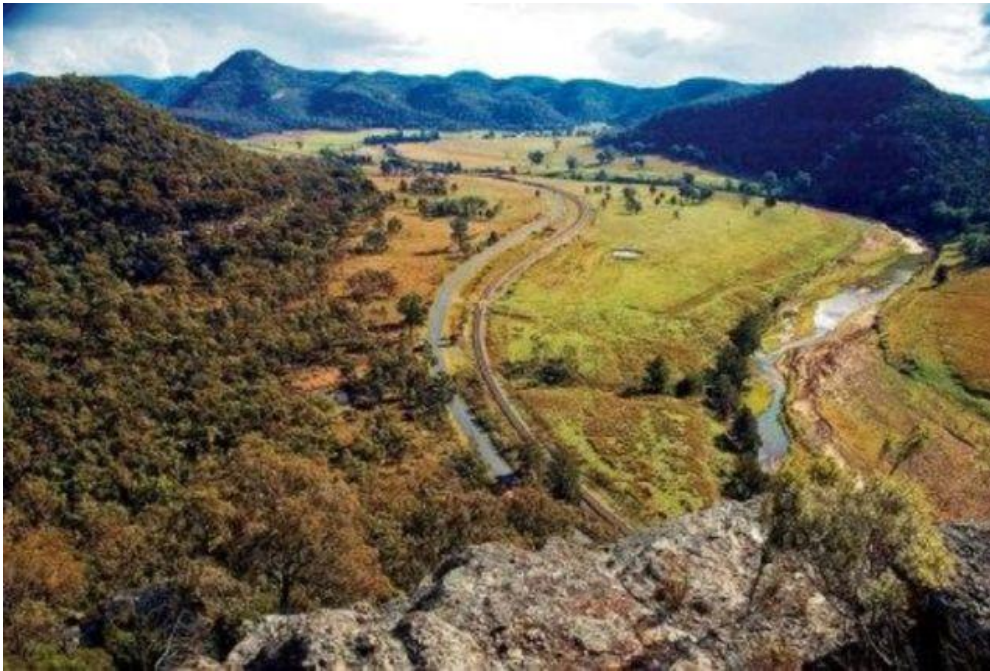


## HERITAGE IMPACTS OF THE REVISED BYLONG COAL PROJECT

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15 November 2018

**Short report commissioned by the EDO NSW (Ref. 1522462)  
on behalf of the Bylong Valley Protection Alliance  
for the Independent Planning Commission**



*Image 1.1. Photo of the Bylong Landscape Conservation Area ( National Trust of Australia heritage listing report, 2013).*

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## 1. INTRODUCTION

1.1. This report has been prepared at the request of the EDO NSW (EDO) on behalf of the Bylong Valley Protection Alliance (BVPA) for submission to the Independent Planning Commission in November 2018 as part of the process for assessing an application for State Significant Development approval to construct the Bylong Coal Project. Heritage consultant Barbara Hickson was engaged by the BVPA in 2017 to provide advice on the heritage impacts of this major new coal mine proposed by KEPCO Bylong Australia Pty Ltd (KEPCO). KEPCO described the project in 2018 as involving: "the construction and operation of an integrated coal mine utilising open cut & under-ground mining methods to recover up to approximately 6.5 Million tonnes per annum of Run of Mine coal for a period of approximately 25 years" (Hansen Bailey, 2018a, pi).

1.2. Barbara Hickson is not available to compare the 2017 reports with the revised plans for the coal mine released in 2018. In response to a late request for heritage commentary for the BVPA, this report is a desktop survey which addresses the EDO brief and later email to Bronwyn Hanna dated 31 October and 9 November 2018, respectively, which requested the following issues to be addressed:

- In your opinion, does the Revised Project adequately protect the heritage values of Tarwyn Park and/or the Bylong Valley? In preparing your response, please consider the heritage values as identified in the advice provided to the IPC by the NSW Heritage Council.
- Provide any further observations or opinions which you consider to be relevant.
- You may consider confining the scope of your report. In particular, the client has instructed that it is concerned about the wider landscape of the area as a whole being considered as having heritage value whereas the proponent has been focusing on site specific areas.

1.3. In January 2018 KEPCO reported that \$702 million had been invested to date in project preparation and application costs (Hansen Bailey, 2018b, piii). While some of this would have been spent on land acquisition, a large amount has been spent on professional reports. The initial project application by KEPCO, submitted July 2015, included an Environmental Impact Statement (EIS) with 26 annexures including heritage impact studies on Aboriginal heritage, historic heritage and "visual" impacts (related to landscape heritage). Further reports and submissions made throughout 2016 to 2018 by public bodies (including the NSW Department of Planning and Environment (DPE), the NSW Planning Assessment Commission (PAC) and the Heritage Council of NSW (HCNSW)), community groups (including the BPVA) and private citizens have focused on, or included commentaries on heritage issues. The revised project application by KEPCO, currently on public exhibition, suggests that some changes have been made to address heritage and other issues raised during the application process so far.

1.4. A vast amount of heritage information has been generated throughout this process to date. My report briefly summarises the major heritage issues of concern, how KEPCO has addressed them, and what heritage impacts may remain.

### AUTHOR IDENTIFICATION & STATEMENTS

1.5. This report was prepared by myself, Dr Bronwyn Hanna (M.I.COMOS, PhD (UNSW), M.Phil (USyd), BA Hons (Fine Arts, USyd)) of Bronwyn Hanna History & Heritage, a Sydney-based

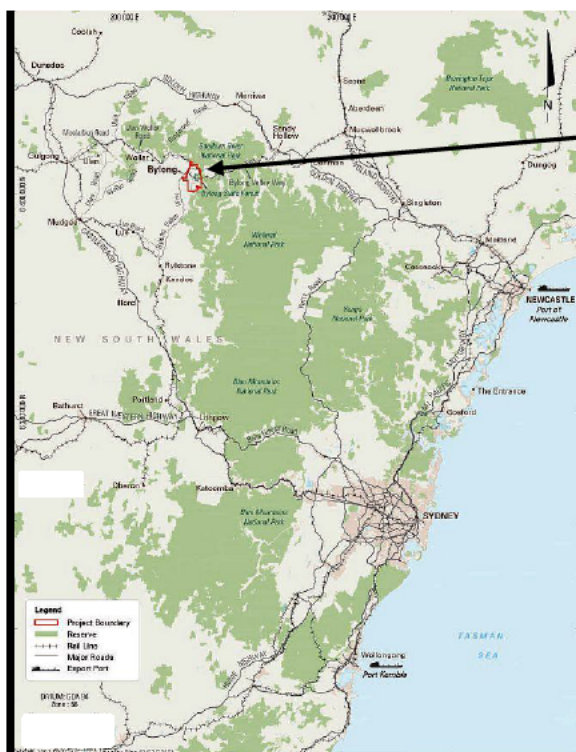
heritage consultant in private practice since 2016. Prior to this I worked for 12 years for the Heritage Division of the NSW Office of Environment and Heritage (OEH) as an expert in heritage significance assessment on the Listings Team, where I contributed to the heritage assessment of places such as the ANZAC Memorial in Hyde Park, the Portland Cement Works Site, the Chinese Market Gardens at La Perouse and Baiame's Cave near Singleton. Before that I lectured, tutored and researched for 17 years in Australian art and architecture history and theory at the University of Sydney, UNSW and UTS, including co-authoring two award-winning history books about women architects. In 2005, I project managed the Heritage Division's World Heritage nomination for the Sydney Opera House and in 2015 I wrote the history for Clive Lucas Stapleton's Conservation Plan for the World Heritage-listed Hyde Park Barracks. I have been a volunteer member of the Built Heritage Committee of the National Trust of Australia (NSW) since 2008.

1.6. This brief report was prepared at the request of EDO NSW on behalf of the BVPA. I have read the "Uniform Civil Procedure Rules 2005," Division 2 of part 31 and the "Expert Witness Code of Conduct" and agree to be bound by it.

## STUDY AREA

1.7. The study area is NSW's Bylong Valley, located north-east of Mudgee in the NSW local government area of the Mid-Western Regional Council.

1.8. The project affects more than 10,000 hectares of land within the Bylong Valley, 55 km north-east of Mudgee. It was envisaged with a projected time frame comprising a two year construction period, a 23 year operational period with underground mining operations commencing in year 7, and various rehabilitation and decommissioning activities to be undertaken during and after this quarter century of works (AECOM, 2015, p11).



*Image 1.2 Location map showing the positioning of the coal project in the Bylong Valley, about four hours' drive north-west of Sydney, close to the nearby town of Mudgee and the nearby port city of Newcastle, (AECOM, 2015, Figure 1, p5).*

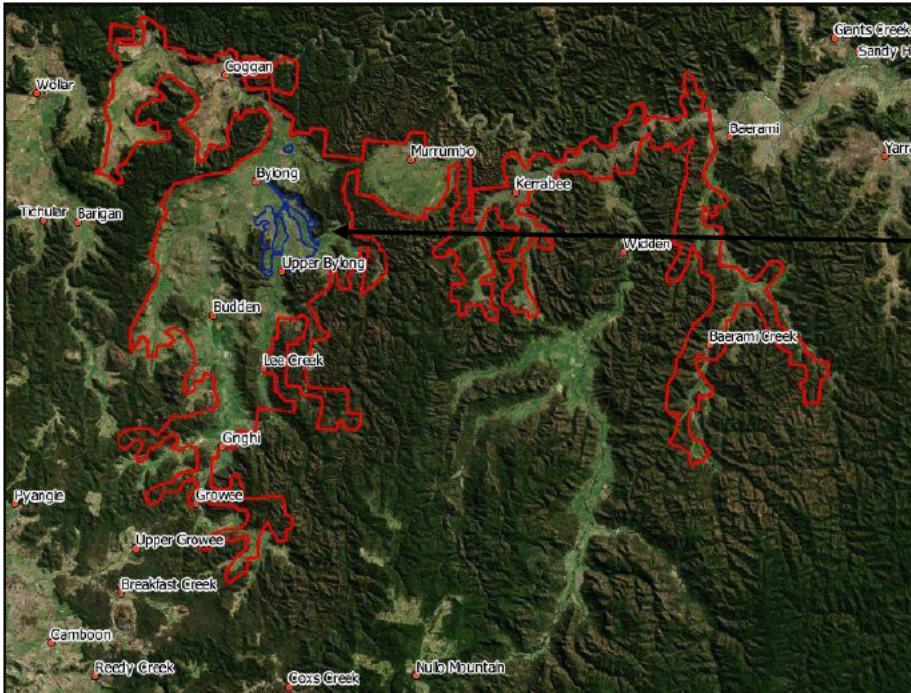


Image 1.3. Curtilage map for the National Trust listing of the Bylong Landscape Conservation Area (in red) with the original coal mine project disturbance area overlaid in blue (AECOM, 2015, Figure 13, p67).

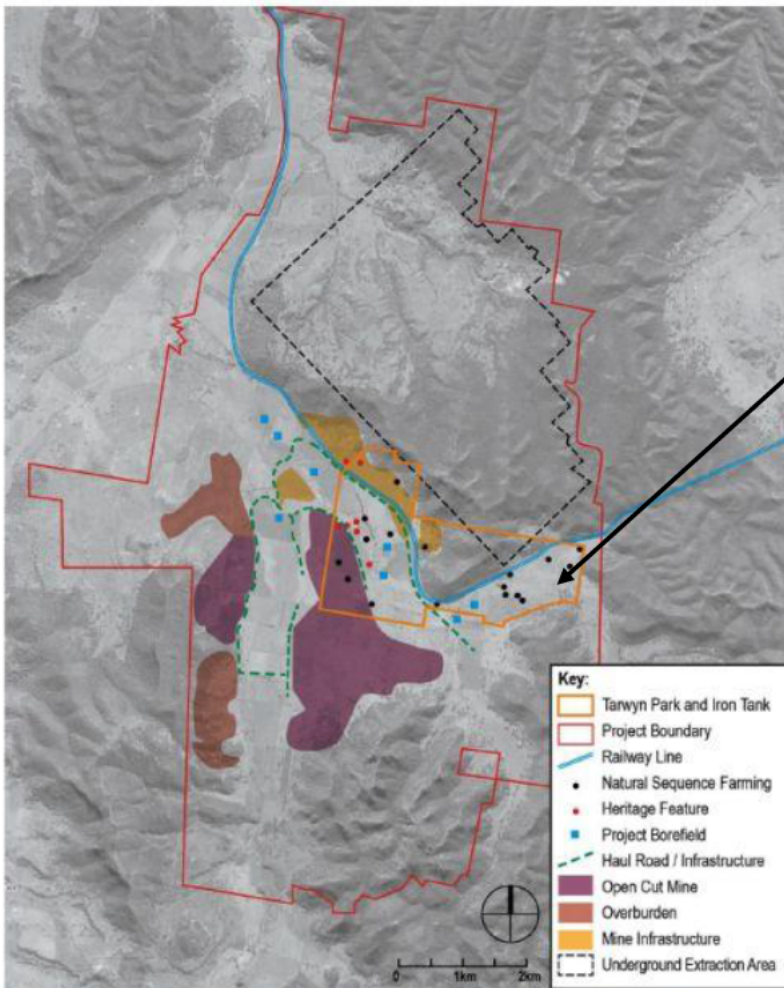


Image 1.4. GML's summary map in 2017 showing the footprint of the original plans for the Bylong mine superimposed over a map of the Bylong Valley. GML assessed Tarwyn Park as being of state heritage significance. This maps shows the numerous identified built heritage features within Tarwyn Park said to be affected by the proposed mining operations (GML, 2017).

Bylong Coal Project Layout overlaid on Tarwyn Park. (Source: KEPCO Bylong Coal Project Boundary with GML overlay)

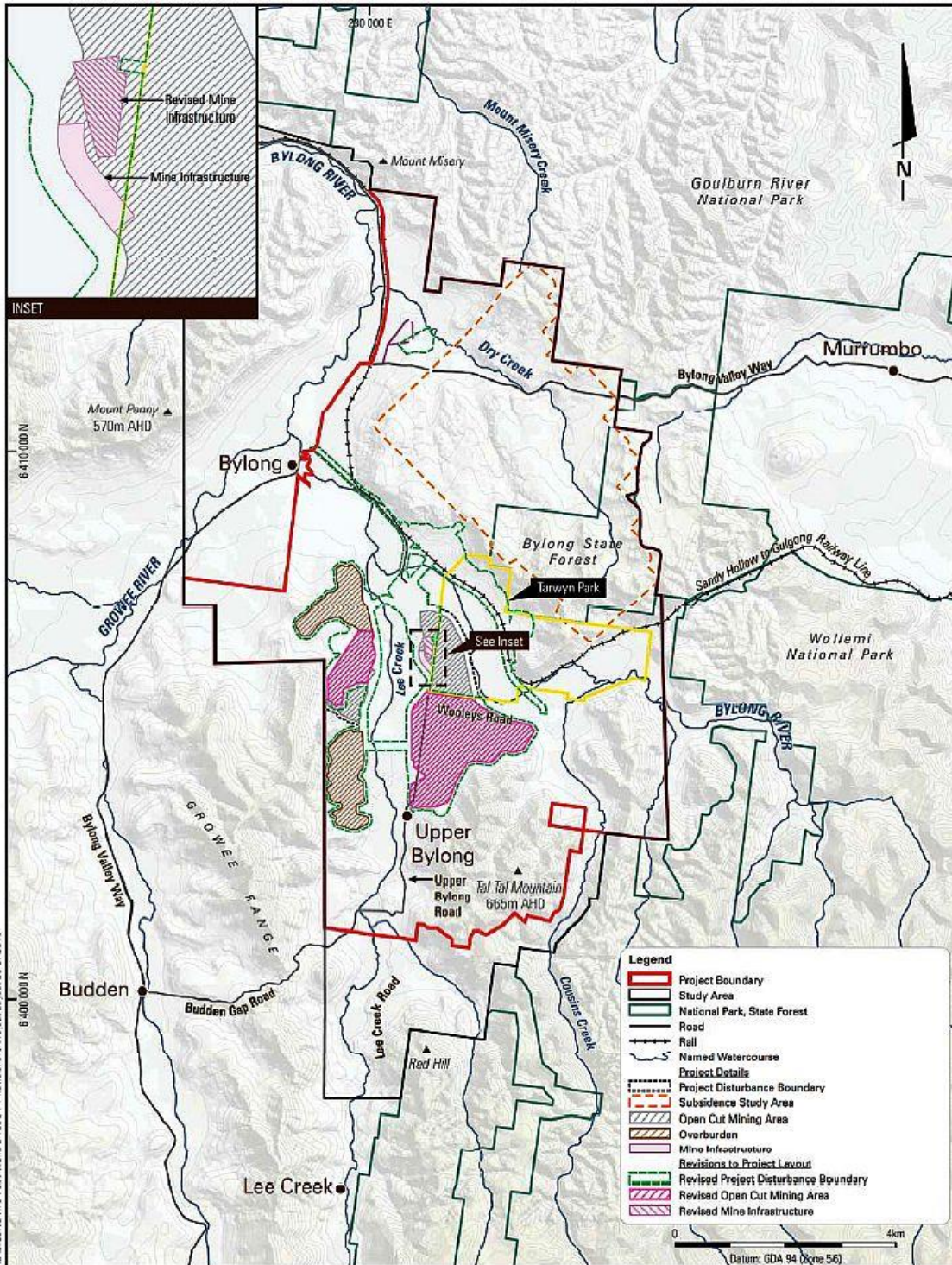


Image 1.4. KEPCO's map of revisions to the proposal responding to feedback from community and government (Hansen Bailey, 2018a, Figure 1, p5).

**BYLONG COAL PROJECT**



**Revisions to Project Layout**

## 2. HERITAGE ISSUES ASSOCIATED WITH THE BYLONG COAL PROJECT

### Cultural / Historic Heritage

2.1 KEPCO's 2015 application included an "Historic Heritage Impact Statement" by AECOM (EIS, Appendix T). This reported no statutory-listed heritage places within the project boundary. However 18 places and two landscape areas were noted within or closely adjacent to the project boundary with potential heritage significance, as identified in previous heritage studies or histories. These included Tarwyn Park—the site of a world famous experiment in agricultural design known as "Natural Sequence Farming." AECOM assessed the significance of every one of these as of "local" or no significance (rather than regional, state or national significance). It was predicted that all of these places would be wholly or partially, temporarily or permanently impacted by the project. Mitigation of these impacts was proposed through a variety of strategies including archival recording and the commissioning of a heritage management plan. Rehabilitation was envisioned to eventually partially restore the landscape and some of its heritage features (AECOM, 2015, p71, Table 10 pp73-75).

2.2. The BVPA submission's comments on historic heritage largely focused on Tarwyn Park as a site of possible "National Heritage" and noted that KEPCO's application included no plans or funding for its maintenance (BVPA, 2017, p1). The report pointed out that since being acquired by KEPCO the farm buildings had already deteriorated and the suggestion that KEPCO would maintain its innovative farming methods "is no guarantee that they will do this and from experience with other mines it is likely they won't" (BVPA, 2017, p7). BVPA's heritage report by consultant Barbara Hickson suggested that Tarwyn Park's Natural Sequence Farming landscape is of "state" significance rather than "local" significance and that the mitigation measures proposed to conserve the place seemed unlikely to prevent adverse impacts (Hickson, 2017). She noted AECOM's failure to define a heritage boundary or curtilage for the place. More generally, Hickson also expressed concern about ingrained coal dust resulting in long-term damage to heritage buildings in the locality, effects which "are not easily managed" (Hickson, 2017).

2.3. In mid 2017 the PAC commissioned GML Heritage (GML) to undertake a heritage review of Iron Tank and Tarwyn Park. GML's analysis also contradicted the AECOM assessment of significance for the farm as being of "local" significance and concluded that it is of "state" significance in six out of seven criteria (GML, 2017, pp36-39). PAC concluded there was "potential for greater heritage significance than previously assessed for Tarwyn Park and Iron Tank, which requires further consideration of the relationship between the project and the setting of these heritage items" (PAC, 2017, pi).

2.4. In January 2018 the HCNSW responded to a request from the DPE for comment on the proposal, although the council has no role as a consent authority or approval body. The HCNSW formed a sub-committee which inspected the site and commissioned Hector Abrahams Architects (HAA) to provide a heritage significance assessment and heritage impact assessment. The HCNSW agreed with HAA's assessment of the Tarwyn Park buildings as being of local significance but reserved judgement on HAA's assessment of its Natural Sequence Farming landscape as potentially of state significance, suggesting that more comparative study was required. It is not clear why the HCNSW did not ask HAA to develop their comparative analysis. The HCNSW suggested that measures were required to conserve the

research potential of the Natural Sequence Farming landscape, “should KEPCO’s application be favoured” (HCNSW, 2018b).

2.5. KEPCO’s response to the PAC Review announced that the project would be (re)designed to “avoid and limit impacts to the heritage values associated with the Tarwyn Park homestead, stables and the Natural Sequence Farming Areas” and suggested there may be plans to turn the place into “a potential research and education centre for the practice of Natural Sequence Farming” (Hansen Bailey, 2018a, p.ii). KEPCO’s “Supplementary Information” report in July 2018 responded to the DPE’s final assessment report by offering more details of a revised mine which removed almost all mining infrastructure from Tarwyn Park, and also reduced impacts on another potential local heritage item (a church and cemetery) (DPE, 2018, Hansen Bailey, 2018b).

2.6. I recognise that although KEPCO’s initial reports may have under-estimated the significance of cultural heritage items in the Bylong Valley, their later reports came some way to accepting the implications of Tarwyn Park potentially having state heritage significance. KEPCO proposed redesigning the coal mining project in an attempt to conserve some of the value of Tarwyn Park, including removing most mining infrastructure from the property, and making better plans to rehabilitate the landscape in its vicinity, so as to conserve heritage views to and from the property. However most of the remaining 16 places identified as having potential local historic heritage significance remain impacted by the revised mining plan in their structure, settings and views. In my professional opinion, the likely impacts of the Bylong Coal proposal on the cultural heritage of the Bylong Valley remain considerable and detrimental.

### **Landscape heritage**

2.7. The National Trust of Australia (NSW chapter) listed the “Bylong Landscape Conservation Area” on its register in 2013 with an extensive curtilage indicated by the red boundary overlay in Image 1.2. Although the National Trust is a community body and its listings have no statutory force, they are recognised as an important source of heritage expertise. The listing’s statement of significance proposed:

The Bylong Landscape Conservation Area has significance as prime agricultural land with a rural landscape of exceptional scenic value.

The Landscape Conservation Area has scientific significance as the site of Peter Andrews development of his Natural Sequence Farming at Tarwyn Park based on the principle of reintroducing natural landscape patterns and processes as they would have existed in Australia prior to European settlement.

The Bylong Landscape Conservation Area has historic significance, particularly evident in the historic towns of Bylong, Baerami and Kerrabee (National Trust, 2013).

2.8. KEPCO commissioned JVP to provide a “Visual Impact Assessment” for its initial Environmental Impact Statement in 2015 (Appendix Y). The report described the Bylong Valley landscape:

The topography of the Bylong Valley generally comprises steep rugged ranges, ridge lines, escarpments and hills which dominate a series of small river valleys and associated floodplains. These ridges and escarpments encircle the Project Boundary and extend into the north-east and east. All these landscape elements create a rural landscape that has

retained high visual integrity as experienced from numerous viewing locations within the valley and moving between them (JVP, 2015, p1).

2.9. JVP considered that the visual impact of the project would be “low from key viewing locations” and were confined to “the local setting of Lee’s Creek and the Upper Bylong Valley.” This presumably would not affect “the major landscape experience” which was considered to be west of the operational areas of the project and “separated visually from it by existing topography and vegetation.” Moreover the visual impacts would be reduced by progressive rehabilitation during the life cycle of the mine (JVP, 2015, p1-2).

2.10. AECOM’s initial study of historic heritage for KEPCO developed a statement of significance for the “Bylong Valley Cultural Landscape” (a smaller area than the National Trust’s “Bylong Landscape Conservation Area”) with more emphasis on Aboriginal associations and using *Burra Charter* criteria rather than NSW Heritage Council criteria:

The Bylong Valley Cultural reflects the physical and cultural character of its use by both Aboriginal and European people. It is of cultural significance for its aesthetic, spiritual, historical, social and scientific values. The valley, comprising a number of natural elements, is of distinctive aesthetic value for its picturesque views of fertile pastoral lands within an idyllic valley and river setting. The area has a rich cultural history as a geographically isolated frontier style settlement that developed into a vibrant pastoral centre known Australia-wide throughout the late nineteenth and twentieth centuries for its rich, fertile pastoral lands and breeding of high quality cattle and thoroughbred horse. The landscape has a distinct pastoral character which is reflected in its natural and man-made features including homesteads, stables, farming complexes, and town buildings, some of which retain archaeological research potential. Bylong Valley’s natural landscape features and historic heritage items are important to past and present owners, residents of adjacent towns, travellers passing through and workers who have a strong association with the area (AECOM, 2015, p28).

2.11. BVPA’s submission observed that the valley is “heritage listed and a popular scenic route for tourists” and argued that the coal mine “will irrevocably destroy the iconic features and integrity of the valley. The mines will be a massive blight on the landscape” (BVPA, 2017, p6). It described KEPCO’s claim that “the prime agricultural land above the mine voids will be returned to its current state” as “wildly optimistic” (BVPA, 2017, p1). Barbara Hickson’s heritage report for BVPA also commented on likely visual impacts associated with the coal mine project, stating:

The general destruction of the environment will modify all of the existing visual environment and potentially the visual aesthetics of the surrounding heritage sites . . . As some historic built items will be removed or altered, and the farming practices that created the environment will be gone, the diverse landscape will be denuded. Views to and from retained heritage items will be largely modified, in my opinion . . . [this] question has not been appropriately addressed (Hickson, 2017).

2.12. Hickson also pointed out that although the project did not plan to mine directly on or under Tarwyn Park, its “world renowned” method of farming was likely to be impacted: “Peter Andrews’ ‘Natural Sequence Farming’ is a landscape system. Its functioning relies heavily on working flood plains and high water table. Based on the current proposal for the mine’s open



cut pits and the ensuing modelled drawdown across the Tarwyn Park and Iron Tank properties, the operation of this system is at significant risk" (Hickson, 2017).

2.13. PAC commented, "that, for a greenfield proposal in a location recognised for its agricultural capacity, exceptional scenic value and heritage importance, caution and great care will be required in weighing the benefits and costs of the project" (PAC, 2017, pi).

2.14. In January 2018 the HCNSW commented on the significance of the Bylong Valley landscape, agreeing that "this scenic landscape has heritage significance." The HCNSW did not comment on the level of significance of the place, preferring to wait for "a more substantive, in depth assessment of like natural landforms . . . to better understand the comparative heritage values." While the HCNSW also thought further analysis was need "in relation to the projects impact on the heritage significance of the Bylong Scenic Landscape," the council suggested that more substantial measures would be required to rehabilitate the landscape than those initially proposed by KEPCO. The HCNSW did not venture a judgement on whether the project's heritage impacts were acceptable. Nor was there any recommendation that KEPCO commission further research in response to these unanswered questions.

2.15. HAA's statement of cultural significance of "Tarwyn Park and its setting" was commissioned by the HCNSW as an "independent" analysis (although its conclusion that Tarwyn Park is of state significance was not endorsed by the HCNSW). HAA also emphasised the property's location within the Bylong 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." HAA assessed Tarwyn Park as having "state" level significance under numerous heritage criteria and proposed a large "visual curtilage" for the property to its west and south (about eight times the size of the property). HAA's Statement of Heritage Impact offered a detailed consideration of proposed mitigation and rehabilitation measures and concluded that the coal mine would have detrimental impacts on the property and the valley. HAA's first mitigation measure was to "delete open cut operations" from the coal project, although this would not ameliorate all the envisioned problems (HAA, 2018):

The 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. The impact arises from the introduction of a nonrural use for a period from 10 and 30 years, and the permanent introduction of artificial landforms which alter the valley shape . . . The construction and operation of an open cut coal mine and associated operations in the setting of the Tarwyn Park Homestead will have a high negative impact on its cultural significance for the loss of the character of its setting and certain key visual relationships (HAA, 2018).

2.16. The PAC review "found that the landscape of the valley would be substantially and permanently altered . . . while the proposed landscape treatments would be at best, long term in their execution, with few examples of successful implementation elsewhere." The commission also commented on the lack of "recognition of the accumulation of, and interaction between, various impacts for the local community and the Bylong Valley. The effect of so many step changes, albeit argued to be individually acceptable, may when taken together, constitute a profound and substantial transformation of the valley's social economic, heritage and

landscape values . . . [and that] that substantial doubt persists about the potential benefits and impacts of [the project]" (PAC, 2017, ppi-ii).

2.17. The DPE's final assessment report on the development application commented on PAC's concerns "about the impacts of the project on the heritage values of the Tarwyn Park property and on the broader landscape values of the Bylong Valley" and noted the further research undertaken to assess the significance of Tarwyn Park. The DPE advised KEPCO that revisions would be required to avoid and minimise the envisioned heritage impacts. It was proposed that there should be no open cut mining on the Tarwyn Park property and that overburden placement in the valley should be redesigned to minimise visual impacts and maximise integration of the reconstructed landform with the surrounding topography (DPE, 2018).

2.18. KEPCO's "Supplementary Information" report in July 2018 (Hansen Bailey, 2018b) responded to the DPE's final assessment report with a revised mine plan which proposed reducing the open cut mine by 92%, reducing the volume and visibility of the overburden emplacement in the valley, reducing direct disturbance on some native vegetation and agricultural land, reducing visual impacts across the valley and reducing peak air emissions (DPE, 2018; Hansen Bailey, 2018b). The HCNSW commented on this revised proposal at the request of the DPE in July 2018. The HCNSW was pleased to see "significant reductions in the mine footprint," and the removal of the bulk of open cut mining from Tarwyn Park "by 90%," as well as further post mining remediation measures designed to recover the landscape. While the HCNSW considered the mining proposal continued to constitute "a significant impact to this unique landscape," the council did not recommend against its implementation (HCNSW, 2018a).

2.19. In my professional opinion, the numerous heritage reports generated through this State Significant Development process have clearly reinforced the National Trust's arguments for listing the Bylong Valley as a cultural landscape of heritage significance—a place with "distinctive aesthetic value for its picturesque views of fertile pastoral lands within an idyllic valley and river setting" (AECOM, 2015, p28). It is equally clear from these reports that the Bylong Coal Project will severely and detrimentally impact upon this landscape, even with KEPCO's most recent plans to reduce the amount of open cut mining and improve the rehabilitation of affected landscape elements. I agree with the HCNSW's comment in early 2018 that the Bylong Coal Project will result in "a significant impact to this unique landscape" (HCNSW, 2018a).

### **Heritage risks from expanded burning of fossil fuels**

2.20. KEPCO has stated its aim is to recover "approximately 6.5 Million tonnes per annum of Run of Mine coal for a period of approximately 25 years" (Hansen Bailey, 2018a, pi). This implies the extraction of more than 150 million tonnes of coal over the course of the project, which when burnt will generate many millions of tonnes of greenhouse gases additional to the earth's atmosphere and thus directly contribute to global warming.

Australia exported 301 million tonnes of coal in the year ending July 1, 2012. When this coal is burnt, it will produce 719.4 millions tonnes of CO<sub>2</sub>, which is more than the domestic emissions alone. The huge mines planned for the Galilee Basin are estimated to add 705 millions tonnes of CO<sub>2</sub> each year, bringing the emissions embedded in Australia's coal exports to almost four times its current domestic emissions. Bill McKibben draws on Climate

Institute data here in Australia to suggest that current coal export plans, if left unchecked, will produce 30% of the carbon needed to push global warming beyond two degrees (Homes, 2014, quoting McKibben, 2013)

2.21. The United Nation's International Panel on Climate Change (IPCC) recently released a complexity of reports with urgent warnings about the social and environmental problems likely to result if global warming is allowed to exceed the current target of a maximum of 1.5°C warming (IPCC, 2018). Coal mining contributes to the expansion of greenhouse gases and global warming. Scientists agree that if global warming increases by 2°C there is a risk of widespread serious environmental impacts (IPCC, 2018). For example:

Global warming of 1.5°C is . . . expected to drive the loss of coastal resources . . . Coral reefs, for example, are projected to decline by a further 70–90% at 1.5°C (*high confidence*) with larger losses (>99%) at 2°C (*very high confidence*). (IPCC, 2018, B4.2)

Marine ice sheet instability in Antarctica and/or irreversible loss of the Greenland ice sheet could result in multi-metre rise in sea level over hundreds to thousands of years. These instabilities could be triggered around 1.5°C to 2°C of global warming (*medium confidence*). (IPCC, 2018, B2.2)

2.22. This report implies that if global warming increases by 2°C we will lose the Great Barrier Reef (World Heritage listed), while our coastal cities and settlements (with all their heritage places) risk being inundated by multi-metre rises in sea level (IPCC, 2018).

2.23. The United Nations' World Heritage Committee is concerned about the impacts of climate change on World Heritage listed properties (UNESCO, 2008). Its "policy document" of 2008 stated: "Coal mining contributes to the expansion of greenhouse gases and global warming. Scientists agree that if global warming increases by 2°C there is a risk of widespread serious environmental impacts . . . climate change will adversely affect, and indeed is already affecting the conservation of World Heritage natural properties and the ecological systems that sustain life" (UNESCO, 2008, p3).

If humanity wants to maintain the stable climatic conditions of the past million years of Earth's history, the world's leading climate scientists have told us that most of the world's remaining coal resources will have to remain in the ground for the foreseeable future, and therefore constitute "unburnable carbon" (Lucas, 2015).

2.24. Coal mining contributes to the expansion of greenhouse gases and global warming. Scientists agree that if global warming increases by 2°C there is a risk of widespread serious environmental impacts. The World Heritage Committee considers that global warming will adversely affect the conservation of heritage places (UNESCO, 2008).

### 3. CONCLUSIONS

3.1. I reiterate the main conclusions I have reached through this desktop survey of the enormous array of heritage reports on the Bylong Coal Project.

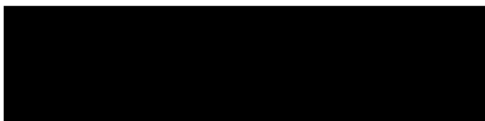
3.2. In relation to historic heritage, I recognise that although KEPCO's initial reports may have under-estimated the significance of cultural heritage items in the Bylong Valley, their later

reports came some way to accepting the implications of Tarwyn Park potentially having state heritage significance. KEPCO proposed redesigning the coal mining project in an attempt to conserve some of the values of Tarwyn Park, including removing most mining infrastructure from the property, and making better plans to rehabilitate the landscape in its vicinity, so as to conserve heritage views to and from the property. Furthermore most of the remaining 16 places identified as having potential local historic heritage significance remain impacted by the mining plan in their structure, settings and views. In my professional opinion, the likely impacts of the Bylong Coal Project on the cultural heritage of the Bylong Valley remain considerable and detrimental.

3.3. In relation to landscape heritage, the numerous heritage reports generated through this State Significant Development process have clearly reinforced the National Trust's arguments for listing the Bylong Valley as a cultural landscape of heritage significance. KEPCO's consultants described it as a place with "distinctive aesthetic value for its picturesque views of fertile pastoral lands within an idyllic valley and river setting" (AECOM, 2015, p28). It is equally clear from these reports, in my professional opinion, that the Bylong Coal Project will severely and detrimentally impact upon this landscape, even with KEPCO's most recent plans to reduce the amount of open cut mining and improve the rehabilitation of affected landscape elements. I consider that the HCNSW's comment holds true— that the Bylong Coal Project must result in "a significant impact to this unique landscape" (HCNSW, 2018a).

3.4. Coal mining contributes to the expansion of greenhouse gases and global warming. Scientists agree that if global warming increases by 2°C there is a risk of widespread serious environmental impacts (IPCC, 2018). The World Heritage Committee considers that global warming will adversely affect the conservation of heritage places (UNESCO, 2008).

Your sincerely,

A large black rectangular redaction box covering the signature area.

Dr Bronwyn Hanna  
Bronwyn Hanna History & Heritage

## ANNEXURE — REFERENCES

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