



18 September 2019

Bylong Coal Project (SSD 6367)

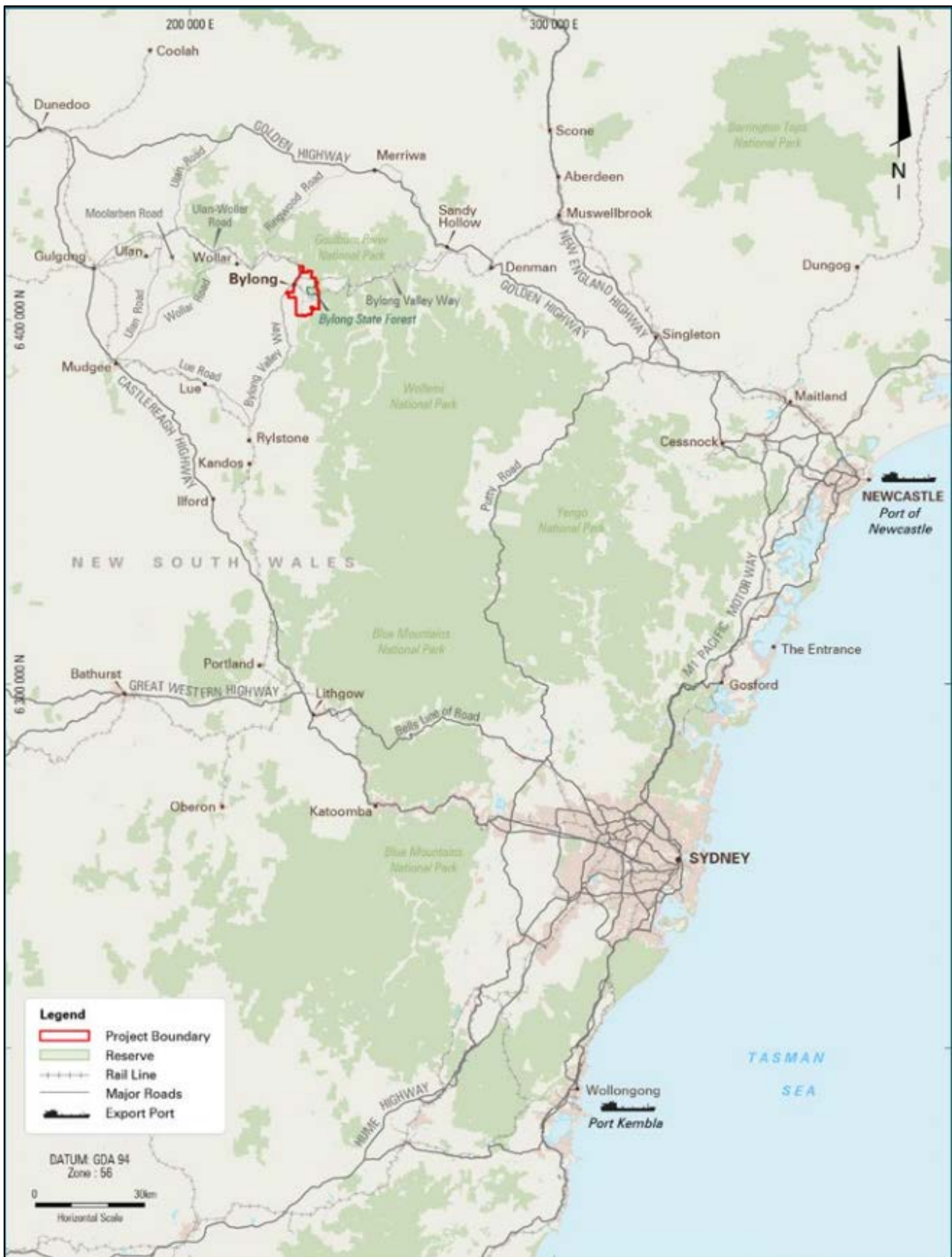
1 INTRODUCTION

1. On 4 October 2018, the NSW Independent Planning Commission (**Commission**) received from the NSW Department of Planning and Environment (**Department**) a State significant development application (**SSD**) 6367 from KEPCO Bylong Australia Pty Ltd (**Applicant**) to develop and operate an open cut and underground coal mine to recover approximately 124 million tonnes (Mt) of run-of-mine (**ROM**) coal at a combined rate of up to 6.5 million tonnes per annum (Mtpa) of ROM coal for a period of 25 years (**Project**).
2. The Commission is the consent authority in respect of the Applicant's development application under section 4.5(a) of the *Environmental Planning and Assessment Act 1979* (**EP&A Act**) and clause 8A of *State Environmental Planning Policy (State and Regional Development) 2011* (**SEPP SRD**). This is because:
 - the Project is SSD under section 4.36 of the EP&A Act as the Project constitutes development for the purposes of coal mining, consistent with Schedule 1, clause 5 of the SEPP SRD; and
 - the Department received more than 25 submissions from the public objecting to the Project.
3. Professor Mary O'Kane AC, Chair of the Commission, nominated Gordon Kirkby (Panel Chair), Wendy Lewin, and Steve O'Connor to constitute the Commission determining the Bylong Coal Project.

1.1 Site and locality

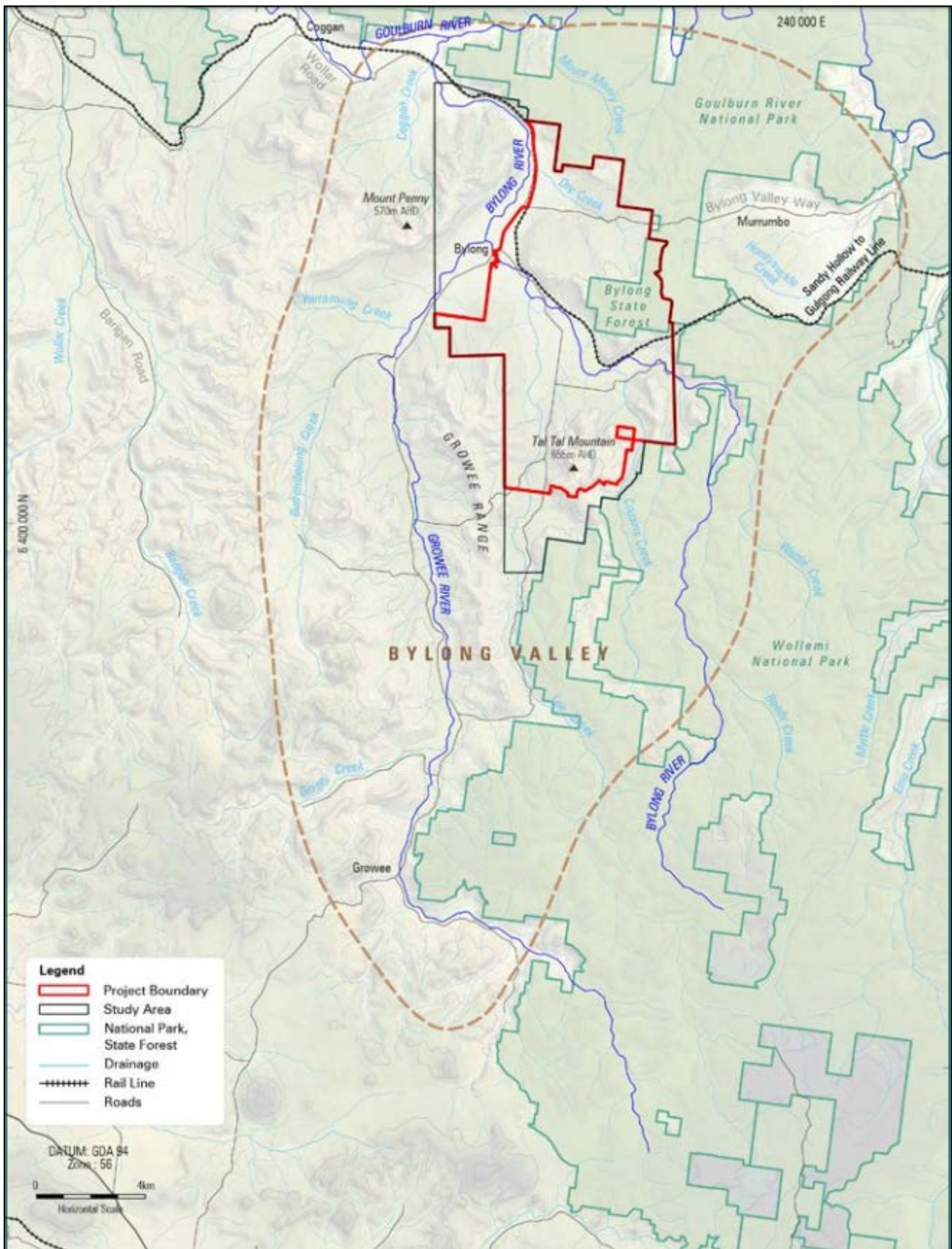
4. According to the Applicant's *Bylong Coal Project Environmental Impact Statement*, dated September 2015 (**EIS**), the Project is a proposed open cut and underground thermal coal mine for a greenfield site in the Bylong Valley. It is located in the Mid-Western Regional Local Government Area (**Figure 1**), approximately 55 kilometres (km) northeast of Mudgee. It covers an area of approximately 6,958 hectares (**ha**) of land. Of this, approximately 1,160 ha would be subject to surface disturbance and up to 1,714 ha would be impacted by subsidence (the **Project Site**).
5. There are no currently approved or active coal mines within 20 km of the Project Site.
6. The Bylong Valley has had a long history of agricultural land use, including grazing, cropping (dryland and irrigation) and horse breeding. The Project Site and surrounding land supports agricultural activities and are comprised of cleared cultivated lands, cleared grasslands, lower slope grazing, hill grazing and heavy timber, as shown in Figure 9 of the EIS. The majority of the Project Site contains cleared agricultural land with native vegetation prevalent within the remaining area.
7. Bylong Valley is a rural landscape comprised of cleared agricultural land surrounded by vegetated slopes and ridgelines, which has historically been used for cropping, grazing and horse studs. There are a number of remnant historical buildings and structures located within the Bylong Valley, including several historical locally significant items and complexes such as Tarwyn Park Homestead, which is located within the Project Site (**Figure 4**).
8. The whole of the Project Site is located within the Bylong Landscape Conservation Area, which is listed on the non-statutory National Trust (NSW) Register (see **Figure 10**) and includes the historical items and associated views.

Figure 1: Regional Context



Source: Bylong Coal Project EIS, September 2015

Figure 2: Site Location



Source: Bylong Coal Project EIS, September 2015

9. The main watercourse within the Bylong Valley is the Bylong River, which is ephemeral in nature. The Bylong State Forest is located within the eastern portion of the Project boundary and the Goulburn River National Park and Wollemi National Park bound the Project Site to its north-east and south-east, respectively (see **Figure 2**). The Bylong Valley is adjacent to the National Parks and Blue Mountains World Heritage Area. These places and features, including the mountains of the Great Dividing Range, provide a backdrop for the area's recognised aesthetic beauty.
10. The Applicant owns approximately 7,547 hectares of land within and surrounding the Project Site. Within the Project Site, approximately 5,425 ha of freehold land or approximately 78% of the Project Site is owned by the Applicant and the remaining 21% is either Crown land, State forest or freehold land under private ownership. Since the EIS was prepared, the Applicant has completed further acquisitions of properties surrounding the Project (see section 1.5, p.9 of the Department's Final Assessment Report, dated October 2018 (**Final Assessment Report**)).

1.2 Summary of the Project before the Commission

1.2.1 Bylong Coal Project

11. The Project, as originally proposed in the EIS, comprises the following components (see **Figure 3**):

Mines

- the development of two open cut mines and associated out-of-pit emplacement areas. One open cut mine is situated on the historic Tarwyn Park property;
- underground mining by longwall mining methods (15 longwalls);
- extraction of 124 million tonnes of ROM coal to produce approximately 90 million tonnes of product coal, comprising 33 million tonnes of ROM coal by open cut methods and 91 million tonnes of ROM coal by longwall mining methods;

Construction

- construction and operation of a range of infrastructure to support the mine including a coal handling and preparation plant, mine access roads, workforce accommodation facility (**WAF**), ventilation shafts, water supply and water management, electricity supply, communications, and administration infrastructure;
- realigning and upgrading of local road infrastructure;

Operations

- transportation of coal to the Port of Newcastle for export via a new rail loop and rail loading facility;
- 24 hours a day, seven days a week operation during construction and operation;
- Project life of 25 years, including:
 - o an initial two-year construction-only period
 - o a 23-year active mining period comprised of:
 - open cut mining for 8 years;
 - underground mining for 19 years; and
 - concurrent operations of both methods for 4 years; and

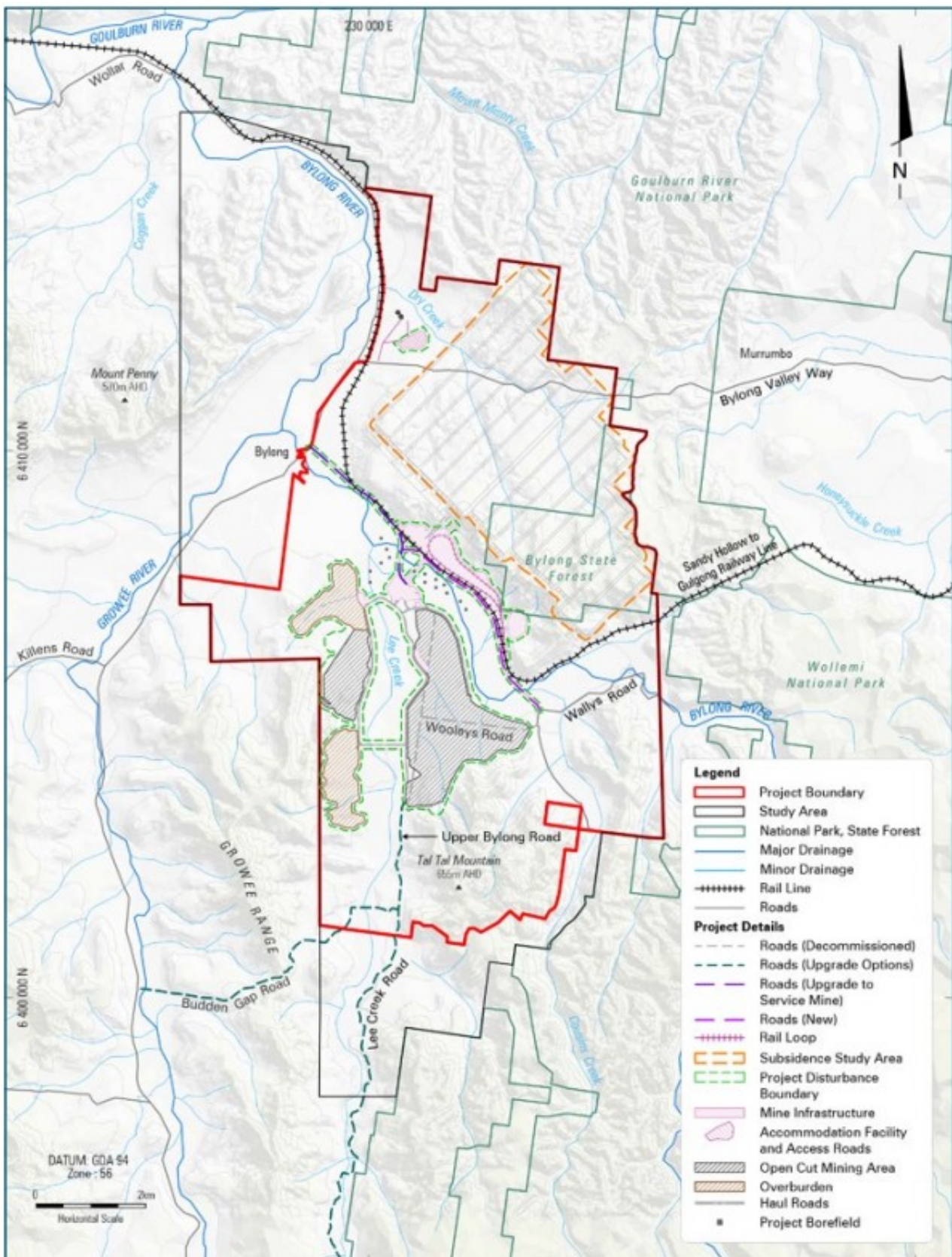
Rehabilitation

- progressive mine site rehabilitation with the aim of achieving the equivalent agricultural land quality as the existing Biophysical Strategic Agricultural Land (**'BSAL'**) (**'BSAL-equivalent'** land), resulting in a final landform that is agriculturally productive and with no final void.

1.2.2 Revised Mine Plan

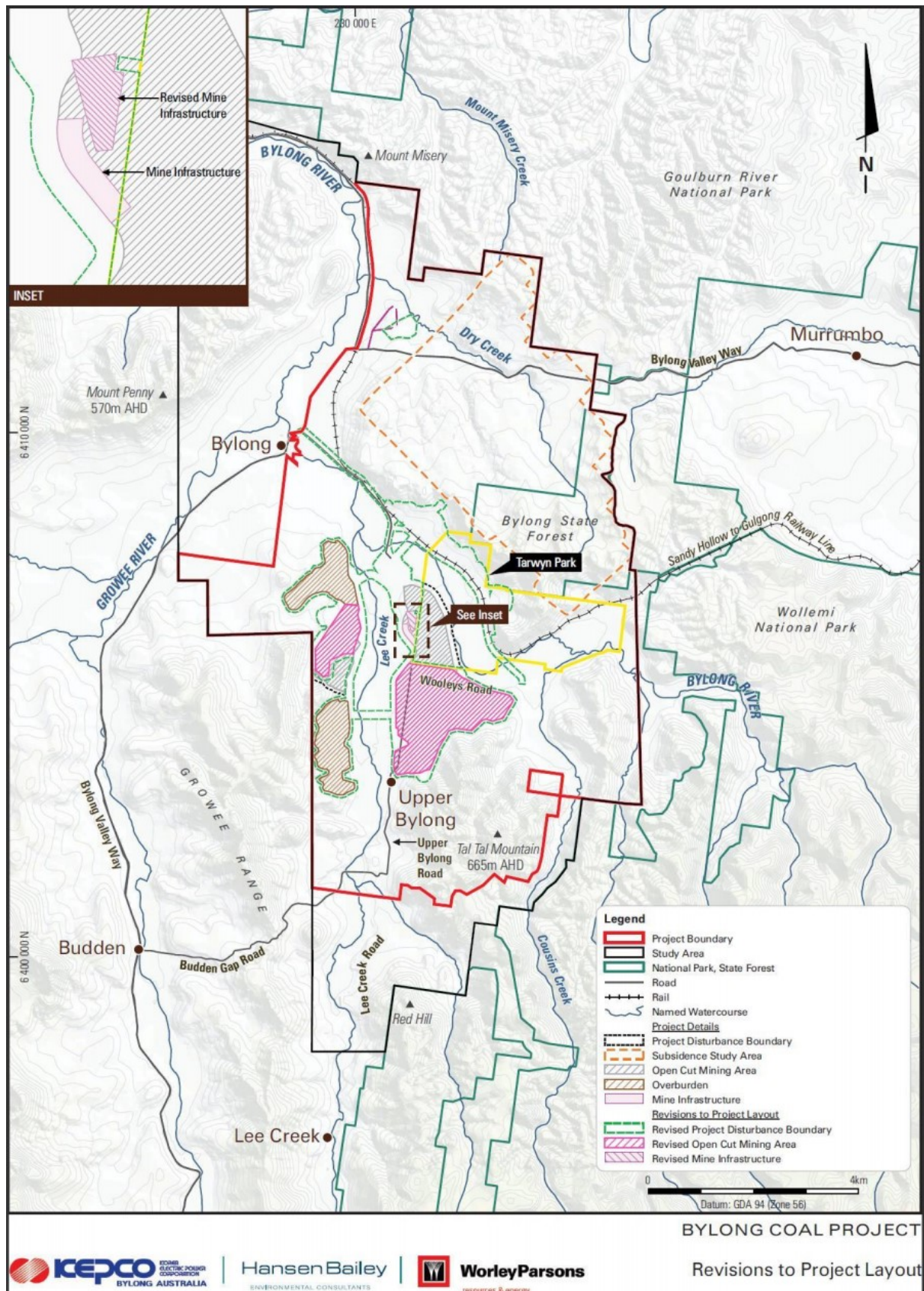
12. Following review of the Project by the former Planning Assessment Commission (**PAC**) in July 2017 (the **PAC Review Report**), and a letter from the Department to the Applicant dated 28 May 2018, the Applicant submitted a Bylong Coal Project – Supplementary Information Report (**Supplementary Information Report**) to the Department in July 2018, which provided details of a **Revised Mine Plan**.
13. The 28 May 2018 letter stated that the Department “*considers that revisions to the proposed mine plan are required to adequately avoid and minimise the potential impacts on the heritage values of Tarwyn Park and surrounding landscape*” and that “*no open cut mining or overburden emplacement should be permitted on the Tarwyn Park property; and overburden emplacement areas should be redesigned to minimise the visual impacts and maximise the integration of the proposed final landform with the surrounding topography*”.
14. The Revised Mine Plan submitted by the Applicant includes the following changes, and is illustrated in **Figure 4**:
 - removal of open cut mining and overburden emplacement from the Tarwyn Park landholding, avoiding impacts on the former Upper Bylong Catholic Church and cemetery;
 - reducing the volume of overburden being handled by around 24%;
 - reducing the footprint of the western open cut by 22.5 ha to maintain a wooded ridgeline and retain the existing views from the Tarwyn Park homestead;
 - modifying the north-western overburden emplacement area to incorporate a valley/ drainage line, to minimise visual impacts on Tarwyn Park homestead;
 - reducing the height and slope of the south-western overburden emplacement area to integrate with the existing topography;
 - re-establishing the connection between the Upper Bylong Road and Lee Creek Road at mine closure, subject to consultation and agreement with Mid-Western Regional Council (the **MWRC**);
 - incorporating macro relief into the conceptual final landform, consistent with existing landscape elements in the Upper Bylong Valley; and
 - removal of the on-site WAF to accommodate the construction workforce.
15. The Revised Mine Plan would result in approximately 1,047 ha of surface disturbance, compared to the Project’s surface disturbance of approximately 1,160 ha.
16. Further to the Revised Mine Plan, the Department recommended a set of conditions (**Final Proposed Conditions**) in its Final Assessment Report to amend the Project in line with the Revised Mine Plan and prohibit the construction of the WAF and the open cut mine on the historic Tarwyn Park property (see section 2.5 for a summary of the Final Assessment Report). The Revised Mine Plan and the Final Proposed Conditions are collectively referred to as the **Recommended Revised Project**.
17. The Commission notes that despite providing an assessment of the Revised Mine Plan, the Applicant has not formally amended its development application (see paragraph 54). The Commission has therefore assessed the Project on the basis that approval is being sought for the Project as originally proposed in the EIS submitted with the development application, as described in paragraph 11.
18. The Commission has also considered the merits of the Recommended Revised Project, as put forward by the Department in its Final Assessment Report, as a potential modification to the Project under section 4.38(1)(a) of the EP&A Act.

Figure 3: Project Layout



Source: Bylong Coal Project EIS

Figure 4: Recommended Revised Project Layout



Source: Bylong Coal Project – Supplementary Information to the Department, July 2018

1.3 Stated need for the Project

19. In its EIS, the Applicant states that the Project is required because:

"The coal resource within the Bylong Authorisations has a significant material value to the Local, State and Australian communities, which would be foregone without its recovery." (p.367)

20. Further, in its EIS the Applicant states that *"the Project will:*

- Assist Australia to continue to meet the international demand for thermal coal for at least the next 25 years, during which time it is expected that there will continue to be a strong world demand for coal for the purposes of electricity generation;*
- Support Australia in maintaining its reputation as a consistent and reliable supplier of thermal coal to its existing and expanding markets; and*
- Contribute materially to sustaining the Australian economy and maintaining the economic stability of NSW, the MWRC LGA and the broader local Hunter region." (p.368)*

21. The Applicant re-iterates the need for the Project in its Supplementary Information Report:

"...the Republic of Korea Government and KEPCO continue to support the need (and strategic importance) of the Project to the people of South Korea." (p.69)

"...whatever the coal price is during the operation of the Project, it is clear that the royalties to be paid to the NSW Government as a result of recovering the coal resource will be in the hundreds of millions of dollars (present value) in addition to the several billion dollars of economic stimulus to the Mid-Western Region and even more to NSW as a whole... This significant benefit to NSW, along with the various other benefits from the Project will continue to substantially outweigh any residual economic costs of the Project." (p.70)

2 KEY STEPS IN THE CONSIDERATION OF THE APPLICATION

2.1 The Mining Gateway Panel's consideration of the Project

22. On 10 January 2014 the Applicant submitted a Gateway Application to the Mining and Petroleum Gateway Panel for assessment.
23. On 15 April 2014 the Project was granted a conditional Gateway Certificate for the Project, accompanied by a report and recommendations by the Gateway Panel, as set out in Section 5.2.2.
24. On 15 April 2019 the Gateway Certificate expired. The Commission notes however that the *SEPP (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP)* was amended on 30 August 2019 and specifies if a gateway certificate accompanies a development application made in respect of a proposed mining or petroleum development — the certificate remains current until that application is finally determined. (see paragraph 124).

2.2 The Department's consideration of the Project

25. On 22 July 2015, the Applicant submitted its development application and EIS for the Project to the Department.
26. The Department publicly exhibited the EIS from 23 September 2015 to 6 November 2015 and notified relevant government agencies.

27. The Department received 350 submissions from the general public, special interest groups and government agencies. Of these, 336 objected to the Application, 12 supported, and two provided comments that neither support nor objected. 315 submissions were received from individuals, of which 14 were from local residents (12 objecting and two supporting), and 66 were from residents located up to 60 km away, including from the regional centre of Mudgee (61 objecting and five supporting). The remaining 235 individual submissions lived over 60km from the Project Site. None of the 14 agency submissions objected to the Application.
28. On 23 March 2016, the Applicant submitted the *Bylong Coal Project Environmental Impact Statement Response to Submissions*, dated March 2016 (**RtS**). The RtS responded to the key concerns raised during the public exhibition of the EIS and presented amended assessments of the potential impacts of the Project, including impacts in relation to water resources, agricultural landscapes, the heritage values of the Tarwyn Park property and Iron Tank property.
29. The key concerns raised in the submissions were set out in the Department's Preliminary Assessment Report, dated 31 March 2017 (**Department's Preliminary Assessment Report**) on p.2 and in Section 5.6, p.31, as illustrated below in **Figure 5**.

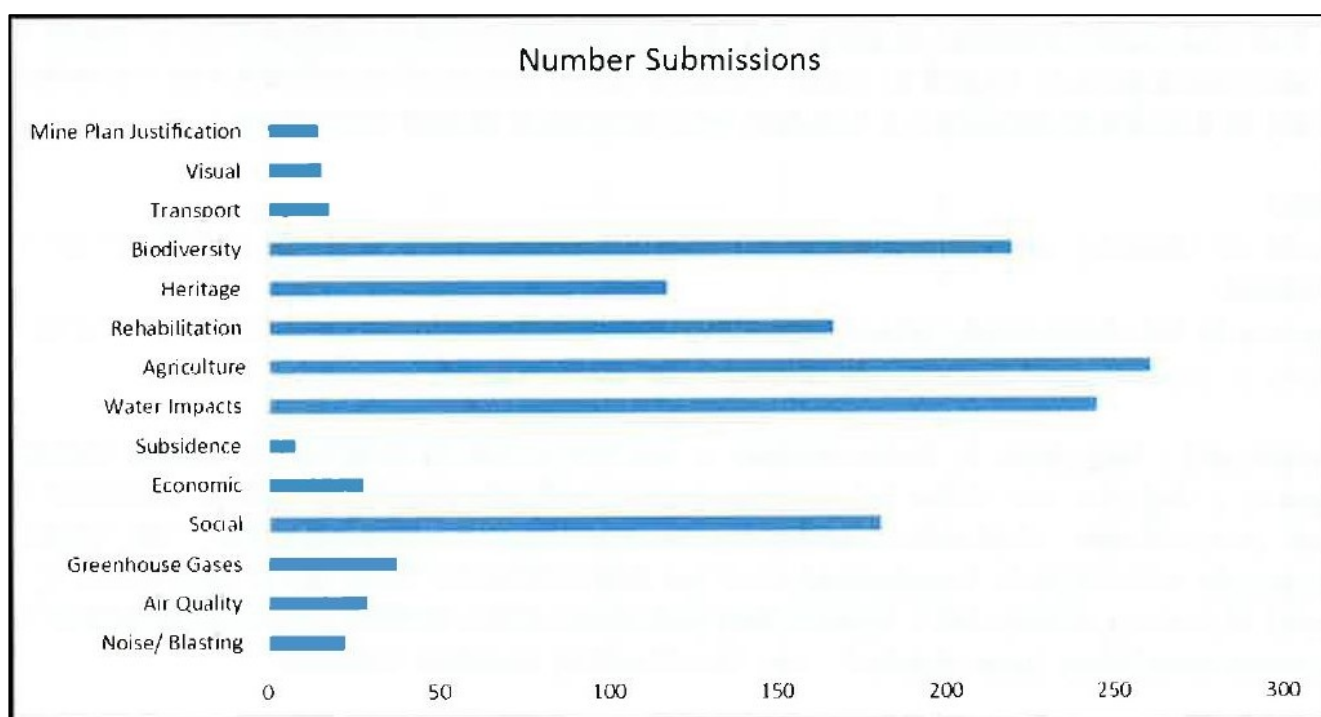


Figure 5: Department's Submissions Summary (Source: Department's Preliminary Assessment Report, 31 March 2017)

2.3 The Planning Assessment Commission's review process and public hearing

30. On 9 January 2017, the then Minister for Planning requested the PAC to carry out a review of the Bylong Coal Project, to conduct a public hearing and submit a report on the review to the Department.
31. On 31 March 2017, the Department completed its Preliminary Assessment Report, following which the PAC commenced its review of the Project.
32. On 11 May 2017, the PAC held a public hearing at Club Mudgee, 99 Mortimer Street, Mudgee. A total of 44 speakers presented at the public hearing. The summary of issues from the written and oral submissions are found at Appendix 3 to the PAC Review Report and include the following topics: groundwater and surface water; social impacts; heritage impacts; economic impacts; agricultural impacts and rehabilitation; subsidence; biodiversity; and noise and infrastructure (local roads and rail lines).

33. In May 2017 the PAC commissioned GML Heritage to prepare a Heritage Review Report (**Heritage Review**), which included assessing Tarwyn Park and Iron Tank against the NSW Heritage Assessment Criteria. The report found that Tarwyn Park and Iron Tank fulfilled one or more criteria for heritage listing at the State level.
34. On 25 July 2017, the PAC released the PAC Review Report, which identified issues and concerns in relation to:
- Mine plan justification and economic evaluation: including the integrated mine plan and the need for the open cut component, open cut product coal quality, the support of the Korean Government, economic evaluation, benefit cost analysis, Computable General Equilibrium (CGE) modelling, and the risk of project failure.
 - Water: including groundwater development, groundwater modelling uncertainty, water supply and entitlements, water inflows and entitlements, water balance and management of excess water.
 - Land use compatibility: including competing land uses and loss of agricultural production, commitment to managing agricultural activities, loss of BSAL, and rehabilitation.
 - Heritage: including heritage significance and impacts on the Tarwyn Park and Iron Tank properties, landscape heritage values and impacts, Aboriginal heritage.
 - Social: including adequacy of the Social Impact Assessment and mitigation measures, Voluntary Planning Agreement, and the WAF.
 - Subsidence: covering impacts on cliffs and Bylong Valley Way.
 - Visual impacts: including the impacts of night lighting on Siding Spring Observatory.
 - Biodiversity: including biodiversity security for Offset Area 5 and other biodiversity matters.
 - Transport and traffic: including road funding within Midwestern Regional Council, and traffic from the Hunter Valley and on school bus routes.
 - Air, noise and blasting: including Voluntary Land Acquisition and Mitigation Policy (**VLAMP**), low frequency noise, diesel emissions, background air quality, blast impacts on Tarwyn Park and other sensitive sites.
35. The PAC Review Report concluded that “...*doubts persisted about the potential benefits and impacts of this project, despite extensive research and peer assessment. As a result, all aspects of the project would need to be comprehensively and cautiously considered, carefully weighted, and balanced one against another at the determination stage*”.

2.4 The Department's consideration of the Applicant's Review Response

36. In January 2018, the Applicant submitted to the Department its *Bylong Coal Project Response to PAC Review Report, January 2018* (the **Review Response**) to address the issues and concerns in relation to the Project raised in the PAC Review Report.
37. The Department requested the Heritage Council provide independent advice on a range of heritage matters associated with the Project. The Heritage Council commissioned Hector Abrahams Architects Pty Ltd to undertake a desktop study and site inspection, which included a *Heritage Impact Assessment* report and a broader *Heritage Significance Assessment*. These reports were provided to the Department on 23 February 2018.
38. As stated in paragraphs 12-13 on 28 May 2018 the Department wrote to the Applicant and stated that it considered that revisions to the Project were required and requested supplementary additional information.
39. In July 2018, the Applicant provided the Supplementary Information Report, which provided details and an updated impact assessment of the Revised Mine Plan.

2.5 The Department's Final Assessment Report

40. On 4 October 2018, the Department completed its Final Assessment Report, which considered the Revised Mine Plan put forward in the Supplementary Information Report (see paragraph 1.2.2). The Final Assessment Report recommended the approval of the Recommended Revised Project, including the Revised Mine Plan, with the removal of the WAF, and Final Recommended Conditions.
41. The Department's Final Recommended Conditions included the following two conditions that significantly amend the size, scope and impact of the Project:

- Schedule 2, Condition 2:

The Applicant must carry out the development:

- (a) generally in accordance with the EIS;*
- (b) in accordance with the conditions of consent; and*
- (c) for the open cut stage, generally in accordance with the Revised Mine Plan.*

- Schedule 2, Condition 8:

This consent does not permit the construction of a WAF at the site.

42. The Department's Final Recommended Conditions also included the following rehabilitation conditions, that are critical to mitigating land use impacts of the Project:

- Schedule 4, Condition 62:

The Applicant must rehabilitate the site to the satisfaction of DRG. This rehabilitation must be generally consistent with the proposed rehabilitation activities described in the EIS (and depicted conceptually in Appendix 7), and comply with the objectives in Table 17.

- Schedule 4, Condition 63:

The Applicant must rehabilitate the site progressively as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim rehabilitation strategies must be employed when areas prone to dust generation cannot yet be permanently rehabilitated.

- Schedule 4, Condition 64:

Prior to carrying out any development under this consent, unless otherwise agreed by the Planning Secretary, the Applicant must prepare a Rehabilitation Management Plan for the development to the satisfaction of DRG. This plan must:

- (a) be prepared in consultation with the Department, DoI Water, DPI Agriculture, OEH, Council and the CCC;*
- (b) be prepared in accordance with any relevant NSW Government mining rehabilitation guidelines;*
- (c) include a detailed soil balance for the development;*
- (d) include a detailed plan for reinstatement and review of the proposed:*
 - agricultural land capability across the site, including a protocol for periodic trials to demonstrate that the land capability is being achieved;*
 - BSAL, including a protocol for verification of the land as BSAL-equivalent land; and*
 - woodland areas;*
- (e) optimise the design of the final landform to incorporate macro and micro-relief features to improve visual integration with the existing landscape and rehabilitation to meet BSAL-equivalent land and LSC Class 3 and Class 4 land.*
- (f) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary);*
- (g) include a final void management strategy including:*
 - identifying the capacity required for reject emplacement and water storage;*

- details on the separation of reject and water storages within the final void;
 - inventory and management of fill and capping materials;
 - actions to prioritise storage of underground mine water within the goaf; and
 - annual review of reject and water storage estimates to optimise the final void size required prior to cessation of open cut mining operations;
- (h) describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform, final land use and post mining social impacts;
- (i) describe the rehabilitation methodologies that will be implemented to achieve the rehabilitation performance measures;
- (j) describe a process for managing minor delays or changes to progressive rehabilitation forecasts;
- (k) include interim rehabilitation where necessary to minimise the area exposed for dust generation;
- (l) include a program to monitor, independently audit and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria; and
- (m) build to the maximum extent practicable on the other management plans required under this consent.
- Schedule 4, Condition 64:
The Applicant must implement the approved Rehabilitation Management Plan for the development

43. In preparing its Final Assessment Report, the Department consulted with the Environment Protection Authority (**EPA**), Office of Environment and Heritage (**OEH**), Department of Industry – Lands and Water (**DoI - L&W**), Division of Resources and Geoscience (**DRG**), the MWRC, and the Heritage Council.
44. The Department's Final Assessment Report considered the following activities and impacts in relation to the Recommended Revised Project:
- groundwater and surface water impacts;
 - post mining rehabilitation;
 - impacts to agricultural production;
 - heritage and landscape values;
 - social impacts;
 - mine subsidence;
 - biodiversity impacts;
 - greenhouse gas (**GHG**) emissions;
 - traffic and transport impacts; and
 - amenity impacts on air quality and noise.
45. The Recommended Revised Project includes the changes to the Project listed at paragraph 14.
46. The Department stated in its Final Assessment Report that the Recommended Revised Project will reduce impacts compared to the Project by:
- “ensuring key integrated elements of natural sequence farming across the Tarwyn Park landholding are retained, including its ongoing research potential;
 - significantly reducing visual impacts on the Tarwyn Park farm complex and more broadly across Upper Bylong Valley;

- *avoiding direct impacts on 2 heritage items;*
 - o *Tarwyn Park horse burials; and*
 - o *the former Upper Bylong Catholic Church and cemetery;*
 - *reducing direct disturbance on 113 ha (or 9.7%) of native vegetation including 69 ha of native vegetation and 4.5 ha of Box Gum Woodland Endangered Ecological Community (EEC);*
 - *reducing direct disturbance of 22.7 ha of Biophysical Strategic Agricultural Land (BSAL) (5.4% reduction) and 112.8 ha of Equine Critical Industry Cluster (CIC) (16.1% reduction); and*
 - *reducing peak air emissions from the mining operations.”*
47. The Department’s Final Assessment Report stated that the Department’s Final Recommended Conditions in the Recommended Revised Project:
- *“reflect best practice and provide a sound basis for preventing, minimising and/or offsetting the impacts of the project”; and*
 - *“provide a comprehensive, strict and precautionary approach to ensuring the project can comply with relevant performance measures and standards, and that the predicted residual impacts can be effectively minimised, mitigated and/ or compensated.”*
48. The Department’s Final Assessment Report concluded that:
- “While there would be residual impacts on the local environment and community, acknowledging that social impacts have already occurred during the exploration and assessment stage of the project, KEPCO through its iterative mine design has avoided, minimised, mitigated and/or offset impacts in accordance with NSW Government policy, statutory requirements and guidelines.”*
49. Based on its assessment, the Department concludes that the Recommended Revised Project as subject to the Final Proposed Conditions provides a comprehensive, strict and precautionary approach to ensuring compliance with relevant performance measures and standards, and that the predicted residual impacts can be effectively minimised, mitigated and/ or compensated.
50. Consequently, the Department considers that the benefits of the Recommended Revised Project outweigh its costs, and that the Recommended Revised Project is approvable subject to the Department’s Final Recommended Conditions.

3 THE COMMISSION’S MEETINGS AND SITE INSPECTION

51. As part of its assessment of the Project and Recommended Revised Project, the Commission met with the Department, the Applicant, the MWRC, Muswellbrook Shire Council, Bylong Valley Protection Alliance (**BVPA**) and the various persons as set out below. Transcripts of each of these meetings were made available on the Commission’s website on 15 November 2018, unless otherwise stated.

3.1 Meeting with the Department

52. On 29 October 2018, the Commission met with the Department. The matters discussed at the meeting were in relation to the revisions in the Revised Mine Plan and the impacts from the Recommended Revised Project including heritage, ground and surface water, agricultural production, greenhouse gas emissions and post mining rehabilitation.

3.2 Meeting with the Applicant

53. On 29 October 2018, the Commission met with the Applicant. The matters discussed at the meeting included the revisions in the Revised Mine Plan.

54. On 19 December 2018, the Applicant wrote to the Commission, clarifying comments in the meeting transcript as to whether that the Applicant had sought an amendment to the Project under the EP&A Act. The Applicant confirmed that it is seeking consent for the Project, as set out in the EIS and RtS. The Applicant stated in this letter that “*KEPCO’s application (SSD 14_6367) is for consent to a development involving the **original mine plan**.*” This letter was made available on the Commission’s website on 16 January 2019.

3.3 Site inspection

55. On 6 November 2018, the Commission conducted an inspection of the site with the Applicant and local community group representatives identified in paragraph 56. The site inspection commenced at the site office and followed identified points set out in a booklet of maps and figures provided by the Applicant (**the booklet**). It included the Tarwyn Park and Iron Tank properties, the locations of the proposed eastern and western open cut pits, Telstra Hill and the western overburden emplacement areas, and the woodlands above the proposed underground extraction area. The booklet and the minutes of the site inspection were made available on the Commission’s website on 16 January 2019.
56. Representatives from the following local community groups attended and observed the site inspection:
- the BVPA;
 - the Hunter Communities Network;
 - the Warrabinga Native Title Claimants Aboriginal Corporation;
 - the Kandos/Rylstone Men’s Shed;
 - the Mudgee Chamber of Commerce; and
 - the MWRC.

3.4 Meeting with Mid-Western Regional Council

57. On 6 November 2018, the Commission met with the MWRC. The matters discussed at the meeting included:
- the community and MWRC’s support of the Recommended Revised Project,
 - the role of the Recommended Revised Project in the economic development in the region,
 - the Applicant’s contributions to the region, and
 - the Applicant’s responsiveness to addressing community and agency concerns regarding the Project.

3.5 Public meeting

58. On 7 November 2018 the Commission held a public meeting at Parklands Resort and Conference Centre, 121 Ulan Road, Mudgee. A list of the 58 speakers that presented to the Commission, a transcript of the public meeting and a copy of the Material tendered at the public meeting were made available on the Commission’s website by 15 November 2018. An opportunity to lodge written comments was afforded until seven days following the public meeting.
59. All comments received were made available on the Commission’s website. A total of 3,192 comments, including campaign comments and petition signatories, in relation to the Recommended Revised Project were received by the Commission.
60. Of the individual written comments, 2,530 were a standard-form letter provided through Do-Gooders and the Lane Cove Coal and Gas Watch. These raised objection to the Recommended Revised Project and stated that it should not proceed because it will:
- directly open cut BSAL, which cannot be replaced;
 - destroy areas that are part of Equine Critical Industry Cluster (**Equine CIC**);

- damage the Bylong River and its alluvial aquifer;
 - increase global warming from burning fossil fuels; and
 - damage the heritage values of the Bylong Valley landscape and broader heritage values of the Greater Blue Mountains World Heritage Area.
61. A petition signed by 382 individuals from the Kandos–Rylstone areas in support of the Recommended Revised Project was presented to the Commission at the public meeting. The petition stated that the Recommended Revised Project will *“deliver significant benefits to the region including creating approximately 830 direct and indirect jobs in the Mid-Western Regional Council and over 1,490 direct and indirect jobs in New South Wales. Further, we believe that the proponent, KEPCO, has demonstrated its commitment to working with the Mid-Western community including through its Community Investment Fund.”*
62. An additional 134 written submissions were received after the expiry of the seven-day period following the public meeting and were placed on the website on 15 November 2018. These submissions all raised objections to the Recommended Revised Project and stated that it should not proceed.
63. The matters raised in these written submissions included:
- the role of the Project and/or Recommended Revised Project in the local and regional economy;
 - the proposed contributions by the Applicant to the regional and local community;
 - the adverse social impacts caused by the Project and/or Recommended Revised Project;
 - ground and surface water impacts;
 - the need to consider climate change as part of the public interest of the project;
 - the impacts to agricultural production, including through loss of water resources; and
 - public safety issues from changed traffic patterns.

3.6 Meeting with Muswellbrook Shire Council

64. On 12 November 2018, the Commission met with Muswellbrook Shire Council. The matters discussed at the meeting included the likely impacts to road usage and safety as a result of the increased usage of the regional road network, and the requirement for adequate funding for the upgrading and maintenance of the Bylong Valley Way.

3.7 Meeting with the Bylong Valley Protection Alliance

65. On 12 November 2018, the Commission met with the BVPA, which was represented by the EDO and counsel, as well as the Australia Institute, the University of New South Wales Water Research Laboratory, and the Institute of Energy, Economics and Financial Analysis (IEFFA). This meeting was supplementary to the public meeting and was held for the purpose of discussing technical matters. The matters discussed included likely changes to the global energy market, the economic risk associated with approving a new coal mine, the function and limitations of the provided groundwater modelling and legal concerns regarding the adequacy of the Department’s Final Recommended Conditions of consent.

3.8 Meeting with the Department and Department of Primary Industries - Agriculture

66. On 6 August 2019, the Commission met with the Department and Department of Primary Industries – Agriculture (DPI). The matters discussed were in the BSAL policy framework in NSW and the rehabilitation and reinstatement of BSAL soils in relation to the Project.

4 ADDITIONAL INFORMATION

67. On 23 November 2018, the Commission wrote to the Department seeking further information in relation to the potential impacts to the local groundwater resources.
68. On 28 November 2018, the Commission engaged GW-SW Pty Ltd to undertake an independent review of the groundwater assessment.
69. On 5 December 2018, the Commission wrote to the Department seeking an updated independent review of the economic assessment undertaken for the Project.
70. On 20 December 2018 the Department provided the Commission with the *Review of Economic Analysis supporting the Revised Bylong Coal Project*, dated 20 December 2018 (the **Independent Economic Review**).
71. The above correspondence and documents were published on the Commission's website on 16 January 2019.
72. On 19 December 2018, the Applicant confirmed that despite submitting details of the Revised Mine Plan in the Supplementary Information Report, it was not seeking a formal amendment to the Project under section 55 of the EP&A Regulation, and that it was still seeking approval for the Project as described in the EIS.
73. On 12 February 2019, the Department provided a response to the Commission's request for further information on groundwater resources, the *Bylong Coal Project (SSD 6367) – Request for Additional Information*, dated 13 February 2019 (the **Department's Groundwater Response**). On 15 February 2019 this response was published on the Commission's website.
74. On 18 February 2019, the EDO, on behalf of the BVPA, submitted a letter including a copy of the NSW Land and Environment Court's judgment in *Gloucester Resources Limited v Minister for Planning [2019] NSWLEC 7 (Gloucester Resources v Minister)*, and correspondence from Professor Will Steffen and the Institute for Energy Economics and Financial Analysis.
75. On 5 March 2019, GW-SW Pty Ltd provided the Commission with the *Review of Groundwater Issues Associated with the Proposed Bylong Project* (the **Independent Groundwater Review**). On 11 March 2019 the Independent Groundwater Review was published on the Commission's website.
76. On 30 May 2019, the Commission engaged GML Heritage to update their review of the heritage impacts of the Project undertaken for the PAC to consider the heritage impacts of the Recommended Revised Project.
77. On 11 June 2019, GML Heritage provided their Heritage Review of the Recommended Revised Project. On 12 June 2019 this report was published on the Commission's website.

5 MATERIAL CONSIDERED BY THE COMMISSION

5.1 Material before the Commission

78. In this determination, the Commission has carefully considered the following material (**the Material**):
 - the Independent Expert Scientific Committee (**IESC**) advice (**IESC advice**) dated 14 March 2014
 - the report by the Mining & Petroleum Gateway Panel to accompany a Conditional Gateway Certificate for the Bylong Coal Project (the **Gateway Report**) dated 15 April 2014;
 - the Conditional Gateway Certificate (the **Gateway Certificate**) dated 15 April 2014;
 - the development application, including the Revised Secretary's Environmental Assessment Requirements, dated 11 November 2014;
 - the Bylong Coal Project Environmental Impact Statement (the EIS), dated September 2015 and prepared by Hansen Baily Environmental Consultants, and its accompanying appendices;
 - the Department's request to Minister for Lands and Water for advice, dated 4 January 2016;

- the Minister for Lands and Water advice to the Department, dated January 2016;
- the Bylong Coal Project: Environmental Impact Statement Response to Submissions (the RtS), dated March 2016, and its accompanying appendices;
- the Mining & Petroleum Gateway Panel's response to the Department, dated 9 September 2016;
- the Department's State Significant Development Assessment Bylong Coal Project (SSD-6367), dated 31 March 2017;
- the PAC's Bylong Coal Project SSD6367 Review Report, dated 25 July 2017, including Appendices;
- the Bylong Coal Project Response to PAC Review Report (the Applicant's Review response), dated January 2018, and its accompanying appendices;
- the Applicant's Revised Mine Plan detailed in the report Bylong Coal Project, Supplementary Information, July 2018;
- the Department's Final Assessment Report dated October 2018;
- the Microsoft Surface Pro tablet (the **tablet**) containing information and visual rendering regarding the Project and the Revised Mine Plan, dated 1 November 2018;
- information discussed with the Commission at its meeting with MWRC on 6 November 2018 and provided in the transcript published on the Commission's website;
- information discussed with the Commission at its meeting with Muswellbrook Shire Council on 12 November 2018 and provided in the transcript published on the Commission's website;
- information discussed with the Commission at its meeting with the Department on 29 October 2018 and provided in the transcript published on the Commission's website;
- information discussed with the Commission at its meeting with the Applicant on 29 October 2018 and provided in the transcript published on the Commission's website;
- information discussed with the Commission at its meeting with the BVPA on 12 November 2018 and provided in the transcript published on the Commission's website;
- oral submissions made by the 58 speakers at the public meeting and the 3192 written comments received subsequently;
- the Independent Groundwater Review prepared by GW-SW Pty Ltd, dated 5 March 2019;
- the Independent Economic Review prepared by CIE dated 20 December 2018;
- additional information provided by the Applicant including:
 - o Bylong Coal Project Response to Submissions on the Greater Blue Mountains World Area, dated 10 December 2018;
 - o Bylong Coal Project Response to Glencore Submission dated 12 November 2018, dated 14 December 2018;
 - o Bylong Coal Project Response to Submissions in Relation to Economic Impact Assessments, dated 18 December 2018;
 - o Bylong Coal Project Clarification over Meeting Transcript in Relation to Mine Plan Sought (SSD 14_6367), dated 19 December 2018;
 - o Bylong Coal Project Response to Submissions in Relation to Water Resources, dated 20 December 2018; and
 - o Bylong Coal Project Relevant Information for the IPC's Consideration in Relation to Greenhouse Gas Emissions, dated 4 March 2019;

- o Applicant's response to the EDO NSW Submission, dated 15 February 2019;
 - o the Department's Bylong Coal Project (SSD 6367) – Request for Additional Information, dated 13 February 2019, and its accompanying appendices (the Department's Groundwater Response);
 - o Bylong Coal Project Response to GML Heritage Advice, dated 27 June 2019;
 - o response to the Commission correspondence, dated 5 July 2019;
 - o comments on the Gateway Certificate, dated 23 July 2019;
 - o further comments on the Gateway Certificate, dated 5 August 2019;
 - o further comments on the Gateway Certificate, dated 13 August 2019; and
 - o comments on the Commission's meeting with the Department and DPI on 6 August 2019, dated 23 August 2019.
- the independent Heritage Review prepared by GML Heritage, dated 12 June 2019;
 - written comments received following the publication of the Heritage Review on the Commission's website.
 - written comments received following the publication of the Commission's media statement relating to the expiry of the gateway certificate;
 - written comments received following the publication of the Applicant's comments on the gateway certificate; and
 - information discussed with the Commission at its meeting with the Department and DPI on 6 August 2019 and provided in the transcript published on the Commission's website.

5.2 Mandatory considerations

79. In considering the Project and Recommended Revised Project, the Commission has taken into consideration the following relevant mandatory considerations, as provided in s 4.15 of the EP&A Act (**mandatory considerations**):
- a) the provisions of all:
 - i. environmental planning instruments (EPIs);
 - ii. proposed instruments that are or have been the subject of public consultation under the EP&A Act and that have been notified to the Commission (unless the Secretary has notified the Commission that the making of the proposed instrument has been deferred indefinitely or has not been approved);
 - iv. planning agreements that have been entered into under s 7.4 of the EP&A Act;
 - v. draft planning agreements that a developer has offered to enter into under s 7.4;
 - vi. the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) to the extent that it prescribes matters for the purposes of s 4.15(1) of the EP&A Act that apply to the land to which the development application relates,
 - b) the likely impacts of the development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality;
 - c) the suitability of the site for the development;
 - d) submissions made in accordance with the EP&A Act and EP&A Regulation; and
 - e) the public interest.
80. The Commission has considered the above mandatory considerations in Section 6 and Section 5.2.2-Section 5.2.6.

5.2.1 Public interest and ecologically sustainable development

81. Under s 1.3 of the EP&A Act, the relevant objects (**relevant objects**) applicable to the consideration of the Project and Recommended Revised Project are:

- a) *“to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State’s natural and other resources,*
- b) *to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,*
- c) *to promote the orderly and economic use and development of land,*
- d) *to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,*
- e) *to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage)”*

82. A relevant object of the EP&A Act to the consideration of the Project and Recommended Revised Project is section 1.3 (b) ‘to facilitate ecologically sustainable development’ (**ESD**). In paragraph 79 above, the public interest is listed as a mandatory relevant consideration. The term public interest has been held to include the principles of ESD. Section 6(2) of the *Protection of the Environment Administration Act 1991*, states that ESD:

“...requires the effective integration of social, economic and environmental considerations in decision-making processes. [ESD] can be achieved through the implementation of the following principles and programs:

(a) the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

In the application of the precautionary principle, public and private decisions should be guided by:

(i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and

(ii) an assessment of the risk-weighted consequences of various options,

(b) inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations;

(c) conservation of biological diversity and ecological integrity; and

(d) improved valuation, pricing and incentive mechanisms.”

83. The Commission has considered the relevant objects and the ecologically sustainable development principles in Section 6.

5.2.2 Relevant Environmental Planning Instruments

84. The EPIs that may apply to the Project and the Recommended Revised Project are:

- *Mid-Western Regional Local Environment Plan 2012 (MWR LEP 2012);*
- *SEPP No.33 – Hazardous and Offensive Development (SEPP 33);*
- *SEPP No.44 – Koala Habitat Protection (SEPP 44);*
- *SEPP No.55 – Remediation of Land (SEPP 55);*
- *SEPP State and Regional Development 2011 (SEPP SRD);*

- SEPP (Infrastructure) 2007 (Infrastructure SEPP); and
- Mining SEPP.

85. As required by s 4.15(1)(a) of the EP&A Act, the Commission has considered the provisions of these EPIs in its assessment of the Project and the Recommended Revised Project below in Section 6.

MWR LEP 2012

86. The Commission notes that the objectives of the MWR LEP 2012 are as follows:

“(a) to promote growth and provide for a range of living opportunities throughout Mid-Western Regional,

(b) to encourage the proper management, development and conservation of resources within Mid-Western Regional by protecting, enhancing and conserving:

- *land of significance to agricultural production, and*
- *soil, water, minerals and other natural resources, and*
- *native plants and animals, and*
- *places and buildings of heritage significance, and*
- *scenic values,*

(c) to provide a secure future for agriculture through the protection of agricultural land capability and by maximising opportunities for sustainable rural and primary production pursuits,

(d) to foster a sustainable and vibrant economy that supports and celebrates the Mid-Western Regional's rural, natural and heritage attributes,

(e) to protect the settings of Mudgee, Gulgong, Kandos and Rylstone by:

- *managing the urban and rural interface, and*
- *preserving land that has been identified for future long- term urban development, and*
- *promoting urban and rural uses that minimise land use conflict and adverse impacts on amenity, and*
- *conserving the significant visual elements that contribute to the character of the towns,*
- *such as elevated land and the rural character of the main entry corridors into the towns,*

(f) to match residential development opportunities with the availability of, and equity of access to, urban and community services and infrastructure, and

(g) to promote development that minimises the impact of salinity on infrastructure, buildings and the landscape.”

87. The Project Site is located within land zoned as RU1 – Primary Production and SP2 – Rail Infrastructure Facilities under the MWR LEP 2012. Open cut mining is permissible with consent on land zoned RU1, but is prohibited on land zoned SP2. The Commission notes that ‘underground mining’ is not listed as a land use in items 2, 3 and 4 of the MRWC land use table for RU1 and SP2 zones. However, under clause 7(1)(b)(i) of the Mining SEPP, development for the purposes of mining may be carried out on any land where agriculture or industry is a permissible land use, which includes land zoned SP2.

88. The objectives of the RU1 – Primary Production zone are stated to be:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*

- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To maintain the visual amenity and landscape quality of Mid-Western Regional by preserving the area's open rural landscapes and environmental and cultural heritage values.
- To promote the unique rural character of Mid-Western Regional and facilitate a variety of tourist land uses.

89. According to the MWR LEP, permitted uses in the RU1 zone:

- without consent are: "Environmental protection works; Extensive agriculture; Home businesses; Home occupations; Intensive plant agriculture; Roads; Water reticulation systems".
- with consent are: "Aquaculture; Building identification signs; Business identification signs; Cellar door premises; Dwelling houses; Extractive industries; Farm buildings; Home industries; Intensive livestock agriculture; Landscaping material supplies; Markets; **Open cut mining**; Plant nurseries; Restaurants or cafes; Roadside stalls; Any other development not specified in item 2 or 4" (**bold added**).

90. According to the MWR LEP 2012 the minimum lot sizes for the land within the Project Site is 100 hectares and 40 hectares.

91. The Commission has considered the objectives the MWR LEP 2012 in Section 5.2.2.

SEPP 33

92. According to the Department's Preliminary Assessment Report, the Project does not meet the definition of a 'potentially hazardous industry' under clause 3 of SEPP 33, which:

"...means a development for the purposes of any industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality:

(a) to human health, life or property, or

(b) to the biophysical environment,

and includes a hazardous industry and a hazardous storage establishment."

93. The Commission agrees with the Department that the Project (and by extension the Recommended Revised Project) does not meet the definition of a potentially hazardous industry and SEPP 33 therefore does not apply to the development.

SEPP 44

94. As stated in Appendix J of the Department's Preliminary Assessment Report, the Department undertook an assessment of the Project against SEPP 44, in which it reviewed the Applicant's ecological assessment accompanying the EIS.

95. The EIS concluded that the Project does not contain any areas of 'core koala habitat', defined by SEPP 44 to mean "an area of land with a resident population of koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population."

96. However, the EIS stated that as there are 124 ha of feed tree species located on the Project Site that would be required to be cleared, the Project would clear 'potential koala habitat', which means "areas of native vegetation where the trees of the types listed in Schedule 2 [feed tree species] constitute at least 15% of the total number of trees in the upper or lower strata of the tree component." Notwithstanding, the EIS concluded that the Project was unlikely to have a significant impact on the Koala.
97. The Department's Preliminary Assessment Report concluded that the Project "would not significantly impact koala populations and would eventually lead to improved long term habitat outcomes through the establishment and enhancement of local offsets that would link with existing areas of vegetation". The Commission agrees with the Department that the Project (and by extension the Recommended Revised Project) would not significantly impact the Koala and is generally consistent with the aims, objectives and requirements of SEPP 44.

SEPP 55

98. Under SEPP 55, "[a] consent authority must not consent to the carrying out of any development on land unless:
- (a) it has considered whether the land is contaminated, and
 - (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and
 - (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose."
99. The Commission agrees with the Department's conclusion in Preliminary Assessment Report that there is limited risk of material contamination on the Project Site.

SEPP SRD

100. As stated in paragraph 2, under s 4.38 of the EP&A Act the Project is considered SSD. Under clause 8A of the SEPP SRD and s 4.5(a) of the EP&A Act, the Commission is the consent authority for the Project as there were more than 25 public submissions by way of objection.

Infrastructure SEPP

101. The Infrastructure SEPP requires the consent authority to notify relevant public authorities about developments that may affect public infrastructure on public land. In that regard, according to the Department's Preliminary Assessment Report, the Department undertook notification of MWRC, Muswellbrook Shire Council, Roads and Maritime Services (**RMS**), Transport NSW, the Australian Rail Track Corporation Limited (**ARTC**), Crown Lands, Telstra, John Holland Rail and Endeavour Energy on behalf of the Commission, as outlined in its Preliminary Assessment Report. As such, the Commission is satisfied that the requirements of the Infrastructure SEPP have been met.

Mining SEPP

102. The relevant aims of the Mining SEPP as stated in clause 2 are:
- "The aims of this Policy are, in recognition of the importance to New South Wales of mining, petroleum production and extractive industries:*
- (a) to provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State, and*
 - (b) to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and*

(b1) to promote the development of significant mineral resources, and

(c) to establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources...”

103. Part 3 of the Mining SEPP lists a number of matters that a consent authority must consider before determining an application for development for the purposes of mining, including:
- non-discretionary development standards for mining (i.e. noise, air quality, blasting and aquifer interference);
 - compatibility of development with other land uses;
 - the Voluntary Land Acquisition and Mitigation Policy approved by the Minister and published in the Gazette on the date on which State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) Amendment (Air and Noise Impacts) 2018 is published on the NSW legislation website (103);
 - compatibility of development with mining, petroleum production or extractive industries;
 - natural resource management and environmental management;
 - resource recovery;
 - transport; and
 - rehabilitation.
104. Clause 12AB of the Mining SEPP identifies various non-discretionary development standards for mining for the purposes of s 4.15(2) and (3) of the EPA Act (see clause 12AB(2) of Mining SEPP). The object of the clause is stated in cl 12AB(1) of the Mining SEPP:
- “The object of this clause is to identify development standards on particular matters relating to mining that, if complied with, prevents the consent authority from requiring more onerous standards for those matters (but that does not prevent the consent authority granting consent even though any such standard is not complied with).”*
105. The relevant non-discretionary standards are considered by the Commission in Section 6.
106. In relation to GHG emissions, Clause 14 of the Mining SEPP states that:
- “in determining a development application for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider an assessment of the greenhouse gas emissions (including downstream emissions) of the development, and must do so having regard to any applicable State or national policies, programs or guidelines concerning greenhouse gas emissions”.*
107. The Commission notes that the term ‘downstream emissions’ is not defined in the Mining SEPP. The Commission understands the term to denote the greenhouse gas emissions relating to sold goods and services and thus caused by the end users’ use of the product. (*Wollar Property Progress Association Inc v Wilpinjong Coal Pty Ltd* [2018] NSWLEC 92 per Sheahan J at [126]).
108. Division 2 of Part 4AA of the Mining SEPP also requires the Commission to have regard to the minimal impact considerations set out in the NSW Aquifer Interference Policy 2012 (**AIP**) and the other provisions of the AIP. The Commission has therefore considered the provisions of the AIP in Section 6.2.
109. Clause 12 of the Mining SEPP requires the consent authority, before determining a development application for mining, to consider the compatibility of the proposed mine with other land uses in the vicinity of the mine. Clause 12 provides:
- “Before determining an application for consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must:*

(a) consider:

- (i) the existing uses and approved uses of land in the vicinity of the development, and
 - (ii) whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and
 - (iii) any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and
- (b) evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a) (i) and (ii), and
- (c) evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a) (iii)."

110. The Commission has considered the existing, approved and likely preferred uses of land in the vicinity of the Project and Recommended Revised Project with respect to Clause 12 of the Mining SEPP in Section 6.

VLAMP

111. The Commission has considered Department's assessment of the VLAMP in Appendix F of the Department's Final Assessment Report. The Commission accepts the Department's conclusion that *"as a result of additional land acquisitions/ acquisition agreements and the reduction in noise impacts as a result of the Revised Mine Plan no private residences are predicted to have a significant impact such that acquisition rights would be afforded"*.
112. The Department's Final Assessment Report stated that *"At the time the PAR was prepared, a total of 9 privately-owned receivers (owned by 6 landowners) were predicted to experience noise levels above the Project Specific Noise Level (PSNL) criteria of 35dB(A) during the open cut stage of the project"*. The Department further stated that the revised mine plan in the Recommended Revised Project has reduced predicted noise impacts and as a result mitigation rights under VLAMP no longer apply to 5 privately owned receivers.
113. The Commission notes that the owners of Cherrydale Park (receiver ID 56, 57A and 57C) in their comments to the Commission dated 14 November 2018, raised concern that as a result of revised mine plan, mitigation rights under VLAMP would no longer be afforded.
114. The Department's Final Assessment Report stated that *"Cherrydale Park (residences ID 56, 57A, 57C) exceeds the PSNL by 1-2 dB(A) which is characterised as a negligible impact under the VLAMP. The exceedances at Cherrydale Park are only predicted during the open cut period, which under the Revised Mine Plan is reduced by one year (from 8 to 7 years)"*. The Department concluded that *"The noise levels would be reduced to below the PSNL once underground only mining commences. The Department considers that, in accordance with the VLAMP, no mitigation rights should be afforded"*.
115. The Commission accepts the Department's assessment and conclusion set out in paragraph 114 that as a result of revised mine plan in the Recommended Revised Project, the VLAMP does not apply to Cherrydale Park (receiver ID 56, 57A and 57C).

Resource Recovery

Consideration of the Project

116. The Department states in its Assessment Report that the Division of Resources and Energy provided advice to the Department in relation to the efficiency of the recovery and the significance of the coal resource:

“Under State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 a consent authority must consider the efficiency or otherwise of the development in terms of resource recovery. The submission from the Division of Resources and Energy (DRE) provided advice to the Department in relation to the efficiency of recovery and the significance of the coal resource. DRE verified that the project would produce approximately 124 million tonnes of ROM coal and about million tonnes of product coal over its 25-year life. DRE advised the Department it is satisfied that the coal resource on the site is significant, that it can be feasibly and economically recovered, and that the project would have considerable economic benefits for the region and NSW.”

Consideration of the Recommended Revised Project

117. On 10 September 2018 the DRE wrote a letter to the Department in relation to the Recommended Revised Project and advised: *“The Division considers that this reduction in total tonnage from the Project area does not have any significant impact on either total export revenue or total royalty from the Project ... the Division considers that the Project’s mine plan efficiently recovers the resource, while minimising waste, and ensures an appropriate return to the state.”*

Commission’s consideration

118. The Commission considered and accepts the Department’s assessment in paragraph 116 and DRE conclusion in paragraph 117. Based on the Material, the Commission finds that resource recovery is adequately efficient because the DRE is satisfied that the Project and Recommended Revised Project’s mine plan efficiently recovers the resource. The Commission, however finds that there is reasonable level of uncertainty in the estimation of the economic benefits of the Project and Recommended Revised Project as set out in paragraph 784.

Compatibility with mining, petroleum production or extractive industry

119. As previously discussed, the Commission takes the “vicinity” of the Project Site to be the ‘Bylong Valley’ as represented in the map presented by in the EIS as ‘Figure 5 Bylong Valley’ (see Figure 7). The Commission finds that there are no existing or approved mines within the vicinity of the Project Site and that this consideration in the Mining SEPP does not apply.

Mining Gateway Certificate

120. Clause 50A of the *Environmental Planning and Assessment Regulation 2000* requires that a development application for consent to a mining development on identified Strategic Agricultural Land must be accompanied by a current Gateway Certificate:

“[a development application to which the clause applies] must be accompanied by (a) in relation to proposed development on land shown on the Strategic Agricultural Land Map as critical industry cluster land – a current gateway certificate in respect of the proposed development”.

121. Strategic Agricultural Land is defined in the Mining SEPP to be “biophysical strategic agricultural land, or critical industry cluster land, or both”.
122. The Project is on BSAL and Equine CIC land as mapped in the Upper Hunter Strategic Regional Land Use Plan (SRLUP) and identified via an assessment undertaken by the Applicant in Gateway Application Report and the accompanying Preliminary BSAL Strategy Report.

Expiry of the Gateway Certificate & Mining SEPP Amendment

123. The Gateway Panel issued a conditional Gateway Certificate for the Project on 15 April 2014.
124. The Mining SEPP was amended on 30 August 2019.
125. As part of the amendment, Clause 17K of the Mining SEPP now states that:
- “A gateway certificate remains current until—*

- (a) *the day that is 5 years after the day on which the certificate was issued (or an earlier day specified in the certificate), or*
- (b) *if the certificate accompanies a development application made in respect of a proposed mining or petroleum development—that application is finally determined.”*

126. Clause 24 of the Mining SEPP was introduced as part of the amendment and states:

- “(1) *Clause 17K, as substituted by the amending SEPP, extends to a gateway certificate that was current immediately before that substitution.*
- (2) *A gateway certificate that accompanied a development application made before the substitution of clause 17K by the amending SEPP and ceased to be current before the application was finally determined is taken to be a current gateway certificate until that application is finally determined.”*

127. The Commission notes that the SSD was accompanied by a gateway certificate at the time of lodgement and that the development application was made prior to the substitution of clause 17K on 30 August 2019.

128. The Commission is therefore of the view that the SSD is accompanied by a current gateway certificate and that the Commission has the authority to determine the development application.

Recommendations of the Gateway Certificate

129. Clause 17B of the Mining SEPP requires the Commission, when determining an application for development consent for mining or petroleum development that is accompanied by a gateway certificate, to:

(a) *refer the application to the Minister for Regional Water for advice regarding the impact of the proposed development on water resources, and*

(b) *consider:*

- (i) *any recommendations set out in the certificate, and*
- (ii) *any written advice provided by the Minister for Regional Water in response to a referral under paragraph (a), and*
- (iii) *any written advice of the Gateway Panel in relation to the development given as part of the consultations undertaken by the Director-General under clause 3 (4A) (b) of Schedule 2 to the Environmental Planning and Assessment Regulation 2000, and*
- (iv) *any written advice of the IES Committee provided to the Gateway Panel as referred to in clause 17G (1) (whether that advice was received before or after the expiry of the 60-day period referred to in clause 17G (1) (b) (i)), and*
- (v) *any cost benefit analysis of the proposed development submitted with the application.*

(2) *In determining an application for development consent for mining or petroleum development that is accompanied by a gateway certificate, the consent authority must consider whether any recommendations set out in the certificate have or have not been addressed and, if addressed, the manner in which those recommendations have been addressed.*

130. The conditional Gateway Certificate stated that the Project was considered to not meet 11 out of 12 relevant criteria and included recommendations to address the Project’s failure to meet the relevant criteria. In its report, the Mining and Gateway Panel concluded that:

- *“the open cut mining would have a direct and significant impacts on the agricultural productivity of the verified BSAL within the project boundary areas;*
- *indirect impacts on verified BSAL within the project boundary have not been assessed and are potentially significant;*
- *indirect impacts on potential BSAL adjacent to the project boundary have not been assessed and are potentially significant; and*

- *there would be significant impact on Equine CIC*".

131. In accordance with clause 17B(1)(b)(i) of the Mining SEPP, the Commission has considered the Gateway Panel's considerations and associated recommendations, and written advice provided by the Gateway Panel under clause 17B(1)(b)(iii), which included "a summary of the actions taken to address the issues raised in Schedule 2 of the 2 Conditional Gateway Certificate", in paragraphs 132-148 below.
132. ***"Consideration 1: The proposal to remove 194.4 ha of verified BSAL soils from within the planned open-cut mining area and the 're-creation' of this BSAL elsewhere lacks precedence and necessary detail.***

With regard to the removal and recreation of verified BSAL soils:

- 1. Undertake a risk assessment that identifies the hazards and proposes controls with respect to the movement of BSAL soils;*
 - 2. Identify a final location for the verified BSAL soils within the Project Boundary area;*
 - 3. Detail the methods proposed for the handling, storage and treatment of the verified BSAL soils;*
 - 4. Propose alternate mitigation measures to be implemented in the event that the methodology selected results in the loss of verified BSAL soils post-implementation."*
133. According to the Applicant's EIS, a risk assessment was undertaken in accordance with the *Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land – V7* to determine the risk on soil resources and consequently agricultural activities in each project domain. The Commission notes that a Rehabilitation Strategy and BSAL Reinstatement Strategy accompanied the EIS in Appendix W.
134. The Applicant has identified a final location for the BSAL soils within the project boundary area in Figure 63 of the EIS. In section 7.14.4 of the EIS the Applicant detailed the soil handling techniques for the Project. The Commission also notes that a Soil, Land Capability and Strategic Agricultural Land Assessment accompanied the EIS in Appendix V.
135. The Gateway Panel in the Gateway Report consider that recommendation 4 in paragraph 131 has only been 'partially addressed'.
136. In Section 6, the Commission provides a detailed assessment of whether it considers that the recommendations with regard to BSAL impacts in paragraph 131 above have been adequately addressed.
137. ***"Consideration 2: Significant impacts are anticipated on highly productive groundwater and the consequent connection between surface and groundwater in modelling requires more detailed evaluation.***
- 1. Develop a more complex transient 3D numerical model for the EIS stage of the Development Application which includes improved time variant input data, more details on recharge, geological imperfections (dykes, sills & faults), fractures from subsidence, and a sensitivity/uncertainty analysis.*
 - 2. Complete baseline studies for the project area to improve knowledge on water levels, and groundwater dependent ecosystems.*
 - 3. Provide an assessment of the hydrochemistry of spoil and tailings materials, and potential impact on nearby water sources.*
 - 4. Provide a strategy for complying with the rules of the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources. In particular the implication of reduced available water determinations (AWDs) and the cease to pump rule.*
 - 5. Supply a plan for monitoring actual water take and how any changes from the predictions will be accounted for with water licences and remediation".*

138. According to the Applicant's EIS, a three-dimensional groundwater flow model was used to simulate the Project's impacts on the groundwater regime over time. The Commission notes that a Groundwater Impact Assessment (GIA) was undertaken to characterise the existing groundwater sources, predict inflows throughout the life of the Project, assess the impacts of the Project on groundwater sources and water users, and recommend measures to monitor, mitigate and manage impacts to the groundwater regime. The Commission also notes that a peer review of the GIA was undertaken by Hydro Simulations.
139. The Gateway Panel in their response to the Department consider that the recommendations in consideration 2 set out in paragraph 137 have been adequately addressed.
140. In Section 6, the Commission provides a detailed assessment of whether it considers that the recommendations in paragraph 137 above have been addressed.
141. ***"Consideration 3: Mine waste emplacements have been designed with steep slopes to minimize footprint disturbance areas.***
1. *Conduct an analysis of short and long term geotechnical stability risk of waste emplacement slope gradients.*
 2. *Demonstrate that all final landform slope gradients are geotechnically stable in the long-term and have factors of safety of 1.5 or better.*
 3. *Demonstrate that all final landform slope gradients are erosionally stable".*
142. In section 7.15.4 of the EIS, the Applicant has considered erosion minimisation, and landform stability and compatibility. The Commission notes that a Mine Plan Justification Report accompanied the EIS in Appendix E provides an overview of the mine planning and decision-making process undertaken to deliver the preferred mine plan for the Project.
143. The Gateway Panel in their response to the Department consider that the recommendations in consideration 3 set out in paragraph 141 have been addressed.
144. In consideration of the Material, the Commission considers that the recommendations under Consideration 3 in paragraph 141 have been addressed.
145. ***"Consideration 4: NSW Government has verified 1,933 ha of land within the Project Boundary area as Equine CIC land. The potential impacts of the Project on the Equine CIC have not been properly assessed".***
1. *Using the Guideline for Gateway Applicants (September 2013) by Department of Planning & Infrastructure, provide a compliant and comprehensive assessment of the Project's potential impacts on the Equine CIC."*
146. An assessment of potential impacts to the Equine CIC was undertaken by the Applicant utilising the optimum equine land use scenario. The Commission notes that an Agricultural Impact Statement (AIS) also accompanied the EIS in Appendix X. The AIS has assessed the impacts of the Project on agriculture and Strategic Agricultural Land (SAL).
147. The Gateway Panel in their response to the Department consider that the recommendation in consideration 4 set out in paragraph 145 has only been 'partially addressed'.
148. In Section 6, the Commission provides a detailed assessment of whether it considers that the recommendation in paragraph 145 above has been addressed.

Other advice

149. In accordance with clause 17B(1)(b)(ii) of the Mining SEPP, the Commission has considered the written advice provided by the Minister for Regional Water (MRW) dated January 2016.

150. Clause 17B(1)(b)(ii) of the Mining SEPP, requires the consent authority to consider any written advice provided by the MRW in response to a referral. On 4 January 2016, the Department wrote to the Minister for Lands and Water (now known as the MRW) seeking advice on the impact of the Project on water resources. The Minister for Lands and Water provided a response to the Department in January 2016.
151. In relation to water licensing, the Minister for Lands and Water stated that the Proponent has identified sufficient entitlement to account for the predicted take and use of water from alluvial groundwater source. The MRW noted that the proponent had applied for a licence under part 5 of the *Water Act 1912* and that the application was under assessment.
152. In relation to water table impacts, the Minister for Lands and Water stated that the “*DPI Water advises that the modelling and assessment of groundwater impacts should be improved to better understand the impacts and proposed management of the project*”.
153. In accordance, with clause 17B(1)(b)(iv) of the Mining SEPP, the Commission has considered the written IESC Advice provided to the Gateway Panel, dated 14 March 2014 as referred to in clause 17G(1). The Commission notes that the key issues identified by the IESC include surface-groundwater interactions, subsidence impacts, and potential contamination of water resources.
154. The Commission notes that the advice provided by the IESC was only able to consider the material provided as part of the Gateway process. This did not contain the level of analysis expected for a development application and accompanying environmental assessment.
155. In accordance with clause 17B(1)(b)(v) of the Mining SEPP, the Commission has considered cost benefit analysis of the proposed development submitted with the application in Section 6 of this report.

5.2.3 Relevant Proposed Instruments

156. There are no relevant proposed instruments.

5.2.4 Relevant Development Control Plans

157. As the Project is SSD, Development Control Plans do not apply (as per clause 11 of the SRD SEPP).

5.2.5 Relevant Planning Agreements and Draft Planning Agreements

158. In December 2016, the Applicant executed a Voluntary Planning Agreement (**VPA**) with MWRC to fund community enhancement projects. The terms of the VPA include approximately \$7.12 million in funds, indexed to the consumer price index (**CPI**) from July 2017, to be disbursed, including:
 - \$2.75 million when the Project commences; and
 - \$0.05 per tonne of product coal.
159. In accordance with the terms of the VPA, the expenditure of funds would be consistent with MWRC’s Towards 2030 Mid-Western Region Community Plan, which was adopted by MWRC in 2013. The Commission notes that the VPA only becomes operational if the development application is granted development consent.

5.2.6 EP&A Regulation

160. Section 92 of the EP&A Regulation outlines additional matters that a consent authority must consider in determining a development application. These are considered by the Commission in Section 6 and below.
161. Specifically, section 92(1)(d) requires the consent authority to consider the NSW Dark Sky Planning Guideline, as the Project is located within 200 km of Siding Spring Observatory.
162. In their Review of the Project the PAC noted that the operation of the mine would have a lighting impact on the night sky, and that the NSW Dark Sky Planning Guideline) may not have been appropriately considered:

“...stated level of lighting impact and proposed management strategy for both direct and diffuse light impacts may not have been considered against the NSW Government’s Dark Sky Planning Guideline, particularly in relation to cumulative impacts with mines between the project site and the Siding Spring Observatory.”

163. The Applicant’s Review Response stated that the diffuse and indirect lighting effects from night operation of the mine could be adequately managed:

“In accordance with the Australian Standard, lighting will be designed and installed to minimise direct and diffuse lighting impacts (including artificial skyglow) from the Project. This will include the use of directional lighting and hooding to reduce diffuse light spillage as well as ensuring all light fittings are directed downwards. These measures, in conjunction with the screening effects provided by existing topographic features, will ensure visual impacts from light effects are low to negligible.” (p.68)

164. The Department acknowledged that the NSW Dark Sky Planning Guideline considers “*direct artificial upward light spill, reflection of light and illumination of light from dust emissions as contributing to increasing artificial sky glow that can affect observing conditions. The guideline also identifies good lighting design principles to eliminate or reduce the upward spill of light.*”
165. The Department’s Preliminary Assessment Report put forward good lighting design principles to minimise upward spill of light in the proposed conditions and recommended that the Applicant prepare a Dark Sky Lighting Management Strategy in consultation with the Observatory Director of the Siding Springs Observatory. The Department also required the applicant to: “*[implement] all reasonable and feasible measures to minimise off-site dust emissions and to minimise any visible air pollution generated by the development.*”
166. The Commission has considered the lighting impacts of the Project and the Recommended Revised Project in accordance with the NSW Dark Sky Planning Guideline and accepts that the Department’s condition above would be sufficient to ensure an acceptable plan for night-time mine lighting and operations can be developed in collaboration with the Siding Spring Observatory in line with the NSW Dark Sky Planning Guideline.

5.3 Other relevant documents

5.3.1 Commonwealth Approvals

167. The Commission notes that on the 12 March 2014, the Project was determined to be a ‘controlled action’ in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to likely significant impacts to listed threatened species and communities (Sections 18 and 18A) and a water resource (Sections 24D and 24E).
168. The assessment process under the EP&A Act has been accredited under a bilateral agreement with the Commonwealth Government. Accordingly, the Department has undertaken an assessment of matters of national environmental significance (**MNES**) on behalf of the Commonwealth, as outlined in its Preliminary Assessment Report and Final Assessment Report.
169. As part of this assessment, the Department sought advice from the Commonwealth Independent Expert Scientific Committee (**IESC**) on Coal Seam Gas and Large Mining Development about the potential impacts of the project on water resources, as discussed in Section 4.5 of the Department’s Preliminary Assessment Report.

5.3.2 Secretary’s Environmental Assessment Requirements

170. The Applicant made a request for the Secretary’s Environmental Assessment Requirements (**SEARs**) for the Project on 17 January 2014.
171. On 23 June 2014, the Department issued the SEARs for the Project, with reference to the Project’s Gateway Certificate, which was issued on 15 April 2014.
172. The SEARs were amended by the Department on 11 November 2014 to address amendments made to the Project by the Applicant.

173. The Commission has reviewed the Material and is satisfied that the EIS was prepared in accordance with the amended SEARs, as outlined in Section 5.4.2 of the Applicant's EIS, and finds the information provided enables the Commission to assess and determine the Project.

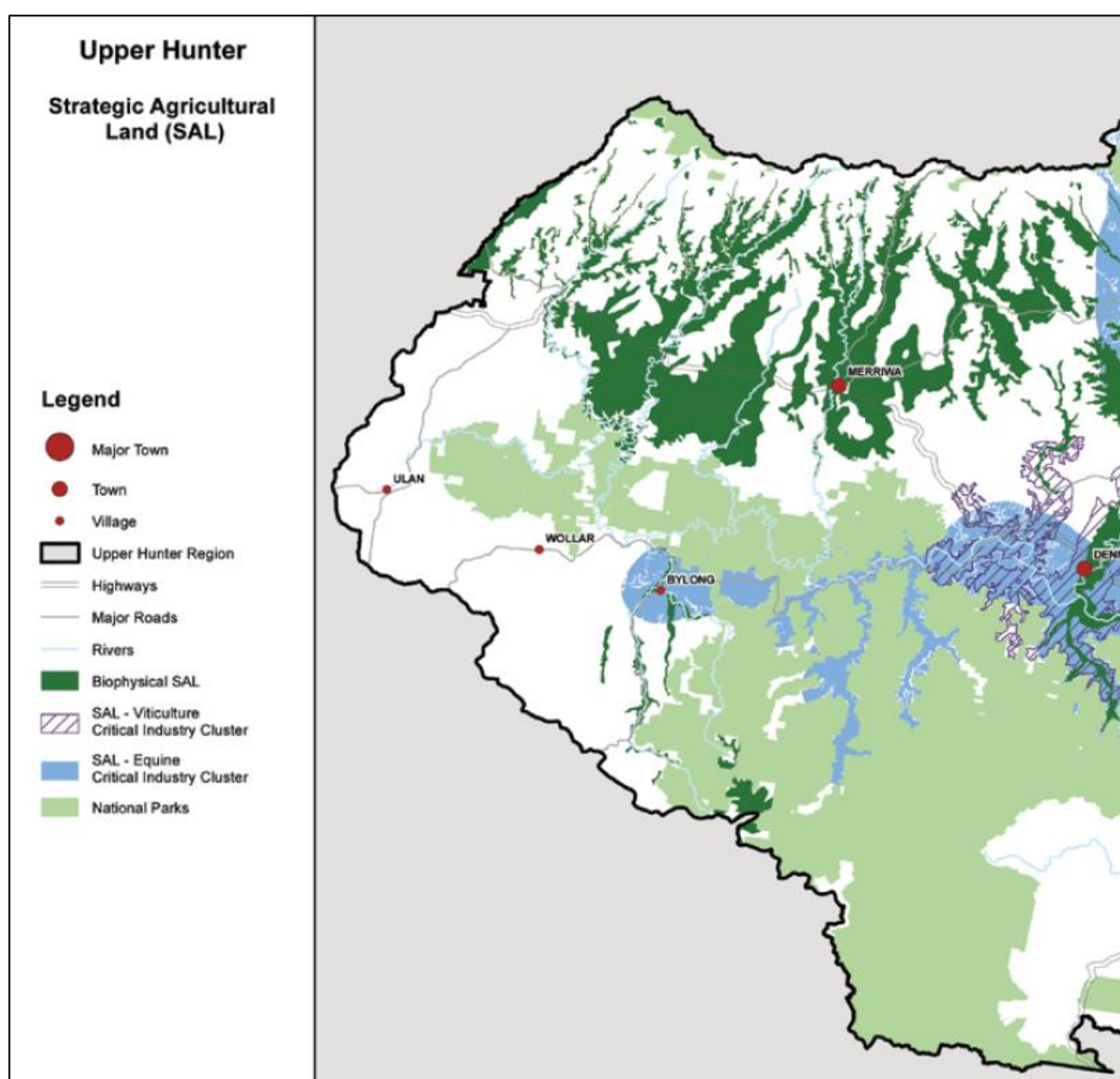
5.3.3 Relevant Regional Plans

174. As identified in the PAC Review reports, the Project Site is located within the boundaries of both the *Upper Hunter Strategic Regional Land Use Plan 2012* (the **Upper Hunter SRLUP**) and the *Central West and Orana Regional Plan 2017* (the **CW&O Regional Plan**).

Upper Hunter Strategic Regional Land Use Plan

175. The Upper Hunter SRLUP is *"one component of the Government's broader Strategic Regional Land Use Policy which comprises multiple initiatives being staged over time to address land use conflict in regional areas, particularly focused on managing coal and coal seam gas issues. The plan provides a clear strategic framework for the Upper Hunter."*
176. The Upper Hunter SRLUP describes the Strategic Agricultural Land (*"areas with particularly high agricultural values"*) in the region as *"highly productive land that has both unique natural resource characteristics (such as soil and water resources) as well as socio-economic value (such as high productivity, infrastructure availability and access to markets.)"*. In the Upper Hunter, BSAL and Critical Industry Clusters (**CIC**) have been mapped with the goal of helping to *"address the challenge of achieving balanced land use outcomes in the region"*.
177. The Upper Hunter SRLUP describes CICs as meeting the following criteria:
- *"there is a concentration of enterprises that provides clear development and marketing advantages and is based on an agricultural product;*
 - *the productive industries are interrelated;*
 - *it consists of a unique combination of factors such as location, infrastructure, heritage and natural resources;*
 - *it is of national and/or international importance;*
 - *it is an iconic industry that contributes to the region's identity; and*
 - *it is potentially substantially impacted by coal seam gas or mining proposals."*
178. The direct impact of the Project on BSAL and CIC land required the development application to be accompanied by a Gateway Certificate under the Mining SEPP, as set out in paragraphs 129 - 155.
179. The Upper Hunter SRLUP describes BSAL as *"land with a rare combination of natural resources highly suitable for agriculture. These lands intrinsically have the best quality landforms, soil and water resources which are naturally capable of sustaining high levels of productivity and require minimal management practices to maintain this high quality."* (p. 21)
180. The distribution of BSAL as mapped in the Upper Hunter Strategic Regional Land Use Plan in **Figure 6** below shows that the BSAL in Bylong is geographically isolated from the more substantial clusters of BSAL in the Upper Hunter.

Figure 6: Upper Hunter Strategic Agricultural Land



181. The Commission has considered the Upper Hunter SRLUP with regard to impacts of the Project and the Recommended Revised Project on the strategic agricultural lands of BSAL and Equine in section 6.

Central West and Orana Regional Plan 2017

182. The CW&O Regional Plan is “the NSW Government’s strategy for guiding land use planning decisions for the Central West and Orana region for the next 20 years.”
183. The CW&O Regional Plan sets 29 directions, including the following that are relevant to the assessment of the Project:
- protect the region’s diverse and productive agricultural land;
 - promote and diversify regional tourism markets;
 - expand education and training opportunities;

- sustainably manage mineral resources;
- promote business and industrial activities in employment lands;
- sustainably manage water resources for economic opportunities; and
- protect and manage environmental assets.

184. In relation to the CW&O Regional Plan, the PAC Review Report stated:

"In acknowledgement of these potentially conflicting land uses, the plan notes that the Bylong-Wollar-Ulan corridor will "be incorporated into the Central West Strategic Land Use Plan, which will address broader land use issues relating to mining in the corridor."

The Central West and Orana Regional Plan 2036 (2017) re-affirms the importance of mineral, agriculture and water resources to diversifying the regional economy and the importance of managing environmental and heritage values in the region. The regional plan identifies that highly productive agricultural land "requires ready access to water, high quality soils and suitable climates. While the total area of land available for agriculture is large, comparatively few locations have access to all these characteristics".

The plan recognises that areas with potential mineral and energy resources, and important agricultural land needs to be identified and protected. It says a critical mass of agricultural industries is needed to capitalise on demand, increase productivity, employment and to ensure the availability of fresh food."

185. In relation to the CW&O Regional Plan, the Applicant stated in the Review Response that:

"The CW&O Regional Plan addresses the broader land use issues relating to mining in Bylong-Wollar-Ulan Corridor, where the Project is located. The CW&O Regional Plan clearly intends on promoting and encouraging both agricultural and mining in the Region, as indicated by the Plan's goals and directions. The CW&O Regional Plan also acknowledges that whilst mining can compete with other land uses, mining activities are also temporary..."

The Project has been specifically designed to avoid alluvial areas as well as land defined as BSAL and Equine CIC to the maximum extent possible without completely sterilising this valuable NSW Government owned coal resource."

186. In relation to the CW&O Regional Plan, the Department's Preliminary Assessment Report concluded that:

"the project as proposed, with stringent conditions, could represent a good example of co-existence of these important industries, consistent with the strategic objectives of the Department's Central West & Orana Regional Plan.

The Department considers that these impacts would not cause a fundamental shift from agriculture to mining in the Upper Bylong Valley."

187. The Commission has considered the objectives the CW&O Regional Plan in Section 6.

5.3.4 Relevant Guidelines

188. In determining this Application, the Commission has also considered the:

- Noise Policy for Industry (**NPI**) dated 2017;
- NSW Climate Change Policy Framework dated November 2016;
- NSW Aquifer Interference Policy 2012 (**AIP**);
- VLAMP dated September 2018;
- Social Impact Assessment Guidelines dated September 2017; and
- 2013 Interim protocol for site verification and mapping of biophysical strategic agricultural land (the **Interim BSAL Protocol**).

6 COMMISSION'S CONSIDERATIONS

6.1 Existing, approved and likely preferred uses of land in the vicinity

189. As presented in paragraph 104, under the Mining SEPP the Commission must give consideration to the existing uses and approved uses of land in the vicinity of the development, including whether or not it is likely to have a significant impact on the uses that are likely to be the preferred uses of land in the vicinity of the development and any ways in which the development may be incompatible with any of those uses.

6.1.1 Vicinity

190. The Commission has adopted Preston CJ's guidance on the meaning of vicinity of the development. In the *Gloucester Resources Limited v Minister for Planning* [2019] NSWLEC 7 at [58] vicinity "involves consideration of not only the proximity or nearness in space of the uses of land to the proposed mine, but also visual considerations and "demographic and geographic features of the area".
191. The Commission takes the "vicinity" of the Project Site to be the '**Bylong Valley**' as represented in the map presented by in the EIS as 'Figure 5 Bylong Valley' (**Figure 7** below). The vicinity at its widest points are approximately 40km north-south and 22km east-west. It includes the Project Site, and parts of the Bylong State Forest, Wollemi National Park, Goulburn River National Park, Bylong Village and surrounding rural and agricultural land. The Bylong Village is also within the vicinity and consists of a general store, a sporting ground, community facilities surrounded by rural and residential properties.
192. The Project Site is wholly within the 486km² Bylong Landscape Conservation Area, which is:
- "... dominated by a landscape associated with natural features. These features were present before human occupation in the area and occur independent of human intervention ... **In the vicinity of the Bylong Coal Project** are views of prominent natural features such as Mount Penny and Tal Tal Mountain and the Growee Ranges. Views are also present overlooking prime agricultural land, with lush rolling green across the plains and river flats, bisected by the Bylong River that flows through the area."* (p. 22 draft Bylong Historical Heritage Management Plan (HHMP) (**bold added**).

6.1.2 Existing uses

193. Clause 12(a) of the Mining SEPP set out in paragraph 104 above requires consideration of three types of uses of land in the vicinity of the Project: existing uses, approved uses and likely preferred uses.
194. **Existing uses** are uses of land that are actual, physical and lawful. There are a number of existing land uses within the vicinity of the Project, including, but not limited to agriculture; rural residential; and State Forest.
195. The Preliminary Assessment Report states that land use in the Bylong Valley is mainly agricultural, with beef cattle grazing and cropping the predominant agricultural activities in the area. Land uses in the vicinity include "cattle grazing operations, cultivation and some smaller equine fodder crop enterprises".
196. Based on the Preliminary Assessment Report and the SRLUP, the Commission finds that the existing uses in the vicinity of the Project Site are primarily agricultural and limited tourism uses.
197. The Upper Hunter Equine CIC that is mapped within the broader region is described as:
- "Highly integrated concentration of horse breeding facilities and related infrastructure covering thoroughbred and stock horse breeding centres and numerous other equine developments and support services, such as a specialised veterinary centre. In 2009 - 2010 the region provided 80 to 90 per cent of the total value of stud horses exported by Australia. It is also the headquarters for the NSW Stock Horse Society."*

The attraction for equine interests to the region lies in its combination of a temperate climate, protected aspect and varied terrain combined with a lack of tropical diseases and accessibility to Sydney. The breeders are supported by the aggregation of equine industry infrastructure and good transport routes."

198. The Department's Preliminary Assessment Report states that "[t]he Bylong Valley is still associated with stock horse breeding and fodder production" although the Applicant purchased the only operating thoroughbred horse stud in the Bylong Valley in August 2012, which means that there are no current operating thoroughbred horse studs within 10 km of the Project Site.
199. The Preliminary Assessment Report notes that land use in the vicinity also includes residential use: *"The Bylong Valley and surrounding area has a population of around 100 people, mainly on rural properties"*; and uses associated with the activities of the Bylong Village, including commercial, retail and business: *"there is also a store with associated residence, the Bylong Community Hall and the Anglican Church"*, and the Bylong Quarry.
200. The Preliminary Assessment Report notes that along with multiple other properties in the vicinity, the Applicant has acquired the Bylong Upper Public-School site from the NSW Department of Education and there is no longer a public school in the vicinity.
201. The Applicant's EIS states that *"Bylong Valley Way runs from east to west through the northern portion of the Project Boundary and currently provides the main access into Bylong Valley"*. Bylong Valley Way provides access to the Wollemi National Park and Goulburn River National park at various points between Bylong and the Golden Highway, including picnic areas and camping as well as entry points for hiking.
202. The Commission notes that the Bylong Valley Way is part of a designated regional tourist drive and cycling route linking the Castlereagh Highway near Ilford to the Golden Highway near Sandy Hollow (see Figure 7). Bylong Valley Way is widely promoted as a tourist route with scenic qualities, and Bylong Village promoted as a tourist stopping point along this drive.

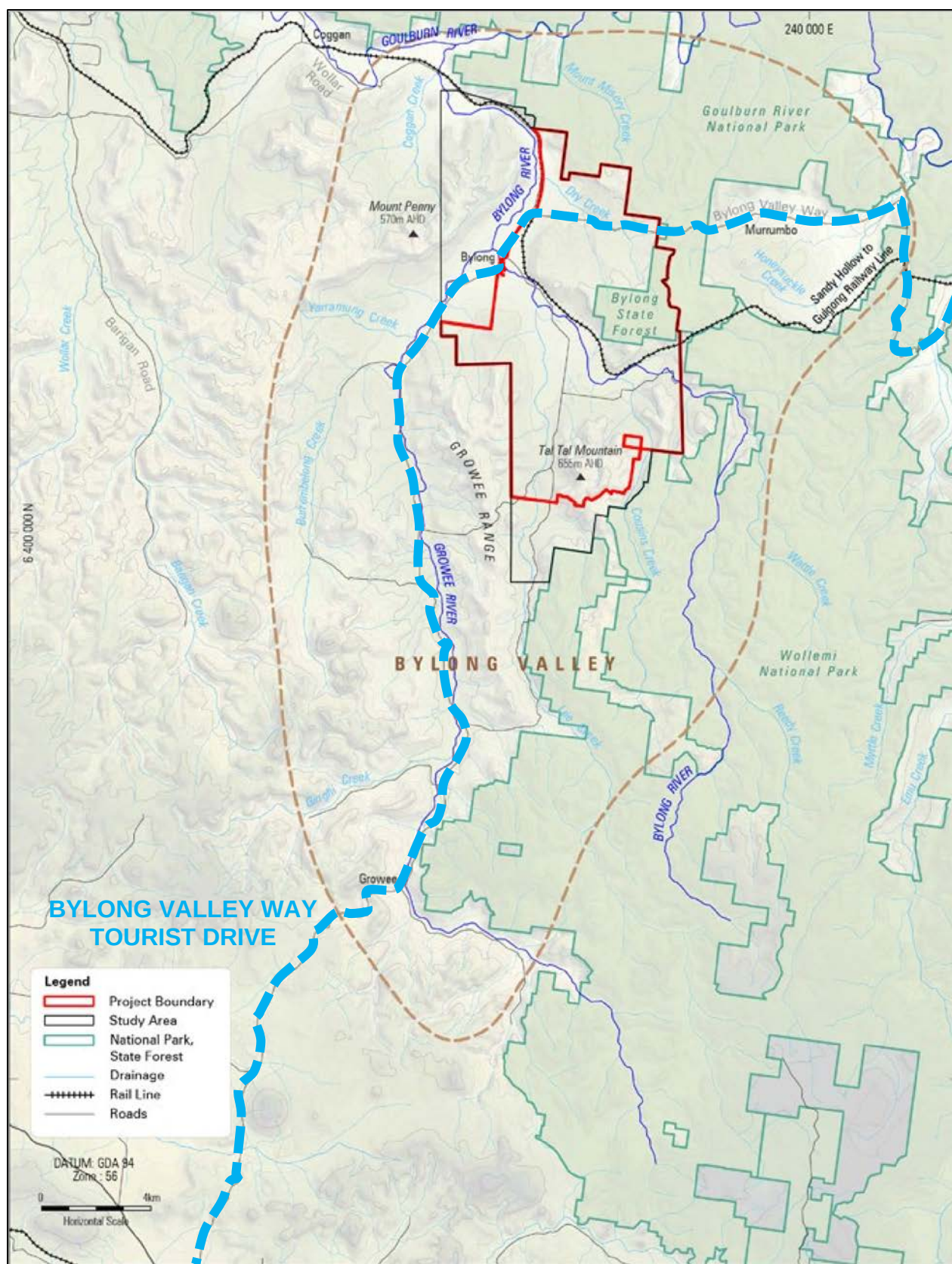


Figure 7: Vicinity of the Project Site and: Bylong Valley Way Tourist Drive (Sourced from: Applicant's EIS dated September 2015, Bylong Valley Way highlight added)

6.1.3 Approved uses

203. **Approved uses** are uses that have been approved by the grant of development consent under the EPA Act, but have not commenced in accordance with the consent.
204. The Preliminary Assessment Report notes that the Applicant has acquired substantial landholdings around the Project Site and “...is also actively negotiating land acquisition or agreements with a further 3 properties in upper Lee Creek Road and 2 properties to the east of the project”.
205. According to a search of Council’s application tracking service on 12 August 2019 there are no approved development applications within Bylong, where activities have not commenced in accordance with the consent.

6.1.4 Likely preferred uses

206. The Commission has adopted Preston CJ’s guidance on **likely preferred uses** in *Gloucester Resources v Minister* as referring to uses of the land that, having regard to land use trends, are likely to be the preferred uses of land in the vicinity.
207. The Commission considers that the MWLEP 2012 is a relevant representation of what land uses are most likely to be considered the preferred uses of land in the vicinity of the Project.
208. According to the zoning objectives of the RU1 Zone in the MWLEP that applies to the Project Site and vicinity, set out in paragraph 86, open cut mining is permissible with consent. The Commission notes that underground mining is not listed as a permissible or prohibited use in the MWLEP, however, under clause 7(1)(b)(i) of the Mining SEPP, development for the purposes of mining may be carried out on any land where agriculture or industry is a permissible land use (see paragraph 87). The Commission notes that the majority of the zone’s objectives are associated with maintaining agricultural lands, rural, scenic and heritage qualities, and minimising conflict between land uses. As stated in paragraph 87, the zone’s objectives are:
 - “• To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
 - To encourage diversity in primary industry enterprises and systems appropriate for the area.
 - To minimise the fragmentation and alienation of resource lands.
 - To minimise conflict between land uses within this zone and land uses within adjoining zones.
 - To maintain the visual amenity and landscape quality of Mid-Western Regional by preserving the area’s open rural landscapes and environmental and cultural heritage values.
 - To promote the unique rural character of Mid-Western Regional and facilitate a variety of tourist land uses.”

Agriculture

209. The zoning specifies minimum lot sizes in the vicinity as being 40 hectares and 100 hectares (see paragraph 90), which indicates that land uses in the vicinity are amenable to and can support intensive agricultural production, such as irrigated pasture.
210. In considering agricultural land that would be impacted by the Project, the PAC Review cited the CW&O Regional Plan’s description of the region’s highly productive agricultural land, noting that such land “requires ready access to water, high quality soils and suitable climates. While the total area of land available for agriculture is large, **comparatively few locations have access to all these characteristics.**” (**bold added**).
211. The Preliminary Assessment Report notes that the Project Site and its vicinity are home to land classified as “Biophysical Strategic Agricultural Land (BSAL), which is essentially the best farming land in the region”.

212. BSAL is defined in the Interim BSAL Protocol as:

“...land with a rare combination of natural resources highly suitable for agriculture. These lands intrinsically have the best quality landforms, soil and water resources which are naturally capable of sustaining high levels of productivity and require minimal management practices to maintain this high quality. BSAL is able to be used sustainably for intensive purposes such as cultivation. Such land is inherently fertile and generally lacks significant biophysical constraints.” (p. 2)

213. The BSAL *Frequently Asked Questions* document accessible on the Department’s website notes that the land does not need to be currently cultivated in order to be identified as BSAL: *“[i]t is the inherent values of the land itself, rather than the agricultural activity it supports, which determine the BSAL classification”*. (p. 2)

214. The Bylong Valley has approximately 5,345 ha of mapped BSAL.

Heritage

215. An objective of the MWLEP RU1 zone is *“to maintain the visual amenity and landscape quality of Mid-Western Regional by preserving the area’s open rural landscapes and environmental and cultural heritage values.”*

216. The Preliminary Assessment Report recognises heritage values in the vicinity and states that:

“The Bylong area was explored and settled by Europeans in the 1820s, and has had a continuous pastoral land use history since this time, with a focus on cattle and thoroughbred horses.”

“The Bylong Valley also has links to a number of bushrangers (including Captain Thunderbolt), who are suspected to have used the sandstone caves and cliffs above the valley as hideouts”.

217. The Preliminary Assessment Report identifies heritage attributes associated with Bylong Valley that include:

- 239 identified Aboriginal sites and cultural features within the Project Site;
- 18 items within and adjacent to the Project Site that have been assessed as having local heritage significance. Three of these – the **Bylong Landscape Conservation Area** (including the Bylong and neighbouring valleys covering approximately 486km²) and Our Lady of the Sacred Heart Catholic Church and Cemetery – are listed on the non-government National Trust (NSW) Register. The historic heritage also includes **The Bylong Cultural Landscape** (reflecting the aesthetic and cultural values of the Bylong Valley), including the Bylong Station Farm Complex and Tarwyn Park Farm Complex (see the Preliminary Assessment Report Table 17: Historic Heritage Sites on p.87); and
- the association of the farming method known as natural sequence farming (**Natural Sequence Farming**) at the Tarwyn Park property within the Project Site:

“The farm is the location where natural sequence farming was first developed and practised (from about 1975). The model was developed by Mr Peter Andrews and is based on the following key principles:

- *Retention and control of stream water on the alluvial floodplain to increase water availability;*
- *Rehabilitation and improvement of the fertility of the alluvial floodplain and adjacent areas through a managed succession of vegetation (mostly weeds).”*

218. The Commission considers that the prevalence of natural and cultural heritage in the vicinity, and its recognition through expert bodies such as the National Trust is an appropriate indication that heritage preservation is central to the likely preferred uses in the vicinity.

Tourism

219. An objective of the MWLEP RU1 zoning is: *"To promote the unique rural character of Mid-Western Regional and facilitate a variety of tourist land uses."*
220. The Applicant noted the Bylong Valley Way in its HHMP:
- "The Bylong Valley Way links the Golden Highway near Sandy Hollow to the Castlereagh Highway near Ilford. It is named after the Bylong Valley, through which the road passes. The Bylong Valley Way is a sealed road and is approximately 140 km in length. It has been listed by magazines and newspapers such as the Mudgee Guardian and Drive as one of the best drives in NSW for tourists, and was promoted by Muswellbrook Shire Council as part of an Inland Adventure Trail that led from Goulburn or the Snowy Mountains area to Oberon, then Bathurst and Sofala, then Kandos, Rylstone and Bylong. ... The road offers views and vistas to natural landscape features including exposed hills and sandstone outcrops, ridge tops, plains, villages and farming areas." (p. 31)*
221. Speakers at the public meeting referred to the tourist value of the local sights:
- "St Stephen's Anglican Church...built in 1881 and sitting at the edge of the village, is definitely a point of interest for tourists."*
- "The drive through the Bylong Valley has rightly been named one of the best scenic drives in Australia."*
222. Wollemi National Park and Goulburn River National Park are located within the vicinity and are notable tourist attractions. These National Parks provide forest and riverside setting for scenic walks, swimming, fishing, hiking and camping activities. Wollemi National Park is World Heritage Listed and contains the only known wild specimens of the Wollemi Pine. Bylong Valley Way provides access to Wollemi National Park and Goulburn River National Park as well as a number of picnic areas as stated in paragraph 201.

Mining

223. As per paragraph 87, the Commission notes that development for the purposes of open cut mining is permissible with consent on land zoned RU1. The Commission also notes that 'underground mining' is not listed as a permissible or prohibited use in the MWLEP on land zoned RU1 and SP2. The Commission notes that under clause 7(1)(b)(i) of the Mining SEPP, development for the purposes of mining may be carried out on any land where agriculture or industry is a permissible land use, which includes land zoned SP2.
224. The Preliminary Assessment Report states the while the Project is located within the Western Coalfield, there is no history of coal mining in the Bylong Valley. The nearest coal mine is Wilpinjong Mine located 20 km northwest of the Project Site.
225. Mining would be a new land use in a predominately agricultural setting, surrounded by State Forests and National Parks. The Preliminary Assessment Report stated that *"[e]xpansion of the mining industry into the Bylong Valley area has the potential to create land use conflicts with existing agricultural industries, including cattle grazing operations"*.
226. The PAC considered that the impact of this new use would be felt across the local economy of the Bylong Valley:
- "... the conclusion that might be reached is that any approval of the project would represent a fundamental shift in the valley in favour of mining as opposed to agricultural or pastoral pursuits, and that the water security on which agricultural activities depend, may be jeopardised, particularly during extended dry periods."*

Commission's consideration of likely preferred uses

227. The Commission acknowledges that open cut mining on the Project Site is permissible with consent, as stated in paragraphs 87 and 89. On balance, the Commission finds that agricultural and some tourism land uses are the likely preferred uses in the vicinity, having regard to:
- the objectives of zoning in the MWLEP being primarily agricultural, as well as the maintenance of heritage and promotion of tourism (paragraph 207);
 - the minimum lot sizes being suited to intensive agricultural use (paragraph 209);
 - the prevalence of BSAL in the vicinity and on the Project Site to support agricultural activities given that BSAL is a finite natural resource and with BSAL being the most fertile 3.5% of soils in NSW as there are comparatively few locations that have access to all the relevant characteristics (see paragraph 372);
 - the prevalence of historical items and landscapes with heritage significance in the vicinity (paragraph 217); and
 - the nearest coal mine being 20 km away (paragraph 224).
228. The Commission considers that these likely preferred uses of the land are also compatible with a further objective of the RU1 zoning to preserve the local heritage and rural landscape (see paragraph 207).

6.1.5 Impact of the proposed mine on the likely preferred uses

229. As stated in paragraph 109, under Clause 12 of the Mining SEPP, the Commission must consider whether the Project or Recommended Revised Project is likely to have a significant impact on the likely preferred uses in the vicinity.
230. The Commission has considered the impacts further in this section of the Statement of Reasons including evaluating any measures proposed by the Applicant to avoid or minimise any incompatibility.

6.1.6 The incompatibility with the existing, approved or likely preferred uses

231. As stated in paragraph 109, under Clause 12(a)(iii) of the Mining SEPP the Commission must consider any ways in which the Project or Recommended Revised Project may be incompatible with any of the existing, approved or likely preferred uses. Where there is incompatibility, under subclause 12(c) of the Mining SEPP the Commission must evaluate any measures proposed by the Applicant to avoid or minimise incompatibility.
232. The Commission considers the impacts of the Project and Recommended Revised Project in this Statement of Reasons in Section 6 and finds that, by reason of its groundwater and agricultural impacts, and the lack of evidence to support the rehabilitation to BSAL equivalent, mining will be incompatible with the existing, approved and likely preferred uses in the vicinity and that the measures proposed by the Department and the Applicant will not avoid or minimise this incompatibility.

6.1.7 The comparative public benefits of the mine and other land uses

233. As stated in paragraph 109, under Subclause 12(b) of the Mining SEPP the Commission must evaluate and compare the respective public benefits of the Project and the existing, approved and likely preferred uses of land in the vicinity.
234. The Commission has considered the public benefits of the Project and finds them to be employment for up to 470 mine workers at full production, with 275 persons employed during underground only operations and \$290 million (net present value) in royalties for the NSW Government.

235. The Commission has considered the public benefits of the Recommended Revised Project and finds them to be 805 direct and indirect jobs, \$278 million (net present value) in royalties for the NSW Government and contribution of funding for local infrastructure. The Commission finds the negative impacts of the Recommended Revised Project to be the likelihood that rehabilitated land will not be at the standard of BSAL-equivalent resulting in a permanent loss of BSAL in the Bylong Valley, long-term impacts on groundwater, contribution towards climate change through GHG emissions, impacts on intergenerational equity and adverse heritage impacts and adverse visual impacts on the Bylong Valley landscape.
236. The Commission makes findings about the public benefits of the mine and other land uses in section 6.17.5. For the reasons given in this section, the Commission finds that the public benefits of the Project and the Recommended Revised Project have not been proven to outweigh either the public costs of the proposed mine or the public benefits of the existing, approved and likely preferred uses in the vicinity if those uses were left unaffected by the proposed mine.

6.2 Natural environment impacts - groundwater

6.2.1 Statutory context

237. Part 3 cl 14(a) of the Mining SEPP requires the consent authority to consider whether impacts on significant water resources, including groundwater resources, have been avoided, or are minimised to the greatest extent practicable.
238. Division 2 of Part 4AA of the Mining SEPP requires the consent authority to:
- “consider any written advice provided by the Minister for Regional Water; and
 - have regard to the minimal impact considerations set out in the NSW Aquifer Interference Policy 2012 (AIP) and the other provisions of the AIP”.
239. Clause 12AB(7) of the Mining SEPP requires that “[a]ny interference with an aquifer caused by the development does not exceed the respective water table, water pressure and water quality requirements specified for item 1 in columns 2, 3 and 4 of Table 1 of the Aquifer Interference Policy for each relevant water source listed in column 1 of that Table.” and that “[t]he taking of water from all water sources must be authorised by way of licenses or exemptions under the relevant water legislation.”
240. Section 4.15 of the EP&A requires the consent authority to consider “the likely impacts of the development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality”.

6.2.2 Gateway certificate recommendations

The Gateway Panel in the Gateway Report included recommendations specific to the consideration of groundwater impacts. **“Consideration 2: Significant impacts are anticipated on highly productive groundwater and the consequent connection between surface and groundwater in modelling requires more detailed evaluation.**

1. Develop a more complex transient 3D numerical model for the EIS stage of the Development Application which includes improved time variant input data, more details on recharge, geological imperfections (dykes, sills & faults), fractures from subsidence, and a sensitivity/uncertainty analysis.
2. Complete baseline studies for the project area to improve knowledge on water levels, and groundwater dependent ecosystems.
3. Provide an assessment of the hydrochemistry of spoil and tailings materials, and potential impact on nearby water sources.

4. *Provide a strategy for complying with the rules of the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources. In particular the implication of reduced available water determinations (AWDs) and the cease to pump rule.*
5. *Supply a plan for monitoring actual water take and how any changes from the predictions will be accounted for with water licences and remediation.*

6.2.3 Regional Plans

241. As stated in paragraph 183, the CW&O Regional Plan sets out 29 directions to assisting in guiding land use planning decisions for the Central West and Orana region for the next 20 years. Direction 11 is relevant to the Application as it aims to “sustainably manage water resources for economic opportunities”. Direction 11 sets out the following actions:

- *“Implement the Murray–Darling Basin Plan to ensure a balance of social, economic and environmental outcomes*
- *Finalise water resource plans and long-term watering plans for surface water and groundwater systems in accordance with the Murray–Darling Basin Plan*
- *Plan for high-water use industries in locations with water access and security*
- *Enhance the productive capacity of land in the Namoi, Macquarie and Lachlan irrigation areas by limiting encroachment of inappropriate and incompatible land uses.*
- *Provide guidance for development in areas of groundwater vulnerability.”*

6.2.4 Aquifer Interference Policy

242. According to cl 1.1 of the AIP, the AIP (relevantly) “establishes and objectively defines considerations in assessing and providing advice on whether more than minimal impacts might occur to a key water-related asset”. Clause 2 of the AIP provides that “[t]he water management framework for NSW and the National Water Initiative are underpinned by objectives and principles aimed at the sustainable management of water sources”.

243. The Commission considers that the AIP applies to both privately-owned land, and mine-owned land. Accordingly, the Commission is of the view that the AIP applies to the Project Site. The Commission notes, in this context, that KEPCO concedes that in assessing the Project, the Commission may proceed “on the assumption that the minimal impact considerations in the AIP do apply to water supply works, even if they are owned by KEPCO” (see paragraph 263).

244. For highly productive alluvial aquifers, the AIP allows for a maximum of 2 metre decline cumulatively at any water supply work. If this maximum is exceeded, ‘make good’ provisions apply and “appropriate studies will need to demonstrate to the Minister’s satisfaction that the variation will not prevent the long-term viability of the dependent ecosystem or significant site” (p.15, AIP).

245. Under the Clause 12AB(7) of the Mining SEPP it refers to the AIP as part of the non-discretionary development standards for mining:

“Any interference with an aquifer caused by the development does not exceed the respective water table, water pressure and water quality requirements specified for item 1 in columns 2, 3 and 4 of Table 1 of the Aquifer Interference Policy for each relevant water source listed in column 1 of that Table.

Note. The taking of water from all water sources must be authorised by way of licences or exemptions under the relevant water legislation.”

6.2.5 Applicant's assessment of the groundwater impacts of the Project

246. As part of the EIS the Applicant undertook the *Bylong Coal Project Groundwater Impact Assessment* (the **GIA**), prepared by Australasian Groundwater and Environmental Consultants Pty Ltd (**AGE**) dated June 2015, and the *Peer Review – Bylong Coal Project Groundwater Impact Assessment* (the **GIA Review**), conducted by Hydrosimulations dated 17 July 2015.
247. The EIS states the surface water in Bylong River and Lee Creek are highly connected with the groundwater: *"A shallow surface water and alluvial groundwater system, based on water level and hydrochemistry data is highly connected. During periods of sustained rainfall groundwater levels rise above the base of the Bylong River and Lee Creek and a continuous discharge from the aquifer as baseflow occurs. During dry periods groundwater levels fall, and the interconnected surface water systems reduce to a chain of ponds along the drainage alignment, with no continuous baseflow. During these periods, sub-surface groundwater flow occurs through the alluvium along the alignment of present day water courses."* (p. 74) and *"As discussed above the groundwater and surface water form a highly connected system and therefore when the water take from each is considered separately this is effectively double accounting"* (p. 140).
248. The EIS states that the salinity of the groundwater is suitable for stock watering and agriculture: *"Alluvial water samples ranges from relatively fresh (190 $\mu\text{S/cm}$) to brackish (3,100 $\mu\text{S/cm}$). EC for the Permian Coal Measures is also fresh to brackish ranging from 930 $\mu\text{S/cm}$ to 3,900 $\mu\text{S/cm}$ "* (p. 67) and *"The water quality results indicate the alluvium is suitable for stock watering and suitable for irrigation in many, but not all bores."* (p. 71). The EIS also predicts that there is no long-term impact on salinity. *"The long-term bore water salinity values derived from co-disposed overburden and well managed coal rejects was estimated to be in the range 1,800 $\mu\text{S/cm}$ to 3,500 $\mu\text{S/cm}$. This is within the range of EC measured within the alluvium, although generally, at the upper end of that range"* (p. 145).
249. The EIS states that aquifer recharge events are infrequent: *"Groundwater levels also demonstrate that recharge episodes are infrequent, leading to long term declines in groundwater levels over prolonged dry periods between soaking rain events."*
250. The EIS presented the following modelled impacts on groundwater from the Project during mining activities:
- mine area seepage into the two open cut mine areas of <360ML/year, and groundwater inflows: *"The model predicts seepage rates to the open cut mining areas of less than 360 ML/year (1 ML/day)... This represents a groundwater take from the Permian coal measures of 110 ML/year on average and a maximum of 354 ML/year."* (p. 111);
 - mine area seepage into the underground mine area is 1,200 ML/year due to the larger footprint, higher relative groundwater levels and mining methods. *"Groundwater inflow to the longwall panels, main headings and drift is higher than the open cut mining areas due to the larger footprint, higher water levels above the mining area and the effects of fracturing above the longwall panels. This results in groundwater take from the Permian coal measures of 1,200 ML/year on average, peaking at a maximum of 2,109 ML/year."*
 - drawdown in impacted alluvial and Permian aquifers is generally 1-2 metres, with one area northwest of the underground area along Dry Creek (figures 10.11 and 10.12) having a maximum impact of up to 9 m.
 - during operation of the open cut mine, *"[d]rawdown due to extraction from the bore field proposed for makeup water is constrained to within 0.5 km, although groundwater levels are generally reduced by 5 to 9 m close to the extraction wells."* (p.117);
 - drawdown within alluvial aquifers after open cut mining is completed and when the longwall mine is fully developed as impacted groundwater systems re-equilibrated, with the maximum drawdown in PY25;
 - depressurisation of groundwater in the coal seam from open cut and underground mining operations, extending a maximum of 2.3 km from open cut areas and 2.4 km from the underground area;

- reduced baseflow from the alluvium to Lee Creek (average reduction of 51 ML/year) and the Bylong River (peaking at 918 ML/year during open cut phase). No predicted impacts to baseflow for the Growee and Goulburn Rivers as a result of depressurisation of the alluvium;
- water take of approximately 29,400 ML from alluvial groundwater during the life of the mine (20,990 ML due to mine seep.(Table 10.3 p.113) and approximately 8,400 ML of mine make up water (Figure 10.1, p.104); and
- no impact to bores on privately owned land of more than 0.1 metres (p.128 of the EIS). Some salinity in bores and surface waters of waterways and seepage but no change to the environmental value and use of alluvial water.

251. The EIS presented the following modelled impacts on groundwater from the Project post-mining (i.e. in relation to surplus water management and groundwater recovery):

- there will be continued groundwater impacts at the cessation of mining. *“At the cessation of mining, there will be a relatively steep hydraulic gradient between the underground mine and surrounding aquifers, which will result in relatively rapid seepages. As the underground mine slowly floods, the hydraulic gradient reduces and the rate of groundwater inflow will slow. Eventually a state of equilibrium will occur where inputs are balanced by outputs and the water levels will have stabilised.”* (p. 138);
- the groundwater system will reach a new equilibrium within 100 years and the surface water within 140 years. *“Table 10.6 indicates the groundwater system essentially re-equilibrates within 100 years of mining ceasing.”* (p. 140);

Table 1: ‘Water take’ from alluvium and baseflow post mining

Year	Water take from alluvium (ML/yr)	Net water take from surface water baseflow (ML/yr)
26	227	208
27	188	188
28-29	51	75
30-31	55	78
32-38	55	84
39-53	41	81
54-88	21	66
89-136	-2	49
137-506	-5	4

Source: The Applicant's Environmental Impact Statement

- a permanent change in the water table surface, with water mounding in spoil areas and decreasing above the mined longwall areas. *“The figure [figure 10-27] indicates mining results in a permanent change in shape of the water table surface, with water levels generally mounding within the spoil areas due to the change in hydraulic properties and recharge rates. The results indicate a decrease in water levels above the mined longwall area, which is the result of changes to the vertical hydraulic conductivity in the goafed zone. The permanent drawdown is largely confined to within the footprint of the underground mining area, where water levels re-equilibrate at a slightly lower level.”* (p. 139). Figure 10-27 (p.141 of the EIS) indicates a change of up to 20 m in groundwater levels in the underground mining area and generally a 1-2m change in the open cut areas; and
- the impact would be local, as other *“existing mines within the Western Coalfield...are located well beyond the predicted zone of influence generated by the mining and as a consequence, there are unlikely to be any cumulative impacts on groundwater”*.

252. The Applicant's GIA Review concluded that:

“the model underpinning the groundwater assessment is ‘fit for ‘purpose’ where the primary purpose of the model is the prediction of environmental impacts in the context of the Aquifer Interference Policy, and estimation of water takes for licensing”.

253. The Applicant submitted additional information in relation to impacts to groundwater resources as part of its Review Response, including a Draft Water Management Plan that stated:

“[t]he borefield proposed within the Supplementary RTS, which was optimised with eight bores within the Bylong River and Lee Creek alluvium, will be capable of supplying the water demands for the vast majority of climatic conditions and uncertainty modelling scenario”; and

“In light of the PAC’s concern over deferring various management and mitigation measures, KEPCO has prepared a Draft WMP... which provides further information on the contingency measures proposed to be implemented to manage potential impacts of the Project. This includes items such as the processes for meeting water licensing requirements, processes surrounding the proposed Compensatory Water Supply Agreements with neighbouring landholders, Trigger Action Response Plans and an outline of the proposed contingency plans to be implemented in the case of unforeseen impact.”

6.2.6 Department’s assessment of the groundwater impacts of the Project

254. As part of its assessment of the Project, the Department consulted with the Department of Primary Industries (DPI), which has delegation to provide advice on behalf of the Minister for Regional Water, on behalf of the PAC as required by Division 2 of Part 4AA of the Mining SEPP. DPI’s advice to the Department, dated 11 November 2015, raised the following concerns:

- 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.
- DPI Water advised that the water security to the Project during extended drought periods remained uncertain and this warranted further consideration by the Applicant.

255. According to the Department’s Preliminary Assessment Report, the Department engaged Dr Frans Kalf of Kalf & Associates to undertake an independent review of the groundwater assessments and groundwater-related issues raised in submissions. Dr Kalf, DPI-Water and a number of other submitters raised a number of concerns about the groundwater modelling in the EIS. In response to these issues, the Applicant undertook additional groundwater-related assessment as part of the RTS.

256. The Department’s Preliminary Assessment Report stated that, based on the additional assessments undertaken by the Applicant, the DPI-Water and Dr Kalf concludes that they are satisfied that an acceptable prediction of the project’s potential water resource impacts has now been undertaken, and that the assessments include sensitivity analysis to account for the range of potential water resource impacts. Notwithstanding, DPI-Water considers that some uncertainty in groundwater predictions persists and has recommended measures to address this during mining operations, including additional modelling and validation (including investigation of using an integrated, or coupled, surface-water/groundwater model code), aquifer pump testing, and monitoring.

6.2.7 Planning Assessment Commission’s Review of the groundwater impacts of the Project

257. The PAC Review Report found that *“the assessment of groundwater highlighted persistent uncertainty about the availability of water resources for the project, and for agriculture and other land uses.”* (p.i).

258. In particular, the PAC Review Report found that:

“The Commission notes that multiple closely reviewed iterations of the groundwater model have been undertaken, all of which highlight uncertainty regarding the performance of and impacts on the alluvium. As such the Commission notes that doubt persists regarding the evidence and arguments on groundwater impacts and management strategies.”

"The Commission finds it difficult to accept the applicant's and the Department's assertions that there is a low probability of dry periods over the life of the mine, which would lead to impacts that only need to be identified and managed post approval. The Commission's view is that the available evidence of existing variability in the alluvial aquifers, as well as potential effects of climatic variability, suggest that there continues to be significant uncertainty about potential consequences". (p.7)

259. In summary, in regard to the Project's impact on groundwater resources, the PAC Review Report concluded:

"that the water balance information and proposed management arrangements raise uncertainties about whether the proposed nil-discharge mine may quickly revert to a discharge mine if wet conditions are encountered either shortly after mining commences or toward the end of mine life. Should mine water discharges continue to be a contingency, then potential discharge impacts should be fully assessed and appropriate discharge parameters established prior to a decision is made about the project." (p.9)

260. In making this conclusion, the PAC Review Report acknowledged the importance of groundwater resources to the agricultural productivity of the area:

"The Commission recognises the relationship between the management of impacts to groundwater resources and the retention of agricultural productivity. This relationship makes the establishment of an effective water sharing and compensation program, including appropriate make good components, essential in limiting the impacts of the project on agricultural enterprises, and ensuring sustainable land use co-existence outcomes." (p.15)

6.2.8 Applicant's assessment of the groundwater impacts of the Revised Mine Plan

261. The Applicant's *Bylong Coal Project Mine Plan Update Groundwater Impact Assessment*, which was submitted as part of the *Supplementary Information Report*, set out the expected reduction in groundwater impacts from the open cut mine under the Revised Mine Plan as follows:

"...reducing the footprint for the open cut mining area, reduces the inflow of groundwater to the open cut mining areas."

"...reducing the footprint of open cut mining does not influence the groundwater inflow rate experienced during the underground mine period. This is an expected outcome as no changes to the underground mining footprint/production rates are proposed."; and

"Whilst there are some differences in the post mining water levels, the conclusions from the EIS is that there will be no significant residual drawdown post mining remains valid for the Revised Mine Plan".

262. The Applicant noted that it had mitigated impacts of the Project on surrounding land through an acquisition strategy:

"Throughout the approvals process, KEPCO has acquired a large landholding both within and surrounding the Project Boundary. This landholding provides a material buffer surrounding the Project which means that any possible discernible impacts occur on KEPCO owned land."

263. The AGE report (Appendix G to the Applicant's Revised Mine Plan July 2018 (p8)) describes modelling results for predicted the drawdown of the alluvial aquifer for the Project and Recommended Revised Project. The modelling predicts a drawdown of between 2 and 10m in the aquifer along the Bylong River and Lee Creek for the Project. This drawdown is predicted to be marginally less (between 0.1m and 0.2m) for the Recommended Revised Project. This represent a greater than 2m for a number of bores in this locality.

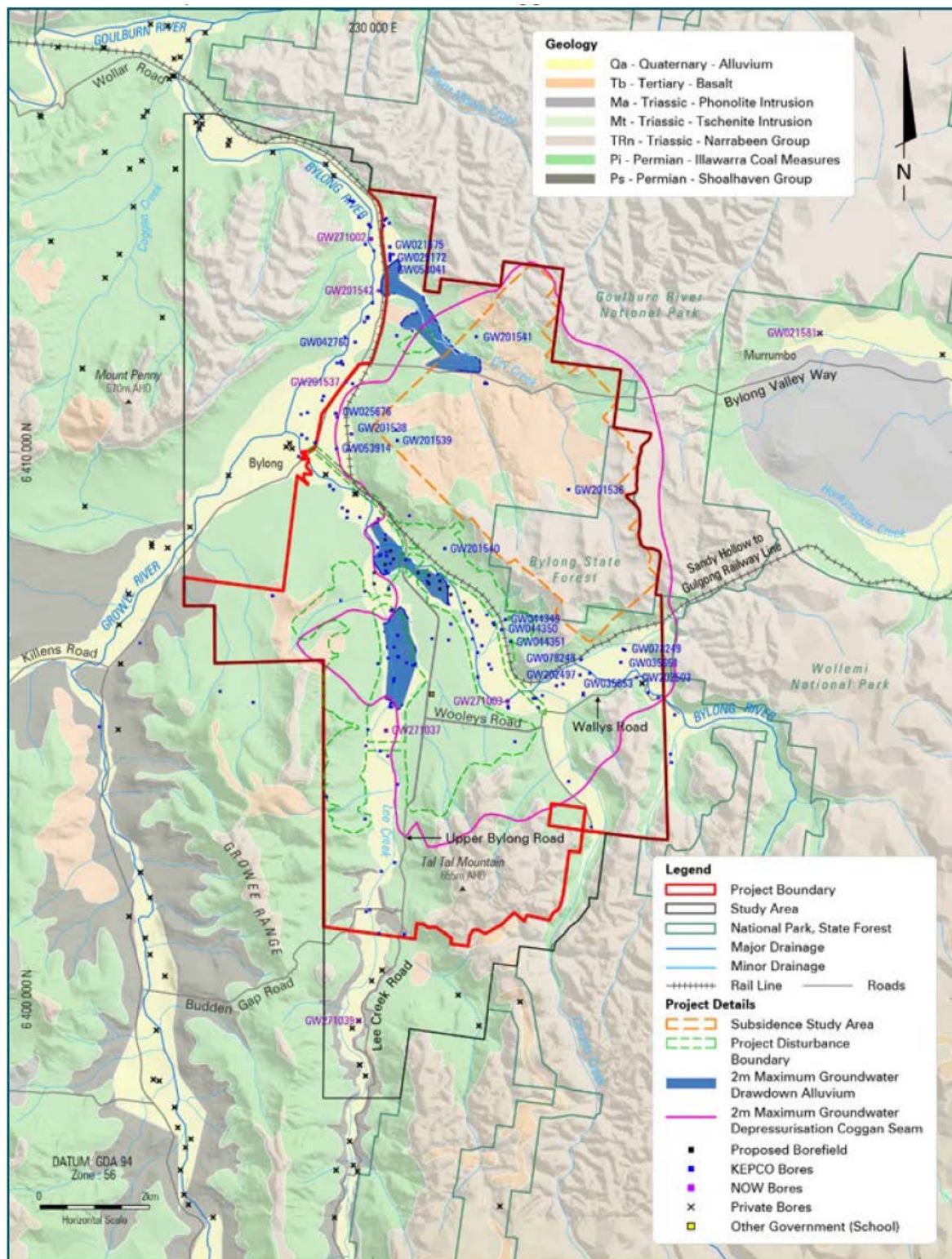
264. In its *Bylong Response to Submissions in relation to Water*, dated 20 December 2018 the Applicant responded to public concerns that the KEPCO-owned land would not meet the AIP by presenting an assessment of KEPCO-owned land in relation to the AIP:

“Given the concerns raised by stakeholders, if there is doubt as to the scope of the AIP, the IPC may wish to assess the Project on the assumption that the minimal impact considerations in the AIP do apply to water supply works, even if they are owned by KEPCO.”

265. In the *Bylong Response to Submissions in relation to Water*, the Applicant stated:

*“Figure 53 (**Figure 8**) of the EIS presents the maximum predicted groundwater drawdown in the alluvium and depressurisation within the Permian coal seam aquifer in relation to the registered bores within and surrounding the Project Boundary (i.e. KEPCO owned, Government owned and privately owned bores). Figure 53 of the EIS identifies a number of bores on KEPCO owned land within the predicted 2 m drawdown zone within the alluvium. The EIS identified that no privately-owned bores would experience drawdown greater than 2 m as a result of the Project’s activities.”*

Figure 8: Maximum Predicted Groundwater Drawdown in the Alluvium and Depressurisation in the Permian (Coggan Seam)



Source: Applicant's Environmental Impact Statement

266. The Applicant's assessment quantified the number and type of bores on the Project Site that would be affected by a drawdown greater than the 2m (i.e. the threshold set by the AIP) and concluded that the impact would not be permanent:

"The primary cause of drawdown in water levels at water supply works by reason of the Project is the operation of a borefield. It is also predicted that there will be recharge of the water levels from natural events (i.e. rainfall, river recharge and movement of alluvial water from upstream). For these reasons, it is predicted that any drawdown in water levels will not be permanent and that there will be no adverse impacts post-mining and after the borefield pumps are turned off. The maximum drawdown is predicted to occur throughout the open cut mine life in line with the anticipated maximum borefield demands. Once the underground mining commences, borefield demand decreases significantly."

6.2.9 Department's assessment of the groundwater impacts of the Revised Mine Plan

267. As part of the government assessment of the Revised Mine Plan, the Department of Industry (DoI), in its submission dated 12 February 2018, was satisfied with the outputs of the model and recommended conditions and stated the water allocation requirements that would apply to the Applicant should the Project be approved.
268. In regard to the uncertainty about groundwater modelling stated in the PAC Review Report, the Department's Final Assessment Report stated that the modelling was supported by statistical analysis:
- "While there is a level of uncertainty in any modelling, the groundwater impact assessment is supported by a statistical analysis of the predicted impacts based on the uncertainty analysis completed by AGE. The uncertainty analysis was informed by 140 calibrated model runs where key hydrological parameters, such as the vertical hydraulic conductivity, were varied."*
269. In relation to aquifer drawdown on private land not owned by the Applicant, the Department's Final Assessment Report stated that:
- "The results indicate that it is exceptionally unlikely that drawdown impacts exceeding the 2m minimal impact drawdown target of the Aquifer Interference Policy (AIP) would occur at any privately-owned properties."*
- To provide further context, only one model run of the 140 model runs of the uncertainty analysis predicted an impact that exceeded the NSW Government's AIP minimal impact requirements on the alluvial aquifer outside of land owned by KEPCO."(p.25-26)*
270. In relation aquifer drawdown on land owned by the Applicant, the Department's Final Assessment Report stated that:
- "Under all other uncertainty analysis model runs, the 2m drawdown is confined to land owned by KEPCO within the Upper Bylong River valley catchment."*
271. The Final Assessment Report found that the groundwater modelling was sound and that the impacts of the Revised Mine Plan were limited to land owned by the Applicant and largely relate to the open cut phase:
272. The Department concluded that the Applicant's management of the groundwater impacts of the Revised Mine Plan was acceptable because:
- *"KEPCO has designed the project to avoid significant impacts, including open cut mining undertaken outside a 150 m buffer from the alluvium, and locating bores to minimise impacts on GDEs;*
 - *the predicted impacts on water users and GDEs would comply with the minimal impact criteria as set out in the NSW Government's Aquifer Interference Policy; and*
 - *KEPCO holds sufficient water licences to account for its predicted water take in the alluvium; and*

- while KEPCO has not acquired all its entitlement in the Permian aquifer, there is sufficient depth in the water market to acquire its additional entitlement, noting that the take from the Permian aquifer would not exceed its allocated entitlement until Year 19 of the project.” (p.33)

273. The Department’s Final Assessment Report recommended relevant Final Recommended Conditions, which included:

“Revisions to compensatory water conditions to make it clear that the burden of proof about loss of water supply rests with the Applicant. That is KEPCO must ensure that its water monitoring network and investigation/action triggers provides sufficient evidence that the mine operations have not caused a loss of water supply.”

“Performance measures for mine water storages to make it clear that the consent does not permit discharge of mine water from the site.”

“Additional requirements for a detailed validation and peer review of the site water balance every 3 years, including a review of the life of mine water balance and (if necessary) identify and implement measures to ensure mine water storage capacity is retained to ensure commitment to no discharge of mine water off-site.”

“Additional requirement for a detailed final void management strategy to optimise the size of the final void required for reject emplacement and water storage, with an annual review based on verified data.” (p.34)

274. Further, the Department’s Final Assessment Report concluded:

“The Revised Mine Plan further reduces the impacts on water resources through slightly reduced drawdown impacts in the alluvial aquifer, reduced groundwater inflow during open cut operations and a greater buffer distance of the open cut from the alluvium located on Tarwyn Park.” (p.33)

275. In response to the Commission’s request for further information and assessment in relation to impacts on water resources, the Department stated in a letter to the Commission dated 13 February 2019 that there was no cumulative effect from nearby mines on the groundwater:

“There are no groundwater interactions between the western coal precinct mines (Ulan, Wilpinjong and Moolarben Coal mines) which are located more than 20km from the Bylong Coal Project. Based on the detailed modelling for these projects, there is no overlapped zone of influence between these mines and the Bylong Coal Project and there are no cumulative groundwater drawdown impacts.” (p.9, Attachment A).

6.2.10 Public comments on the groundwater impacts of the Recommended Revised Project

276. The Commission heard concerns from speakers at the public meeting and received written comments regarding the potential impacts of the Recommended Revised Project on groundwater resources. These included concerns about the potential consequences for agriculture in the valley from the extraction of water from the Bylong River alluvium, uncertainty of the availability of water in the alluvium, and personal experience regarding the difficulty of accessing water from the aquifer. Some speakers were also concerned about the risks to water availability posed by climate change and climatic fluctuations during the life of the mine and post-mine.

277. A number of speakers noted the relationship between the groundwater resources of the Bylong Valley and its agricultural productivity. For example:

“The likelihood of aquifer draw-down being greater than two metres is highly probable, and the increase in salinity level in the alluvial system is also likely to be above the threshold of quality. The risk of this policy not being met, even with the proposed Revised Mine Plan, is very high” (p. 25); and

“KEPCO modelling indicates a sustained change in water levels for [over] 100 years, including dewatering large sections of the alluvial sands entirely and not going back to pre-mining levels. The long-term impact of this drawdown of the alluvial water system, on the Tarwyn Park Natural Sequence Farming property, on groundwater dependent ecosystems such as River red gums, and on downstream water users is basically unknown, unproven and uncertain. One thing we do know is this level of disruption to the water system will reduce the resilience and increase the Bylong Valley[s] vulnerability to drought for many decades into the future.” (p. 20)

278. Local residents at the public hearing also noted the reliance on bore water for irrigation of agricultural lands in the area:

“Our primary concern relates to having a viable water resource for all agricultural interests in the Bylong Valley. For years now, we personally have experienced a degree of uncertainty about getting sufficient groundwater for our livestock and crops. Despite having an irrigation licence, we are no longer able to irrigate any of our lucerne paddocks. Ever since our shallow alluvial well dried up, back in about 1997, we have had to rely on water from deep bores, the deepest of which is 102 metres; but this is currently unusable due to a decline in groundwater levels, owing to extended dry conditions. Groundwater, in the Bylong Valley, is already a very precarious resource. To place further demands on its supply should, in our view, be unthinkable. We’re also concerned that dirty mine water could jeopardise the quality of the existing groundwater.” (p. 9)

“For example, our farm has a licence of 30 megalitres, but in dry times like this, we struggle to get one megalitre. So that means we’re pumping and we have to stop pumping because the bore goes dry.” (p. 63)

279. A written submission provided by Chalk and Behrendt on behalf of Lock the Gate on 7 December 2018 raised concern about the compliance of on-site groundwater impacts of the Project and Recommended Revised Project with the AIP. The submission stated:

“A central purpose of the AI Policy is to establish and objectively define ‘minimal impact considerations as they relate to water-dependent assets’ (section 32.1)”, and “...there is no limitation [in the AI Policy] to the effect that aquifer impacts only be assessed at ‘private dwellings’ or otherwise outside of Project proponent-owned land”, and so “...the AI Policy requirements ... apply to ‘any’ water supply work irrespective of land ownership or use”. (p.1)

280. The submission stated that the Department’s assessment that the Project and the Recommended Revised Project complied with the AIP had only considered aquifer impacts on privately-owned properties, and that as such *“there is the potential for considerable doubt over the validity of any determination in relation to the Project, due to a failure to properly consider the matters required to be considered by the AI Policy and the Mining SEPP.” (p.3)*

6.2.11 Independent Review of Groundwater Impacts and Modelling.

281. On 28 November 2018, the Commission engaged GW-SW Pty Ltd to undertake an independent review (**Independent Groundwater Review**) of:

- the water quality assessment information submitted by the Applicant;
- the independent water quality studies considered by the Department in its assessment of the Project; and
- the independent reviews of groundwater impacts provided through community submissions, including the predicative groundwater modelling which has been undertaken (i.e. by BVPA).

282. Within the Independent Groundwater Review, the Commission requested GW-SW Pty Ltd to:

- summarise the key inconsistencies within reviewed documentation, and identify the most appropriate approach to assessment, based on accepted best practice, published scientific literature and evidence, with reference to the request for consideration of groundwater model parameters set out in the submission by BVPA;

- provide comments on:
 - o the potential impact on neighbouring properties and bores;
 - o rehabilitation and groundwater recovery; and
 - o potential cumulative impacts.
283. The Independent Groundwater Review focused on the potential impacts of the Recommended Revised Project, including the Revised Mine Plan, and was provided to the Commission on 5 March 2019.
284. The Independent Groundwater Review noted the existing practice in the vicinity of using groundwater for irrigation:
- “The alluvial aquifer has been used as a source of groundwater for irrigation of crops. The bores are relatively well separated from each other and have small yield.”*
285. The Independent Groundwater Review included the following recommendations in relation to the proposed groundwater management plan for the Recommended Revised Project:
- “If the project is approved, the Groundwater Management Plan should include a list of potential groundwater issues ... [and] explain how each potential issue will be managed. The Groundwater Management Plan should include descriptions of the conceptual hydrogeological model in layman’s language, so that all stakeholders, including operational staff, can understand the most important issues and how they will be managed...”*
- It would be possible to be more prescriptive about how monitoring and modelling should be undertaken. At present, there are few graphs or Tables in the documents submitted by the Applicant that could be used by an auditor to show that impacts are occurring as expected, or not as expected. The Groundwater Modelling Plan needs to address this issue by identifying specific locations where stakeholders would be interested in tracking the water table elevation and piezometric heads, and by making predictions of hydrographs at each measurement location...”*
286. With regard to the groundwater modelling and outputs presented by the Applicant, the Independent Groundwater Review concluded that the assessment and results seemed reasonable. It supported the projected impacts modelled by the Applicant in Table 10.6 of the EIS – presented in paragraph 251 – and stated that most of the recovery of the aquifers would take place in *“the first 100 (or arguably 150) years”*:
- “AGE (2015) simulated the recovery of the regional aquifer for a period of 1000 years after mining. With reference to their Table 10.6, they suggest that most of the recovery occurs in the first 100 (or arguably 150) years. Their Figure 10-27 shows final “groundwater levels” 1000 years after mining, with a slight lowering in the area of longwall mining, and a rise in the area of overburden emplacement areas and backfilled open cut mines.... It is not clear whether there is any expectation that recharge through the land surface above the longwalls panels would be expected to increase post mining. It also is not clear whether the rates of flow in Table 6 are integrated over the whole model domain, including areas far from the proposed mines. Nevertheless, the results seem reasonable.” (p.31)*
- “In spite of an unusual amount of public discussion of the challenges with modelling, the outcome of this review of reports, without additional hands-on review of the modelling, is that there is no reason to change this conclusion. The assessment of potential groundwater impacts is defensible and consistent with other similar projects.” (p.37)*
287. The Independent Groundwater Review also confirmed that there would not be a cumulative impact on the groundwater in relation to nearby mines:

“There is no risk of direct groundwater impacts of the project on groundwater near other existing mines (Ulan, Wilpinjong or Moolarben Mines), in the sense that the water table at these mines will not be affected by the Bylong Coal Project, and depressurisation will not extend that far. The only potential cumulative impact would be an indirect impact, if drawdown in the alluvium of Bylong River were to cause a reduction in streamflow, either at times of low flow or on an annual basis, such that the impacts of all mines were felt concurrently in the Goulburn River, downstream of its confluence with Bylong River.” (p.32).

6.2.12 Commission’s consideration of the groundwater impacts of the Project and Recommended Revised Project

288. The Commission accepts the findings of the Applicant and Independent Groundwater Review in paragraphs 251, 275 and 287 that there would be no cumulative impact on groundwater in relation to nearby mines as there is no overlap in zone of influence.
289. The Commission accepts the robustness of the modelled groundwater impacts presented in the Applicant’s *Bylong Coal Project Mine Plan Update Groundwater Impact Assessment* as referenced in paragraph 261.
290. The Commission accepts the findings of the Applicant and Independent Groundwater Review in paragraphs 251 and 286 that the groundwater system will reach a new equilibrium within 100-150 years.
291. The Commissions agrees with the conclusions of the Applicant and the Department in paragraphs 265 and 269 that the projected aquifer drawdown will not exceed 2m on neighbouring properties not owned or operated by the Applicant. The Commissions finds that the Project and the Recommended Revised Project meet the requirements of the AIP in relation to the groundwater impacts on land that is not owned or operated by the Applicant.
292. The Commission accepts the statements of the Applicant and Department in paragraphs 265 and 270 that the drawdown of the aquifer on land owned and operated by the Applicant is projected to be greater than 2m which exceeds the maximum drawdown thresholds in the AIP set out in paragraph 238. The Commission notes that the Applicant’s modelling as stated in paragraph 263 predicts a drawdown of between 2 and 10m in the aquifer along the Bylong River and Lee Creek for the Project. The Commission notes that the drawdown is predicted to be marginally less (between 0.1m and 0.2m) for the Recommended Revised Project. The Commission is of the view that this is a significant decline in the water table in comparison to Table 1 ‘The Minimal Impact Considerations for Aquifer Interference Activities’ which sets out the AIP’s maximum drawdown threshold of a 2m decline.
293. The Commission accepts the Department’s conclusion that the Recommended Revised Project has slightly reduced the impacts on groundwater as stated in paragraph 274.
294. The Commission notes the Department’s conclusion in paragraph 272, that the Applicant has designed the Project to avoid significant groundwater impacts. The Commission does not support this conclusion for the reasons set out in paragraph 295, 296 and 297. The Commission accepts the Department’s conclusion in paragraph 272, that the Applicant holds sufficient water licenses to account for its predicted water take in the alluvium and that the Applicant has not acquired all its entitlement in the Permian aquifer.
295. The Commission notes the Department’s conclusion in paragraph 272 that the Applicant’s management of the groundwater impacts of the Recommended Revised Project was acceptable because the predicted impacts on water users would comply with Table 1- Minimal Impact Considerations for Aquifer Interference Activities set out in the AIP. The Commission is of the view that this only applies to land not owned by the Applicant. As set out in paragraph 292, the drawdown of the aquifer on land owned and operated by the Applicant is projected to be greater than 2m (up to 9m along Dry Creek), exceeding the maximum drawdown thresholds in the AIP. The Commission finds that under Clause 12AB(7) of the Mining SEPP, this is an interference with an aquifer caused by the proposed development that does exceed the respective water table threshold under the AIP as both considerations 1 and 2 in the AIP refer to a ‘2m decline cumulatively’.

296. The Commission notes that there is a breach of the AIP's maximum drawdown as stated in paragraph 292 and therefore the AIP 'make good' provisions apply as set out in paragraph 244. The Commission notes that the AIP does not define or identify what 'make good provisions' are. The Commission acknowledges that the AIP states that *"surrendering of water access licences is a 'make good' provision which may account for ongoing post-closure take of water, provided water management costs and the net present value of any charges associated with this ongoing take of water and the surrendered licences are met"* (p30). The Commission notes that there has been no information provided by the Applicant in relation to proposed 'make good' measures. The Commission finds that there is uncertainty and insufficient information before it as to whether the 'make good' requirements of the Project and Recommended Revised Project are met given the exceedance in the respective water table.
297. The Commission finds that the groundwater impacts on the Project Site are unacceptable for the reasons set out below:
- aquifer recharge events are infrequent leading to long term declines in groundwater levels over prolonged dry periods, as stated in paragraph 249;
 - the groundwater system will reach a new equilibrium within 100-150 years as stated in paragraph 290. The Commission is of the view that this will have long term intergenerational consequences;
 - drawdown at the Project Site exceeds the AIP thresholds (i.e. 2m). The Commission notes that one area along Dry Creek will have a maximum impact of up to 9m as stated in paragraph 292.
 - there is uncertainty and insufficient information before it as to whether the 'make good' requirements of the Project and Recommended Revised Project are met as stated in paragraph 296; and
 - the predicted water seepage into the mine at cessation of mining is significant, as stated in paragraph 251 and the length of time over which the aquifer will recover is beyond the commercial life of the mine and there will be continued groundwater impacts at the cessation of mining, as stated in paragraph 251 and 286.

6.3 Natural environment impacts - surface water

6.3.1 Statutory context

298. Part 3 cl 14(a) of the Mining SEPP requires the consent authority to consider whether impacts on significant water resources, including surface water resources, have been avoided, or are minimised to the greatest extent practicable.
299. Section 4.15 of the EP&A requires the consent authority to consider *"the likely impacts of the development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality"*.

6.3.2 Applicant's assessment of the surface water impacts of the Project

300. The Applicant undertook a *Surface Water and Flooding Impact Assessment*, dated 18 June 2015, to inform the EIS. The EIS described the catchment as being:
- "within the catchment of the Bylong River a tributary of the Goulburn River, which in turn is a tributary of the Hunter River. The headwaters of the catchment are typically steep and well vegetated. In the lower portions of the catchment, extensive vegetation clearing has occurred for agricultural purposes, particularly in alluvial areas adjacent to the river channel... The primary area of disturbance for the Project are on elevated land along a short reach of Lee Creek and the Bylong River where mine infrastructure and open cut mining areas are located and in the Creek catchment, where underground mining is proposed."* (p.184)
301. The EIS identified that baseline surface water quality monitoring has been undertaken at nine sites from February 2012 to August 2014 that characterised the existing surface water environment for the Bylong River, Lee Creek and Dry Creek.

302. The EIS identified that the potential impacts from the Project on surface water resources include:
- *"Impacts on regional water availability as a result of the operation of the bore field;*
 - *Degradation of surface water draining from the disturbance areas to the receiving waterways;*
 - *Loss of catchment area draining to local drainages paths due to captured runoff; and*
 - *Potential impacts on flood levels and flood velocities in the Bylong River and its tributaries."*
303. The EIS identified that the "results of the water balance modelling show that KEPCO's existing WALs [water access licenses] providing 2,535 ML/year will satisfy all site demands for all years of operation (even in the driest climatic sequence experiences over the past 125 years)" (p. 190).
304. The EIS assessed the overall site water balance for the Project and concluded that the risk of impacts on water quality was low:
- "The results of the site water balance modelling demonstrate that the site water management system can be operated to ensure with at least 99% probability that no uncontrolled releases of saline water will occur throughout the life of the Project. The only uncontrolled offsite release will be from the sediment dams during periods of rainfall greater than the relevant design criteria. Available geochemical information indicates that the runoff draining to most of the sediment dams should have salinity consistent with receiving waterways and therefore it is unlikely that a measurable impact will be experienced to receiving water quality."* (p.190)
305. The EIS identified that during operation the mine water management system would result in a net loss of catchment area for the Bylong River, Lee Creek and Dry Creek.
306. The EIS identified that in the absence of a final void at the completion of the Project, a significant change in catchment area between pre and post mining landforms was not expected, and no measurable impact on the receiving water volumes was expected beyond the life of the mine.

Water quality impacts and spills

307. The EIS identified that the average annual salt load to the Bylong River would be reduced by approximately 5.6 – 8.4% depending on the mining stage, with the long-term water quality from surface runoff similar to the pre-mining quality once the post mining landform was established.
308. The EIS stated that the Project could operate as a 'no spill' mine:
- "[O]n the configuration and capacity of the proposed water management system, there will be no offsite spills from mine water storages or controlled discharges throughout the life of the Project."*
309. The EIS identified that the two haul roads would impact on flood behaviour but concluded that impacts would be local and confined to land owned by the Applicant:
- "the inclusion of the proposed mine infrastructure was identified to result in isolated changes in water levels in the vicinity of the proposed haul roads and the overland conveyor embankment for all modelled design events. The increase in flood depth ranges from 1.0 m to 2.5 m immediately upstream during the 100 year ARI events."*
- "the predicted impact on existing flood levels was identified to be smaller for the 2 year and 50 year ARI design events. There is an increase in flood levels of between 1.0 m and 2.0 m and between 0.5 m and 1.0 m upstream of the structures in the 50 year and 2 year ARI design events respectively."*
- "there is a decrease in velocity of between 0.2 m/s and 1.0 m/s upstream of these structures and isolated increases in velocity between 1.0 m/s and 2.0 m/s immediately downstream of the structure during the 100 year ARI design event... The predicted impact to flood velocities is not as severe during the 2 year and 50 year ARI design events."* (p 195)

310. The Applicant's Review Response stated that site water balance and potential mine discharges could be appropriately managed:

"statistical analysis in the Supplementary RTS indicates that there is a 1% chance of the need to store more than 860 ML of water within the open cut during Project Years 3 and 6. In light of these results, the consistent conclusion is provided within the Supplementary RTS that the open cut mining area could manage excess mine water during the open cut mining stage";

"water balance modelling conservatively assumes that mining operations will continue to pump all available water to the surface and to the Eastern Void until the completion of mining operations. The likely reality will be that in the final years of mining operations, a greater proportion of groundwater inflows will be left underground instead of pumping water to the surface for usage and management." (p. 30)

6.3.3 Department's assessment of the surface water impacts of the Project

311. The Department's Preliminary Assessment Report stated that the project has *"the potential to impact surface water quality, particularly via increases in salinity, which could occur through changes to catchment flows and uncontrolled releases (overflows) from the project's sediment basins"*. The Department stated that the modelling undertaken by the Applicant indicates that salt loads released to the Bylong River would marginally decrease during mining operations as a result of the reduction in catchment runoff and overflows from the sediment dams having salinities consistent with receiving waterways.
312. The Department's Preliminary Assessment Report concluded that *"the project is not expected to result in any significant impacts on water quality in the locality. In the long term post-mining, water quality is predicted to be similar to pre-existing conditions"*.

6.3.4 Planning Assessment Commission's Review of the surface water impacts of the Project

313. The PAC Review Report noted that public submissions were concerned about impacts to the Goulburn River catchment including salinity, water quality data reliability, and the capacity of the Project to appropriately manage mine water discharges.
314. The PAC Review Report considered that the 1% chance of climatic conditions outside the normal range proposed by the Applicant was not insignificant:

"The [PAC] is reluctant to accept that these probabilities and the potential consequences are remote or trivial. Rather, these statistics show that if the mine encounters wet conditions early on, part of the void may be required for mine water storage and the amount of storage required could be significant enough to require some adjustments to open cut mining. Further, the Commission is concerned about the contingency to discharge mine water toward the end of mining operations." (p. 9)

315. The PAC set out the matters that would require detailed evaluation which included claims that:

"the project area is a relatively small portion of the Lee, Bylong, and Growee catchments and it is not expected to have significant impacts on catchment hydrology;

loss of surface flows in Dry Creek resulting from subsidence deformations and cracking is not expected to be significant, and many physical impacts would be remediated;

based on nil-discharge mine design, the residual salt loads that are exported from the site are not expected to result in significant impacts on catchment water quality;

overflow of water from sediment dams during wet periods that exceed the relevant design standard of the sediment control system would be governed by the Environment Protection Licence for the project..." (p. 10)

6.3.5 Applicant's assessment of the surface water impacts of the Revised Mine Plan

316. The Applicant's *Bylong Coal Project Updated Surface Water Impact Assessment*, dated 10 July 2018, identified that the Revised Mine Plan would have following impacts:

"The predicted impact through loss of catchment for the Revised Project Layout mine plans is less than the impact predicted as part of the EIS investigations due to the reduced mine footprint"; and

"The flooding impacts of the Revised Project Layout mine plan are similar (and in some cases less than) the previous assessments. Flood impacts will not encroach upon the Tarwyn Park property."

6.3.6 Department's assessment of the surface water impacts of the Revised Mine Plan

317. The Department stated in its Final Assessment Report that the water take for the Recommended Revised Project, including intercepted water and reductions in surface base flow, were acceptable and manageable through the Department's Final Recommended Conditions:

"the recommended conditions require that KEPCO must ensure it has sufficient water for all stages of the development, and if necessary, adjust the scale of its mining operations to match its available water supply. That is, like any other water user if KEPCO's water licence allocation under the Water Sharing Plan is reduced, it would need to alter its operations accordingly." (p. 26)

318. The Department's Final Assessment Report proposed the following Final Recommended Conditions:

"ensure that it has sufficient water for all stages of the project, and if necessary, adjust the scale of mining operations on site to match its available water supply;

ensure that it has adequate water access licences to account for all water used by the project, prior to the commencement of mining in the open cut and underground mining areas;

not discharge any mine water (i.e. 'dirty' or saline water) from the site, unless otherwise approved under an environment protection licence;

ensure that all surface water discharges of non-mine water from the site comply with the limits set in any environment protection licence." (pp. 33-34)

319. Additionally, the Department's Final Assessment Report presented Final Recommended Conditions to address issues raised by the PAC Review Report, including:

"Schedule 4 Condition 27 - Water Management Performance Measures: Performance measures for mine water storages to make it clear that the consent does not permit discharge of mine water from the site.

Schedule 4 Condition 28 - Water Management Plan: Additional requirements for a detailed validation and peer review of the site water balance every 3 years, including a review of the life of mine water balance and (if necessary) identify and implement measures to ensure mine water storage capacity is retained to ensure commitment to no discharge of mine water off-site.

Schedule 4 Condition 64 - Rehabilitation Management Plan: Additional requirement for a detailed final void management strategy to optimise the size of the final void required for reject emplacement and water storage, with an annual review based on verified data." (p. 34)

320. The Department concluded in its Final Assessment Report that surface water could be adequately managed:

"Based on this additional information and the contingencies proposed, the Department considers that mine water could be effectively managed in surface storages and the mined underground workings without the need to discharge to receiving waters." (p. 31)

6.3.7 Public comments on the surface water impacts of the Recommended Revised Project

321. The Commission heard concerns from speakers at the public meeting and received written comments regarding the impacts of the Recommended Revised Project on likely impacts to surface water impacts. These included:

- through flow volumes and increased salinity contributions from the Project to the Goulburn

River, a tributary of the Hunter River;

- reduction in catchment areas for the Bylong River and Lee Creek; and
- reduced recharge of surface water systems as a result of impacts to the alluvium.

6.3.8 Commission's consideration of the surface water impacts of the Recommended Revised Project

322. The Commission accepts the Applicant's findings in paragraph 316 that the predicted impact through loss of catchment for the Recommended Revised Project is less than the impact predicted as part of the EIS investigations for the Project due to the reduced mine footprint.
323. The Commission notes that there were concerns raised by the public in relation to impacts of the Project and Recommended Revised Project on surface water. However, the Commission agrees with the Department's conclusion in paragraph 320, that the mine water could be effectively managed in surface storages and the mined underground workings without the need to discharge to receiving waters. The Commission accepts the Department's conclusions in paragraphs 317-319 that surface water impacts were acceptable and manageable through the Department's Final Recommended Conditions.

6.4 Land use compatibility – agriculture

6.4.1 Statutory context

324. s 4.15 of the EP&A Act requires the Commission to assess the suitability of the site for the development.
325. Part 3 of the Mining SEPP requires the Commission to consider the compatibility of development with other land uses, including whether or not it is likely to have a significant impact on the likely preferred land uses in the vicinity of the development; any ways in which the development may be incompatible with any of those uses; and any measures proposed by the Applicant to avoid or minimise any incompatibility.
326. The Commission has found that the likely preferred land use in the vicinity is primarily agricultural (paragraphs 227-228).

6.4.2 Gateway certificate recommendations

327. As set out in paragraph 120-122, under 17B of the Mining SEPP the Project was required to obtain a Gateway Certificate because the Project Site impacted on BSAL and Equine CIC.
328. The purpose of the gateway assessment process is described in the FAQ titled *Introduction of the Gateway Process and Gateway Panel* accessible on the Department of Planning and Environment's website: "[t]he role of the Gateway assessment is to identify potential impacts on the State's valuable agricultural land and water resources from mining and CSG [coal seam gas] proposals early in the process. Once identified, these impacts must be addressed in the development application (DA) which will then be subject to the established development assessment process." (p.1) Further "[t]he consent authority must also consider the Gateway Panel's recommendations."
329. The gateway process is described in the FAQ titled *"Biophysical strategic agricultural land mapping across NSW"* accessible from the Department of Planning and Environment's *"Safeguarding agricultural land"* webpage as providing *"an additional level of scrutiny"*.
330. The Project obtained a conditional Gateway Certificate as it failed to meet 11 out of 12 relevant gateway criteria. The conditional Gateway Certificate included recommendations to address the Project's failure to meet the relevant criteria. In its report, the Mining and Gateway Panel concluded that:
- *"the open cut mining would have a direct and significant impacts on the agricultural productivity of the verified BSAL within the project boundary areas;*

- indirect impacts on verified BSAL with the project boundary have not been assessed and are potentially significant;
- indirect impacts on potential BSAL adjacent to the project boundary have not been assessed and are potentially significant; and
- there would be significant impact on Equine CIC”.

6.4.3 Relevant guidelines

Interim BSAL protocol

331. The Interim BSAL Protocol is a site verification process that has been developed under the Mining SEPP to determine the existence of Biophysical Strategic Agricultural Land at the site of a potential development. It is the primary tool for the identification and mapping of BSAL in NSW, listed under the heading of ‘safeguarding’ agricultural land on the Department of Planning and Environment website.
332. The purpose of the Interim BSAL Protocol is to:
- “outline the process for seeking verification of whether or not land mapped as biophysical strategic agricultural land (BSAL) meets the BSAL criteria. The State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) Amendment 2013 (the 2013 Mining SEPP amendment) requires certain types of developments to verify whether the proposed site is on biophysical strategic agricultural land (BSAL). The purpose of this protocol is to assist proponents and landholders understand what is required to identify the existence of BSAL and outlines the technical requirements for the on-site identification and mapping of BSAL.” (p. 1 Interim BSAL Protocol)*
333. BSAL is identified using the Interim BSAL Protocol in regard to the following specific characteristics:
- “properties with access to a reliable water supply, defined by:*
- *rainfall of 350mm or more per annum (9 out of 10 years), OR*
 - *a regulated river (maps show those within 150m), OR*
 - *a 5th order or higher unregulated river (maps show those within 150m), OR*
 - *an unregulated river which flows at least 95 per cent of the time (maps show those within 150m), OR*
 - *highly productive groundwater sources, as declared by the NSW Office of Water. These are characterised by bores having yield rates greater than 5L/s and total dissolved solids of less than 1,500mg/L and exclude miscellaneous alluvial aquifers, also known as small storage aquifers.*
- AND*
- *land that falls under soil fertility classes ‘high’ or ‘moderately high’ under the Draft Inherent General Fertility of NSW (OEH), where it is also present with land capability classes I, II or III under the Land and Soil Capability Mapping of NSW (OEH).*
- OR*
- *land that falls under soil fertility classes ‘moderate’ under the Draft Inherent General Fertility of NSW (OEH), where it is also present with land capability classes I or II under the Land and Soil Capability Mapping of NSW (OEH).”*
334. The Interim BSAL Protocol notes that all land in the vicinity would meet the Protocol’s criteria for water supply access to a reliable water:
- “All of the area in the Upper Hunter and the New England has access to a ‘reliable water supply’. This is because there is either rainfall of 350mm or more per annum in 9 out of 10 years or the land is underlain by a groundwater aquifer with a bore yield rate greater than 5Ls and total dissolved solids of less than 1,500mg/L”.*

335. The Protocol includes various levels of soil fertility, indicating that BSAL is not necessarily 'prime' agricultural land.

6.4.4 Applicant's assessment of the agricultural land use compatibility of the Project

336. In their Agricultural Impact Assessment dated May 2015 and Soil, Land Capability and Strategic Agricultural Land Assessment dated 24 March 2015 the Applicant identified the agricultural activities in the surrounding locality to include beef and cattle grazing, fodder cropping, irrigated cropping and equine activities.
337. The Agricultural Impact Assessment identified that within the 6,957.7 ha Project Boundary area:
- 27.9% is classified as Highly Capable land and 24.6% as Moderate to Moderate-Low Capable land.
 - 1,143.85 ha of the 3,660ha of classified arable and grazing agricultural land referred to in the dot point above would be impacted by the Project.
 - 711 ha mapped BSAL will be impacted by the Project, with 423.1 ha to be within the Project Disturbance boundary, and 287.8 ha to be managed for biodiversity offsets.
 - 1,215 ha mapped Equine CIC will be impacted by the Project, with 700 ha to be within the Project Disturbance boundary, and 515 ha to be managed for biodiversity offset.
 - 4,435 ha of agricultural land, including biodiversity offset land, will be retained for agricultural use.
338. The Agricultural Impact Assessment also quantified the agricultural impact of the Project on the Project Site in terms of the economic value of the loss of agricultural land in relation to the economic value of agricultural production in the local area and the State:
- "The gross value of agricultural production (land and water) predicted to be removed from agricultural production is estimated to be \$2.66 Million per annum. This represents 4.12% of the gross value of agricultural production in the Mid-Western Regional Council local [sic] Government Area, 0.02% of NSW and 0.005% of Australia."*
- "The annual average loss of gross value of production over the 27 year period is \$1.871 M with \$1.686 M remaining lost to agriculture as a result of agricultural production no longer being carried out in the areas managed for biodiversity (\$1.613 M) and non-rehabilitated infrastructure areas (\$0.073 M)."*
339. The draft *Bylong Coal Project Draft Farm Management Plan*, dated December 2017 (the **draft FMP**), articulated the Applicant's intention to continue agricultural production on mine-owned lands in a 'Vision Statement':
- "KEPCO is committed to sustainable agricultural practices and to operate its agricultural land holdings as a fully utilised commercial farming enterprise which co-exists with, and provides benefits to, the KEPCO mining operation and the regions agricultural production."*
340. The *Agricultural Impact Assessment* stated that the majority of the agricultural impact of the Project is expected to be fully remediated through the EIS Rehabilitation Strategy and BSAL Reinstatement Strategy. BSAL and Equine CIC lands within the Project Disturbance boundary are to be returned to agricultural land use "as soon as practical after achieving relevant rehabilitation goals". The Applicant has maintained that progressive post-mining rehabilitation of BSAL land to a BSAL-equivalent standard is a key component of their strategy to manage and reduce agricultural impacts in the medium to long term.
341. With respect to equine uses of the land in the vicinity, the *Agricultural Impact Assessment* stated that Equine CIC land within the Biodiversity Offset Areas will "[continue] to meet the relevant criteria for Equine CIC".

6.4.5 Department's assessment of the land use compatibility of the Project

342. The Department's Preliminary Assessment Report stated that "[e]xpansion of the mining industry into the Bylong Valley area has the potential to create land use conflicts with existing agricultural industries, including cattle grazing operations".
343. The Preliminary Assessment Report indicates the importance of the Rehabilitation Strategy for the mitigation of the agricultural impacts in noting that "DPI-Agriculture's advice does not object to the loss of BSAL within the project disturbance area, provided that the BSAL (or BSAL-equivalent) is reinstated within the rehabilitation area to ensure no net loss of BSAL in the locality".
344. With regard to equine uses of the land, the Preliminary Assessment stated that "Equine CIC impacts from the Project are acceptable because the Bylong Valley Equine CIC is geographically separated from the larger section of Equine CIC in the region, and there are no longer any horse studs in the vicinity".

6.4.6 Planning Assessment Commission's Review of the compatibility of the Project with other land uses

345. The PAC identified that the potential impacts of the Project on existing and potential agricultural uses of the land related to the loss of BSAL and Equine CIC land, subsidence of the land, and the depletion of local water resources in consideration of the relationship between the management of local water resources and the retention of agricultural productivity.
346. The PAC consideration of the compatibility of the Project with agricultural land uses were within the context of assessing EIS Rehabilitation Strategy, which is considered in Section 369.
347. The PAC Review also considered the impact of the Project on the heritage values of the vicinity associated with Natural Sequence Farming on the adjoining Tarwyn Park agricultural property. This is discussed further in Section 6.6.

6.4.7 Applicant's assessment of the land use compatibility of the Revised Mine Plan

348. In Appendix I of the Revised Mine Plan the Applicant showed that the Revised Mine Plan would reduce impacts to agricultural land in the Disturbance Boundary. Impacted BSAL would reduce to 400.43 ha, and impacted Equine CIC would reduce to 587.2 ha.
349. The Applicant also stated that the Revised Mine Plan no longer included open cut mining activities in Tarwyn Park, which was proposed in the Project. Tarwyn Park also has heritage value in relation to the landscape in the vicinity and Natural Sequence Farming (discussed in Section 6.6.).
350. As part of its PAC Review Response, the Applicant provided an *Agricultural Response to Planning Assessment Report*, dated December 2017 (the **Agricultural Response**). The Agricultural Response further stated the economic calculations that the Applicant had provided in the *Agricultural Impact Assessment*:

"The estimate was \$2.664 M per annum and was considered a conservative estimation (using conservative assumptions) based on all of the land and water resources being removed from agricultural production at the commencement of the Project. For NPV calculations it was assumed the production was lost in perpetuity (i.e. not returned to agriculture post rehabilitation)."

351. The Agricultural Response also referred to the extent that agricultural land within the Disturbance Boundary was currently used:

"Whilst ... 415 ha of land within the Disturbance Boundary is classed as Arable land, the majority of this land has not been utilised for cropping for some time (current land use is grazing)."

352. The Applicant proposed measures to maintain agricultural production on areas of mine-owned land that is not within the Disturbance Boundary. These included:

- consolidating smaller agricultural properties under a single management strategy and continue the employment of a dedicated farm manager to oversee these properties;

- developing a farm management plan that includes weed and pest control provisions and a program to monitor pasture production on rehabilitated lands; and
- expanding the existing environmental monitoring network.

6.4.8 Department's consideration of land use compatibility of the Recommended Revised Project

353. In its Final Assessment Report, the Department quantified the loss of agricultural production from the development and operation of the mine in financial terms and in the reference to the economic value of agriculture in the regional area:

"The foregone value of agricultural production of \$1.9 M is mainly due to change of land use from agriculture to biodiversity offsets, with an average annual gross value loss to agriculture of \$1.6 M due to permanently ceasing agricultural production in these areas. However, the reduction in gross value of agricultural production is a small percentage of the broader MWRC LGA area (2.3% reduction) and Central West and Orana Regional area (0.1% reduction)."

The Department notes that this assessment is based on the EIS Mine Plan and that with the reduction in direct disturbance to Tarwyn Park ... this area would be retained for agricultural production..." (p.36)

354. The Department's Final Assessment Report quantified the spatial area of mine-owned land that is not directly impacted by the Recommended Revised Project and that under the Department's Final Recommended Conditions of Consent agricultural production will be maintained:

"There is around 3,237 ha of land available for agricultural activities on land that would not be constrained due to mining operations or due to being incorporated into biodiversity offset lands. There is a further 882 ha of land that is at some point during the mine life, mainly during open cut operations, which would be progressively removed from agricultural production, with agriculture resuming following rehabilitation. There is a further 295 ha of land that is located on offset properties that would be retained for agricultural production, giving a total of 4,414 ha of land that KEPCO is committing to continue to maintain as agricultural enterprises." (p.37)

355. The Department's Final Assessment Report included a Final Recommended Condition to ensure that these areas are retained for productive agricultural use:

"[This provides] a binding requirement on KEPCO to manage its landholdings consistent with its commitment in the EIS, as progressively updated in the RtPR Report, draft Farm Management Plan and the Revised Mine Plan Supplementary Report. The Department notes that "reasonable" and "feasible" is defined in the recommended conditions, with KEPCO identifying in the draft Farm Management Plan what can be reasonably undertaken, given climatic and operational constraints, to maintain or enhance agricultural productivity on its landholdings." (p.37)

356. In the Commissions meeting with the Department and DPI Agriculture on 6 August 2019, the DPI Agriculture states that BSAL is *"the most fertile 3.5% of soils (sic) in NSW"*.

357. The Department's Final Assessment Report stated that the Applicant *"has provided further comparison of the extent of BSAL directly impacted by mine infrastructure or mining operations (400 ha – reduced from 423 ha in the EIS Mine Plan) or proposed to be permanently used for a biodiversity conservation outcome in offset areas (288 ha) against BSAL in other regions across NSW"*.

358. In its Final Assessment Report, the Department considered that the loss of BSAL as a result of the Recommended Revised Project affects a relatively small area of the wider region:

"The percentage of BSAL permanently removed from agriculture across the broader areas of the MWRC local government area and Central West Orana Region, within which the project is located is relatively small both prior to and after rehabilitation of the mine disturbance areas." (p.40)

359. In support of its view in paragraph 356 above that the percentage of BSAL removed is relatively small, the Department presented the BSAL impacted by the Recommended Revised Project as a proportion of the BSAL in the region and the stated in Table 2 below:

Table 2 - BSAL Areas Comparison

Table 10 BSAL Areas Comparison			
Area	Area (ha) BSAL	% removed from agriculture during mining¹	% removed from agriculture post rehabilitation
BSAL areas impacted or offset	688	100	41.8
Bylong Valley Catchment	5,345	12.9	5.4
Mid-Western Region Council LGA	29,780	2.3	1.0
Central West Orana Region	520,900	0.13	0.06
Upper Hunter Region	211,060	0.33	0.14
NSW	2,800,000	0.02	0.01
(1) This is a maximum area as BSAL areas would be progressively taken out of production over the life of the project and progressive rehabilitation would occur to reinstate agricultural land back to productive use during the project life.			

Source: Department's Final Assessment Report

360. The Department stated that the loss of BSAL has been accepted by the relevant authorities on the basis that the land is rehabilitated to BSAL-equivalent post-mine:

"Under NSW Government policy, the identification of land as BSAL does not preclude development for mining. However, for land impacted by mining projects it provides a rigorous and comprehensive process to assess the impacts on the soil resources and agricultural productivity. This process included a Gateway Panel review and gateway certificate to be issued early in the planning process to ensure that all key concerns were considered in the assessment of the project."

"KEPCO provided comprehensive responses to the Gateway Panel's and Department of Industry – Agriculture's (DPI-Agriculture) concerns throughout the assessment process. DPI-Agriculture did not object to the loss of BSAL within the project disturbance area, provided that the BSAL (or BSAL-equivalent) is reinstated within the rehabilitation area to ensure no net loss of BSAL in the locality." (p. 40)

361. According to the Department's Strategic Regional Land Use Policy factsheet dated January 2014, Critical Industry Clusters are defined concentrations of highly productive industries within a region that are related to each other, contribute to the identity of that region, and provide significant employment opportunities.
362. In regard to equine land uses and mapped Equine CIC, the Department stated that *"prior to KEPCO acquiring land in the area for the project, there was only one stud (Bylong Park Stud) operating in the area, which has since been acquired by KEPCO and subsequently relocated to the Denman area."* (p.44)

363. The Department notes the Project included “[o]pen cut mining and emplacements within Tarwyn Park landholding including farmland for natural sequence farming”, but that the Revised Mine Plan is for “[n]o mining activities on the Tarwyn Park landholding”, further protecting “agricultural production associated with natural sequence farming”.

364. Overall, the Department considers that the Recommended Revised Project mitigates the agricultural impacts identified by the PAC Review and resolves competing land uses between mining and agriculture:

“...the project as proposed, with stringent conditions, would represent a good example of co-existence of these important industries, consistent with the strategic objectives of the CW&O Regional Plan”. (p.44)

6.4.9 Public comments in relation to the compatibility of the Recommended Revised Project with other land uses

365. The Commission heard concerns from speakers at the public meeting and received written submissions regarding the impacts the Recommended Revised Project on agricultural production in the Bylong Valley. These concerns included:

- the removal of BSAL for both open cut mining activities and biodiversity offsets;
- the potential for groundwater and surface water impacts to affect nearby agricultural production.

366. The Commission heard a range of views on the importance of the type of agricultural land that would be impacted. Some noted that the Recommended Revised Project was avoiding the alluvial plain and the impacted areas were not “prime” agricultural land. Others stated that the agricultural assessment of the Recommended Revised Project did not accurately reflect the agricultural significance of the area, such that the Final Assessment Report “...displays an inherent bias towards downplaying the agricultural significance of the Bylong Valley area throughout the agricultural impact statement.” (p.110).

367. At the public meeting, the New South Wales Farmers Association affirmed the need to conserve BSAL in the vicinity with reference to the value of the market proximity of Bylong BSAL:

“In the case of the Bylong Valley, the location of this BSAL is also critically important to protect a strategic state agricultural asset for near to market fresh produce to Sydney into the future.” (p.111)

368. The New South Wales Farmers Association was also concerned that the use of existing BSAL for biodiversity offsets would remove it from future productive use:

“...the proponent proposes to tie up large areas of BSAL via their offset strategy with 486 hectares of verified BSAL to be managed in the future to primarily deliver biodiversity conservation outcomes. It is acknowledged that 109 hectares of the BSAL is currently cultivated.

The proponent has stated that these lands will continue to be managed as agricultural activity; however, the main objective and requirement of an offset is to deliver biodiversity outcomes. It is therefore disingenuous to state that some BSAL areas will be used for agriculture when it is well known that this cannot be the prior purpose of that offset land. New South Wales Farmers believe that productive agricultural land, including BSAL, should not be locked up as an offset for mining and energy companies.” (p.111)

6.4.10 Commission’s consideration of compatibility with agricultural land uses

369. In relation to the strategic agricultural lands on the Project Site, the Commission accepts that for the Project, 423 ha of BSAL and 700 ha of Equine CIC will be directly impacted, and an additional 288 ha of BSAL and 515 ha of Equine CIC will be within proposed offset areas as set out in paragraph 337. The total amount of BSAL impacted represents 13.3% of the BSAL in the Bylong Valley.

370. The Commission accepts that for the Recommended Revised Project, 400.43 ha of BSAL and 587.2 ha of Equine CIC will be directly impacted, and an additional 288 ha of BSAL and 515 ha of Equine CIC will be within proposed offset areas as set out in paragraph 348. The total amount of BSAL impacted represents 12.9% of the BSAL in the Bylong Valley.
371. The Commission accepts the submission from the New South Wales Farmers Association as set out in paragraph 368, that the amount of BSAL considered to be impacted should include BSAL that will be used for biodiversity offsets, as the land will be dedicated for conservation and no longer be available for agricultural use.
372. The Commission accepts the DPI Agriculture's statement that BSAL is the most fertile 3.5% of soils in NSW as referenced in paragraph 356. However, the Commission notes that according to the Strategic Agricultural Land maps there are areas of BSAL mapped in National Parks and State Conservation areas. The Commission is therefore of the view that although 3.5% of land in NSW has been identified as BSAL and not all of it is available for agricultural purposes.
373. The Commission is of the view that the Project and Recommended Revised Project have adverse impacts on the agricultural capability of Bylong Valley for the reasons set out below:
- the BSAL removed represents 13.3% of the Bylong Valley BSAL (for the Project) and 12.9% of the Bylong Valley BSAL (for the Recommended Revised Project). The Commission considers this to be a material proportion for the reasons set out in paragraph 399.
 - while it has good proximity to the Sydney markets, BSAL in the Bylong Valley is isolated from other mapped BSAL in other areas in the Hunter Catchment, as noted in paragraph 367. The Commission considers that the remoteness of the Bylong Valley BSAL increases its local significance and the impact of its loss on agricultural land uses in the vicinity.
374. The Commission acknowledges the Applicant's commitment to make all reasonable endeavours to retain agricultural production on land owned and managed by the Applicant during the life of the mine. The Commission considers that this commitment along with the relevant Final Recommended Conditions at paragraph 354 will promote the retention of agricultural production on a portion of the land owned by the Applicant. However, the Commission does not consider that this fully mitigates the incompatibility of the mine with agricultural land uses because the post-mine compatibility with the likely preferred land uses in the vicinity is contingent on the success of the mine rehabilitation plan in restoring BSAL-equivalent land.
375. The Commission notes the Department's defines Critical Industry Clusters as concentrations of highly productive industries within a region that are related to each other, contribute to the identity of that region, and provide significant employment opportunities as referenced in paragraph 361. The Commission finds the Equine CIC in the vicinity is geographically distant from the regionally mapped Equine CIC. The Commission notes that there is currently no equine industry in the vicinity following the Applicant's relocation of the thoroughbred stud farm to another site, as stated by the Department in 344. The Commission also find that the Applicant could reinstate Equine CIC following closure of the mine and rehabilitation of the site (excluding the use of 515 ha of Equine CIC for biodiversity offsets).
376. The Commission does not accept the Department's view that the Recommended Revised Project is consistent with the strategic objectives of the CW&O Regional Plan and a good example of resolving land use conflicts as stated in paragraph 364. For the reasons set out in paragraphs 373 and 374, the Commission considers that neither the Project nor the Recommended Revised Project are compatible with the land use objectives (b) and (c) of the MWR LEP 2012 set out in paragraph 86 and the objective of the CW&O Regional Plan to *"protect the region's diverse and productive agricultural land"* as set out in paragraph 183.

6.5 Mine Rehabilitation

6.5.1 Statutory context

377. Mining is defined in cl 3(2) of the Mining SEPP to include:

- “(a) the construction, operation and decommissioning of associated works, and*
- (b) the stockpiling, processing, treatment and transportation of materials extracted, and*
- (c) the **rehabilitation of land affected by mining.**” (bold added)*

378. Clause 17 of the Mining SEPP requires the Commission to consider whether the consent should be issued subject to conditions relating to rehabilitation. Relevantly, the Commission must consider whether conditions of the consent should:

“(a) require the preparation of a plan that identifies the proposed end use and landform of the land once rehabilitated”

6.5.2 Gateway certificate recommendations

379. The Project failed to meet 11 of the 12 relevant gateway criteria and was issued with a conditional Gateway Certificate. As set out in paragraphs 132-136, the Gateway Panel considered “[t]he proposal to remove 194.4 ha of verified BSAL soils from within the planned open-cut mining area and the ‘re-creation’ of this BSAL elsewhere lacks precedence and necessary detail” and set out specific recommendations with regard to the removal and recreation of verified BSAL soils:

1. *“Undertake a risk assessment that identifies the hazards and proposes controls with respect to the movement of BSAL soils;*
2. *Identify a final location for the verified BSAL soils within the Project Boundary area;*
3. *Detail the methods proposed for the handling, storage and treatment of the verified BSAL soils;*
4. *Propose alternate mitigation measures to be implemented in the event that the methodology selected results in the loss of verified BSAL soils post-implementation.”*

6.5.3 Final Recommended Condition of consent

380. The Rehabilitation Condition in the Department’s Final Recommended Conditions is set out below:

“Rehabilitation Management Plan

64. Prior to carrying out any development under this consent, unless otherwise agreed by the Planning Secretary, the Applicant must prepare a Rehabilitation Management Plan for the development to the satisfaction of DRG. This plan must:

- (a) be prepared in consultation with the Department, DoI Water, DPI Agriculture, OEH, Council and the CCC;*
- (b) be prepared in accordance with any relevant NSW Government mining rehabilitation guidelines;*
- (c) include a detailed soil balance for the development;*
- (d) include a detailed plan for reinstatement and review of the proposed:*
 - agricultural land capability across the site, including a protocol for periodic trials to demonstrate that the land capability is being achieved;*
 - BSAL, including a protocol for verification of the land as BSAL-equivalent land; and*
 - woodland areas;*
- (e) optimise the design of the final landform to incorporate macro and micro-relief features to improve visual integration with the existing landscape and rehabilitation to meet BSAL-equivalent land and LSC Class 3 and Class 4 land.*
- (f) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary);*
- (g) include a final void management strategy including:*

- identifying the capacity required for reject emplacement and water storage;
 - details on the separation of reject and water storages within the final void;
 - inventory and management of fill and capping materials;
 - actions to prioritise storage of underground mine water within the goaf; and
 - annual review of reject and water storage estimates to optimise the final void size required prior to cessation of open cut mining operations;
- (h) describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform, final land use and post mining social impacts;
- (i) describe the rehabilitation methodologies that will be implemented to achieve the rehabilitation performance measures;
- (j) describe a process for managing minor delays or changes to progressive rehabilitation forecasts;
- (k) include interim rehabilitation where necessary to minimise the area exposed for dust generation;
- (l) include a program to monitor, independently audit and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria; and
- (m) build to the maximum extent practicable on the other management plans required under this consent.

Notes:

The Mining Operations Plan (MOP) or equivalent requirement under the Mining Lease may be used to address the requirements of the Rehabilitation Management Plan required under this condition. However, the MOP must clearly document how the requirements of this condition have been met.

6.5.4 Applicant's assessment of mine rehabilitation for the Project

381. The Applicant states 423.1 ha of BSAL will be within the Project Disturbance boundary and will be impacted by the mine.
382. In its *Bylong Coal Project Rehabilitation Strategy and BSAL Reinstatement Strategy* dated 12 May 2015, the Applicant stated that the goals of their rehabilitation strategy are to, where practical, return land to its pre-mining land capability and land use, including the re-instatement of BSAL-equivalent productive agricultural land:

"Specific long-term objectives include:

- *The re-establishment to BSAL-equivalent land, pastoral land or native vegetation in areas disturbed by the mine;*
- *The long-term conservation of native vegetation and/or habitat corridors on the mine site;*
- *The provision of habitat for fauna within the final landform;*
- *Ensuring that the quality of run-off water from rehabilitation areas will not cause environmental harm off site; and*
- *Monitoring and manage rehabilitation to ensure success in terms of physical, chemical and biological parameters."*

6.5.5 Department's assessment of mine rehabilitation for the Project

383. The Department of Primary Industries comments on the EIS stated that “[t]he evidence provided within the documents is insufficient to demonstrate that the BSAL can be reinstated or that the proponent is capable of successful reinstatement of BSAL.”
384. The Preliminary Assessment Report stated that “The Department notes that BSAL restoration has been accepted on other contemporary mining projects, and the project would provide the opportunity for further research and continuous improvement in this area” (p.84)

6.5.6 Planning Assessment Commission's Review of mine rehabilitation for the Project

385. The PAC noted that the impacts of the Project on the Project Site were proposed by the Applicant to be offset by post-mine restoration of the land to BSAL-equivalence as set out in their Mine Rehabilitation Plan. The PAC were concerned that this goal of Mine Rehabilitation Plan may not be successful:

“...reestablishment of a sustainable agricultural landscape is a complex process. Beyond the process of redistributing soil resources, considerable time and effort is required to restore the function, structure and cycles (both biotic and abiotic) present in functioning BSAL. Even with careful consideration of these aspects, success is uncertain, infrequently achieved, and contingent upon favourable climatic conditions...”

“...The Commission notes that these risks potentially exacerbate the overall agricultural impacts of the project because the applicant has placed a high reliance on the rehabilitation of a post mining landscape to a highly functioning agricultural landscape as part of its impact mitigation strategy...”

“...ultimately the rehabilitation plan will require additional studies to finalise details”.

386. The PAC sought from the Applicant more information about how the rehabilitation would be measured, seeking “a more clearly defined picture of how [BSAL rehabilitation] success will be measured at a local level”. The PAC noted that “there is little consideration in the Material provided to the Commission of the wider range of factors that would be important to restoring the long term agricultural function of the landscape” and that the “the proposed completion criteria for the re-instatement of BSAL equivalent soil relate only to the physical structure of the landscape, rather than its functionality”.

6.5.7 Applicant's assessment of mine rehabilitation for the Revised Mine Plan

387. In Appendix I of the Revised Mine Plan the Applicant states that under the Revised Mine Plan the BSAL that will be within the Project Disturbance boundary and impacted by the mine reduces from 423.1ha to 400.43 ha.
388. In the Bylong Coal Project Revision to Mine Plan Soils and Rehabilitation Assessment, dated July 2018, the Applicant confirmed that progressive post-mining rehabilitation of land was proposed to compensate for agricultural impacts and minimise the amount of time that disturbed areas are removed from agricultural production:

“[t]he re-instatement of agricultural land and BSAL will compensate for the temporary loss of available agricultural land as a result of the Project. Within the proposed preserved and/or reinstated agricultural land, KEPCO will preserve or re-instate 400.43 ha of BSAL equivalent land within the Revised Project Disturbance Boundary.”

389. In Appendix I of the Revised Mine Plan, the Applicant stated that the achievement of BSAL-equivalent on post-mining land should be based on meeting the set of criteria used to identify pre-mining BSAL criteria in the Interim BSAL Protocol:

“...the BSAL protocol used to identify and map the pre-mining BSAL area will be used to verify the post-mining BSAL area.”

390. The Applicant's Soil, Land Capability and Strategic Agricultural Land Assessment in the EIS described how the BSAL on the Project Site was identified. It did not include an assessment of the water resources on site on the basis that *"[f]or the Upper Hunter SRLUP, the Interim Protocol states that reliable water supply has been verified for the area and as such only Phase 2 is applicable to the BSAL verification assessment."*

391. The Applicant did not support the suggestion in the PAC Review presented in paragraph 386 that BSAL-equivalent land should be determined by broader performance criteria:

"The suggestion by the PAC that additional parameters (function and productivity) should be imposed to verify BSAL on the post mining landform does not align with any scientifically sound concepts of assessment consistency and is not supported by KEPCO or its technical specialists."

392. The Applicant stated that only the soil fertility of the rehabilitated land should be measured using a different assessment method, agreed by the NSW Department of Primary Industries, on the basis that the physical arrangement of the soil will have changed:

"[t]he one exception to the criteria from the BSAL protocol will be the fertility criteria. Within the BSAL protocol, the criteria are based on the in situ soil types. Once the soil material is stripped, salvaged and respread onto a new landform, the soil type is referred to as an Anthroposol (or man-made soil). Even though the soil material is the same, the physical arrangement of that material will have changed."

393. The Applicant's Soils and Rehabilitation Assessment stated that the following techniques have been proposed to:

1. *Identification and tracking of the original in situ 'parent' soil material; and*
2. *The analytical testing in the laboratory for Cation Exchange Capacity*

The Applicant stated that these two parameters best reflect the potential match of the soil material to the BSAL fertility criteria. The Applicant also noted that the NSW Department of Primary Industries – Agriculture agreed that replacement fertility parameters be implemented to assess BSAL.

394. In Appendix P of their Response to the PAC Review and Appendix I of their Revised Mine Plan, the Applicant provided examples of mine sites that have been rehabilitated to agricultural land and *"have either achieved an agricultural productivity level comparable to surrounding land or have reinstated the landform and soil profile to a land capability class which allows highly productive agricultural uses"*. The examples provided were:

- **The Alluvial Lands Project** managed by Coal and Allied that rehabilitated 63ha to Class 1 and Class 2 cropping land for lucerne and met yield, quality and monitoring requirements over a three-year trial. No BSAL assessment was carried out, however *"the rehabilitated land has been classified as Land Capability Class 1 and 2 which is reflective of its high to very high agricultural activity"*.
- **The Upper Hunter Mine Rehabilitation Grazing Study** that grazed livestock on rehabilitated mine land and produced heavier cattle over four years to 2017 than local unmined farming land. The Applicant stated that this project *"demonstrates there is clear precedence of mine rehabilitation being suitable for agricultural production"*. The size of the site is not specified in the Material provided but is described on the Australian Coal Industry's Research Program (ACARP) website as being 70ha in total.
- **The Liddell Grazing Trial** managed by Glencore that improved livestock performance and condition without feed supplements in comparison to neighbouring sites over 18 months. The trial commenced in 2012, and the size of the site is 70ha.
- **The Bengalla Reinstatement of BSAL Quality Soil Profiles** that rehabilitated 5.7 ha to Class 3 land, with three of the four sites assessed as meeting the criteria for BSAL. Salinity at all sites was elevated. The Applicant notes that the outcomes were reported in the 2017 Bengalla Mining Company Annual Review.

6.5.8 Department's assessment of mine rehabilitation for the Recommended Revised Project

395. The Department's Final Assessment Report stated that the loss of BSAL has been accepted by the relevant authorities on the basis of the Applicant's Rehabilitation Strategy to rehabilitate the land to BSAL-equivalent post-mine:

"Under NSW Government policy, the identification of land as BSAL does not preclude development for mining. However, for land impacted by mining projects it provides a rigorous and comprehensive process to assess the impacts on the soil resources and agricultural productivity. This process included a Gateway Panel review and gateway certificate to be issued early in the planning process to ensure that all key concerns were considered in the assessment of the project."

"KEPCO provided comprehensive responses to the Gateway Panel's and Department of Industry – Agriculture's (DPI-Agriculture) concerns throughout the assessment process. DPI-Agriculture did not object to the loss of BSAL within the project disturbance area, provided that the BSAL (or BSAL-equivalent) is reinstated within the rehabilitation area to ensure no net loss of BSAL in the locality." (p.40)

396. The Final Assessment Report identified that both the Applicant and the Department consider that any assessment of whether the post-mine rehabilitated land reaches BSAL-equivalent should be based on the relevant criteria in the Interim Protocol:

"In response to the [PAC's] comment that the BSAL-equivalent soil completion criteria should include landscape function, not just physical attributes, KEPCO argues that the validation of achieving BSAL-equivalent land should be only based on the relevant interim BSAL criteria used to identify the impacted land, in accordance with NSW Government policy."

The Department considers that the BSAL-equivalent completion criteria should be based only on the criteria as defined in the BSAL interim protocol." (p.43)

397. The Department summarised the examples of successful post-mining rehabilitation of agricultural land put forward by the Applicant as discussed in paragraph 394, and concluded that:

"[w]hile the studies are limited, the results indicate that rehabilitated mining land, if monitored and managed correctly, has reasonable prospects of being returned to productive agricultural land use for cultivation and grazing." (p.43)

398. The Department's Final Assessment Report recommends the following changes to the conditions that were previously provided in the Preliminary Assessment Report:

"Rehabilitation Objectives: To reflect the Revised Mine Plan reduction in BSAL, the rehabilitation objectives have been revised to restore at least 400 ha of BSAL-equivalent land/ Class 3 land."

Rehabilitation Management Plan: In preparing the Rehabilitation Management Plan, an additional requirement is recommended to further optimise the final landform design towards integration with the existing landscape (macro and Micro-relief) and restoration of higher capability agricultural land (BSAL/LSC Class 3).

Agricultural Productivity: Maintaining or enhancing agricultural production- the condition has been revised to clearly identify the land available for agricultural production and require that reasonable and feasible steps are undertaken to maintain or enhance production, in line with the commitments made during the assessment of the project, including the draft Farm Management Plan."

399. The Rehabilitation Conditions in the Department's Final Recommended Conditions are set out in paragraph 380.

6.5.9 Public comments on mine rehabilitation for the Recommended Revised Project

400. The Commission heard concerns from speakers at the public meeting and received written submissions regarding proposed mine rehabilitation for the Recommended Revised Project on agricultural production in the Bylong Valley, in particular the uncertainty associated with re-establishing agriculturally productive land on a large scale on previously mined landscapes.
401. Some submissions identified risks with the Applicant's mine rehabilitation plan to restore BSAL and questioned its feasibility.

At the public meeting, the Hunter Communities Network stated:

"The proposal by KEPCO to rehabilitate 400 hectares of prime agricultural land on mine spoil is a high-risk commitment. The attempt to reinstate 63 hectares of river flat at Hunter Valley Operations, and to grow lucerne, has been a disaster, with ongoing management problems, including rising salinity. New South Wales can't afford to continue losing highly productive farmland on the promise that at some unknown time in the future, it will possibly be reinstated. Mine rehab can have ongoing expensive management issues that are not covered into the future by the current bond arrangement." (p.40)

The Bylong Valley Protection Alliance stated:

"[I]n relation to agriculture, the Department claims the rehabilitation of prime land will be possible after the close of the mine, however, there are enormous risks in this and, as mentioned earlier, the only current example of an attempt to re-establish alluvial flats is at Hunter Valley Operations where 63 hectares have been reinstated but the results have been mixed. The quality of replacement land does not resemble the original values lost. So there is no precedent in Australia or the world, as far as we know, for the re-establishment of 400 hectares of prime ag land." (p.64)

The New South Wales Farmers Association stated:

"With the greatest of respect, when you are talking about BSAL, we find [its rehabilitation] very hard to believe. You cannot unscramble the egg. This disbelief is further expounded by the fact that the proponent has not included in the [Agricultural Impact Statement] any detailed description at all of how this is to occur, the costs of undertaking this rehab and the risk associated with these activities. There is also no alternative rehabilitation strategy proposed. Given that the merit of this project rests heavily on the credibility of the proponents' claim to return and make this out, we strongly contend that much more scrutiny should be given to this process." (p.111)

6.5.10 Commission's consideration of mine rehabilitation

402. The Commission does not consider the Applicant's rehabilitation plan to restore the 423.1 ha of BSAL impacted by the Project, or the 400.43 ha of BSAL impacted by the Recommended Revised Project to BSAL-equivalent land to be feasible. The Commission does not accept that there is evidence to support the Applicant's claim that the Project Site can be rehabilitated to BSAL-equivalent in paragraph 382, because the cited examples of rehabilitation:
- are located on much smaller parcels of land than proposed at Bylong, with site sizes of 5.7 ha, 63 ha and 70 ha. The Commission considers that it does not have the evidence before it that similar rehabilitation efforts will be successful at the much larger scale of 400.43 ha or 423.1 ha;
 - are too recent to provide a longitudinal demonstration of the performance of BSAL-equivalent sites over a reasonable timeframe. The examples cited commenced within the last seven years and did not track results for more than four years. The Commission considers that it does not have the evidence before it that the agricultural productivity shown in these examples can be maintained over time;
 - are limited to grazing or lucerne agriculture and have not been tested for productivity for diverse crop species that BSAL-equivalent land should be expected to support; and

- are largely currently managed by or on behalf of mining companies as part of active rehabilitation works, and do not provide evidence of long-term agricultural productivity under different management regimes.
403. The Commission considers that the cited examples are too small, too recent and too limited in scope and management regimes to be taken as reliable demonstrations of the likely long-term success of large scale BSAL rehabilitation. The Commission notes that the DPI Agriculture in their meeting with the Commission stated that the examples that have been put forward aren't complete restorations back to BSAL or prime agricultural land standard. The Commission therefore does not accept the Department's conclusion in paragraph 397 that these examples show that the Site has 'reasonable prospects' of being returned to BSAL-equivalent land.
404. The Commission accepts that BSAL is recognised as is land with high quality soil and water resources capable of sustaining high levels of productivity and there are relatively few locations which have access to all the necessary characteristics to be classified as BSAL (paragraph 372).
405. The Commission notes the PAC's concern in paragraph 385 that the completion criteria for BSAL-equivalent mine rehabilitation would not be adequate, given the strategic value of BSAL and the policy goal of identifying the strategic agricultural lands in order to 'safeguard' them. The Commission notes that the proposed completion criteria is a hybrid of Interim BSAL protocol and an alternative measure of soil productivity.
406. The Commission does not consider that the rehabilitated land would be unsuitable for all agricultural uses but notes that the loss of BSAL from the Project and Recommended Revised Project was accepted by the relevant authorities on the basis that the land **is** rehabilitated to BSAL-equivalent post-mine (paragraph 395). The Commission does not consider that there is evidence to conclude that the rehabilitated land can reach the standard of BSAL-equivalent. The Commission therefore does not accept the Applicant's rationale in paragraph 392 and the Department's view in paragraphs 396 and 398 that the proposed criteria is appropriate and can be conditioned.
407. As such, for the reasons set out above, the Commission considers that in respect to the Applicant's Rehabilitation Strategy, neither the Project nor the Recommended Revised Project meet the objectives (b) and (c) of the MWR LEP 2012, set out in paragraph 86 relating to the proper management of resources by protecting, enhancing and conserving land of significance to agricultural production. Further, the Commission considers that neither the Project nor the Recommended Revised Project are consistent with the objective of the CW&O Regional Plan to "*protect the region's diverse and productive agricultural land*" as stated in paragraph 183.

6.6 Built and natural environment impacts – heritage

6.6.1 Statutory context

408. Under s 1.3 of the EP&A Act, the relevant object applicable to the consideration of heritage impacts of the Project and Recommended Revised Project is "*to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage)*".
409. Section 4.15 of the EP&A Act requires the Commission to assess the suitability of the site for the development and consider the likely environmental impacts of the development on the built environment.
410. Under the Heritage Act 1977 (as amended), the Heritage Council of NSW is the designated body that would recommend a heritage listing on the NSW State Heritage Register (SHR) to the Minister.
411. Part 3 of the Mining SEPP requires the Commission to consider the compatibility of development with other land uses, including whether or not it is likely to have a significant impact on the likely preferred land uses in the vicinity of the development; any ways in which the development may be incompatible with any of those uses; and any measures proposed by the Applicant to avoid or minimise any incompatibility.
412. The Commission has found that the likely preferred land use in the vicinity is agricultural and limited tourism (paragraphs 227-228).

6.6.2 Guidelines

413. The NSW Office of Environment & Heritage publication, *A Guide to the Heritage System* (1996, amended 2005) sets out the requirements and criteria for heritage assessment. There are seven NSW Heritage Assessment Criteria (Criterion A to G below) and related inclusion and exclusion guidelines. In order for a place to be considered eligible for listing on the State Heritage Register, it must satisfy one or more of the seven criteria at the State level:
- Criteria A: An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area)
 - Criteria B: An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area)
 - Criteria C: An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or in local area)
 - Criteria D: An item has strong or special association with a particular community or cultural group in NSW (or local area) for social, cultural or spiritual reasons
 - Criteria E: An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area)
 - Criteria F: An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area)
 - Criteria G: An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or environments (or a class of the local area's cultural or natural places or environments).
414. The Australia International Council on Monuments and Sites (ICOMOS) Burra Charter 2013 (the Burra Charter) is cited by GML Heritage in its 2019 Heritage Advice as providing a best practice guide for the consideration of heritage items.

6.6.3 Bylong Landscape Conservation Area

415. The whole of the Project Site is located within the Bylong Landscape Conservation Area (BLCA), which covers the Bylong and neighbouring valleys covering approximately 486km². The BLCA is listed on the non-statutory National Trust (NSW) Register (see **Figure 10**) and includes historic heritage items Our Lady of the Sacred Heart Catholic Church and Cemetery; Bylong St Stephens Anglican Church and Cemetery; and associated views.
416. The BLCA is described in its National Trust listing as follows:
- "The Bylong Landscape Conservation Area includes the Bylong Valley Way from its junction with Baerami Creek Road in the east to where it crosses the boundary of the localities of Growee and Upper Growee in the south-west. It includes the valley and pasture landscapes beside the Bylong Valley Way, the valleys adjoining the Wollar Road westwards to Razorback Ridge, the valleys of the Growee River and Sawyers and Jumper Creeks, the valley of Cousins Creek, the valley of Kerrabee Creek and the valley of Baerami Creek. (National Trust of Australia (NSW), 2013)". (Cited in HHMP p 25)*
417. According to the Applicant's *Bylong Valley Landscape Conservation Area Assessment of Significance* (Appendix B of the HHMP): "[t]his listing poses no statutory controls on the management of Tarwyn Park and Iron Tank, but is an indication of the general esteem in which the landscape of the wider Bylong Valley is held by heritage professionals and the public more generally". (p. 9)

6.6.4 Applicant's assessment of the heritage impacts of the Project

418. The Applicant undertook a Historic Heritage Impact Assessment, dated 20 April 2015, as part of its EIS.

419. In the Historic Heritage Impact Assessment, the Applicant acknowledges the significance of the Bylong Valley's natural features and landscape values, and states:

"Natural features within the Bylong Valley Cultural Landscape include its rivers and creeks, rich fertile soils, and views and vistas which are tied to the continuing history of pastoralism and horse breeding in the valley. Bylong River, part of the Hunter River catchment, is the most significant watercourse in the area and as such was important to early settlement and continuing agriculture. The valley's rich fertile soils are clearly linked to its early settlement and development as a pastoral centre. Other features such as the Bylong State Forest, comprising mountains of the Great Dividing Range and linking to the Goulburn River National Park [sic] and Wollemi National Park, provide a backdrop for the area's aesthetic beauty. Land use patterns in the area are sympathetic to these natural features with farms being located within close proximity to watercourses and locations with idyllic views" (p.27)

420. The Applicant identified the specific areas within the Project Site that were recognised as having heritage significance:

"...a total of 18 sites were identified within and directly adjacent to the Study Area. Of these three are listed on the non-government organisation National Trust (NSW) Register and an additional 15 historical heritage items or complexes are considered to be of local heritage significance."

There are no heritage items or sites within the Project Boundary listed on statutory UNESCO, Commonwealth or NSW State or Local Government Lists, Registers or Schedules."

421. The EIS identified that the development and operation of the Project could impact these sites by directly impacting the structure of heritage sites and modifying the visual environment because:

"ground vibration and overpressure associated with blasting have the potential to indirectly impact the structural integrity of the identified historic heritage sites"; and

"... modify the existing visual environment and potentially the visual aesthetics of the surrounding heritage sites... The recommended Rehabilitation Strategy proposed final landform, revegetation and other visual mitigation strategies will ensure that a landscape of high visual diversity is released in the long term." (p.250)

422. With regard to the heritage values of the former Catholic Church site, the EIS stated that the Applicant would take action to protect former grave sites "[b]urial sites within the Project Disturbance Boundary will need to be exhumed and relocated following consultation with various stakeholders and the receipt of the necessary approvals".

423. The Applicant also undertook a Visual Impact Assessment (VIA) as part of its EIS, which was reviewed and clarified as part of the RtS. The VIA considered both the visual effect from the Project and the visual sensitivity of the impacted catchments. The VIA identified six distinct Landscape Character Units (LCU) which comprised the Primary Visual Catchment (PVC) for the Project Site, including forested hills and ridges, undulating pastoral lands, flat pastoral lands, irrigated grazing and agricultural lands, creeks and rivers and Bylong Village. The VIA stated that the LCUs "combine to create the overall visual and landscape character of the locality. Overall the character is created by a range of rural landscapes contained by visually prominent forested ridge lines."

424. The VIA stated that the visual impacts of the Project were largely addressed by the Applicant's acquisition of local land:

"There are a number of residencies that will have a high sensitivity to views of the various project elements due to proximity and the openness of the landscape in the locality. However the majority of these have been acquired by KEPCO therefore significantly reducing the sensitivity of the impacted views from these receptor locations..."

The remaining private freehold rural residencies including Tinka Tong to the northwest and one property (141) in the Eastern view sector have high to moderate sensitivity to views of the Project elements..."

Generally localised vegetation and topography also provides screening to views of the Project elements from other sensitive receptors around the Project.” (p.62)

6.6.5 Department’s assessment of the heritage impacts of the Project

425. Assessment of heritage impacts in the Department’s Preliminary Assessment Report consideration noted that “*t[h]e project would ... directly or indirectly impact on a number of historic heritage items, including the Upper Bylong Cemetery (now located on KEPCO-owned land), which would require exhumation of burials*” (p.6), which would be done in accordance with requirements.
426. In relation to Tarwyn Park Complex, the Department stated:

“The project would directly impact a part of the Tarwyn Park property, which is partially located within the footprint of the open cut. This property is known for the development of natural sequence farming principles, has operated as a horse stud, and is also the burial site of dual Melbourne Cup winner, Rain Lover. However, direct impacts from mining on the Tarwyn Park homestead and natural sequence farming area, which is located within the floodplain, would be avoided.

In response to these issues, the Department has recommended that a Historic Heritage Management Plan be prepared and implemented, incorporating KEPCO’s commitments and a number of additional requirements of the Department to minimise and/or mitigate heritage impacts.” (p.6)

6.6.6 Planning Assessment Commission’s Review of the heritage impacts of the Project

427. The PAC Review Report noted the extent of the heritage areas that would be impacted by the Project included Tarwyn Park and Iron Tank, the Natural Sequence Farming areas and the racehorse burial sites:

“...both Tarwyn Park and Iron Tank form part of the project area, proximate to open cut activities, with parts of each property within the actual project disturbance area. The project disturbance area includes the entrance and part of the driveway to Tarwyn Park, interrupting the property’s historical connections to the village, church and other elements of the landscape. Tarwyn Park would be accessed through the open cut pit, effectively isolating the property. The natural sequence farming areas and racehorse burial sites would also be directly impacted. Remaining farm buildings would be subject to visual impacts and vibration impacts.”

428. As part of its Review Report, in May 2017 the PAC commissioned GML Heritage to prepare the **GML Heritage Review Report**, which included assessing Tarwyn Park and Iron Tank against the seven NSW Heritage Assessment Criteria (i.e. Criterion A to G). In order for a place to be considered eligible for listing on the State Heritage Register, it must satisfy one or more of the seven criteria at the State level.
429. The GML Heritage Review Report concluded that Tarwyn Park and Iron Tank:
- satisfy Criterion A, B, C and E at the State level;
 - are likely to satisfy Criterion D at a local level and evidence suggests it may meet the threshold at the State level;
 - satisfy Criterion G at the local level; and
 - do not satisfy Criterion F at the State level.
430. In its assessment, the GML Heritage Review Report considered Tarwyn Park and Iron Tank in the context of the Bylong Valley. In particular, in assessing Tarwyn Park and Iron Tank against ‘*Criterion C: It is important in **demonstrating aesthetic characteristics** and/or a high degree of creative or technical achievement in NSW*’ (emphasis added) the Heritage Review Report stated:

“Set on the floor of the Bylong Valley and fringed by scenic picturesque skyline views to sandstone escarpments and vegetated slopes, the historic and evolving rural agricultural cultural landscapes associated with the properties Tarwyn Park and Iron Tank are aesthetically distinctive with positive sensory visual appeal...

...The views and vistas from the homestead complex, seen from within and around the buildings and across the valley in all directions, contribute to the understanding and appreciation of the beauty of the natural environment. The landscape setting, views and visual connections to other places from within Tarwyn Park and Iron Tank that link to other historic places along Upper Bylong Road contribute to the understanding of the area's historical evolution as a rural village and have strong visual and sensory qualities.” (p.37)

431. The GML Heritage Review Report concluded that the Project would have the following impacts on the Bylong Valley Historic Cultural Landscape (including Tarwyn Park and Iron Tank):

“Impact on the historic and evolving rural agricultural landscape of the Bylong Valley with historic land grants located adjacent to water courses throughout the alluvial and river valleys, with complexes of agricultural buildings, both domestic and agricultural, set in open grazing landscapes.”

432. Additionally, in regard to Tarwyn Park, the GML Heritage Review Report concluded that the Project would have the following impacts:

“Mine infrastructure will give rise to a material impact on the surrounding rural agricultural landscape setting associated with the homestead complex.”

“Detrimental visual impacts to views to and from the homestead complex. Visual impacts to the setting of homestead's associated aesthetic, historic and social cultural values of the locality and its wider setting due to haul roads and surrounding open cut mines.”

433. In regard to the Bylong National Trust Landscape Conservation Area, the GML Heritage Review Report concluded that the Project would have the following impacts:

“Direct impact to the natural landscape, aesthetic value and views and vistas (Goulburn River National Park) to the north of Tarwyn Park that is part of the Bylong Conservation Area.”

434. In regard to Natural Sequence Farming, the GML Heritage Review Report concluded that the Project would have the following impacts:

“Direct impact on a section of the alluvial floodplain by access road and mine infrastructure including haul road and bore fields. This will materially impact on the historic patterns use and management of land and water.

Material impact on NSF (Natural Sequence Farming) infrastructure through the removal of NSF features (crushed limestone, hay bale and boxthorn vegetation) in southwest corner of the property where Eastern Open Cut Mine is proposed.” (p.40)

435. In the PAC Report, the PAC concluded that the landscape and visual amenity of the Bylong Valley would be significantly impacted by the Project:

“...transformation of the Bylong valley landscape would be in large part, irreversible, and that it is not possible for landscape treatments to return the valley to its current appearance. The Commission considers that the project would result in a shift from an agricultural landscape, recognised as exceptional by the National Trust, to an industrial setting.”

“...the significance of the visual impacts on the valley. The evaluations and estimates of the risks of impacts to a greenfield location are, by necessity, speculative. There is a potential for these impacts to be more severe than predicted.”

436. The PAC noted that the agricultural landscape of Bylong Valley had been recognised by the National Trust and listed on National Trust of Australia NSW Register, and concluded that the heritage impacts to the landscape settings of Tarwyn Park, Iron Tank and adjacent areas should be re-evaluated:

“...assessment of the values of, impacts to and mitigation measures for the setting of the properties, which is currently part of the proposed disturbance area, is largely absent. The importance of the landscape setting is moreover elevated by the value placed on it by the community, and the designation of a Bylong Landscape Conservation Area by the National Trust. As the natural beauty of the area is widely recognised, the extent of its interruption by the project requires evaluation.”

6.6.7 Applicant’s further assessment of the heritage impacts of the Project

437. The Applicant provided additional assessment and consideration of heritage mitigation and management measures as part of the PAC Review Response. This included the *draft Bylong Historical Heritage Management Plan (HHMP)*, dated 12 January 2018 and the *draft Conservation Management Plan for Tarwyn Park and Iron Tank*, dated 15 January 2018. These proposed that the rural character of the valley and other visual impacts would be minimal or mitigated:

“...the surface components of the Project have been specifically designed to utilise the existing topography, trees and vegetation to shield open views from Bylong Valley Way and other sensitive public and private viewing locations. The Project is located within the Upper Bylong Valley which is surrounded by the Growee Ranges, Bylong State Forest and Tal Tal Mountain.”

“An Assessment of Significance for the BLCA has been undertaken and incorporated into the Draft HHMP (Appendix J), as discussed in Section 4.4.1. The assessment concluded that the rural character of the Bylong Valley will not be irreversibly lost. The Project is located within a secluded valley with only limited views experienced from sensitive public vantage points. Therefore, the visual impacts are negligible on the significance of the BLCA.”

“Being visible from around 0.6% of the publicly accessible locations within the BLCA (in the maximum extent year of open cut mining), the potential visual effects of the Project to the overall BLCA will be minimal.”

“The change in landform as a result of the Project will not significantly impact on the landscape setting of the Tarwyn Park Homestead. That is, the Tarwyn Park Homestead will continue to be located within the Upper Bylong Valley and surrounded by the more elevated Growee Ranges, Tal Tal Mountain and the Bylong State Forest. Tarwyn Park Homestead’s visual setting will also continue to experience views across the Bylong River floodplain and neighbouring valley areas post mining.

The eastern open cut will increase current landform heights to parts of the lower slopes, which currently divide the floodplains of Lee Creek and the Bylong River. This elevated landform will be rehabilitated with open woodland patches in order to retain the open views of the landscape towards this direction. Given that the final landform is proposed to be reinstated for agricultural use, the impacts experienced throughout the life of the Project will be mitigated.”

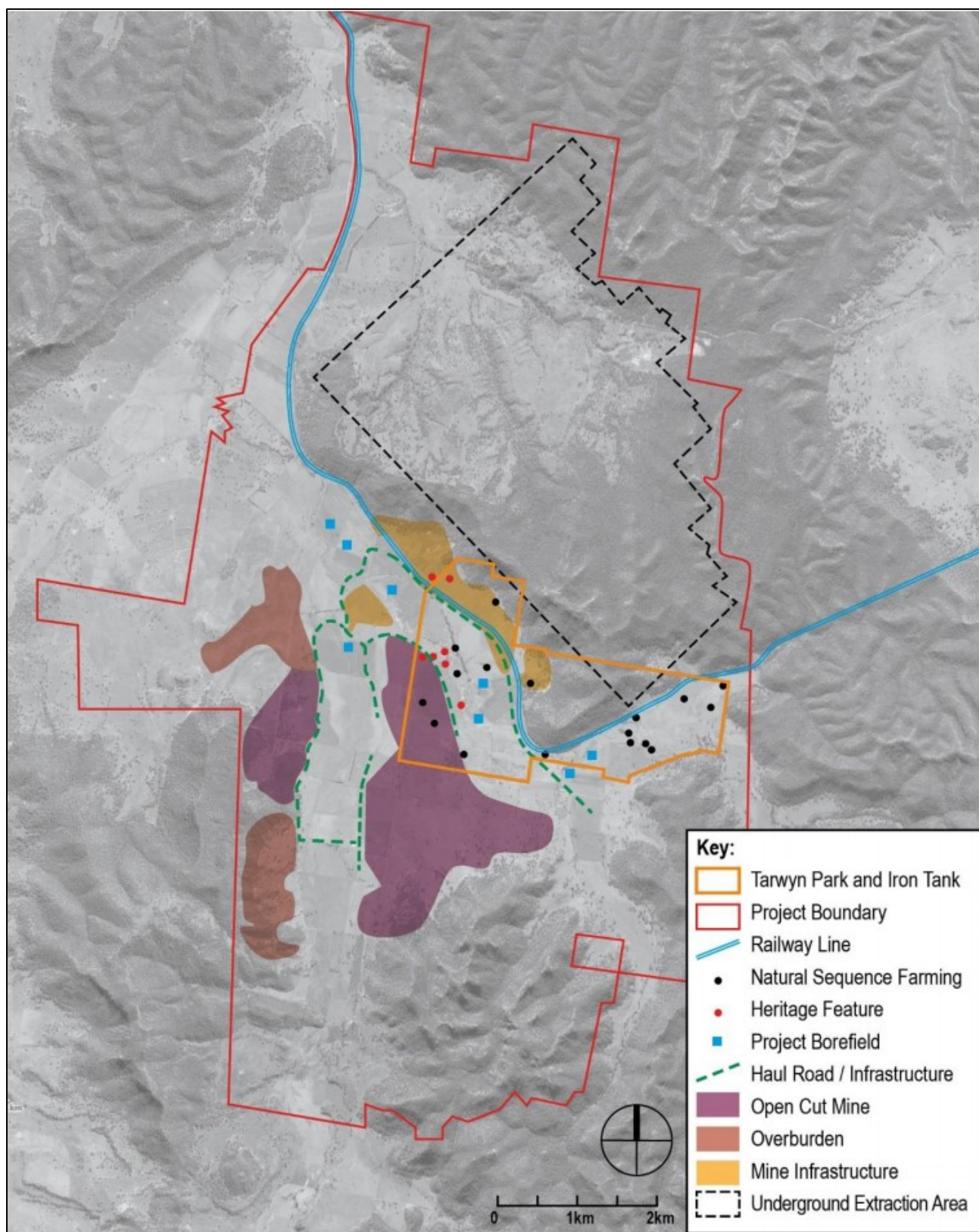


Figure 9: Location of Tarwyn Park and associated heritage features in relation to the Project Site (Source: Heritage Review Report, GML Heritage, May 2017)

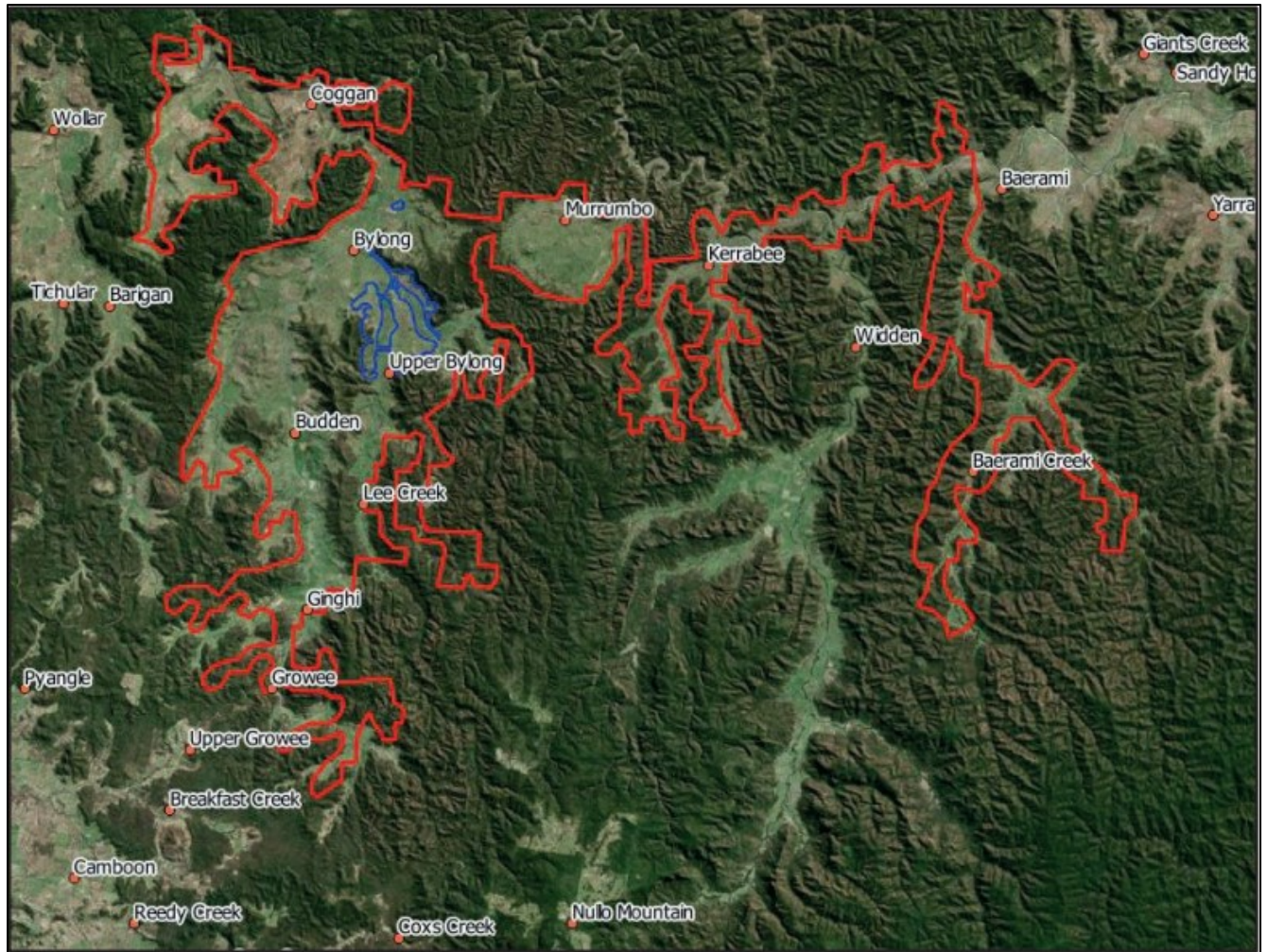


Figure 10: Bylong Landscape Conservation Area (Source: Historic Heritage Impact Assessment, AECOM Australia Pty Ltd, September 2015)

438. The HHMP includes a heritage assessment of the Bylong Landscape Conservation Area to make the following statement of significance:

"The Bylong Landscape Conservation Area is of State historical, aesthetic, research and representative significance. Historically, the area can demonstrate the occupation of the land by the Wiradjuri people, followed by the early land holdings by European settlers and subdivision and diversification in pastoral and agricultural pursuits. These historical themes are supported by physical evidence, including the sandstone outcrops and vegetation communities, Aboriginal sites and European homesteads. The area holds outstanding natural beauty, contrasted with the cleared valley floors, which contains structures associated with the various pastoral and agricultural enterprises operating within the Valley. Far from diminishing the natural beauty, these two elements compliment and contrast with each other in a most visually pleasing way. The Bylong Landscape Conservation Area holds research significance relating to its ability to provide on-going data relating to the effects of Natural Sequence Farming (locally significant) and the archaeological potential of both Aboriginal and historical sites (State significant). The Bylong Landscape Conservation Area is representative of a cultural landscape, demonstrating the interactions between the natural and the cultural (including Aboriginal and historic) elements."

Additionally, the Bylong Landscape Conservation Area holds local associative, social and rarity significance. The area is associated with Peter Andrews, known within NSW as the originator of the Natural Sequence Farming technique, as well settlers of note, including the Hungerford, MacDonald, Lee, Harris, Thompson and Tindale families. Socially, the Bylong Landscape Conservation Area undoubtedly holds strong and special associations for the local residents and Aboriginal community" (p 1.)

439. In relation to Criterion C of the heritage assessment, which includes that the item is "important in demonstrating aesthetic characteristics ", the HHMP states: *"The Bylong Landscape Conservation Area is of State significance as an area of outstanding natural beauty, which is juxtaposed against the cleared valleys, dotted with structures relating to the agricultural and pastoral pursuits they support. Far from diminishing the natural beauty, the cleared valleys provide a contrast to the rugged, vegetated sandstone ridges that accentuates and highlights the beauty of both."*
440. The HHMP goes on to note that the Project Site is not a significant proportion of the BLCA:
"The Bylong Conservation Area is approximately 486 km2 in size, with the Project Boundary for the Bylong Coal Project sitting within its bounds, measuring approximately 70 km2. While this Project Boundary covers approximately 14.4% of the total conservation area, the direct impacts proposed to be undertaken within it (including access roads, haul road, mine surface infrastructure, overburden emplacement and open cut mining areas) equate to approximately 2.4% of the listed curtilage" (p 25 HHMP)
441. The Applicant submitted to the PAC a peer review of the 2017 GML Heritage Report dated 8 June 2017 (**Heritage Peer Review**). This identified "a number of errors of fact and omission in the GML Heritage Report relating to matters such as the accurate location of heritage features" (presented in Table 1 pp.18-23 of the Heritage Peer Review) and concluded that the GML Heritage Report had provided "...insufficient information ... to justify the levels of significance assessed." (p. 3)

6.6.8 Applicant's assessment of the heritage impacts of the Revised Mine Plan

442. In response to the Department's request for an assessment of the Revised Mine Plan, the Applicant provided the *Bylong Coal Project, Revised Mine Plan Historic Heritage and Visual Impact Assessment*, dated 10 July 2018, which concluded that the Recommended Revised Project will reduce impacts to heritage value and visual amenity:
"The Revised Project Layout steps off Tarwyn Park and therefore the horse burials and the NSF farmland and features within this area would remain undisturbed. The system of NSF, initiated by Peter Andrews, would remain intact, allowing for continued study of the technique on the site of its development... The indirect vibration impacts on Tarwyn Park Homestead and Stables would also be reduced as mining would now be approximately 1.4 kilometres from the structures."
"The former Our Lady of the Sacred Heart Catholic Church and Cemetery would also remain undisturbed, and therefore the exhumation of the cemetery would not need to be progressed for the Project. The Former Church building would also remain in situ. Additionally, there would be a reduction in direct impacts to the Bylong Station Farm Complex as the Workers Accommodation Facility has been removed from the Project."
"The Revised Final Landform has significantly reduced impacts to the shape of the Upper Bylong and Lee Creek Valleys". (p.65)
443. In their *Revised Mine Plan – Historic Heritage and Visual Impact Assessment* dated 10 July 2018, the Applicant noted the "locally significant" Natural Sequence Farming practices and stated that they were "committed to maintaining or enhancing the soil hydrology techniques (NSF) on the Tarwyn Park property. Furthermore, KEPCO is committed to making reasonable access to the Tarwyn Park property for external study..."

6.6.9 Department's consideration of heritage impacts of the Project and Recommended Revised Project

444. In its Final Assessment Report, the Department noted the material prepared by the Applicant on heritage impacts of the Project and that the Department had subsequently sought a review from the Heritage Council of New South Wales (the **Heritage Council**):

"In response to the Commission's review, KEPCO prepared a detailed draft Historic Heritage Management Plan, including updated significance assessments and a Horse Burials Management Plan, and a Draft Conservation Management Plan for the Tarwyn Park landholding. This additional information also included 3D visualisation and video animations, and photo montages (see Appendix A) to provide further analysis of the visual/ landscape impacts on Tarwyn Park, the Bylong Valley Historic Cultural Landscape, and the broader Bylong Landscape Conservation Area (BLCA).

To address the Commission's concerns, the Department requested the Heritage Council of NSW to undertake a review of the heritage values of the Tarwyn Park landholding."

445. The Department asked the Heritage Council to provide independent advice on a range of matters associated with the Project, including *"the overall scenic values of the Tarwyn Park property within the confines including the National Trust NSW classification of the Bylong Valley Scenic Landscape non-legal heritage classification"*.
446. The Heritage Council engaged Hector Abrahams Architects (HAA) to undertake a Heritage Significance Assessment (the HSA Report) dated 22 February 2018 to *"advise the Heritage Council of New South Wales about the significance of Tarwyn Park and its setting, and its relationship to the significance of the Bylong Scenic Landscape."* (p. 1)
447. In considering the scenic landscape of Bylong Valley, HAA states: *"[a] scenic landscape is one which presents as a scene. A scene is usually comprised of foreground, middle ground and background, and appears as presented to the viewer. There is a harmony of contrasts between differing parts of the scene"* (p.21)
448. The HSA Report concluded the Bylong Scenic Landscape is aesthetically distinctive and has landmark qualities and meets the criteria for State level significance:
- "Tarwyn Park and its setting are substantial components in the Bylong Scenic Landscape, one of a group of scenic landscapes traversing the Great Dividing Range which are distinctive the New South Wales landscape. The Bylong Valley is one of the many valleys of different sizes but consistent geology that together form the western side of the World Heritage-listed Blue Mountains and contribute to its scenic values. (State level significance)." (p.1)*
- "Since the Bylong landscape is one of a group of scenic landscapes in which the roads traverse the Great Dividing Range, which together are a distinctive feature of New South Wales landscape, and is one of the many valleys of different sizes but of same geology that together make the western side of the Blue Mountains which contribute to its scenic values, the Bylong landscape's significance is at the State Level. Accordingly, as Tarwyn Park and its setting is part of this landscape, these attributes should be identified in the assessment of its significance" (p. 23)*
449. The HSA report also concluded that Tarwyn Park, as the site of the first and longest running application of Natural Sequence Farming in Australia, meets the criteria for State significance, and the historic pastoral landscape of the Tarwyn Park Complex meets the criteria for local significance
450. In HAA's *Statement of Heritage Impact for Tarwyn Park and its Setting, Upper Bylong*, dated 20 February 2018 (the **HAA Statement of Heritage Impact**), it concluded that *"[t]he construction and operation of a coal mine in all its components will have a very high negative impact on the heritage significance of the Bylong scenic landscape."* (p. 2)
451. The Heritage Council's response to the Department dated 23 February 2018 *"recommends"* and *"generally supports the assessment and findings in the [HAA] report"* and provided the following advice:

"1. In terms of the report's conclusions on the heritage significance of the discreet European Tarywn Park Homestead Complex, the Council supports the finding of local heritage significance;

2. In terms of the report's conclusions on the heritage significance of Tarywn Park's association with the NSW horse racing industry, the Council supports the finding of local heritage significance;

3. In terms of the report's conclusions on the heritage significance of the association and physical evidence in the landscape of the agricultural practice known as Natural Sequence Farming (NSF), the Council notes HAA's finding of potential State heritage significance. However, the Council has not formed a view on this ascribed value at this stage as there is a need for more established comparative evaluation. The Council notes however that Tarwyn Park is today widely recognised as being the first, and longest-running (i.e. operational) example of NSF, and a prototype of this model...

4. In regard to the consultant's assessment of the potential State significance value of the greater Bylong Valley as a landscape of scenic (aesthetic) values, and the National Trust's categorisation of the Bylong Conservation Area and National Trust Landscape Conservation Area, also referred to as the 'Bylong Scenic Landscape' (BSL), the Council notes the independent assessment and agrees that this scenic landscape has heritage significance." (p. 2)

452. The Heritage Council determined that the capacity to assess the heritage value of landscapes (in point 4 in paragraph 451 above) is limited, and so was unable to confirm the likely State significance of the area:

"As a result of the examination of the impact of the Project on the BSL, the Council realises that the potential State significant heritage assessment of natural and cultural landscapes is an area in which work is required to develop a more substantive and holistic assessment of landscapes across the State. As a result of the lack of current rigour in the assessment of such landscapes and an understanding of their values as scenic elements, and complex cultural landscapes evolved from initially Indigenous and then European human interactions, the Council cannot at this time confirm the likely State significance attributes of the BSL (including the much smaller Tarwyn Park element)." (p.2)

453. The Heritage Council also stated that it was concerned about the visual impacts of the Project on the "current varied, complex and undulating" landscape:

"The Council is concerned that the proposed remediation will create a landscape that alters the existing reading of the valley system, and is made up of landforms that are too uniform and symmetrical, the whole being too potentially altered to be able to 'read' the pre-disturbance condition. The Council urges DPE to further evaluate the proposed post-mining landscape form to better reproduce the current character of the terrain. This should include a more in-depth study of the patterns of the landscape so that measures are put in place to effectively respect the visual and functional aspects of the former landscape. This should also consider the current layering of European built elements such as roads, buildings, and rural structures in their current context." (p.2)

454. The Heritage Council's letter in Appendix D of the Final Assessment Report noted that *"the removal of the bulk of the open cut mining from the Tarwyn Park property is seen as a significant heritage concession. The Heritage Council notes that the mine proposal per se is still a significant impact to this unique landscape, and that the PAC will determine the proposal on a range of matters, including heritage and visual intrusion, when it makes its final assessment of the overall benefits and impacts from the mine."*

455. In noting the Heritage Council's assessment of the Project set out in paragraph -452, the Department stated in its Final Assessment Report that *"[w]hile the Heritage Council considers there is merit in improving how landscape significance assessment is undertaken in NSW, it should not delay the decision on the Bylong Coal Project." (p.59)*

456. The Final Assessment Report stated that the Heritage Council's advice and the findings of the PAC Review informed the Department in taking a precautionary approach and recommended a condition to prohibit mining on Tarwyn Park:

"In relation to the landscape context, the Heritage Council, was particularly concerned about the change in the valley landform and views from the Tarwyn Park complex (homestead and stables) across the Upper Bylong Valley towards Lee Creek and the Growee Range. The Council considered that further measures could be put in place to reflect the existing landscape, including the natural and built heritage, such as reinstatement of roads and built structures.

Following careful consideration of the Heritage Council's advice and the Commission's concerns on the impacts of the mine on Tarwyn Park's heritage values and the landscape setting within the Upper Bylong Valley, the Department considered that a precautionary approach should be adopted.

KEPCO were advised that the Department would be recommending a condition to the Commission to prohibit mining on Tarwyn Park. The Department requested KEPCO to revise the mine plan to:

- exclude open cut mining and overburden emplacement on the Tarwyn Park landholding; and*
- re-design emplacement areas to minimise visual impacts and maximise the integration of the final landform with the surrounding topography." (p.47-48)*

457. The Department's Final Assessment Report noted that the BLCA is listed on the National Trust of Australia NSW Register, and identified that the visual, landscape and heritage impacts from the Project have been appropriately managed in the Recommended Revised Project:

"The Department considers that the Revised Mine Plan provides a significant improvement to the EIS Mine Plan by retaining key landscape features of the Upper Bylong Valley and a similar landscape view from the Tarwyn Park homestead of Bald Hill, the Growee Range, Tal Tal Mountain and the Upper Lee Creek catchment." (p.52)

"The Department has considered the impacts on Tarwyn Park cognisant of its potential heritage significance and is satisfied that, regardless of the decision on the listing by the Heritage Council, the impacts on the heritage values Tarwyn Park have been largely avoided or minimised as far as practicable, in accordance with the recommendations of the Heritage Council". (p.53)

"The Department and the Heritage Council consider that the Revised Mine Plan provides a significant reduction in the impacts on the landscape values of the Upper Bylong Valley and the BLCA in that:

- the valley form is largely retained across the broader Bylong River and Lee Creek catchments;*
- views from across the Upper Bylong Valley from Tarwyn Park and from vantage points along Upper Bylong Road to the south/ south east would retain key landform features;*
- there is improved integration with existing landform, with retention of forested ridgelines and incorporation of macro and micro relief in the rehabilitated final landform; and*
- while the EIS Mine Plan was designed to have limited views from the main Bylong Valley Way tourist drive, the proposed changes would retain key landform aspects post mining and allow opportunity for future reinstatement of the road connecting to Upper Lee Creek catchment and significant cultural heritage infrastructure in the landscape, such as the former Upper Bylong Catholic Church." (p.59)*

“...the Revised Mine Plan provides a significant improvement to the EIS Mine Plan by retaining key landscape features of the Upper Bylong Valley and a similar landscape view from the Tarwyn Park homestead of Bald Hill, the Growee Range, Tal Tal Mountain and the Upper Lee Creek catchment.” (p.52)

“The landscape heritage values are acknowledged by the proponent, with avoidance and mitigation measures incorporated into the mine design to minimise impacts on the BLCA.” (p.59)

458. In regard to the heritage value of Natural Sequence Farming in the landscape, the Department recommended the following condition:

“The Applicant must take all reasonable and feasible measures to maintain or enhance the soil hydrology farming techniques on the Tarwyn Park property, and make reasonable access to the property available for external study by applicable scientific organisations (such as CSIRO, universities and government authorities) upon request”.

6.6.10 Public and Council comments on the heritage impacts of the Recommended Revised Project

459. The Commission heard concerns from speakers at the public meeting and received written submissions regarding the impacts of the Recommended Revised Project on the heritage and landscape value of the Bylong Valley. These concerns included:

- the importance of Tarwyn Park and Iron Tank properties as a demonstration of Natural Sequence Farming;
- the impact on the Tarwyn Park homestead;
- a lack of consideration of the heritage values of the surrounding landscape; and
- impacts to the recognised visual amenity of the Bylong Landscape Conservation Area (BLCA) that the Recommended Revised Project is considered unlikely to address.

460. Natural Sequence Farming was identified by speakers as integrated with the agricultural and heritage values of the landscape, with Tarwyn Park recognised as *“the birthplace of natural sequence farming”* (p.85). Two speakers on behalf of the BVPA respectively stated:

“[T]he agricultural character of the valley will be adversely changed by removing prime ag land from production, removing options for more intensive agriculture, such as thoroughbred horse breeding or vegetable cropping and not maintaining or developing the natural sequence farming methods pioneered at Tarwyn Park.”

“We have heard from the mine that they do want to continue natural sequence farming ... but in my inquiries with the people who teach and research natural sequence farming... the mine has not approached these people with the practical experience and research background. Maybe they’ve approached other researchers but not the people who actually have carried out natural sequence farming.” (p.63-64)

461. At the public meeting, speakers referred to the heritage significance of Tarwyn Park and the reliance of Natural Sequence Farming on water resources:

“Even with the revised mining plan, Tarwyn Park will be subject to the worst of alluvial water drawdown. The state heritage significance of this valued park is dependent on the availability of water and the ongoing process of natural sequence farming for its survival” (p.36)

462. Speakers noted that the heritage significance of the area had also been recognised by the Heritage Council:

"We're really concerned about the impact of this mine on heritage and we would draw the commission's attention to the discrepancy between what the independent heritage report commissioned by the Heritage Council says and what the Department of Planning says. The independent report issued by the council found at Tarwyn Park itself but also the Bylong scenic landscape is of state heritage significance which will be damaged – radically changed is their words – by this project..."

"Heritage is another issue that [Rylstone District Environment Society] is concerned about, and we are concerned that the independent report commissioned by the Heritage Council was not reflected – that the findings and advice was not reflected in the advice given to the Heritage Council – to the Department of Planning and are not found in the Department's final assessment. Independent experts found that both Tarwyn Park and the broader Bylong scenic landscape qualified for State Heritage listing, but the Heritage Council did not adopt this recommendation in its advice to the Department of Planning." (p.46)

463. Speakers at the public meeting also emphasised the heritage value of the adjacent World Heritage Area:

"Given that it is adjacent to the Greater Blue Mountains World Heritage Area and contributes to the scenic beauty of that area..." (p.46)

"...the World Heritage area is superlative area of global significance. So New South Wales should not actually be permitting a project to damage one of the World Heritage sites that the Australian Government has committed to protect. Finally, destruction of scenic grandeur. A lot of people have been pointing out how pretty and beautiful this valley is. It is an area of great scenic grandeur. Adjoining Wollemi National Park and the Bylong Labyrinth just upstream between the mine site and where I live on Nullo Mountain is an example of this. So, really, we're talking about major visual pollution on the edge of what is a World Heritage site" (p.69)

"I would particularly like to talk about impacts on the greater Blue Mountains World Heritage Area. The society believes – is concerned that likely impacts of the proposal on the biodiversity of the adjoining Blue Mountains World Heritage Area has not been adequately considered. The World Heritage listed area is listed solely for its natural values, including its biodiversity and its threatened species. Any actions that degrade the biodiversity of the adjoining World Heritage Area, that is Wollemi National Park, threatens to degrade the outstanding universal values of the world heritage area." (p.103)

464. Others were concerned that the Recommended Revised Project would fundamentally change the nature of the Bylong Valley by impacting the BLCA:

"It is a far better stance to support farming in the future than risk permanently damaging the irreplaceable water system that supports the Bylong Valley, the future of this magnificent heritage-listed valley with abundant water sources set within a stunning landscape must be agricultural and recreational. It should not be compromised or sterilised by short-term ill-perceived, high-risk coal mining." (p.21)

"It is our belief that neither the revision of the mining plan or the further information provided ... adequately alleviates these ... concerns." (p.36)

465. The Mudgee District Environment Group considered significant issues of concern to include "...threats to state-significant heritage landscape values of the Bylong Valley, the Wollemi National Park, the Greater Blue Mountains World Heritage Area, and the biodiversity of the area." (p.38)

466. At their meeting with the Panel, MWRC stated that they were satisfied with the Revised Mine Plan in regard to heritage:

"...the Council feel that the response from KEPCO to the previous PAC's concerns about heritage, we really feel now that they've addressed that and that's why that we have – there is that support." (p.3)

6.6.11 GML Heritage Advice

467. The Commission engaged GML Heritage to update its Heritage Review Report of the Project prepared for the PAC in 2017 with its consideration of the Revised Mine Plan. GML Heritage provided its final advice on 12 June 2019.
468. GML Heritage concurred with the Heritage Council that more substantive in-depth assessment of natural landforms needs to be done, but that “[n]otwithstanding this, based on the review of the National Trust listing for the Bylong Landscape Conservation Area, various consultant reports and our opinion, we would contend that the historic and aesthetic significance of the area has the potential to satisfy the threshold at state level” (p.18).
469. In relation to the heritage impact of the Revised Mine Plan, GML notes that “[m]uch of the proposed mining activity and related infrastructure has been removed from within the boundary of Tarwyn Park. As such, the adverse direct impacts associated with open cut mining and overburden emplacement have been addressed and mitigated through the removal of these activities from within Tarwyn Park’s boundary” (p.2).
470. However, “[f]rom a heritage perspective consideration needs to be given to ‘integrity’, or the wholeness or intactness of Tarwyn Park within the setting of the Bylong Landscape Conservation Area” (p.2), given that “...there is concurrence between professionals that Tarwyn Park meets the threshold at state level under one or more [heritage] criteria” (p.3).
471. Noting that under the ICOMOS Burra Charter, “cultural significance is not only embodied in a place, its historic fabric and its use, but in its setting, association, meaning, records and related places and objects” (p. 2), GML Heritage state that the “[k]ey question becomes whether the mine and its associated activities will materially interfere with the historic uses and detract from the cultural significance of the property within the broader setting of the Bylong Landscape Conservation Area.” (p.2)
472. GML Heritage consider that “the heritage values of [Tarwyn Park] are not separate from the natural and historic cultural landscape context that the property is set within” (p.4) and conclude that “[t]he fundamental change in land use puts at risk the heritage importance and association of the Bylong Valley and Tarwyn Park with the evolution of agriculture in the area” (p.13). GML Heritage do not consider that the mine rehabilitation plan adequately mitigates this risk, noting that “[r]econstruction is not a conservation outcome, rather it is a mitigative measure when damage or change has impacted the heritage significance of a place to such a degree that other alternatives are not available” (p.18)
473. Overall the Revised Mine Plan does not substantially change GML Heritage’s earlier advice on the heritage impacts of the Project, as “GML believes the Revised Mine Plan does not adequately address the impacts on heritage and that it may well risk Tarwyn Park’s eligibility for listing” (p. 13)
474. With regard to impacts on the Bylong Valley Historical Cultural Landscape, “GML is of the view that the proposal will permanently change the natural and historic cultural landscape, its agricultural uses and its significant scenic qualities and character...” (p. 15). “While the visual impacts and the visual effects have been addressed in the Revised Mine Plan, with regard to the views, the fundamental issue remains that the visual integrity and authenticity of the Bylong Valley [Conservation] Landscape...will be permanently changed and this gives rise to a significant heritage impact” (pp15-16)

6.6.12 Applicant’s response to the 2019 GML Heritage Advice

475. The Applicant submitted a Response to GML Heritage Advice on 27 June 2019, including five attachments. It noted that as the GML Heritage Advice in 2019 contained many of the issues the Applicant had already identified in the GML Heritage Report in 2017 a number of the findings already expressed in the Applicant’s peer review “remain relevant to the current GML Heritage Advice” (p. 3). The Applicant also responded to the GML Heritage Advice in relation to State Heritage Significance Criteria in detail in Table 1 p. 10-14.

476. The Response included a different view of the appropriate use of reconstruction in conservation than what was presented by GML Heritage in paragraph 554. It proposes that “[r]econstruction is appropriate only where a place is incomplete through damage or alteration, and only where there is sufficient evidence to reproduce an earlier state of the fabric” (p. 7) and concludes that “[s]hould the mine proceed, then ‘reconstruction’ based on documentary and physical evidence is considered a valid conservation process.” (p. 8).
477. The Applicant’s previous assessment of heritage significance of the BLCA in its HHMP (see paragraphs 437-439) is stated as remaining unchanged.
478. In acknowledging that in reaching a determination the consent authority must weigh the relevant importance of socio-economic benefits and other impacts of the Project, the Response to GML Heritage Advice states that “it would be manifestly unreasonable for the decision maker to give undue weighting to what are very limited and largely temporal visual impacts to an isolated and largely concealed landscape on privately owned land.” (p. 33)

6.6.13 Commission’s consideration of heritage impacts

479. The Commission notes that the Project Site is located within the Bylong Landscape Conservation Area, which is listed on the non-statutory National Trust (NSW) Register and is located adjacent to the Greater Blue Mountains World Heritage Area. However, there are presently no items, landscapes or complexes within the Project Site or the vicinity that have a heritage listing. The Commission acknowledges that a recommendation by the Heritage Council to the relevant Minister would be required to list these as State heritage items under the *Heritage Act 1977*.
480. The Commission accepts that an assessment of the heritage significance of the Project Site and vicinity against the applicable criteria has now been undertaken by multiple experts and that these experts have differed in their assessments.
481. The Commission notes the HAA findings that the practice of natural sequence farming at the Tarwyn Park and Iron Tank properties has potential state heritage significance. The Commission also acknowledges that the Heritage Council has not yet formed a view as there is a need for a more established comparative evaluation. The Commission notes the Applicant’s willingness to continue to pilot this farming method in paragraph 443, and the Department’s proposed condition to ensure this occurs in paragraph 458. However, the Commission is of the view that the feasibility of conducting trials of Natural Sequence Farming is indirectly impacted by the expected slow recovery of groundwater resources referenced in paragraph 290.
482. The Commission has considered the expert advice and public comments on the heritage value of the Tarwyn Park Complex. The Commission notes that the HAA considers Tarwyn Park to be of state significance and considers the historic pastoral landscape of the Tarwyn Park Complex to be of local significance (paragraph 449). The Commission further notes that the Heritage Council supports the advice that the Tarwyn Park Complex is of local heritage significance (paragraph 451), and that GML Heritage is of the view that it meets the threshold at state level under one or more criteria (paragraph 470). The Commission is therefore of the view that the Tarwyn Park Complex is of heritage significance.
483. The Commission finds that the Project would have unacceptable impacts on the heritage values of the Tarwyn Park Complex for the reasons presented by GML Heritage, the Department and the PAC in paragraphs 426, 427 and 432. In relation to the Recommended Revised Project, the Commission finds that much of the proposed mining activity has been removed from within the boundary of Tarwyn Park. The Commission accepts the views of GML Heritage and the Department that the adverse impacts on the heritage values of the Tarwyn Park Complex have been addressed and mitigated as far as practicable in the Recommended Revised Project as stated in paragraphs 457 and 469.
484. However, the Commission finds that the heritage and aesthetic values of the Tarwyn Park Complex are not confined to the Tarwyn Park property and are instead connected to the aesthetic and natural values of the broader Bylong Landscape Conservation Area, as stated by GML Heritage in paragraphs 470-472, by HAA in paragraph 448, and supported by the Commission’s observations of the physical and scenic attributes of the land in their visit to the Project Site.

485. The Commission notes that there is no agreed methodology for assessing the heritage and aesthetic significance of landscapes as stated by the Heritage Council in paragraph 452 and that without a 'substantive and holistic' framework to assess the heritage value of landscapes, the Heritage Council cannot confirm the likely State significance of the landscape in the vicinity of the Project Site.
486. Based on the advice provided by the Heritage Council, the Applicant, HAA, GML Heritage, public comments and the National Trust (see paragraph 415, 438, 447, 459 and 468) the Commission finds that the Bylong Valley Scenic Landscape in the vicinity of the Project Site is a significant landscape with aesthetic, scenic, heritage and natural values.
487. In relation to mine rehabilitation, the Commission agrees with the conclusion of GML Heritage in paragraph 472 that "[r]econstruction is not a conservation outcome, rather it is a mitigative measure when damage or change has impacted the heritage significance of a place to such a degree that other alternatives are not available", because the significant landscape values are currently undisturbed. The Commission accepts that the Project Site's landform can be reinstated as stated by the Applicant in paragraph 437. However, due to the level of disturbance and the fact that the current landscape is undisturbed, the Commission does not consider that a recreated landscape will retain the aesthetic, scenic, heritage and natural values of the current landscape.
488. For the reasons set out in paragraphs 481, 482 and 487 above, the Commission considers that:
- the Project would have unacceptable impacts on the heritage values and visual amenity of the Tarwyn Park and Iron Tank properties;
 - the Project and Recommended Revised Project would have negative impacts on the aesthetic, scenic, heritage and natural beauty characteristics of the vicinity and landscape both during operation and post-mine; and
 - there remains uncertainty regarding the risk of impact to the heritage values of natural sequence farming from the Recommended Revised Project.

6.7 Built and natural environment impacts - Aboriginal heritage

6.7.1 Statutory context

489. The SEARs issued by the Department set out requirements under s 1.3 of the EP&A Act. An assessment of the likely Aboriginal and historic the consideration of heritage impacts of the was required.
490. The OEH set out a number of requirements having regard to the following documents:
1. Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment Recommended Revised Project is "to promote the sustainable management of built and Community Consultation (Department of Planning, 2005). These guidelines identify the factors to be considered in Aboriginal cultural heritage assessments for development proposals under Part 3A of the EP&A Act (including Aboriginal cultural heritage)".
 2. Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW, 2010) - This document establishes the consultation requirements with the Registered Aboriginal Parties (RAPs) as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places.
 3. Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010). This code sets out the requirements for undertaking archaeological investigations in NSW.
491. Part 4.15 of the EP&A Act requires that the Commission to consider the likely environmental impacts of the development on the natural and built environments.

6.7.2 Applicant's consideration of the Aboriginal heritage impacts of the Project

492. The Applicant provided the Bylong Coal Project Aboriginal Archaeology and Cultural Heritage Impact Assessment, dated September 2015, as part of its EIS.

493. The EIS identified *"within the Study area identified during the field study included 239 Aboriginal archaeological site and cultural features"*. (p.238)
494. The EIS identified that *"144 archaeological sites and cultural features [were] identified as being at risk from the Project. Of the total 144 sites at risk of impact, 42 were identified as being at risk of indirect impacts (due to subsidence and blasting) and 102 are at risk of direct impacts (within the Project Disturbance Boundary)." (p.241)*
495. According to the EIS: the indirectly impacted sites included an ochre quarry, a grinding groove site and ten rock shelters. The directly impacted sites consisted of 95 surface artefact sites, a potential archaeological deposit (PAD), an artefact scatter with PAD, three modified trees and two cultural features.
496. The EIS assessed the significance in consultation with the RAPs and their responses to the assessment. The EIS stated:
- "These responses, as well as the information provided by RAPs during the cultural values assessment and discussion sessions determined that a high level of significance should be ascribed to the ochre quarry, modified trees and the grinding grooves present within the Study Area. Not all RAPs agreed unanimously on the significance of the sites. As such the level of cultural value is seen as a general consensus." (p.241)*
497. The Applicant's Review Response stated that:
- "KEPCO has actively engaged with OEH throughout all stages of the approvals process to ensure the Project meets the requirements and expectations of OEH on Aboriginal cultural heritage matters."*
- Following the concerns raised by the PAC, a further meeting was held with OEH on 26 September 2017 to confirm the approach proposed by KEPCO is acceptable and capable of meeting the Recommended Development Consent conditions.*
- A letter from OEH to DP&E, dated 31 October 2017, provides a proposal to progress Condition 44 (d) under Schedule 4 of the Recommended Development Consent, which is consistent with the outcomes agreed to in the recent meeting. KEPCO has provided a letter in response to OEH." (p.71)*

6.7.3 Department's consideration of the Aboriginal heritage impacts of the Project

498. The Department's Preliminary Assessment Report described the Aboriginal cultural heritage sites as including two rock-shelters, a grinding groove and sandstone cultural features:
- "The project would directly and indirectly impact a number of Aboriginal cultural heritage sites, including two rock-shelters, a grinding groove, and some sandstone cultural features in the subsidence area with high regional significance. There is also a rock shelter with high significance adjacent to the proposed open cut, although impacts on this site can be managed through careful blast design." (p.6)*
499. The Department's Preliminary Assessment Report stated that consultation had taken place with relevant Aboriginal stakeholders to devise a recording and salvage program for the Aboriginal sites. The Department stated that:
- "...both Department and the NSW Office of Environment and Heritage (OEH) consider that the impacts of the project on Aboriginal cultural heritage in the locality can be managed with the implementation of these measures." (p.6)*
- "The Aboriginal community was consulted in accordance with the OEH's Aboriginal Cultural Heritage Consultation Requirement for Proponents (2010) and provided input into the preparation of the cultural heritage impact assessment and the adopted mitigation measures." (p.33)*
500. In its submission on the EIS, dated 6 November 2015, OEH advised that:

“...it has examined the consultation section of the RPS report that details the engagement and consultation with the Registered Aboriginal Parties (RAPs)...The consultation is consistent with the procedures set out in the OEH consultation guidelines (2010).” (p.13)

501. Additionally, in regards to the impacts of subsidence (see section 624) OEH advised that it:

“...accepts the specialists subsidence report conclusion that impacts to artefact scatter sites and isolated finds in the subsidence areas will be minimal from undergrounds mining.” (p.10)

502. However, OEH raised a number of concerns in relation to the Project's impacts on Aboriginal heritage, items, and made a number of recommendations including that:

- a regional rock art/ ochre study be undertaken in consultation with the Aboriginal community; and
- additional sub-surface excavation be undertaken within the open cut mining footprint and that biodiversity offset areas be surveyed for Aboriginal heritage value.

503. Additionally, in its submission dated 31 October 2017, OEH recommended that the Applicant continue to engage with the RAPs during the investigations, research and assessment phases of undertaking its Aboriginal Heritage Management Plan.

504. OEH also advised that a “verbal agreement” had been reached between OEH and the Applicant, which was supported by the Department, that OEH would provide the following information to assist the Applicant with its Aboriginal Heritage Management Plan:

- summary of AHIMS information of Aboriginal rock art sites in the region; and
- list of cultural plants and associated vegetation communities.

6.7.4 Planning Assessment Commission's Review of impacts to Aboriginal heritage

505. The PAC Review Report noted:

“The Department reported that a total of 144 Aboriginal cultural heritage sites would be impacted by the project with 102 within the disturbance area, and 42 within subsidence or blasting impact zones. Many of the sites with moderate or high significance, including rock shelters, are situated in the subsidence zone where it coincides with the elevated, wooded landscape of the Bylong State Forest.” (p.26)

506. The PAC Review Report identified the need for further investigation to occur including with consultation with OEH:

“the applicant considered it “unreasonable” for the OEH to expect the cumulative assessment to use the same methodology as others, and that in providing its comments, the OEH had not considered the occurrence of Aboriginal heritage in the “vast areas of land covered by National Parks and Nature Reserves”. While the applicant explained that it would prepare methods of cumulative assessment in line with the OEH advice, as well as carry out a more detailed assessment of the ochre site and Aboriginal sites within the biodiversity offset areas, it is unclear to the Commission whether there is agreement on the method and scope of work to be done.”

It appears to the Commission that further investigation remains to be completed to properly assess the expected impacts to Aboriginal cultural heritage. The work will also require an agreed approach among the relevant parties, including the OEH.”

6.7.5 Department's consideration of the Aboriginal heritage impacts of the Recommended Revised Project

507. In its Final Assessment Report, the Department outlined further consultation that had occurred between the Applicant, OEH and the Department in relation to the rock art/ochre study and Aboriginal cultural heritage assessment of the biodiversity offset areas.

508. The Department states “*further consultation with OEH and the Registered Aboriginal Parties (RAPs) would be required when preparing the Aboriginal Heritage Management Plan.*” (p.62)
509. The Department also notes that the Recommended Revised Project “*avoids direct impacts on a further 4 Aboriginal heritage items including 3 artefact scatters and one isolated find.*” (p.62)
510. According to the Department, all of these Aboriginal cultural heritage sites were ranked “*low archaeological significance.*” (p.62)

6.7.6 Public comments on Aboriginal heritage

511. The Commission heard concerns from speakers at the public meeting, and received written comments, regarding the impacts of the Project, including concerns that an adequate investigation has not been undertaken and the cumulative impacts of both the Project and the Recommended Revised Project on Wiradjuri heritage was raised as an issue in the assessment but had not been addressed:

“The Commission review said: Further investigation remains to be completed to properly assess the expected impacts to Aboriginal cultural heritage.

Yet no one has done this. Office of the Environment and Heritage provisional view of the Wiradjuri heritage impacts of this mine was that: ‘Notwithstanding the mitigation actions of previous mine projects and those of the proposed Bylong Coal Project, Office of the Environment and Heritage is concerned that harm to Aboriginal cultural heritage is approaching unacceptable thresholds for the region. Unless adequately compliant with a measured conservation regime, an imbalance of this scale may have permanent intergenerational consequences.

The cumulative impact of this mine on Wiradjuri heritage was raised as an issue but has not been addressed nor treated seriously by the Department of Planning and Environment.” (p.37-38)

“The expected impacts on Aboriginal culture and heritage have not been properly investigated, despite the Commission’s reviews stating that such further investigation remains to be completed before properly assessing the expected impact on Aboriginal and cultural heritage. Why does this remain undone?” (p.84)

512. The Commission received a submission from Lock the Gate dated April 2019 which included in a list of issues that may need resolution before determination, the PAC Review Report’s statement about further investigation of Aboriginal cultural heritage and that “*Aboriginal cultural heritage is among the matters to be weighed up by the Commission and if the impact on the mine on these values has not been “properly assessed,” the Commission cannot make an informed decision to approve the mine.*”
513. The Commission received a letter from Ibbai Waggan-Wiradjuri People, dated 12 April 2019. This letter stated that the Ibbai Waggan-Wiradjuri People have been denied access to their Cultural Sensitive sites and excluded from any rightful benefits to support projects to assist the Ibbai Waggan-Wiradjuri People and included extracts from Historical Connections Records and claimed territorial rights over “*Ngurangbang*”. The Commission notes that according to the Applicant’s EIS, the Ibbai Waggan-Wiradjuri People are not listed as a Registered Aboriginal Party (RAP).

6.7.7 Commission’s consideration of Aboriginal heritage impacts

514. The Commission notes that the PAC Review Report requested further investigation of Aboriginal heritage to occur and raised concern that there may be permanent intergenerational consequences unless a cumulative assessment is undertaken. The Commission accepts that in response, the Applicant committed to preparing methods of cumulative assessment in line with the OEH advice, as well as carrying out a more detailed assessment of the ochre site and Aboriginal sites within the proposed biodiversity offset areas outlined in paragraph 506.

515. Based on the Material before it and as stated in paragraph 497, the Commission understands that the further investigations undertaken by the Applicant in response to the PAC Review Report comprised a further meeting held with OEH on 26 September 2017, at which the works required to be completed for the Aboriginal Heritage Management Plan were agreed upon.
516. In light of the steps taken by the Applicant to further investigate Aboriginal heritage (namely a meeting between OEH, the Department and the Applicant to agree the scope), the Commission finds that the Aboriginal cultural heritage assessment has not been greatly advanced since the PAC Review Report, and therefore there is insufficient evidence for the Commission to form a view on the impacts on Aboriginal heritage.

6.8 Natural environment impacts - biodiversity

6.8.1 Statutory context

517. Part 3 of the Mining SEPP requires that the Commission must consider environmental management, and ensure that impacts on threatened species and biodiversity are avoided, or are minimised to the greatest extent practicable.
518. Part 4.15 of the EP&A Act requires that the Commission to consider the likely environmental impacts of the development on the natural environment.

6.8.2 Applicant's consideration of the biodiversity impact of the Project

519. The Applicant provided an assessment of the likely biodiversity impacts in the following documents (collectively, the **ecological assessment**):
- the EIS, including an ecological assessment (August 2015) and Biodiversity Offsets Report (July 2015);
 - the RtS, including a Biodiversity Assessment Report and revised Biodiversity Offset Strategy; and
 - the supplementary RtS, including a response to comments made by OEH in relation to the RtS.
520. The ecological assessment identified the land size of the native vegetation that would be affected:
- "[The] Project will disturb up to 753 ha of native vegetation, including three communities listed as TECs [threatened ecological communities] under the TSC Act and/or EPBC Act. Additional areas of vegetation have the potential to be indirectly impacted by subsidence related effects."*
521. The ecological assessment stated that 31 threatened species were recorded in the Project's Disturbance Boundary and subsidence area.
522. The ecological assessment proposed a range of measures to manage and mitigate impacts to threatened flora and fauna. These measures included, but were not limited to:
- preparation of a detail biodiversity management plan, including pre-clearing surveys;
 - dust, noise and lighting minimisation to reduce indirect impacts;
 - progressive rehabilitation of disturbed areas, including reinstatement of 64 ha of native woodlands, and the establishment of appropriate monitoring programs and reference sites; and
 - aquatic mitigation measure relating to ground movements and management of surface water, erosion and sedimentation.

6.8.3 Planning Assessment Commission's Review of impacts to biodiversity

523. The PAC Review report identified a range of biodiversity issues that needed to be addressed:

“The Commission notes that the finalisation of a significant area of biodiversity offsets (i.e. the areas in Offset 5 impacted by subsidence) would occur after the commencement of the project. The appropriateness of this approach should be considered in any future decision about the project.

The Commission also notes a number of matters that will require careful consideration prior to a decision about the project, including:

- impacts associated with subsidence deformation in relation to the structure and form of native vegetation, which might need to be managed alongside subsidence remediation;*
- potentially observable impacts to identified groundwater dependent ecosystems ... though they are unlikely as they occur in the riparian corridors of the creeks that are largely ephemeral and already subject to natural variations in flow. Such impacts may nevertheless need to be very carefully monitored and managed;*
- verifying that areas of vegetation consistent with the total areas proposed to be cleared are present as offsets in suitable locations, quantities and qualities to maintain landscape connectivity; and*
- being satisfied that disturbed areas are expected to be rehabilitated and result in the successful establishment of suitable vegetation communities.”*

6.8.4 Public comments on biodiversity impacts of the Recommended Revised Project

524. The Commission heard concerns from speakers at the public meeting and received written submissions regarding the impacts of the Recommended Revised Project on State and nationally protected flora, fauna and ecological communities. These submissions included the need to consider the cumulative impacts to these species and the view that the proposed biodiversity offset strategy was inadequate.

525. The Blue Mountains Conservation Society stated in the public meeting that:

“it is not correct to claim, as the Department ... claims regarding this project and I quote: ‘...that biodiversity would be enhanced [or] maintained over the medium to long term.’ There will be a net loss of biodiversity.

The short-term prospects of threatened species and other biodiversity are not even considered. The society does not believe – does not agree with the department’s assessment in that the risks associated with the proposed rehabilitation of the woodland community are acceptable.” (p.102)

526. The Mudgee District Environment Group stated in the public meeting that:

“The cumulative loss of critically endangered ecological communities and regent honeyeater habitat in the region has not been adequately assessed. The three existing large mining operations to the west of the proposal have been approved to remove very large extents of threatened vegetation and species habitat from the region. This mine will clear a further 699 hectares of native vegetation, including critically endangered woodland. Critically endangered ecosystems cannot be replaced with mining rehabilitation; yet that is what is proposed. Threatened species’ habitat in collapsed cliffs will be permanently lost. KEPCOs largest biodiversity offset area is over the underground mine and will itself not secure [until] mining is complete.” (p.38)

527. The Nature Conservation Council of New South Wales stated in the public meeting that:

“In relation to biodiversity offset strategy... there’s a delightful map in ... one of the appendices at the bottom of the EIS which shows an aerial shot of the properties that have been acquired. One of them is completely cleared. It’s an offset paddock. One of them is half cleared. The other ones are a third cleared, or two-thirds cleared. These are supposedly to offset for prime habitat of species like the Regent Honeyeater.” (p.34)

6.8.5 Applicant's assessment of biodiversity impacts of the Revised Mine Plan

528. The Applicant has proposed to offset unavoidable biodiversity impacts, and its PAC Response Report stated that:

"Seven areas have been nominated as areas for biodiversity offsets for the conservation, restoration and ongoing management of vegetation communities and associated habitat for threatened and endangered species."

"The biodiversity offset areas as a whole will provide a substantial amount of habitat for threatened species to be potentially impacted by the Project, including the Regent Honeyeater, Brush-tailed Rock Wallaby and Greater Long-eared Bat." (p.69)

"Given that some areas of OA5 are expected to be impacted by subsidence effects from underground mining, OEH has advised that OA5 could not be secured in perpetuity until the completion of underground mining and post mining assessment of the ecological value of the area is undertaken.... During the life of the Project, the land within OA5 will be managed under a conservation agreement (or similar mechanism), such as an agreement under the Conveyancing Act 1919. Furthermore, in accordance with Condition 40 of Schedule 4 of the Recommended Development Consent, KEPCO will lodge a Conservation Bond with the DP&E to ensure the management of OA5 is implemented in accordance with performance and completion criteria that aligns with the biodiversity outcomes." (p.70)

6.8.6 Department's consideration of the biodiversity impacts of the Recommended Revised Project

529. The Department's Final Assessment Report stated that the PAC's concerns regarding the uncertainty of Offset Area 5 (OA5) have been addressed:

"As described in the PAR, Offset Area 5 (OA5) provides residual ecosystem credits for one plant community type, Grey Box – White Box grassy open woodland on basalt hills in the Merriwa region, Upper Hunter Valley (PCT HU690) and residual species credits for the Regent Honeyeater. The other 6 land-based offsets provide sufficient ecosystem and species credits for all other communities/ species impacted by the project, with substantive excess credits available." (p.73)

"That is, there is sufficient offset credits available in OA5 even accounting for diminution of biodiversity values due to subsidence.... The credits generated within the subsidence area were conservatively reduced by 10%. Further, 30% of OA5 is located outside the subsidence impact area." (p.74)

530. The Department's Final Assessment Report noted the reduction of impacted biodiversity from the Recommended Revised Project as compared to the Project and that BSAL located in the offset area would also be used for agriculture:

"The Revised Mine Plan reduces the direct impacts on native vegetation by around 62 ha (from 753 ha to 691 ha), including 25 ha of native woodland. This also includes a reduction of 4.4 ha on threatened Box Gum Woodland. KEPCO has committed to offset the project's impacts based on the EIS Mine Plan offset requirements."

"OEH have reviewed the Revised Mine Plan... and commitments made by KEPCO and welcomed the reduction of impact to biodiversity and Aboriginal heritage, noting that the offset package already proposed by KEPCO would be retained." (p.76)

"the Department and OEH considered that the permanent removal from agriculture of 288 ha of BSAL for biodiversity offset areas is the highest and best use of this land given the areas are mainly intact woodland, with some areas of grazing rather than cultivation. However, around 120 ha of BSAL on the offset properties, which have been historically cropped and located on higher agricultural and soil capability class land would be retained for agriculture." (p.xii – xiii)

“Following consideration of the Commission’s findings and the response from KEPCO, the Department confirms its and OEH’s view that OA5 is a suitable offset area and that, with the recommended conditions there is sufficient certainty that the offset area would be appropriately managed and secured for biodiversity conservation.” (p.76)

531. The Department’s Final Assessment Report stated that:

“As concluded in the PAR, KEPCO has sought to avoid, mitigate, manage and/or offset the residual impacts of the project in accordance with NSW and Commonwealth requirements, so that biodiversity values would be enhanced or maintained over the medium to long term.” (p.76)

6.8.7 Commission’s considerations of the biodiversity impacts

532. The Commission considers that the Applicant and the Department have adequately assessed biodiversity impacts from the Project and Recommended Revised Project and have addressed the issues raised by the PAC Review. The Commission accepts the Department’s assessment and Final Recommended Conditions as set out in paragraphs 529-531 because it meets policy and legislative requirements for offsets.
533. In accepting the Department’s assessment of biodiversity impacts the Commission finds that the Applicant has proposed sufficient measures to avoid, minimise and mitigate impacts to biodiversity as set out in paragraph 528.
534. The Commission notes that a proportion of the identified biodiversity offset areas will be undermined as part of the Project and Recommended Revised Project. The Commission finds that degradation from associated subsidence impacts is likely to be manageable because appropriate mechanisms can be put in place to ensure suitable biodiversity offsets are established if subsidence has a greater impact than expected as set out in paragraphs 528 and 529.
535. The Commission accepts that the offsets are in accordance with the *Biodiversity Conservation Act 2016*, however notes that in part this use of BSAL for offsets results in a net loss of 288 ha of BSAL that is available for agricultural use, as set out in paragraph 357.

6.9 Built environment impacts - transport and traffic

6.9.1 Statutory context

536. Part 4.15 of the EP&A Act requires that the Commission to consider the likely environmental impacts of the development on the built environment.
537. Clause 16 of the Mining SEPP requires the consent authority to consider whether consent should be issued subject to conditions relating to transport:

“(1) Before granting consent for development for the purposes of mining or extractive industry that involves the transport of materials, the consent authority must consider whether or not the consent should be issued subject to conditions that do any one or more of the following:

- (a) require that some or all of the transport of materials in connection with the development is not to be by public road,*
- (b) limit or preclude truck movements, in connection with the development, that occur on roads in residential areas or on roads near to schools,*
- (c) require the preparation and implementation, in relation to the development, of a code of conduct relating to the transport of materials on public roads.*

(2) If the consent authority considers that the development involves the transport of materials on a public road, the consent authority must, within 7 days after receiving the development application, provide a copy of the application to:

- (a) each roads authority for the road, and*

(b) the Roads and Traffic Authority (if it is not a roads authority for the road).

Note. Section 7 of the Roads Act 1993 specifies who the roads authority is for different types of roads. Some roads have more than one roads authority.

(3) The consent authority:

(a) must not determine the application until it has taken into consideration any submissions that it receives in response from any roads authority or the Roads and Traffic Authority within 21 days after they were provided with a copy of the application, and

(b) must provide them with a copy of the determination.

(4) In circumstances where the consent authority is a roads authority for a public road to which subclause (2) applies, the references in subclauses (2) and (3) to a roads authority for that road do not include the consent authority."

6.9.2 The Applicant's assessment of the traffic and transport impacts of the Project

538. The Applicant undertook a Traffic and Transport Impact Assessment (TTIA) as part of its EIS, which was revised as part of the RtS. Additional information, including on matters raised by the MSC regarding the distribution of the workforce and mine support services and existing road safety matters, was provided in the Supplementary RtS.

539. The Applicant states in its revised TTIA that the impacts on the traffic from the Project are overall manageable:

"...although there is a large percentage increase in daily traffic due to the Project traffic... the mid-block road capacity continues to operate at good levels of service, with ample spare capacity. The mid-block Level of Service... is based on the Cumulative weekday AM peak hour volumes, which represent the highest number of vehicles in a one hour period, including vehicles from background community traffic, other coal mines, quarry and the Project."

"Given the low amount of traffic generated by the Project over a daily and peak hourly period, and given the existing low volumes of traffic, only minimal impacts are foreseen on the surrounding road network. Road mid-block capacities and intersection performance on Bylong Valley Way, Upper Bylong Road and Wollar Road will continue to perform well within capacity with the introduction of Project traffic."

"It is proposed that Project related vehicle movements during both construction and operation be limited to travel during school drop off and pick up periods. Bylong Upper School closed in 2015. Project related travel impacts on Wollar Public School are negligible. School bus travel between Wollar and Mudgee would not coincide with shift start or end times and therefore no impacts to this bus service are envisaged."

"the Project will have a minimal impact on the surrounding road network in terms of road traffic, including the cumulative impacts with neighbouring mines. The Bylong Valley Way, Upper Bylong Road and Wollar Road will continue to operate within plenty of spare capacity and at more than reasonable levels of service throughout the life of the Project. Only small impacts to the operation of the Wollar Road/Ulan–Wollar Road and Wollar Road/Ulan Road intersections are anticipated during peak Project traffic periods."

540. The Applicant's EIS identified potential impacts to the Bylong Valley Way as a result of mine subsidence:

"Sections of Bylong Valley Way are predicted to experience maximum strains of 30 mm/m tensile and 25 mm/m compressive. These strains are predicted to result in cracking, heaving and stepping of the road surface." (p.141)

541. The Applicant's RtS concluded that the mine subsidence outlined in the EIS, listed as seven separate active subsidence events, can be effectively managed by the Applicant:

"It is further advised that, based on the current mine plan, the Bylong Valley Way will experience seven separate active subsidence events. One event from each longwall panel. Most of the events will be separated in time by a period of many months, proportionate to the time it takes for the longwall mining to pass beneath the road and continue to its finishing end of the current panel, before it then returns in the next longwall panel to pass underneath the road." (p.266)

"Mine subsidence impacts on Bylong Valley Way will be effectively managed by KEPCO to ensure that this road remains safe and serviceable during and after the extraction of the proposed longwall panels." (p.264)

"As recommended by MSEC (2015), the Project will develop and implement a subsidence management strategy prior to the influence of the proposed longwall panels on Bylong Valley Way. The planned management measures will be described in a PSMP, which will be developed by the Project in consultation with the MWRC and the Mine Subsidence Board." (p.274)

6.9.3 Department's consideration of the traffic and transport impacts of the Project

542. The Department's Preliminary Assessment Report concluded that the increase in traffic as a result of the Project could be safely accommodated on the local and regional road network, subject to the recommended conditions:

"The RMS and [Mid-Western Regional] Council both accept that the regional and local road network can accommodate the project, however this would be subject to addressing the findings of the road safety audit, a number of road upgrades and works and contributions towards road maintenance." (p.108)

"Based on KEPCO's traffic assessment, commitments proposed by KEPCO in response to RMS recommendations and the Department's recommended conditions, the increase in traffic as a result of the project could be safely accommodated on the local and regional road network." (p.111)

543. The Preliminary Assessment Report considered the capacity of the existing Sandy Hollow to Gulgong Railway Line to accommodate the Project and stated:

"... production forecasts from the project have already been accounted for within ARTC's 2015-2024 Corridor Capacity Strategy (the Corridor Strategy). Importantly, the Corridor Strategy shows that the existing line has sufficient capacity to include anticipated rail movements from the project over this period. The recently completed 2016-2025 Corridor Strategy (September 2016) includes Bylong in its prospective volumes over this period. The Department also notes that the Cobbora Coal Project is not proceeding, which was approved to transport 6 return train trips a day along the same rail corridor." (p.110)

6.9.4 Planning Assessment Commission's Review of the traffic and transport impacts of the Project

544. The PAC's Review Report raised the concern that Bylong Valley Way would potentially have both subsidence impacts and increased traffic as a result of the Project:

"The Commission is concerned about the ongoing management of subsidence impacts to the Bylong Valley Way from a public safety perspective. The Commission notes that the Bylong Valley Way is likely to experience an overall increase in traffic, including mine related traffic, and that the predicted levels of subsidence and surface cracking could have an impact on the safe operation of the Bylong Valley Way. The Commission notes subsidence impacts have been successfully managed in other road networks, including the Charlton Road, Hume Highway and Appin Road as referenced by the applicant. However, the Commission considers that for this to be successfully achieved, binding and comprehensive commitments need to be established and implemented relating to timely monitoring of impacts on the road surface attributable to subsidence and prompt remediation action to ensure road safety."

“The Commission also notes that the impacts of increased traffic movements in relation to school bus services was not considered in respect of heavy vehicles other than B-doubles. The applicant identified a significant change in the volume of heavy vehicle traffic, particularly between Mudgee and the project site, which has the potential to coincide with the operation of school bus services.”

6.9.5 Applicant’s assessment of the traffic and transport impacts of the Revised Mine Plan

545. The Applicant’s PAC Response Report stated that the Applicant has reached agreement with MWRC in relation to the contribution to road maintenance and road safety upgrades which address heavy vehicle traffic movements in relation to school bus services and a traffic management plan.

546. The Applicant’s assessment of the Revised Mine Plan stated that the following improvements and changes to traffic and transport impacts, would result in a reduction in light vehicles, marginal decreased deliveries, changes to peak operational year and marginally reduced rail movement:

“The Revised Mine Plan will result in the following improvements/changes to traffic and transport impacts:

- A marginally smaller operations workforce – therefore reduced light vehicles*
- Reduced production rates, and therefore a marginal decrease in deliveries for the open cut mining operations*
- Peak operational year for traffic movements will be shifted forward one year due to reduced open cut mine life*
- Marginally reduce rail movements over the life of the mine due to decreased tonnage recovered.”*

6.9.6 Department’s consideration of the traffic and transport impacts of the Project and Recommended Revised Project

547. The Department’s Final Assessment Report stated that the PAC’s concerns in relation to the traffic and transport impacts of the Project have been addressed through the agreement on funding arrangements with the MWRC for road and safety upgrades, and commitments by the Applicant for road dilapidation surveys during construction on the Bylong Valley Way.

548. The Final Assessment Report outlined other measures that had been undertaken to address the PAC’s Review Report including:

- the Applicant has increased funding arrangements with Muswellbrook Shire Council; and
- the Department has strengthened the recommended conditions, including the Traffic Management Plan to include measures on school bus hours and routes and manage heavy vehicle interaction during school bus hours.

549. In this regard, the Department’s Final Assessment Report states:

“KEPCO has increased its offer to Muswellbrook Shire Council (MSC) on safety upgrades along a 40 km length of Bylong Valley Way from a one-off contribution of \$40,000 up to \$267,700 (CPI indexed) to fund replacement of safety barriers along Bylong Valley Way within MSC (see Appendices E9-1 and E9-3). These costs are based on a road safety audit completed by MSC in 2015. KEPCO had previously based its funding contribution as a percentage of the total safety upgrade cost based on its share of traffic using the road.” (p.79)

“The Department has strengthened these recommended conditions by requiring KEPCO to schedule construction shift changes to avoid school bus hours and that relevant school bus service providers be consulted when preparing the Traffic Management Plan for the project.”

“An additional requirement has been included in the Traffic Management Plan that requires measures to be implemented to minimise and manage heavy vehicle interaction during school bus hours, for example, school bus routes and hours to be documented in the proposed heavy vehicle Journey Management Plans.” (p.80)

550. The Final Assessment Report did not provide further consideration of the capacity of the existing Sandy Hollow to Gulgong Railway Line to accommodate the Recommended Revised Project.
551. The Department's Final Assessment Report presented a range of Final Recommended Conditions to manage and/or minimise the traffic and transport impact in relation to subsidence on Bylong Valley Way, school bus routes, roadwork upgrades, road maintenance and the traffic management plan, set out on pages 71, 72 and 81 of the Final Assessment Report.

6.9.7 Public and Council submissions on the traffic and transport impacts of the Project and Recommended Revised Project

552. The community presented concerns about the impact of the Project on local road safety, highlighting that the local road network was not suitable for the volume or scale of the traffic associated with the development and construction of the Project:

"The proposed access to the mine site by heavy vehicles is limited to the Wollar Road. This road, in many places, is narrow and dangerous for road users. There is already mine-generated traffic with contractors travelling up from always at speed. The proposed investment in an upgrade of the road between Wollar and Ulan Road will not solve all the current safety problems or fix the poor conditions of the entire length of the road. The road is not suited to regular use by heavy vehicles, carrying 20 large, oversize loads, or two shift changes a day of mine workers. The cumulative cost of mine traffic on regional roads has been a major problem in the Mudgee area that will be further impacted if a fourth coal mine is added." (p.42)

"I understand that the Wollar Road is to be the main route for heavy vehicles in large. If the mining is approved I will have to navigate these over-sized vehicles with nowhere to pull off the road in many places. If the whole length of the road is closed 20 to get these large vehicles through there will be no assessment of the time other road users like myself will be held up. I will also have to deal with the traffic of two shift changes a day to and from Mudgee." (p.49)

553. During its meeting with the Commission, MWRC stated that road contributions for maintenance and upgrades have been agreed *"both through the Munghorn and also the Wollar, Bylong Valley Way intersection and the Bylong Valley Way between that and Upper Bylong, they have all been agreed - the scope and the contributions made"* such that the MWRC has *"a combination of KEPCO money as well as Black Spot money as well as council money towards the Munghorn upgrade and straightening which we're working on with the National Parks at the moment."* (p.5-6)
554. The Commission heard concerns from Muswellbrook Shire Council, speakers at the public meeting, and received written comments regarding the impacts of the Project and the Recommended Revised Project on local road system and rail transport. These concerns included the capability of the local road network to accommodate the traffic volume associated with the construction and operation of the project, the required road upgrades, the likely travel patterns of mine workers and the capability of the existing rail network to accommodate the coal from the Project.
555. During its meeting with the Commission, Muswellbrook Shire Council re-iterated concerns about the traffic impact assessment completed for the Project and the Recommended Revised Project and considered that there would be higher project-related traffic from the Upper Hunter than assumed in KEPCO's assessment. Muswellbrook Shire Council also provided a written comment dated 12 November 2018:

"Council is still of the firm view that should this project be approved, the majority of the mine's workforce is likely to reside in the Hunter, instead of the Mid-Western Regional Council area. That's indicated by the habits of existing mine workers who typically would board ... in close proximity to the mine and then travel by the Golden Highway and Bylong Valley Way to their permanent residence." (p.4)

"Bylong Valley Way would require significant upgrades and maintenance in order to render it safe for traffic that use or are otherwise associated with the project during its entire life cycle." (p.5)

556. The ARTC, in its submission to the Commission dated 22 November 2018, stated that “ARTC can confirm that these mechanisms, including the associated commercial aspects, can enable sufficient capacity to be established for the Bylong Coal Project in the context of the current Ulan line capacity strategy with relevant lead times.”

6.9.8 Commission’s considerations and conclusions of traffic and transport

557. The Commission recognises the concerns of MSC, that higher than expected traffic volumes and road use along the Bylong Valley Way may occur as a result of mine workers residing in or travelling from nearby areas. The Commission recognises that concerns were raised by the public relating to the impact of heavy vehicles on the local road network, specifically Wollar Road. The Commission accepts that the Applicant has increased funding arrangements with MWRC for road and safety upgrades as outline in paragraph 549. The Commission is of the view that the Department’s Final Recommended Conditions referenced by the Department in paragraphs 549 and 551 further address the traffic related concerns because they require the Applicant implement additional measures to manage heavy vehicle interaction which include the consideration of school bus hours and routes.
558. The Commission considers that the consequences of the Project and Recommended Revised Project’s impacts to transport could be managed with appropriate conditions. The Commission notes that the ARTC has considered the volume of product coal to be produced at the Project Site. The Commission accepts the ARTC’s confirmation that the current rail network has the capacity to accommodate the additional tonnage of product coal to be produced by the Project and Recommended Revised Project, as set out in paragraph 556.

6.10 Amenity – Air Quality

6.10.1 Statutory context

559. Under Clause 12AB (4) of the Mining SEPP, the following requirements for cumulative air quality level apply: “*The development does not result in a cumulative annual average level greater than 25 µg/m3 of PM10 or 8 µg/m3 of PM2.5 for private dwellings.*”

6.10.2 Applicant’s assessment of air quality impacts of the Project

560. The Applicant undertook an *Air Quality and Greenhouse Gas Impact Assessment* in Appendix O Air Quality and Greenhouse Gas and Appendix P Air Quality Peer Review. The EIS outlined that the air quality management measures, controls and commitments were based on the *NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining (2011)*, a study commissioned by the NSW EPA.
561. The Applicant concluded in the EIS that the results of the dispersion modelling indicated that the Project is not predicted to “*contribute to exceedances of the relevant air quality criteria at any private receivers (either due to the Project alone, or cumulatively).*”

6.10.3 Department’s consideration of air quality impacts of the Project

562. The Department’s Preliminary Assessment Report outlined the air quality assessment that was undertaken by the Applicant in relation to the Project. This assessment included taking into consideration the dust (particulate matter) associated with construction and mining operations, blast fume emissions (NO₂), diesel emissions, odour and other fumes associated with spontaneous combustion and emissions associated with off-site rail haulage. The cumulative contributions from the Wilpinjong mine, approximate 25 km west of the Project, were also considered.
563. The Department described the “*proactive air quality management system*” that the Applicant proposed to implement, which, according the Preliminary Assessment Report, used a combination of real-time dust monitoring and weather forecasting to prevent air quality impacts during adverse weather conditions “*as far as practicable*”.
564. The Preliminary Assessment Report included the predicted worst-case dust impacts on p.36 in Table 5 entitled “*Worst Case Dust Predictions (cumulative unless otherwise noted)*”. This showed exceedance of dust criteria would affect Applicant owned land and small areas of Crown land.

565. The Department included recommended conditions which required the Applicant to develop a comprehensive Air Quality Management Plan and an active management system, to independently investigate air quality exceedances and to publicly report on its environmental performance.

6.10.4 Planning Assessment Commission's Review of air quality impacts of the Project

566. The PAC Review Report noted that the Department had provided a comprehensive review of air quality, blasting and noise impacts resulting from the Project and had recommended many matters be dealt with post-approval. The PAC raised the following concerns about air quality as part of its review:

"It appears to the Commission that there is residual uncertainty around the:

- mitigation measures that could reasonably be deployed to minimise diesel emissions (as raised by the EPA);*
- suitability of background data used in the air quality model;*
- noise and air quality impacts that approach the limits of acceptability for receivers that have not been nominated under the VLAMP for acquisition, particularly Cherrydale Park.*

The Commission notes the Department recommended proactive and predictive management of amenity impacts. However, it appears to the Commission that these residual uncertainties could be remedied before a decision is made about the project, or alternatively, in relation to air and noise impacts, could be the subject of a more cautious approach in the application of the VLAMP."

6.10.5 Applicant's assessment of air quality impacts of the Revised Mine Plan

567. The Applicant in its Response to the PAC Review Report stated that the Applicant had since held meetings with the EPA to discuss the findings of the PAC Review Report. The Applicant also highlighted previous correspondence with the NSW EPA which the Applicant stated resolved the matters referenced in the PAC Review Report. This was set out in a letter to the NSW EPA from the Applicant dated 17 January 2018 included in Appendix O.

6.10.6 Department's consideration of air quality impacts of the Recommended Revised Project

568. In the Final Assessment Report, the Department recommended the following revisions to its earlier proposed recommended conditions to address the PAC's findings set out at paragraph 566 above and the Applicant's Response to the PAC Review Report:

"the Air Quality Criteria: Revised to adopt the current EPA approved methods ambient air quality criteria for PM10 and PM2.5;

Air Operating Conditions: additional requirement included to address EPA 's advice to apply Tier 4 USEPA standards for non-road diesel for equipment commissioned into service after 30 June 2020." (p.90)

569. The Department's Final Assessment Report states that the Department sought advice from the EPA on the PAC's findings on the air quality impact assessment and Final Recommended Conditions based on the EPA's advice. The Department also noted that since the EIS was completed the Applicant had acquired additional properties:

"The Department requested the EPA to provide advice on the Commission's findings on the air quality impact assessment. The EPA did not raise any further residual concerns about the air quality assessment apart from measures to minimise diesel emissions and recommended conditions, as discussed above.

The Department also notes that since the EIS was completed, KEPCO has acquired additional properties around the mine and with the Revised Mine Plan there is a significant decrease in peak dust emissions from the open cut stage along with a one year reduction in open cut mining operations." (p.84-85)

570. The Department's Final Assessment Report also considered the Revised Mine Plan and the mitigation measures to minimise diesel emissions and concluded that:

"The Revised Mine Plan has significantly reduced peak particulate emissions with an estimated reduction in PM_{2.5} of 48%, compared to the EIS Mine Plan, as shown in Table 23 below. The largest contribution is due to reduced haulage lengths, providing 34% of the reduction in total emissions.

The Department also notes that the overall PM_{2.5} emission reduction of around 76,000 kg/year due to the Revised Mine Plan is significantly higher than moving from USEPA Tier 2 to Tier 4 diesel emissions, noting that the total peak diesel emission contribution is only around 13,700 kg/year.

The Department considers that it is reasonable that KEPCO is required to minimise its diesel emissions in line with the industry-wide approach proposed by the EPA." (p.83-84)

6.10.7 Public and Council comments on air quality impacts of the Recommended Revised Project

571. The Commission heard concerns from speakers at the public meeting and received written comments regarding the impacts of the Recommended Revised Project on air quality. These concerns included PM₁₀ and PM_{2.5} particles in the air, air pollution, Scope 1 and 2 greenhouse gas emissions, the impact of dust from the mine on nearby residences, and public health including allergies, illness and death.
572. The Commission did not receive any comment or written submission from any Council on the matter of air quality.

6.10.8 Commission's consideration of air quality impacts

573. Based on the Material, the Commission finds that the air quality impacts resulting from the Project and the Recommended Revised Project are acceptable because:
- the Department and the Applicant have undertaken further consultation with the EPA as described in paragraph 569;
 - the Department's Final Recommended Conditions reflect best practice and are in line with the industry-wide approach proposed by the EPA, as outlined in paragraph 569;
 - neither the Project nor the Recommended Revised Project are predicted to contribute to exceedances of the relevant air quality criteria at nearby sensitive receivers; and
 - impacts on air quality could be effectively managed through the Department's Final Recommended Conditions.

6.11 Amenity - noise and blasting

6.11.1 Statutory context

574. The relevant noise and blasting Clause 12AB development standards from the Mining SEPP are:

"(3) Cumulative noise level

The development does not result in a cumulative amenity noise level greater than the recommended amenity noise levels, as determined in accordance with Table 2.2 of the Noise Policy for Industry published by the Environment Protection Authority, for residences that are private dwellings."

"(5) Airblast overpressure

Airblast overpressure caused by the development does not exceed:

(a) 120 dB (Lin Peak) at any time, and

(b) 115 dB (Lin Peak) for more than 5% of the total number of blasts over any period of 12 months,

measured at any private dwelling or sensitive receiver.

(6) Ground vibration Ground vibration caused by the development does not exceed:

(a) 10 mm/sec (peak particle velocity) at any time, and

(b) 5 mm/sec (peak particle velocity) for more than 5% of the total number of blasts over any period of 12 months,

measured at any private dwelling or sensitive receiver.”

575. The Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Developments, dated 15 December 2014, is the NSW Government's policy for voluntary mitigation and land acquisition to address noise and dust (particulate matter) impacts from State significant mining, petroleum and extractive industry developments.

6.11.2 Applicant's assessment of noise and blasting impacts of the Project

576. As part of its EIS, the Applicant commissioned Pacific Environment Limited to undertake a *Noise and Blasting Impact Assessment* (the **Noise Assessment**); and Bridges Acoustics to undertake a peer review of the Noise Assessment, *Peer Review of Bylong Coal Project – Final Review of Noise and Blasting Impact Assessment Report* (the **Noise Peer Review**).

577. The Noise Assessment identified the key potential noise issues for the Project as:

- noise generated by construction and operation activities;
- blasting overpressure and vibration; and
- rail and road traffic noise.

578. In regard to noise generated by construction activities, the Noise Assessment concluded that:

“With respect to construction noise and vibration, the assessment considered five construction scenarios, including mine infrastructure, road upgrades and realignments and the start of mining operations.

The installation of structures (scenario 2) and the realignment of Upper Bylong Road (scenario 4), did not predict exceedances of the INP or the ICNG criteria and therefore impacts are considered negligible. During earthworks for mine infrastructure (scenario 1), one receiver (receiver 69) was predicted to be moderately impacted and at all other receivers, the impacts were negligible.

During the upgrade of Upper Bylong Road (scenario 3), exceedances of the ICNG construction noise management levels were predicted at up to five receivers (receivers 60, 63, 65A, 68 and 69) when works were at their closest to Bylong Village. When works were at their furthest, compliance with the noise management levels was predicted.

During mine establishment and stripping activities (scenario 5) compliance with the INP goals was predicted under neutral conditions during the day and night. Under adverse conditions during the day, moderate impacts were predicted to receiver 69 and 60. During the night, significant impacts predicted at receiver 69 and moderate impacts at receivers 60, 65A, 63 and 68 similar to the Year 3 operational noise impacts.

No receivers are predicted to be highly noise affected (noise levels of 75 dB(A) or above) for any of the construction scenarios.” (p.76)

579. In regard to noise generated by operation activities, the Noise Assessment concluded that:

- *“Initial noise predictions indicated significant noise impacts and the need to investigate noise mitigation options.*

- Feasible and reasonable mitigation measures were investigated to reduce noise impacts at receivers. The adopted mitigation measures include:
 - o Mitigation for selected fixed and mobile plant.
 - o Alteration of operations during day and night under adverse meteorological conditions whilst the NW OEA is in operation in the Year 3 scenario.
- The implementation of the mitigation measures reduced noise levels by up to 3 dB(A) at the most affected receivers.
- With the mitigation measures, three receivers were predicted to be significantly impacted, including receiver 60, 63 and 69 to the north of the project. An additional six receivers were predicted to be moderately impacted, including receivers 56, 58, 65A 68 to the north and receiver 141 to the south east. As open cut mining progresses south, noise levels reduced at receivers to the north and moderately impact an additional two receivers to the south, namely receivers 151 and 158.
- At-property mitigation measures or acquisition rights applied under the DP&E VLAM Policy is recommended for the residual significantly and moderately impacted receivers.
- Low frequency noise levels were predicted to be within acceptable levels.
- Sleep disturbance impacts were predicted at one receiver (receiver 69). This receiver is significantly impacted by operational noise and the measures implemented for operational noise would be sufficient to control sleep disturbance impacts." (p.76)

580. In regard to blasting overpressure and vibration, the Noise Assessment concluded:

"The blasting assessment indicated that no privately owned receivers were predicted to be impacted by blast vibrations or overpressure levels in excess of the guideline limits.

Predicted vibration and overpressure levels for heritage items indicated exceedance at Tarwyn Park Harley Hill Cottage, Swiss Cottage and Cottage Chimney Remains where blasting occurs in the adjacent Eastern Open Cut. A Blast Management Plan would be required to detail suitable blast management to meet blast limits at the heritage receivers.

Predicted vibration and overpressure levels also indicated that the guideline levels would not be exceeded for rock escarpments." (p.77)

581. In regard to rail and road traffic noise, the Noise Assessment concluded that:

"The rail noise assessment indicated that rail movements caused by the project would increase noise levels at receivers along the Bylong to Mangoola and Bengalla to Muswellbrook sections of the track. The assessment considered the impact of Project generated movements with both existing movements and existing and approved movements. The assessment concluded the following:

- On the Bylong to Mangoola section, up to three additional receivers would be impacted as a result of the Project compared with existing movements and up to four additional receivers compared with the existing and approved movements.
- On the Bengalla to Muswellbrook section, up to four additional receivers would be impacted as a result of the Project compared with existing movements and no additional receivers compared with the existing and approved movements.

The requirement and provision to provide mitigation is not generally borne from one user of the track and would be subject to further investigation and consideration by ARTC.

The road traffic noise assessment indicated that project related traffic is expected on Wollar Road, Upper Bylong Road and Bylong Valley Way, with the majority of traffic expected to travel on Wollar Road to access the Project. The assessment indicated that increases in traffic noise would be within acceptable limits for construction and operational stages of the Project." (p.77)

582. The Noise Peer Review concluded that:

"The review indicated all results and conclusions presented in the Bylong Coal Project - Noise and Blasting Impact Assessment are appropriate and can be considered to reliably indicate the acoustic impacts likely to occur from the Bylong Coal Project."

6.11.3 Department's consideration of noise and blasting impacts of the Project

583. The Department's Preliminary Assessment Report noted that EIS included a noise assessment undertaken in accordance with applicable guidelines including the *NSW Industrial Noise Policy (INP)*, the *Interim Construction Noise Guideline (ICNG)*, the *NSW Road Noise Policy (RNP)* and the *Rail Infrastructure Noise Guideline (RING)*.

584. In relation to cumulative noise the Department's Preliminary Assessment Report stated that the noise assessment *"considered the cumulative noise impacts of the project together with surrounding industrial land uses. The assessment found that there is no significant industrial or mining noise source within the vicinity of the project that could contribute to cumulative noise impacts, and therefore that cumulative impacts are not expected"*

585. In relation to operational noise, the Department's Preliminary Assessment Report stated that:

"a total of 9 privately-owned receivers (owned by 6 landowners) would experience noise levels above the PSNL criteria at some stage during the project. The exceedances generally occur during the open cut mining stage only, although a marginal exceedance (ie. 1 dBA) is predicted for 2 of the receivers near Bylong village during underground mining operations."

"In circumstances where the acquisition and mitigation criteria are likely to be exceeded, the VLAMP encourages mining companies to either acquire the property or reach an agreement with the affected landowners. In this case, the Department considers that KEPCO should use its best endeavours to acquire or reach a negotiated agreement with the owners of Receiver 58 and 60 prior to the determination of the project"

586. In relation to low frequency noise (**LFN**), the Department's Preliminary Assessment Report stated that:

The EPA initially raised concerns about the assessment of low frequency noise (LFN) in the EIS, commenting that the assessment was not undertaken strictly in accordance with the INP, and recommending that the noise predictions should have adopted a modifying factor for LFN. The Department stated the Applicant provided a revised assessment of LFN and the EPA confirmed that it accepts the assessment as being consistent with the current science.

587. In relation to construction noise, the Department's Preliminary Assessment Report stated that:

"Based on the noise impact assessment, the construction noise impacts associated with the project are able to be effectively managed subject to the implementation of such best practice measures. The Department has recommended conditions requiring KEPCO to implement best practice measures, to detail them in the Noise Management Plan, and to restrict the Bylong Road upgrade works to the daytime period.

588. In relation to traffic noise, the Department's Preliminary Assessment Report stated that:

"The assessment indicates that traffic noise at all privately-owned receivers would comply with the applicable absolute and relative increase criteria at all times, with the exception of a small exceedance of the night-time relative increase criterion at one receiver location (i.e. Receiver 44) if the WAF is not constructed. Receiver 44 is located on Wollar Road to the north of the site, and to the north of the proposed WAF".

589. In relation to rail noise, the Department's Preliminary Assessment Report stated that:

"The noise assessment includes an assessment of rail noise on the Sandy Hollow - Gulgong Railway, which found that the project would increase noise levels at receivers in the vicinity of the railway line by less than 2dB at all privately-owned receivers, which indicates that the increase is unlikely to be perceptible. However, the assessment indicates that the increase would result in the total rail noise levels exceeding the absolute criteria in the EPA's Rail Infrastructure Noise Guideline (i.e. 65 dBA during the daytime and 60 dBA during the night time) at some residences, including 3 residences in Denman and one in Muswellbrook"

590. In relation to blasting activities, the Department's Preliminary Assessment Report concluded that:

"The proposed blasting activities would comply with relevant amenity guidelines for residential receivers and are therefore unlikely to result in any material impacts on built structures on privately-owned residential land."

"There are a number of historic heritage buildings, Aboriginal sites and rock features located within or adjacent to the project boundary that have the potential to be impacted by blasting activities."

"The assessment found that predicted vibration and overpressure levels would likely exceed the adopted criteria for a number of heritage buildings and sensitive features, even when applying the lowest modelled MIC"

591. The Department's Preliminary Assessment Report concluded that *"[b]lasting and blast-related operations can be readily managed to meet the applicable amenity and structural damage criteria at all surrounding private residences and infrastructure, subject to implementation of strict blast management measures"* and *"[b]lasting is also unlikely to significantly affect the heritage values of the locality, but has the potential to impact some heritage items in the vicinity of the mine, including on the Tarwyn Park property"*.

6.11.4 Planning Assessment Commission's Review of noise and blasting impacts of the Project

592. In regard to the noise impacts of the Project, the PAC Review Report noted:

"...the Department recommended several residual matters be dealt with in post-approval arrangements. However, the suitability of this approach will require careful consideration before a decision is made about the project. It appears to the Commission that there is residual uncertainty around the..."

- incomplete analysis of the low frequency noise spectrum and third octave bands under the modified UK Department of Environment, Food and Rural Affairs' method of assessment; and*
- noise and air quality impacts that approach the limits of acceptability for receivers that have not been nominated under the VLAMP for acquisition, particularly Cherrydale Park.*

The Commission notes the Department recommended pro-active and predictive management of amenity impacts. However, it appears to the Commission that these residual uncertainties could be remedied before a decision is made about the project, or alternatively, in relation to...noise impacts, could be the subject of a more cautious approach in the application of the VLAMP." (p.29)

593. In regard to the blasting impacts of the Project, the PAC Review Report noted:

"The Commission is concerned about the Department's recommended approach to blast impacts on heritage features and sensitive sites, including Tarwyn Park. It appears to accept either blast specifications that will not cause impacts, or blast specifications that are likely to cause impacts, provided any subsequent damage is remediated. This either/or approach will require careful consideration before a decision is made about the project, particularly in light of the potential for Tarwyn Park to be judged to have greater heritage significance than previously thought. If damage is to be permitted to occur by way of a management plan, the particulars of likely damage and proposed remediation measures ought to be available to the determining authority and not simply deferred to post approval arrangements." (p.29)

6.11.5 Public comments on noise and blasting impacts of the Recommended Revised Project

594. The Commission heard concerns from speakers at the public meeting and received written comments regarding the noise impacts of the Recommended Revised Project. These concerns included statements that:

"The three operating mines to the west of Bylong have acquired many more private properties in the region than first identified, because they were unable to manage noise emissions to satisfy their conditions of approval.....Bylong Valley has an unmeasurable background noise level, it is so quiet. The sound from multiple mining machines and the coal handling plant, operating 24 hours a day, will invariably travel much further than predicted." (p.39)

"I live on a small property between Wollar and Bylong with my husband and sister. We have been braving the impact... for ... we can hear them at home and it disturbs our sleep even though we live over 10 kilometres away. We are also disturbed by the noise... especially at night." (p.49)

6.11.6 Applicant's assessment of noise and blasting impacts of the Recommended Revised Project

595. As part of its Supplementary Information Report, the Applicant commissioned ERM to undertake an assessment of the Revised Mine Plan, the *Noise and Blasting Impact Assessment Revised Mine Plan* (the **Noise Report Addendum**). The Noise Report Addendum:

"...details the findings of an assessment of the potential noise and blasting impacts associated with contracting the open cut mine plan associated with the Project..." (p.15)

596. In regard to noise, the Noise Report Addendum concluded that:

"As a result of the Revised Mine Plan, mining operations are generally shifted further south which results in slight reductions in noise impacts are predicted for receivers to the north of the Project. When comparing the overall predicted noise levels against the PY3 operations within the EIS NBIA, noise levels at impacted receivers have reduced on average by 1 dB.

At receivers located to the south and east of the Project, noise levels have remained consistent with noise levels previously predicted for PY5 and following years mining operations.

With regard to privately owned land subject to land acquisition in accordance with DPE VLAMP, this NBIA has confirmed that receiver 60 is no longer predicted to be significantly impacted by noise from the Project and is now predicted to experience moderate noise impacts. Receiver 58 and Receiver 60 are the only remaining receivers to experience moderate noise impacts as a result of the Revised Mine Plan for the Project. Receivers 56, 57A and 57C are predicted to experience negligible noise impacts (consistent with the EIS mine plan) as a result of the Revised Mine Plan for the Project." (p.15)

597. In regard to blasting, the Applicant concluded in the Noise Report Addendum that:

"The contraction to the footprint of the Eastern Open Cut mining area has enabled the Former Bylong Catholic Church & Cemetery to be retained throughout the life of the Project. Predicted blasting impacts at the church and cemetery is predicted to be below the 15mm/s vibration and/or 133dB overpressure criteria for heritage receivers. Additionally, blast impacts at the Tarwyn Park Homestead and Stables are significantly reduced when compared to impacts presented in the EIS with vibration and overpressure levels now below the criteria for heritage receivers for all blast MIC [maximum instantaneous charge] scenarios assessed. Negligible blasting impacts will occur to Aboriginal heritage items due to the project disturbance boundary only comprising of surface artefact sites. Which will be managed in accordance with the Aboriginal Heritage Management Plan to be development for the Project.

Accordingly, blast impacts will be able to be appropriately designed and managed to ensure that these items are not structurally compromised." (p.15)

6.11.7 Department's consideration of the noise impacts of the Recommended Revised Project

598. In regard to noise, in its Final Assessment Report the Department concluded:

- five privately-owned receivers are predicted to exceed the Project Specific Noise Level (**PSNL**) during the open cut phase of the Recommended Revised Project; and
- one receiver is predicted to exceed the PSNL during the underground phase of the Recommended Revised Project.

599. Additionally, the Department considered the Recommended Revised Project would reduce the noise impacts at the worst affected receiver, Eagle Hill:

"The Revised Mine Plan has also reduced the predicted noise impact at the Eagle Hill residence.... Additional noise modelling of the peak Year 5 impacts, containing open cut operations in the eastern and western open cut areas was undertaken, with a reduction of 1dB(A) at residence ID60."

"In accordance with the VLAMP, the Department now recommends that mitigation rights rather than acquisition rights be afforded to Eagle Hill and that the predicted noise limits in Table 22 apply at the property."

"In this regard, it is important to note that the noise levels would remain below the EPA's recommended 'acceptable' night-time noise amenity criterion of 40 dBA ^{L_{aeq} night period} for a rural area, as defined under the Industrial Noise Policy (INP) which continues to apply to the project. This also applies to the current Noise Policy for Industry." (p.82)

600. The Department concluded that the predicted noise is acceptable in line with the Industrial Noise Policy (**INP**) and recommended conditions to provide safeguards for monitoring and managing noise. Additionally, under the recommended conditions two receivers are afforded mitigation rights under the VLAMP.

601. The Department considers that the recommended conditions would manage the noise impacts at the privately-owned receivers:

"The recommended conditions require KEPCO to strictly comply with strict noise criteria, inclusive of any noise penalties. This includes requirements to incorporate real time noise monitoring, including investigation and action triggers to modify or cease operations as necessary to ensure compliance. This is a standard proactive management approach used effectively at mining operations in NSW."

"In the unlikely event that during attended noise monitoring a noise penalty applied that caused an exceedance of noise criteria at a private receiver, then KEPCO would be required to undertake actions to ensure compliance. That is, there is no uncertainty about KEPCO's obligation to comply with the noise limits and enforcement of these conditions." (p.83)

602. In its submission dated 21 February 2018, the EPA supported the Department's conclusion and states:

"The draft conditions as contained in the Department's Preliminary Assessment Report are relevant and appropriate."

"The Report states that the modified DEFRA [UK Department for Environment, Food and Rural Affairs] approach for low frequency noise can be achieved with the current proposal. We reproduce below an excerpt from DP&E's Preliminary Assessment Report (dated March 2017, Section 6.1, p.46), which confirms EPA's satisfaction with the proponent's assessment of the modified DEFRA curve for low frequency:

"KEPCO subsequently provided a revised assessment of the LFN [Low Frequency Noise] using the DEFRA method. The EPA has confirmed that it accepts this assessment as being consistent with the current science'. The DEFRA method assessment also found that LFN levels would comply with the applicable DEFRA criteria at all privately-owned receivers." (p.2)

603. Further in its submission dated 21 February 2018, the EPA noted that it was satisfied with the Applicant's assessment of Low Frequency Noise (LFN) in its Noise Report Addendum using the modified UK Department for Environment, Food and Rural Affairs (DEFRA) approach. The Applicant's assessment showed that no LFN penalty would apply at private receivers.
604. However, while the EPA was satisfied with the Applicant's LFN assessment, it noted that as no LFN modifying factor was predicted to apply to the noise levels that if an LFN penalty subsequently did apply during operations, that the Applicant should make adequate contingency arrangements.
605. In regard to blasting, in its Final Assessment Report the Department concluded:
- "...the Revised Mine Plan now substantially increases the distance of blasting to the Tarwyn Park homestead and stables such that the blast criteria for overpressure and ground vibration are comfortably met at the highest blast charge proposed (maximum instantaneous charge MIC of 3,500 kg), without requiring significant changes to the blast design near these heritage items. That is, blasting impacts are unlikely to occur based on the predicted overpressure and ground vibration levels." (p.85)*

6.11.8 Commission's consideration of noise and blasting impacts

606. The Commission notes that the PAC raised concern in paragraphs 592 and 593 regarding the Project's impacts of blasting on *"heritage features and sensitive sites, including Tarwyn Park"*. However, the Commission accepts the Applicant's findings and Department's conclusion in paragraphs 597 and 605 that the blasting impacts of the Project Recommended Revised Project are now significantly reduced and are below the relevant criteria.
607. The Commission has considered the assessment of the noise impacts of the Recommended Revised Project in both the Department's Final Assessment Report and the Applicant's Noise Report Addendum. The Commission accepts the Department's conclusion in paragraph 600 that the predicted noise of the Recommended Revised Project is acceptable in consistent with the INP and that the recommended conditions provide appropriate safeguards for monitoring and managing noise. The Commission accepts the Department's conclusion that under the recommended conditions two receivers are afforded mitigation rights under the VLAMP.
608. Based on the Material the Commission finds that the noise and blasting impacts resulting from the Recommended Revised Project would be acceptable with the Department's Final Recommended Conditions.

6.12 Visual Impact

6.12.1 Statutory context

609. Part 4.15 of the EP&A Act requires that the Commission to consider the likely environmental impacts of the development on the natural environment.

6.12.2 Applicant's assessment of visual impacts of the Project

610. The Applicant undertook a Visual Impact Assessment (VIA) as part of its EIS, which was reviewed and clarified as part of the RtS. Additional consideration of the landscape impacts were considered by the Applicant as part of their assessment of the impacts associated with the revised mine plan and contained within the Review Response, including the *Draft Historic Heritage Management Plan*.
611. The VIA identified that the visual impact of the Project was determined by considering both visual effect from the development and visual sensitivity of the impacted visual catchments. The VIA identified six distinct Landscape Character Units (LCU) which comprised the Primary Visual Catchment (PVC) for the Project site, including forested hills and ridges, undulating pastoral lands, flat pastoral lands, irrigated grazing / agricultural lands, creeks and rivers and Bylong Village.
612. The VIA summarised that:

“There are a number of residencies that will have a high sensitivity to views of the various project elements due to proximity and the openness of the landscape in the locality. However the majority of these have been acquired by KEPCO therefore significantly reducing the sensitivity of the impacted views from these receptor locations....

The remaining private freehold rural residencies including Tinka Tong to the northwest and one property (141) in the Eastern view sector have high to moderate sensitivity to views of the Project elements....

Generally localised vegetation and topography also provides screening to views of the Project elements from other sensitive receptors around the Project.”

6.12.3 Department's consideration of visual impacts of the Project

613. The Department's Preliminary Assessment Report stated that:

“The Department recognises that the project would result in some changes to the visual landscape of the Bylong Valley. However, the Department notes that these impacts would be relatively localised, with the project elements generally hidden from view of the receivers with the highest visual sensitivity (including Bylong village, most rural residences and Bylong Valley Way). The Department also acknowledges KEPCO's commitment to minimise visual impacts, particularly though the backfilling of the open cut voids, promptly rehabilitating the emplacements, and avoiding subsidence of key cliff lines”.

614. The Department stated in the Preliminary Assessment Report that in order to minimise residual visual and lighting impacts of the Project on receivers as far as practicable, the following conditions have been recommended requiring the Applicant to:

- *“implement additional visual mitigation measures to reduce the visibility of the mine operations on privately-owned receivers that have direct views of the mining operations, at the request of the landowner;*
- *notify relevant land owners of their entitlement to additional site-specific visual assessment and landscaping treatments;*
- *undertake screening along affected roadsides as soon as possible; and*
- *implement all reasonable and feasible measures to reduce visual impacts.”*

6.12.4 Planning Assessment Commission's Review of the visual impacts of the Project

615. The PAC Review Report stated *“concern about the significance of the visual impacts on valley. The evaluations and estimates of the risks of impacts to a greenfield location are, by necessity, speculative. There is a potential for these impacts to be more severe than predicted.”*

616. The PAC also noted that the *“direct and diffuse light impacts may not have been considered against the NSW Government's Dark Sky Planning Guideline”.*

6.12.5 Applicant's Assessment of visual impacts

617. In its response to the PAC Review Report, the Applicant stated that:

“The mine layout and plan has been purposefully designed to minimise visual impacts by placing open cut mining areas and infrastructure behind existing vegetation, hills and ranges. Additional screening will be implemented to augment the visual barriers created by existing topography and vegetation. The Project's open cut mining operations will be seen from approximately 0.6% of the publicly accessible Bylong Landscape Conservation Area, with the rehabilitation of disturbed areas at the completion of open cut mining in Project Year 10 further reducing impacts to the rural character of the local area. A 3D interactive model has been developed which vividly and realistically illustrates the minimal impacts the Project will have on the greater Bylong Landscape Conservation Area.”

618. The Applicant also discusses the location of the Project in its Response to PAC Report:

“The Upper Bylong Valley, within which the Project is proposed, is located within the narrowing confines of the south eastern reaches of the Bylong Valley. It is a partly secluded valley and not visually accessible from the surrounding areas within the wider Bylong Valley.”

619. In relation to the closest residences in the areas of the Applicant mostly owns the Project boundary and the surrounding properties and stated in its response that:

“The Project Boundary and the surrounding properties are also mostly owned by KEPCO, with limited public access (apart from the East Link Road, Wooleys Road and areas of Crown Land) during the life of the Project. Therefore, the visual impacts of the Project on the significance of the BLCA will be negligible to the general public. Whilst the conceptual final landform represents a modified landscape, the establishment of a landform which visually integrates with the surrounding lands (with no final void) and is capable of supporting pastoral activities will ensure that the impacts to the BLCA post mining are negligible. The potential visual impacts of the Project on the wider BLCA have been assessed as low. This is mainly due to the layout of the Project being consciously designed to use the existing topographic and vegetation features (including ranges, mountains and woodland vegetation) to shield the majority of open views from Bylong Valley Way and other public locations. The views of the open cut mining areas from publicly available locations is limited to only 0.6% of the larger BLCA, as determined by the Seen View Analysis completed for the Project (refer to Appendix S).”

6.12.6 Public comments on visual impact

620. The Commission heard from speakers at the public meeting and received written comments regarding potential visual impacts from the Recommended Revised Project. Issues raised included:
- visual impacts associated with mining and the overburden emplacement as mining progresses closer to properties south of Jerrys Plains;
 - potential for light spill as a result of mining operations; and
 - impacts of mining infrastructure and voids.

6.12.7 Department's assessment on the Project and Recommended Revised Project

621. In its Final Assessment Report, the Department stated that the Project had *“Low visual impacts in Bylong Village, High visual impacts for one receptor, now acquired by KEPCO, Moderate to high visual impacts for limited views from Bylong Valley Way and Wollar Road, Impacts of the eastern overburden emplacements area on Tarywn Park viewsheds to Gowee Range and Upper Lee Creek Valley.”*
622. The Department stated that the Recommended Revised Project had *“...significantly reduced visual impact for views across the Upper Bylong Valley/Lee Creek Valley from the Tarwyn Park farm complex. Improved integration of overburden emplacements with existing forested ridgelines and landscape features. Open cut mine disturbance reduced by one year”.*
623. The Department concluded in the Final Assessment Report that *“With the additional acquisitions by KEPCO within the Upper Bylong Valley and Lee Creek, there are no residences with significant direct views. The Department has removed the recommended conditions from the PAR for additional off-site mitigation measures and notification requirements”.* The Department's Final Recommended Conditions set out requirements to establish and maintain roadside vegetative screens along the upgraded Bylong Road.

6.12.8 Commission's consideration of visual impact

624. The Commission finds that suitable mitigation measures have been proposed by the Applicant to address the potential visual impacts of the Project and Recommended Revised Project on surrounding residences because:
- the Project Site is adjacent to properties that are mostly owned by the Applicant;
 - the Project and Recommended Revised Project are generally not visible from surrounding areas within the wider Bylong Valley; and

- in light of the Applicant's evidence that the Project and Recommended Revised Project's open cut mining operations would be seen from approximately 0.6% of the publicly accessible BLCA.

625. The Commission finds that the Department's Final Recommended Conditions are reasonable and appropriate as they will assist in minimising the visual impacts of the Project and Recommended Revised Project via establishing and maintaining road side vegetative screens along the upgraded Upper Bylong Road as set out in paragraph 623.

6.13 Natural environmental impacts - subsidence

6.13.1 Statutory context

626. Part 4.15 of the EP&A Act requires that the Commission to consider the likely environmental impacts of the development on the natural environment.

6.13.2 Applicant's assessment of subsidence impacts of the Project

627. As part of its EIS, the Applicant commissioned:

- Mine Subsidence Engineering Consultants (**MSEC**) to undertake a *Subsidence Ground Movement Predictions and Subsidence Impact Assessment* for all natural features and surface infrastructure (the **Subsidence Assessment**); and
- SCT Operations Pty Ltd to undertake a peer review of the Subsidence Assessment, *Peer Review – Bylong – MSEC Subsidence Predictions and Impacts Assessment* and a *Peer Review of Finalised MSEC Subsidence Report* (collectively the **Subsidence Peer Review**).

628. The Subsidence Assessment assessed a Subsidence Study Area that covers an area of approximately 1,714 ha and is defined as:

"...the surface area within the predicted limit of vertical subsidence, determined by the greater of the 26.5 degree angle of draw from the limit of the proposed secondary extraction and the predicted 20 mm subsidence contour resulting from the extraction of the proposed longwalls." (p.ii)

629. The Subsidence Assessment identified a number of natural and built features in the Subsidence Study Area, including "streams, cliffs, steep slopes, local roads, drainage culverts, powerlines, copper telecommunications cables, a quarry, rural building structures, farm dams, archaeological sites, and survey control marks." (p.ii)

630. As summarised in the Applicant's EIS, the Subsidence Assessment concluded that:

"Subsidence related surface impacts such as surface cracking and deformations in the landform may potentially affect safety and access or result in environmental impacts (such as increased erosion)..."(p.52)

631. The Applicant has proposed a number of measures to monitor and mitigate subsidence, as summarised in the EIS:

"Monitoring of subsidence related surface impacts will be undertaken during and following the extraction of each longwall panel to identify impacts which require remediation and to validate subsidence predictions. Remediation techniques will include infilling of surface cracks with soil or other suitable materials, or by locally regrading and compacting the surface. In some cases, erosion protection measures may be needed, such as the regrading and planting of vegetation in order to stabilise the slopes created within subsided areas." (p.52)

632. The Subsidence Peer Review concluded that:

“...the report by MSEC provides adequate discussion on effects, impacts, increased impacts and mitigation measures as detailed in the scope. For some features that have been outlined in the Gateway Conditions and SEARs, such as equine land use and transport, it may be beneficial to expand the discussion on effects and mitigation measures described in the review.” (p.10)

“the MSEC report is considered to be a comprehensive assessment of the likely impacts on cliffs and steep slopes. The findings are consistent with the author’s experience of observing and monitoring mining impacts on cliff formations in the Western Coalfield of NSW.” (p.15)

6.13.3 Department’s consideration of the subsidence impacts of the Project

633. The Department’s Preliminary Assessment Report stated that:

“The subsidence effects would result in some surface cracking within the subsidence affectation area, with flatter areas predicted to experience cracks with widths of between 25-50 mm, and up to 100 mm. Steeper areas would experience cracks of between 50-100 mm width, and possibly up to 200 mm. The assessment predicts that less than 1% of the subsidence affectation area would be affected by surface cracking. The total disturbance area, with remediation of the cracking, is estimated to be well below 10% of the subsidence affectation area.

634. In relation to impacts on water resources, the Department’s Preliminary Assessment Report stated that the subsidence would result in some localised environmental consequences on Dry Creek. The Department stated that *“given the minor and ephemeral nature of the creek, the Department, DRE and DPI-Water are satisfied that these impacts are not significant and are able to be remediated using standard best practice subsidence remediation techniques such as crack filling and re-grading”.*

635. In relation to impacts on cliffs and steep slopes, the Department’s Preliminary Assessment Report stated that the longwall panels have been specifically designed (shortened) to avoid subsidence-related impacts on the most prominent cliff lines in the area. The Department stated OEH provided recommendations to protect the largest remaining cliff line within the subsidence affectation area. The Department stated that the Applicant incorporated OEH’s advice and *“designed the project to avoid and/or minimise impacts on the most prominent cliffs in the locality, and that the residual impacts to cliff lines are acceptable and commensurate with impacts associated with contemporary underground mining projects in the region”*

636. In relation to impacts on protected areas, the Department’s Preliminary Assessment Report stated that *“further advice from KEPCO confirmed that based on the subsidence assessment (including sensitivity analysis) the project would not have any subsidence-related impacts on the National Parks, including far field impacts”.*

637. In relation to impacts on public infrastructure, the Department’s Preliminary Assessment Report stated that the main piece of public infrastructure that would be affected by the project is the Bylong Valley Way. The Department noted that *“Bylong Valley Way is predicted to experience up to 3,000 millimetres of vertical subsidence and could experience cracking of up to 50-100 millimetres, stepping and heaving, as well as some localised impacts to drainage and culverts”.*

The Department concluded that *“the Department and MWRC (the applicable roads authority) are satisfied that Bylong Valley Road can be maintained in a safe and serviceable condition, subject to implementation of standard best practice measures for undermining public roadways”.*

638. In relation to impacts to land uses and private structures, the Department’s Preliminary Assessment Report stated that:

“The subsidence assessment indicates that impacts on farm structures are likely (including KEPCO owned sheds, a silo and farm dams), however these structures are able to be kept safe, serviceable and repairable through implementation of standard subsidence management and remediation measures. The project is not predicted to have any subsidence impacts on the KEPCO-owned Tarwyn Park property or its natural sequence farming areas.”

“The Forestry Corporation of NSW (FCNSW) acknowledges that Bylong State Forest would be subject to subsidence impacts, and expects that KEPCO would repair or replace all FCNSW infrastructure affected by subsidence (including access tracks and fences), as well as repairing any safety risks. It also raised concerns about impacts on the forest stand value and future productivity of the forest (due to damage, ponding, soil moisture decline, tree fall, malformation and root shear), and expects that these issues be addressed as part of the Property Subsidence Management Plan and access arrangements and compensation under the Mining Act 1992”.

639. The Department accepts that the subsidence associated with the Project is able to be minimised, managed, or at least compensated for to an acceptable standard. To ensure this occurs, the Department has recommended a suite of conditions that reflect the standard framework for managing subsidence in NSW.

6.13.4 Planning Assessment Commission's Review of impacts associated with subsidence

640. The PAC Review Report did not raise any significant concerns or considerations regarding subsidence beyond those related to impacts to biodiversity and traffic and transport as discussed in paragraphs 523 and 544.

6.13.5 Applicant's assessment of subsidence impacts of the Recommended Revised Project

641. In the Supplementary Information Report, the Applicant confirmed that the Subsidence Study Area of the Recommended Revised Project would not change from that assessed within the EIS.

6.13.6 Department's consideration of the subsidence impacts of the Recommended Revised Project

642. The Department stated in its Final Assessment Report that the subsidence impacts are acceptable. The Department concluded that:

“...the Department accepts that the subsidence associated with the project is able to be minimised, mitigated, or at least compensated for to an acceptable standard. There are no residences located within the subsidence area and the subsidence assessment predicted there would be no impacts on adjoining National Parks, with subsidence largely confined to woodland, including associated cliff-lines, and agricultural areas. The key infrastructure asset that would be impacted is Bylong Valley Way.” (p.71)

643. The Department recommended a range of Final Recommended Conditions that reflect the standard framework for managing subsidence in NSW. In addition to the recommended conditions restricting longwall mining from within 150m horizontally of the potentially impacted cliffs, these conditions require the Applicant to:

- *“meet a number of performance measures to protect or manage impacts on natural and built features within the subsidence affectation area;*
- *remediate or repair subsidence impacts;*
- *provide additional offsets in the event that impacts, or consequences are greater than the performance measures; and*
- *prepare and implement comprehensive Extraction Plan(s)...” (p.71)*

6.13.7 Public and Council comments on the subsidence impacts of the Recommended Revised Project

644. Neither MWRC, Muswellbrook Shire Council, speakers at the public meeting nor written comments raised new concerns about the subsidence impacts of the Recommended Revised Project beyond those related to impacts to visual amenity, biodiversity and traffic.
645. MWRC is the appropriate roads authority for the section of Bylong Valley Way that would potentially be impacted by subsidence, and indicated in their meeting with the Commission on 6 November 2018 that they are satisfied that the subsidence impacts could be effectively managed through the road contributions and maintenance agreed in their VPA with the Applicant.

6.13.8 Commission's consideration of subsidence impacts

646. The Commission has reviewed the Applicant's Subsidence Assessment, Subsidence Peer Review, EIS and the Department's Final Assessment Report. The Commission accepts the Department's conclusion outlined in paragraph 642 that the subsidence impacts associated with the Project and the Recommended Revised Project are able to be minimised, mitigated or at least compensated for to an acceptable standard.
647. The Commission agrees with the Department's findings and is of the view that the recommended monitoring and adaptive management conditions outlined in paragraph 643 are appropriate in managing the impacts of subsidence. Based on the Material, the Commission finds that the subsidence impacts resulting from the Project and the Recommended Revised Project would be acceptable.

6.14 Natural environment impacts - climate change

6.14.1 Statutory context

648. Part 4.15 of the EP&A Act requires the Commission to consider the likely environmental impacts of the development on the natural environment.
649. The following sections of the *EP&A Act* require the Commission to consider GHG emissions in assessing the Project:
- s 4.15(1)(a), which requires the Commission to take into consideration the provisions of any applicable environmental planning instrument including the Mining SEPP (which in turn requires the consideration of GHG emissions as explained below).
 - s 4.15(1)(b), which requires the Commission to take into consideration the likely impacts of the development, including environmental impacts (which the Commission considers includes impacts of GHG emissions on climate change); and
 - s 4.15(1)(e), which requires the Commission to take into consideration public interest, including the principles of ecologically sustainable development (**ESD**).
650. Section 6(2) of the *Protection of the Environment Administration Act 1991*, as set out in paragraph 82, states that ESD:
- "...requires the effective integration of social, economic and environmental considerations in decision-making processes. [ESD] can be achieved through the implementation of the following principles and programs:*
- (a) the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.*
- In the application of the precautionary principle, public and private decisions should be guided by:*
- (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and*
- (ii) an assessment of the risk-weighted consequences of various options,*
- (b) inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations;*
- (c) conservation of biological diversity and ecological integrity; and*
- (d) improved valuation, pricing and incentive mechanisms."*
651. Clause 1.2(2) (b), (c) and (d) of the MWRLEP 2012 states that the particular aims of the Plan include:

“(b) to encourage the proper management, development and conservation of resources within Mid-Western Regional by protecting, enhancing and conserving:

- (i) land of significance to agricultural production, and*
- (ii) soil, water, minerals and other natural resources, and*
- (iii) native plants and animals, and*
- (iv) places and buildings of heritage significance, and*
- (v) scenic values,*

*(c) to provide a secure future for agriculture through the protection of agricultural land capability and by maximising opportunities for **sustainable** rural and primary production pursuits,*

*(d) to foster a **sustainable** and vibrant economy that supports and celebrates the Mid-Western Regional’s rural, natural and heritage attributes”*

652. Clause 14 of the Mining SEPP relevantly provides:

“(2) in determining a development application The consent authority must consider an assessment of the greenhouse gas emissions (including downstream emissions) of the development and must do so having regard to any applicable State or national policies, programs or guidelines concerning greenhouse gas emissions”.

653. Before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure:

(c) that greenhouse gas emissions are minimised to the greatest extent practicable.

6.14.2 Applicable policies

654. The Commission must consider an assessment of the GHG emissions of both the Project and the Recommended Revised Project, having regard to applicable State or national policies, programs or guidelines concerning GHG emissions, by reason of the application of the Mining SEPP, in accordance with section 4.15(1)(a) of the EP&A Act.

655. The Mining SEPP’s reference to “State...policies” includes the NSW Climate Change Policy Framework, which states: “*The NSW Government endorses the Paris Agreement and will take action that is consistent with the level of effort to achieve Australia’s commitments to the Paris Agreement*”. Under the Paris Agreement, Australia has committed to limit the increase in global temperature to below 2 degrees. The NSW Climate Change Policy Framework says that its “*aspirational emissions savings objective is to achieve net-zero emissions by 2050*”.

656. The stated aim of the NSW Climate Change Policy Framework is to “*maximise the economic, social and environmental well-being of NSW in the context of a changing climate and current and emerging international and national policy settings and actions to address climate change*”. The plan for implementation of the Policy includes “*investigate how to embed climate change emissions savings and adaption in government decision-making.*”

6.14.3 Applicant’s assessment of climate change impacts of the Project

657. The Applicant assessed the GHG emissions of the Project in its *Air Quality and Greenhouse Gas Impact Assessment* (Appendix O to the EIS). The assessment quantified GHG emissions over the life of the Project to be:

- 2,228,023 tonnes carbon dioxide-equivalent (CO₂-e) for Scope 1;
- 1,286,419 tonnes CO₂-e for Scope 2; and
- 202,978,885 tonnes CO₂-e for Scope 3.

658. A summary of Annual GHG Emissions of the Project appears in Table 12.1 on p.101 *Air Quality and Greenhouse Gas Impact Assessment*.
659. The Applicant presented a comparison of the predicted annual Scope 1 GHG emissions from the Project with global, Australian and NSW emissions inventories in Table 12.3. Scope 2 and Scope 3 GHG emissions were not included in this comparison.
660. The Applicant has committed to *“develop an Energy and Greenhouse Gas Management Plan which will describe a number of reasonable and feasible measures to be implemented to minimise GHG emissions from the Project”*. These measures appear to relate only to Scope 1 and 2 GHG emissions and include *“the creation of mine plan which maximises energy efficiency mining operations through:*
- investigation of options for capture and treatment of fugitive methane emissions from underground mine ventilation;*
 - sealing of underground mining panels to reduce methane emissions from the goaf; and*
 - monitoring and recording.”*
- (further details in table 12.4, p.104 of the Appendix O to the EIS).
661. The Applicant concluded:
- “Average annual scope 1 emissions from the Project (0.09 million tonnes (Mt) CO₂-e) would represent approximately 0.02% of Australia’s commitment under the Kyoto Protocol (591.5 Mt CO₂-e) and a very small portion of global greenhouse emissions, given that Australia contributed approximately 1.25% of global GHG emissions in 2012.” (p.221)*

6.14.4 Department’s consideration of the climate change impacts of the Project

662. The Department’s Preliminary Assessment Report dated March 2017 *“acknowledges the significant global threats posed by climate change”*. In this report, the Department considered the GHG emissions associated with the Project and stated that:
- “the project’s contribution to Australian and global greenhouse emissions, even when assessed on a full life cycle basis (i.e. including downstream emissions), would be very small;*
 - refusing the project would not reduce global greenhouse emissions, as the gap in coal supply would almost certainly be filled by another coal resource locally or overseas;*
 - there is a demonstrable need for the development of new coal resources, for at least the foreseeable future, to meet society’s basic energy needs;*
 - the project would result in a number of benefits to society, including job creation and socioeconomic benefits for NSW; and*
 - KEPCO’s greenhouse gas mitigation measures are reasonable.”*

663. Additionally, the Department stated in its Preliminary Assessment Report:

“[S]cope 1 and 2 greenhouse gas emissions (i.e. direct emissions and electricity consumption emissions) from the project would average some 140,000 tonnes of Co2 equivalent a year, or around 0.02% of Australia’s annual average emissions... and scope 3 emissions (i.e. indirect emissions including those from downstream burning of coal) associated with the project would average around 8.1 Mt of Co2 equivalent a year”. (p.40-41)

6.14.5 The Planning Assessment Commission’s Review of the climate change impacts of the Project

664. The PAC heard from speakers on the issue of climate change and GHG emissions at its public hearing. The issues arising from this hearing in relation to GHG emissions, as presented in the PAC Review Report, included:

“concern about the risks to water availability posed by climate change and climatic fluctuations for the duration of mining and after it is complete.”

“... challenged the methodology by which the greenhouse costs associated with the project were valued at close to zero.”

665. The PAC Review Report stated that the PAC recommended clarification on the treatment of externalities in the economic assessment and cost benefit analysis for the Project. The PAC was *“...concerned about the relatively narrow range of assumptions in the calculation and the exclusion of some potentially negative impacts. Consideration of the proposal across a wider range of price and exchange rate values would generate different outcomes. A different approach to externalities would potentially reduce the calculated benefits. Some specific externalities include the greenhouse and transport (accident) costs”*.

666. The PAC considered that this approach to externalities was detrimental to the economic assessment of the Project:

“the economic assessments provided by the applicant currently lack the comprehensiveness, rigour and transparency required to enable a decision-maker to make a fully informed judgment about the mix of input assumptions that generate the claimed net benefits for the State and the probabilities attached to those assumptions.”

6.14.6 Applicant's assessment of climate change impacts of the Revised Mine Plan

667. In its updated Air Quality and Greenhouse Gas Assessment (Appendix F to the Supplementary Information Report), the Applicant assessed the GHG emissions of the Revised Mine Plan. A summary of GHG emissions was attached in Appendix B, p.23.

668. In the correspondence from the Applicant dated 4 March 2019, the Applicant stated that the Revised Mine Plan will reduce GHG emissions because it would remove the open cut mining off Tarwyn Park, which:

“reduces the recoverable coal resource for the Project by approximately 4.6 million tonnes (Mt) of Run of Mine (ROM) coal.” to deliver “minor reductions in Scope 1, Scope 2 and Scope 3 GHG emissions due to the reduction in coal reserve. Scope 3 (indirect) GHG emissions associated with end use of product coal (i.e. power generation) were predicted at 197.4 mt of Co2-e”.

669. The Applicant considered that South Korea would be the jurisdiction within which the Scope 3 emissions from the coal mined at Bylong would occur:

“it is predicted that the product coal will wholly be sold to and used in the Republic of Korea. It is not predicted that any product coal will be used in NSW.”

670. The Applicant considered international policy and noted that the contribution of Scope 3 emissions from the Bylong coal in South Korea *“...is not incompatible with South Korea's commitments under the Paris Agreement”*.

671. The Applicant considered that NSW would be the jurisdiction within which Scope 1, Scope 2 and Scope 3 emissions *“associated with the production and transport of diesel, supply of electricity and the transport of product coal to the Port of Newcastle”* from the Bylong coal mine operations would occur and presented this amount as a total value and a percentage of total State emissions:

“On an annual basis, these Scope 1, Scope 2 and Scope 3 (which occur within NSW) emissions associated with the Project equate to approximately 0.16 Mt CO2-e. This represents a negligible proportion (0.1%) of NSW's annual emissions in 2011/12...”

672. The Applicant also submitted a letter dated 8 March 2019 which responded to the submission made by the NSW EDO on behalf of Bylong Valley Protection in relation to *Gloucester Resources v Minister* (outlined below in paragraph 683) stating:

- *“Rocky Hill was a merits review in the Class 1 jurisdiction of the Land and Environment Court,*
- *there are difficulties relying on the findings of the decision;*

- *no inference should be drawn from the fact the Department did not cross-examine a witness; and*
- *the mine was refused on other grounds alone."*

673. The Applicant in its response to the submissions made by the EDO said that the Applicant had targeted the Project as *"a reliable appropriate quality supply of coal for its power station in South Korea"* and claimed that:

"If the Project is not approved, KEPCO will need to secure an alternative source of coal from elsewhere to meet its energy demands. It is possible that an alternate supply may be of an inferior quality. A refusal of this Project would not in any way influence the quantity of coal forecast to be utilised in KEPCO's power generation in the decades to come".

674. On 4 March 2019, the Applicant provided further comments to the Commission in relation to the Commission's task in considering the Project's Scope 3 GHG emissions (the **'March Letter'**). In this letter, the Applicant outlined the various assessments that were previously conducted in relation to the assessment of GHG emissions. The letter also noted that *"Scope 3 emissions associated with the transportation of product coal to port"* were included within the cost benefit analysis, as questioned by the PAC in its Review and presented in paragraph 665.

675. In the March 2019 letter, the Applicant stated it is:

"committed to a number of mitigation and management measures to minimise its GHG emissions. These measures will be described within the Air Quality Management Plan to be prepared to the satisfaction of the DP&E. The mitigation and management measures proposed are consistent with the primary objective of the Emissions Reductions Fund to reduce GHG emissions".

676. The Applicant further stated that *"the total Scope 3 emissions associated with the use of the coal from the [Recommended Revised Project] were estimated at approximately 197.4 MtCo₂-e. This value represents the total GHG emissions from end use of product coal from the [Recommended Revised Project] equates to approximately 8.6 Mt CO₂-e per year."*

6.14.7 Department's consideration of the climate change impacts of the Recommended Revised Project

677. In its Final Assessment Report, the Department considered the GHG emissions based on the Revised Mine Plan, finding:

"The Revised Mine Plan reduces Scope 1 and Scope 2 GHG emissions (direct emissions and electricity consumption) by around 3% over the life of the project to 3.4 MTCO₂-e (annual average contribution reduced from 0.140Mt to 0.136Mt), which is 0.03% of Australia's commitment under the Paris Agreement.

There is also a 2% reduction in Scope 3 emissions, largely due to less extraction and transportation of coal over the life of the project". (p.86)

678. The Department assessed the relevant objects of the EP&A Act in its Final Assessment Report, including ESD and concluded it is satisfied that:

"the proposed modification is able to be carried out in a manner that is consistent with the principles of ESD... the Revised Mine Plan has further reduced the environmental and social impacts of the project, while providing a significant net benefit to NSW and the regional economy".

679. The Department considered that the NSW Climate Change Policy Framework is a *"framework to guide Government in its own operations, rather than a development control policy as such"* and concluded that *"the policy's content has no direct bearing on either the project or its determination by the Commission."* (p.86)

6.14.8 Public comments on the climate change impacts of the Recommended Revised Project

680. The Commission heard concerns from speakers at the public meeting and received written comments regarding the contribution of the Recommended Revised Project to climate change, the potential impacts of climate change on NSW, including by reference to the Paris Agreement and the Intergovernmental Panel on Climate Change's Report commissioned by the United Nations (the **IPCC Report**), and whether it was in the public interest to approve a greenfield thermal coal mine. The Commission also heard the following concerns raised by members of the community:

"Proceeding with the Bylong mine is incompatible with meeting the goals of the Paris agreement to limit global temperature increases to 1.5 degrees Celsius to a preindustrial level, and moderating the negative effects that climate change will have on human health over the next century." (p.30 of the transcript);

"There is a significant body of law from both New South Wales Land and Environment Court and the New South Wales Court of Appeal which indicates that the public interest includes the consideration of the principles of ecologically sustainable development. One of those is the principles of intergenerational equity. I don't have time to go into the detail of that, but climate change is the definitive example of the principles of intergenerational equity." (p.32 of the transcript);

"the most serious and urgent environmental issue we face is climate change, and climate change is very much an issue of intergenerational equity". (p.89 of the transcript);

"What is essential is that we phase out coal, as the recent IPCC report has stated. It appears more than cynical that the final VPA assessment report saying this mine was approvable was released on the same day as the IPCC report on the need to reduce coal dependency." (p86 of the transcript);

"I wish to object to the Bylong Valley Coal Mine because I feel it is not an ecologically sustainable development. ESD is defined in the New South Wales Protection of the Environment Act, and the Act requires that the precautionary principles should be applied, that irreversible damage to the environment should be avoided, but the present generation should ensure the health, diversity and productivity of the environment are maintained for the benefit of future generations, and those who generate pollution and waste should bear the cost of containment, avoidance or abatement." (p89 of the transcript).

681. As stated in paragraph 672 above, the Commission received submissions that included references to and a copy of the recent decision, *Gloucester Resources v Minister*.
682. The Commission received a letter from Lock the Gate dated 13 February 2019 in relation to *Gloucester Resources v Minister* and the Commission's consideration of the NSW Climate Change Policy Framework and Paris Agreement.
683. The Commission received a submission from EDO NSW on behalf of the BVPA dated 15 February 2019, which raised climate change and *Gloucester Resources v Minister*, noting that this was a matter of public interest.
684. A further submission from the EDO NSW on behalf of the BVPA, dated 8 March 2019, raised the following issues in response to the Applicant's letter dated 4 March 2019 in relation to the Commission's task in considering the Scope 3 GHG emissions from the Project and the Recommended Revised Project:
- The Commission should consider the cumulative GHG emissions of the Project. The Court in *Gloucester Resources v Minister* stated: *"it matters not that this aggregate of the Project's GHG emissions may represent a small fraction of the global total of GHG emissions. The global problem of climate change needs to be addressed by multiple local actions to mitigate emissions by sources."*
 - A "Carbon Budget and "double counting" argument" similar to the statement by the Applicant in the March letter (outlined in paragraph 673) was rejected by the Court in *Gloucester Resources v Minister*, stating: *"a consent authority cannot rationally approve a development*

that is likely to have some identified environmental impact on the theoretical possibility that the environmental impact will be mitigated or offset by some unspecified and uncertain action at some unspecified and uncertain time in the future”.

- Preston CJ's at [441] of *Gloucester Resources v Minister* referred to the concept of a “carbon budget approach”, which is a commonly used approach to determine whether the nationally determined contributions of the parties to the Paris Agreement cumulatively will be sufficient to meet the long term temperature goal of keeping the global temperature rise to between 1.5°C and 2°C, is the carbon budget approach.
- The EDO NSW stated in its submission that in order to respect the Global Carbon Budget, and in order to limit global warming to non-dangerous levels, “*most fossil fuel reserves will need to remain in the ground unburned*”.
- A ‘Market Substitution’ argument, similar to the statements by the Applicant in the March Letter that lower quality substituted coal sourced from elsewhere will otherwise be used and lead to poorer environmental outcomes, was rejected by the Court in *Gloucester Resources v Minister* because, amongst other things, there was no evidence provided to the decision maker that this was the case.

685. In relation to the ‘Market Substitution’ argument, the Commission also notes that the *Gloucester Resources v Minister* Judgment appended to the EDO’s submission states:

“If a development will cause an environmental impact that is found to be unacceptable, the environmental impact does not become acceptable because a hypothetical and uncertain alternative development might also cause the same unacceptable environmental impact”.
(paragraph 545)

686. In relation to the consideration of new coal mines under the NSW Climate Change Policy, *Gloucester Resources v Minister* noted that, like the Paris Agreement, this Policy does not “*prescribe the mechanisms by which ... reductions in GHG emissions to achieve zero net emissions by 2050 are to occur. In particular, there is no proscription on approval of new sources of GHG emissions, such as new coal mines*”.

6.14.9 The Commission’s consideration of the climate change impacts

687. Under clause 14(2) the Mining SEPP the Commission as the consent authority is required to consider greenhouse gas emissions including downstream emissions in its assessment as set out in paragraph 106 and 107. Clause 14(2) also states that in considering GHG emissions, the Commission must “*have regard to any applicable State or national policies, programs or guidelines concerning greenhouse gas emissions*”. The NSW Climate Change Policy Framework outlines the States long-term objectives to achieve net-zero emissions by 2050 and to make NSW more resilient to a changing climate. The Commission is therefore of the view that the NSW Climate Change Policy is applicable and must be considered by the Commission.

688. Based on the evidence presented by the Applicant and the Department to quantify GHG emissions from the Project and Recommended Revised Project, the Commission accepts for the:

- **Project:** the cumulative Scope 1, Scope 2 and Scope 3 GHG emissions will be 206,493,327 tonnes of CO₂-e over the life of the Mine as set out in Table 12.1 in Appendix O of the EIS; and
- **Recommended Revised Project:** the cumulative Scope 1, Scope 2 and Scope 3 GHG emissions will be 200,808,700 tonnes of CO₂-e as set out in the *Updated Air Quality and Greenhouse Gas* report, Appendix F to the Supplementary Information Report.

689. The Commission notes that the NSW government has endorsed the Paris Agreement and set the goal of achieving net zero emissions by 2050. Neither the Paris Agreement, Australia's Nationally Determined Contributions (NDCs) of reducing GHG emissions in Australia by 26% to 28% below 2005 levels by 2030 nor NSW's Climate Change Policy Framework prescribe the mechanisms by which these reductions in GHG emissions to transition to zero net emissions are to be achieved. In particular, there is no prohibition on approval of new sources of GHG emissions, such as new coal mines.
690. For the purpose of the Commission's assessment of the Project and Recommended Revised Project, it is not necessary to decide whether consideration of the Scope 3 emissions extends beyond New South Wales to, for example, the use of the coal in South Korea. That is because the Commission accepts that all of the direct and indirect GHG emissions of the Project and the Recommended Revised Project, will adversely impact the NSW environment.
691. The Commission agrees with Preston CJ that:
- "Nevertheless, the exploitation and burning of a new fossil fuel reserve, which will increase GHG emissions, cannot assist in achieving the rapid and deep reductions in GHG emissions that are necessary in order to achieve "a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century" (Article 4(1) of the Paris Agreement) or the long term temperature goal of limiting the increase in global average temperature to between 1.5°C and 2°C above pre-industrial levels (Article 2 of the Paris Agreement)." [525]*
692. The Commission acknowledges that NSW is currently in a transition away from the use of fossil fuels as an energy source. In that context, the Commission is of the view that the cumulative environmental impact of the Project and Recommended Revised Project needs to be considered when weighing the acceptability of GHG emissions associated with the mine. The Commission agrees with Preston CJ at [555] in *Gloucester Resources v Minister* that:
- "it would be rational to refuse fossil fuel developments with greater environmental, social and economic impacts than fossil fuel developments with lesser environmental, social and economic impacts. To do so not only achieves the goal of not increasing GHG emissions by source, but also achieves the collateral benefit of preventing those greater environmental, social and economic impacts."*
693. The Commission notes that the Department's position that the Project and Recommended Revised Project's contribution to Australian and global GHG emissions will be very small and therefore have limited impact. However, the Commission does not accept the Department's assessment that refusal would not reduce global GHG emissions, as a gap in supply will almost certainly be filled by another coal resource locally or overseas as no evidence to support this argument was provided to the Commission.
694. The Commission does not have evidence before it to determine whether, if the Project or Recommended Revised Project is not approved, the Applicant will need to secure an alternative source of coal and that this coal may be of an inferior quality and may lead to poorer environmental outcomes, as was asserted in the Applicant's letter dated 8 March 2019 and in the Department's Preliminary Assessment Report. The Commission agrees with Preston CJ that, in any event, an unacceptable impact does not become acceptable because the Applicant may end up pursuing an alternative development that has unacceptable impacts:

“If a development will cause an environmental impact that is found to be unacceptable, the environmental impact does not become acceptable because a hypothetical and uncertain alternative development might also cause the same unacceptable environmental impact. The environmental impact remains unacceptable regardless of where it is caused. The potential for a hypothetical but uncertain alternative development to cause the same unacceptable environmental impact is not a reason to approve a definite development that will certainly cause the unacceptable environmental impacts. In this case, the potential that if the Project were not to be approved and therefore not cause the unacceptable GHG emissions and climate change impacts, some other coal mine would do so, is not a reason for approving the Project and its unacceptable GHG emissions and climate change impacts: see Kane Bennett, “Australian climate change litigation: Assessing the impact of carbon emissions” (2016) 33 EPLJ 538 at 546-548; Justine Bell-James and Sean Ryan, “Climate change litigation in Queensland: A case study in incrementalism” (2016) 33 EPLJ 515 at 535 [Rocky Hill 545]

695. In addition, the Commission does not accept the Department’s statement in paragraph 679 that the NSW Climate Change Policy Framework has no direct bearing on the determination of the Project or the Recommended Revised Project. Clause 14(2) of the Mining SEPP requires the consent authority to have regard to that Framework as set out in paragraph 687. Likewise, the Commission does not accept that this Policy only applies to government projects as narrowly interpreted by the Department as there is no evidence to support this statement. The Commission considers that on the proper construction of the Mining SEPP, the NSW Climate Change Policy is applicable and must be considered by the Commission.
696. The Commission accepts that the Recommended Revised Project will slightly reduce the GHG emissions compared to the Project as set out by the Department in paragraph 677. The Commission notes that the Applicant has committed to develop an Energy and Greenhouse Gas Management Plan which will set out measures to minimise GHG emissions from the Project (refer to paragraph 660). The Commission notes that these measures appear to relate only to Scope 1 and 2 GHG emissions. The Commission is therefore of the view that the Applicant has not minimised Scope 1, 2 and 3 GHG emissions to the greatest extent practicable as required under Clause 14(1)(c) of the Mining SEPP. The Commission also notes that there are no offset measures proposed in either the Project or Recommended Revised Project from the Applicant.
697. The Commission accepts that there is no policy guidance on what constitutes an acceptable, unacceptable or substantial amount of GHG emissions. Nonetheless, the Commission concludes that based on the evidence in paragraph 688 there will be a contribution to global GHG emissions that needs to be considered by the Commission.

6.15 Social impacts in the locality

6.15.1 Statutory context

698. Under s 4.15 of the EP&A Act, the Commission must consider the likely impacts of the development, including social and economic impacts in the locality.

6.15.2 Guidelines

699. *The Social Impact Assessment Guideline 2017* (the **SIA Guideline**) provides a methodology for considering and assessing the social benefits and costs of State significant mining, petroleum and extractive industry development. The SIA Guideline provides direction on assessing impacts in the context of the EIA process under the EP&A Act. The SIA Guideline also provides advice regarding transitional arrangements for State significant resource project development applications with SEARs issued before the date of publication of the guideline.
700. The Commission notes that the development application was submitted to the Department prior to the publication of the SIA guidelines in September 2017.

6.15.3 Applicant's assessment of the social impacts of the Project

701. The Applicant undertook a Social Impact Assessment dated 2 July 2015, as part of its EIS, which described the social context of the area:

"The Bylong Valley consists of a small rural agricultural community of approximately 100 residents. Coal exploration has been occurring in the area for more than 15 years. Bylong Valley is the focus of the community activity in the Bylong Valley and has a small general store, a community hall and community sporting grounds, St Stephen's Anglican Church and the Bylong Rural Fire Service (RFS)." (p.330)

702. The Social Impact Assessment provided a summary of community concerns:

"Bylong Valley residents identified a range of economic, social, physical, natural and cultural heritage values of importance in the Bylong Valley. Residents also expressed a number of key concerns in relation to their existing environment, including:

- Stress and anxiety as a result of uncertainty in relation to coal exploration and the potential for mining into the future of the Bylong Valley and potential impacts;*
 - Population decline and resulting changes in social networks and sense of community;*
 - Changes in community structure and social networks with the gradual departure of long-term residents;*
 - Declining social capital due to community fragmentation;*
 - Perceived increasing prevalence of property acquisition and corresponding changes in landownership;*
 - Potential loss of the Bylong Upper PS due to lack of enrolments, attributed to historic population decline in the Bylong Valley; and*
 - Maintaining the economic viability of agricultural holdings and retaining property values."*
- (p.iv)*

703. The Applicant provided a revised SIA in the RtS based on a no WAF scenario (**Revised SIA**). The Applicant defined the study area as the Project area, the sub-regional area and the regional area with specific definition provided in Table 1 of the Revised SIA. The Revised SIA relied on the baseline established in the SIA giving consideration to population and demography, economic characteristics, housing and accommodation, community infrastructure and community liveability in the study area.

704. The Applicant in the Revised SIA stated that the SIA includes a wide range of mitigation strategies which have been developed to address the social impacts of the Project. The Applicant stated that *"the VPA is the primary mechanism for managing the socio-economic impacts associated with the Project and enhancing positive benefits and opportunities"*.

6.15.4 Department's consideration of the social impacts of the Project

705. The Department's Preliminary Assessment Report states in regards to the WAF:

"The Department has considered KEPCO's arguments for, and Council's arguments against, the WAF. While both party's arguments have merit, the Department accepts Council's position that the WAF is not required based on the experience of other mining development projects in the region, and that it would be better to have the workforce accommodation in existing centres to improve the integration of project workers within the hosting community, and reduce potential social issues associated with the WAF itself, which would be located in a quiet rural setting with relatively few residents." (p.18)

6.15.5 Planning Assessment Commission's Review of the social impacts of the Project

706. The PAC Review stated that the social impacts in the Bylong Valley from the Project had not been fully recognised because the Project had already impacted on the size and interconnectedness of the community through its current and previous land acquisition process. It noted that the Project *"has already had significant adverse consequences for the existing social fabric of the Bylong Valley. The Commission notes that the acquisition of land for the project area has resulted in the depopulation of the valley, with profound consequences for its organically grown community networks."*

707. The PAC Review raised concerns that the land acquisition process itself had also negatively impacted the level of engagement of the community in the planning process:

"the Department's explanation that some social impacts have already occurred owing to open market processes considering that several public submissions indicate that some sellers may have felt that they had no option but to sell, and that there was a possibility that, having sold, the landowners may have no longer felt able to participate in the planning process, or may have been excluded from such processes by contractual provisions."

708. The PAC Review considered that the construction of a WAF would be detrimental to the local community, concluding:

"An on-site accommodation facility has not historically been necessary for other mining projects in the region. Moreover, its provision is likely to be accompanied by impacts, to the local community and to the wellbeing of workers, of a kind that have been well documented for remote mining projects elsewhere." (p.30)

709. The PAC Review considered that the nature of conditions proposed by the Department to mitigate social impacts were weaker than they ought to be, on the basis that such impacts had already occurred and were not assessed as being directly attributable to the future operation of the Project:

"there does not appear to be any evaluation of the sufficiency of the mitigation measures proposed by the applicant and recommended by the Department. Indeed, some of the peer reviewer's recommendations appear to have been weakened in the Department's conditions, which require only that the applicant "make every effort" to contribute to local community projects, and maintain agriculture, but only "where possible". These terms seem to reinforce the Department's acceptance of the inevitability of local social impacts and reliance of open market conditions to protect the interests of impacted people without recognising the full significance of community impacts."

710. The PAC concluded that as a result, the social impact assessment did not and could not provide an adequate appraisal of the real social impacts of the Project:

"there are several inadequacies in the social impact assessment of the project, and as a consequence, the severity of the social impact cannot be adequately determined. In the absence of this information, any future evaluative judgement on the social benefits and social costs of the project will be impaired"

6.15.6 Applicant's assessment of the social impacts of the Revised Mine Plan

711. The Applicant's Review Response stated that the social capital of Bylong Village had been impacted by wider and longer-term population decline trends, with *"a declining rural population across the Bylong Valley for at least the last 20 years"*. The Applicant considered that this trend was consistent with rural population decline across Australia, which has been exacerbated by an ageing rural population, challenging economic conditions, particularly in the agricultural industry and from the increased mechanisation of the agricultural industry, changing family dynamics and associated lifestyle needs.

712. The Applicant's Review Response acknowledged that the Project had also impacted on the local community and presented population data that showed *"a steady decline in rural population that predates the commencement of KEPCO exploration activities in the Bylong Valley. However, it is notable that the greatest population decline across the 10 year period has occurred between 2011 and 2016 (22.2%) in parallel with KEPCO's property acquisition activities."* (p.7).

713. The Applicant's Review Response set out how these property acquisitions had impacted on the local population and were responsible for 61% of the population migration out of the local area in Table 3.

Table 3 – Estimate Population Change

TABLE 5 Estimate Population Change – Bylong Valley 2011 – 2017		
	Resident Landholders	Other (Residents, Farm-hands, Farm Managers)
Outgoing Population		
Private Property Sales	6	17
KEPCO Property Acquisitions	26	10
Total Outgoing Population	32	27
Incoming Population		
Private Property Sales	5	0
Change in Private Farm Management	0	10
KEPCO Farm Operations	0	14
Total Incoming Population	5	24
Population Change Attributed to KEPCO 2011-2017	-26	4
Population Change 2011-2017	-27	-3

Source: Applicant's Review Response

714. Further, the Applicant's Review Response states:

"KEPCO acknowledges that property acquisition activities, particularly those conducted during 2014-2015 resulted in the out-migration of a number of residents, some of whom were active members of the Bylong Valley community. The findings of the SIA consultation conducted in 2015 indicates that the out-migration of key community leaders due to Project related property acquisitions resulted in changes to the social structure of the community and social connections." (p.51)

715. In the context of these population declines, and that the Bylong population was estimated by the Applicant to be 66 people in 2017, the Applicant's Review Response highlighted the benefits of the Revised Mine Plan, stating that:

"The Project will reverse the trend of population decline in the Bylong Valley and underpin the long term sustainability of the Bylong Valley community" (p.50)

"If the Project is not approved, the socio-economic and other benefits which are set to flow to the Bylong Valley will largely evaporate." (p.53)

716. Further, the Applicant noted in its Review Response that the Revised Mine Plan would have the following social benefits:

- “Creation of up to 830 direct and indirect jobs in MWRC LGA;
- Creation of approximately 1,496 direct and indirect jobs in NSW;
- Provision of up to \$582 M over the life of the Project to NSW in royalties and taxation;
- Contribution of funding for community projects and infrastructure” (pp. 14 – 15)

717. In that regard, in the Review Response the Applicant noted MWRC’s support:

“Development of the Project and KEPCO’s ongoing commitment to the Bylong Valley community will arrest social decline and improve the socio-economic outlook for both the Mid-Western Regional Council Local Government Area (particularly in Rylstone and Kandos) and New South Wales more generally. In recognition of the regional benefits that will flow from the Project and to confirm that it is in the public interest, the Mid-Western Regional Council has written to the New South Wales Minister for Planning expressing its support for the Project and request that it be approved.” (p.ii)

718. The Applicant’s Review Response included a *Preliminary Social Impact Management Plan (SIMP)* for managing the social impacts of the project on Bylong Village. The SIMP stated:

“There are no regulatory guidelines in NSW specific to the preparation of SIMPs. In September 2017, the DP&E released the Social Impact Assessment Guideline for State Significant Mining, Petroleum Production and Extractive Industry Development (NSW SIA Guideline) (DP&E 2017a). In a letter dated 8 November 2017, the DP&E advised that the NSW SIA Guideline will not directly apply to the Bylong Coal Project. However, the Department can request additional information about the proposal’s social impacts and the assessment of those impacts if it is reasonably required to properly consider the application.

The NSW SIA Guideline does not specify the requirement for a SIMP, however:

- *Section C4.1 provides guidance on the approach to management of social impacts; and*
- *Section C5 describes the need for a monitoring and management framework for social impacts.*

These requirements have been taken into consideration in the development of the Preliminary SIMP.”

719. The Applicant’s SIMP is comprised of the following elements:

- *“Provide signage at the eastern and western entrance to the Bylong Village that acknowledges the importance of the Bylong Village to the community and encourages motorists to slow-down (e.g. ‘This is our little Village and we hope you enjoy it by slowing down’);*
- *Provide signage near Wollar Road to direct tourists to the Bylong Village;*
- *Advocate on behalf of the Bylong Hall Committee for funding through the Project VPA for upgrades to the amenities and facilities at the Bylong Sporting Grounds;*
- *Ensure all Project related signage along Bylong Valley Way (e.g. private property and access signage) is sensitive to the rural setting and does not detract from the journey experienced along Bylong Valley Way;*
- *Allocation of funds to the completion of beautification and enhancement works at Bylong Village to enhance the attractiveness of the location as a tourist stopping point along the Bylong Valley Way; and*
- *Ensuring ongoing operation of the Bylong General Store throughout the life of the project”.* (p.50)

6.15.7 Department's consideration of social impacts of the Recommended Revised Project

720. The Department's Final Assessment Report acknowledges that social impacts from the Project and Recommended Revised Project development have already taken place, but there was nonetheless community support:

"social impacts have already occurred due to the acquisition of land by KEPCO in the Bylong Valley with loss of social cohesion and loss of connections in the local farming community. This has followed a slow decline in the population in the Valley, particularly since construction peaks during the construction of the Sandy Hollow to Gulgong railway in the area in the 1980's, with consolidation of landholdings occurring in the area over the last 20 years." (p.67)

"However, there is community support in the broader region for the proposed mine, particularly in the larger regional towns of Mudgee, Rylstone and Kandos where the positive social impacts of the project are predicted to occur through additional employment and economic stimulus, as shown through the assessment of net benefits and local effects analysis, including a petition from 459 Kandos, Rylstone and surrounding community residents in support of the project." (p.68)

721. In its Final Assessment Report, the Department notes that following consultation with MWRC, the Applicant removed the WAF from the Project. However, the Commission notes that as per paragraph 17, the Applicant has not formally amended its application to remove the WAF.
722. According to the Department's Final Assessment Report, the Applicant's SIMP was prepared having regard to the SIA Guideline, despite the Application being advised by the Department that the SIA Guideline would not apply to the Project. The Department stated that

"The Preliminary SIMP provides further consideration and information about key concerns raised by the Commission including:

- social impacts that have already occurred due to project property acquisitions;*
- adequacy of engagement with Bylong Valley residents;*
- the significance of social impacts and measures to mitigate these impacts;*
- community health impacts and linkages to assessments on air/ noise; and*
- mine closure impacts."*

723. Notwithstanding, in its Final Assessment Report the Department put forward a Final Recommended Condition not permitting construction of the WAF.

724. Additionally, in its Final Assessment Report the Department recommended a range of Final Recommended Conditions for minimising and managing residual social impacts:

- "affording acquisition and/or mitigation rights to the remaining noise affected residents in the vicinity of the proposed mining operations;*
- establishing a community consultative committee to ensure that the views and concerns of the community through its representatives are considered during the life of the project;*
- where possible, retaining and re-establishing agricultural productivity on KEPCO acquired landholdings during mining and after mining.*
- undertaking an oral history of the area, preparing archival documentation, relocating where possible important local historical items of importance to the local community and managing impacts on heritage items, including on Tarwyn Park;*
- preparing a Burial Management Plan for exhumations from the former Upper Bylong Catholic Church grounds;*
- providing assistance for the RFS and ensuring the site is equipped for fire-fighting;*
- support for allocation of VPA funding to be directed to local community projects;*
- requiring monitoring, management and reporting of impacts under management plans and the environmental management system for the project;*

- requiring KEPCO to implement measures, in consultation with Council and the CCC, for post mining land use and managing socio-economic impacts associated with mine closure; and
- prepare and implement a comprehensive and adaptive Social Impact Management Plan". (p.68)

6.15.8 Public and Council comments on the social impacts of the Recommended Revised Project

725. The Commission heard concerns from speakers at the public meeting and received written submissions regarding the negative social impacts that have already occurred in the Bylong Valley and those that might occur in future as a result of the Project or Recommended Revised Project proceeding. These concerns included:

"KEPCO acknowledges in the Preliminary Social Impact Management Plans, or SIMP, that the greatest recent population decline in the valley occurred through KEPCO acquisition of properties and this decline has continued". (p.13 of the transcript)

"The proposed mitigation measures in the SIMP do not see any problem with loss or acknowledge community connections with that population loss. Repopulating the valley with mineworkers cannot replace a rural community, because they're not invested, demonstrated clearly in Wollar where there is no engagement in social activities and very little voluntary support by mineworkers" (p.14 of the transcript)

726. Speakers noted that negative social impacts have already happened as a result of the Project progressing through the planning system:

"Our system has allowed Bylong's social fabric to be broken and, no matter how much you mandate in those community handouts, they can't replace things like The oral history you propose is no substitute for the ongoing life of a community. A village is more than its buildings. It is people and their connections. It holds the history of the surrounding rural region, of gatherings, of families with generations, of past good members, different futures hope to call. It is not okay for Planning to just note it inevitable that large mining projects have significant social impact. Rather, they should consider such a project inappropriate in that area and say no early. What was the gateway for and what is the point of social impact there now." (p.48)

727. A written submission to the Commission from Dr Hedda Askland, titled *Expert Witness Submission on Social Impacts: Bylong Coal Project*, dated 14 November 2018, described the inequity of the social impact on different groups and locations:

"the social impacts of the proposed project have not been adequately assessed and ... the mitigation and management strategies proposed are insufficient...."

The Bylong Project presents unique moral issues that should be considered by the IPC. These relate to the matter of distributional equity, which require valuation of social, economic and environmental costs and benefits as they manifest within different locations and in relation to various individuals and groups affected (positively or negatively) by the project.

There is a distinct inequity embedded in the proposed development, which exposes a particular part of the population (rural landholders in Bylong who are in competition with the Proponent regarding key resources, particularly water) to the vast negative impacts, with few, if any, benefits. The SIA does not consider this inequity.

There is a distinct lack of attention to the transnational nature of the project and the fact that this is a proposed greenfield mine. Further consideration is required in terms of the social impacts on the broader community, specifically as it relates to greenhouse gas emissions and climate change."

728. The Commission heard from speakers that consideration of both the negative and positive social impacts of the Recommended Revised Project needed to extend beyond Bylong Village to nearby towns:

“As the principal of Kandos Public School, I see directly on a daily basis the considerable impact that the repeated closing of industry and business is having on the wider Kandos area. Since, 2011, industry closes have put immense pressure on families in the local economy. That’s the Cement Works closed, Big Rig, Charbon Colliery, Sibelco will be moving on at the end of the year. It also impacts on those associated industries in town. The economic and social impact of these losses have been significant. The social impact on this downturn alone has created an atmosphere of disillusionment, as many relevant prospective long-term working families have been forced to move to find employment.” (p.15)

“The approval of the Bylong Coal Project will bring more families to the area and, at the same time, it will also allow locals who are seeking work to continue to live and support locally, particularly those in the Kandos and Rylstone area. The Mid Western region clearly demonstrates how mining can work well alongside agriculture, viticulture and tourism, and the region will certainly benefit economically and socially influenced diverse workforces.” (p.12)

729. MSC in its written submission dated 12 November 2018 raised an issue with the social assessment in the conclusion of the Department’s Final Assessment Report that “[o]nly 5-7% of the workforce would reside and commute from the local area from Bylong Valley Way to the east, in Denman/Sandy Hollow”. MSC stated its position that the Project’s workforce is not likely to reside in the MWRC Local Government Area, rather the workforce will reside in the Hunter Valley. Council said if their position is correct “this will fundamentally change the various impact assessments, including the social and traffic assessment, relied by the Department and before the Commission”. The Commission notes MWRC’s support for the Project and Recommended Revised Project and acknowledges that a VPA has been agreed to.

6.15.9 Commission’s consideration of social impacts

730. The Commission notes that the Applicant’s SIA and Revised SIA were prepared prior to the release of the SIA Guideline. The Commission notes that the Applicant’s SIMP was prepared in January 2018 and although the SIA Guideline does not specify the requirement for a SIMP, the Applicant has prepared the SIMP having regard to the SIA Guideline in accordance with the relevant considerations as stated by the Department in paragraph 722. The Commission has had regard to the Guideline in its consideration of social impacts.
731. The Commission accepts that the Project and Recommended Revised Project would have positive social impacts in terms of increasing local employment and stimulating the local economy during the operation of the mine as stated by the Applicant in paragraph 716. The Commission finds that while there is a positive social impact on local employment and the local economy, this may be countered by negative social impacts of the Project and Recommended Revised Project, identified in paragraphs 732, 734, 735.
732. The Commission notes that the property acquisition activities of the Applicant have contributed to the 61% of the local population decline in 2011-2017, which has had a negative impact on social structure and social connections as set out in paragraph 713 and 714. This impact has been recognised by the Department in paragraph 720. On this basis, the Commission finds that significant negative social impacts of the Project and Recommended Revised Project on the Bylong Valley have already occurred.
733. The Commission accepts that the social impacts raised in paragraph 711 have occurred in the context of wider trends towards economic and population decline in smaller, regional towns in Australia.
734. The Commission notes the concerns raised by the public in section 6.6.10 and that the heritage and scenic values of the area contribute to the people’s sense of place. The Commission finds that people are concerned that there will be unacceptable impact on the heritage and visual values of the landscape and that that mine would fundamentally change the nature of Bylong Valley (see paragraph 464). The Commission agrees with this view that the Project and Recommended Revised Project will fundamentally change the nature of the Bylong Valley.

735. The Commission notes that many residents expressed concerns in relation to the noise and air quality impacts which has the potential to affect people's health and wellbeing, both directly and indirectly (see paragraph 571). The Commission notes that although the particulate and noise impacts from the Project and Recommended Revised Project may well comply with the relevant regulatory requirements, impacts may still be perceptible by the local residents. The Commission finds that people may perceive that the Project and Recommended Revised Project will have a negative impact on their health and wellbeing.

6.16 Economic impacts in the locality

6.16.1 Statutory context

736. Under s 4.15 of the EP&A Act, the Commission is required to consider the likely impacts of the development, including social and economic impacts in the locality.
737. Under Clause 12 of the Mining SEPP, the Commission is required to “*evaluate and compare the respective public benefits of the development and the [likely preferred] land uses*”.

6.16.2 Guidelines

Economic Assessment Guidelines

738. The Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals (December 2015) (**Economic Assessment Guidelines**) and the associated Technical Note Supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals (April 2018) (“**Technical Notes**”), set out default methodologies, parameters and assumptions to be used as part of the economic assessment. The Economic Assessment Guidelines states that the “*Guidelines and the Technical Notes must be treated as setting out minimum standards for the economic assessment*”.
739. The Commission notes that the Economic Assessment Guidelines postdate the Economic Impact Assessment of the Project (June 2015). The Applicant has nonetheless referred to and relied on the Economic Assessment Guidelines in its RtS (23 March 2016), its Response to Planning Assessment Commissions Comments on the Economic Impact Assessment (January 2018) and in its Economic Impact Assessment for Revised Mine Plan (July 2018). Accordingly, given the Applicant's use of the Economic Impact Guidelines, the Commission considers it appropriate to take them into account in the Commission consideration of the economic impacts of the Project and in the Recommended Revised Project.
740. According to the Economic Assessment Guidelines, a cost benefit analysis (CBA):
- “estimates and compares, on a common basis, the total benefits and costs of a project or policy to the members of a specified community.*
- CBA provides a technique that allows a systematic treatment of trade-offs and provides a basis on which the Government can assess the net public benefits of decisions. It allows for quantification and valuation of the full range of potential impacts, economic, social or environmental (including human health) that might arise from a project. All costs and benefits should be quantified and monetised if feasible and material.” (p.2)*
741. The Economic Assessment Guidelines prescribe that the CBA should incorporate the following key features:
- scope;
 - discount rate of 7% per annum with sensitivity testing at 4% and 10% per annum;
 - set timeframe, noting that:

“For long-lived projects, it is recommended a 30 year time-frame post construction is used, consistent with NSW Treasury Guidelines for Economic Appraisal, and where applicable a residual value for impacts beyond that time-period. However, where predictable and material, a longer time-frame can be adopted. In all cases, remediation and decommissioning costs should be accounted for, either within the time frame considered or as part of the residual value for impacts beyond that timeframe.”

- risk and uncertainty; and
- unquantified factors.

742. The Commission agrees with Preston CJ's analysis in the *Gloucester Resources v Minister* Proceedings in relation to:

- the description of direct and indirect impacts in the Economic Assessment Guidelines:

“CBA includes all first round (primary) impacts of a project, both direct and indirect, but not second round or flow on effects. The direct impacts reflect the revenues of the project less the opportunity cost of resources (such as land, labour and capital) used for the project” (Economic Assessment Guidelines, p 4).” [567]

“The direct benefits include net producer surplus attributable to the NSW community, royalties paid to the NSW government, local government rates and local contributions paid to the relevant NSW local council, and the proportion of company income tax paid to the Australian government that is attributable to NSW (Economic Assessment Guidelines, pp 9-12).” [568]

“Indirect impacts are impacts on third parties. They include all the environmental, social and health costs and benefits and associated public expenditure (Economic Assessment Guidelines, p 4). Indirect benefits include any economic benefit to existing landholders, workers and suppliers (Economic Assessment Guidelines, p 12). Indirect costs include net environmental, social and transport costs, net public infrastructure costs and indirect costs to other industries (Economic Assessment Guidelines, p 15).” [568]

“Indirect costs include the net environmental, social and transport costs, net public infrastructure costs and indirect costs to other industries. (Economic Assessment Guidelines, p 15).” [637]

- and the description of environmental and social impacts in the Economic Assessment Guidelines:

“Environmental and social impacts of mining projects include impacts to air quality, ambient noise, biodiversity, greenhouse gas emissions, groundwater, non-Aboriginal heritage, Aboriginal heritage, surface water and visual amenity. Transport related impacts may occur, such as increased traffic congestion (Economic Assessment Guidelines, p 15). Guidance on how to identify and value environmental, social and transport costs is provided by the Technical Note Supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals (April 2018) (“Technical Notes”).” [638]

743. In relation to sensitivity analysis, the Economic Assessment Guidelines state:

- “Sensitivity analysis provides decision-makers with the potential range in the level of net benefits that could arise from the project. Where there is substantial uncertainty around key impacts, “threshold” testing should also form part of the sensitivity analysis to understand, for example, the magnitude of the costs that would be required to occur to offset the benefits of additional mining activities”;
- “As part of the CBA, the proponent should undertake sensitivity analysis of a key range of variables and include them as part of the economic assessment report...”;
- “The onus is on the proponent to clearly explain:
 - o The difference in assumptions

- o *Why their own assumptions are more representative of the project's true benefits and costs than the default values"; and*

- *"Proponents are encouraged to test scenarios using multiple sensitivities." (p.18)*

744. In relation to distributional impacts the Economic Assessment Guidelines state: *"Projects can also have distributional impacts in other dimensions. For example... or have different impacts on different socio-economics groups or generation (for example, the current generation might receive significant direct economic benefits but future generations experience environmental costs due to a project)."*

745. In relation to the consideration of Aboriginal heritage, the Economic Assessment Guidelines state: *"guidance on how to identify and value these impacts of the project is expected to be provided in Technical Notes. Regardless of whether a Technical Note has been released, proponents are expected to address each of the following issues (including quantification where feasible)"* The Technical Notes includes a Technical Note 1 Aboriginal Cultural Heritage which states:

- *"Any proposal that effects Aboriginal cultural heritage values must investigate, assess and report on the impact";*
- *"There are substantive challenges in quantifying these intrinsic cultural values in monetary terms"; and*
- *"The Proponent should consider the following approach in addressing Aboriginal cultural heritage impacts. The cost and benefit of any management or mitigation measures stemming from compliance with policies... The proponent should undertake qualitative analysis. The proponent should then assess any material indirect costs and benefits to the NSW community... If Preliminary analysis suggests that these impacts are likely to be immaterial, relative to the overall result of the CBA, it may be sufficient to note this as part of the cost-benefit analysis.... To the extent that material Aboriginal cultural heritage impacts exist, the portion of these impacts that are incurred within the locality will need to be estimated and presented within the Local Effects Analysis" (pp. 2-4).*

6.16.3 Applicant's assessment of the economic impacts of the Project

746. The Applicant has commissioned an economic impact assessment undertaken by Gillespie Economics (**Gillespie**). This included a cost benefit analysis that included *"conservative sensitivity modelling"*, as set out in Appendix AE to the EIS. An economic specialist was also engaged to peer review the economic assessment report, as set out in Appendix AF to the EIS.

747. The EIS stated that the BCA (Benefit Cost Analysis) for the Project had net benefits to Australia, and delivered 37 times the net production benefits of the displaced agriculture. Overall the Project was estimated to have net social benefits to Australia of between \$592M and \$757M, and it was noted that this meant any unquantified *"residual environmental, cultural or social impacts... would need valued at greater than between \$592M and \$757M for the Project to be questionable from an Australian Economic efficiency perspective"*.

748. In its *Response to PAC Review Report*, dated January 2018 (**the Review Response**) the Applicant stated that the residual environmental, cultural or social impacts would need to be valued at greater than *"equivalent figures from a NSW economic perspective [of] between \$314M and \$479M"*.

749. The Response to the PAC Review Report outlined the assumptions in the BCA, including that:

- GHG impacts were *"impacts of Scope 1 and Scope 2 emissions from the Project on NSW Climate Change included in the CBA- in accordance with NSW Guidelines focus on impacts to NSW households only";*
- agricultural impacts were the *"cost of forgone agriculture, reflected in land values, included in capital and opportunity costs of Project";*
- the life of the Project was assumed to be 2 years pre-construction, 2 years construction and 23 years operation, a total of 27 years; and
- impacts to historic heritage were assumed to include *"[d]irect impact on seven heritage items*

assessed as having local heritage significance that will require them to be disturbed, demolished or relocated were valued...costs of protecting and restoration of 12 heritage items of local significance included in capital costs of the CBA."

750. The Response to the PAC Review Report dated January 2018 stated based upon the economic assessment for the Project, an approval would provide the following benefits to NSW:
- 830 direct and indirect regional jobs and 1,496 jobs for the State economy;
 - \$624 million in annual business turnover within the regional economy and \$855 million for the State economy;
 - Direct capital investment value over the life of the Project of \$1.3 billion; and
 - \$763 million (\$290 million present value) in royalties for the NSW Government.

6.16.4 Department's consideration of the economic impacts of the Project

751. The Department's Preliminary Assessment Report assessed the Project's economic impacts and concluded that it would deliver the following social and economic benefits for the region as well as the State as a whole:
- *"Employment for up to 470 mine workers at full production, with 275 persons employed during underground only operations;*
 - *Generating around \$290 million (present value) in royalties for the NSW Government;*
 - *Around \$302 million in company taxes to the Commonwealth Government;*
 - *Increased economic activity in the local and regional economy including 830 direct and indirect jobs and \$624 million in annual business turnover for the regional economy;*
 - *Approximately \$7.25 million in developer contributions through a Voluntary Planning Agreement with Mid-Western Regional Council for communities' services and other local initiatives." (p.7)*
752. The Department's Preliminary Assessment Report concluded that *"the Benefit Cost Analysis (BCA) for the Project estimated that the net economic benefit to the Australia of the project would be in the order of \$596 million."* (p.7)

6.16.5 Planning Assessment Commission's Review of the economic impacts of the Project

753. The PAC Review Report presented an overall concern that *"gaps in the evidence supporting the cost-benefit arguments made it difficult to be confident about the claimed benefits, the costs of the impacts and the risks attached to the project"*.
754. The PAC noted that it had heard concerns at the public hearing that the cost benefit analysis did not accurately reflect the economic costs and benefits of the Project, including in relation to the coal price assumptions, greenhouse costs and mitigation and offset measures.
755. The PAC Review Report stated that *"assumptions under-pinning the cost benefit analysis for the project were not fully transparent and, in some case, could be problematic"*.
756. The PAC suggested that there were *"unquantified externalities and costs not included in the analysis, such as the permanent, irreparable change to a valuable rural landscape with roots in Australia's agriculture and equine heritage, and the risks attached to the achievement of those benefits."*
757. The PAC discussed the input-output analysis approach that the Applicant claimed complied with the NSW Treasury Guidelines and suggested *"an assessment based on alternative measures derived from Computable General Equilibrium (CGE) modelling would help to calibrate the expected welfare gain to the community"*.
758. The PAC Review Report concluded that the assumptions used in the economic assessments lacked the comprehensiveness, rigour and transparency required to enable a decision-maker to make a fully informed decision:

"[The analysis] currently lack the comprehensiveness, rigour and transparency required to enable a decision-maker to make a fully informed judgement about the mix of input assumptions that generate the claimed net benefits for the State and the probabilities attached to those assumptions".

6.16.6 Applicant's assessment of the economic impacts of the Recommended Revised Project

759. The Applicant's Economic Impact Assessment for the Revised Mine Plan, Appendix L dated July 2018 provided an Economic Impact Assessment of the Recommended Revised Project, using the same primary methods referred to in the EIS, Response to Submissions and Response to the PAC Review Report. This concluded that *"the reduced net production benefits from the Project of \$13M present value (\$15M including revised company tax estimates), mainly comprising a reduction in NSW government royalties. This represents a 4% reduction in net production benefits of the Project"*. There would also be a reduction in the environmental, social and cultural impacts.
760. The Applicant wrote a letter to the Commission dated 18 December 2018, which included a response prepared by Gillespie to matters raised by submissions, including those outlined in paragraphs 776-778. The response stated:
- *"in relation to the exclusion of the sustainable development scenario "the Gillespie Economics response... clearly defines each of the scenarios... The Sustainable Development Scenario (SDS)... has no basis in current or aspirational policy announcements of governments... because of the highly speculative nature of the SDS, only the CPS and NPS were considered"*.
 - *to the matter of whether international demand and trade of thermal coal is declining, Gillespie quoted IEA World Energy Outlook 2018 that coal is forecast to "remain a significant part of the world energy mix. Under IEA's Current Policy Scenario (CPS), global thermal coal demand, production and trade to 2040 is forecast to grow. Under the New Policy Scenario (NPS), overall thermal coal demand declines slightly (by 2% in 2040)"*.
 - *to the matter of whether the Economic Impact Assessment was overstated Gillespie responded with the inclusion of sensitivity testing: "recognising the inherent uncertainty in coal prices and exchange rates, sensitivity testing was undertaken for inclusion within Economic Impact Assessment. However, under all scenarios, the Project will provide significant net benefits to NSW and Australia"*.
761. According to the Applicant's Appendix L Economic Impact Assessment Revised Mine Plan in Table 2-Summary of Environmental, Social and Cultural Impacts of the Revised Project, the impact category of Aboriginal heritage contains:
- **Project:** 102 sites with direct impact 42 sites potentially indirectly impacted by blasting.
 - **Revised Mine Plan:** 98 sites with direct impact 46 sites potentially indirectly impacted by blasting.
762. The section above states *"the revised Project will result in a reduction in disturbance to four Aboriginal heritage sites on the Tarwyn Park that are of low archaeological significance. With the Project these sites would be directly disturbed. However with the revised Project they would be potentially indirectly impacted by blasting. These impacts were previously unquantified in the CBA. However, they are unlikely to materially impact the CBA"* (p. 8).
763. Page 12 of the Appendix W response to the PAC Review from the Applicant includes Table 2 Assumptions in the Project CBA and shows that Aboriginal heritage was *"Unquantified in the CBA"*.

764. According to Appendix L Economic Impact Assessment Revised Mine Plan in Table 2 - Summary of Environmental, Social and Cultural Impacts of the Revised Project, historic heritage for the Project is 7 sites with direct impact and for the Revised Mine Plan is 5 sites with direct impact *“at an estimated value to NSW households of \$170,000 per heritage site, a reduction in heritage impacts of the revised Project will not be material to the CBA results”*. Section 6.6 finds that the Recommended Revised Project will have unacceptable impacts on the aesthetic, scenic, heritage and natural beauty characteristics of the vicinity and landscape. These impacts are unquantified.

6.16.7 Department’s consideration of the economic impact of the Recommended Revised Project

765. The Department identified in its Final Assessment Report that the changes in the Recommended Revised Project provided significant benefits in the form of retaining the heritage values of the Tarwyn Park landholding, and agricultural land and scenic landscape values. The Department’s Final Assessment Report (Table 3, p.9) stated that there will be:

- *“Net benefits of \$302 million to NSW including \$278 million in royalties (4% reduction)*
- *Economic benefit to regional economy of \$4.76-4.95 billion Gross Regional Income”*.

766. According to the Final Assessment Report, these changes will result in *“a minor 4% reduction in net economic benefits to NSW”*, and:

“There would also be a 3% reduction in local /regional economic activity compared to the EIS Mine Plan. However, the Revised Mine Plan would still drive significant regional economic activity due to an estimated:

- *\$602 Million in annual business turnover;*
- *\$386 million in annual regional value added; and*
- *805 direct and indirect jobs” (p.iv).*

767. The Final Assessment Report included a summary of assumptions provided by Gillespie to respond to the PAC’s finding in the PAC Review Report set out in paragraph 758 above:

- *“a concise summary of key assumptions used in the BCA;*
- *the BCA was peer reviewed by Centre for International Economics (CIE) for the Department including a request that the sensitivity analysis for key parameters be increased from +/- 20% to +/- 30% to assess an increased range in changes to coal prices and in the USD: AUD exchange rate;*
- *a reduction in 30% in the coal price would reduce the net social benefit accrued to NSW from \$315 million to \$207 million, but would still provide a significant net social benefit;*
- *coal price estimates used in the BCA were supported by CIE, noting that the coal prices were also consistent with estimates of future coal prices from NSW Trade and Investment;*
- *allocation of costs associated with greenhouse gas emissions was undertaken in accordance with NSW guidelines, in that it proportionally allocated costs to NSW households;*
- *inclusion of transport accident costs would not significantly affect the BCA as from a NSW perspective, there would be a spatial redistribution of employment, traffic and potential accidents, that is it is unlikely that there would be a significant net change in accidents that would materially affect the BCA; and*
- *given the substantial net social benefit of \$302 Million (net present value) for the Revised Mine Plan, even with the sensitivity analysis, inclusion of additional heritage values would not substantially affect the outcomes of the BCA, noting that the BCA valued the impact on historic heritage items at \$1 Million (net present value), noting that there has been a reduction in impacts on heritage with the Revised Mine Plan.*

- *The Bylong-Wollar road upgrade is already underway and would be completed regardless of the project ... consistent with NSW Government guidelines, it is not a consideration in the economic evaluation."*

768. The Final Assessment Report stated that Gillespie also responded to Lock the Gate's concerns about the BCA, as set out in paragraph 673, with the following:

- *"The coal price forecasts used in the EIS accounted for the quality of the coal;*
- *The assumed base-case coal price was based on an exchange rate of 0.84, noting that the exchange rate is now more favourable for export coal;*
- *The current coal price is well in excess of the base case forecast price used for the BCA, noting that the current benchmark is around USD 105.4/tonne, compared to the KPMG 2018 forecast price of USD\$90.2/tonne, highlighting the difficulty in forecasts in coal price;*
- *While the calorific value of the Bylong Coal is below the benchmark, it is low sulphur coal which meets Korean regulatory requirements; and*
- *Acknowledges that long term forecasts would vary in response to unexpected changes in supply and demand and that this uncertainty is best addressed through sensitivity analysis."*

769. The Department concluded that the *"BCA provides a robust and reliable assessment of the likely range in the net benefits of the project to NSW and that it was undertaken generally in accordance with NSW Government Policy and guidelines"*.

770. In addition, the Department stated that the Computable General Equilibrium (CGE) modelling commissioned by KEPCO to undertake modelling of the economic impacts of the Project, including the Recommended Revised Project, should *"provide further confidence to the Commission that the project as proposed would provide significant benefits to the regional and the NSW economics"*.

771. The Final Assessment Report stated that there are significant benefits to the regional economy through employment opportunities, significant increase in economy activity and approximately \$302 million to NSW from both the open cut and underground components: *"if both the open cut and underground components of the project are allowed to proceed, there are significant net benefits in the order of \$302 million to NSW and to the regional economy through employment opportunities and significant increase in economic activity"*.

772. The Department commissioned an Economic Peer Review dated 20 December 2018 from CIE in response to the Commission's request for more information following *"significant community concern regarding the economic benefits and associated cost benefit analysis for the Project"* (p. 1, Commission's Request Letter). The aim of the Review was *"to evaluate the extent to which the new material has a bearing on the findings of the earlier CBA"* (Economic Peer Review p. 3).

773. The Economic Peer Review confirmed the previous assessments and noted that *"[t]he revised Project delivers slightly lower benefits than the original Project, however the differences in net social benefit between the two are small and consistent with the reduction in production of coal"* (p. 3), and that *"[w]hile 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. Sensitivity testing shows that the net social benefit remains positive with lower prices."* (p. 3)

6.16.8 Public and Council comments on the economic impacts of the Project and Recommended Revised Project

774. The Commission heard a range of views from MWRC, Muswellbrook Shire Council, speakers at the public meeting, and received written submissions regarding the economic impacts of the Project and Recommended Revised Project. These views highlighted the importance of the Project and Recommended Revised Project in delivering economic benefits, in particular through creating employment, investment by the applicant in the region and contributions to the State and Commonwealth through taxes.

775. MWRC stated in its meeting with the Commission that there was overwhelming support for the Project and Recommended Revised Project because:

"We are well aware of the impacts of the project and in particular, the investment and creation of jobs in the region. The high levels of local support for the project are certainly there, so compared to a number of projects in the past, there has been overwhelming support from the council – or expressed to council. We did have – a petition was presented at the last council meeting, so just at 20 our most recent October council meeting... And so the key points there are that the communities of Kandos and Rylstone have had two major projects close...over the last probably five years with Cement Australia and the Charbon coalmine. And so you do have a community there that is well used to and aware of the benefits and impacts of major projects and that's why they have expressed through the petition that has been tabled that they are really – the petition clearly states the project represents a lifeline for the region and certainly that's a 45 view that council shares." (p.4)

"It's more the communities, particularly the Kandos/Rylstone, but also up here saying, "We want a decision. We want to see it happening because we're suffering." And it's a real economic – will be a real economic boost to the Kandos/Rylstone region, this project." (p.9)

776. The Commission met with the BVPA, as set out in paragraph 65. At the meeting it was discussed, among other things, that there was a change in policy in Asia and South Korea to reduce their reliance on coal. BVPA also questioned the assumptions in the cost benefit analysis. It was stated that *"the seaborne thermal coal market will shrink by 80% in the 20, 25 years under the sustainable development scenario that- the scenario that energy systems transition or pivot to renewable energy"*. The International Energy Agency's (IEA) latest World Energy Outlook 2018 that was due to be released was also discussed.
777. The presentation that accompanied the meeting with the BVPA, prepared by Tim Buckley and Simon Nicholas, included, among other things, the IEA's Current Policies Scenarios that was referenced by the Applicant. The BVPA outlined that the IEA's World Energy Outlook 2017 presented three main scenarios: the Current Policy, the New Policy and the Sustainable Development Scenario (SDS). The presentation stated that the Applicant's table did not include the projections from this third scenario – the SDS – in which the BVPA claimed *"global trade in thermal (steam) coal plummets 59% by 2040"*.
778. The SDS was described in the presentation as an *"integrated approach to achieving internationally agreed objective on climate change, air quality and universal access to modern energy"*. This description is consistent with the IEA's website which said of the three scenarios *"all are possible"*. It describes the SDS as *"ambitious but pragmatic"* and states that *"under the SDS, energy-related GHG emissions peak around 2020 and then decline rapidly. By 2040, they are at around half of today's level and on course toward net-zero emissions by 2070, in line with the goals of the Paris Agreement."*¹

6.16.9 Commission's consideration of the economic impacts

779. The Commission agrees with the findings in the Applicant's Economic Impact Assessment, the Department's Final Assessment Report in paragraphs 759 and 766 that the Project and the Recommended Revised Project would result in a net economic benefit to NSW during the operation of the mine.
780. The Commission notes the Applicant's comments that the IEA's SDS for coal demand is highly speculative in nature and should therefore not be considered, as set out in paragraph 760. The Commission does not accept this for the following reasons:
- The IEA is a reputable international organisation of which Australia is a signatory member. The SDS therefore can be taken as one possible outcome of the expected level of disruption to energy resources markets from the pursuit of stated GHG emissions, air quality and energy access goals, as set out in paragraph 778.
 - The SDS presents the changes to the energy sector that would be needed to deliver the

¹ <https://www.iea.org/weo/weomodel/sds/>

internationally agreed objectives of the Paris Agreement on climate change. The Paris Agreement is referred to in the NSW Climate Change Policy, which is a relevant policy consideration for this Project, as set out in paragraph 689.

- The Commission considers that the introduction of an open cut and underground coal mine in a greenfield site that will impact on agricultural and heritage values into the long-term warrants, the consideration of as many reasonable market scenarios as are available. In paragraph 778 the IEA describes their SDS scenario as “*ambitious but pragmatic*” and the Commission therefore considers that the SDS represents a market scenario which should have been considered.
- The Commission accepts that as set out in the Economic Assessment Guidelines, the CBA is “*intended to allow decision-makers to consider trade-offs and decide whether the community as a whole is better or worse off as a result of the proposal*”. Based on the Economic Guidelines which state that “[p]roponents are encouraged to test scenarios using multiple sensitivities” the Commission considers that the Applicant should have tested the SDS.

781. The Commission finds the Applicant’s assumption that the agricultural impacts would continue for approximately 27 years, as set out paragraph 749, does not adequately reflect the uncertainty as to whether or not BSAL equivalent can be successfully replicated (see paragraphs 402 and 406), or whether or not the Project Site will have the requisite water supply following cessation of mining operations, given the groundwater impact findings set out in paragraph 297.
782. The Commission finds that the assumptions in the Applicant’s BCA referenced in paragraph 749, do not adequately reflect the unquantified heritage values of the BVSL as set out in paragraph 486, because the BCA only considered the direct impacts of the Project and Recommended Revised Project on the seven heritage items of local heritage significance.
783. The Commission finds that the distribution of costs and benefits over and beyond the life of the mine is temporally inequitable in that the economic benefits accrue to the current generation and the environmental, agricultural and heritage costs are borne by future generations, given the findings in paragraphs 297, 373, 374, 406 and 488.
784. Based on the Material, the Commission finds that there is a reasonable level of uncertainty in the estimation of the economic benefits of the Project and Recommended Revised Project, and that this is exacerbated by the intergenerational inequity of costs and benefits. The Commission also notes that scenarios under the SDS have not been considered by the Applicant. The Commission therefore finds that the economic benefits of the Project and the Recommended Revised Project are uncertain.

6.17 The Public Interest

6.17.1 Statutory context

785. Under Clause 12 of the Mining SEPP, the Commission is required to “*evaluate and compare the respective public benefits of the development and the [likely preferred] land uses*”.
786. In determining the public interest merits of the Project, the Commission has had regard to the objects of the EP&A Act.
787. As set out in *Gloucester Resources v Minister*, Preston CJ [686]: The task of determining the development application for the Project, in essence, requires the Court, exercising the function of the consent authority, (here, the Commission as consent authority) “*to balance the public interest in approving or disapproving the Project, having regard to the competing economic and other benefits and the potential negative impacts the Project would have if approved*”: *Warkworth Mining Ltd v Bulga Milbrodale Progress Association Inc* at [171].

6.17.2 Department's consideration of the public interest of the Project and Recommended Revised Project

788. The Department has outlined its consideration of the Project and the Recommended Revised Project by reference to the objects of the EP&A Act in its Final Assessment Report and Preliminary Assessment Report.
789. The Department concluded that the objects of most relevance to the Commission's decision are found in section 1.3(a), (b), (c), (e), (f) and (j) of the EP&A Act. The Department concluded that the Project and Recommended Revised Project are consistent with these objects of the EP&A Act (set out in Appendix F, Table F1 to its Final Assessment Report and Appendix J of the Department's Preliminary Assessment Report).
790. The Department stated in its Final Assessment Report that it is satisfied that object 1.3(b) is met because:
- *"The principles of ecologically sustainable development have been considered through its assessment of the project;*
 - *The proposed modification is able to be carried out in a manner that is consistent with the principles of ESD;*
 - *The assessment has sought to integrate all significant environmental and social and economic considerations; and*
 - *The Revised Mine Plan has further reduced the environmental and social impacts of the project, while providing a significant net benefit to NSW and the regional economy."*
791. The Department also concluded in its Final Assessment Report that it was satisfied the Project and Recommended Revised Project encouraged the proper development of resources and promotion of orderly and economic use of the land because:
- *"the project is a permissible land use on the subject land;*
 - *the Division of Resources and Energy confirmed the size and quality of the coal reserve and that the mine would be a mid-sized operation providing substantial royalties of up to \$266 million (present value); and*
 - *the project would provide considerable economic benefits to the region and to NSW as a whole."*

6.17.3 Applicant's assessment of the public interest of the Project

792. The Applicant considered the objects of the EP&A Act at section 4.2.8, section 9.5, 9.6, 9.7 of the EIS and at section 3.3 of the Applicant's response to the PAC Review. The Applicant concluded in relation to public interest that:

"...on the basis of the numerous and extensive environmental assessments and reports completed for the SSD Application for the Project, which has quantified the Project's social and environmental impacts with a high level of scientific certainty, it is available the Minister for Planning (or delegate) to conclude that the Project is consistent with the objects of the EP&A Act, addresses the principles of ESD and that the economic and social benefits of the Project far outweigh its social and environmental costs.... the economic and social benefits of the Project include:

- *Creation of up to 830 direct and indirect jobs in the MWRC LGA;*
- *Creation of approximately 1,496 direct and indirect jobs in NSW;*
- *Provision of up to \$582 M over the life of the Project to NSW in royalties and taxation;*
- *Contribution of funding for community projects and infrastructure.*

As such it is open for the Minister (or his delegate) to conclude that the Project is in the public benefit."(p.14-15)

793. The Applicant considered inter-generational equity in their EIS and stated that the *“immediate cost of environmental effects will not be left to be borne by future generations”*. The Applicant claimed that this had been achieved by:

“Limiting the scale of the Project and excluding development from environmentally sensitive areas.” (p.377)

“Long term ecological conservation areas will be established.” (p.377)

“Expert peer reviews and sensitivity analyses of key scientific studies have confirmed with certainty that the Project will not measurably impact on the longer term productivity of the region’s groundwater resources.” (p.377)

794. The Applicant also considered the precautionary principle and claimed that the EIS *“[i]dentifies, with certainty, all environmental impacts from the development of the Project, which has been designed to avoid serious or irreversible environmental damage”*. (p.376)
795. The Applicant further claimed that the *“[e]nvironmental consequences have been assessed on a “worst case scenario”, where a serious or irreversible damage was identified, an appropriate re-design of the Project was implemented to avoid these consequences”* (p.377). The EIS also adopted a risk-based approach to assessment which involved the high-risk profile being peer reviewed by authoritative experts to ensure certainty over the predicted impacts of the Project.

6.17.4 Public comments on the public interest of the Recommended Revised Project

796. The Commission heard concerns from the speakers at the public meeting, and received written submissions regarding ESD, including intergenerational equity and the precautionary principle, as set out in paragraph 680.

6.17.5 Commission’s consideration of the public interest

797. The Commission has made a series of findings throughout Section 5 of this Statement of Reasons for Decision. In reaching those findings and ultimately deciding whether the Project and Recommended Revised Project are in the public interest and should be approved, the Commission has had regard for all the Material before it and carefully considered all the issues raised by the public.

Project

798. The Commission considers that the Project would include the following economic and social benefits while the mine is operational, based on the economic assumptions set out in paragraph 751:
- employment for up to 470 mine workers at full production, with 275 persons employed during underground only operations
 - \$624 million in annual business turnover;
 - \$290 million (net present value) in royalties for the NSW Government; and
 - contributions to MWRC in accordance with the VPA.
799. The Commission considers that the negative impacts of the Project include the:
- impact on the aesthetic, scenic, heritage and natural landscape significance of the Bylong scenic landscape (see paragraph 488);
 - impacts on the heritage values of Tarwyn Park (see paragraph 483);
 - contribution towards climate change through GHG emissions (see paragraph 688);
 - the likelihood that impacted productive agricultural land will not be rehabilitated to BSAL-equivalent standard post-mining, resulting in the permanent loss of BSAL in the Bylong Valley (see paragraph 402); and
 - long-term impacts on the groundwater (see paragraph 297).

Recommended Revised Project

800. The Commission considers that the Recommended Revised Project would include the following economic and social benefits based on the economic assumptions set out in paragraph 766:
- the creation of approximately 805 direct and indirect jobs;
 - \$602 million in annual business turnover;
 - \$278 million (net present value) in royalties for the NSW Government;
 - upgrades to Bylong Valley Way (see paragraph 549); and
 - contributions to MWRC in accordance with the VPA (see paragraph 557).
801. The Commission considers that the negative impacts of the Recommended Revised Project include the:
- adverse heritage impacts as set out in paragraph 488;
 - adverse impacts on the Bylong Scenic Landscape (see paragraph 487);
 - contribution towards climate change through GHG emissions (see paragraph 688);
 - the likelihood that impacted productive agricultural land will not be rehabilitated to BSAL-equivalent standard post-mining, resulting in the permanent loss of BSAL in the Bylong Valley (see paragraph 402); and
 - long-term impacts on groundwater (see paragraph 297).
802. The Commission considers that the following objects of the EP&A Act, set out in section 1.3, are relevant to the Project and the Recommended Revised Project.
- a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,**
803. The Commission does not accept that there is evidence to support the Applicant's claim that the Project Site can be rehabilitated to BSAL-equivalent (see paragraph 402). The Commission finds that the use of BSAL for biodiversity offsets results in a net loss of 288 ha BSAL that is available for agricultural use (see paragraph 535).
804. The Commission finds that the groundwater impacts on the Project site are unacceptable for the reasons set out in paragraph 297. The Commission finds that, while there are benefits to the public from the Project and Recommended Revised Project, there is uncertainty around the impacts on the environment in relation to the rehabilitation of the BSAL and recovery of the aquifers.
805. The Commission finds that the economic benefits last for approximately the life of the Project and Recommended Revised Project, but the environmental impacts on groundwater and productive agricultural land use last long after the life of the Project and Recommended Revised Project.
- b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,**
806. The Commission considers that, on balance, it has not been demonstrated that either the Project or the Recommended Revised Project are consistent with the principles of ESD – including inter-generational equity. The Commission does not accept the Applicant's assertion that the "*immediate cost of environmental effects will not be left to be borne by future generations*" (see paragraph 793). The Commission finds that the costs of the Project and Recommended Revised Project will indeed be borne by future generations. The Commission also finds there is inequity in the distribution of benefits from the Project and the Recommended Revised Project between current and future generations (see paragraphs 297, 373, 374, 406 and 488).
- c) to promote the orderly and economic use and development of land,**

807. The Commission agrees with the Applicant's and Department's findings that the Project and the Recommended Revised Project would result in a net economic benefit to NSW during the operation of the mine (see paragraph 779). However, the Commission finds that there is a reasonable level of uncertainty in the estimation of the economic benefits of the Project and Recommended Revised Project, and that this is exacerbated by the inter-generational inequity of costs and benefits. The Commission also notes that scenarios under the SDS have not been considered by the Applicant. The Commission, therefore, finds that the economic benefits of the Project and the Recommended Revised Project are uncertain.
- e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,***
808. In accepting the Department's assessment of biodiversity impacts, the Commission finds that the Applicant has proposed sufficient measures to avoid, minimise and mitigate impacts to biodiversity. The Commission also accepts that the offsets are in accordance with the *Biodiversity Conservation Act 2016* (see paragraphs 533 and 535).
- f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),***
809. The Commission accepts the views of GML Heritage and the Department that the adverse impacts on the heritage values of the Tarwyn Park Complex have been addressed and mitigated as far as practicable in the Recommended Revised Project (see paragraph 483).
810. The Commission finds that the BVSL in the vicinity of the Project Site is a significant landscape with aesthetic, scenic, heritage and natural values. Due to the level of disturbance and the fact that the current landscape is undisturbed, the Commission does not consider that a recreated landscape will retain the aesthetic, scenic, heritage and natural values of the current landscape (see paragraph 487).
811. In relation to Aboriginal cultural heritage, the Commission finds that the Aboriginal cultural heritage assessment has not been greatly advanced since the PAC Review Report, and therefore there is insufficient evidence for the Commission to form a view on the impacts on Aboriginal heritage (see paragraph 516).
- j) to provide increased opportunity for community participation in environmental planning and assessment***
812. The Commission is satisfied that the community has been provided ample opportunity to participate in the assessment of the Project and Recommended Revised Project, as set out in Sections 2.2, 2.3 and 3.5.
813. For the reasons set out above, the Commission finds that both the Project and Recommended Revised Project are inconsistent with the objects (a), (b) and (f) of the EP&A Act and is not in the public interest.

7 HOW THE COMMISSION TOOK COMMUNITY VIEWS INTO ACCOUNT IN MAKING DECISION

814. The views of the community were expressed through public submissions and comments received as part of exhibition, during and after the public meeting and as part of the Commission's determination process as set out in section 3.5.
815. The Commission carefully considered the community's views in deciding whether the Project and Recommended Revised Project are in the public interest. How the community's views were considered by the Commission is set out under each issue in section 6 of this Statement of Reasons.

8 CONCLUSION: THE COMMISSION'S FINDINGS AND DETERMINATION

816. The Commission has considered all the Material before it, as set out in paragraph 78. The Commission is required to consider the Project as submitted by the Applicant. The Commission has also considered the Recommended Revised Project as a potential modification to the Project within the meaning of section 4.38(1)(a) of the EP&A Act. The Project and Recommended Revised Project have been assessed in accordance with the current statutory and policy framework as set out in this Statement of Reasons, notwithstanding that the Commission's determination under section 4.38 of the EP&A Act is in respect of the Project only.
817. The Commission has considered the merits of both the Project and Recommended Revised Project and finds that:
- neither the Project nor the Recommended Revised Project are compatible with land use objectives (b) and (c) of the MWR LEP 2012 and the objective of the CW&O Regional Plan (see paragraph 376);
 - the groundwater impacts would be unacceptable because: aquifer recharge events are infrequent leading to long term declines in groundwater levels over prolonged dry periods; drawdown at the Project Site exceeds the AIP thresholds of 2m; the groundwater system will reach a new equilibrium within 100-150 years; and there is insufficient information before the Commission and, therefore, uncertainty as to whether the 'make good' requirements are met (see paragraph 297);
 - the Commission does not accept that there is evidence to support the Applicant's claim that the 423.1 ha of BSAL impacted by the Project – nor the 400.43 ha of BSAL impacted by the Recommended Revised Project – can be rehabilitated to BSAL-equivalent (see paragraph 402);
 - due to the level of disturbance and the fact that the current landscape is undisturbed, the Commission does not consider that a recreated landscape will retain the aesthetic, scenic, heritage and natural values of the current landscape (see paragraph 487);
 - the Tarwyn Park Complex is of heritage significance. The Commission finds that the Project has unacceptable impacts on the heritage values of the Tarwyn Park Complex which have not been addressed by the Applicant. However, the Commission finds that the adverse direct impacts on the heritage values of the Tarwyn Park Complex have been addressed and mitigated as far as practicable in the Recommended Revised Project (see paragraph 483);
 - the Aboriginal cultural heritage assessment has not been greatly advanced since the PAC Review Report, and therefore there is insufficient evidence before the Commission for it form a view on the impacts on Aboriginal heritage (see paragraph 516);
 - the Recommended Revised Project will slightly reduce the GHG emissions compared to the Project. However, the Commission is of the view that the Applicant has not minimised Scope 1, 2 and 3 GHG emissions to the greatest extent practicable as required under Clause 14(1)(c) of the Mining SEPP. The Commission also finds that there are no offset measures proposed by the Applicant in either the Project or Recommended Revised Project from the Applicant

(see paragraphs 696).

- the cumulative environmental impact of the Project and Recommended Revised Project needs to be considered when weighing up the acceptability of GHG emissions associated with the mine. The Commission finds that it is rational to refuse fossil fuel developments with greater environmental, social and economic impacts than fossil fuel developments with lesser environmental, social and economic impacts as this not only achieves the goal of not increasing GHG emissions by source, but also achieves the collateral benefit of preventing those greater environmental, social and economic impacts (see paragraph 692).
- the Applicant has proposed sufficient measures in accordance with the *Biodiversity Conservation Act 2016* to avoid, minimise and mitigate impacts to biodiversity. However, the Commission notes that meeting these requirements will result in the loss of 288 ha of BSAL being available for agriculture use (see paragraph 535);
- the Applicant could reinstate Equine CIC following closure of the mine and rehabilitation of the Project Site (excluding the use of 515 ha of Equine CIC for biodiversity offsets).
- the Project and Recommended Revised Project's impacts to transport could be managed with appropriate conditions. The Commission accepts the findings of ARTC confirming that the current rail network has the capacity to accommodate the additional tonnage of product coal to be produced by the Project and Recommended Revised Project (see paragraph 557 and 558);
- the air quality impacts resulting from the Project and the Recommended Revised Project are acceptable (see paragraph 573);
- noise and blasting impacts resulting from the Recommended Revised Project would be acceptable and that the Department's Final Recommended Conditions provide appropriate safeguards for monitoring and managing impacts (see paragraph 608);
- surface water from the mine water could be effectively managed in surface storages and the mined underground workings without the need to discharge to receiving waters (see paragraph 323);
- suitable mitigation measures have been proposed by the Applicant to address the potential visual impacts of the Recommended Revised Project on surrounding residences (see paragraphs 624 and 625);
- subsidence impacts associated with the Project and the Recommended Revised Project are able to be minimised, mitigated or at least compensated for to an acceptable standard (see paragraph 646);
- the Project and the Recommended Revised Project would result in a net economic benefit to NSW during the operation of the mine. However, the Commission is of the view that the distribution of costs and benefits over and beyond the life of the mine is temporally inequitable in that the economic benefits accrue to the current generation and the environmental, agricultural and heritage costs are borne by future generations. The Commission also finds that there is a reasonable level of uncertainty in the estimation of the economic benefits of the Project and Recommended Revised Project (see paragraphs 783 and 784);
- the Project and the Recommended Revised Project are inconsistent with objects (a), (b) and (f) of EP&A Act (see paragraph 813); and
- the Project is not in the public interest because it is contrary to the principles of ESD – namely intergenerational equity because the predicted economic benefits would accrue to the present generation but the long-term environmental, heritage and agricultural costs will be borne by the future generations. (see paragraphs 806).

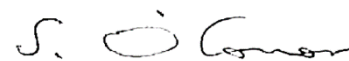
818. In determining the development application for the Project, the Commission has taken into account all of the matters in this Statement of Reasons, including the anticipated benefits and adverse impacts of the Project, and on balance has reached the following conclusion.
819. For all the reasons outlined in this Statement of Reasons for Decision (not limited to those set out in this Conclusion), the Commission has determined to refuse consent for the Project dated 18 September 2019.



Gordon Kirkby (Chair)
Member of the Commission



Wendy Lewin
Member of the Commission



Steve O'Connor
Member of the Commission