. Similar to operating costs, total capital costs include some undefined costs of mitigation. In this case, the total of the mitigation costs are separated from other capital costs. Of the estimated $1 331 million total capital costs, $1 247 million relate directly to the construction of the mine and processing facilities.

- **Greater specificity in the mitigation costs is desirable to ensure transparency of actions proposed.**

Traffic

Gillespie Economics has assumed that the Proponent's actions would mitigate all traffic related impacts. The costs of one of three mitigation techniques are included in the Proponent's capital costs. The report does not include the specific cost.

- **CIE cannot verify the cost of traffic disruptions based on the information in the report. However, based on the EIS findings we have assumed that the impacts are fully mitigated.**

Air quality impacts

The economic analysis reiterates the assessment findings in the EIS that there are no properties that will be impacted by exceedances of air quality criteria and assumes there are no material economic costs resulting from air quality impacts.[18] The EIS states:

> The modelling results show that no private residence is predicted to experience ground level concentrations of PM_{10}, $PM_{2,5}$, TSP and dust deposition above the relevant impact assessment criteria, due to the Project alone or cumulatively.[19]

There is one private residence (at receptor 69) which is predicted (based on statistical analysis) to have an increase in the number of days exceeding PM 10 criteria from 7 to 13

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17 The Australia Institute (2013), *Terminal 4 Project -Submission to the preferred project,* November, p.14.

18 Gillespie Economics (2015), p.15 and p.36.

19 Pacific Environment Limited, 2015,*Bylon Coal Project EIS Appendix O: Air Quality and Greenhouse Gas Impact Assessment,* p. 108

when cumulative background concentrations included. There is no increase in days for PM2.5.[20] We understand that this private residence is not currently owned by the mine, however, it may be acquired by the mine at a later stage (although this is not clearly stated in the EIS).

Despite air quality criteria being met, potential impacts to the community can still occur. Current research into the health effects of particulate matter has not identified a known threshold for health effects, for example, PAEHolmes (2013)[21] states

> The current approach to air quality management in Australia focuses on reducing exceedances of ambient air quality standards at specific locations. The standards are designed to protect health. However, for PM_{10} and $PM_{2.5}$ there is no evidence of threshold concentrations below which adverse health effects are not observed.

Gillespie Economics acknowledges these findings in the economic analysis noting that adverse health impacts may occur at air quality levels below current standards. However, the economic analysis states a recent study by Merritt, Cretikos, Smith and Durrheim (2013) that found there were no significantly higher rates of problems managed or medications prescribed for Hunter region residents due to close proximity to coal mining and coal-fired power generation, compared with the rest of rural NSW.[22] On this basis and given air quality standards are met by the Project, the economic analysis does not estimate the potential health impacts of emissions.

The CIE has not verified the findings in the study by Merritt, Cretikos, Smith and Durrheim. However, given the uncertainty regarding health impacts caused by air pollution it is prudent to assess air quality impacts in the economic analysis.

- **For the purpose of CBA, an appraisal of air quality impacts should evaluate the impacts of a change in air pollution regardless of whether air quality standards are met because there is no known threshold for health effects resulting from particulate matter.**

The two approaches to estimate the economic value of changes in air quality are:

- ***damage cost approach*** – values changes in emissions
- ***impact pathway approach*** – values changes in ambient concentrations

The 'impact pathway' approach is the most robust valuation approach following the pathway from emissions to cost via ambient air quality concentrations, population exposure, and morbidity and mortality health impacts.

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20 Pacific Environment Limited, 2015,*Bylon Coal Project EIS Appendix O: Air Quality and Greenhouse Gas Impact Assessment,* p.59.

21 PAEHolmes (2013), *Methodology for valuing the health impacts of changes in particle emissions – final report*, p.1.

22 Gillespie Economics, page 36.

The damage cost approach applies unit damage costs per tonne of emissions. This approach is less resource intensive than the full 'impact pathway' approach and has been used in Australia to evaluate policies/measures that change the quantity of emissions.[23]

The full impact pathway approach can be used to estimate a robust set of unit damage costs, based on location-specific inputs and data, which are subsequently used to evaluate projects, policies and measures.[24] This exercise has been undertaken in many countries and jurisdictions, but as noted by PAEHolmes (2013), damage costs based on the full impact pathway approach have not been estimated for Australian jurisdictions. Rather damage costs used for appraisal in Australia have been transferred from overseas studies.

PAEHolmes (2013) prepared unit damage costs per tonne of $PM_{2.5}$ emissions by significant urban area (SUA) across NSW. These unit damage costs were transferred from a UK study[25]and adjusted to account for population density to estimate unit damage costs weighted for population exposure for each SUA. Further detail on the construction of these damage costs is available in Appendix A. These unit damage costs can be applied to the estimated emissions resulting from the project.

The EIS estimated emissions of dust during the operation of the Project for the following representative years (table 6):

- Year 3 – represents open cut mining in both the western and eastern open cut mines
- Year 5 – represents maximum open cut mining rate at both the western and eastern open cut mines
- Year 9 – maximum combined open cut and underground production
- Year 18 – maximum ROM coal production rate from underground mining only.[26]

6 Emission rates for modelled years of operation

Modelled year	TSP	PM10	PM2.5
	kg/yr	kg/yr	kg/yr
Year 3 (2018)	1 871 969	471 907	60 814
Year 5 (2020)	3 303 381	907 978	126 306
Year 9 (2024)	3 391 908	949 420	128 682
Year 18 (2033)	580 848	215 186	49 356

Source: Pacific Environment Limited, 2015,*Bylon Coal Project EIS Appendix O: Air Quality and Greenhouse Gas Impact Assessment*, Tables 7.2, 7.3, 7.4 and 7.8, pgs 43 to 50.

23 PAEHolmes, 2013, *Methodology for valuing the health impacts of changes in particle emissions - final report*. Prepared for NSW Environment Protection Authority (EPA).

24 National Environment Protection Council, 2014, *Draft variation to the National Environment protection (Ambient Air Quality) Measure: Impact Statement.*

25 Defra, 2012, *Air Quality Damage Costs. Published by Defra.* Current damage cost values published at: http://www.defra.gov.uk/environment/quality/air/airquality/economic/damage/. with a guidance document on the use of the damage costs at: http://archive.defra.gov.uk/environment/quality/air/airquality/panels/igcb/documents/damagecost-guidance.pdf

26 Pacific Environment Limited, 2015,*Bylon Coal Project EIS Appendix O: Air Quality and Greenhouse Gas Impact Assessment*

PAE Holmes estimated the cost of $PM_{2.5}$ emissions outside any 'significant urban area' as $360 per tonne. Using this cost per tonne estimate, the cost of air pollution over the 25 year period of the Project is around $300 000 in present value terms (using a 7 per cent discount rate).[27]

- **Based on our estimates, the economic cost of the Project's $PM_{2.5}$ emissions is approximately $0.3 million in present value terms.**

Carbon pollution costs

The taxonomy of GHG emissions is defined as:

- ***Scope 1***: All direct GHG emissions.
- ***Scope 2***: Indirect GHG emissions from consumption of purchased electricity, heat or steam.
- ***Scope 3***: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc.[28]

The EIS estimated the total Scope 1, 2 and 3 emissions for the life of the Project: [29]

- 2.2 million tonnes of direct carbon dioxide equivalent (CO_2-e) emissions associated with mining (Scope 1 emissions) over the lifetime of the Project and approximately 1.3 million tonnes of indirect (Scope 2 emissions) CO_2-e emissions associated with on-site electricity consumption.
- 203 million tonnes of indirect (Scope 3) CO_2-e emissions of which 202.5 million tonnes are associated with the use of thermal coal and excluded from the economic analysis. The economic analysis includes 0.5 million tonnes associated with the transport of product coal to Newcastle and on-site diesel and electricity use.

A shadow price of AUD$23 per tonne of CO_2-e is applied to annual estimates of Scope 1, 2 and 3 emissions to estimate the cost of greenhouse gas emissions. The economic analysis estimated the cost of greenhouse gas emissions attributable to the Project as approximately $38 million in NPV terms (using a 7 per cent discount rate).

Carbon price and scope of emissions considered in appraisal

There is considerable uncertainty regarding the cost of carbon. In its peer review of the economic analysis, BDA concluded that using the carbon price set for Australia to achieve its target as a measure of the global damage caused by carbon pollution is

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27 Emissions of $PM_{2.5}$ during construction were not provided in the EIS. The estimated cost of air pollution assumes zero emissions of $PM_{2.5}$ in years 1 and 2 (construction period), emissions in years 3 and 4 are equal to modelled emissions for year 3, emissions in years 5 to 8 are equal to modelled emissions in year 5, emissions in years 9 and 10 are equal to modelled emissions in year 9 and all remaining years equal to modelled emissions in year 18.

28 For more information, please see: http://www.ghgprotocol.org/calculation-tools/faq

29 Pacific Environment Limited, 2015, *Bylon Coal Project EIS Appendix O: Air Quality and Greenhouse Gas Impact Assessment* , pg 101.

contestable.[30] The Treasury modelling is outdated in terms of both the Australia and the global carbon markets.

Given the uncertainty regarding the cost of carbon, an economic appraisal should estimate the economic cost of greenhouse gas emissions using multiple carbon prices. Two alterative carbon prices include:

- carbon price estimated by Australian Treasury for the Clean Energy Future Policy Scenario[31]
- US EPA Social Cost of Carbon (5 per cent discount rate scenario).[32]

Gillespie Economics estimates the economic cost of Scope 1 and 2 emissions and a small proportion of Scope 3 emissions and attributes 1 per cent of this estimated total cost to the Project ($0.4 million). This is based on the assumption that Australia represents 1 per cent of global production. The rationale behind the attribution of 1 per cent of the total cost of greenhouse gas emissions to the Project is unclear given Scope 1 emissions are direct emissions at the project site and whilst Scope 2 emissions are indirect emissions, the electricity consumed by the project is directly determined by operations.

Table 7 outlines alternative estimates of the economic cost of greenhouse gas emissions from the Project based on alternative carbon prices and for Scope 1 and Scope 1 and 2 emissions.

7 Alternative estimates of the economic cost of greenhouse gas emissions

Carbon price	Gillespie Economics applying 1% of estimated cost	Scope 1 emissions	Scope 1 and Scope 2 emissions
	NPV ($m)	NPV ($m)	NPV ($m)
Fixed $23 per tonne	0.4	24.8	35.8
EPA Social Cost of Carbon (low scenario)	na	22.8	34.1
Australian Treasury Clean Energy Future Policy Scenario	na	49.0	76.1

Source: The CIE.

- **The economic cost of greenhouse gas emissions reported in the economic appraisal is $0.4 million (in NPV terms).**
- **The CIE estimates the economic cost of greenhouse gas emissions could range between $23 million and $76 million by applying alternative carbon prices and**

30 BDA Group (2015), *Bylong Coal Project, Economic Impact Assessment Peer Review,* p.4.

31 Core (household modelling) scenario reported in 2015 dollars sourced from Australian Treasury, 2011, *Strong growth, low pollution: modelling a carbon price*. http://carbonpricemodelling.treasury.gov.au/content/report.asp with data available at http://carbonpricemodelling.treasury.gov.au/content/chart_table_data/chapter5.asp

32 The 5 per cent discount rate scenario reported in 2014 dollars sourced from US EPA Social Cost of Carbon, http://www.epa.gov/climatechange/EPAactivities/economics/scc.html

attributing 100 per cent of the estimated cost (of either Scope 1 or Scope 1 and 2) to the Project.

Noise costs

Gillespie Economics has estimated noise pollution costs as the cost of mitigation paid by the Proponent which includes some land acquisition costs for properties 'significantly impacted by noise'.[33] The CIE cannot verify these costs because Gillespie Economics does not identify the most severely affected properties. The report includes an estimate of the costs of mitigating the less affected properties, although the acquisition costs related to properties impacted by noise are not separately identified.

The implicit assumption is that residents would experience minimal residual effects from the noise.[34] The EIS suggests the Proponent is just beginning its negotiations regarding noise mitigation for affected property owners.[35]

> KEPCO has commenced discussions with these relevant landholders as part of an ongoing process in establishing the appropriate negotiated agreements.

Given the uncertainty around the outcome of these negotiations, the costs and potential for unmitigated noise pollution are correspondingly uncertain.

- **It is possible that noise costs are fully mitigated but further clarification of this is required from the Proponent based on their negotiations with landholders.**

Rural amenities and culture

Gillespie Economics do not consider rural amenities and culture either quantitatively or qualitatively. The EIS [36]provides considerable detail around the potential impact s (both positive and negative) on the local community, including impacts on the future status of Bylong Upper Public School.

- **While noting the difficulty in quantifying rural amenities, given the number and type of affected buildings CIE recommend Gillespie Economics considers the issue qualitatively.**

Biodiversity

Biodiversity includes all plants, animals, fungi, bacteria and other micro-organisms in the natural environment. It encompasses three components: genetic diversity, species diversity and ecosystem diversity, which comprise composition, structure and function.

According to the NSW Government's Guidelines, valuation techniques such as hedonic pricing and willingness to pay should be used to estimate costs to biodiversity in coal

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33 Gillespie Economics (2015), p. 32.

34 There may be some residual amenity affects even where noise limits are met, given the low ambient background noise levels of Bylong Valley.

35 Hansen Bailey (2015), *Bylong Coal Project Environmental Impact Statement*,

36 Hansen Bailey (2015), *Bylong Coal Project Environmental Impact Statement*, p. 333.

mining projects. However, in their analysis, Gillespie have calculated the costs of KEPCOs offset strategy to mitigate any loss in biodiversity.

Gillespie Economics do not specifically identify the costs associated KEPCO incurred in purchasing and maintaining its biodiversity offsets.

To validate, CIE have multiplied to reported number of hectares purchases by the estimate of the lifetime costs of offset management, in line with the NSW Office of Environment and Heritage Credit Calculator, updated to 2014 prices ($3 318 per hectare). The resulting estimate of biodiversity costs is $11.5 million.

Although the Gillespie Economics method may be appropriate, an implicit assumption of this method is that there are no other losses in value beyond the cost of mitigation measures. However, Bull et al. (2013) put forward that the requirements for demonstrably achieving no net loss are often undefined. There is an implicit assumption that the baseline for biodiversity is fixed at the point of the project, however, ecosystems are generally dynamic. Furthermore, the outcomes of offset schemes may be uncertain and there can also be temporal gaps between impacts from the project and benefits from a rehabilitation plan. [37] Therefore, the incremental costs included in the CBA may potentially be understated. CIE note the EIS concludes that the offsets purchased by the Proponent will more than cover the biodiversity impacts from the Project.

- **Consistent with the EIS, the CBA assumes that the biodiversity impacts are fully mitigated by purchasing land to offset the biodiversity losses. To the extent that this occurs, there are no unmitigated impacts that need to be considered in the CBA.**

Water quantity impacts

There are not expected to be significant impacts on water quantity and all these impacts are assumed to be mitigated via the purchase of existing groundwater and surface water licences. Gillespie Economics values the water allocation at its market value of $3 000 per ML. CIE estimate the value of the investment in water entitlements at $7.6 million, based on the 2 535 water units held.

Water quality impacts

Gillespie Economics has not considered the effects of the Project on water quality either quantitatively or qualitatively. The EIS[38] states that the risks of any significant water quality impacts are low from mine operations and the likelihood of any ground water contamination is very low. The EIS concludes that there will be a reduction in salt loads in the receiving surface waters during the operational phase. However, once the mining was completed the salt loads in the receiving surface waters is expected to increase (above pre-mining levels). The EIS estimates that over the longer term the average salt loads

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37 Bull, J.W, Suttle, K.B., Gordon, A., Singh, N.J., and Milner-Gulland, E.J. (2013), 'Biodiversity offsets in theory and practice' in *Fauna and Flora International,* pp. 1- 12

38 Hansen Bailey (2015), Bylong Coal Project, Environmental Impact Assessment.

would increase by just under 1 per cent compared to pre-mining levels. The EIS argues that

> Such a change would unlikely to affect stream health as indicated by the River Condition Index (see Section 4.3) which considers stream geomorphology, riparian vegetation, hydrology and biodiversity.[39]

To the extent that this holds, there is unlikely to be any material water quality impact that needs to be incorporated into the economic analysis.

Aboriginal heritage

Gillespie Economics qualitatively describe the value of impacts on aboriginal heritage in this report. It is important to recognise that the Aboriginal community have identified artefacts and landscape values and place a high significance on loss of these values. However, it is difficult to quantify these impacts for inclusion in an economic analysis given the challenges in placing values on these impacts. Therefore, these (and other unquantified) impacts will need to be considered in parallel with the economic analysis. Some judgement is, therefore, required in making a final decision on whether the qualitative impacts are sufficient to outweigh the quantified net benefits from the Project.

Historic heritage

Gillespie Economics used an Allens Consulting[40] report to estimate the non-market value of the impact of the Project on historic heritage plus the mitigation costs incurred by the Proponent.

Applying the Allens Consulting Pty Ltd is a reasonable approach. However, the CIE estimate of the heritage value is around $1 million compared with the Gillespie Economics estimate of $529 000.

- **Clarification is required on the calculations of these costs.**

Visual amenity

Gillespie Economics have estimated the costs to visual amenity as the mitigation costs KEPCO incur but acknowledge there may be residual, unquantified, effects. The report does not include the specific estimates; therefore, CIE cannot validate the estimate.

- **CIE consider the methodology appears reasonable but cannot validate the estimate from the information provided. To the extent that there are some minor residual visual amenity impacts this would not have a material impact on the results.**

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39 Hansen Bailey (2015), Bylong Coal Project, Environmental Impact Assessment, pp.146-147.

40 Allens Consulting Pty Ltd (2005), *Valuing the Priceless: The Value of Historic Heritage in Australia*

Non-market value of employment

Gillespie Economics estimated the non-market value of employment at the Bylong Coal Project to be $165 million (in present value terms).[41] This is based on an average non-market value of approximately $25 000 per employee per year transferred from a choice modelling study conducted by Gillespie Economics in 2009.[42]

The rationale for this estimate is not clear. Primarily, it is not clear what positive externalities of employment resulting from the Project are being valued. In addition no consideration of the existing employment status of the employees has been considered, nor the impacts of potential 'crowding out' of existing jobs.

To put this non-market value into perspective, if the value of $25 000 per mining employee per year was applied to all workers in the mining industry (approximately 40 000 in NSW) [43], the total non-market benefit of employment in the mining industry would be approximately $1 billion per year. It seems unrealistic that NSW residents are willing to pay $1 billion per year (equivalent to $350 per household per year) to attain the non-market benefit of mining employment. As a comparison, if 20 per cent of mining employees would otherwise have been unemployed, the avoided cost of unemployment benefits, paid indirectly by households through tax revenue, would be equal to approximately $40 per household per year, significantly lower than $350 per household per year.

- **Given the highly contentious nature of these estimates, the CIE recommends the estimated non-market value of employment is excluded from the economic analysis of the Project.**

Generating the future stream of benefits and costs

The NSW Government Guidelines provide the following guidance for conducting the CBA:[44]

> The costs and benefits should be estimated over the timescale of the impacts of a project. Where a project has environmental impacts, the impacts may continue well after the productive life of the project under construction. It is recommended that long-term projects should use a 50-year timeframe and where applicable a residual value for impacts beyond that time period.

The Guidelines also states that a discount rate of 7 per cent per year.

- **Gillespie Economics used appropriate a 7 per cent discount rate.**

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41 Based on 290 employees over 23 years

42 Gillespie Economics, 2009, *Bulli Seam Operations: Choice Modelling Study of Environmental and Social Impacts*, Prepared for Illawarra Coal Holdings Pty Ltd.

43 NSW Mining, *Fast Facts*, http://www.nswmining.com.au/industry/fast-facts

44 NSW Government, Guidelines for the use of Cost Benefit Analysis in mining and coal seam gas proposals, 2012, p.8.

Taking this into consideration, our review of the calculating the future stream of benefits and costs was guided by two questions:

- Was the timeframe used appropriate?
- Were residual values identified and considered?
  - for example, environmental impacts that occur after the operational phase ends

Was the timeframe used appropriate?

The timeframe used covers the investment and operation phases of the project. It would also cover period where the majority of impacts would be incurred.

Were residual values identified and considered?

A number of the cost and benefit categories valued by Gillespie Economics are contained within the project lifetime – for example, revenue, financial costs, and noise pollution. Where appropriate, Gillespie Economics considered residual impacts of the Project, including the residual value of the land.

- **The timeframe for the analysis is appropriate, and, where necessary, Gillespie Economics considered residual impacts that may occur after the assumed end of the lifetime of the Project.**

Uncertainty and sensitivity analysis

The NSW Government (2012), "Guidelines for the use of Cost Benefit Analysis in mining and coal seam gas proposals" provides the following guidance for conducting sensitivity analysis:[45]

> The CBA should also provide sensitivity tests that show the outcome of a project may vary with plausible alternative estimates of the main uncertain quantified costs and benefits and for a range of discount rates.
>
> Sensitivity tests show the estimated outcomes may vary with variations in key assumptions. To be useful, these tests should indicate how likely the tested scenarios are. Sensitivity tests are useful if there is a plausible likelihood of the alternative estimates being correct.
>
> A discount rate of 7% should be used and tested at 4% and 10%. All costs and benefits should be discounted by the same rate.

Taking this into consideration, our review of the sensitivity analysis conducted was guided by four questions:

- What are the main uncertain quantified costs and benefits and were they included in the sensitivity analysis?
- Were plausible scenarios used?

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[45] NSW Government, Guidelines for the use of Cost Benefit Analysis in mining and coal seam gas proposals, 2012, p.8.

- Was the methodology used appropriate, and in particular, were correlations with other relevant variables considered?[46]
- Were multiple discount rates applied?

What are the main uncertain quantified costs and benefits?

Table 4 shows the magnitude of the costs and benefits quantified by Gillespie Economics. The three cost and benefit categories that have the largest impact on the overall net present value of the project were:

- value of coal
  - which is the product of coal price and production volume forecasts
- operating costs
- capital/development costs.

Table 8 below shows that Gillespie Economics have undertaken sensitivity analysis on all cost categories at a range of ±20 per cent for all costs except greenhouse gas emissions for which a wider range is selected.

8 Parameters included in sensitivity analysis

Net benefits	Variations
Value of coal	± 20%
Capital investment	± 20%
Residual value of land	± 20%
Opportunity cost of land and water	± 20%
Decommissioning and rehabilitation costs	± 20%
Operating costs	± 20%
Carbon emissions	\$8/t CO_2 and \$40/t CO_2
Historic heritage costs	± 20%
Discount rate	4 and 10%

Source: Gillespie Economics (2015), *Bylong Coal Project Economic Impact Assessment*

Were plausible scenarios used?

Based on the evidence provided by Gillespie Economics, CIE agree that the 20 per cent range is acceptable for most variables. The range considered for carbon emissions is consistent with the prices in the European Carbon Exchange and is reasonable.

A 20 per cent range for the value for some items, coal prices in particular, may be too narrow. Lower coal prices could also lower coal production from the mine, reducing

[46] For example, in testing the sensitivity of the net present value of the project to changes in coal price forecasts, it may be necessary to also consider how the volume coal production may change under different price scenarios.

royalties. However, lower production would also result in lower impacts (eg air pollution).

We note the difference between the modelled exchange rate and the current exchange rate but note that the current value of the exchange rate not reflective of its future value. Nevertheless, predicting a future exchange is extremely difficult and, in this context, Gillespie Economics' sensitivity analysis regarding the exchange rate is reasonable.

Was the methodology used appropriate?

Gillespie Economics indicated they dealt with the uncertainty by changing the values of critical variable. The approach is appropriate if the parameters considered are not correlated with other benefit or cost categories. This may not be the case with coal price forecasts, which could be correlated with production volumes and operating costs.

Were multiple discount rates applied?

Consistent with NSW guidelines, Table 8 above shows Gillespie Economics performed sensitivity analysis with discount rates of 4 per cent and 10 per cent.

- **The sensitivity analysis covers an appropriately broad range of variables and consequently clearly demonstrates the relative significance of each cost category.**
- **Gillespie Economics undertook sensitivity tests at 4 and 10 per cent discount rates.**
- **CIE recommend the sensitivity testing around the value of coal be changed to ±30 per cent to reflect the volatility in coal prices and potential interactions between other costs.**

Regional Economic Impacts

The methodology

To estimate the flow-on effects of the Project, Gillespie Economics uses an input-output (IO) analysis. The rationale behind this correctly identified that a CBA focuses on the Project and its immediate external effects. On the other hand, IO modelling traces the immediate effects of the Project through the economy more broadly. IO modelling does not capture the environmental effects. Therefore, using results from both IO modelling and a CBA, will provide a broader picture of the impact of the Project although the CBA is still the primary tool that should be used to decide on whether the Project will improve societal welfare.

Analysts generally use either IO modelling or CGE modelling to estimate the flow-on effects of projects. Box 9 summarises the limitations of the IO framework. However, the most significant of which is that IO modelling does not allow for potential redistribution of resources arising from the project and allows 'crowding out' economic activity by the proposed investment. Therefore, IO modelling may be considered an upper bound for regional economic effects. As Gillespie Economics note, the 'crowding out' effect is likely to be more important for NSW than for the regional economy. Gillespie Economics qualitatively consider 'crowding out', noting that both the region and NSW have spare employment.

Gillespie Economics utilise highly disaggregated and reasonably up to date (2011) data.

- **The IO methodology is reasonable but should be considered an upper bound of the regional effects.**

9 Limitations of using IO multipliers for economic impact assessment

The ABS stopped publishing input-output (IO) multipliers after the 2001-02 issue. The following limitations of using IO multipliers were stated as the reason for discontinuing publication:

- **Lack of supply-side constraints:** There is an implicit assumption when using multipliers that there are no supply-side constraints. That is to say, that output in one area can be increased, without any impact on the resources available in another area. This overstates the economic impacts because actual impact is likely to be dependent on the extent to which the economy is operating at or near capacity.
- **Fixed prices:** When using multipliers, where factors of production are considered limitless, the rationing response of prices is not assumed. Instead, prices are assumed to be unaffected by policy and any crowding out effects are not captured.
- **Fixed ratios for intermediate inputs and production:** Impact analysis using multipliers can be seen to be describing average effects, not marginal effects. This is mainly because using multipliers assumes that there is a fixed input structure in each industry and fixed ratios of production.
- **No allowances for purchaser's marginal response to change:** There is an assumption when using multipliers that household consumption of goods and services are in exact proportions to their initial budget shares. For example, the household budget share of some goods might increase as household income increases. This also applies to industrial consumption of intermediate inputs and factors of production.
- **Absence of budget constraints:** When using multipliers that consider consumption-induced effects, there is an implicit assumption that household and government consumption is not subject to budget constraints.
- **Not applicable to small regions:** Multipliers calculated based on the national IO table are not appropriate for use in analysing economic impact of projects in small regions. Small region multipliers tend to be smaller than national multipliers since their inter-industry linkages are normally relatively shallow. This is due to the limited capacity to produce an extensive range of goods for inputs and consumption and instead, importing a significant portion of these goods from other regions.

Source: ABS, 'Australian National Accounts: Input-Output Tables, 2009-10', catalogue no. 5209.0.55.001

Analytical scope

Gillespie Economics have considered both the construction and operation phases of the Project and have considered the flow-on effects of the displaced agricultural activity for completeness.

The regional analysis covers the mid-Western regional LGA and the report includes results for this region and the whole of NSW.

- **The spatial and temporal scopes of the analysis are appropriate and consistent with the CBA.**

Impacts on the regional and state economies

Considering both direct and indirect effects, Gillespie Economics highlights the following flow-on effects to the regional and NSW economies. The Project is estimated to add:

- $104 million to regional value added and 863 regional jobs at the peak of the construction phase
- $378 million to regional value added and 830 jobs on average during the operation phase
- $492 million to state value added and 1 496 jobs in NSW during the operation phase.

These results appear reasonable given the scale of the Project and the data presented, however CIE cannot verify all numbers.

- **The CIE consider this a reasonable estimate of the upper bound of regional effects.**

Gillespie Economics uses value add to estimate the regional flow on benefits. A closer equivalent measure that can be derived from CGE modelling is real consumption (public and private). The net present value of the 'above forecast' change in aggregate private and public consumption, adjusted for any consequent deterioration in net foreign debt over the project life, is a general measure of welfare gain that can be used.

A Air quality impacts

PAEHolmes (2013) transferred damage cost values from the UK Department of Environment, Food and Rural Affairs (Defra).[47] The UK damage costs have been estimated for areas with different population densities. PAEHolmes adjusted the UK damage cost values to account for differences between the Value of a Life Year (VOLY) in the UK and Australia, and differences in currency and inflation.[48]

PAEHolmes (2013) estimated the linear relationship between adjusted damage cost and population density. This linear function was used with population density data to estimate unit damage costs weighted for population exposure for each SUA in Australia.

PAEHolmes (2013) recommend that these weight unit damage costs be used for economic appraisals in NSW and Australia where there is no possibility of following the full impact pathway approach.[49]

A.1 Unit damage costs by SAU (rounded to two significant figures) - NSW

SUA code	SUA name	Area	Population	Population density	Damage cost/tonne of $PM_{2.5}$
		km^2		people/km^2	A$
1030	Sydney	4,064	4,028,525	991	$280,000
1009	Central Coast	566	304,755	538	$150,000
1035	Wollongong	572	268,944	470	$130,000
1027	Port Macquarie	96	41,722	433	$120,000
1013	Forster - Tuncurry	50	19,501	394	$110,000
1023	Newcastle - Maitland	1,019	398,770	391	$110,000
1014	Goulburn	65	21,485	332	$93,000
1003	Ballina	73	23,511	320	$90,000
1018	Lismore	89	28,285	319	$89,000
1016	Griffith	56	17,900	317	$89,000

47 Defra, 2012, *Air Quality Damage Costs. Published by Defra.* Current damage cost values published at: http://www.defra.gov.uk/environment/quality/air/airquality/economic/damage/. with a guidance document on the use of the damage costs at: http://archive.defra.gov.uk/environment/quality/air/airquality/panels/igcb/documents/damagecost-guidance.pdf

48 PAEHolmes, 2013, *Methodology for valuing the health impacts of changes in particle emissions - final report*. Prepared for NSW Environment Protection Authority (EPA).

49 PAEHolmes, 2013, *Methodology for valuing the health impacts of changes in particle emissions - final report*. Prepared for NSW Environment Protection Authority (EPA).

SUA code	SUA name	Area	Population	Population density	Damage cost/tonne of $PM_{2.5}$
		km^2		people/km^2	A$
1033	Ulladulla	47	14,148	303	$85,000
1010	Cessnock	69	20,262	294	$82,000
1034	Wagga Wagga	192	52,043	272	$76,000
1025	Orange	145	36,467	252	$71,000
1022	Nelson Bay - Corlette	116	25,072	217	$61,000
1012	Dubbo	183	33,997	186	$52,000
1017	Kurri Kurri - Weston	91	16,198	179	$50,000
1015	Grafton	106	18,360	173	$48,000
1004	Batemans Bay	94	15,732	167	$47,000
1024	Nowra - Bomaderry	202	33,340	165	$46,000
1029	St Georges Basin - Sanctuary Point	77	12,610	164	$46,000
1031	Tamworth	241	38,736	161	$45,000
1005	Bathurst	213	32,480	152	$43,000
1032	Taree	187	25,421	136	$38,000
1001	Albury - Wodonga	628	82,083	131	$37,000
1011	Coffs Harbour	506	64,242	127	$36,000
1028	Singleton	127	16,133	127	$36,000
1007	Broken Hill	170	18,519	109	$30,000
1019	Lithgow	120	12,251	102	$29,000
1006	Bowral - Mittagong	422	34,861	83	$23,000
1002	Armidale	275	22,469	82	$23,000
1020	Morisset - Cooranbong	341	21,775	64	$18,000
1026	Parkes	235	10,939	47	$13,000
1021	Muswellbrook	262	11,791	45	$13,000
1008	Camden Haven	525	15,739	30	$8,400
1000	Not in any Significant Urban Area (NSW)	788,116	999,873	1.3	$360

Source: PAEHolmes, 2013, Methodology for valuing the health impacts of changes in particle emissions - final report. Prepared for NSW Environment Protection Authority (EPA).

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REPORT

Review of Economic Analysis supporting the Bylong Coal Project

Prepared for
NSW Department Planning and Environment

September 2016

THE CENTRE FOR INTERNATIONAL ECONOMICS
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Introduction

About the Project

The Bylong Coal project (the Project) will take place over 25 years, comprising 2 years of construction and 23 years of operation. Rehabilitation and decommissioning will take place during and after the Project.

The Proponent intends to achieve a combined maximum extraction rate of 6.5 Mt per annum ROM coal from two open cut mines and an underground mine. Open cut mining will occur for ten years beginning at the start of mining operations. Construction and operation of the underground mine will begin around year 7.[1]

The Project involves a number of infrastructure upgrades, including:

- construction of a coal handling and preparation plant
- upgrade of the Upper Bylong Road and construction of a mine access road
- construction of a rail loop and associated rail load out facility.

Hansen Bailey Environmental Consultants commissioned Gillespie Economics to undertake an economic impact assessment (EIA) for the Project on behalf of the Proponent of the Project, KEPCO Bylong Australia Pty Ltd. The EIA forms part of the environmental impact statement (EIS).

The CIE's 2015 review

In December 2015 the CIE completed a review of the CBA conducted by Gillespie Economics in relation to the Project. The CIE concluded that the analysis was undertaken in a manner that was consistent with the NSW Government's November 2012 *Guideline for the use of Cost Benefit Analysis in mining and coal seam gas proposals*.

The benefits considered by Gillespie Economics are royalties accruing to the NSW government, company tax accruing the Australia government and component expended in NSW and a voluntary contribution made to the local community and, in one scenario, the non-market employment benefits.

On the cost side, there are a range of impacts that are mitigated under the Project. These actions lower the profit generated by the mine. In Gillespie Economics' analysis the unmitigated impacts are minimal. The quantified unmitigated impacts relate to historic heritage as well as carbon pollution. Table 1 provides a summary of the estimated benefits.

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1 Gillespie Economics (2015), *Bylong Coal Project: economic impact assessment,* prepared for KEPCO Bylong Australia Pty Ltd, p. 10.

1 Costs and benefits for Australia and NSW – Gillespie estimates

	NSW	Australia
	$m	$m
Net production benefits to KEPCO	0	0
Net production benefits to the Commonwealth government	21	302
Net production benefits to the state government	290	290
Voluntary contributions	4	4
Non-market benefits of employment	165	165
Total benefits	**315**	**596**
Greenhouse gas emissions	0	0
Historic heritage	1	4
Total costs	**1**	**4**
Net benefits NSW (excluding non-market benefits of employment)	**314**	**592**
Net benefits Australia (including non-market benefits of employment)	**479**	**757**

Source: Gillespie Economics (2015), Bylong Coal Project Economic Impact Assessment, p.44.

While there are a range of benefits estimated, the net benefits from the Project are largely attributed to the royalty payments to the NSW Government of $290 million in present value terms. The estimated level of royalties is dependent on a range of factors, most notably, the coal price received for the product. This depends on global commodity prices (in US dollar terms) as well as the prevailing US/Australian dollar exchange rate. The CIE had previously concluded that

> Based on alternative assumptions of global coal prices, we estimate that the expected royalties could range between $253m and $345m. The estimates presented by Gillespie Economics, therefore, appears reasonable.

In its review the CIE noted the challenges in verifying the quantum of some of the other benefit items (e.g. tax revenue to governments) without a detailed review of the potential profitability of the mine including access to potentially commercially confidential information.

In this context, the CIE focused on verifying the royalty calculations which provided a *minimum level of benefits* that could be expected. That is, the benefits would be greater than just the royalties, however, it was unclear precisely how much greater it would be. This minimum level of benefits to the community can be compared against the expected *unmitigated impacts* resulting from the Project. Based on this the CIE concluded that

> At a minimum it is reasonable to expect net benefits to NSW, associated with royalty payments, of above $177m (under high-side cost estimates). In addition to this there are public benefits associated with income tax payments to the Australian Government (some of which is distributed to NSW) and broader employment benefits to the community, although the quantum of these benefits is more difficult to estimate.

The CIE, however, did note a number of aspects of the analysis that required clarification.

Proponent's response to submissions

In March 2016 the Proponent provided a response to the CIE's 2015 review of the economic analysis conducted as well as submissions by Government agencies and other stakeholders.

This section considers the responses and the extent to which it has a bearing on the CBA conducted earlier. In reviewing the responses we consider its consistency to the recent guidance issued by the NSW Government in relation to conducting CBAs of coal mining and CSG applications. The NSW Government has issued its final guidance document dated December 2015, however, it is still in the process of preparing Technical Notes on key issues that will provide proponents with more specific guidance.[2] In the absence of the final Technical Notes we also draw on the draft Guidelines (October 2015).[3]

Gillespie Economics

Gillespie Economic has provided a detailed response to a number of specific points raised by the CIE. Summarised below are the key points.

Air pollution – particulate matter.

The assessment of air quality impacts at nearby properties indicated that there are no properties that will be impacted by exceedances of the relevant air quality criteria (PEL, 2015). Consequently, it was assumed that there are no material economic costs for inclusion in the BCA.

Gillespie also refers to The *NSW Health Fact Sheet - Mine Dust and You* which states that

> Provided that mines are operated with proper dust controls it is unlikely that healthy adult residents would suffer any serious health effects from the expected exposure to particulate matter."[4]

Gillespie also quotes a 2013 study that found that

> …there is no significantly higher rates of problems managed or medications prescribed for Hunter region residents compared with the rest of rural NSW.[5]

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2 NSW Government (2015), *Guidelines for the economic assessment of mining and coal seam gas proposals*, December, p16.

3 NSW Government (2015), *Draft Guidelines for the economic assessment of mining and coal seam gas proposals*, October.

4 http://www.health.nsw.gov.au/environment/factsheets/Pages/mine-dust.aspx

5 Gillespie Economics (2016), *Response to CIE Peer Review*, p.9.

The more recent work conducted by the NSW Government in developing the 2015 draft guidelines notes that

> There is no known threshold for health effects from particulate matter (PM10 and PM2.5). With a lack of evidence of a threshold for health effects, there are likely health benefits achievable above and below the NEPM Ambient Air Quality standard for PM10 and goal for PM2.5. 30 In the absence of a threshold, an appraisal of air quality impacts should evaluate the impacts of the change in air pollution regardless of whether the national standards/goals are met.[6]

While we recognise that there is no conclusive evidence currently available on the threshold for health effects, the draft Guidelines have been developed with detailed input from NSW Health and NSW EPA and, therefore, presents the currently available position.

Consistent with this the CIE has estimated the air quality impacts to be in the order of $0.3m in present value terms. This impact is considered immaterial relative to the other costs and benefits considered in the analysis.

Greenhouse gas emissions

In regards to carbon pollution Gillespie Economics estimates the economic cost of Scope 1 and 2 emissions and a small proportion of Scope 3 emissions and attributes 1 per cent of this estimated total cost to the Project ($0.4 million).

In its response to the CIE's 2015 review, Gillespie maintains its support for attributing only 1 per cent of the social cost of the emissions to NSW and argues that

> The prices of carbon used in the Economic Impact Assessment and those used by CIE in its review represent proxies for the global social damage cost of carbon i.e. the cost of carbon emissions to the population of the whole world. It is not appropriate to attribute all these costs to the people of NSW.

This approach is inconsistent with the 2015 draft Guidelines which require the attribution of the full global cost. This is also inconsistent with the approach adopted in a large number of economic analyses, particularly in the context of a cap on emissions which means that the carbon price of $23/tonne of CO_2 emissions previously estimated by the Australian Treasury reflects the opportunity cost to Australia of the additional tonne of emissions. Similarly, the current price of around $12/tonne under the Emissions Reduction Fund (which potentially includes projects in NSW) could also be seen as representing the value of emissions from a domestic perspective.

Having said this, there is debate in the economic literature regarding the extent to which the global social cost of carbon is appropriate for the use in the benefit cost analysis of domestic policy options.[7]

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6 NSW Government (2015), *Draft Guidelines for the economic assessment of mining and coal seam gas proposals*, October, p.43.

7 See for example Kotchen, M (2016), *Which Social Cost of Carbon? A theoretical Perspective*, National Bureau of Economic Research, May, Working Paper 22246, http://www.nber.org/papers/w22246

Notwithstanding this, for the purposes of the review the CIE has previously presented a range of potential costs associated with greenhouse gas emissions. The 2015 CIE review highlighted that *even if* a high end social cost of carbon emissions of $76m was assumed then the mine would still generate net social benefits.

Other items

Gillespie Economics has provided further information to explain the approach taken to estimate impacts on a range of other items. These issues do not materially impact on the conclusions drawn in the CIE's 2015 review.

Department of Primary Industries

In November 2015 the Department of Primary Industries raised a number of issues where it sort specific clarification from the Proponent. DPI made the following recommendations.

2 DPI Recommendations[8]

1 The proponent should provide a more comprehensive assessment of the potential impacts that may result from the reduction in availability of groundwater to agriculture during dry years.

2 DPI Water advises that the water security to the project during extended drought periods remains uncertain and this warrants further consideration by the proponent.

3 Impacts to Biophysical Strategic Agricultural Land (BSAL) are likely to be underestimated by the EIS due to:

   a) Uncertainty in the verification methodology

   b) Some BSAL being surrounded by disturbed areas and subsequently impacted

   c) Biodiversity offsets including BSAL.

   d) No impacts considered to BSAL resulting from underground mining

4 Improvements are recommended to the rehabilitation methodology and documentation.

5 Resolution of access and ownership of Crown Land.

The Proponent has responded to each of DPI's recommendations. In regards to groundwater impacts, the Proponent has undertaken additional work to provide further certainty in relation to the groundwater modelling predictions, including the reliability of the alluvial borefield.

8 DPI (2015), *Response to exhibition of Environmental Impact Statement*, November.

In regards to the Aquifer Interference Policy, the Proponent notes that,

> should monitoring indicate there are changes in groundwater levels and quality more extensive than predicted at any privately owned bore, then mitigation measures will be discussed with the landholders. This may include the implementation of "make good provisions" to compensate for any adverse impacts to neighbouring landholder bores determined to be a result of the Project.[9]

That is, there appear to be management and mitigation options available, if required, and these options would be documented in the Water Management Plan for the Project.

We are not in a position to assess the extent to which the Proponent has satisfactorily responded to the DPI and other agency recommendations. Notwithstanding this, based on the analysis conducted to date it appears unlikely that these issues would materially impact on the net benefit calculations in the CBA. However, to the extent to there are further issues raised by DPI that are likely to materially impact on the CBA then this may need to be considered at a later stage.

Mid-Western Regional Council submission

In its submission the Mid-Western Regional Council has raised concerns regarding the Temporary Workers' Accommodation (TWA). The Council is seeking to maximise local economic stimulus flowing from the Project to the local community. In light of the above the Council has required that the traffic impact, economic and social impact assessments be updated to include a scenario where there is no TWA.

The Proponent has investigated this option "Scenario 4 - There is no WAF provided for the Project and all employees across all phases of the Project, over the life of the Project are accommodated in the Local Area (i.e. within a one hour commute of the Project site)".

From the perspective of the CBA, the no WAF scenario would reduce upfront capital and ongoing maintenance costs. This would increase the financial profitability of the mine, resulting in higher tax revenue of which a share would be transferred to the NSW Government. Therefore, there would be a marginal increase in the benefits associated with additional tax revenue.

On the cost side, the Council has noted its intention to complete a full seal upgrade of the Wollar –Bylong Road underfunding received from the NSW Government's Royalties for Regional Program. As a result of this upgrade the commute to Mudgee and Rylstone will be less than one hour. However, given that the Council has already committed to the upgrading the road between Mudgee and Rylstone, these costs cannot be attributed to the WAF versus no WAF scenarios. There may be additional traffic congestion or increased greenhouse gas emissions from additional vehicle kilometres travelled.

As Gillespie Economics notes there is also a question over whether there is sufficient capacity in the short term and long term accommodation market to meet the

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9 Hansen Bailey (2016), *Bylong Coal Project: Response to Submissions*, March, p.71.

requirements of the Project. To the extent that this impacts on the ability to attract a suitable labour force, this may impose extra costs on the company.

Further increasing the demand for housing in the local area will have an impact on house prices and rents in the area. This would benefit existing property owners, although it could make it more difficult for first home buyers and renters in the area. Therefore, there would be different distributional impacts within the community of the 'no WAF' option. These issues are beyond the scope of the CBA.

From the perspective of the CBA, the issues regarding the accommodation for the temporary workforce would not materially change the results of the CBA, although there may be different implications.

Conclusions

Based on the new information provided in the submissions, the conclusions drawn in the CIE's 2015 review still remain. That is, while there is some uncertainty regarding the precise quantum of net benefits, it is reasonable to conclude that *at a minimum* the project will deliver net benefits of $177m. We understand there is further analysis being conducted to refine the understanding of the potential impacts on the groundwater resource in the area. Unless the results are significantly larger it is unlikely to materially change the conclusions of the CBA.

Bylong Coal Project

Peer review of Social Impact Assessment and Response to Submissions

Client:
DPE

Date:
2 September 2016

Final report

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Executive Summary

Elton Consulting was engaged to provide an independent peer review of the *Bylong Coal Project Social Impact Assessment* (SIA) (Hansen Bailey, July 2015) and the *Response to Submissions* (RTS) (Hansen Bailey, March 2016) for the Department of Planning & Environment (DPE).

We have reviewed the SIA, relevant sections of the EIS, community submissions on each of these documents, the RTS, supporting material and information provided by Mid-Western Regional Council (MWRC) and community members during a visit to the region in April 2016. The review was undertaken in two stages. This report sets out our findings and advice.

Stage 1 findings

In Stage 1, we reviewed the SIA (Hansen Bailey, July 2015) and considered its adequacy against SIA guidelines and standard methodologies. This review found that the SIA conforms to a standard SIA methodology and presents as a thorough and well-researched document. The approach, including the integration of a community engagement process and outcomes, appears thorough, although there is a sense that the report conclusions are skewed in favour of the proposal benefits and offer limited detail in relation to local social impacts in the Bylong Valley. The overall impression is of a detailed technical document that focuses on macro and project-level benefits but provides a relatively superficial treatment of social issues and concerns.

Initial conclusions in relation to adequacy, gaps and areas for additional research highlighted:

» A need for a more fine-grained evaluation of community feedback and documentation of local stakeholder impacts (such as through an Impacts Assessment Table) to better represent qualitative information and community 'voices' and to ensure views expressed in consultations are reflected in proposed mitigation and management measures

» Lack of an evidence base drawn from documented social impacts and benefits of other mining projects, including experience of worker accommodation facilities (WAFs)

» No information on community health.

Stage 1 also raised questions about whether the social issues and impacts identified as being most important were supported by evidence, or whether other social issues should have received greater emphasis in the evaluation and conclusions. This particularly applied to the report's conclusion that population growth would be the 'single most critical factor in the manifestation of almost all social impacts' (p. 60) arising from the project. It is notable that the SIA contains little discussion or appreciation of the very real social impacts arising from bio-physical factors (dust, noise, traffic, visual changes, water supplies). Discussion of these impacts is instead cross-referenced to original technical documents, which makes it difficult for a reader to appreciate the relevance and significance of issues (eg there is almost no discussion of how the visual environmental will change for tourists using the Bylong Valley Way) and reading of the document a difficult process. In addition, technical studies deal with bio-physical emissions in terms of compliance with guidelines and do not examine social impacts from an individual or community perspective.

Stage 2 findings

A review of the RTS reinforced these impressions in relation to stakeholder concerns and revealed little new research was provided to address concerns raised in submissions. The main exceptions are the response to questions about Methodology (Section 5.25.2) and the inclusion of RTS *Appendix C* for a 'No WAF option'.

First-hand information received during consultations with residents of the Bylong Valley for Stage 2 of this Peer Review showed that many of the issues raised were consistent with summary data reported in the SIA (Sections 5 and 10) or provided in submissions on the EIS and summarised in the RTS. However, while these community views are clearly included in the SIA, their significance appears to receive little weight in the SIA's conclusions and instead are aggregated into an overall summary of project benefits.

This review identifies instances where assumptions are considered unnecessarily restrictive or do not accurately reflect the findings in quoted sources. When considering feedback from residents of the Bylong Valley and their views on the adequacy of the SIA and RTS, it is acknowledged that only a few had a detailed familiarity with the content. Nevertheless, it is clear the SIA evaluation and conclusions and the RTS convey little of the intensity and depth of concerns or sensitivity to the full extent of the cumulative changes already underway and expected to continue. Given the detail in the SIA devoted to researching and analysing some project-related factors (such as population and economic characteristics, labour force characteristics, available accommodation and social infrastructure), it is surprising that these key social issues and potentially very significant social impacts are not reflected in the report's conclusions.

Discussions and submissions highlighted some support for the employment and income benefits of the proposal from some residents or former residents who see benefits to the Bylong Valley or the regional economy. However, several key social impacts have been overlooked in the analysis, including the significant effects of historical property acquisitions on community structure and the effects of the community engagement process itself.

A key issue identified in Stage 2 was the reported shortfalls in the community engagement process, which are carried through to the analysis, evaluation and conclusions. It is considered the community engagement process for this SIA has fallen short of professionally accepted standards for accuracy and completeness of information provided and transparency of process, to the extent that many residents were unable to contribute to an informed discussion about the project's likely impacts on their lives and daily activities. Not only would the effects of this process have resulted in potential omissions from the SIA, but many residents reported they felt it had directly contributed to feelings of distrust within the community, has fractured family and community relationships and networks, and has threatened community sustainability. As a major data source for SIAs, a robust, open and transparent community engagement process that meets best practice standards is essential, as is clear, complete and transparent reporting of consultation outcomes and incorporation of findings in the evaluation of social benefits and impacts.

In summary, the reader is left with an overall impression that the SIA shows a poor understanding of the processes and significance of cumulative change, the social significance of bio-physical impacts (dust, noise, visual, traffic, water and combinations of these effects) on the lives of residents, the effects of a proposal and its associated social, environmental and land acquisition processes on stress and change within an existing population, and the potential for future community revitalisation through attraction of mining employees to the area.

Section 8 of this report sets out key deficiencies with this SIA, in order to inform DPE assessment of the project. At this stage in the planning process it is considered that there is little benefit in making revisions to the SIA, as the majority of issues are already documented or known to DPE. The key now is to avoid or minimise (where possible) further local level social impacts, rebuild relationships wherever possible, and to support co-existence of new and existing residents so Bylong can survive as a village.

1 Introduction

Elton Consulting was commissioned by the Department (DPE) to provide an independent peer review of the *Bylong Coal Project Social Impact Assessment* (SIA) (Hansen Bailey, July 2015) and the *Response to Submissions* (Hansen Bailey, March 2016). The Peer Review was undertaken in two stages, with the first being a desktop review of the EIS / SIA and the second involving a review of the RTS, and first hand discussions and meetings with Mid-Western Regional Council (MWRC) and residents of the Bylong Valley who had contributed to the SIA or made submissions to the public exhibition.

We have reviewed the SIA, relevant sections of the EIS, the RTS, community submissions on each of these documents, supporting material and information provided by MWRC and community members. This report sets out our findings and advice.

Scope of work

The Scope of Work for this Peer Review comprises two Stages. Stage 1 involves a review of EIS documentation (relevant sections of the Bylong Coal Project Sept 2015 *Environmental Impact Statement (EIS)* and Appendix AC of the EIS *Bylong Coal Project, Social Impact Assessment,* prepared by Hansen Bailey, July 2015).

The review considered (but is not limited to):

» whether assumptions presented for the SIA are reasonable, appropriate and suitably justified

» whether the social impact assessment aligns with industry leading practice

» the adequacy of the methodology, analysis and assessment presented in evaluating the social impacts of the project

» the extent and effectiveness of community and stakeholder engagement and consultation undertaken in preparing the SIA

» the identification of any areas of deficiency and recommendations to improve or resolve these issues in the assessment.

Stage 2 of the Scope of Work seeks a review of the Applicant's responses to issues raised in submissions on social impacts, including relevant submissions as necessary. This included meetings and discussions with residents of the Bylong Valley and surrounding areas who had been consulted during the SIA process, as well as discussions with MWRC representatives. The purpose of Stage 2 was to consider the adequacy of the responses provided by the Applicant to public and agency comments on the EIS, including the SIA. Key considerations for the review include providing a deeper understanding, and an independent view, of social impacts on the local Bylong community (village and surrounding farming community) and Council, to inform any further recommendations or findings from the Stage 1 desktop review.

Consultations for the Stage 2 review were held in Mudgee and Bylong village during a visit to the region over two days in April 2016. Consultations included a meeting with officers of MWRC, a series of organised one-on-one or small group discussions with residents of the Bylong Valley, representatives of the Bylong Valley Protection Alliance (BVPA) and the Wollar Progress Association and a larger open house question and answer session open to all interested. Arrangements for these meetings were made by DPE.

DPE seeks advice as to whether any additional information is required to complete the peer review and/or justify the methodology or conclusions made in these documents.

This peer review has been prepared in accordance with:

» International SIA Guidelines, professional literature and SIA requirements typically used by NSW local government authorities

» An understanding of best practice community engagement guidelines and processes

» A review of background material

» Understanding of the broad environmental planning context

» A review of relevant literature and a variety of secondary sources

» Knowledge and experience in preparing SIAs and undertaking community engagement

» Face-to-face engagement with members of the Bylong community and MWRC.

2 Guideline documents

Secretary's Environmental Assessment Requirements

DPE Secretary's Environmental Assessment Requirements (SEARs) for the Bylong Coal Project, dated 11/11/2014, list the following for key social and economic issues for inclusion in the Environmental Impact Statement (EIS):

- "an assessment of the likely social impacts of the development (including perceived impacts), paying particular attention to any impacts on Bylong village; and
- an assessment of the likely economic impacts of the development paying particular attention to:
  - the significance of the resource
  - economic benefits of the project for the State and the region
  - the demand for the provision of local infrastructure and services."

The SEARs require that consultation be undertaken during preparation of the EIS, "with relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners. The EIS must describe the consultation that was carried out, identify the issues raised during this consultation, and explain how these issues have been addressed in the EIS".

In addition to the Department's SEARs, Mid-Western Regional Council (MWRC) also sought detailed information about the proposed Temporary Workers Accommodation and the impacts on local services, while Federal Department of Environment sought details of consultation activities, employment opportunities, economic costs and benefits and alternatives to the proposal.

Best practice guidelines and principles

Social impact assessment guidelines

The NSW Government does not currently have specific guidelines for preparation of Social Impact Assessments and no SIA guidelines are listed in SEAR *Attachment 1 Environmental Planning Instruments, Policies, Guidelines & Plans*.

Many best practice SIA (or socio-economic impact assessment – SEIA) guidelines and methodologies have been prepared over the past 25 years for authorities in Australia, such as the Commonwealth Environment Protection Agency, NSW Government agencies and a number of NSW local government authorities[1]. Most of these are now dated.

Leading practice guides used as a basis for this peer review include:

- International Association for Impact Assessment (IAIA) April 2015. *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects,* prepared by F Vanclay (principal author), AM Esteves, I Aucamp and DM Franks http://www.iaia.org/uploads/pdf/SIA_Guidance_Document_IAIA.pdf
- Vanclay, F. 2003 *International Principles for Social Impact Assessment.* Impact Assessment & Project Appraisal**,** 21 (1), 5-11. http://dx.doi.org/10.3152/147154603781766491

[1] See for example, NSW Office of Social Policy, March 1994 *Best Practice Paper 4 – Better communities through social impact assessment* and February 1995, *Best Practice Paper 8 – Techniques for Effective Social Impact Assessment – A Practical Guide*; Social Policy Development Unit of The NSW Cabinet Office, December 1997, DRAFT *Guidelines for Assessing Social Impacts* and Commonwealth Environment Protection Agency, May 1994, *Social impact assessment.*

» Franks, D. 2012. *Social impact assessment of resource projects.* International Mining for Development Centre, Mining for Development: Guide to Australian Practice

» Queensland Government July 2012. *Social impact assessment guideline*.

Of these, the IAIA Principles (Vanclay, 2003) are generally accepted as providing international best practice standards. This is a discussion document which sets out "core values of the SIA community together with a set of principles to guide SIA practice and the consideration of 'the social' in environmental impact assessment generally" (p. 5). In this document, SIA is defined as "the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions". The Guidelines set out a list of tasks that should be included in an SIA, but detailed approaches and methodologies have instead been developed in academic and government agency publications and applied by SIA practitioners.

There is broad agreement around the definition and focus of SIA. IAIA Guidelines (2003) list relevant social impacts as being changes to one or more of the following:

» "people's way of life – that is, how they live, work, play and interact with one another on a day-to-day basis;

» their culture – that is, their shared beliefs, customs, values and language or dialect;

» their community – its cohesion, stability, character, services and facilities;

» their political systems – the extent to which people are able to participate in decisions that affect their lives, the level of democratisation that is taking place, and the resources provided for this purpose;

» their environment – the quality of the air and water people use; the availability and quality of the food they eat; the level of hazard or risk, dust and noise they are exposed to; the adequacy of sanitation,

» their physical safety, and their access to and control over resources;

» their health and wellbeing – health is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity;

» their personal and property rights – particularly whether people are economically affected, or experience personal disadvantage which may include a violation of their civil liberties;

» their fears and aspirations – their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children" (IAIA 2003, p.8).

This definition continues to be referenced in many SIA guidelines and handbooks.

The more recent Guidance issued by IAIA (Vanclay et al, 2015) builds on shortcomings and experience across the SIA field, placing particular emphasis on the role and particular skillset of SIA practitioners within a project team, the integral nature of stakeholder engagement to SIAs and greater recognition of the iterative nature of projects and the interconnectedness of environmental, social and health issues.

Another key aspect of best practice SIA is that it "is a process of management not a product" (Vanclay et al, 2015, p. iv). Contemporary SIA needs to focus on project benefits to communities if a project is "to earn its 'social licence to operate', and also because attempting to minimise harm … does not ensure that the project will be considered acceptable by local stakeholders" (Vanclay et al, 2015, p. iv). Using community engagement and the SIA process to identify opportunities for community development, encouraging partnerships and focusing on a post-mining legacy, are also emphasised (see Franks 2012).

It is noteworthy that in parallel with this Peer Review process, NSW DPE is working to prepare SIA guidelines which are likely to reflect the key principles and directions of these best practice guidelines.

Community engagement guidelines

The International Association for Public Participation (IAP2) is the professional organisation guiding the practice of community engagement globally. Its Australasian Affiliate has led the advancement of best practice consultation and engagement practices in Australia and New Zealand, most recently adding a Quality Assurance Standard (endorsed May 2015) to its widely recognised suite of resources, which include the Public Participation Spectrum and Core Values statement (IAP2 2015) (attached in Appendix A).

IAP2's Quality Assurance Standards provide a tool against which an engagement process can be measured "to ensure it meets best practice principles leading to confidence in the outcome for all involved" (p. 3). It sets out principles to encourage consistent quality in engagement practice and to enable evaluation and quality reviews against defined standards.

Appointment "of an engagement professional, particularly a member of IAP2…places greater responsibility and expectation on the IAP2 member to not only follow good process but to provide evidence of having followed good process… The roles and responsibilities of engagement practitioners are …informed by IAP2's Code of Ethics which has been designed to enhance the integrity of the engagement process" (IAP2 2015, pp. 8-9).

3 SIA methodology and best practice

This Section aims to address two key questions of the Peer Review:

» Does the SIA align with industry leading practice?

» Are its methodology, analysis and assessment adequate?

At a first reading (Stage 1 review), the SIA is found to align broadly with the approach and many of the leading practice principles outlined in guidelines such as the IAIA principles and other guidance documents. Sections are well-researched and the text, if dense, reads relatively well. The SIA methodology follows the broad approach as outlined in many of the leading practice guidelines. It documents the processes adopted for scoping, researching and analysing data (Section 3), and contains a large amount of background quantitative data in relation to the communities of interest – demographic profile (Section 4), economic profile (Section 7), labour market dynamics (Section 8), housing and accommodation characteristics (Section 9), community infrastructure (Section 11) and a selection of data relating to community 'liveability' (Section 10). The SIA also contains some rich qualitative information on the region's history (in Sections 5 and 10). This provides a good understanding of many of the social and economic characteristics of the Bylong Valley and wider region.

The report also refers to the community and stakeholder engagement processes used throughout the EIS and SIA (Section 3.6) and summarises how stakeholders were engaged. By drawing on local knowledge and participatory practices, the SIA documents a range of community and individual values, issues and potential impacts that could arise from the proposal, and puts them in context of change that has been occurring in the area over time and that will occur in conjunction, cumulatively, with other coal mining projects. The information provides a foundation for an understanding of the potential adverse (and beneficial) social impacts of the mine and to propose mitigation strategies to address these identified impacts. This demonstrates that there have been opportunities for stakeholders to have a say in project outcomes, and to contribute towards future community development, thereby effectively monitoring or managing negative social impacts.

As is typical in an SIA, each potential social benefit and impact identified through background research and project planning, community consultations, other consultant technical reports and a knowledge of potential project impacts on local and wider communities, is discussed and evaluated further to identify and weigh up key issues for different stakeholder groups. Initial reading of the report left the impression that the SIA conclusions focussed on the specifics of the mining operation and its benefits for the region. It was difficult to gain an appreciation from the Evaluations of Impacts sections of how the project would actually affect the lives of residents living in the Bylong Valley. Some expected impacts (noise, visual change, dust and traffic) received little attention and the report does not provide a clear picture of the future community. The SIA conclusions do not attempt to disaggregate social benefits and impacts and consider their incidence by stakeholder group. Rather statements are made about the numbers or percent population change (eg. p. 67, 68) without recognising it is the relationships and connections between existing residents that make up the social fabric. Similarly, assertions that population numbers will increase is offered as evidence of continuing 'social capital' (p. 162-163, 173) and claims that new and existing residents will integrate through community engagement activities and community events (p. 175) show a lack of appreciation for existing divides and are aspirations with little basis in fact.

The proposal to prepare a Social Impact Management Plan (SIMP) and to establish, through a Voluntary Planning Agreement (VPA), several funds to assist in identifying and meeting community needs during the project and in the future, recognises the reality of community impacts typically associated with large mining projects. This approach is consistent with trends towards investing in community development and legacy projects and appears to be in accordance with aspects of leading SIA practice (IAIA 2003 p. 6). However, the approach lacks any detail about how money would be spent and how the community would benefit.

Initial impressions from the Stage 1 and Stage 2 reviews of the SIA and RTS documents that the voices of community members were missing or glossed over in conclusions about the significance of social impacts, were confirmed in meetings with residents of the Bylong Valley. On closer analysis of the report's content, style and conclusions – informed directly by Stage 2 Peer Review discussions with Council and local residents who had been consulted during preparation of the EIS and the SIA, the evaluation and conclusions are considered to be disproportionately skewed towards regional project benefits at the expense of local level community impacts. Information obtained directly from community members allowed a considerably more detailed and nuanced understanding of the past, present and expected future social benefits and impacts of the Bylong Coal Project for the local community and wider region than can be gained from reading the SIA.

Key issues relating to a best practice approach which are considered to not be met in the SIA document as reported are discussed below. Issues relating to the community engagement process are discussed in Section 5.

» **Treatment of qualitative data -** Qualitative findings from community discussions for the SIA are summarised by issue category in Section 5 (eg. Table 13) of the SIA. Further comments and direct quotes in Section 5.2.2 (*Existing Issues*) provide additional context and a greater level of detail. These issues and views are essentially consistent with the views expressed in discussions in April 2016, although the summaries limit the ability of a reader to gain a full appreciation of the details, the strength of feelings and importance to the individuals or stakeholder group affected. Relevant sections of the EIS (Chapter 5; Appendix F) provide no additional qualitative information. This section also summarises community views on a range of potential project benefits, including local employment and business opportunities, renewed population growth, improved land management and regional benefits. Themes from the local media add further context and detail to the broader community views and concerns about mining proposals and needs in regional communities.

  The concern in relation to SIA adequacy is that the relevance of this information and its importance to individuals in the Bylong community does not appear to be carried through the document or reflected in its conclusions or mitigation strategies. When referring to *Project Related Issues and Opportunities* (Section 5.2.2), the tone becomes more distanced and dispassionate, with an emphasis on 'perceptions'. Community values and key social issues from Section 5 are discussed further when presented as baseline data in Section 10. Information about change to date covers many of the social impacts raised (eg. p 154; p. 164), but the structure, variety of topics, and extent of new quantitative data (about accessibility, community safety, volunteering and police procedures) detract from a coherent narrative that respects the strength of community values still attached to life in the Bylong Valley.

  Overall the information and analysis tends to confuse or conflate local and regional level benefits and impacts, and the tone and level of analysis given in particular to strongly held local 'perceptions' of social impacts (community health (p. 157); visual impacts (p. 158-159); noise, vibration and air quality impacts (pp. 160-161); water supply impacts (p. 161); community sustainability and cohesion (Section 10.4.2)) downplays the depth of direct experience and concerns summarised in Section 5.

  By Chapters 12 (Management, Monitoring and Reporting) and 13 (Conclusions) of the SIA, there is no sense of a community 'voice' and little focus on measures to mitigate the specific and very real

local level social impacts raised by the remaining Bylong Valley community in the consultations. While residents and other stakeholders raised concerns about how their lives would change or be impacted, SIA Sections 10, 12 and 13 provide little further analysis of the implications of these effects and whether targeted measures could be developed to effectively manage these impacts.

» **Distinguishing who is impacted and how -** Best practice SIA guidelines emphasise the need to clearly distinguish in conclusions the *incidence* of benefits and impacts. This involves a disaggregation by stakeholder groups showing who is expected to benefit and who is expected to be adversely affected by the proposal:

> "Awareness of the differential distribution of impacts among different groups in society, and particularly the impact burden experienced by vulnerable groups in the community should always be of prime concern" (IAIA 2003, p. 7).

Vanclay (April 2015), suggests the Mitigation section of an SIA should contain a "prioritized listing of key social impacts" with a "discussion of how different stakeholders are affected… and a particular focus on Indigenous peoples, women and vulnerable groups" (p. 65).

In reference to best practice in mining SIA, Franks (2012) notes in his first paragraph:

> "How the costs and benefits of resource development are distributed can have an enormous influence on the success of projects…" (p. 3). And he quotes Vanclay (2002) "…[D]ifferent social groups can experience social change differently depending on the circumstances" (p. 6).

A notable omission from the discussion, is a detailed consideration of the effects on the sense of community and community cohesion from the point of view of residents rather than people associated with the mine. There are many examples of community concerns about the project's potential impacts in the Village and Bylong Valley that are not reflected in the report's conclusions. The General Store is identified as being the 'community hub' and 'the heart of the village', but the report is not clear about how this central 'place' will be affected (in some sections the report states the proposal will not impact operation of the store; in others it is identified as the nearest facility to the mine and hence will be used by mine employees). Growth in local population numbers is cited as supporting future community cohesion, but there is no sense that social sustainability is about relationships, history and connections, rather than numbers per se.

Consideration of the incidence of social impacts across community groups and individuals can help determine community needs and assist in framing beneficial community outcomes. This often takes the form of an Impacts Display Table.

This disaggregation of impacts by stakeholder group is a significant omission from the report's Conclusions. As well as offering a better understanding of overall project effects, an Impacts Display Table can facilitate development and targeting of community specific mitigation measures. Opportunities to provide further detail around mitigation of proposal impacts are discussed further in Section 8.

Need for an evidence base - It is also noted that throughout the SIA, there is little documentary evidence used to support assertions about potential benefits and impacts on the local Bylong community. There appears to be only one reference in the SIA to experience from other mining projects (p. 165) and little evidence suggesting ways to support successful, sustainable communities alongside mining operations or proven strategies to mitigate adverse impacts. The evaluation of the proposed Worker Accommodation Facility (WAF), discussion of community health impacts, requirements for successful integration of a large mining workforce into a small community, and other factors do not reference any existing studies to support this proposal. Sources cited in RTS Appendix C – No WAF option, and other data, could have been used to present a more balanced evaluation of likely community impacts. However, even these sources do not entirely support the assertions about the potential social benefits and impacts on a local community presented in the SIA.

» **Cumulative impacts not adequately articulated or fully understood –** Cumulative social impacts considered in the SIA relate to expected LGA-wide population growth as a result of this and other mining projects and their contributions to a range of community needs such as housing demand and social infrastructure and services (health, schooling, tertiary education and training). The analysis of cumulative impacts on population within the Bylong Valley generally only refers to the aggregate numbers of residents, and does not distinguish between stakeholder groups. The proposal will have very real differences for existing residents and those moving to the Valley to take up work in the mine, and their differential impacts and benefits need to be drawn out.

In particular, the SIA does not appear to show an appreciation of the cumulative social impacts on residents of the Bylong Valley, including changes associated with:

> Multiple and successive changes to community life that began several years prior to the EIS – from the first enquiries about property acquisition and early exploration phases of the project. Some of these are outlined in the SIA (eg. p. 162 discusses a social divide and its effect on the sense of community), but the role of the mine proposal itself in contributing to community change, and its effects on the potential for building future networks and relationships is not adequately reflected in the report's conclusions

> A deep understanding and first-hand knowledge of mining impacts as experienced in neighbouring communities (such as Wollar) and by friends, due to the close relationships, shared history, values, experiences and social integration between these villages

> Potential for the social impacts actually being experienced in Wollar (and future impacts associated with a proposal for a further extension of Wilpinjong mine) to extend into and through the Bylong Valley, with the expectations of some Bylong residents that two communities will be at risk of disappearing, becoming unviable or at the least, being unrecognisable to current and former residents

> Multiple bio-physical impacts being experienced by residents at some properties, which individually may meet technical guidelines but together cannot be measured or controlled – for example properties that may experience noise, air quality / dust, water loss, visual impacts, property value depreciation (or inability to sell at market) and loss of community connections.

» **Consideration of health impacts -** The SIA provides no information on population health in its analysis of community characteristics or as an issue with potential significance to residents. The issue is mentioned as an important concern that had been raised in the media (pp. 44 and 172) but not considered further.

Health is a key aspect of a community's way of life, specifically listed in SIA Guidelines (refer p. 6 above) and further comments from the IAIA Principles below:

> "The SIA community of practitioners considers that all issues that affect people, directly or indirectly, are pertinent to social impact assessment…[including]:
>
> …their health and wellbeing – health is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity" (IAIA 2003, p. 8).

One of the core values of SIA is:

> "People have a right to live and work in an environment which is conducive to good health and to a good quality of life and which enables the development of human and social potential" (IAIA 2003, p. 9).

The Protection and Promotion of Health and Safety is also identified in the Guidelines as being of paramount importance, with all planned interventions being assessed for health impacts (IAIA, p10). Recent studies into the social impacts of mining (cited in the RTS Appendix C – No WAF option, p. 61) have led to the Queensland Government supporting a recommendation that "the social impact assessment process consider the mental health of workers and that accommodation

standards include measures addressing mental health needs and access to effective workplace health initiatives" (Queensland Parliament, October 2015; DSD 2015).

It is acknowledged that NSW environmental assessment processes rely on established air and noise criteria as accepted indicators of community health and amenity impacts. Nevertheless, at the very least, population health data should have been included in this SIA and explored as an issue if there is a risk that community health could potentially be impacted by the proposal.

» **Consideration of alternatives -** Best practice SIA (and EIA) calls for consideration of several alternatives in arriving at a preferred proposal or course of action. The SIA proposes and analyses several alternatives relating to worker accommodation, before determining the preferred proposal of the WAF for construction workers during the open cut mine phase of the project (Project Years 1-6).

While these alternatives have clear cost, logistic and social implications for the KEPCO, the Bylong Valley and the wider area, the expected social impacts of the proposal would suggest a range of alternative scenarios should be examined.

It is acknowledged that the RTS examines a new option – a No WAF option in Appendix C in response to feedback from MWRC that economic and income benefits are not likely to flow to the wider region if a WAF is incorporated into the proposal. This option is considered in great detail in Appendix C to the RTS and considerably more analysis is undertaken in relation to available accommodation and evidence around long distance commuting for mining project employees. Nevertheless, MWRC has argued that the community would be unlikely to support a WAF.

» **Social dimensions of bio-physical impacts** - Many aspects of the proposal have the potential for social impacts and these are examined in other technical studies (eg visual impacts, air quality, blasting, traffic, agricultural impacts). In most cases, these effects and their implications for local residents are only briefly mentioned in the SIA, before referring the reader to the relevant technical report. This adds to the difficulty of understanding the full range of social impacts (including impacts of multiple emissions on individuals) and implies a poor understanding of the relationship between bio-physical impacts and their experience in the daily lives of rural residents and the community as a whole.

Examples of where these issues are briefly referenced but implications are not fully explained, are most obvious in Section 10, where issues such as changes to local roads and access arrangements, changes in rural character and amenity and community cohesion are discussed at a high level, with few details of how this will specifically affect residents. For example, the discussion of visual impacts provides little detail about what the impacts will be, where they occur and who will be affected. It is also difficult to understand how effectively the mitigation measures will screen the visual effects.

Blasting, noise and vibration impacts are clearly of key concern for 'near neighbours', but there is no discussion of how their lives will be affected. Stress, sleep, visual, health changes, potential dislocation and loss of ties to the community, would all be relevant, but are not discussed here (pp. 160-161). Even if exceedances of environmental criteria do not occur, it is important to understand how these activities will impact on their lives. Social implications of environmental impacts on water supplies are not even mentioned.

Where dust, noise, visual impacts and other effects are expected to affect residents, these should be clearly explained in the SIA. Stating that this has been done in other sections of the EIS, or that all guidelines are met and so no impacts will occur, fails to show an appreciation of the actual impact on an individual's daily experiences, values, connections and concerns for change. It also implies there is no need for the individual to concern themselves with the impact, or have a role in developing strategies for the future.

» **Some errors in fact** – concerns were raised in relation to:

  > errors in population data used (use of population data from Wilpinjong mine extension project in the Bylong SIA)

  > statements in the SIA about turnover and profitability of the General Store. These were reported as being speculative, as they had not been disclosed during SIA consultations.

» **Report structure** – In general, most SIA guidelines do not detail a preferred report format, although Vanclay (2015, pp. 64-65) offers a suggested structure. It is considered that this SIA could have been structured in a way that better integrates baseline information and focuses more clearly on mitigation of social impacts. Rather than a chapter on each potential social issue, this would see a consolidated chapter on social issues, impacts and benefits, followed by a chapter on mitigation and monitoring of identified impacts. The current structure, the quantity of information and extent of cross-referencing, requires the reader to jump between issues and impacts through the entire document (ie one issue per chapter). The report would have also benefitted from summary sections, additional figures showing areas of bio-physical impacts and further drawing out of the main implications of the detailed data presented.

4 Are the SIA assumptions reasonable, appropriate and suitably justified?

Assumptions used in the SIA appear to be consistent with those in the EIS, in relation to the project description, timing, areas of impact, size of the workforce and so on.

Assumptions specific to the SIA components include choice of Australian Bureau of Statistics (ABS) and Department of Employment (DE) data series, expected locations of the mine workforce residence and assumptions about future population growth, household structure and location.

Choice of ABS census geographies are generally reasonable, appropriate and justified, and the analysis explains the rationale for each and limitations in data availability and consistency due to changes in collection areas over time. ABS labour force data is also used to analyse and support predictions about future workforce characteristics. This data provides a solid evidence base to support these assumptions, although feedback from some community members indicates that inclusion of parts of Muswellbrook and Upper Hunter Shires in the analysis would have provided a more balanced view of regional connections and study implications.

It is difficult to verify whether the report's assumptions about future household size and structure are appropriate without a better understanding of the structure of mining workforces on other projects. Use of findings of other mine projects and wider literature on the social impacts of mining communities would provide a more solid, evidence based framework for the report's assumptions. This will have implications for the discussion of community infrastructure needs and Council's role in meeting the needs of specific population groups.

Assumptions about the expected residency locations of the mine workforce are set out in detail in the SIA and used throughout to explain the case for the proposed Workforce Accommodation Facility (WAF). It is recognised that these assumptions are necessary for project planning and the assessment of potential impacts. These assumptions are revisited and further analysis is undertaken in Appendix C of the RTS to examine the implications of a No WAF option. Discussions with MWRC officers for this peer review indicated differences of opinions regarding the case for the WAF (or Temporary Worker Accommodation - TWA). Council is not convinced of the need for a WAF, even in the short term during initial construction. Contrary to the assumptions put forward in the SIA and the No WAF option, Council has expressed the view that mine employees should be encouraged in live in nearby towns, such as Mudgee, to ensure the region can directly gain the economic benefits through daily expenditure and to facilitate integration of employee households with existing town communities. The concern is that a stand-alone WAF / TWA would quarantine employee earnings, limit the benefits of expenditure within the community, minimise the potential for integration and create a range of social impacts often experienced in mining workforce communities. A separate submission from Muswellbrook Council points out the SIA and RTS overlook opportunities for mine employees to be housed in Denman, located outside the MWRC but within a one hour drive of Bylong.

Both Councils' responses questioned the case for a temporary WAF and the validity of several key assumptions used in the RTS Appendix C. These concerns are based on:

» evidence of other mining workforce accommodation patterns in nearby mines, where temporary accommodation facilities have been approved but not taken up

» aggregate mining construction workforce numbers most likely to be lower than assumed as construction projects (eg at Moolarben) are completed

» additional accommodation supply coming into the Mudgee market over the past five years that would be suitable for the Bylong mine construction and operational workforces

» unnecessarily rigid assumptions about the inclusions needed in dwellings for different employee grades (eg furnished vs unfurnished premises)

» omission of potential accommodation options outside MWRC, in towns such as Denman

» unrealistic expectations about attracting mine employees to live in Bylong Valley properties

» a superficial analysis of potential social issues that can be associated with temporary worker accommodation villages.

The size of the workforce was also raised by some Bylong Valley residents in discussions for this peer review. There was suspicion about use of the phrase "a peak of 650 employees" in the No WAF option Appendix, with the implication that the proponent was not being clear about the exact workforce size and hence its potential needs and impacts. Despite this scepticism, it seems reasonable at this stage of the project that precise employment numbers would be subject to specific contracting and workload planning decisions, and the estimates are appropriate for the scenario testing.

Finally, there is little evidence that the many mitigation measures proposed included in the SIA are supported by locally impacted stakeholders. There are some examples where suggestions from the community identify possible community benefits or mitigation strategies, but apart from the funding proposals, no firm commitments to community partnerships are discussed. Mitigation commitments should be fully developed in the SIA to ensure they can be included as conditions of consent.

5 Extent and effectiveness of the community and stakeholder engagement process

Community and stakeholder engagement processes adopted throughout the project are summarised in Section 3.6 of the SIA and in more detail in Section 5 of the EIS. Engagement for the SIA targeted residents and other stakeholders in the 'Project Area' (defined in the SIA (p. iii) as "the Bylong Valley, including the Project Boundary and neighbouring landholders"), officers of the Mid-Western Regional Council (MWRC) and key state government agencies and service providers. However, consultations have been undertaken since 2011 for a range of other project-related reasons including exploration, negotiations, technical studies, monitoring and property acquisition.

The approach as documented in the EIS and SIA appears to have been thorough, robust, effective and consistent with good practice. Engagement objectives are detailed in Section 5.3 of the EIS (p. 109), and the many community information brochures and fact sheets (EIS Appendix F) cover a range of relevant issues.

Despite this, further examination of the SIA and discussions with community members involved in the SIA and consultation processes for this peer review, identified some critical issues that appear to fall short of good practice community engagement. Many Bylong Valley stakeholders consulted for the peer review raised strong concerns about the consultation process for the mine project as a whole. In particular, respondents reported confusion about:

» Distinction between, the different components and stages of engagement - social / environmental assessment and consultation processes and property acquisition processes etc

» The purpose of interviews held during the SIA process and uncertainty amongst community members about what was expected of them

» Why invitations to consultations were offered to some stakeholders but not others

» The appropriateness of some meetings being held at KEPCO premises rather than in a more neutral setting

» The level of detail, quality, completeness, accuracy and relevance of information presented during consultations and negotiations and its suitability as a basis for obtaining comment on expected social impacts. Despite being directly affected, some claimed they were not informed about the open cut mine component of the proposal until December 2015 and did not understand other implications of the proposal (ie proximity, visual or noise impacts) until very recently.

» Timing of the project, the assessments and project commencement.

Comments from local residents in relation to the stakeholder engagement processes included:

» "Neither the Bylong Valley Protection Alliance nor the Bylong Hall Committee were approached as *organisations* as part of the review, despite the fairly clear and prominent roles these groups have within the community"

» "We only answered questions at the SIA consultations several years ago. We'd say things differently with what we know now"

» "SIA engagement occurred with little information. With more information, we may have given different responses"

» "We had to go to KEPCO premises"

» "…glossy brochures dropped in the mailbox"

» "…glossy pictures, no answers"

» "…little notice' [that information sessions were being held]

» "Consultation took place before the project definition"

» "I didn't read the SIA. Many properties in this area don't have [reliable] internet and I don't use email".

Many respondents reported unfair and unethical negotiation strategies ("a David and Goliath battle") that, intentionally or unintentionally, worked to "hollow out" and "destroy the social fabric of the Valley" and showed little commitment to supporting its ongoing viability. Examples cited in discussions included:

» properties housing multiple families being purchased by the mine, left vacant and allowed to fall into disrepair (instead of being rented to locals)

» closing of accounts at, or choosing not to support, the Bylong General Store

» mine-related jobs not being advertised locally or employing local residents, even when available

» deliberately exclusion of some properties from acquisition

» residents feeling their requests or wishes were treated as being unimportant

» mis-representation, deception and changes of position on critical issues and many other examples of interactions which left residents feeling angry, distrustful and used.

Comments included:

» "We've been up in the air – living in limbo, for five years"…"we can't plan for the future"

» "They push the boundaries. Now people are sick of talking about it"

» "They try to wear you down"…"they're bullies"… "it's very poor treatment"…"playing everyone off against each other"…"it's fractured the community".

This approach was described as "tortuous", creating mental anguish, and working to ultimately wear people down so they will accept any conditions to leave. It is not supportive of constructive community relations.

Discussions with stakeholders for the peer review process highlighted many examples of confusion apparently created by the proponent's early and ongoing interactions with residents, particularly in relation to property acquisition. These discussions and enquiries engendered feelings of distrust, anger and anxiety amongst many residents, who reported they then were disinclined to participate in further engagement. Property owners engaged in negotiations with the proponent were also reportedly required to sign confidentiality agreements, which then prohibited them (or strongly dissuaded them) from discussing aspects of their negotiations or the mining proposal with relatives, friends, neighbours, business partners.

Other examples were given of little or no information being available prior to such meetings, which resulted in participants making statements that that felt were ill-informed or inappropriate.

It is important to stress that not all Bylong Valley residents expressed concerns with the engagement process. One resident believed "the information sessions were helpful".

In addition, these comments reflect local concerns rather than those of the broader regional population.

Without having participated in or observed the mine project and EIS / SIA stakeholder meetings, discussions and information sessions, it is not possible to comment on the specifics of the invitation process, personal interactions, the adequacy and quality of information available to individual stakeholders or the accuracy of the consultation outcomes dot-pointed in the EIS and SIA. It is noted however that the EIS and SIA provide only brief summaries of consultation outcomes, and no details of the types of information provided to survey or information session participants. It is further noted that amongst the brochures and fact sheets distributed to Bylong Valley residents in Appendix F of the EIS, only one map showing the proposed open cut mining areas (Conceptual Mine Plan, February 2014) and open cut mining is referred to in only four of the 13 brochures (August 2015, May 2014, December 2013 and April 2011). Despite this, the purpose of SIA consultation, stated on p. 24, is simply to inform and obtain information from respondents. It does not refer to a process of genuine engagement or dialogue around issues affecting lives of residents.

Comments provided in earlier sections of this report highlight the limitations of the SIA evaluation in weighing up the significance of expected proposal impacts on the daily lives of residents and translating these into meaningful mitigation responses. Understanding, fairly reporting and acting on community feedback that has been provided in good faith, are basic principles of good practice in community engagement and are also key to a mine operator gaining a social licence to operate. However, suspicions and concerns about the community consultation processes appear to have also affected the willingness of residents to participate in discussions to date and future processes. This indicates there are questions to be asked about the validity of information collected and used in the SIA analysis, the potential for developing workable relationships for future interaction between Bylong Valley residents and mining company employees or contractors and the acceptability of the proposed mitigation, management and monitoring framework for future stages of the project.

In summary, this peer review has therefore identified some major concerns in relation to the availability of information and the transparency and openness of the community engagement process from the perspective of intended participants. Consultations and engagement undertaken for the SIA do not appear to meet an acceptable standard of good practice.

6 Comments on the adequacy of the RTS

The RTS (Hansen Bailey, March 2016) is a lengthy (550 page) document which addresses responses to the EIS by stakeholder group and issue. Social impact issues are specifically referred to in several sections, including responses to MWRC comments, responses to comments on agricultural impacts and social impacts, and in a new option – a 'No WAF Accommodation Scenario' (RTS Appendix C).

As with the SIA, there is a tendency for the tone of the RTS to appear both unnecessarily technical and dismissive of critical feedback. The great majority of responses to social issues comprise a summary of the issue, re-iteration of EIS content and cross-referencing to other sections of the RTS, the EIS or its Appendices (see for example Section 5.25.1, 5.25.5 or 5.25.9).

Where additional information is provided (eg Section 5.25.4, 5.25.5 or 5.25.10), it often adds little by way of further explanation. This makes reading of the document difficult and disappointing, as successive opportunities to clarify or present new information are shut off. In some cases the cross-referencing leads in circles or is actually wrong (p. 479, second line).

Section 5.25.2 responds to submissions questioning the adequacy of the SIA methodology and provides a detailed defence of the adopted approach. It rightly acknowledges that there are no best practice guidelines for SIA at the NSW government level (there are many methodology and best practice guidelines in NSW adopted by local government) and references the newly released IAIA Guidance (Vanclay et al 2015). It is correct in its assertion that project SIAs are not meant as academic documents but that they should examine "the interlinked aspects of economic, social and environmental change", including cumulative impacts (RTS, p. 471). The statement that the SIA analysis is based on qualitative and quantitative data is also supported. The difficulty with this section, and others, of the RTS, is that its defence of SIA methodology does not specifically address a key issue raised by the community in our peer review discussions - which relates more to the SIA's *interpretation* of expressed views about expected changes to their lives and village. In this sense, concerns relate more to the quality and sensitivity of the SIA *evaluation*, proposed mitigation measures and report conclusions of overall project impacts and benefits. The complex interplay of resistance to the mine proposal, poor relationships between some residents and company representatives and fundamental bio-physical and social changes likely to impact on local properties and valued facilities, have contributed to a situation where community members feel their views have not been adequately acknowledged throughout the SIA. To this extent, the question of RTS adequacy and compliance is less a matter of its technical adequacy, and more a matter of the extent to which is meets best practice guiding objectives for SIA and community engagement detailed in Section 2 of this Peer Review:

> Contemporary SIA needs to focus on project benefits to communities if a project is "to earn its 'social licence to operate', and also because attempting to minimise harm … does not ensure that the project will be considered acceptable by local stakeholders" (Vanclay et al, 2015, p. iv).
>
> Quality engagement processes meeting best practice principles will lead to confidence in the outcome for all involved (IAP2 2015, p. 3).

Comments on issues relating to SIA and project consultations have been provided in the previous section of this report. The RTS section on SIA consultation provides additional information about the consultation process, including the process and numbers of face-to-face interviews / surveys. The summary suggests a relatively formal process: interviews were held in KEPCO's office, 'interview'

participants were 'informed' about study purpose, and findings contributed to SIA baseline and impacts sections. There is no reference to what information was provided to participants to assist in their understanding or interpretation of specific implications for their lives. The response does not convey a sense of an open, two-way process of information exchange, or discuss ways in which information contributed to development of the project plan or appropriate mitigation measures.

On the whole, the tone of the RTS gives the impression that the issues raised are relatively trivial, are of little significance to the project or are already covered by the proposal or its mitigation measures proposed.

This impression was also expressed by those residents consulted for the peer review who had read through the RTS and expressed dissatisfaction that little information was provided to specifically address the social impacts and concerns of the Bylong Valley community. Instead there was a view that the focus was placed on benefits for the wider area (pp. 228-229) and strategies that will benefit employees. For example, in summarising social impacts of population change and community liveability – two major issues likely to affect local residents – the SIA includes general statements with no reference to the specific issues raised by residents, such as:

> Population and Demographic Change
>
> "..the following are considered to be of most significance…:the increase in permanent resident population predicted for the Bylong Valley as a result of the Project's Operations Phase…" (p. 73).
>
> Other than general funding through a VPA and a (KEPKO vetted) Community Investment Fund, there is no reference to considerations for the existing population in conclusions or mitigation measures.
>
> Community Liveability
>
> "Negative impacts … on community liveability in the Bylong Valley relate to:
>
> – The location of the WAF outside Bylong Village and the potential influx of a non-resident workforce
> – The potential change in rural character and amenity of the Bylong Valley, particularly Bylong Village, and th[e] rate at which that change is predicted to occur
> – Potential changes in residential amenity".

Mitigation measures focus on the VPA / Community Investment Fund, beautification measures in the village, encouragement of employees to volunteer for the RFS and a range of activities aiming to introduce new employees to the Bylong Valley. There is little sense that these are of interest or benefit to residents consulted for this Peer Review, or that they will assist KEPCO in earning its 'social licence to operate'.

While the new 'No WAF Accommodation Option' appears to evaluate the social issues and impacts on their merits and contains detailed additional research into accommodation options in Mudgee, it also seems to begin with the assumption that such a proposal would not be viable (an unacceptable project risk) and sets out the case for why a (temporary) WAF with a 300 bed minimum is required. This new analysis resulted in a reduction in the estimated workforce size from a peak of 800 workers to a peak of 665. Without a detailed understanding of the housing market and workforce needs it is not appropriate to comment on the adequacy of the assumptions or analysis. However, it has been noted in Section 4, that MWRC continues to express concerns about the suitability of some assumptions used in this Appendix.

A review of source documents cited in the Appendix C 'No WAF Accommodation Option' discussion of the effects of fly-in-fly-out arrangements and temporary accommodation facilities on workers and on local communities (eg. RTS Appendix C p. 61, para 3), suggests that some evidence has been used

selectively to further justify the need for temporary accommodation. It is considered that the RTS No WAF option does not present a properly balanced or convincing summary of these quoted sources. In several places, the cited sources directly contradict RTS assertions (see for example COA sections 4.26-4.28; WALA p.v and 135-137).

It is acknowledged that there may be a strong case for concern about safety impacts of long drives after worker shifts. However, it would appear other mines address this risk by operating buses to return employees to homes in nearby towns. In relation to other health and well-being issues, the documents cited appear to support the case for housing employees in established communities. Findings from WALA (2015) that could also have been accessed in weighing up potential impacts would include:

» Finding 40 – "Some mining accommodation facilities are isolated from the local community which may be in close proximity, and interaction between the two may be highly regulated and controlled" (p. 135).

» Finding 41 – "Where possible, FIFO workers should be encouraged and enabled to engage with the local host community. This has benefits for the mental health of workers, and for the local community" (p. 135).

  > Recommendation 27 – "Where possible, FIFO workers should be encouraged and enabled to engage with the local host community" (p. 135).

  > Recommendation 28 – "Mining companies should engage with local host communities to ensure that the placement of accommodation facilities brings benefits to local communities, as well as benefits to the mental health of workers" (p. 135).

  > Recommendation 29 – "That the Department of State Development investigate mechanisms to encourage resource companies to invest in providing workers the opportunity to reside in local communities in order to improve mental health" (p. 136).

» Finding 42 – "Evidence to the Committee showed that living in a local community significantly benefits mental health and wellbeing. The Committee feels that these benefits of living in a community far outweigh considerations such as the possible impact of a 30 minute bus ride to the worksite" (p. 137).

In these ways, the RTS does not fully consider potential social impacts of a No WAF option for either the regional community or the local area.

7 Outcomes of discussions with community stakeholders

As noted in earlier sections, discussions with MWRC and Bylong Valley residents and stakeholders held as part of Stage 2 of this Peer Review, provided a rich, first hand source of information against which to evaluate the content and recommendations of the SIA and the RTS. These consultations, held over two days in April 2016, included a meeting with MWRC, organised one-on-one and small group discussions with residents of Bylong Valley, representatives of the BVPA and the Wollar Progress Association and a larger open house question and answer session.

In addition to the information used to inform comments in earlier sections of this report, the discussions suggested several areas where the SIA and engagement processes could be improved for future project assessments. These issues are set out below.

» **Assumptions about community familiarity with the EIS and SIA processes** – Feedback called into question several basic assumptions accepted as given in the environmental assessment process, with direct relevance to this project assessment. These include factors such as:

  > Information available on the internet and through email is often not an appropriate form of communication for people in rural areas, as some have little or no regular mobile reception or are not skilled or comfortable using web-based communications

  > Information available on-line (eg through DPE project and assessment links) is of little use when internet connections or skills are poor, when reports are voluminous and also where community members have a limited understanding of the complex legislative and environmental assessment processes

  > Where information, technical understanding or time for review (or several of these factors in combination) is limited, community members affected by a proposal (such as the Bylong mine project) are largely restricted to the project information presented to them by the proponent, in the timeframes and terms offered. From the perspective of the individual or group whose daily lives or livelihoods may be directly affected by a proposal, a desire for accurate and up-to-date information is a basic expectation. Feelings about, and responses to, a project's potential impacts can be directly attributable to the quality, accuracy, clarity and completeness of information available and attention to specific needs in interpreting this information

  > The SIA and EIS processes generally assume impacts occur once a project is approved. In reality, social impacts can occur from the time properties or mining licences are acquired, exploration begins and potential changes are mooted. In the case of this proposal, community members reported impacts beginning when exploration activities began around 2010 ("when the suits arrived") and continued throughout, and even as a result of, the SIA process itself. The most damaging social impacts, such as loss of family and community members, relationships, networks, businesses have occurred prior to the project approvals even being obtained. Comments included:

    – "It's as if people's lives have been put on hold and this is even before consent is given"

    – "Overall the community is largely destroyed. It's neighbour vs neighbour and within families. It's those who don't care vs those who want to stay. It's been catastrophic for the whole community"… "there's not enough people left for a dinner party!"

- Few participants appeared to have read the SIA or RTS documents in any detail, or to be familiar with technical aspects of the planning assessment process or the Peer Review and consultations. Assuming this technical information, and the EA process more generally, is understood may add to community dissatisfaction with the quality of information being provided and with the proposal itself.

- **Effectiveness of ex-post mitigation measures** – Drawing on anecdotal evidence and data from other mining projects, some residents expressed strong concerns about their ability to negotiate or claim compensation should adverse social impacts arise once mining begins. While expected social or bio-physical impacts appear obvious to local residents and were articulated in comments on the proposal, there is a view that these have been dismissed in the SIA and RTS as being over-stated, or ignored entirely. Should the expected impacts eventuate, these residents fear the burden of proof will then be on them to demonstrate the impacts have resulted from the mine's operation. Comments included:

  - "If emissions go over the limits, how do they fight back? You'd have to prove things yourself".

  In Bylong, this claim was made by several residents relating to potential effects on water supplies, dust and the proposed WAF. For example, rural land owners are experienced in sharing resources, including water, during times of shortage or when bore levels fall. However, there was great scepticism that mine operators would participate in water sharing to allow rural properties to continue operating effectively should shortages occur. Several residents expressed that view that without access to water, grazing and farming activities cannot continue and rural land becomes next to worthless.

- **Adopting bio-physical standards as measures of social impact** – Despite some residents being unfamiliar with the technicalities of EIS and SIA processes, others demonstrated sophisticated knowledge or understanding of many issues, particularly in relation to their potential to impact on their daily lives and activities. A key concern was the discrepancy between modelled outcomes (or estimations) of air or noise emissions, for example, and the impacts experienced, or expected, at a particular home or property. This was especially of concern where multiple sources of emissions (eg dust, noise, visual, loss of property values) are expected. One resident aptly wondered:

  - "Are there levels of social impact that are considered unacceptable?... At what point are the impacts too much?".

  By contrast, another new resident living within the affectation zone was unconcerned about potential noise impacts on his family, having lived near mines before. He was expecting to be affected for about two years, but "will wait and see" about noise effects of the proposal.

- **Proposal benefits -**It is important to stress that not all views expressed by Bylong Valley residents in these consultations were opposed to the mine or raised concerns with the processes of consultation or reporting. Members of one long term farming family and another more recent resident expressed strong support for the project, primarily for its potential to create much needed employment and training opportunities and to attract new residents. While Bylong was seen to be losing residents, friends and young people in nearby towns such as Rylstone, Kandos and Mudgee were known to be looking for work and this was considered to be a great opportunity to revitalise the area. For those in support of the project, potential noise, dust and water impacts, are less relevant, especially as the proposal includes plans to rehabilitate land after mining.

The overall outcome of these community consultations was a recognition that the focus of expected social impacts identified in the SIA was heavily skewed towards promoting aggregate project benefits to the region, and the omission of fine grained detail on local issues and impacts for individual and community stakeholders. The failure in the SIA to disaggregate social impacts and consider their incidence by stakeholder group, allows local issues to be glossed over and simplified as:

» matters to be dealt with at the next stage of the planning approvals process

» matters that can be solved through encouragement of mining employees to move into the Valley

» matters that can be avoided through simple mitigation measures such as not allowing workers to wear flouro gear into the local shop or community grants for small-scale projects that promote KEPCO's involvement

» social issues that can be overcome by property acquisition to encourage existing residents to move from the area.

It is considered that the SIA's conclusion that key social impacts will be population growth, the influx of mine workers to the LGA and implications for housing availability, tends to overlook key local social impacts that could be directly attributed to this proposal and assumes continuing loss of existing residents from the Bylong Valley community is inevitable. Many local issues are discussed in different sections of the report, but it does not give the sense of a coherent narrative about past and likely future opportunities for this community – with and without the mine proposal. This is partly attributable to the report structure which spreads impact assessment and evaluation across many sections. Inclusion of the following issues in the conclusions would contribute to a more balanced evaluation:

» A frank discussion of baseline conditions specifically acknowledging issues arising and social changes prior to, and as a result of, mining exploration and property acquisitions phases

» Impacts of the proposal on the viability of Bylong as a sustainable rural community

» Impacts arising directly from property acquisition processes

» Recognition that population change likely to arise from this proposal is not simply a measure of the numbers of residents living in the Valley, but needs to consider the roles, history and attachment to the community of specific individuals and families. It is critical to distinguish between residents with a long-standing history in the region, those moving to the area for its peaceful rural environment and those moving in to work for mining operations or other industrial pursuits. Each will have different attachments, interests, networks and needs. Total numbers do not reflect these differences or constitute a measure of community

» Cumulative impacts on individuals (ie multiple social or bio-physical impacts), and associated with the closely inter-connected villages of Bylong and Wollar

» Documentation of social issues and impacts by stakeholder groups, timing and location, rather than summary at an aggregate level

» Clearly articulated strategies and projects to support the existing local community, demonstrate goodwill and encourage establishment of workable and constructive relationships during mining operations, site rehabilitation and beyond.

8 Identification of any areas of deficiency and recommendations to improve or resolve these issues in the assessment

DPE seeks advice as to whether any additional information is required to complete the peer review and/or justify the methodology or conclusions made in these documents.

As noted above, it is considered that there are several ways in which the SIA report could have been improved to better align with best practice and provide a more complete analysis. This includes:

» Inclusion of data on population health, including baseline health conditions in the communities of interest and evidence of health impacts of open cut and underground coal mines on local communities and employees

» Inclusion of evidence from literature review, case studies or industry experience to accurately reflect expected impacts of proposal features (eg. the WAF, effectiveness of company policies regarding housing requirements and location, employee behaviours, community development needs)

» Ensuring issues raised in community consultations are integral to the evaluation of SIA benefits and impacts

» Summary of findings and conclusions in an Impacts Display Table or similar which shows differential impacts by stakeholder group. It is critical to recognise that each impact and benefit will be experienced in different ways and have different levels of significance, for different stakeholders. Social benefits and impacts cannot usefully be simply summarised as an aggregate outcome. A summary by stakeholder group can clearly demonstrate where potential mitigation, monitoring and management of impacts will be required. At present these appear to be treated relatively superficially, and there is no indication of whether proposed measures are welcome or will be beneficial.

» Re-examination of the SIA's mitigation and monitoring measures to include specific, locally based, practical and acceptable strategies to support the co-existence of the Bylong community and mine.

However, at this stage in the planning process, the majority of issues are already documented or known to DPE. The key now is to avoid or minimise (where possible) further local level social impacts, rebuild relationships wherever possible, and to support co-existence of new and existing residents so Bylong can survive as a village.

Suggested mitigation measures would need to be developed in consultation with remaining residents of the village and surrounding areas and based on evidence of success in other small rural communities impacted by open cut mining and large mining workforce. Examples of strategies to support the continued functioning of Bylong through mining operations could include:

» MWRC support for residents in adopting relevant aspects of the approach set out in RIRDC (April 2013) when engaging and negotiating with KEPCO

- A funding agreement, such as a 'mini Bylong VPA' or allocation of a portion of funds from the agreed VPA, to projects that directly benefit the existing community and those who will continue to live there in future. Projects to be funded would need to be developed collaboratively but funding should not be required to show corporate branding and should aim to sustain and support the village and its infrastructure into the future. This might imply projects with a tourism, farming or recreational focus, projects that support the General Store or Community Hall, or investment in local education or community activities (eg. RFS, environmental projects)
- Commitment to community representation on a Community Consultative Committee(CCC) in accordance with terms of reference under NSW Government published CCC guidelines
- If a WAF is approved in the vicinity of Bylong, ensure the facility provides for recreational and social needs of employees through inclusion of an indoor recreational facility / gym or similar, and is open to both mine employees and local residents. This could offer a legacy project for residents and tourists when the mine closes
- MWRC to work with other agencies and local residents to develop and apply acceptable standards to keep remaining farmlands and dwellings maintained for ongoing use, such as requiring farm managers to maintain agricultural land as productive enterprises and effectively managing weeds, pests and building maintenance
- Documentation of the process of change that has occurred, so as to provide case study evidence of social and cumulative for other projects
- Funding and in-kind support for a specified number of local RFS volunteers from its local mine workforce. A pool of volunteers should be supported to attend training, meetings and incidents alongside current RFS members
- Relocation of the Bylong school building to Lower Bylong for community use, for example to celebrate and showcase the area's history.
- Ongoing and future community engagement and communications should be undertaken by staff aligned with professional associations such as IAP2 and in accordance with best practice engagement principles

These examples are provided as a starting point for discussion and agreement with local residents, Council and other agencies and should be evaluated on the basis of their potential to sustain Bylong in the long term.

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Appendices

A IAP2 Core Values and Spectrum

A IAP2 Core Values and Spectrum

Core Value	Indicators	Level of Quality			Evidence
		Elementary	Emerging	Exemplary	
1 Public participation is based on the belief that those who are affected by a decision have a right to be involved in the decision-making process.	Clear problem statement Decision making process clearly communicated Affected stakeholders have been identified	No problem statement/purpose of engagement statement developed. No decision making process communicated Affected stakeholders have not been identified	A problem statement/ purpose of engagement has been developed and provided to stakeholders Decision making process communicated to stakeholders. Affected stakeholders have been identified.	A problem statement/purpose of engagement has been developed in collaboration with stakeholders. Decision making process communicated to stakeholders via with stakeholders preferred communications channel Affected stakeholders have been identified and means of expanding the stakeholder base throughout the process have been considered.	Decision making framework developed. Challenges and decisions to be made are published Governance structures within the decision making body are communicated to stakeholders Communications with stakeholders are recorded Minutes of meetings are recorded Etc.
2 Public participation includes the promise that the public's contribution will influence the decision.	Appropriate level of engagement has been endorsed by decision maker Level of stakeholder influence clearly communicated to stakeholders.	No specific level of engagement identified by decision maker Level of stakeholder influence established but not communicated to stakeholders	A level of engagement has been identified by the decision maker. Stakeholders are informed that their input will influence the decision making process	Stakeholders are involved in establishing the level of engagement Stakeholders are informed of what aspects of the decision making process can be influenced and which cannot be influenced.	Communications to stakeholders outline level of influence
3 Public participation promotes sustainable decisions by recognising and communicating the needs and interests of all participants, including decision makers.	Understanding of participants values and interests Engagement techniques identified to support interests and needs.	No understanding of current concerns of participants No demonstrated understanding of stakeholder interests and needs	No demonstrated understanding of stakeholder interests and needs Demonstrated understanding of stakeholder interests and needs	Barriers to participation have been identified & efforts made to overcome them Knowledge of stakeholder interests and needs are based on stakeholder input.	Techniques aligned to stakeholder interest and level of engagement. Stakeholders engaged to identity values and interests
4 Public participation seeks out and facilitates the participation of those potentially affected by or interested in a decision.	Participation opportunities enable contribution Thorough stakeholder analysis completed	Unrealistic expectation from the sponsor No or little stakeholder analysis conducted	Existing resources and networks have been effectively utilized. Initial stakeholder analysis conducted	Stakeholder input sought for engagement methods. Project sponsor facilitated additional support resources Iterative stakeholder analysis conducted.	Stakeholder participation requirements have been identified Blocks to participation have been identified and overcome. Stakeholder requirements are revisited throughout the project
5 Public participation seeks input from participants in designing how they participate.	Dialogue between representatives on the most suitable way of engaging participants.	Assumptions on engagement techniques made without stakeholder dialogue.	Reasonable efforts have been made to seek feedback on the potential engagement processes with all stakeholder groups.	Project sponsor has enabled the participants to have a key role in determining the engagement processes and techniques.	Demonstrate how the stakeholders influenced the process for the project
6 Public participation provides participants with the information they need to participate in a meaningful way.	A balanced set of information has been provided. Communication tailored for audiences and channels appropriately identified.	Limited information provided to participants prior to the engagement process. Standard language and collateral offered across all communications	Balanced information provided reflecting all sides of the argument relating to the decision to be made. A range of communications channels are offered based on good practice and previous experience.	Expert, objective and independent content has been openly made available to all participants. Stakeholders have been actively engaged to identify appropriate communications channels	The range, quality, format and timing of materials that are made available to inform participants in advance of the engagement process. Stakeholders are engaged in shaping the form and content of materials. Records of meetings and correspondence.
7 Public participation communicates to participants how their input affected the decision.	Clearly demonstrate how participant input has influenced the process.	Little of no feedback is offered or promised to participants.	All feedback is collated and made freely available to the participants	Opportunities are provided to explore the feedback in depth, discuss its implications and determine the future steps.	Statement of feedback promised to all participants. Processes identified for feeding back the results to the stakeholders.

IAP2'S PUBLIC PARTICIPATION SPECTRUM

The IAP2 Federation has developed the Spectrum to help groups define the public's role in any public participation process.

INCREASING IMPACT ON THE DECISION

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To provide the public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISES TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision. We will seek your feedback on drafts and proposals.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will work together with you to formulate solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

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6 October 2016

Team Leader
Planning and Assessment
22-23 Bridge Street
SYDNEY NSW 2000

Attention: Mr Stephen O'Donoghue

Dear Steve,

Bylong Coal Project EIS
Response to Peer Review of Social Impact Assessment

1 INTRODUCTION

This letter responds to the issues raised in the *Bylong Coal Project Peer Review of Social Impact Assessment and Response to Submissions - Final Report* (Peer Review Report), dated 2 September 2016 and prepared by Elton Consulting for the NSW Department of Planning and Environment (DPE). It follows the earlier letter from KEPCO Bylong Australia Pty Ltd (KEPCO) dated 15 September 2016 to DPE which identified a number of factual errors present within the Peer Review Report.

This letter summarises KEPCO's concerns in relation to a number of aspects of the Peer Review Report, in particular the shortcomings of the scope of work and consultation methodology adopted for the preparation of that report. The conclusions drawn in the Peer Review Report are underpinned by the findings of the Peer Review consultation. Based on the limited detail included in the Peer Review Report, KEPCO considers that the scope of the Peer Review consultation is inadequate and the cross section of stakeholders who participated, unbalanced. It is our professional opinion that these shortcomings invalidate the outcomes and recommendations of the peer review.

2 CONTEXT

2.1 NEIGHBOURING STAKEHOLDERS

Since the conduct of the Peer Review consultation in April 2016, KEPCO has continued discussions with a number of the remaining private landholders within and nearby the Project Boundary for the Bylong Coal Project (the Project) regarding land acquisition. KEPCO has reached the relevant agreements with some of these landholders for land acquisition. KEPCO acquired the Tinka Tong property (Receiver ID 68-71) in June 2016 which comprised a property within the Project Boundary. Two private landholders remain within the Project Boundary including Receiver ID 53 (Bylong Quarry) and Receiver ID 141.

Receiver IDs 60 and 63 (which have been predicted within the EIS to be significantly affected by noise) remain the nearest private landholders to the Project outside of the Project Boundary. KEPCO has reached the relevant land acquisition agreement with Receiver ID 63 which is due to be finalised later this month.

Beyond these properties predicted to be significantly affected by noise impacts, Receiver 58, Receivers 56 and 57 and Receiver 181 are not anticipated to be acquired by the Project and will remain.

Further property acquisition negotiations are currently underway with additional four landholders whom have been identified as potentially impacted by restricting road access to their respective properties.

Consequently it is likely that one or more of the stakeholders who participated in the Peer Review consultation are no longer landholders in Bylong Village (or will soon not be) and are therefore not considered to be affected parties for the purpose of the Project assessment. The issues and concerns these stakeholders may have raised during the Peer Review consultation are no longer relevant to the consideration of the Project's potential social impacts. Hence it is likely that a number of the stakeholder issues and concerns upon which the Peer Review Report conclusions are based, are no longer relevant to the consideration of the Project Social Impact Assessment's (SIA) adequacy.

KEPCO currently owns approximately 78.8% of the land within the Project Boundary with 1.9% of the remaining land owned by private landholders and 19.3% in the ownership of the Crown and State Forest.

2.2 TIMING

More than 18 months has elapsed between the conduct of the SIA consultation in August 2014 and the conduct of Peer Review consultation in April 2016. As a result of the progress of Project related property acquisition activities (refer **Section 2.1**) and the planning approvals process, it is likely that residents of the Bylong Valley may view the development of a mine in the locality as more imminent than they originally anticipated (i.e. at the time they participated in SIA consultation).

KEPCO is attempting to respond to these concerns through ongoing and targeted consultation. Ongoing decline in the rural economy (fuelled in part by a downturn in the mining industry) is also likely to have resulted in changes in community attitudes to the Project at a regional level.

KEPCO considers that the findings of the Peer Review consultation were significantly influenced by the timing of the consultation activities undertaken to inform the Peer Review Report. The Peer Review Report does not acknowledge the potential impact of the elapsed time on the consultation outcomes.

2.3 SIA METHODOLOGY

The scope of the Peer Review Report included the requirement to *"consider whether the social impact assessment aligns with industry leading practice"*.

The methodology adopted for the Project SIA is consistent with the industry method adopted for the conduct of a SIA associated with Environmental Impact Statements (EISs) for other State Significant Development (SSD) across NSW i.e. Watermark Coal Project, Drayton South Project and Boggabri Coal Project, Cobbora Coal Project and Bengalla Continuation of Mining Project. One of these projects in particular had similar social issues to the Project.

The methodology applied to the Project SIA builds on recent learning's in relation to the conduct of SIA in NSW, specifically the issue of Solastalgia. The method adopted is consistent with best practice across both NSW and Queensland given the absence of any applicable NSW guidelines for the conduct of SIA. The authors of the SIA are highly familiar with Queensland SIA guidelines and principally applied the relevant aspects of these guidelines in the absence of NSW guidelines.

It is notable that the SIA methodology adopted for the previously listed projects was consistently accepted by the relevant NSW approval agencies as appropriate, and was not considered by the approval agencies to have resulted in a 'deficient' SIA with 'significant' shortcomings. It is difficult to understand how the same methodology could now be considered deficient or inconsistent with industry leading practice.

2.4 SOCIAL IMPACT ASSESSMENT EXPERTISE

The Project SIA (Appendix AC of the EIS) is the culmination of many hours of research and analysis conducted by specialist SIA professionals who not only have extensive demonstrated experience in the field of social impact assessment but are also regarded by clients and industry colleagues as leading 'specialists' in their fields of expertise. These specialist SIA consultants were selected as they met the specific SIA brief and had demonstrated capabilities to prepare a suitable SIA that responded to the Secretary's Environmental Assessment Requirements (SEARs).

The principal author of the Project SIA is a specialist SIA professional - Bronwyn Pressland, Principal Social Planner for Hansen Bailey. The SIA was internally reviewed by Kirsten Snyman, Senior Social Consultant and Elena Miceski, Social Performance Practice Manager for WorleyParsons (Advisian). Bronwyn and Elena have more than 17 years' experience in social performance management across NSW and Queensland with specialist expertise in social impact assessment, impact management and community engagement.

Bronwyn has more than 20 years' experience in the conduct of social impact assessment for resource projects in NSW, Queensland and the Northern Territory. Bronwyn's demonstrated expertise is described in **Attachment 1**.

Kirsten Snyman has over thirteen years of social impact assessment and management planning experience in Australia and internationally and has completed over 20 social impact studies. She has previously been engaged by the World Bank to peer-review social impact studies to assess compliance with international best practice guidelines as documented by the Internal Finance Corporation.

Elena Miceski has more than 17 years' experience in stakeholder engagement, communications, community research and social impact assessment for government, resource and infrastructure sectors. Elena has experience in providing strategic stakeholder and social services for complex, challenging and significant projects, including several government social planning projects, infrastructure developments, rail lines, port expansions, carbon capture and storage proposals, mega coal seam gas developments, liquefied natural gas facilities, onshore and offshore pipelines, wind farms and various mineral developments. Elena specialises in social licence solutions and her projects have been publicly praised by the Government for their responsiveness to community concerns.

Elena has provided strategic stakeholder advice and services to several of the major resource and energy producers in Australia, including ConocoPhillips, Sinopec, BG Group and Rio Tinto. She was responsible for and managed stakeholder engagement, community relations and social performance activities for the significant Australia Pacific LNG Project on behalf of ConocoPhillips during approvals to construction.

Elena is currently managing all engagement and external affairs for the Project. Elena's demonstrated expertise is described in **Attachment 1**.

3 KEY ISSUES

3.1 OVERVIEW

This section presents the key issues and concerns of KEPCO in relation to the Peer Review Report. These key issues can be summarised as follows:

- Peer Review consultation scope and methodology;
- Geographical scope of the Peer Review;
- Lack of evidence base;
- Social baseline considerations;
- Familiarity with the EIS consultation process; and
- Errors of Fact.

3.2 KEY ISSUE 1 - PEER REVIEW CONSULTATION SCOPE AND METHODOLOGY

KEPCO has the following key concerns in relation to the scope of Stage 2 Consultation undertaken to inform the Peer Review Report:

1. Consultation methodology disclosure;
2. Allocation of time for consultation;
3. Geographical scope of consultation;
4. Stakeholder representation in consultation;
5. Open and accountable consultation;
6. Lack of engagement with KEPCO and relevant expert consultants; and
7. Consideration of impacts of elapsed time between consultation activities.

1. Consultation Methodology Disclosure

The Peer Review Report contains limited information about the Stage 2 Consultation Methodology. In particular, there is no information about:

- How many people in total participated in Stage 2 Consultation;
- Residential base of participants;
- How many participants were permanent residents of the Bylong Valley;
- How participants were selected;
- How the open house meeting was advertised to the community;
- How many people attended open-house question and answer sessions and what questions were asked;
- How many people were interviewed in one-on-one interviews and small group discussions;
- The stakeholder groups interviewed e.g. long-term or short-term residents, protagonists or supporters of the project; and
- What methodology was applied for seeking stakeholder participation.

In the absence of a detailed consultation methodology, it is difficult for the reader to understand whether the issues raised during consultation and reported in the Peer Review Report have been gathered from the input of five people or fifty people, a majority of protagonists or a balance of those opposed and those in support. It is not possible to determine whether the consultation participants were largely the few vocal opponents of the Project affiliated with the Bylong Valley Protection Alliance (BVPA) and Wollar Progress Association (WPA) or a broader cross section of residents. The validity of the conclusions drawn in the Peer Review Report would benefit from a more detailed description of the consultation methodology, particularly given that it is these conclusions that underpin the suggested limitations of the Project SIA.

Further, ongoing Project related land acquisitions have occurred since the Peer Review Report was completed and it is likely that a number of stakeholders who participated in the Peer Review consultation are no longer considered affected stakeholders for the purpose of the SIA (discussed further in **Section 2.1**).

2. Allocation of Time for Consultation

The consultation process to inform the Peer Review Report was conducted across two days within April 2016. It is unclear from the Peer Review Report whether these two days include consultation with the Wollar stakeholders in relation to the Wilpinjong Extension Project (WEP). KEPCO understands Elton Consulting undertook the Peer Review for the WEP SIA concurrently with that of the Project SIA. The findings and key recommendations of the Peer Review Report appear to rely almost entirely on the findings of the Peer Review consultation process. Given the significance of the Project, the allocation of two partial days to stakeholder engagement to confirm the findings of the Project SIA is considered deficient.

Further, if indeed it is the case that consultation over two very materially different projects has occurred concurrently, it is highly likely that the comments from stakeholders may well be confused, thus explaining some of the surprising sentiments attributed to what is a green field project as opposed to an existing brown field project.

The Peer Review Report does not acknowledge the potential changes that may have occurred in community perceptions towards the Project across the 18 months that has elapsed between the conduct of SIA consultation and the conduct of the Peer Review consultation. During this 18 months, the EIS has been publically exhibited and received a number of stakeholder comments, KEPCO has engaged in further project related land acquisition, the Wilpinjong Extension Project EIS has been exhibited and a number of long term landholders within the Bylong Valley have moved to other locations within the region. It is also noted that the Response to Submissions (RTS) report was submitted in March 2016, over a month prior to the Peer Review consultation process being undertaken.

3. Geographical Scope of Consultation

As previously noted, only a cursory description of the peer review scope of work is provided in Section 1 of the Peer Review Report. Based on this limited information, it appears that the Peer Review Report has been informed through consultation conducted principally with representatives from the Bylong Valley.

With the exception of consultation with the Mid Western Regional Council (MWRC), there appears to have been no consultation with the communities of Kandos, Rylstone or Mudgee. This is considered to be a significant omission, given the Project's status as a SSD and highlights the inherent bias towards the Bylong Valley in the Peer Review Report.

Prior to the commencement of consultation to inform Stage 2 of the SIA peer review process, Hansen Bailey requested that DPE seek the peer reviewer to conduct interviews with a broader cross section of representatives from the local and wider community rather than solely the Bylong Valley. The primary consequence of a lack of broader consultation is that the Peer Review Report fails to consider the impacts and benefits of the Project for the regional and State levels. Further, it has resulted in the production of a report that deems the entire Project SIA deficient on the basis of the potential impact that the Project may have on what is clearly a small proportion of the 'Project's zone of influence'.

4. Stakeholder Representation in Consultation

Based on the information provided in Section 1 of the Peer Review Report, it appears that the peer review findings have been informed through consultation conducted principally with representatives of the Bylong Valley Protection Alliance (BVPA) and Wollar Progress Association (WPA) (both groups are opposed to the Project). The BVPA includes representation from a small number of Bylong Valley residents whom are valuable members of the local community. The BVPA represents one viewpoint of the Bylong Valley community. The WPA does not represent the Bylong Valley, rather neighbouring Wollar.

With the exception of consultation with the Mid Western Regional Council (MWRC), there appears to have been no consultation with residents, business owners and operators, service providers and community organisations in the neighbouring communities of Kandos, Rylstone or Mudgee. Neither has there been consultation with landholders in the broader Bylong Valley. This is a significant omission given the Project's status as a SSD and also the Project's zone of influence for social impacts.

Any industry recognised Peer Review of an SIA report would include consultation with a wider representative cross section of stakeholders familiar with the particular project. The adoption of this approach for the conduct of the Peer Review consultations is likely to have resulted in a different set of conclusions than those presented in the Peer Review Report.

5. Open and Accountable Consultation

The Peer Review Report states that:

"*Consultations for the Stage 2 review were held in Mudgee and Bylong Village during a visit to the region over two days in April 2016. Consultations included a meeting with officers of MWRC, a series of organise one-on-one or small group discussions with residents of the Bylong Valley, representatives of the Bylong Valley Protection Alliance (BVPA) and the Wollar Progress Association and a larger open house question and answer session open to all interested. Arrangements for these meetings were made by DPE"* (Page 3).

KEPCO interprets the explanation of the "*open house question and answer session*" to be incorrect as the "open-house" session was not advertised publically and is understood from Project Community Liaison Officer (CLO) discussions with local landholders to be an invitation-only event. As such, it was not open to "all interested". During the time of the SIA Peer Review consultations in April 2016, the Project CLOs were approached by local landholders who were interested in attending the Peer Review consultation sessions, but who had not been invited. This information was relayed to DPE at the time.

6. Engagement with KEPCO and Consultants

No consultation was undertaken with KEPCO or the EIS consultants during the preparation of the Peer Review. Without the knowledge of the scope of work for the Peer Review Report, it is acknowledged that this may have been a requirement from DPE to ensure the independence of the Peer Review Report. However, if KEPCO had been engaged, then it is likely that the findings of the Peer Review would reflect an analysis of the full range of consultation tools adopted during the EIS and SIA consultation processes. The Peer Review Report would also have been informed through a great appreciation for the arrangements around the negotiation and implementation of Voluntary Planning Agreements (VPAs) in the context of managing 'local' Project impacts. That is, the funding associated with the Project VPA will commence on granting of development consent and KEPCO's decision to commence the Project. VPAs are negotiated with the relevant local council(s) and generally involve financial contributions from the project proponent. Spending of VPA funding contributions are generally at the discretion of the relevant council. In the case of the Project, the MWRC has advised that they will distribute the Project VPA contributions to address key areas of need identified in their Community Plan for the wider MWRC Local Government Area (LGA). As a result of the views expressed within the Peer Review Report, KEPCO will brief the MWRC in relation to the potential social impacts of the Project on Bylong Village and surrounds and will encourage the distribution of Project VPA funding to these areas.

Further, a number of 'factual errors' that appear in the Peer Review Report could have been avoided if clarification had been sought from KEPCO. It is highly unlikely that this clarification would have affected the integrity of the Peer Review Report; in contrast it may well have contributed to the production of a more robust and accurate report.

7. Consideration of impacts of elapsed time between consultation activities

More than 18 months has elapsed between the conduct of the SIA consultation and the conduct of Peer Review consultation. The Peer Review Report fails to acknowledge the potential impact of this elapsed time on community perceptions of the Project (refer **Section 2.2**).

3.3 KEY ISSUE 2 - GEOGRAPHICAL SCOPE OF PEER REVIEW

The Peer Review Report contains limited discussion of the scope of work and methodology applied. There is no information as to the geographical scope of the Peer Review ground truthing, however, it is apparent that the review has focussed almost singularly on the potential social impacts arising in a subset of the Bylong Valley (and also some comments quoted from the distant Wollar Village) as a result of the Project.

Given the very limited discussion provided in Section 1 of the Peer Review Report, it is difficult to determine whether the Peer Review scope of work was limited at the request of DPE or through poor interpretation of the Project 'zone of influence or affectation'.

As previously discussed, the validity of the Peer Review Report conclusions are significantly undermined as a result of the focus only on the Bylong Valley and the few personnel discussions occurred with during the Peer Review consultation.

The Project SIA assessed impacts of the Project at three levels, acknowledging the potential for the Project to impact communities well beyond the Bylong Valley:

- Project Area - defined as the Bylong Valley;
- Sub Regional Area - MWRC LGA; and
- Regional Area - Lithgow-Mudgee Region.

The Peer Review Report fails to acknowledge that the Project is a SSD and that the impacts and benefits of the Project accrue to a geographically significant area i.e. beyond the boundaries of the Bylong Valley. The Peer Review Report considers only the limitations of the EIS SIA in relation to the identification and assessment of impacts on the Bylong Valley and not the impacts and benefits accruing to the Sub Regional Area or the Regional Area.

3.4 KEY ISSUE 3 - LACK OF EVIDENCE BASE

The Peer Review Report is not considered a scientifically robust report as it contains no evidence base or scale context for the conclusions drawn and the recommendations made. This is further reinforced by the omission of any detailed methodology around the conduct of the Peer Review, in particular the Stage 2 consultation.

The Peer Review Report does not provide evidence based statements based on the issues raised. For the most part, this could have been achieved through engagement with KEPCO and/or EIS specialist consultants. A number of the stakeholder statements included in the Peer Review Report, and used to support the deficiencies identified in the SIA report, are perceived impacts and are not factually correct.

It appears that the majority of stakeholder consultation for the Peer Review Report may have been undertaken with local landholders (Bylong Village and surrounds) who have since negotiated property acquisition and/or compensation arrangements with KEPCO. For example, since April 2016, KEPCO has negotiated property acquisition agreements with two landholders within and nearby the Bylong Village. KEPCO now owns 78.8% of land within the Project Boundary, with only two properties (or 1.9%) remaining within the Project Boundary as private non-mine owned land. Hence whilst these concerns continue to remain valid, the weighting given to these issues by certain stakeholders within the Peer Review Report is no longer considered appropriate.

This reinforces the need for a broader scope of consultation in the conduct of the Peer Review Report. It also highlights that the Project SIA is a 'snapshot' in time and demonstrates how changing social baseline conditions can significantly influence stakeholder emotions and the intensity of their issues and concerns. This issue could have been offset however by the conduct of a broader consultation process for the Peer Review.

Whilst it is acknowledged that the Peer Review Report is not an SIA, the nature of the conclusions drawn in the Peer Review Report require at least some level of evidence based discussion. However this will not necessarily be to the depth of that presented in the Project SIA.

3.5 KEY ISSUE 4 - CHOICE OF SOCIAL BASELINE

The Peer Review Report has determined the limitations of the Project SIA based on the social conditions present during coal exploration activities, and not the baseline that existed in 2014 when the SIA commenced. Attempting to benchmark the social conditions against the exploration period and associated impacts reduces the rigor of the Peer Review methodology. The exploration activities associated with the Project were undertaken in accordance with the applicable laws at that time and should not be subject to analysis as part of the EIS process. Significant rural property agglomeration and associated population decline has also occurred in the Bylong Valley prior to the commencement of the Project (as discussed in Section 5.2.1 and Section 6.2.3 of the SIA). Bylong Upper Public School has closed for reasons other than the Project (as described in Section 11.2.1 of the SIA). KEPCO is now a major landholder in the Bylong Valley. Whilst these impacts have been acknowledged within the SIA, these impacts will not necessarily change as a consequence of the determination of the Project and therefore should not be considered for the determination decision.

Given that some property acquisitions have occurred since the Peer Review consultation was undertaken (**Section 2.1**), the findings of the Peer Review Report and subsequent conclusions made by these former landholders whilst important are now less relevant.

The purpose of the SIA is to inform a consideration of both the benefits and costs of the Project proceeding to the construction and operational phases. The social baseline for this consideration clearly must be the socio-economic status of the Project's zone of influence at the time the Project is considered by regulatory agencies for determination, and not the social baseline existing 5 or 10 years earlier.

3.6 KEY ISSUE 5 - FAMILIARITY WITH THE EIS CONSULTATION PROCESS

Within the Peer Review Report, the EIS consultation process is misinterpreted and in some cases confused with the consultation process undertaken specifically to inform the SIA.

The description of the EIS and SIA consultation methodologies included in the EIS and later in the RTS document is considered consistent with standard practice. Whilst KEPCO acknowledges the inclusion of additional information regarding the SIA methodology in the EIS may have provided clarity around the issues raised during the Peer Review consultation (i.e. reports of confusion in relation to consultation purpose, timelines etc), the inclusion of this level of detail is not considered standard practice. The absence of a broader consultation process, including consultation with KEPCO has weakened the interpretation of the Peer Review Report.

The findings of the Peer Review Report suggest that many stakeholders were uninformed of key Project components prior to the conduct of SIA consultation in August 2014, and would have reacted differently to the SIA interview questions had they been more aware of the Project. An evidence based result of the consultation findings is not included in the Peer Review Report. Prior to the conduct of SIA consultation, Bylong Valley residents were well informed and had ready access to Project information in the event that they wanted it. It is noted that some local landholders categorically refused to accept an invitation to meet or to be informed in relation to the Project.

KEPCO and the Project team have implemented a significant EIS consultation process prior to and in parallel with the conduct of SIA consultation. The extent of this consultation is evident in Section 5 of the Bylong Coal Project EIS and Appendix F - Stakeholder Engagement. Table 14 of Section 5 of the EIS describes the Project stakeholders and methods of engagement employed. This table highlights the conduct of the following engagement activities with near neighbours and the Bylong Valley community prior to the SIA consultation conducted in August 2014:

- Regular Community Newsletters (April 2011, September 2011, January 2012, May 2012, August 2012, October 2012, April 2013, August 2013, February 2014, May 2014, November 2014, April 2015 and August 2015);
- Letters and personal invitations to key near neighbours at various stages of the planning approvals process including the Gateway, Background Document and EIS development;
- Open Days held in 2011, 2012 and 2013;
- Community information sessions (December 2013, February 2014 and November 2014);
- Face to face individual Project Briefings and presentations with 18 landholders regarding the Gateway Certificate application in December 2013. As noted above, some local landholders categorically refused to accept an invitation to meet or to be informed in relation to the Project;
- Project and EIS Briefing with the owners of the Bylong General Store (February 2013, December 2013, March 2014, May 2014, August 2014, April 2015 and June 2015); and
- Various media releases highlighting EIS milestones and issues.

KEPCO initiated engagement first with the directly impacted landholders so that these landholders could review the mine plans for the first time in a private setting. At the time, most landholders appreciated this sensitivity. These landholders were then given the opportunity to organise further meetings following the initial project briefings if they wanted to. As the community information sessions for the Gateway Process were held the week following the initial landholder briefings, landholders were invited to also attend these sessions. The CLO also engaged informally with landholders following the initial project briefings, just one benefit of the CLO being based in Bylong Village. The CLO discussed different aspects of the Project with people on many occasions, and provided contact details for the Project Manager and Senior Environmental Planner at the time for further telephone discussions.

Appendix F of the EIS includes the full suite of Community Information Brochures and Facts Sheets distributed to stakeholders for the Project from 2011 to lodgement of the EIS in 2015.

The Community Newsletter distributed in February 2014 included the proposed conceptual mine plan the subject of the application. It should be noted that following the lodgement of the gateway application and preliminary environmental assessment in January 2014 there was a considerable amount of local media regarding KEPCO's intention to develop the Project. As such, should various stakeholders claim to not be aware of or wish to be part of KEPCO's consultation attempts (as noted above), they would have likely heard about it in the media.

As explained within Section 5.3.1 of the RTS, KEPCO has made a concerted effort to engage with the BVPA throughout the development of the Project documentation. This has resulted in up to 38 interactions, including face to face meetings, emails and phone calls as well as newsletter and Project updates. KEPCO met with the BVPA on 15 February 2016 to provide an update and to seek further clarification from the BVPA members on the response being prepared for the RTS. It was actioned during this meeting that a follow up meeting would be held following the lodgement of the RTS, however due to availabilities of members of the BVPA, this meeting has not eventuated. KEPCO has detailed records of the various consultations with the BVPA regarding these meetings.

Based on the above information, it is inconceivable that the Peer Review Report considers as fact, the claims that stakeholders were not aware that the mine would include an open cut element at the time the SIA consultation was conducted.

The following paragraphs refute the Peer Review Report claim that participants in SIA consultation were unaware of the purpose of the SIA consultation, Project timelines and the Project approvals process.

Additional information pertaining to the conduct of both the EIS and SIA consultation was also included in the RTS. Section 5.25.3 of the RTS provided additional information on the conduct of the SIA consultation. This information clearly states that:

- Stakeholder participation was voluntary, without coercion. As noted above, some local landholders categorically refused to accept an invitation to meet or to be informed in relation to the Project;
- Potential participants were informed of the purpose of the interviews at the time of arranging suitable meeting times;
- Participants were informed again of the purpose of the interviews at the commencement of each interview; and
- All participants were asked to confirm they were happy for the information disclosed to be used in the preparation of the SIA for the Project and in the identification and analysis of Project related impacts.

Further to the above, all participants were contacted via phone and offered a meeting in person or via telephone if they felt more comfortable. No potential participants requested phone interviews and all participants indicated that they were comfortable to attend interviews in the KEPCO field house. It should be noted that the field house was largely bare as the KEPCO site office had been relocated out of the facility.

Attendance at the field house did not require any sign-in or breath tests. There were no exploration staff milling around the office. The office itself was bare with the exception of a table, chairs and tea and coffee facilities. The CLO was in attendance at the commencement of each SIA interview to introduce the interviewers and the interview purpose.

Attachment 2 of this letter provides further detail in relation to the timing and conduct of EIS consultation. This additional information further reinforces our position that stakeholders in the Bylong Valley had access to a range of community engagement mechanisms through which to become informed of the Project and were:

- Provided with sufficient information, to understand the:
  - Purpose and scope of EIS consultation and property acquisition negotiations;
  - Project timeline including the timing of assessments and their contribution to the EIS process.
- Adequately informed of the Project prior to their participation in SIA consultation in August 2014.

This issue is discussed in significant detail in **Section 4.6**.

3.7 KEY ISSUE 6 - ERRORS OF FACT

A number of factual errors have been identified in the Peer Review Report. These errors are discussed below:

"Initial conclusions in relation to adequacy, gaps and areas for additional research highlighted: No information on community health" **(Page 1)**

This statement is incorrect. Community wellbeing and health related matters are addressed in the Project SIA on page 157. Further, potential impacts to local health services have been comprehensively addressed throughout the SIA.

"However, several key social impacts have been overlooked in the analysis, including the significant effects of historical property acquisitions on community structure and the effects of the community engagement process itself" **(Page 2)**

This statement is incorrect. This is addressed on page 182 of the SIA, and acquisition is further addressed on pages 157, 167 and 168 of the SIA.

"*Consultations for the Stage 2 review were held in Mudgee and Bylong village during a visit to the region over two days in April 2016. Consultations included a meeting with officers of MWRC, a series of organise one-on-one or small group discussions with residents of the Bylong Valley, representatives of the Bylong Valley Protection Alliance (BVPA) and the Wollar Progress Association and a larger open house question and answer session open to all interested. Arrangements for these meetings were made by DPE"* **(Page 3).**

KEPCO interprets the explanation of the "*open house question and answer session*" to be incorrect as the "open-house" session was not advertised publically and is understood from Project CLO discussions with local landholders to be an invitation-only event. As such, it was not open to "all interested".

During the time of the consultations for the Peer Review in April 2016, the Project CLOs were approached by local landholders who were interested in attending the Peer Review consultation sessions, but did not receive an invitation. This information was relayed to DPE at the time.

4 ADDITIONAL ISSUES AND CONCERNS

The following section identifies and discusses additional issues of concern. The discussion is presented by Section in the Peer Review Report.

4.1 EXECUTIVE SUMMARY

Issue 1 - Adequacy Gaps

"A need for a more fine-grained evaluation of community feedback and documentation of local stakeholder impacts (such as through an Impacts Assessment Table) to better represent qualitative information and community 'voices' and to ensure views expressed in consultations are reflected in proposed mitigation and management measures." **(Page 1)**

The SIA includes comprehensive representation of qualitative data, as well as mitigation measures. There is no SIA guideline stipulating that data needs to be presented in a table format as suggested in the Peer Review Report (Section 2.3). Community views and opinions have been considered within the mitigation and management measures identified for the SIA, namely:

- Strengthening the volunteer base of the Bylong Rural Fire Service (RFS) Brigade;
- Appointing a KEPCO Farm Manager and developing a suitable Farm Management Plan; and
- Seeking to encourage employees to reside permanently within the Bylong Valley to strengthen existing community capital.

It is noted that whilst the Peer Review Report includes a suite of recommendations for management of social impacts, there are really no new measures recommended that would be additional to what we have already committed too or what is likely to be conditioned under contemporary conditions of consent.

Despite this, Table 18 of Section 5 of the EIS documents the community stakeholder issues raised during the EIS stakeholder engagement program and where these issues have been addressed in the EIS. Table 20 of Section 5 identifies the issues, values and aspirations of the Bylong Valley community as identified during tailored SIA consultation, and identifies the relevant EIS section where these issues, values and aspirations are considered on the context of the Project.

"Lack of an evidence base drawn from documented social impacts and benefits of other mining projects, including experience of worker accommodation facilities (WAFs)" **(Page 1)**

There is no SIA guideline that stipulates that there is a requirement to document processes / outcomes of other projects. Nor is this common practice to do so in NSW SIAs.

The findings of SIA consultation did not highlight significant concerns in relation to the social impacts of the operation of a worker accommodation facility (WAF) in proximity to the Bylong Village. Stakeholders did however seek clarification as to the justification for the WAF. Subsequently there is no detailed evidence based discussion of the potential social impacts of the WAF in the SIA. Section 10.3.2 of the SIA does note that the:

"impact likely to be experienced in the Bylong Village is similar to a number of remote mining towns in Australia, particularly Queensland and Western Australia, where a large non-resident workforce moves in a relatively small existing settlement, and quickly outnumbers the existing residents (Petkova et al, 2009)"

During the EIS public exhibition process, the MWRC lodged a submission that sought further information as to the social effects of the WAF. A detailed discussion of the potential social effects of long-distance commuting practices and the use of WAFs, including references to national studies (Federal and State inquiries), was presented in Section 4.2.3 of the RTS.

"No information on community health" (Page 1)

This statement is incorrect and is addressed in **Section 3.7**.

***"However, several key social impacts have been overlooked in the analysis, including the significant effects of historical property acquisitions on community structure and the effects of the community engagement process itself"* (Page 2)**

This is an incorrect statement and is addressed in **Section 3.7**.

Issue 2 - Cross Referencing

"Discussion of these impacts is instead cross-referenced to original technical documents which makes it difficult for a reader to appreciate the relevance and significance of issues.....and reading the document a difficult process." (Page 1)

It is completely acceptable and common practice to cross-reference to other sections of the EIS. If this approach was not adopted then each EIS chapter would be many hundreds of pages long and become too difficult and laborious for even the most committed stakeholder to read.

The relevant information relating to biophysical impacts e.g. changes in air quality and noise are presented within Section 10.3 of the SIA, however they are addressed in detail in the relevant technical reports. Section 3.4.1 of the SIA lists the additional EIS technical studies considered in the identification of key areas of social impact.

Issue 3 - Consideration of Stakeholder Concerns

"…..it is clear the SIA evaluation and conclusions and the RTS convey little of the intensity and depth of concerns or sensitivity to the full extent of the cumulative changes already underway and expected to continue. Given the detail in the SIA devoted to researching and analysing some project-related factors (such as population and economic characteristics, labour force characteristics, available accommodation and social infrastructure), it is surprising that these key social issues and potentially very significant social impacts are not reflected in the report's conclusions." **(Page 2)**

Whilst it may not have been a requirement of its scope of work, the Peer Review Report does not acknowledge the significant changes that may have occurred in resident perceptions of the Project given the 18 months that has elapsed between the conduct of SIA consultation and the conduct of consultation to inform the Peer Review Report. If a wider more representative cross section of stakeholders familiar with the Project had been interviewed, it is likely that an entirely different set of conclusions may have been reached. The Peer Review consultation activities do not appear to involve a balanced representation of stakeholders. Based on discussions held with local landholders, only selected persons were invited to participate in the Peer Review consultation.

For the Project to date, KEPCO has conducted eight rounds of open consultation forums (including one round at the regional shows) with a total of 16 sessions:

- October 2011 – one session in Bylong Valley;
- December 2013 (for Gateway) – two sessions in Bylong Valley;
- February 2014 – one session each in Kandos and Mudgee;
- November 2014 (introduce WP) – one session in Bylong Valley;
- September 2015 (for the EIS) – one session each in Bylong Valley, Kandos and Mudgee;
- February and March 2016 – one session at the Rylstone Kandos show, and one session at the Mudgee show;
- April 2016 – one session each in the Bylong Valley, Kandos and Mudgee; and
- August 2016 – one session each in the Bylong Valley, Kandos and Mudgee.

Persons genuinely interested in the Project have repeatedly attended these forums to be kept informed of its progress. It is noted that some local landholders categorically refused to accept an invitation to meet or to be informed in relation to the Project. Consultation with some of these individuals would have been of benefit to informing the Peer Review Report. Many of these individuals live locally (Bylong Valley) and have a genuine interest in benefiting from the Project. As noted above, some local landholders categorically refused to accept an invitation to meet or to be informed in relation to the Project.

In November 2013, KEPCO distributed letters to all private landholders which were located within the two Authorisations to notify them of the intention to lodge the Gateway Certificate application and to arrange a face to face meeting to discuss the components of the Project and the planning approvals process. KEPCO conducted face-to-face individual Project Briefings and presentations with 18 of these private landholders (at the time) within the Authorisation areas regarding the Gateway Certificate application.

It is notable that the Project Boundary defined and considered in the Gateway Application and Background Document was the entire Authorisation Boundaries. That is, A287 and A342 – approximately 10,300 ha. This area included Bylong Village (including the Bylong General Store) and property owners to the south and south east of what is now the Project Boundary, approximately 6,958 ha. Stakeholder participation in the private landholder meetings at the time included:

- All landholders within the Bylong Village (N=4) – note that two of these landholders have since reached agreements with KEPCO for acquisition;
- All landholders residing within the current EIS Project Boundary (N=6) – note that four of these landholders have since been acquired by KEPCO;
- All landholders adjoining the EIS Project Boundary (N=14) – note that two of these landholders have since reached agreements with KEPCO for acquisition. KEPCO is in discussions with another four of these in relation to compensation and/or land acquisition;
- All landholders whose property accessibility is likely to be affected by proposed changes in road networks (N=6) – KEPCO has reached land acquisition agreements with one of these landholders and option agreements with another landholder. KEPCO is in ongoing discussions with the remaining four landholders regarding compensation and/or land acquisition.

A number of the issues identified during Peer Review consultation will not be affected by the determination of the Project e.g. reopening of the Bylong Upper Public School. This is due to more recent (post April 2016) Project related property acquisition activities and the movement of current residents out of the Bylong Valley (refer **Section 2.1**).

Issue 4 - Understanding and consideration of impacts and their significance

"In summary, the reader is left with an overall impression that the SIA shows a poor understanding of the processes and significance of cumulative change, the social significance of bio-physical impacts (dust, noise, visual, traffic, water and combinations of these effects) on the lives of residents, the effects of a proposal and its associated social, environmental and land acquisition processes on stress and change within an existing population, and the potential for future community revitalisation through attraction of mining employees to the area." **(Page 2)**

This statement does not reflect the size and geographical distribution of the population residing in the Bylong Valley, or the size of the potential affected population in the context of the Project's zone of influence.

The Bylong Valley is a dispersed community. Whilst Bylong Village is the 'service' centre of the Bylong Valley, at the time the SIA was drafted only seven persons resided in Bylong Village and an estimated 100 persons resided throughout the entire Bylong Valley, an area of approximately 57,100 ha. The SIA seeks to balance consideration of stakeholder issues in the Bylong Valley with the Project's impacts in nearby communities of Mudgee, Rylstone and Kandos.

Project related biophysical issues have the potential to affect a very small number of people within the Project's zone of influence. Three properties were predicted within the EIS to be significantly affected by noise (Receiver 68-71, Receiver 63 and Receiver 60). KEPCO has purchased Receiver 68-71 and has a land acquisition agreement with Receiver 63. Receiver 60 is still privately owned.

Section 10.3.1 of the SIA:

- Includes a detailed discussion of the concerns of Bylong Valley residents in relation to changes in character and rural amenity;
- Includes a discussion of the impact of blasting and vibration on rural amenity, the impact of noise on residences and identifies both the number of residents impacted and the proposed management measures;
- Includes a discussion of the potential Project impacts on the identity of the Bylong Valley community and the impact on residents' connection to the land, reflecting the presence of long term residents in the Bylong Valley; and
- Acknowledges the difficulties likely to be experienced by the Bylong Valley community in accommodating the differing interests of the project related workforce and their potential lack of connection to the land.

These issues are inherently linked to the values, aspirations and issues identified by participants in SIA consultation and documented in Section 5.2 of the SIA.

Further the analysis of stakeholder issues and concerns during SIA consultation highlighted linkages between rural population decline, national and historical trends in population decline, project related property acquisition and social capital and community cohesion in the Bylong Valley. These issues and their interactions are discussed at length in the SIA (Section 10) and again in the RTS (Section 4.2.7 Cumulative Impacts).

Potential cumulative impacts are discussed at length in Section 4.2.7 of the RTS. The cumulative impact assessment has drawn on the process described in Franks et al (2010) and Vanclay et al (2015). Both documents are cited in Section 4.2.7 of the RTS.

4.2 CHAPTER 1 - INTRODUCTION

Issue 1 - Bylong Valley Context

Despite the Peer Review Report's focus on Bylong, there is no clarity as to the geographical area considered to be the Bylong Valley, there is no consideration of the context of the community, the proximity of residents to the Project area, the ownership of land within the Bylong Valley and the stakeholder groups within the Bylong Valley. All of these factors are considered by KEPCO to be adequately addressed within the Project SIA and/or other components of the EIS.

More specifically, the findings of the Peer Review Report do not reflect the size (spatial and population) of Bylong Village and the geographic dispersion of population across the Bylong Valley. KEPCO considers that this is a direct result of a combination of a single focus on the Bylong Valley, and the absence of any consultation with stakeholders located outside of the Bylong Valley but within the Project's zone of influence.

Bylong consists primarily of Bylong Village and Upper Bylong. Bylong Village has a residential population of seven persons, a general store, community hall, church and sporting fields. The remaining extent of Bylong Valley has an estimated population of approximately 100 persons and consists entirely of rural landholdings. There are a small number of residential receivers located predominantly on agricultural properties surrounding the Project Boundary (**Section 2.1**). With the exception of two private landholdings, all freehold land within the Project Boundary is owned by KEPCO. Two out of three landholders within the predicted zone of affectation (ZOA) have either been acquired by KEPCO or have recently entered property acquisition agreements with KEPCO. KEPCO is also in discussions regarding compensation and/or land acquisition with landholders (N=6) adjoining the south and south east of the Project Boundary as a result of road access constraints created for these landholders by the Project. To date, KEPCO has reached agreements with Receiver IDs 165, 168, 348 and 350 and Receiver 146. The size of the directly affected population, the proximity of the nearest sensitive receptor and the status of Project related land acquisition negotiations are not taken into consideration in the conduct of the Peer Review Report.

Aside from private landholders, KEPCO employees (including farm managers, farm hands, site supervisors, CLOs, etc) and tenants on KEPCO land reside in the Bylong Valley. It would appear that the Peer Review consultation process did not involve discussions with any of these stakeholders whose livelihoods depend on the Project and current Agricultural activities.

Issue 2 - Scope of Peer Review Consultation

This issue has been addressed in **Section 3.2**.

Issue 3 - Report Language

***"This makes reading of the document difficult and disappointing,"* (Page 20)**

The language used in the Peer Review Report is not consistent with the intent of a Peer Review. The language used is emotive with terms such as '*disappointing*' frequently adopted to describe the author's reflection on aspects of the EIS SIA report.

4.3 CHAPTER 2 - GUIDELINE DOCUMENTS

Issue 1 - Relevance of Guideline Documents

"Leading practice guides used as a basis for this peer review include:

- ***International Association for Impact Assessment (IAIA) April 2015. Social Impact Assessment: Guidance for assessing and managing the social impacts of projects, prepared by F Vanclay (principal author), AM Esteves, I Aucamp and DM Franks http://www.iaia.org/uploads/pdf/SIA_Guidance_Document_IAIA.pdf***
- ***Vanclay, F. 2003 International Principles for Social Impact Assessment. Impact Assessment & Project Appraisal, 21 (1), 5-11. http://dx.doi.org/10.3152/147154603781766491***
- ***Franks, D. 2012. Social impact assessment of resource projects. International Mining for Development Centre, Mining for Development: Guide to Australian Practice***

- ***Queensland Government July 2012. Social impact assessment guideline."* (Page 5)**

The IAIA document dated April 2015 was released after the SIA had been completed for public exhibition. For this reason, it is not considered appropriate to adopt the principles of this IAIA document in determining the shortcomings of the SIA.

Further, it is noted that the latest version of the Queensland Government SIA guideline is dated July 2013 and not 2012 as stated in the Peer Review Report.

4.4 CHAPTER 3 - SIA METHODOLOGY AND BEST PRACTICE

The Peer Review Report has identified nine key issues relating to a best practice approach which are considered to not be met in the SIA document, including:

- Treatment of qualitative data;
- Distinguishing who is impacted and how;
- Need for an evidence base;
- Cumulative impacts not adequately articulated or fully understood;
- Consideration of health impacts;
- Consideration of alternatives;
- Social dimensions of bio-physical impacts; and
- Report structure.

A response is provided below to the analysis of each relevant issue identified in Chapter 3 of the Peer Review Report.

4.4.1 Issue 1 - Treatment of qualitative data

"Initial reading of the report left the impression that the SIA conclusions focussed on the specifics of the mining operation and its benefits for the region. It was difficult to gain an appreciation from the Evaluations of Impacts sections of how the project would actually affect the lives of residents living in the Bylong Valley." (Page 8)

"Initial impressions from the Stage 1 and Stage 2 reviews of the SIA and RTS documents that the voices of community members were missing or glossed over in conclusions about the significance of social impacts, were confirmed in meetings with residents of the Bylong Valley."(Page 8)

"The concern in relation to SIA adequacy is that the relevance of this information and its importance to individuals in the Bylong community does not appear to be carried through the document or reflected in its conclusions or mitigation strategies. When referring to Project Related Issues and Opportunities (Section 5.2.2), the tone becomes more distanced and dispassionate, with an emphasis on 'perceptions'. Community values and key social issues from Section 5 are discussed further when presented as baseline data in Section 10.

".....The information and analysis tends to confuse or conflate local and regional level benefits and impacts, and the tone and level of analyses given in particular to strongly held local 'perceptions' of social impacts,.....downplays the depth of direct experience and concerns summarised in Section 5." **(Page 9)**

The range of qualitative and quantitative data presented and discussed within the SIA is consistent with other SIA's prepared by specialist consultants for resource projects in NSW and QLD. The issues and concerns of the Bylong Valley community are presented in balance with the issues and concerns of the wider locality e.g. stakeholders in Gulgong, Rylstone, Kandos and Mudgee. This approach reflects the size of the immediately affected population and the status of the Project as an SSD.

The presentation of community issues and concerns in the SIA references stakeholders' issue and concerns as *perceptions* deliberately. This is because the issues and concerns are considered as community "*perceptions*". Community interview statements about potential issues (i.e. magnitude of dust emissions) are only perceived and are not based on fact or modelling outcomes. The impact assessment process within the SIA (particularly the sections relevant to biophysical impacts) are designed to present the facts based on Project-specific modelling, thus enabling the stakeholder to make an informed decision about the significance of the potential impact.

Information about change to date covers many of the social impacts raised (eg. p 154; p. 164), but the structure, variety of topics, and extent of new quantitative data (about accessibility, community safety, volunteering and police procedures) detract from a coherent narrative that respects the strength of community values still attached to life in the Bylong Valley." **(Page 9)**

It is standard practice in resource sector SIAs to present quantitative and qualitative information relating to a range of topics that assist the reader in understanding the characteristics of the Project's zone of influence. The Peer Review Report has identified the structure of the SIA as reducing the coherency of the report. The SIA report structure is designed to enable discrete sections pertaining to a single overarching issue e.g. Housing, to be extracted for consideration. Report structure is discussed further in **Section 4.4.7**.

"On closer analysis of the report's content, style and conclusions – informed directly by Stage 2 Peer Review discussions with Council and local residents who had been consulted during preparation of the EIS and the SIA, the evaluation and conclusions are considered to be disproportionately skewed towards regional project benefits at the expense of local level community impacts." **(Page 9)**

SIA consultation identified population decline in the Bylong Valley and the subsequent impacts of the Project on rural population as one of the most significant issues of concern for residents of the Bylong Valley. This issue (including a discussion of the significance of population decline for the Bylong community) is raised and discussed as an important issue in a number of sections of the SIA including the Executive Summary, Section 5 Community Issues, Values and Aspirations, Section 6 Population and Demographics, Section 10 Community Liveability.

Section 12 of the SIA identifies the key tools to manage project impacts and Table 83 presents specific actions to address amongst other issues, the impact of population decline in the Bylong Valley.

Information obtained directly from community members allowed a considerably more detailed and nuanced understanding of the past, present and expected future social benefits and impacts of the Bylong Coal Project for the local community and wider region than can be gained from reading the SIA." **(Page 9)**

The findings of the Peer Review consultation have been used to determine the extent to which local (Bylong Valley) issues have been considered in the SIA. Given the Peer Review consultation limitations identified in **Section 3.2**, it is unlikely that a balanced set of views informed the Peer Review Report to provide a more '*detailed and nuanced understanding of .....future social benefits and impacts..*"

"By Chapters 12 (Management, Monitoring and Reporting) and 13 (Conclusions) of the SIA, there is no sense of a community 'voice' and little focus on measures to mitigate the specific and very real local level social impacts raised by the remaining Bylong Valley community in the consultations." **(Page 9)**

This is incorrect. Table 77 of the SIA specifically identifies the key management measures proposed to address community liveability impacts within the Bylong Valley. This includes consideration of the potential changes in the identity, character and amenity of Bylong Valley. Specific management measures for Bylong Village are not identified. This is because KEPCO has agreed a VPA with the MWRC. The proposed financial contribution provided by KEPCO to the MWRC through the VPA is the principle mechanism for responding to specific Project related social impacts. The spending of the VPA funds is at the discretion of the MWRC. The MWRC has already indicated to KEPCO that they will use funds received through the VPA to address key regional issues identified in the Community Plan. KEPCO will brief the MWRC in relation to the potential social impacts of the Project on Bylong village and surrounds for inclusion into their Community Plan and will encourage the distribution of Project VPA funding to these areas.

The VPA is identified as the key tool for managing potential social impacts in the Bylong Valley and the Interim Community Investment Fund is identified as a tool for facilitating local investment prior to the commencement of the VPA. The SIA commits to the conduct of a Community Needs Assessment (CNA) to refine potential community investment options in the Bylong Valley and broader Project zone of influence.

The CNA is an internal Project planning document and has been prepared since the release of the SIA and the submission of the RTS document. However, the preparation of a CNA is identified as a management commitment (Commitment 48) in Table 83, Section 12.3 and discussed in Section 12.2.1 of the SIA, hence its existence and purpose should have been considered at the time of drafting the Peer Review Report. To date KEPCO has committed funds to the value of $200, 000.

The CNA aligns with relevant International Finance Corporation (IFC) guidelines for community investment and involved consultation with a number of local services in the area of health, community wellbeing and education and childcare. This consultation included engagement with the Bylong Rural Fire Service. Amongst other things, the CNA seeks to respond to the desire expressed by Bylong Valley residents to attract more long-term residents to the Bylong Valley and to restore social capital in the community. KEPCO is currently considering the future investment options identified through the CNA.

In 2015, KEPCO established a Community Investment Fund for the Project. The findings of the CNA will inform the ongoing investment strategy for the Fund. The following community investment initiatives are proposed for the Bylong Valley in 2016:

- Ongoing annual sponsorship of local events - Contribution to the Bylong Hall Committee for funding the Bylong Christmas BBQ in 2016;
- Ongoing contribution to Bylong Community - Contribution to the Bylong Hall Committee for funding upgrades to the Bylong Community Hall to support future community events;
- Financial contribution towards the maintenance of the Bylong Anglican Church; and
- Restoration works to the historic 'Homestation'(c 1848) building, also known as Lee Homestead.

The final community investment strategy will be reflected in the Social Impact Management Plan, the preparation of which is a commitment in the SIA.

The SIA Conclusion (Section 13) is brief. It is not the intent of Section 13 to focus solely on the potential impacts on the Bylong Valley. It is fair and reasonable to present both impacts and benefits of the Project to the broader region in Section 13 and it is notable that this section does include a dedicated discussion on the potential negative socio-economic impacts of the Project on the Bylong Valley.

"Similarly, assertions that population numbers will increase is offered as evidence of continuing 'social capital' (p. 162-163, 173) and claims that new and existing residents will integrate through community engagement activities and community events (p. 175) show a lack of appreciation for existing divides and are aspirations with little basis in fact." **(Page 8)**

This SIA acknowledges existing social divides in the Bylong Valley. This issue is discussed in Sections 5.2 and 10.2.3 of the SIA. With regards to the integration of new residents into the community, KEPCO already has staff residing within the Bylong Valley and these people are active participants in the community. Existing employees volunteer at the Bylong Rural Fire Service and are representatives on the Bylong Valley Hall Committee. KEPCO farm managers and farm hands are permanent residents of the Bylong Valley and participate in the community. Section 10 of the SIA also identifies these facts.

4.4.2 Issue 2 - Disaggregation of social impacts and benefits by stakeholder group

"Best practice SIA guidelines emphasise the need to clearly distinguish in conclusions the incidence of benefits and impacts. This involves a disaggregation by stakeholder groups showing who is expected to benefit and who is expected to be adversely affected by the proposal" (Page 10)

"A notable omission from the discussion is a detailed consideration of the effects on the sense of community and community cohesion from the point of view of residents rather than people associated with the mine. The disaggregation of impacts by stakeholder group is significant omission from the report's conclusions". (Page 10)

Hansen Bailey has prepared EISs with component SIAs for a number of SSD (resource sector projects) in NSW for more than 10 years. In the past five years, project experience has included the Watermark Coal Project, Maules Creek Coal Project, Boggabri Continuation of Mining Project and the Drayton South Coal Project. The methodology adopted for the Bylong Coal Project SIA is consistent with that adopted for these earlier projects. All of these earlier projects have had different and unique local community issues. At no time during the assessment process did the SIA methodology adopted for these projects come under regulatory or other stakeholder criticism. Further none of these projects involved the clear disaggregation of impacts down to specific stakeholder level such as residents living in close proximity to the development, residents who move to this area in the future, residents of Mudgee, Rylstone or Kandos. The Queensland Department of State Development SIA Guidelines, against which the assessment has largely been undertaken, does not require the disaggregation of impacts down to stakeholder level. Further it is not common practice in the resource sector to do this.

Despite this the SIA does consider the distribution of potential impacts among different groups across the Project's zone of influence. Impacts are disaggregated for different communities in the MWRC LGA e.g. Mudgee and Bylong Valley and for some stakeholder groups e.g. lower socio-economic groups, particularly in relation to housing (which was one of the main issues raised during consultation with service providers for the SIA.). Section 5.2 and Section 6.2.3 of the SIA discuss the trends in population decline in the Bylong Valley, key drivers and resident perceptions of the impacts of population decline on sense of community and community cohesion. Section 6.2.3 of the SIA and Section 4.2.7 of the RTS discuss the potential cumulative impacts of the Project on social cohesion and sense of community.

The Peer Review Report cites Vanclay 2015 as the basis for determining the need for a prioritised list of social impacts. It has already been noted that this document was not released at the time that the SIA was finalised for public exhibition.

4.4.3 Issue 3 - Cumulative Impacts

"In particular, the SIA does not appear to show an appreciation of the cumulative social impacts on residents of the Bylong Valley, including changes associated with:

- ***Multiple and successive changes to community life that began several years prior to the EIS……***

- ***A deep understanding and first-hand knowledge of mining impacts as experienced in neighbouring communities (such as Wollar) and by friends, due to the close relationships, shared history, values, experiences and social integration between these villages***
- ***Potential for the social impacts actually being experienced in Wollar (and future impacts associated with a proposal for a further extension of Wilpinjong mine) to extend into and through the Bylong Valley***
- ***Multiple bio-physical impacts being experienced by residents at some properties, which individually may meet technical guidelines but together cannot be measured or controlled……" (Page 11)***

The SIA and the RTS both include a discussion of cumulative impacts. It is not common practice to include a standalone cumulative impacts chapter in the SIA. There are few current guidelines that adequately discuss the identification and assessment of cumulative impacts. It is noted that Vanclay et al (2015) contains additional information on addressing cumulative impacts, however as noted previously this document was not available at the time the SIA was conducted.

Chapter 5 and Chapter 6 of the SIA acknowledge the cumulative effects of multiple exploration projects occurring in the Bylong Valley. These chapters also include a discussion in relation to the cumulative effects of coal exploration and rural population decline on community capital and cohesion in the Bylong Valley.

The EIS for the Wilpinjong Extension Project (WEP) was not publically available at the time the SIA was completed. Despite this the anticipated construction and operations workforce associated with the WEP were included in a consideration of population and demographic impacts.

A key finding of the SIA consultation was the occurrence of a slow, historical and ultimately significant decline in population of the Bylong Valley prior to the commencement of Project exploration activities. SIA consultation indicated that population decline was the cumulative effect of multiple activities including consolidation of landholdings and associated reduction in farm personnel, challenging economic conditions, the completion of the construction of the Sandy Hollow to Gulgong Railway Line and a general trend of rural population decline across Australia.

From the findings of SIA consultation, it is clear that community cohesion and sense of community has suffered greatly from this historical population decline. These issues are discussed in Chapter 5 and throughout Chapter 10 of the SIA.

Potential cumulative social impacts for the town of Wollar are largely associated with potential changes in amenity and safety from the increase in traffic along Wollar Road and the movement of oversized loads. These issues (and others) were raised in the Wollar Progress Association submission in response to the RTS and have been addressed in the Supplementary RTS. The Supplementary RTS was prepared in August 2016 after the completion of the Peer Review consultation.

The Noise and Blasting Impact Assessment from the EIS and Bylong Noise Report Addendum from the RTS provided the relevant noise assessment for Project-related traffic travelling on Wollar Road. The assessment has confirmed that the increase in noise levels and cumulative noise levels resulting from the Project-related traffic are predicted to remain below the criteria prescribed within the Road Noise Policy.

In relation to safety, the Supplementary RTS confirmed that oversized or overmass vehicles for the Project will not use the Ulan-Wollar Road which has various unsealed sections and also travels through the more populated areas of Wollar Village. In light of various submissions received on the RTS, KEPCO commissioned a Road Safety Audit of the current condition of the regional road network, namely on Wollar Road and Bylong Valley Way. KEPCO is in discussions with the relevant roads authorities in relation to the relevant road maintenance contributions for the Project. The RTS also considered the decline in mining in the surrounding towns and the potential impacts associated with workers travelling to Bylong from locations such as Denman.

4.4.4 Issue 4 - Consideration of health impacts

The SIA provides no information on population health in its analysis of community characteristics or as an issue with potential significance to residents." (Page 11)

Within the Peer Review Report two types of health considerations are mixed into a single discussion on the SIA limitations. The first health issue is that of community health, which in the absence of additional clarification is presumed to refer to the health of the Bylong Valley community. The second issue relates to the mental health of workers accommodated in worker accommodation facilities.

Individual and community health was not raised as an issue during SIA consultation conducted with local residents of the Bylong Valley. Despite this, community wellbeing and health related matters are discussed in the SIA on page 157. Consistent with NSW environmental; assessment guidelines, established air and noise criteria have been used as indicators of amenity impacts. The findings of the noise and air quality assessments are referenced in Sections 10.3.1 of the SIA and reported in detail in the relevant technical Appendices of the EIS. Potential impacts to local health services have been comprehensively addressed throughout the SIA.

Section 4.2.3 of the RTS specifically addresses the potential social impacts of the WAF, in particular workforce mental health.

4.4.5 Issue 5 - Consideration of Alternatives

The Peer Review Report claims that the SIA document does not provide an appropriate consideration of alternatives.

"The SIA proposes and analyses several alternatives relating to worker accommodation, before determining the preferred proposal of the WAF for construction workers during the open cut mine phase of the project (Project Years 1-6). While these alternatives have clear cost, logistic and social implications for the KEPCO, the Bylong Valley and the wider area, the expected social impacts of the proposal would suggest a range of alternative scenarios should be examined."(Page 12)

Project alternatives are assessed in the EIS document (Section 3.17). It is standard practice in NSW to incorporate a 'sensitivity analysis' of workforce labour recruitment options (local hires and non-local hires) into the assessment of social impacts SIA for resource projects. The SIA for the project took a slightly different approach to the analysis of alternatives, reflecting social conditions in the Local Area at the time i.e. constrained labour market and concern in relation to housing affordability and availability.

The SIA assessed a single hiring scenario which was considered worst case and reflected a constrained labour market. This scenario was discussed in some depth with the MWRC.

The SIA also assessed the potential housing and accommodation impacts of the Project under three workforce accommodation scenarios, in which varying proportions of the workforce are accommodated in the WAF and in the Local Area. A fourth scenario was also assessed in the RTS.

A further sensitivity assessment was also included in the assessment of the No-WAF accommodation scenario in the RTS. Each sensitivity assessment uses a different average occupancy rate across accommodation types.

4.4.6 Issue 6 - Addressing Bio-Physical Impacts

"Some expected impacts (noise, visual change, dust and traffic) received little attention and the report does not provide a clear picture of the future community." (Page 8)

Biophysical impacts are considered to be adequately addressed in the relevant technical sections of the EIS for the Project. The inclusion of biophysical impacts in the technical sections of the EIS reduces the significant duplication of information throughout the EIS document and improves the overall readability of the EIS and SIA.

4.4.7 Issue 7 - Report Structure

"It is considered that this SIA could have been structured in a way that better integrates baseline information and focuses more clearly on mitigation of social impacts. Rather than a chapter on each potential social issue, this would see a consolidated chapter on social issues, impacts and benefits, followed by a chapter on mitigation and monitoring of identified impacts. The current structure, the quantity of information and extent of cross-referencing, requires the reader to jump between issues and impacts through the entire document (i.e. one issue per chapter)." (Page 13).

The SIA report structure is designed to enable discrete sections pertaining to a single overarching issue e.g. Housing to be extracted for consideration. Over the past few years, SIA reports have become voluminous documents by virtue of the scope of information that is frequently requested by regulators and communities for inclusion in these reports, specifically the depth of discussion regarding bio-physical issues alluded to in the Peer Review Report. Alternative report structures have been adopted to improve the readability of the document. Cross-referencing is necessary to avoid duplication of information. The addition of summary sections, the inclusion of additional figures and additional discussion is unlikely to improve the overall readability of the document. Stakeholders such as MWRC were particularly interested in the project housing and accommodation strategy and in particular the potential impacts on housing in the MWRC LGA. The structure of the report enabled stakeholders to extract a single relatively standalone section, as relevant to their review.

It is hoped that the proposed NSW SIA Guideline will provide further clarity around the scope and the reporting structure for future SIAs.

4.5 CHAPTER 4 - SIA ASSUMPTIONS

4.5.1 Issue 1 - Choice of ABS Data

"ABS labour force data is also used to analyse and support predictions about future workforce characteristics. This data provides a solid evidence base to support these assumptions, although feedback from some community members indicates that inclusion of parts of Muswellbrook and Upper Hunter Shires in the analysis would have provided a more balanced view of regional connections and study implications." (Page 14)

The SIA considers policy and governance issues at a state and regional level. Section 2.3.1 of the SIA discusses the Upper Hunter Strategic Regional Land Use Plan which includes portions of both the Upper Hunter Shire (UHS) and Muswellbrook Shire Council (MSC) LGAs.

Project impacts are for the most part confined to the MWRC LGA. The SIA does identify and assess potential Project impacts on the Regional Area. This is defined as the Lithgow-Mudgee Region (Table 5, Section 3.2 of the SIA) and includes portions of the Singleton, Upper Hunter, Wellington and Warrumbungle LGAs. The inclusion of additional ABS data into the SIA would further increase the length of document and content potentially reducing readability. The inclusion of additional ABS data is unlikely to add value to the SIA.

The assessment of the No WAF accommodation scenario in the RTS included consideration of potential accommodation options outside of the MWRC and within the Upper Hunter and MSC, LGAs.

4.5.2 Issue 2 - Assumptions around future household size and structure

"It is difficult to verify whether the report's assumptions about future household size and structure are appropriate without a better understanding of the structure of mining workforces on other projects. Use of findings of other mine projects and wider literature on the social impacts of mining communities would provide a more solid, evidence based framework for the report's assumptions. This will have implications for the discussion of community infrastructure needs and Council's role in meeting the needs of specific population groups." (Page 14)

The SIA includes the data that is both relevant and necessary. It is not necessary to complete wider literature reviews as the SIA is not an academic report. These assumptions are regularly included in NSW SIAs for resource projects without the requested evidence based framework. Stakeholders already object to the length of SIA reports.

The analysis of future housing demand (including household size) was informed through consultation with the MWRC and an analysis of the MWRCs Mudgee-Gulgong Urban Release Strategy (URS) (2014). KEPCO and Project technical representatives met with MWRC representatives on a number of occasions over the course of the preparation of the SIA in order to present and discuss assumptions for the consideration of workforce accommodation arrangements.

The Mudgee-Gulgong URS presents the most recent analysis of current and future anticipated housing demand and supply in Mudgee and Gulgong and was finalised during the preparation of the SIA. The projected construction and operations workforce associated with the Project and future expansions to other mining operations within the region were considered in the preparation of the Mudgee-Gulgong URS. KEPCO had a number of discussions with the MWRC in relation to the assumptions underpinning the Mudgee-Gulgong URS. The Mudgee-Gulgong URS analysis included an assumption around the number of Local Hires (LHs) and Non-Local Hires (NLHs). These assumptions are generally consistent with the assumptions considered in the SIA.

Further, Mudgee is an established rural community with an existing resident mining population. The household size and structure assumptions presented in the SIA are based on the current structures present within Mudgee.

To this end, it is unlikely that the household size and structure assumptions included in the SIA will necessitate any increased consideration of community infrastructure needs above what has already been identified in the Mudgee-Gulgong URS.

At no time during engagement with the MWRC did representatives question the housing structure assumptions used in the SIA. MWRC remains firm in its stance that a WAF is not required for the Project based on its understanding of the availability of accommodation.

It is understood that the Mudgee-Gulgong URS will inform an analysis of community infrastructure needs for the MWRC LGA, noting that in 2012 the MWRC completed the Mid-Western Regional Local Services Assessment (Manidis Roberts 20120). These documents are referenced in Section 2.3.1 of the SIA.

4.5.3 Issue 3 - Need for a Worker Accommodation Facility

"Discussions with MWRC officers for this peer review indicated differences of opinions regarding the case for the WAF (or Temporary Worker Accommodation - TWA). Council is not convinced of the need for a WAF, even in the short term during initial construction. Contrary to the assumptions put forward in the SIA and the No WAF option, Council has expressed the view that mine employees should be encouraged in live in nearby towns, such as Mudgee, to ensure the region can directly gain the economic benefits through daily expenditure and to facilitate integration of employee households with existing town communities." (Page 14)

KEPCO has engaged extensively with the MWRC in relation to the housing and accommodation strategy for the Project workforce over the past three years. Meeting dates are documented in Table 14 of the EIS (Main Volume). The SIA adopted a series of assumptions which were developed in close consultation with MWRC in relation to housing in order to enable a quantitative assessment of housing and accommodation impacts. It was not until towards the completion of the SIA that representatives of the MWRC began to question the requirement for the WAF for the Project. This opposition has been based on anecdotal evidence only. MWRC has provided no hard evidence to date to support their objection to the inclusion of a WAF in the Project. Further, it is unclear if the opinion of MWRC represents the views of the communities of the MWRC LGA, as MWRC has not canvassed the issue with the public. The Project team has undertaken considerable additional work in the form of an accommodation survey in order to better understand the need (or otherwise) for a WAF.

It is unnecessary for a detailed discussion of the position of the MRWC (and Muswellbrook Shire Council) in relation to workforce accommodation options to be included in the Peer Review Report as the issues identified have already been addressed in the RTS and the Supplementary RTS. What is relevant is the extent to which the SIA has analysed the potential social impacts of the various accommodation options. All relevant workforce accommodation options have been identified and analysed using a range of sensitivity assumptions with findings presented in a combination of the SIA, the RTS and Supplementary RTS documents.

4.5.4 Issue 4 - Consideration of potential accommodation options outside of MWRC

"A separate submission from Muswellbrook Council points out the SIA and RTS overlook opportunities for mine employees to be housed in Denman, located outside the MWRC but within a one hour drive of Bylong." (Page 14)

The statement from MSCs submission as referred to within the Peer Review Report is correct; however the suggestion made in MSCs submission is incorrect. The SIA and later the RTS did include consideration of suitable workforce accommodation outside of the MWRC LGA. The submission from MSC was received almost four months after the completion of the EIS public exhibition period. KEPCO responded to the MSC submission as part of the Supplementary RTS.

In response to MSCs submission received on 15 March 2016, KEPCO prepared a letter to DP&E dated 7 July 2016. This response included consideration of the discussions held during a meeting with MSC representatives on 26 May 2016. KEPCO addressed MSC's concerns by referring specifically to the SIA assumptions, which demonstrates that Denman was assumed to accommodate a percentage of Project employees.

Table 12 of the SIA (page 38) indicates that 5% of Project NLHs will reside outside of the MWRC LGA but within the Local Area, which would include townships like Denman and Sandy Hollow. Further consideration of accommodation options outside of the MWRC LGA is documented in Section 9.3 of the SIA. In response to various stakeholder submissions, a detailed examination of accommodation options in both the MSC LGA and the Upper Hunter LGA were included in the Accommodation Study conducted for the RTS (Appendix E of the RTS). This study included the conduct of a telephone survey of the majority of accommodation providers within an approximate one hour commute of the Project (i.e. the Local Area). This survey included the towns of Denman and Sandy Hollow within the MSC LGA and Merriwa within the Upper Hunter LGA.

4.5.5 Issue 5 - Validity of key assumptions used in RTS Appendix C

Within the Peer Review Report, the issues raised by MWRC and the MSC (Peer Review Report, page 14) form the basis for analysing the suitability (or otherwise) of the assumptions used in the RTS SIA (Appendix C of the RTS). However, no evidence is included in the Peer Review Report to support or refute the claims made by the MWRC and MSC. There is also no acknowledgement that the MSC submission arrived almost 4 months after the EIS Public Exhibition period and was responded to in the Supplementary RTS and not the RTS. The Peer Review Report appears to take the issues raised in these submissions as factual statements and does not consider KEPCO's responses to these submissions.

The following discussion responds to the key concerns identified on pages 14 and 15 of the Peer Review Report relevant to the consideration of the SIA assumptions.

Evidence of other mining workforce accommodation patterns in nearby mines, where temporary accommodation facilities have been approved but not taken up

This issue appears principally to relate to the approved (but not yet constructed) WAF located at Gulgong. It is noted that there are other WAF establishments within Wilpinjong, Moolarben and Ulan. KEPCO has previously considered the use of the approved facility in Gulgong as an alternative to constructing one as part of the Project. However, at the time, the commuting distance between the Project site and Gulgong was considered too distant for this option to be a feasible alternative. Further, the Project WAF is proposed for only the duration of the construction phase. The WAF proposed in Gulgong is intended to be a permanent facility.

Mining construction workforce numbers

The MWRC asserts in its submissions that aggregate mining construction workforce numbers are likely to be lower than assumed for the Project. MWRC supports its assertion with historical experience with other mining related construction projects (e.g. at Moolarben) within the region.

Section 4.2.2 of the RTS describes the additional planning and scheduling works which have been undertaken by WorleyParsons in response to MWRCs concerns. This additional planning work resulted in a revision to the peak workforce from 800 to 665 workers which demonstrates that a considerable construction workforce will still be required for the Project.

Since the preparation of the RTS, WorleyParsons has received further feedback from the Engineering Procurement and Construction (EPC) tenders which confirms the peak construction workforce remain generally consistent with those presented within the RTS.

Additional accommodation supply in Mudgee

The analysis of construction and operation phase workforce accommodation options presented in Appendix C of the RTS includes consideration of additional accommodation options (rental, short-term, holiday lets etc) coming into the Mudgee market of over the past 5 years. The availability of rental housing was determined based on interviews with property agents and an analysis of online data and vacancy rates.

Unnecessarily rigid assumptions

The assumptions included in the assessment of the No-WAF scenario (within Appendix C of the RTS) reflected the following feedback received from tourist accommodation providers during the conduct of the accommodation survey.

- A large number of survey participants indicated that their accommodation was generally not acceptable for use by certain categories of mine employees due to a range of factors including size of establishment, availability of key services, number of toilets etc, presence of swimming pools etc;
- A number of accommodation providers indicated that they would only provide rooms, or lease properties to senior managers;
- The majority of accommodation providers within the MWRC LGA indicated severely limited accommodation availability during peak tourism periods such as Day on the Green (October), Mudgee Wine and Food Festival (September) and the Mudgee Small Farm Field Days (July). During these periods accommodation is frequently booked 12 months in advance and often with returning guests; and
- Significant fluctuation in occupancy rates across all forms of short term accommodation.

Consequently it became apparent during the conduct of the accommodation study that the full suite of tourist accommodation rooms (N=1004) within a one hour commute of the Project site would not be available for use by the workforce at any one time. Some accommodation was only suited to short-stays (one week) while other accommodation was more suited to longer stay e.g. more the 3 months.

In order to improve the accuracy of the assessment findings and apply the limitations identified during the accommodation survey, a number of assumptions around construction employee accommodation were developed. The Project Mining Engineers provided the assumptions based on current industry practice and expectations (including that of industry representative bodies and relevant unions) and on the realistic accommodation requirements for the Project.

The key assumptions related to:

- The type of accommodation required for the workforce based on employee duration of employment. These assumptions are presented in Table 12 of Appendix C of the RTS. Table 13 of Appendix C of the RTS shows that long-term accommodation is likely to experience the greatest demand during Construction Phase 1; and
- The occupancy rates across all forms of accommodation.

Given the variable occupancy rates across centres in the MWRC two sensitivity assessment scenarios were applied to the analysis of short term accommodation availability during Construction Phase 1. These scenarios are described in Table 19 of Appendix C of the RTS and in summary assume:

- Scenario 1 - High existing demand for tourist accommodation, high demand for private rental accommodation and limited availability for the Project;
- Scenario 2 - Moderate existing demand for tourist accommodation and private rental accommodation with reasonable availability for the Project;

Based on Scenario 1 there were 396 rooms of longer-term accommodation (>3 months) available for the workforce. Under Scenario 2 there were 395 rooms of longer-term accommodation available for the workforce.

Further assumptions around the type of accommodation (e.g. furnished or unfurnished) were then applied. Despite these assumptions the assessment demonstrated that the supply of longer-term tourist accommodation that was suitable for use by the majority of the construction phase workforce was insufficient to meet Project demands under both Scenario 1 and Scenario 2 across the majority of Construction Phase 1.

Omission of potential accommodation options outside MWRC LGA

A response to this concern raised by the MSC is provided in **Section 4.5.4**.

Unrealistic expectations about attracting mine employees to live in Bylong Valley properties

As a result of its land acquisitions within the Bylong Valley, KEPCO has acquired properties containing a number of residences which are located outside of the proposed disturbance limits. It has been assumed for the purpose of the SIA that 13 of these would be available for occupation by mine related employees or new residents seeking accommodation in the Bylong Valley.

As explained within Section 4.2.7 of the RTS, there are numerous examples where mining companies have leased out mine owned residences to mine workers and their families. A number of Project-related employees are already residing within houses located on KEPCO-owned properties and this occupation is proposed to continue throughout the life of the Project.

A superficial analysis of the potential social issues associated with the WAF

The RTS provides a detailed response to the concerns raised by the MWRC in relation to the social impacts associated with the inclusion of a WAF in the Project. The RTS provides additional detail to that included in the SIA.

MWRC provided supplementary comments on the RTS document in a letter dated 26 April 2016 to DP&E. MWRC's primary comment was that they do not support the use of a WAF for the Project. MWRC's primary justification for not supporting the temporary WAF is simply that the region has previously supported employees for the construction phases of other mining projects in the absence of a WAF. In its supplementary comments, the MWRC did not raise any additional concerns in relation to the analysis of social issues associated with WAF as presented within the RTS. It can therefore be assumed that the additional information provided in the RTS was satisfactory.

4.5.6 Issue 3 - Mitigation Commitments

In Chapter 4 of the Peer Review Report, it is concluded:

"there is little evidence that the many mitigation measures proposed included in the SIA are supported by locally impacted stakeholders. There are some examples of where suggestions from the community identify possible community benefits or mitigation strategies, but apart from the funding proposal, no firm commitments to community partnerships are discussed. Mitigation commitments should be fully developed in the SIA to ensure they can be included as conditions of consent."

Firstly the Peer Review Report fails to define the term 'locally'. The discussion used within the Peer Review Report is not consistent with the terminology used in the SIA, hence it is difficult to understand if this issue relates to Bylong, Kandos/Rylstone, Mudgee or the greater area. Regardless, the mitigation measures proposed in the SIA are drawn from the findings of the EIS and SIA consultation. For the most part, the recommended mitigation and management measures within the Peer Review Report do not appear to build on the management measures committed to in the SIA.

KEPCO has reached a VPA with the MWRC in relation to the Project. The VPA provides the opportunity for the development of 'local' mitigation measures in consultation with the affected community. Implementation of the VPA is the responsibility of the MWRC. The MWRC has advised that VPA funds will be used to facilitate actions described in the MWRC Community Plan. KEPCO will brief the MWRC in relation to the potential social impacts of the Project on Bylong village and surrounds for inclusion into their Community Plan and will encourage the distribution of Project VPA funding to these areas. This issue is discussed further in Section 3.2 and Section 4.4.2.

The SIA contains a commitment to prepare a SIMP prior to the commencement of the Project construction phase. DPE has, in a number of circumstances, included the requirement for a SIMP as a consent condition for resource projects. Examples include Watermark Coal Project, Maules Creek Coal Mine and the Boggabri Coal Continuation of Mining Project.

The inclusion of this consent condition acknowledges that social management measures are informed through ongoing project consultation and further project planning (including refinement) prior to the commencement of construction.

The SIMP will reflect the findings of the CNA and in particular, the findings of further consultation undertaken with service providers and community groups in the Local Area, including the Bylong Valley.

Two of the most significant Bylong Village specific community groups include the Bylong Rural Fire Service (RFS) Brigade and the Bylong Anglican Church. KEPCO has previously sponsored and will continue to support both of these community groups. One KEPCO employee who is a resident of the Bylong Valley already volunteers for the Bylong RFS. The only other public building in Bylong is the Community Hall and the adjacent sporting grounds and amenities. KEPCO has funded the annual Bylong Christmas Celebration and BBQ held at the Community Hall, the maintenance and refurbishment works at the hall (including pest control, gardens maintenance, kitchen renovations and regularly rents the Community Hall for Community Information Sessions and various other purposes). KEPCO representatives also participate on the Bylong Hall Committee.

The most significant private piece of infrastructure within the Bylong Village is the Bylong General Store. KEPCO has committed to maintaining the General Store if indeed it is ultimately purchased by KEPCO from the current owners.

A further relatively significant tangible initiative of KEPCO has been the establishment of the KEPCO Agricultural Company. This company currently employs six full time personnel, whom live locally within KEPCO owned residences. With over 2,104 head of cattle and 190 calves at foot, 191 tonnes of hay and more than 230 ha of fodder cropping, the agricultural company is currently operating the largest agricultural landholding within the Bylong Valley covering more than 7,600 ha.

4.6 CHAPTER 5 -EFFECTIVENESS OF THE COMMUNITY ENGAGEMENT PROCESS

"It is considered the community engagement process for this SIA has fallen short of professionally accepted standards for accuracy and completeness of information provided and transparency of process, to the extent that many residents were unable to contribute to an informed discussion about the project's likely impacts on their lives and daily activities."(Page 2)

The analysis of the EIS and SIA consultation process included in the Peer Review Report does not demonstrate an understanding of the approach adopted by KEPCO and its consultants to Project consultation. Within the Peer Review Report, the EIS and SIA consultation processes are considered deficient based on the findings of discussions with a select few residents of the Bylong Valley. KEPCO has invested significant time and financial resources into ensuring the EIS engagement process is, open, accountable, transparent, inclusive and meaningful. KEPCO has engaged stakeholder consultation professionals who have been living in Bylong working with the local community for more than five years.

The following sections respond to the '*critical issues*' identified in the Peer Review Report that '*appear to fall short of 'good practice community engagement'.* As previously suggested, many of these critical issues could have been clarified through engagement with KEPCO during the preparation of the Peer Review, where considered appropriate. In the absence of any detail relating to the Peer Review consultation methodology, KEPCO is concerned that the issues identified in pages 16 and 17 of the Peer Review Report represent the views of a select minority of residents in the Bylong Valley.

4.6.1 Issue 1 - SIA participant 'confusion'

"..., respondents reported confusion about:

- ***Distinction between, the different components and stages of engagement …..***
- ***The purpose of interviews held during the SIA process and uncertainty amongst community members about what was expected of them***
- ***Why invitations to consultations were offered to some stakeholders but not others***
- ***The appropriateness of some meetings being held at KEPCO premises rather than in a more neutral setting***
- ***The level of detail, quality, completeness, accuracy and relevance of information presented during consultations and negotiations and its suitability as a basis for obtaining comment on expected social impacts. Despite being directly affected, some claimed they were not informed about the open cut mine component of the proposal until December 2015 and did not understand other implications of the proposal (i.e. proximity, visual or noise impacts) until very recently.***
- ***Timing of the project, the assessments and project commencement." (Page 16)***

Distinction between different components and stages of engagement

At the commencement of each SIA interview, Hansen Bailey provided an update on the status of the planning approvals process and described the purpose of the social impact assessment process within the overarching EIS process.

Purpose of SIA consultation

The purpose of the SIA interviews was clearly explained by the Project Community Liaison Officer (CLO) in setting up each interview and then again by Hansen Bailey at the commencement of each interview. At the commencement of each interview, participants were informed that the purpose of the SIA interviews was to assist the SIA consultants to gain an in depth understanding and appreciation for:

- Life in the Bylong Valley, particularly stakeholder values (economic, social, physical natural and cultural) and future aspirations;
- The existing issues present in the Bylong Valley; and
- Emerging and future issues considering the Project and its potential changes.

Invitations for Participation

The Project CLO contacted residents within an approximate 5 km radius of the Authorisation Boundaries to participate in SIA interviews at the KEPCO field house. Participants were offered a meeting in person or via telephone if they felt more comfortable. No potential participants requested phone interviews. All participants indicated that they were comfortable to attend interviews in the KEPCO field house. The CLO, having resided within Bylong for more than two years (at that time) had an established relationship with residents of the Bylong Valley and was best placed to invite and encourage resident participation in the interviews. Residents were asked to nominate a suitable time on any of a number of given days across a five day period to attend the interviews. . .

Appropriateness of setting (KEPCO Premises)

The KEPCO field house located on Upper Bylong Road provided the venue for the meetings. This venue was chosen as it was easily accessible, heated (meetings were held in August), was accessible at all times of the day (meetings were held both in early morning and late afternoon), enabled stakeholders to also catch-up with the CLO (who was living in the Bylong Village) to discuss other Project related issues. The KEPCO field house was largely bare when the interviews were undertaken. This is because the KEPCO site office had been relocated out of the facility. Attendance at the field house did not require any sign-in or breath tests. There were no exploration staff milling around the office. The office itself was bare with the exception of a table, chairs and tea and coffee facilities. The CLO was in attendance at the commencement of each SIA interview to introduce the interviewers and the interview purpose.

Clarity of information provided

"The level of detail, quality, completeness, accuracy and relevance of information presented during consultations and negotiations and its suitability as a basis for obtaining comment on expected social impacts." (Page 16)

At no time did the SIA consultations involve negotiations.

SIA consultation was undertaken in August 2014. By this point in time, all directly affected landholders had been engaged by the CLO and or Project team in relation to the Project and more specifically had been consulted on the latest Project mine plans subject of the SSD Application (which included the open cut mine). The various consultation tools that were used to inform stakeholders in the Bylong Valley of key project components are described at length in **Attachment 2**. Given the extent of community consultation conducted to inform the EIS and the extensive media coverage that the Project experienced around the submission of the gateway certificate application and background document in January 2014, KEPCO understands that affected stakeholders of the Bylong Valley should have been aware of the inclusion of an open cut in the mine plan prior to the conduct of SIA consultation. Further, there were no EIS submissions received from directly affected stakeholders that suggested any stakeholder was uninformed of key project aspects prior to SIA engagement.

Timing of the project, the assessments and project commencement

KEPCO acknowledges that the EIS process and associated components can be difficult for many stakeholders to interpret and understand. Information related to Project timelines, including Project assessment were regularly included or discussed in the Project newsletters (refer Appendix F of the EIS) and on the Project website. Fact sheets and poster displays also covered this content.

4.6.2 Issue 2 - Negotiation Strategies

"Many respondents reported unfair and unethical negotiation strategies ("a David and Goliath battle") that, intentionally or unintentionally, worked to "hollow out" and "destroy the social fabric of the Valley" and showed little commitment to supporting its ongoing viability."

KEPCO is committed to working ethically and respectfully with local landholders and to reaching mutually agreeable terms and conditions of access with landholders and/or tenants before accessing properties. Land access for preliminary assessment activities (such as exploration and environmental monitoring) is facilitated through the negotiation of formal Land Access Agreements with relevant landholders. Once a Land Access Agreement is in place, verbal and written notification is provided to the individual landholders prior to any activity taking place. The project team is committed to ensuring that disruption to local landholders is minimised as much as possible. KEPCO works together with landholders to determine the best times of the day or week for property access.

Land acquisitions are a component of the Project's development as they provide certainty to KEPCO and to local landholders. Project noise and air quality modelling activities undertaken as part of the Project EIS have facilitated the identification of specific properties (N=7) where predicted amenity impacts are determined to be greater than the relevant assessment criterion (refer Table 59 of the EIS Main Report). Three of these properties are predicted to experience significant noise impacts. Two out of the three significantly affected properties have either been acquired by KEPCO or the landholders have recently entered into property acquisition agreements with KEPCO. A further four properties are predicted to be affected by moderate noise impacts. Should the Project be granted approval, these four landholders will be provided the opportunity to request mitigation and management measures at the residence by the Proponent (KEPCO) in accordance with the NSW government's Voluntary Land Acquisition and Mitigation Policy (December 2014).

KEPCO is also in discussions regarding compensation and/or land acquisition with a further five landholders adjoining the south and south east of the Project Boundary as a result of road access constraints created for these landholders by the Project. KEPCO has reached the relevant agreements with two of these landholders.

KEPCO engaged independent valuation services to assess the value of properties to be purchased. Valuation assessments are typically based on a range of factors including the use(s) and quality of the land, the extent of property infrastructure, unique property features, and historical sales data from comparable properties.

Once properties have been purchased, KEPCO has completed assessments to determine which homesteads / houses could be occupied or could be repaired to allow occupation. KEPCO is committed to attracting a local operational workforce to increase the population of the Bylong Village. KEPCO intends to continue to lease its houses to local residents to sustain the viability of Bylong Village.

"Property owners engaged in negotiations with the proponent were also reportedly required to sign confidentiality agreements, which then prohibited them (or strongly dissuaded them) from discussing aspects of their negotiations or the mining proposal with relatives, friends, neighbours, business partners."(Page 17)

Confidentiality agreements are common practice in commercial discussions over asset acquisitions. Such agreements are in the interest of both parties. This practice allowed the sellers lawyers (at KEPCO cost) to review the respective agreements.

4.6.3 Issue 3 - Lack of Genuine Engagement and Dialogue in SIA Consultation

"It is noted however that the EIS and SIA provide only brief summaries of consultation outcomes, and no details of the types of information provided to survey or information session participants..... Despite this, the purpose of SIA consultation, stated on p. 24, is simply to inform and obtain information from respondents. It does not refer to a process of genuine engagement or dialogue around issues affecting lives of residents." (Page 18)

Further information in relation to the discussion content of the SIA interviews was included in Section 5.25.3 of the RTS. This information demonstrates that there was genuine dialogue around issues affecting the lives of residents within the Bylong Valley. The most significant issues of discussion was the population decline in the Bylong Valley and the flow-on impacts to community capital, cohesion and sense of community.

In parallel with the SIA process, KEPCO has a comprehensive ongoing engagement process that specifically provides for genuine engagement and/or dialogue with stakeholders around issues affecting their lives in the Bylong Valley.

4.6.4 Issue 4 - Validity of information collected during SIA consultation

"However, suspicions and concerns about the community consultation processes appear to have also affected the willingness of residents to participate in discussions to date and future processes. This indicates there are questions to be asked about the validity of information collected and used in the SIA analysis, the potential for developing workable relationships for future interaction between Bylong Valley residents and mining company employees or contractors and the acceptability of the proposed mitigation, management and monitoring framework for future stages of the project."(Page 18)

This comment is not appropriate and draws exaggerated conclusions that are not based on fact.

Tailored and face-to-face consultation with residents of the Bylong Valley was undertaken as a component of the SIA consultation process. Residents (landholders, tenants including farmhands and farm managers) within and adjoining the Authorisation Boundaries were personally invited by the Project CLO to participate in face-to-face interviews with Hansen Bailey representatives for the purposes of the SIA. Potential participants were contacted again prior to the interviews to confirm or encourage their participation. In a number of cases potential participants were unable to attend meetings due to illness or availability. A few participants declined to participate.

4.6.5 Issue 5 - Inadequate description of SIA consultation methodology in the SIA

"the EIS and SIA provide only brief summaries of consultation outcomes, and no details of the types of information provided to survey or information session participants". (Page 18)

Section 5.25.3 of the RTS provides additional detail in relation to the conduct of the SIA consultation. This material was provided in response to stakeholder submissions.

4.7 CHAPTER 6 - ADEQUACY OF THE RTS

4.7.1 Issue 1 - Structure and Language of the RTS Document

"As with the SIA, there is a tendency for the tone of the RTS to appear both unnecessarily technical and dismissive of critical feedback. The great majority of responses to social issues comprise a summary of the issue, re-iteration of EIS content and cross-referencing to other sections of the RTS, the EIS or its Appendices (see for example Section 5.25.1, 5.25.5 or 5.25.9).....This makes reading of the document difficult and disappointing, as successive opportunities to clarify or present new information are shut off." (Page 19)

"On the whole, the tone of the RTS gives the impression that the issues raised are relatively trivial, are of little significance to the project or are already covered by the proposal or its mitigation measures proposed.

This impression was also expressed by those residents consulted for the peer review who had read through the RTS and expressed dissatisfaction that little information was provided to specifically address the social impacts and concerns of the Bylong Valley community." (Page 21)

The structure of the RTS, the language used and the use of cross referencing to relevant sections of the EIS documentation is standard practice and is considered appropriate.

Many of the stakeholder issues raised in the EIS submissions related to issues that were already addressed in the EIS. This is often a result of stakeholders reading only subsets of the EIS - understandable given the size of the document required to address the relevant expectations from Government and stakeholders. This is consistent with the feedback received from stakeholders during the Peer Review consultation as reported within the Peer Review Report. The Peer Review Report notes that:

"Few participants appeared to have read the SIA or RTS documents in any detail"...." (Page 24)

The Peer Review Report contains key conclusions relating to the adequacy of the RTS which have been drawn from the findings of consultation undertaken with only a small group of residents who had actually read the RTS.

4.7.2 Issue 2 - Extent to which social impacts and concerns of the Bylong Valley Community have been addressed.

Consultation for the Peer Review Report related specifically to the RTS document. The Peer Review Report states that residents consulted, who had read through the RTS:

""expressed dissatisfaction that little information was provided to specifically address the social impacts and concerns of the Bylong Valley community".

It is unclear from the Peer Review Report whether the residents consulted had actually read the EIS SIA which contains a more thorough and detailed discussion of the Project related social impacts, or if their comments are drawn from a review only of the RTS document. At the request of the BVPA copies of the EIS were made available at the Bylong Valley General Store.

Given that Page 24 of the Peer Review Report states that consultation indicated the EIS SIA document was read by few residents of the Bylong Valley, the use of the previous comment to support a significant limitation of the RTS is questionable.

4.7.3 Issue 3 - Consideration of No WAF option

"the RTS does not fully consider potential social impacts of a No WAF option for either the regional community or the local area."(Page 22)

A response to this issue is provided in **Section 4.5.3** and **Section 4.5.5**.

4.8 CHAPTER 7 - OUTCOMES OF DISCUSSIONS WITH STAKEHOLDERS

The Peer Review Report identifies a number of areas where the EIS and SIA engagement processes for future project assessments could be improved. These issues are based on the findings of the Peer Review consultation, during which stakeholders are understood to have identified a number of shortcomings of the Project EIS and SIA consultation. These issues are addressed in the following sections.

4.8.1 Issue 1 - Assumptions about community familiarity with the EIS and SIA processes

"Assumptions about community familiarity with the EIS and SIA processes - Feedback called into question several basic assumptions accepted as given in the environmental assessment process, with direct relevance to this project assessment" **(Page 23)**

The following factors are identified in the Peer Review Report:

- The internet (online websites and email) is often not an appropriate from of communication for people in rural areas due to the availability of a reliable data connection or a lack of familiarity with web-based communications;

- Stakeholders affected by a project are largely restricted to the information provided by the proponent in the timeframes and terms offered; and
- The SIA and EIS processes assume impacts occur once a project is approved.

The issues identified above are generic and are a direct result of the current approvals process applicable to SSD. It is hoped that some of the issues highlighted will be considered by the DPE in the preparation of the NSW SIA Guideline.

The implications of these factors for the design and implementation of an effective EIS consultation process are acknowledged. KEPCO's Consultation Specialists have designed an EIS consultation process that provides multiple and different opportunities for stakeholders to obtain information about the Project, to clarify key issues and ask questions. These opportunities have already been described in **Section 3.6** with additional information included in **Attachment 1**. The range of engagement tools used has included:

- Open days in multiple locations. Key Project representatives and technical consultants have been available at these locations to answer stakeholder questions. Project displays including the mine concept plan and relevant Fact Sheets have been made available at these events;
- Face-to-face engagement. Project stakeholders, specifically directly and indirectly affected stakeholders of the Bylong Valley have been engaged in multiple face-to-face formal and informal meetings with KEPCO facilitated by the CLO. These meetings have provided an opportunity for reviewing and discussing the mine plan, clarifying project approval timelines and project assessment components e.g. SIA, EIS, noise and air quality studies and groundwater studies; and
- Stakeholder accessibility to a locally based (i.e. Bylong Valley) Community Liaison Officer for the Project.

KEPCO acknowledges the voluminous nature of the EIS document and the difficulty some stakeholders may have in identifying relevant components and reading the document. EIS documents are technical and scientific reports prepared to the detail which is required for contemporary regulatory requirements. KEPCO has sought to respond to this issue by:

- Producing an Executive Summary document that provides a brief overview of key Project components and the findings of the key technical studies. It is acknowledged that the information provided in the Executive Summary is limited;
- Making hard copies of the EIS available at the Bylong General Store and KEPCO site office for public viewing at the request of the BVPA;
- Providing USB copies of the EIS to stakeholders in the Bylong Valley (on request);
- Holding Community Information Sessions over three days during the EIS Public Exhibition period so that interested stakeholders could view the relevant documents and seek additional information from the Project team or clarify report findings. Community Information Sessions were held in Bylong, Kandos and Mudgee in late September/early October 2015;
- Conducting face-to-face meetings with directly and indirectly affected stakeholders in the Bylong Valley during the EIS public exhibition period;

- Arranging face-to-face meetings between stakeholders and Project technical consultants to present the background, methodology and results of technical impact assessments (such as groundwater) and answer any property specific queries; and
- Making the Project CLOs available throughout the EIS public exhibition period to respond to stakeholder questions.

There is a potential for project related social impacts to occur prior to a project being approved. However NSW legislation, including the SEARs does not require the assessment of social impacts that may arise prior to the commencement of project construction such as from a combination of the exploration, property acquisition and environmental approvals process. Further there are not applicable SIA standards and guidelines that necessitate this approach. To this end, the SIA for the Project includes a discussion of historical changes in the Bylong Valley, however the social baseline upon which the assessment of impacts is based reflects the time at which the SIA was completed - August 2014.

4.8.2 Issue 2 - Effectiveness of ex-post mitigation measures

"Drawing on anecdotal evidence and data from other mining projects, some residents expressed concerns about their ability to negotiate or claim compensation should adverse social impacts arise once mining begins." (Page 24)

These are genuine concerns. KEPCO is familiar with the identified water issues and the specific landholders to which this issue has been raised. KEPCO has met with property managers and representatives of the landholders to discuss these issues. Appropriate conditions of development consent and the associated management plans will address the required management of potential future Project impacts, both environmental and social.

4.8.3 Issue 3 - Adopting bio-physical standards as measures of social impact

"A key concern was the discrepancy between modelled outcomes (or estimations) of air or noise emissions, for example, and the impacts experienced, or expected, at a particular home or property. This was especially of concern where multiple sources of emissions (eg dust, noise, visual, loss of property values) are expected" (Page 24)

These are genuine concerns. As with the previous issue, the conditions of development consent and the associated management plans will address the required management of potential future Project impacts, both environmental and social.

Contemporary conditions of development consent provide landholders with the right to seek an independent review of monitoring results if they consider the project is exceeding the relevant criteria specified within the consent.

Contemporary conditions of development consent also require the proponent to implement a complaints response protocol and maintain a complaints register to enable stakeholders to identify any issues of concern and for the proponent to provide the appropriate response. KEPCO has established a leading practice Complaints and Grievance Management System for the Project which includes protocols to ensure responses are actioned in a timely manner.

4.9 CHAPTER 8 - PEER REVIEW RECOMMENDATIONS

Chapter 8 of the Peer Review Report provides recommendations to improve or resolve the areas of deficiency identified in the SIA. This letter has already responded to the deficiencies identified in Chapter 8. The following section responds to the recommendations made within the Peer Review Report.

It is noted that a number of the suggested recommendations in the Peer Review Report highlight a lack of familiarity with the Project and the EIS.

4.9.1 Issue 1 - Engagement and Negotiation with KEPCO

"MWRC support for residents in adopting relevant aspects of the approach set out in RIRDC (April 2013) when engaging and negotiating with KEPCO" (Page 26)

The document *Principles for Negotiating Appropriate Co-existence Arrangements for Agricultural/ Landholders* (Rural Industries Research and Development Corporation [RIRDC] 2013) was not endorsed by the mining industry. The document was commissioned by Meat and Livestock Australia and was completed in consultation with meat and livestock producers. KEPCO understands that the resources industry was not consulted during the development of the document and was not provided an opportunity for input.

4.9.2 Issue 2 - - Funding Agreement with Bylong Valley

"A funding agreement, such as a 'mini Bylong VPA' or allocation of a portion of funds from the agreed VPA, to projects that directly benefit the existing community and those who will continue to live there in future. "(Page 26)

The role of Project VPA and the implementation of VPA is discussed in **Section 4.4.1**.

In addition to the VPA, KEPCO has conducted a CNA to inform the Community Investment Fund. The CNA is discussed in **Section 4.4.1**. To date KEPCO has invested funds to the value of $200,000 through the CNA. The following community investment initiatives are proposed for the Bylong Valley in 2016:

- Ongoing annual sponsorship of local events - Contribution to the Bylong Hall Committee for funding the Bylong Christmas BBQ in 2016;
- Ongoing contribution to Bylong Community - Contribution to the Bylong Hall Committee for funding upgrades to the Bylong Community Hall to support future community events
- Financial contribution towards the maintenance of the Bylong Anglican Church; and
- Restoration work at 'Homestation'.

4.9.3 Establishment of a CCC

"Commitment to community representation on a Community Consultative Committee (CCC) in accordance with terms of reference under NSW Government published CCC guidelines." (Page 26)

Contemporary conditions of consent require the proponent to establish and operate a Community Consultative Committee (CCC) for the development. These conditions also specify requirements for membership of the CCC.

KEPCO is accepting of such a condition of consent requiring the establishment of the CCC for construction and operational phase of the Project.

4.9.4 WAF Facilities

"If a WAF is approved in the vicinity of Bylong, ensure the facility provides for recreational and social needs of employees through inclusion of an indoor recreational facility / gym or similar, and is open to both mine employees and local residents. This could offer a legacy project for residents and tourists when the mine closes." (Page 26)

If the WAF is approved for the Project, further consultation will be undertaken with the Bylong Valley community to understand the extent to which residents seek to have access to facilities at the WAF. The level of accessibility provided for residents to the facilities at the WAF and the potential interactions between the WAF and Bylong Village will be determined based on the outcomes of this consultation. It will also depend on the operational duration of the WAF, which is currently proposed for six years.

4.9.5 Farmland Management

"MWRC to work with other agencies and local residents to develop and apply acceptable standards to keep remaining farmlands and dwellings maintained for ongoing use, such as requiring farm managers to maintain agricultural land as productive enterprises and effectively managing weeds, pests and building maintenance" (Page 26)

KEPCO has implemented active farming initiatives aimed at maintaining the agricultural viability of purchased properties. KEPCO has appointed a Farm Manager to oversee the agricultural aspects of KEPCO owned properties and has prepared a Farm Management Plan. The plan brings together previously disparate farms under a single management plan and KEPCO is confident the agricultural output from the area can be maintained to current levels.

With over 2,104 head of cattle with 190 calves at foot, 191 tonnes of hay and more than 230 ha of fodder cropping, the agricultural company is currently operating the largest agricultural landholding within the Bylong Valley covering more than 7,600 ha.

Regular weed and pest management activities will continue to take place on site and surrounding areas as part of ongoing property management practices. Kangaroo Numbers remain high. Ongoing culls are taking place targeting the cropping areas. To date 55 kangaroos have been culled. Feral pigs are dispersed across the properties due to the abundance of feed. To date pig traps have not been successful.

Areas within the Project's disturbance footprint will be returned to agricultural land use as soon as possible following rehabilitation.

4.9.6 Document Historical Processes

"Documentation of the process of change that has occurred, so as to provide case study evidence of social and cumulative for other projects" (Page 27)

KEPCO is willing to initiate the preparation of this documentation following the granting of development consent approval and a decision to proceed with Project construction. It is likely that this document will form part of the SIMP for the Project.

4.9.7 Funding for RFS

"Funding and in-kind support for a specified number of local RFS volunteers from its local mine workforce." (Page 27)

This commitment is already included in the SIA (Section 10.3.6 and Section 11.3.8).

4.9.8 Bylong School

"Relocation of the Bylong school building to Lower Bylong for community use, for example to celebrate and showcase the area's history" (Page 27)

As explained in Section 4.2.13 of the EIS, the practicality for the relocation of the Bylong Upper Public School and other heritage structures within the proposed disturbance boundary will be largely dependent on the structural integrity of the structures as determined by dilapidation surveys. Further, there are practical timing limitations to determine whether these structures should be relocated or not. KEPCO is willing to relocate the school buildings subject to the findings of the dilapidation survey and acceptance by the community.

4.9.9 Expertise of Community Engagement Personnel

"Ongoing and future community engagement and communications should be undertaken by staff aligned with professional associations such as IAP2 and in accordance with best practice engagement principles" (Page 27)

Ongoing community engagement for the Project is being managed by Elena Miceski of WorleyParsons. Elena's extensive experience in community engagement and stakeholder consultation is described in **Section 2.4**.

A comprehensive stakeholder and community engagement strategy was prepared to guide project consultation and communications. The strategy addressed stakeholder identification, issues mapping, complaints management, communication approaches and feedback mechanisms to be utilised with various stakeholder groups. The strategy also addressed government and media relations and included processes to monitor, evaluate and report on community and stakeholder engagement outcomes. The strategy incorporated trigger-points which identified appropriate junctures for the strategy to be updated. A detailed stakeholder engagement schedule is utilised to track engagement activities and is updated on an ongoing basis.

KEPCO's engagement program has been guided by international good practice guidance documents, including IAP2, and has been designed to comply with the *NSW Government Guideline for Community Consultation Requirements for Exploration* (March 2016), *Exploration Code of Practice: Community Consultation* (March 2016), *Guidelines for Major Project Community Consultation* (2007), as well as the *Ministerial Council for Mineral and Petroleum Resources' Principles for Engagement with Communities and Stakeholders* (2005).

The *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (2010) is also being adhered to regarding consultation with registered Aboriginal parties as part of the heritage assessment process associated with the Project.

All future project related consultation will continue to be undertaken in accordance with best practice engagement principles.

Specifically, KEPCO aims to deliver an approach to stakeholder engagement which:

- Meets regulatory and international industry good practice guidelines;
- Honours KEPCO's values and principles around open, transparent and genuine engagement with communities;
- Strategically implements engagement initiatives in a manner which proactively responds to stakeholders' interests, concerns and issues in a holistic and comprehensive manner;
- Informs stakeholders of potential project impacts and benefits in a timely way;
- Provides opportunities for all relevant stakeholders to be included in community engagement activities, including those that are disadvantaged and difficult to reach;
- Recognises the inherent value of local views and perceptions, and actively harnesses these to improve project design; and
- Uses consultation as a critical vehicle through which to identify potential local benefits and opportunities, and optimises these through project implementation as much as possible.

5 CONCLUSION

KEPCO and the wider Project team have conducted a detailed review of the Peer Review Report prepared on behalf of DPE. This review has identified a number of areas of concern relating to the shortcomings around the scope of work and consultation approach undertaken in the preparation of the Peer Review.

This letter report is in addition to KEPCO's letter to DPE dated 15 September 2016 and describes the primary concerns raised by our client and the wider Project team in relation to the Peer Review Report. It is our professional opinion that the shortcomings identified within this letter report highlight some significant deficiencies in the outcomes and recommendations of the Peer Review Report.

The validity of the Peer Review Report in determining the robustness of the Bylong Coal Project SIA and compliance with leading industry practice is limited by the:

- Consultation methodology adopted for the Peer Review. The Peer Review Report methodology is not adequately defined and provides limited information on the methodology adopted for the peer review consultation. In particular the number of people consulted and their stakeholder groupings and the topics for discussion during consultation have not been explained within the Peer Review Report. There is a concern that the failure of a well planned consultation process compromises the validity of the conclusions drawn from the consultation findings, particularly given that it is these conclusions that underpin the suggested limitations of the SIA.
- Geographical scope for the consideration of potential social impacts. The geographical scope of the Peer Review Report (and associated consultation) is not defined, although appears to be constrained to the Bylong Valley. This does not reflect the Project's status as a SSD and in doing so, does not consider the broader Project implications, the views and aspirations of stakeholders in other potentially affected communities such as Denman, Merriwa, Rylstone, Kandos and Mudgee. All of which are discussed in the SIA.
- Absence of a robust evidence base. The Peer Review Report includes little or no robust evidence to support the stakeholder perceptions referenced through community consultation. Whilst it is acknowledged that it is a Peer Review and not an SIA, the inclusion of some evidence to support the findings of stakeholder consultation would have significantly improved the outcomes of the Peer Review Report.
- Use of emotive language. The use of emotive language in the report is not consistent with the intent of a Peer Review of a technical report such as the SIA. Terms such as 'disappointing' are adopted to describe the authors reflection on aspects of the EIS SIA report.
- Absence of any consultation with the proponent. The Peer Review Report was not informed through consultation with the proponent, or the SIA author (a highly experienced specialist in the field). It is acknowledged that this may have been required by the DPE to ensure the independence of the Peer Review Report. However, if KEPCO had been engaged, then it is likely that the findings of the Peer Review would reflect an analysis of the full range of consultation tools adopted during the EIS and SIA consultation processes.

- Choice of social baseline against which the consideration of impacts in the SIA has been considered. The Peer Review Report has determined the limitations of the Project SIA based on the social conditions present during coal exploration activities, and not the baseline that existed in 2014 when the SIA commenced. Attempting to benchmark the social conditions against the exploration period and associated impacts reduces the rigor of the Peer Review methodology.
- Lack of consideration given to potential implications of the 18 months that has elapsed between the conduct of the SIA consultation and the conduct of the consultation to inform the Peer Review. These implications include:
  - Changing views and attitudes of stakeholders towards the Project;
  - Formation of groups whose main objective is to undermine the Project; and
  - Progression of property acquisition activities and resulting impacts on landownership in the Bylong Valley.

It is hoped that this letter has provided sufficient material to 'balance' the criticisms of the SIA presented in the Peer Review Report. KEPCO would encourage DPE to give due consideration to the content of this letter in the preparation of the development assessment report for the Project. In the event that the DPE make the Peer Review Report publically available then KEPCO requests that this response letter is also made publically available.

KEPCO would be happy to meet with DPE to discuss the content of this letter further. Should you have any queries in relation to this letter, please contact us on 02 6575 2000.

Yours faithfully
HANSEN BAILEY

Nathan Cooper
Principal

James Bailey
Director

Attach:

Attachment 1 - SIA Expertise
Attachment 2 - EIS Consultation Methodology

ATTACHMENT 1

SIA Expertise

Bronwyn Pressland
Principal Social Planner - Hansen Bailey

Bronwyn's demonstrated expertise includes.

- Preparation of SIA reports for the following State Significant Developments (SSD) in NSW: Watermark Coal Project (Shenhua), Boggabri Coal Project and Drayton South Project;
- Preparation of the Maules Creek Social Impact Management Plan (SIMP);
- Preparation of SIA reports for the following projects in Queensland, including coordinated projects of significance: China Stone Coal Project (MacMines), Moranbah South Coal Project (Anglo American), Grosvenor Project (Anglo American), Foxleigh Plains Project (Anglo American), Minyango Project (Caledon), Eagle Downs Project (Bowen Central Coal);
- Preparation of a SIA and management of health impact assessments and economic impact assessments for the Tampakan Copper Gold Project in the Philippines, including compliance with International Finance Corporation and World Bank guidelines;
- Preparation of a SIA for the Groote Eylandt Ming Company (GEMCO) Eastern L:eases Project (South 32) located within an Indigenous Protected Area; and
- Ongoing provision of strategic advice in relation to community engagement and social impact to Anglo American for their Central Queensland operations.

Elena Miceski
Social Performance Practice Manager

Elena's experience includes:

- Queensland Government – Department of Housing and Public Works – Stakeholder Engagement Program to Support Regional Planning: Elena was the Project Manager and Principal Stakeholder Manager for a regional housing consultation program.
- KEPCO – Bylong Coal Project Stakeholder Engagement Manager: Elena is the Stakeholder and Community Engagement Manager for the Bylong Coal Project in New South Wales.
- Rio Tinto Coal Australia and Rio Tinto Energy – Expansion and Growth Projects: Elena led the provision of stakeholder engagement services to support approvals for a portfolio of Rio Tinto Coal Australia growth projects in Queensland.
- Queensland Gas Company (QGC) – QCLNG Project: Elena project managed and was the technical lead for a comprehensive strategic social impact review to support the QCLNG coal seam gas and liquefied natural gas project.
- QGC – Engineering Project Services Provider: Elena was appointed as the Interface Manager and Stakeholder Engagement and Communications Manager for the QGC-WorleyParsons Engineering Contract.

- Origin Energy and ConocoPhillips – Australia Pacific LNG Project: Elena was responsible for and managed all stakeholder engagement, community relations and social performance activities for the significant Australia Pacific LNG Project on behalf of ConocoPhillips during approvals to construction.
- LNG Ltd (Gladstone LNG Pty Ltd) – Fisherman's Landing Project: Elena managed stakeholder relations on behalf of LNG Ltd for an LNG facility development in Queensland.

ATTACHMENT 2
EIS Consultation Methodology

BYLONG
Coal Project

Bylong Coal Project
Community Engagement Summary

December 2015

Disclaimer

- Consultation outcomes are recorded in the Bylong Coal Project's stakeholder contact management software system, Consultation Manager.
- The reporting period for the data included in this presentation is from 1 January 2011 to 25 November 2015 inclusive.
- The data in this presentation is based on information contained in the Consultation Manager database and Project team records. Whilst the Bylong Coal Project team has endeavoured to ensure all consultation is captured in Consultation Manager, there may be some data that has not been captured e.g. informal conversations with stakeholders, consultation undertaken by sub-contractors etc.
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KEPCO BYLONG AUSTRALIA

WorleyParsons
resources & energy

"KEPCO is committed to actively seeking community feedback on the Bylong Coal Project and implementing engagement mechanisms which ensure stakeholders and the community feel heard and respected"

Bill Vatovec, COO KEPCO Bylong Australia

BYLONG Coal Project

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- Procurement and employment
- Ongoing engagement
- Summary of consultation activities

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Introduction

- A robust stakeholder consultation program has been implemented by the Bylong Coal Project team since KEPCO acquired the Authorisations
- KEPCO is committed to leading stakeholder engagement practice and has prepared a number of documents to guide consultation activities including:
  - Stakeholder Engagement Plan
  - Social Performance Plan
  - Grievance Management System
  - Media and Communication Protocol
- We complete regular issues analysis and reporting (weekly, monthly and annually) to monitor and evaluate engagement activities to ensure engagement activities are effective and key objectives are achieved.

Key stakeholders

- KEPCO consults with:
  - Landholders
  - Near neighbours
  - Local communities
  - Community groups and service providers
  - Tourism groups and chambers of commerce
  - Local businesses
  - Environmental groups
  - Academic institutions
  - Local government
  - Neighbouring industry
  - Infrastructure and service providers
  - Aboriginal groups and individuals

Bylong Coal Project's Community Liaison Officer with the Rylstone Hospital Auxiliary; recipients of funding from KEPCO's Community Investment Fund

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Engaging the local community

Since acquiring the Project's authorisations KEPCO has been closely engaged with the Bylong community

- The Bylong Valley is located 55 km north-east of Mudgee and 53 km from Denman in New South Wales.
- The Project site office is located in Upper Bylong and employs two dedicated Community and Landholder Liaison Officers (CLOs).
- Local landholders and near neighbours in the Bylong Valley comprise of those properties located within the Authorisations (a total of 22 private properties*) and those properties neighbouring the Authorisations.
- KEPCO's consultation activities focuses on stakeholders who are directly impacted by the Project's current and proposed operations.
- Community feedback has informed project planning and design (e.g. reducing seven open cut areas to two open cut areas).

*Excluding KEPCO-owned properties and Crown land.

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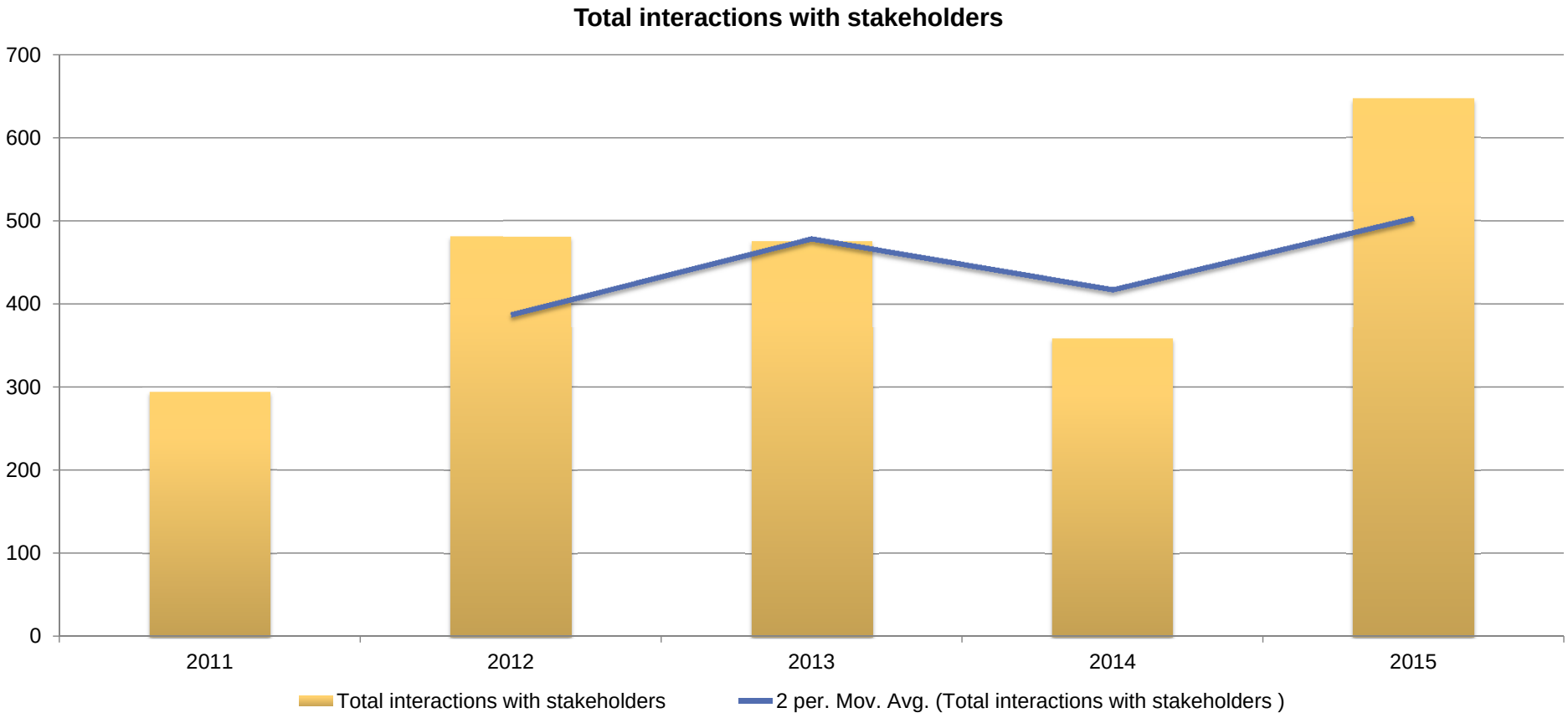
Engagement summary 2011 – 2015

During each year, KEPCO averages 450 direct engagements with stakeholders



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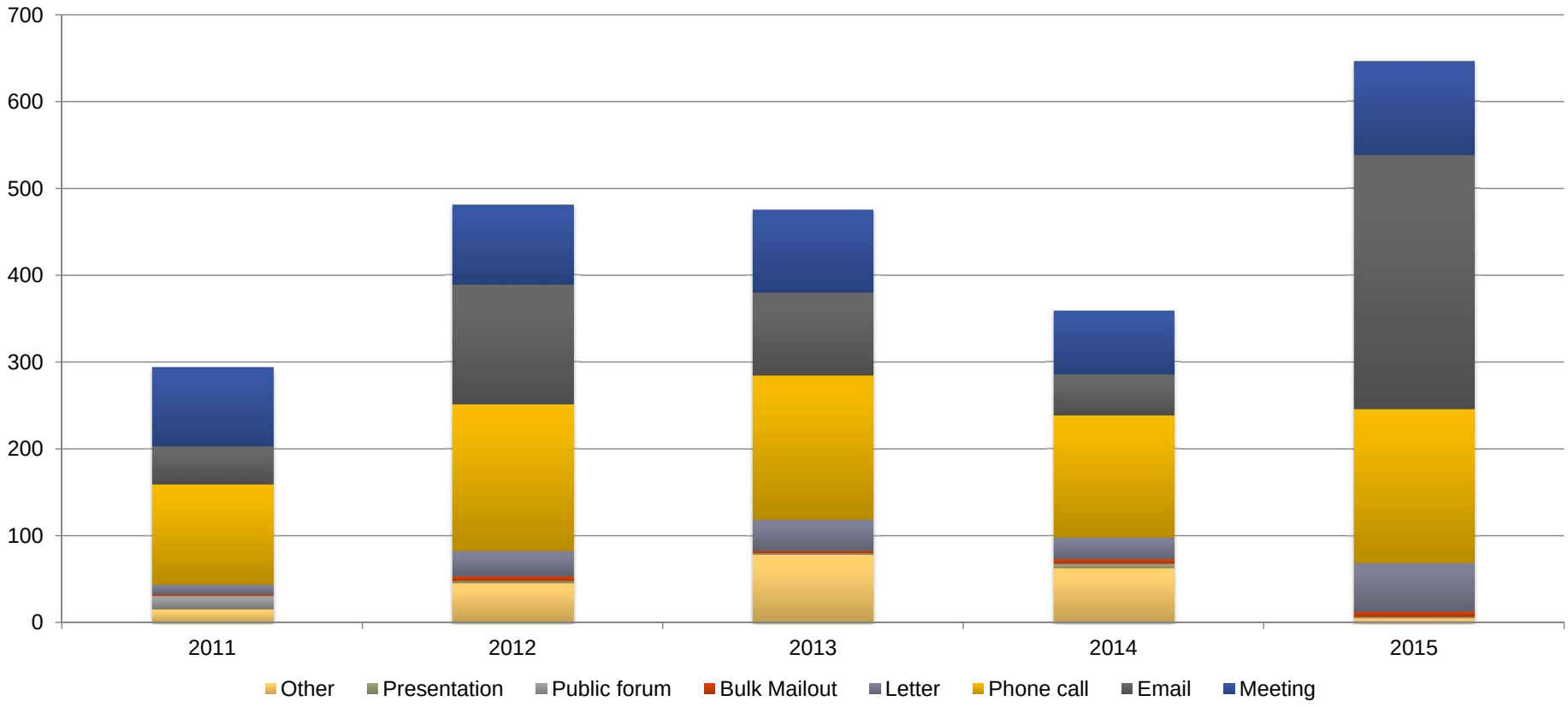
Engagement summary 2011 – 2015

KEPCO's preferred method of engagement is face-to-face and tailored meetings



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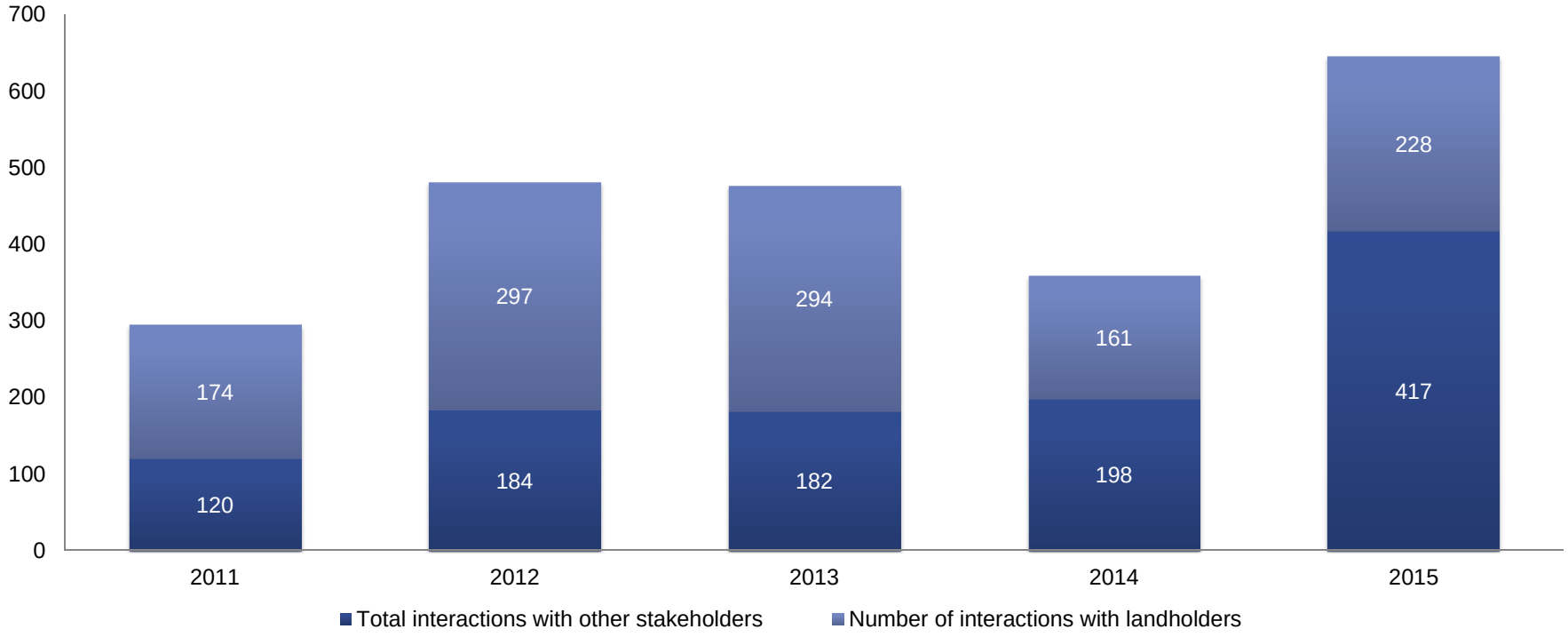
Landholders & near neighbours

- Direct consultations with landholders and near neighbours within the Bylong Valley have been ongoing since 2011.
- KEPCO engages on Project updates, land access, environmental studies, exploration activities, agricultural land management, EIS, water management, amenity and road access.



*Excludes bulk mailouts of Project updates and newsletters

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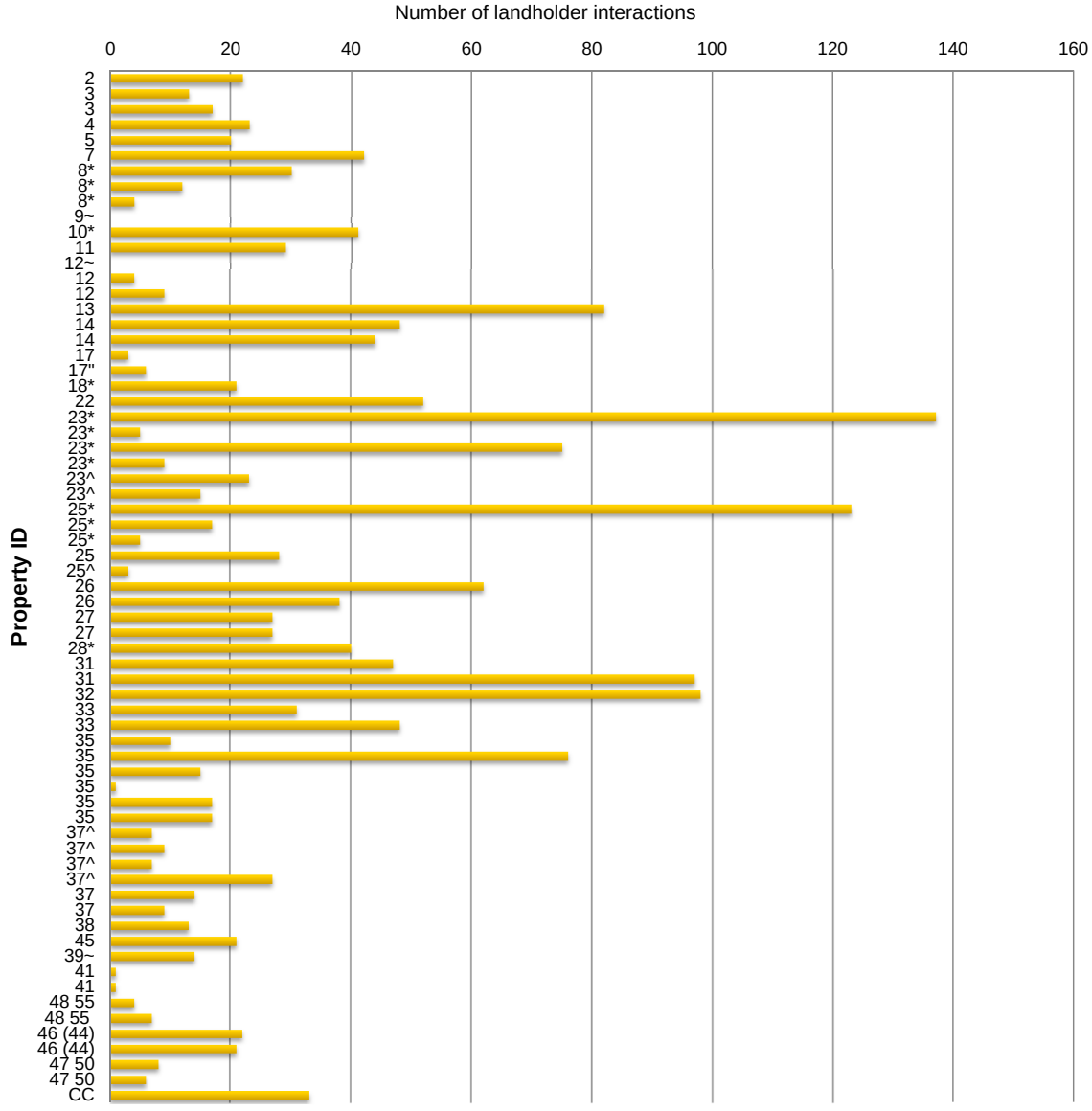
Landholders & near neighbours



Excludes bulk mailouts of Project updates and newsletters

* Property purchased
^ Landholder moved on
“ Landholder deceased
~ Contact with landholder via third party

- KEPCO has had more than 1,800 interactions with landholders in Bylong since 2011 including face-to-face meetings, emails, phone calls, letters and information days.
- In addition to these interactions, KEPCO has provided regular Project updates via quarterly newsletters and bulk mail outs.
- We are incorporating landholder feedback into project planning (e.g. working closely with landholders to consider the most appropriate road access / road strategy for the Project).

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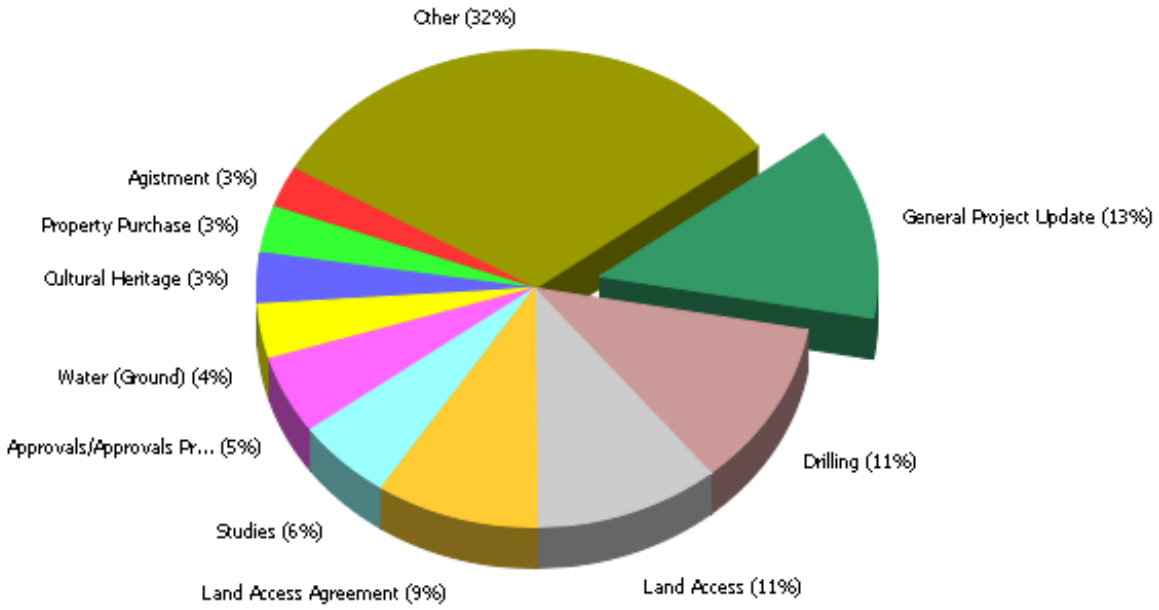
Engagement summary 2010 – 2015

- The key interests and issues raised by stakeholders from the local community during consultations include:

  - General Project updates
  - Land access
  - Exploration
  - Cultural heritage
  - Water
  - Agistment opportunites
  - Approvals
  - Procurement opportunities
  - Employment opportunities
  - Community investment fund



Top 10 issues raised by stakeholders 2010 – 2015

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EIS consultation

- Exploration Information Day held in October 2011 – 26 members of the community attended including children from the Bylong Upper Public School.
- Community information sessions were held during December 2013, February 2014 and November 2014 – approximately 52 members of community attended the information sessions to discuss issues in relation to the Project.
- Sessions were initiated by KEPCO to provide community with opportunities to gain additional information on the Project and provide feedback.
- A series of Project briefings and presentations were provided to landholders and relevant regulators throughout preparation of the EIS.

Community information session, Bylong 29 September 2015

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Social Impact Assessment consultation

- Consultation specific to the Social Impact Assessment (SIA) was conducted by Hansen Bailey
- Hansen Bailey conducted face-to-face and telephone interviews with a number of local service providers to inform the preparation of the SIA

Service and Facility Provider	Discussion Themes
Mudgee Health Council	Health service provision
Medicare Local Western NSW	Health service provision
Various GPs across Kandos, Rylstone and Mudgee	Health service provision
Barnardos – Mudgee	Social housing provision and youth services
Housing Plus NSW	Social housing provision
Mudgee Police Citizens Youth Club (PCYC)	Child and youth services
Rylstone-Kandos Preschool	Children's services
TAFE Western NSW – Mudgee College	Training and skilling programs
Kandos High School (HS)	Education services
Mudgee HS	Education services
St Mathews College Mudgee	Education services
Imaginations Early Learning Centre	Children's services
MWRC Family Day Care	Children's services
Mudgee Preschool	Children's services
State Emergency Service – Dubbo	Emergency service delivery
Cudgegong Rural Fire Service	Emergency service delivery
NSW Police – Mudgee and Kandos	Emergency service delivery
Mudgee Tourism Information Centre	Tourist events and short-term accommodation

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EIS public exhibition consultation

- Community information sessions were held in Bylong, Kandos and Mudgee during the public exhibition of the Bylong Coal Project's EIS in September and October 2015.
- Sessions were advertised in various local newspapers and publications.
- Many attendees expressed support for the Project and were interested in learning more about the Project's skill and supply chain requirements.
- KEPCO prepared 13 fact sheets to summarise key EIS findings.
- Individual EIS briefings and water information sessions provided to landholders in September and October 2015.

Community information session, Bylong 29 September 2015

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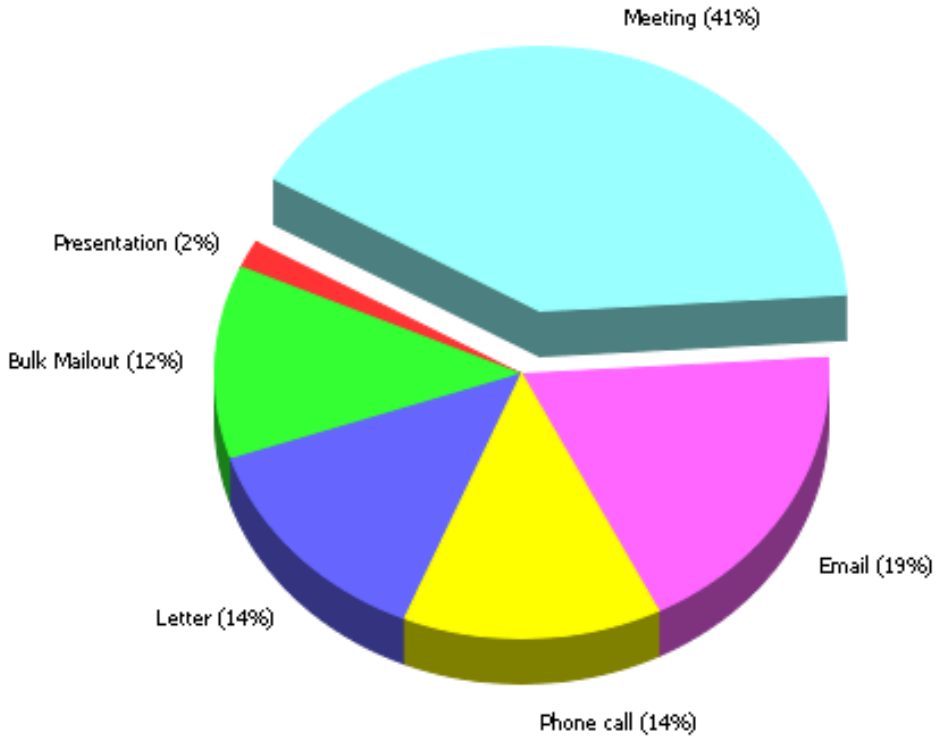
Local government

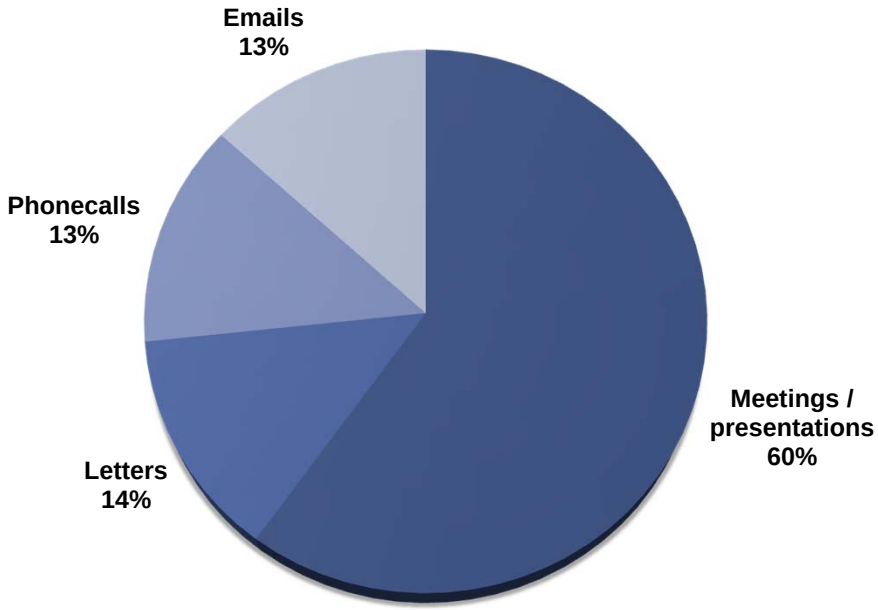
- KEPCO has been engaging with Mid-Western Regional Council throughout Project and EIS development.
- KEPCO has also engaged with neighbouring councils including Muswellbrook Shire Council and Singleton Shire Council.



Interactions with local government by event type 2011 – 2015

Mid-Western Regional Council

- KEPCO has engaged extensively with MWRC on a range of matters including:
  - Project updates
  - Social Impact Assessment
  - Workforce accommodation and various road related matters
  - Former Upper Bylong Catholic Church and Cemetery
  - Voluntary Planning Agreement
  - Traffic assessment and road strategy



Interactions with MWRC by event type 2011 – 2015

*Excludes bulk mail outs of Project updates and newsletters

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Local service providers

- KEPCO has provided regular Project updates to local service providers, and conducted face-to-face meetings regrading the EIS, community needs assessment and community investment fund
- KEPCO has engaged or made offers to meet local service providers including (but not limited to):
  - Rylstone District Care and Transport
  - Rural Fire Service (Bylong)
  - NSW Health
  - NSW Ambulance Service
  - Mudgee District Hospital
  - Volunteer Rescue Association (Rylstone)
  - Mudgee Disability Support Service
  - Barnardos Australia
  - Mudgee Pre-School
  - Rylstone Kandos Pre-School
  - Mudgee Community Health Services Centre
  - Rylstone-Kandos and Mudgee Rotary Clubs
  - Mudgee Lions Club
  - Rylstone Men's Shed
  - Lifeskills Plus Inc.

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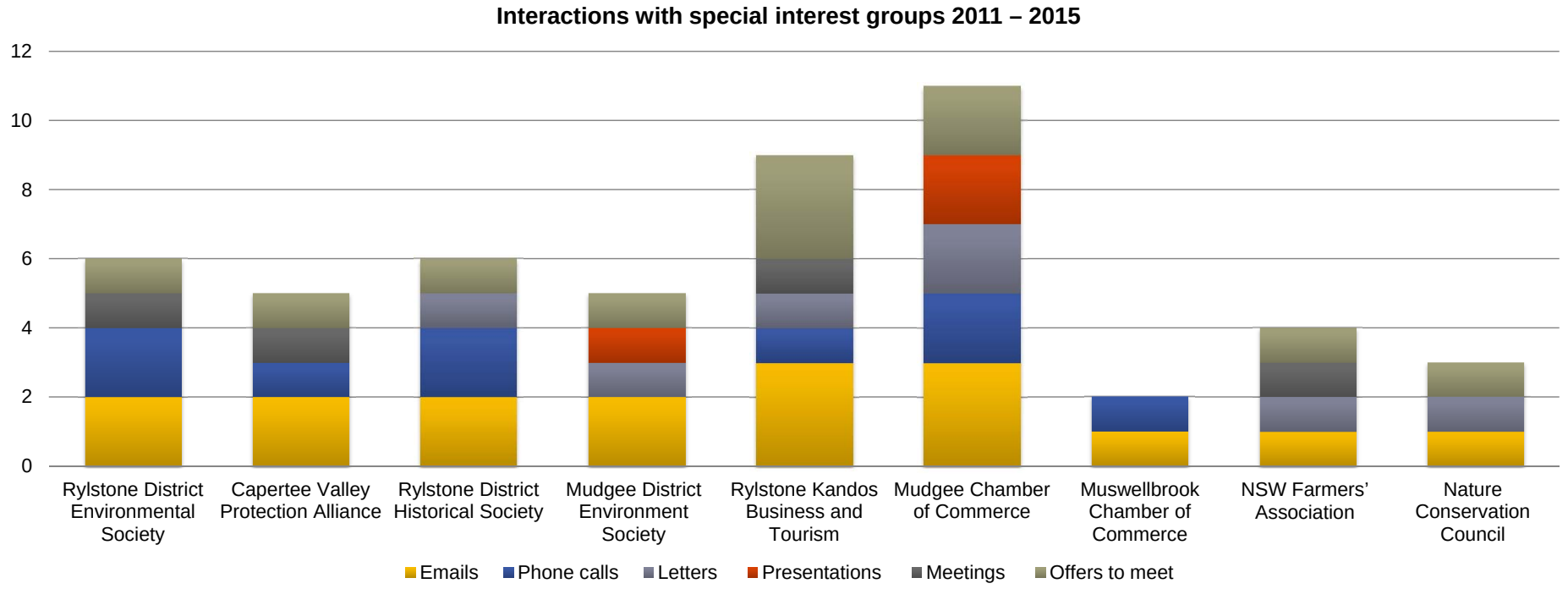
Special interest groups

- KEPCO engages with special interest groups to:
  - provide updates on the Project and EIS
  - gain feedback on environmental management, local content and Indigenous participation planning, cultural and historic heritage
- KEPCO has engaged or offered to meet special interest groups including (but not limited to) the following:



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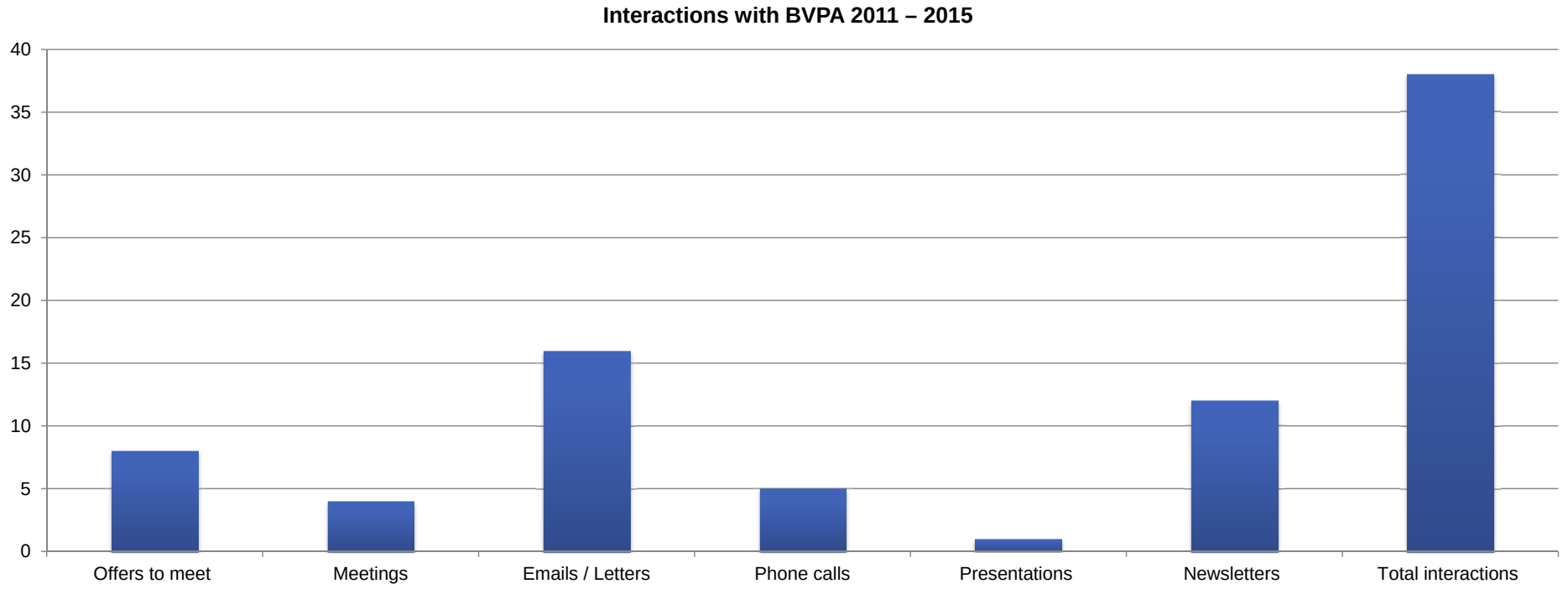
Bylong Valley Protection Alliance

- KEPCO has made a concerted effort to engage the Bylong Valley Protection Alliance (BVPA).
- KEPCO has had a total of 38 interactions* with BVPA since 2011 including face-to-face meetings, emails and phone calls as well as newsletters and Project updates.



*The BVPA requested that all correspondence be sent to the Secretary's nominated email address. General communications sent to this address, at times, served as communications to both him as a private landholder and as secretary of the BVPA.

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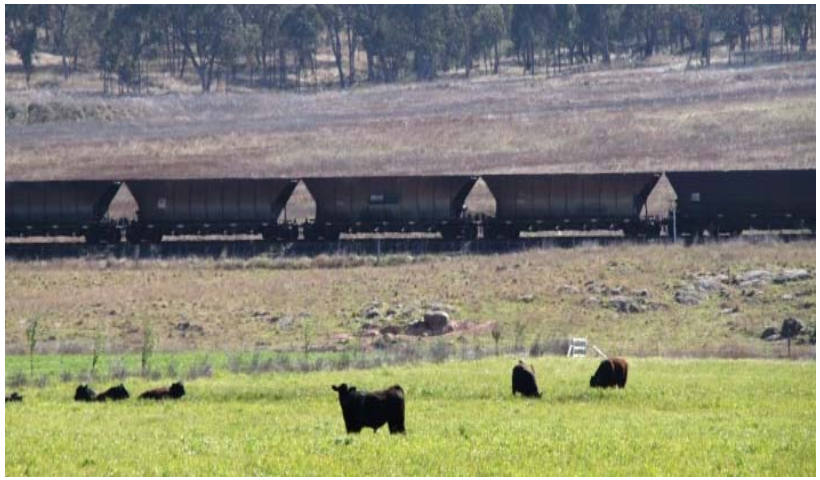
Infrastructure providers & industry

- KEPCO has engaged with infrastructure providers and neighbouring industry and mines in relation to the Project, EIS, infrastructure requirements and local road and rail capacity and has provided regular updates on Project progress.
- KEPCO has engaged or made offers to meet infrastructure providers and neighbouring mines and industry including:
  - Australian Track Corporation
  - Transport for NSW
  - Endeavour Energy
  - John Holland Rail
  - Pacific National
  - Aurizon
  - Hunter Valley Coal Chain Coordinator
  - Newcastle Coal Industry Group
  - Yancoal Moolarben
  - Peabody Wilpinjong
  - Glencore Ulan Coal



Sandy Hollow to Gulgong Railway Line near the proposed rail loop

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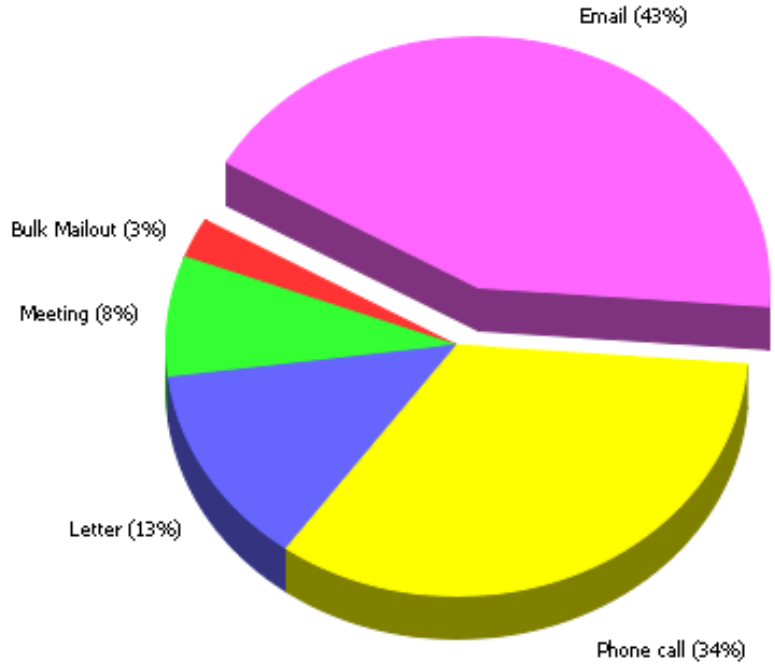
Upper Bylong Catholic Church Cemetery

- KEPCO is committed to full and inclusive engagement with known descendants and relatives of those buried in the Upper Bylong Catholic Church cemetery.
- KEPCO has made concerted efforts to engage with descendants via email, phone, face-to-face meetings and letters.
- KEPCO has also sent descendants Project newsletters and updates.
- There has been a total of 77 interactions with 15 descendants over the past 12 months.



Interactions with descendants by event type Nov 14 – Nov 15

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Aboriginal groups

- Aboriginal community consultation was conducted by Hansen Bailey and RPS Australia East Pty Ltd.
- Consultation with 27 Registered Aboriginal parties was completed in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* and the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation.*
- Registered Aboriginal parties and Aboriginal organisations have been consulted in relation to:
  - Cultural heritage surveys
  - EIS findings
  - Draft Aboriginal and Cultural Heritage Impact Assessment
  - Indigenous participation planning
  - General Project updates

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Local content & Indigenous participation

- KEPCO and its contractors will facilitate local and Indigenous participation through employment, training and development, contracting and procurement of people, goods and services.
- Community Liaison Officers have been engaging with local training and employment providers to understand the capacity and skills of individuals and businesses in the region:

  - NSW Indigenous Chamber of Commerce
  - Western Student Connections
  - CE Training Consultants Pty Ltd
  - Skillset Mudgee
  - Many Rivers
  - Supply Nation
  - Rylstone Kandos Business & Tourism
  - Mudgee Chamber of Commerce
  - Indigenous Business Australia
  - TAFE Western
  - Joblink Plus
  - VERTO
  - Pegasus

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Procurement & employment

- Over the past 6 months, KEPCO has received an average of 3 employment / supplier enquiries per week via the Project's 1800 number and email.
- Attendees at our recent community information sessions were predominately interested in learning more about the Project's skill and supply chain requirements and how they can register their interest for procurement and employment opportunities.
- More than 170 stakeholders have enquired about employment and procurement opportunities with 110 of these enquiries received in the past 12 months.

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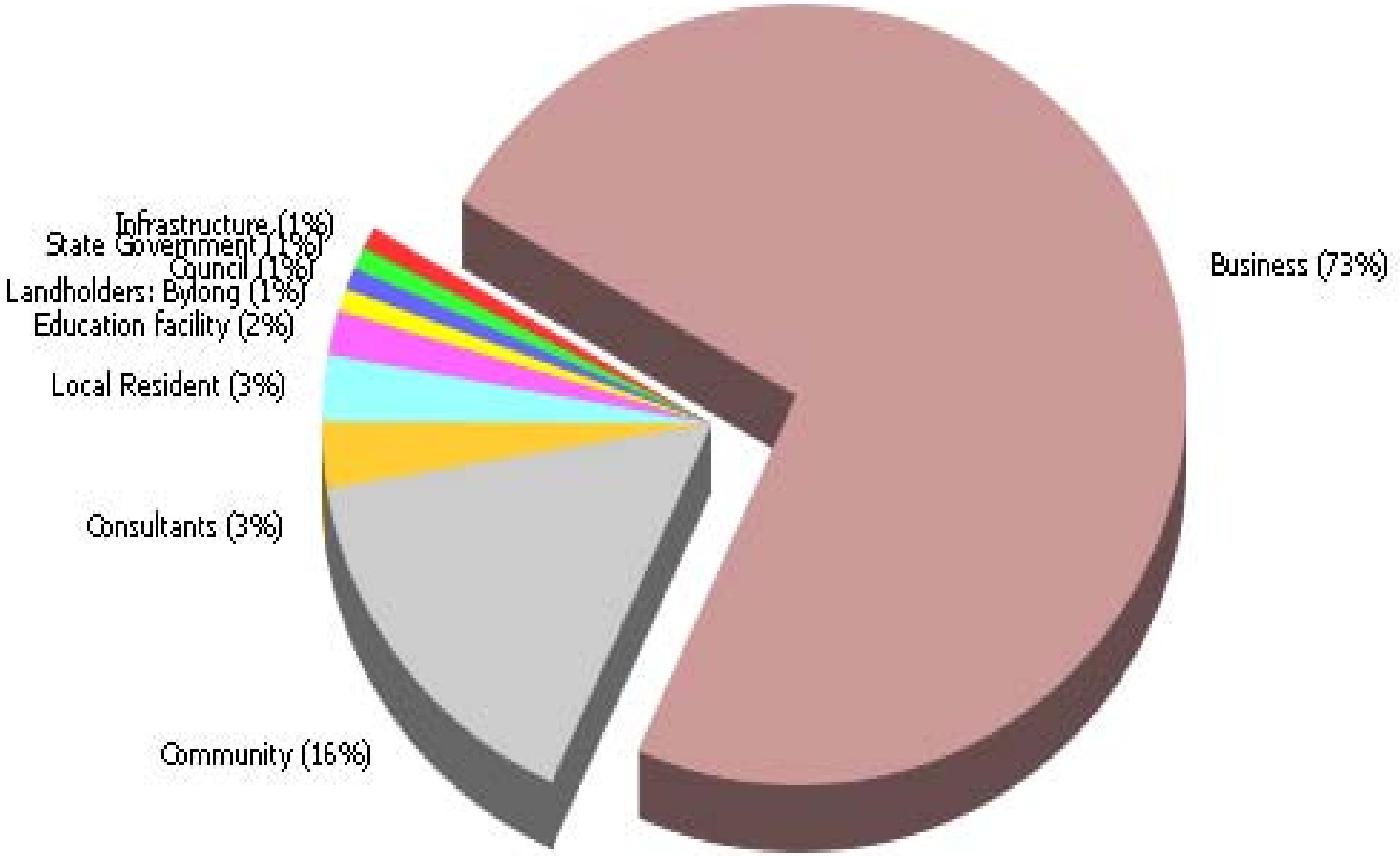
Stakeholder groups who have enquired about employment and procurement opportunities



Number of enquiries by stakeholder group
Nov 14 – Nov 15

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Community Investment Fund

- KEPCO is investing beyond the requirements of the Project with the aim of making a lasting contribution to the communities in which it operates.
- A Community Investment Fund has been established for investment in community projects, events, sponsorships and donations.
- To appropriately target strategic investment over the short and long-term, KEPCO is undertaking a Community Needs Assessment which involves consultation with local service providers and government agencies.
- KEPCO has supported the following local community groups through its Community Investment Fund:
  - Kandos Rylstone Men's Shed
  - Rylstone Street Feast
  - Bylong Hall Committee
  - Rylstone Kandos Show
  - Rylstone Hospital Auxiliary
  - Mudgee Disability Support Service
  - Mudgee Men's Shed
  - Rotary Club of Mudgee Sunrise Inc
  - Cudgegong Valley Mathematics
  - Rylstone Public School
  - Kandos High School
  - Rylstone Branch Combined Pensioners & Superannuates
  - Rylstone and District Pony Club

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Ongoing engagement

- Engagement with the community and key stakeholders will continue throughout the approvals process and the life of the Project
- Various engagement mechanisms will continue to be implemented including:
  - Face-to-face engagement with landholders and near neighbours through the Community Liaison Officers and other senior project staff
  - Face-to-face engagement with other key stakeholders including local government, special interest groups, community groups and education and training providers
  - Provision of regular project updates and documentation on the KEPCO website
  - Project newsletters and fact sheets
  - Community information sessions
  - State and local government briefings and meetings
  - Project 1800 phone number
  - Project email address
  - Dedicated Stakeholder and Social Performance team

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Summary of consultation activities

CONSULTATION ACTIVITY	OUTCOMES
Group and individual information sessions	• Face to face discussions with key landholders and residents within the Bylong Valley. • Discussions with key landholders predicted to receive amenity/access impacts as a result of the project and which will result in mitigation or acquisition • Engagement with landholders potentially impacted by exploration activities, and associated approvals process • Landholder information sessions regarding land management activities – for example, wild dog and feral pig control programs • Face to face individual project briefings and presentations with landholders and various stakeholders • Community information sessions to provide project updates.
One-on-one meetings	• KEPCO, WorleyParsons and Hansen Bailey (EIS consultants) have been engaging with landholders, community groups and industry • KEPCO, WorleyParsons and Hansen Bailey have been engaging with Australian, State and local government departments and representatives
Participant feedback forms	• Feedback forms were made available to attendees of community information sessions. These were recorded in Consultation Manager along with feedback from consultation activities detailed above • Contact and feedback forms are available on the project website: http://www.bylongproject.com.au/index.cfm/contact-us/comment-and-subscribe-to-project-updates/
Project website	• Project website is live and updated regularly - http://www.bylongproject.com.au/
Fact sheets	• Fact sheets are published and updated when required. Fact sheets have been made available on the website and handed out at Project events. Fact sheets have been produced for: o About the project o Exploration process o Water resources o Water management o Approvals process o Stakeholder engagement o Agricultural land o Social impact management o Community investment fund o Rural amenity o Historic heritage o Nature conservation o Roads and transport o Former Upper Bylong Catholic Church and Cemetery

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Summary of consultation activities

CONSULTATION ACTIVITY	OUTCOMES
Frequently asked questions (FAQs)	• FAQs are made available to stakeholders through the website - http://www.bylongproject.com.au/index.cfm/media/frequently-asked-questions/
Community newsletters and community information flyers	• 12 community newsletters have been distributed to the community since 2011. The next newsletter will be distributed in December 2015. • Newsletters are distributed via letterbox drop to Bylong Valley residence, email and also made available on the project website - http://www.bylongproject.com.au/index.cfm/media/community-newsletters/ • Letters and flyers have also been distributed to the local community regarding important project events and updates, for example, regarding agricultural land management activities and community information session summaries
Community liaison team	• Two Community Liaison Officers (CLO) have been appointed to engage local communities and landholders • CLO contact details are published on the website, media releases, newsletters, letters, fact sheets, email signatures
Participation in local events and / or activities	• Project staff have participated in and provided volunteer support to local events including Rylstone StreetFeast, Rylstone Kandos Show, Bylong Swap Meet, and the Bylong Rural Fire Brigade • The Project has also provided sponsorship to local events and organisations:
	o Kandos Rylstone Men's Shed o Rylstone Street Feast o Bylong Hall Committee o Rylstone Kandos Show o Rylstone Hospital Auxiliary o Mudgee Disability Support Service o Mudgee Men's Shed o Rotary Club of Mudgee Sunrise Inc o Cudgegong Valley Mathematics o Rylstone Public School o Kandos High School o Rylstone Branch Combined Pensioners & Superannuates
Media and information releases	• Ongoing proactive media and information releases have been provided as required addressing matters of stakeholder interest. These are also available on the project website - http://www.bylongproject.com.au/index.cfm/media/media-and-information-release/
Consultation Manager records of discussions with stakeholders	• Consultation Manager is updated regularly with stakeholder contact details