

12 June 2019

Samantha McLean  
Executive Director  
NSW Independent Planning Commission  
Level 3, 201 Elizabeth Street  
SYDNEY NSW 2000

Our Ref: 19-0240

**Re: Bylong Coal Project (SSD 6367)**

Dear Ms McLean,

GML Heritage has prepared advice regarding the Revised Mine Plan for the Bylong Coal Project at the request of the NSW Independent Planning Commission.

Please find our advice at Attachment A: Bylong Coal Project (SSD 6367)—GML Heritage Advice.

Should you have any questions, please do not hesitate to contact me.

**Yours sincerely**  
**GML Heritage Pty Ltd**



**Sharon Veale**  
**CEO**

**Attachments:**

- Attachment A: Bylong Coal Project (SSD 6367)—GML Heritage Advice.

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# 1.0 Attachment A: Bylong Coal Project (SSD 6367)—GML Heritage Advice

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## 1.1 Introduction

GML Heritage Pty Ltd (GML) provided heritage advice to the former Planning Assessment Commission (PAC) on the Bylong Coal Project in May 2017. On 24 May 2019 the Independent Planning Commission (IPC) requested GML's advice regarding the following matters:

1. Does your report, Bylong Coal Project Heritage Review, dated May 2017, including the advice and recommendations contained within it, change based on the Revised Mine Plan?
2. In particular:
  - a) The impacts of the Revised Mine Plan on the eligibility of the Tarwyn Park and Iron Tank properties as items of state significance, with reference to the Heritage Council criteria for listing on the State Heritage Register.
  - b) The impacts of the Revised Mine Plan on any heritage values associated with the Bylong Valley, including natural sequence farming, thoroughbred horse breeding and cattle breeding, and cultural history.
  - c) The eligibility of the Bylong Valley as an item of state significance, with reference to the Heritage Council's criteria for listing on the State Heritage Register, in light of the Revised Mine Plan.
  - d) The impacts of the Revised Mine Plan (if any) on the Bylong Landscape Conservation Area, as listed on the National Trust Register.

## 1.2 Does your report, Bylong Coal Project Heritage Review, dated May 2017, including the advice and recommendations contained within it, change based on the Revised Mine Plan?

GML's report prepared for the PAC in May 2017 considered the eligibility of Iron Tank and Tarwyn Park as items of heritage significance under the New South Wales (NSW) assessment criteria. That report also considered the impacts of the proposed Bylong coal mine on the heritage significance associated with Iron Tank and the Tarwyn Park property, including Natural Sequence Farming, thoroughbred horse breeding and the history of cattle breeding.

At that time GML found that Tarwyn Park and Iron Tank satisfied several of the criteria for heritage listing at state and local levels. Having now reviewed the considerable corpus of documentary research, physical description, investigation and assessment that has been prepared for the property since May 2017 by consultants for the proponent and by consultants to the Heritage Council of NSW, we would modify our assessment under select assessment criteria. Yet we remain of the view that Tarwyn Park is at threshold and would satisfy one or more of the heritage assessment criteria at state level. We note that listing on the State Heritage Register is a separate matter and subject to a recommendation by the Heritage Council of NSW and a Ministerial decision under section 34 of the *Heritage Act 1977* (NSW).

The GML May 2017 report included a short discussion on the impacts of the Bylong Coal Project on Tarwyn Park, the surrounding cultural landscape and associated features.

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We note that the Revised Mine Plan has reduced the physical footprint of the mine. Much of the proposed mining activity and related infrastructure has been removed from within the boundary of Tarwyn Park. As such, many of 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. While this is a positive impact, the material and adverse impacts associated with the proposal have been modified and relocated to land areas adjacent to and surrounding Tarwyn Park.

The Australia ICOMOS Burra Charter, the industry's best practice guideline for places of cultural significance, states that cultural significance is not only embodied in a place, its historic fabric and its use, but in its setting, associations, meanings, records and related places and objects. Further, the Burra Charter under Article 3 states 'changes to a place should not distort the physical or other evidence it provides'. A cautious approach is required.

Recognising that Tarwyn Park and Iron Tank within the National Trust listed Bylong Landscape Conservation Area are of natural and cultural heritage significance, one of the key heritage matters to be considered is whether the natural, historic and evolving cultural landscape can retain its heritage significance as an interdependent functional agricultural system that has supported innovation in land management practices, and the production of cattle and horses over generations. The key question becomes whether the mine and its associated activities will materially interfere with these historic uses and detract from the cultural significance of the property within the broader setting of the Bylong Landscape Conservation Area. In our view, based on the reports reviewed there is still considerable uncertainty about whether the historic uses of the place and its cultural significance can be successfully retained and or recovered.

The Bylong Landscape Conservation Area 'has significance as prime agricultural land with a rural landscape of exceptional scenic value'.<sup>1</sup> We note that the visual impacts have been reduced in the Revised Mine Plan. The fact remains that the proposed changes, notwithstanding the amendments, will distort and irrecoverably alter the natural and historical cultural landscape, its agricultural uses and its significant scenic qualities and character. The Burra Charter provides guidance on setting at Article 8.

*Conservation requires the retention of an appropriate setting. This includes retention of the visual and sensory setting, as well as the retention of spiritual and other cultural relationships that contribute to the cultural significance of the place.*

*New construction, demolition, intrusions or other changes which would adversely affect the setting or relationships are not appropriate.*

The aesthetic and visual qualities of the Bylong Valley have been variously expressed. The proponent's consultants have stated, the place has 'distinctive aesthetic values for its picturesque views of fertile pastoral landscape within an idyllic valley and river setting'.<sup>2</sup> In the JVP report for KEPCO the Bylong Valley was described as 'comprising 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

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<sup>1</sup> National Trust Register, Listing Report, Bylong Valley Landscape Conservation Area, 23 August 2013.

<sup>2</sup> AECOM, 'Bylong Coal Project, Historic Heritage Impact Assessment', commissioned by Hansen Bailey, Annexure T of the initial Environmental Impact Assessment, 2015, p28.

locations within the valley and moving between them'.<sup>3</sup> In the AECOM 'Landscape and Visual Analysis for Tarwyn Park Complex and Iron Tank' report, the Upper Bylong Valley, is described as 'picturesque, with a well husbanded character of pastoral lower slopes and fertile floodplain, set within a cordon of visually distinctive, rugged and densely forested hills'.<sup>4</sup>

We note that the Revised Mine Plan endeavours to mitigate many of the direct physical and visual impacts on Tarwyn Park through modifications to the location, scale and design of various mine areas and activities. The proposed changes to the significant natural and cultural landscape character for the proposal are fundamental. Vegetation, soils and geological substrates will be removed. The arrangement and organisation of unrelated places and their associated scenic qualities will be changed.

From 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. Further, the authenticity of Tarwyn Park within the Bylong Landscape Conservation Area will be compromised. It will not retain its original, authentic and true cultural expression of the natural and cultural significance. In short, while some of the impacts may have changed due to the Revised Mine Plan, the fact remains that the material impacts cannot be fully mitigated, nor are they reversible. The final landform will be an artificial reconstruction of the natural and cultural landscape. The existing character of the visual and sensory setting will change with the introduction of a new land use. The natural forces that shaped and patterned the landforms and vegetation over millennia, and the long evolving history of human land uses and management, both Aboriginal and non-Aboriginal, will be removed.

In our view it is necessary to balance the public benefit of the proposed change against the potential harm. In such matters, the weight given to heritage significance should be proportionate to the significance of the place and the proposed impact upon it. There is a cumulative impact when each of the separate but interrelated impacts are considered together. The scale and severity of the proposed change is substantive, and the overall impact will be significant on the ability to appreciate the existing natural and cultural historic landscape, patterns of use, activities, associations, visual and sensory qualities.

### **a) The impacts of the Revised Mine Plan on the eligibility of the Tarwyn Park and Iron Tank properties as items of state significance, with reference to the Heritage Council criteria for listing on the State Heritage Register**

For an item to be of state heritage or local heritage significance it must satisfy one or more of the NSW Heritage Assessment Criteria in the opinion of the Heritage Council of NSW. While professional opinion varies between heritage consultants and the Heritage Council regarding the threshold or levels (eg state or local) there is concurrence between professionals that Tarwyn Park meets threshold at state level under one or more criteria.

For example, the Bylong Coal Project Conservation Management Plan finds that Tarwyn Park and Iron Tank are of 'State associative significance and local significance under the historical, associative, aesthetic/technical, social, research, rarity and representative criteria'.<sup>1</sup> The Historical Heritage Management Plan Appendix J (21 January 2018, Hansen & Bailey, page 127) notes in its Statement of Significance that Tarwyn Park meets Criterion B through its associations with Peter Andrews, the creator

<sup>3</sup> JVP for KEPCO, 'Visual Impact Assessment', Annexure Y of the initial Environmental Impact Assessment, 2015, p1.

<sup>4</sup> AECOM, 'Bylong Coal Project: Landscape and Visual Analysis for Tarwyn Park Complex and Iron Tank', commissioned by Hansen Bailey, 20 December 2017, p11.

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of Natural Sequence Farming. Yet it incorrectly states that '[a]s Tarwyn Park meets only one criterion at a State level, the site is not considered to meet the threshold for listing on the State Heritage Register.' The HHMP is directly contradicted by KEPCO's Main Report (Hansen and Bailey/Worley Parsons January 2018) where it is stated:

*further assessments of significance have reconfirmed that Tarwyn Park and Iron Tank are of local heritage significance and do not meet the threshold for listing on the State Heritage Register under the Heritage Act 1977.*

The Department of Planning and Environment Final Assessment Report (October 2018) acknowledges there are a range of expert views on the heritage values and the criteria that would satisfy heritage significance classification.

The eligibility for listing is subject to a range of considerations, including the guidelines for inclusion and exclusion. For example, under criteria (a) and (b) an item may be excluded because it has 'been so altered that it can no longer provide evidence of a particular association'. Under criterion (g) an item may be excluded if it 'does not include or has lost the range of characteristics of a type'.<sup>2</sup>

The following table considers GML's 2017 assessment against the heritage assessment criteria alongside the impacts of the Revised Mine Plan on the significance of Tarwyn Park and Iron Tank. Only the heritage assessment criteria where GML found the item satisfied the criteria at state level are considered in the table below.

State Heritage Significance Criteria	2017 GML Heritage Comments	Impacts of Revised Mine Plan on Eligibility of Properties as Items of State Significance
<p><b>Criterion A:</b> 'It is important in the course or pattern of the cultural or natural history of NSW.'</p>	<ul style="list-style-type: none"> <li>Located in the Bylong Valley, Tarwyn Park and Iron Tank demonstrate the course of significant human activity associated with the colonial period pattern of endeavour, exploration and settlement in Central Western NSW from the 1820s. The history of the Bylong Valley is associated with the state's production of fine Shorthorn cattle, as well as thoroughbred and champion racehorses.</li> <li>Tarwyn Park and Iron Tank is associated with the establishment and historical evolution of agriculture in the Bylong Valley through the endeavours of former convict servants and 'pioneers' William Lee and John Tindale, dating from the 1820s. The Bylong Valley, and especially the land grants of Lee and Tindale, contributed to the growth and development of Shorthorn cattle breeding in NSW and more broadly across Australia. For a period during the early twentieth century the Bylong Valley boasted the world's largest population of Shorthorn cattle. Lee and Tindale's legacy was enhanced over generations by their descendants who continued to breed cattle in NSW, and elsewhere, through the importation of fine stock including 'Napoleon', a bull bred by Queen Victoria at Windsor Stud Farm.</li> </ul>	<p>The <i>Assessing Heritage Significance</i> guideline states under the exclusion guidelines for criterion (a) that if an item 'has been so altered that it can no longer provide evidence of a particular association' it may not satisfy the criterion. The key question is whether the revised mine plan will alter the heritage item (assuming it to be of state heritage significance) to such a degree that the association is no longer evidenced.</p> <p>The Revised Mine Plan has removed the Open Cut Mining Area (from within 107m to 1.4km of the Tarwyn Park complex) and the Overburden Emplacement Area from within the Tarwyn Park landholding. The Plan notes reductions in direct disturbance to key values (5.4% reduction of impact on Biophysical Strategic Agricultural Land, 16.1% on the Equine Critical Industry Cluster).</p> <p>GML acknowledges the efforts to reduce the mining footprint. Yet mining infrastructure remains within the property boundary. This includes the rail loop for coal handling, a new road to be built along the western side of the rail corridor within the Tarwyn Park boundary (as featured in the KEPCO Main Report – Year 3 of Mine Project, page 10), mine water dam, and project borefields. A portion of underground mining is located within the property boundary with potential subsidence from the range above to be monitored.</p> <p>Notwithstanding the above, the largest area of revised open cut mining (eastern overburden emplacement area (EOEA) is in the vicinity of Tarwyn Park and Iron Tank. Along the western boundary of Tarwyn Park an open cut MIA, a fuels storage facility, new roads, a mine water dam, a sediment dam, dirty water drain, mine infrastructure, and topsoil stockpile area will be created. This infrastructure is in the vicinity of the house burials and entry to Tarwyn Park.</p> <p>GML notes that the heritage values of the property are not separate from the natural and historic cultural landscape context that the property is set within. The property is part of the Bylong Valley's natural and cultural landscape system and a natural and human modified network of historic and evolving land practices, systems, processes. This interdependent system is evidenced by particular buildings, structures and elements that are sited to respond to the various landscape features and qualities. Excising the property from its landscape setting and assessing it in isolation detaches it from the course of significant European activities of settlement in Central Western NSW from the 1820s and the history</p>

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	<ul style="list-style-type: none"> <li>Tarwyn Park and the Bylong Valley are important in the state's history of thoroughbred horse breeding and horse racing by the Lee family. In 1866, 'Bylong' won the first Australian Jockey Club Metropolitan in Randwick. 'Bylong' was sired by Lee's famous horse Sir Hercules whose skeleton is now on display at the Australian Museum as a representation of the importance of horses and horsemanship to Australian history.</li> <li>Tarwyn Park is important for its contribution to the history of thoroughbred horse breeding by the Thompson family from 1918, who were involved in bloodhorse breeding before the advent of the 1878 Australian Stud Book. Tarwyn Park was one of the most famous Australian studs with the most modern facilities that was renowned for producing champion horses between 1927–1939. From the stallion 'Heroic', 29 winners were produced including 1933 Melbourne Cup winner 'Hall Mark' and 1930s champion 'Nuffield'. 'Rain Lover', Melbourne Cup winner in 1968 and 1969, brought from South Australia by the Andrews' family, is buried at Tarwyn Park. The Melbourne Cup is of significance in the history of Australian horse racing. The race is said to 'stop the nation' and is the most prestigious annual thoroughbred horserace.</li> </ul>	<p>of the Bylong Valley's association with the state's production of fine Shorthorn cattle, as well as thoroughbred and champion racehorses, now discontinued as the valley's use is transformed for mining purposes.</p> <p>DPE's report notes KEPCO's commitment to a Rehabilitation Management Plan which would 'restore higher capability agricultural land' and the Farm Management Plan which will maintain and enhance agricultural production throughout the mine's life.</p> <p>GML was not provided with a copy of the Rehabilitation Management Plan. However, the documents provided to GML, including the digital fly-throughs and renders of the surrounding landscape, do not clearly outline the pre-disturbance conditions beneath the surface. Key to the success of horse, cattle and later Natural Sequence Farming practices was the 'chain of ponds' landscape Andrews worked to restore and the agricultural land use that has evolved over time. The HHMP notes (Section 8, page 5) that in fact Tarwyn Park could be used as a trial:</p> <p><i>to document its interaction with the existing landscape, from establishment through to rehabilitation. Documentation of this may prove a useful case study for future mining operations elsewhere and how they can interact with heritage landscapes and how that may change over time.</i></p> <p>This suggests that the success of rehabilitation and mitigation of impacts on current use is largely unknown.</p> <p>Other precedents for successful rehabilitation of agricultural landscapes after mining use are not adequately documented in the Farm Management Plan or DPE's report. As the Planning Assessment Commission Review Report (25 July 2017) noted:</p> <p><i>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.</i></p> <p>Bengalla Mine within the Hunter Valley is referenced as a recent successful example of BSAL soil rehabilitation. Yet there are no examples in the Hunter Valley of viticulture and equine capabilities being</p>

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	<ul style="list-style-type: none"> <li>Tarwyn Park and Iron Tank is important in the agricultural history of NSW as an example of a chain-of-ponds landscape where land degraded by European farming practices was 'restored' through a land management technique known as 'Natural Sequence Farming' (NSF). NSF was first developed and demonstrated at Tarwyn Park; it is now widely recognised as a sustainable land management practice and agricultural approach that has been adopted and applied to land throughout NSW and elsewhere in Australia.</li> </ul>	<p>brought back to pre-mining conditions. The 2017 Australia Institute Report identified more than 60,000 abandoned mine sites across Australia and found that most Australian states had just one successfully closed, rehabilitated or relinquished mine site (except for South Australia).<sup>3</sup></p> <p>The Revised Mining Plan has mitigated adverse impact on physical evidence associated with thoroughbred horse breeding though the retainment in situ of horse burials including 'Eloisa' and a possible third horse near the current entry gates.</p> <p>Adverse impacts to the Bylong Valley's natural and cultural landscape over the life of the mine project may alter the ability of Tarwyn Park to evidence Natural Sequence Farming due to the irrevocable change to the underlying natural systems of water, soil and landform.</p> <p>The shift from historic agricultural use to mining will fundamentally change the Bylong Valley's historic association with NSW's production of fine Shorthorn cattle, as well as thoroughbred and champion racehorses.</p> <p>The Revised Mine Plan would likely impact the eligibility of Tarwyn Park to meet Criterion (a) due to the fact that the complex fundamentals and interrelationships between the natural and cultural landscape will be altered to the degree that Tarwyn Park could no longer evidence the strong associations to past practices, processes and systems. Tarwyn Park would therefore satisfy the exclusion guideline for criterion (a).</p>
<b>Criterion A—Satisfied at state level.</b>		
<p><b>Criterion B:</b> 'It has a strong or special association with the life or works of a person, or a group of persons or importance in cultural or natural history of NSW.'</p>	<ul style="list-style-type: none"> <li>Tarwyn Park and Iron Tank, located within the Bylong Valley, has a special and strong association with prominent NSW 'pioneers' who established and conducted agricultural activities in the area for around 140 years (1820s–1950s). Within NSW, Tindale and Lee were highly regarded and prominent breeders of Shorthorn cattle and horses during the 1840s.</li> </ul>	<p>The <i>Assessing Heritage Significance</i> guideline states that an item will not satisfy Criterion B if it has been 'so altered that it can no longer provide evidence of a particular association'.</p> <p>The Revised Mine Plan has removed the direct impact of the open cut mine and outlines the proponent's commitment to maintaining or enhancing soil hydrology techniques associated with NSF as well as the agricultural production on the Tarwyn Park Landholding of beef cattle, lucerne and fodder crops which will vary over the lifetime of mining operations.</p> <p>The historical association of key figures such as Tindale, Lee, the Thompson family as well as Peter Andrews is dependent on evidence of their links to the development of pastoral activities in the Bylong</p>

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	<ul style="list-style-type: none"> <li>• Associated with the rise of agriculture in the Central West, the Lee and Tindale families were part of the network of pastoral properties in the area established by the Lowe, Rouse, Cox and Bayly families who largely bred sheep.</li> <li>• William Lee is a person of note in the history of NSW. He sat in the First NSW Legislative Assembly as Member for Roxburgh between 1856–1859. John Lee contributed to four of the 19 bloodhorse families now listed in the Australian Stud Book. His racehorse named ‘Bylong’ won the first Australian Jockey Club Metropolitan in Randwick in 1866.</li> <li>• From 1918, the Thompson family developed bloodhorse breeding at Tarwyn Park and today continue operations in the neighbouring Widden Valley. The Thompsons have a long and continuing association with the history of Australian horse breeding and are widely regarded in that industry as leaders.</li> <li>• Tarwyn Park has a special association with the life work of Peter Andrews, who first established NSF, an inventive land management and soil hydrology technique, on Tarwyn Park. Peter Andrews is a prominent and respected advocate of the technique and was awarded a Medal of the Order of Australia (OAM) in January 2011 for outstanding achievement and services to</li> </ul>	<p>Valley (including cattle and horse breeding and Andrews’ innovation in agricultural practice). The continuity of these historic and continuing activities is dependent on the successful reinstatement of the Biophysical Strategic Agricultural Land based on KEPCO’s Rehabilitation Plan and the scientific data developed around soil hydrology. As such it is difficult to assess whether Tarwyn Park and the Bylong Valley will be able to regain the full scale of activities that were associated with key historical figures.</p> <p>Impacts to the wider landscape with the surrounding mining footprint may also alter the ability of the Tarwyn Park property to demonstrate the NSF system through the series of cuttings, contours and structures that were originally developed in response to the pre-mining form of the valley. KEPCO has committed to the research potential but the successful reinstatement of the NSF practices on the property is not known at this stage.</p>

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	<p>agriculture. Tarwyn Park was the place at which Peter Andrews first introduced and demonstrated the NSF model. The property retains the ability to demonstrate the NSF system through its chain of ponds and series of cuttings, contours and structures.</p> <ul style="list-style-type: none"> <li>Tarwyn Park is associated with the work of Harold Hardwick (Australian Institute of Architects), a well-respected local architect who designed many important civic, religious, commercial and residential buildings in the Central West of NSW.</li> </ul>	
<b>Criterion B—Satisfied at state level.</b>		
<p><b>Criterion C:</b> ‘It is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW.’</p>	<ul style="list-style-type: none"> <li>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 of Tarwyn Park and Iron Tank are aesthetically distinctive with positive sensory visual appeal.</li> <li>In its materiality, composition and arrangement, Tarwyn Park demonstrates a well-resolved architectural design and aesthetic characteristics in its complex of farm buildings including the horse stables and homestead designed by local Mudgee architect Harold Hardwick in 1927. The views and vistas from the homestead complex,</li> </ul>	<p>In the <i>Assessing Heritage Significance</i> guideline under criterion (c) an item may be excluded if ‘its positive visual or sensory appeal or landmark and scenic qualities have been more than temporarily degraded’.</p> <p>By reducing the footprint of the open cut by 22.5ha, the Revised Mine Plan will maintain a wooded ridgeline and existing views from Tarwyn Park homestead, reducing the height and slope of the southwestern overburden emplacement area to integrate with existing topography and incorporating the conceptual final landform with existing elements of Upper Bylong Valley. The Plan has mitigated direct impacts to Harold Hardwick’s architectural design and aesthetic characteristics of the farm complex.</p> <p>The Eastern Embankment Area is positioned directly to the south of Tarwyn Park and will remove a substantial part of the Upper Bylong Road. The driveway into Tarwyn Park will no longer be linked to the Upper Bylong Road and to the historic village. Hector Abrahams’ Heritage Significance Assessment (February 2018) identified that the landscape of the driveway is partially intact from its creation during the 1920s and it forms an important component of the Tarwyn Park homestead’s architectural and garden significance. Significant mining infrastructure will surround the property for the lifetime of the</p>

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	<p>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> <ul style="list-style-type: none"> <li>• Tarwyn Park demonstrates technical achievement and innovation in the development and application of NSF by Peter Andrews.</li> </ul>	<p>mine (up to 25 years). The Eastern Open Embankment Area will sever the scenic, aesthetically distinctive natural and cultural landscape setting and visual connections of Tarwyn Park to the network of historic places along Upper Bylong Road. The scenic qualities, textures, colours, and pattern of rural lands across the undulating valley floor, fringed by densely wooded slopes, with rocky ridges and a skyline marked by different hill formations, will be impacted.</p> <p>The HHMP states that ‘following rehabilitation, it would be difficult to distinguish the former location of the mine... modifications are considered to be in keeping with landforms and will make a neutral contribution to the landscape.’ Yet examples of successful rehabilitation and reformation of landscapes have not been provided to support the digital renders.</p> <p>The mine will irrecoverably alter the landscape’s scenic picturesque views and visual relationships. The positive sensory appeal of the landscape will be irrecoverably altered though the introduction of new and modified landforms. Sounds and the sensory feel of the landscape will be fundamentally altered. The aesthetic qualities and character of the valley, including the functions and pattern of the landscape, will be modified and more than temporarily degraded.</p>
<b>Criterion C—Satisfied at state level.</b>		
<p><b>Criterion D:</b> ‘It has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons.’</p>	<ul style="list-style-type: none"> <li>• This assessment has not considered social values about community or cultural groups.</li> <li>• There are associations with the horse breeding and racing communities; however, the nature, extent and strength of these social attachments has not been researched.</li> <li>• As an of example of NSF, Tarwyn Park and Iron Tank is held in high esteem by proponents as a key reference site for its ability to demonstrate a restorative soil hydrology process and land management system.</li> </ul>	<p>No changes to GML’s 2017 assessment.</p>

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	<ul style="list-style-type: none"> <li>• There are notable and continuing attachments amongst proponents of NSF; this is represented through social media, publications, events and other educational activities.</li> <li>• There is demonstrable local community attachment to Tarwyn Park, which is evidenced by the community's interest in the stables and the horse burials on site.</li> </ul>	
<b>Criterion D—Likely to meet threshold at a local level. Evidence to suggest that it may meet threshold at state level.</b>		
<p><b>Criterion E:</b> 'It has potential to yield information that will contribute to an understanding of the cultural or natural history of NSW.'</p>	<ul style="list-style-type: none"> <li>• The known and potential historical archaeological evidence associated with a continuing history of European occupation and management has through research and investigation the ability to yield information about domestic life and consumption patterns, agricultural practices and industrial and technical innovation through time.</li> <li>• The areas of NSF within the Tarwyn Park and Iron Tank properties have attributes of a significant land management process, technique and philosophy.</li> <li>• The distinctive cultural landscape associated with NSF infrastructure, variously comprising a leaky weir, stream bank and vegetation growth and contouring, represent the key characteristics of the NSF method applied to a natural environment. NSF is no longer practiced at Tarwyn Park and Iron Tank, yet the properties</li> </ul>	<p>The <i>Assessing heritage significance</i> guidelines for exclusion include that the knowledge gained would be irrelevant to research on science, human history or culture, or that an item has little archaeological or research potential, or that an item only contains information that is readily available from other resources or archaeological sites.</p> <p>The revised mine plan avoids impacts to the NSF infrastructure and landscape modifications within Tarwyn Park, though it appears that a dam structure on the northern side of the railway line may be used for raw water storage and surrounded by mine infrastructure. It also appears that an NSF contour bank for stabilisation of gully erosion may be within the area proposed for mine infrastructure. Bore fields appear to remain within the Tarwyn Park boundary.</p> <p>GML has not been asked to specifically review the archaeological components. We note an archaeological assessment was undertaken in 2015 (Higginbotham and Associates) for the horse burials but further assessments for the property have not been undertaken. Policies for management of potential excavations have been outlined in the AECOM Historical Heritage Management Plan (page 20).</p> <p>The Revised Mine Plan will impact the setting of Tarwyn Park including the historic relationships and associations and patterns of use that are part of its significance. The proposed mining activities, combined with the potential impacts, may well affect the eligibility of the item under this criterion as the</p>

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	<p>still retain the potential to yield new information. Through programmatic research and monitoring this information may contribute to an understanding of the transformative processes associated with NSF on the natural environment. This could contribute to an understanding of NSF's potential to contribute to the development of sustainable land management systems and economic development and agricultural productivity within NSW.</p>	<p>scientific and research value of the item will be changed. The scientific research potential will shift from a focus based on historic land use patterns associated with Aboriginal use, occupation and historic agricultural production and the application of innovative techniques to one related to mining and post-mining rehabilitation and land use.</p>
<p><b>Criterion E—Criteria satisfied at state level.</b></p>		
<p><b>Criterion F:</b> 'It possesses uncommon, rare or endangered aspects of the cultural or natural history of NSW.'</p>	<ul style="list-style-type: none"> <li>• Based on research to date, Tarwyn Park is an uncommon example of a rural homestead and stables complex by well-known Mudgee-based architect Harold Hardwick.</li> <li>• As the first demonstration site associated with NSF established by Peter Andrews within the Bylong Valley, Tarwyn Park and Iron Tank does possess evidence of NSF in this location.</li> <li>• NSF has been implemented at several other sites since it was first established at Tarwyn Park; given this, the NSF infrastructure evident at Tarwyn Park and Iron Tank is not considered to process uncommon, rare or endangered evidence of significant human activity at state level.</li> </ul>	<p>No changes to GML's 2017 assessment.</p>

State Heritage Significance Criteria	2017 GML Heritage Comments	Impacts of Revised Mine Plan on Eligibility of Properties as Items of State Significance
<b>Criterion F—Does not meet criterion at state level.</b>		
<p><b>Criterion G:</b> 'It is important in demonstrating the principal characteristics of a class of cultural or natural places/environments in NSW.'</p>	<ul style="list-style-type: none"> <li>• With its topographical features, soil and chain of ponds, Tarwyn Park and Iron Tank is representative of a historic evolving rural landscape that was modified by Europeans and which has been used continuously for agricultural activities since colonisation. The properties retain the ability to demonstrate important aspects of this class of historic cultural landscape including that associated with cattle breeding, horse breeding and NSF and the environmental impacts of European occupation and land use.</li> <li>• Tarwyn Park and Iron Tank is considered to demonstrate the principal characteristics of a class of the state's natural or cultural places at local level.</li> </ul>	<p>No changes to GML's 2017 assessment.</p>
<b>Criterion G—Criteria satisfied at local level.</b>		

### 1.3 Summary—GML’s findings on the impact of the Revised Mine Plan on State Heritage Criteria eligibility

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. The property’s significance is borne in part out of the establishment and historical evolution of agriculture in the Bylong Valley and its association with historical figures of this area (Criteria A and B). Secondly the Natural Sequence Farming technique pioneered on the property and since taken up nationally also meets the criteria at state level (Criteria C and E). The cessation of the use of property and its historic links to the village and landscape during the mine’s project life, anticipated to be 25 years (a two-year construction period and 23-year operational period with underground mining operations commencing in Year 7), directly impacts on the legibility of these heritage values and the property’s eligibility to be listed.

GML does not support the contention in the Historical Heritage Management Plan that “productive uses of the landscape would be reinstated, and this would mitigate historical impacts... impacts would be temporary and can be managed and mitigated” (HHMP Section 8.2.3). The fundamental change in land use puts at risk the historic importance and association of the Bylong Valley and Tarwyn Park with the evolution of agriculture in the area. The exclusion guidelines highlight that a site may not be eligible if it:

- *has been so altered that it can no longer provide evidence of a particular association (Criterion A and B); or*
- *its positive visual or sensory appeal or landmark and scenic qualities have been more than temporarily degraded (Criterion C)*

#### b) The impacts of the Revised Mine Plan on any heritage values associated with the Bylong Valley, including natural sequence farming, thoroughbred horse breeding and cattle breeding cultural history

Heritage Feature	Impact GML 2017 Report	Revised Mining Plan	GML Comments 2019
Bylong Valley Historic Cultural Landscape (including Tarwyn Park and Iron Tank)	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Impact on the research potential associated with the historical archaeological evidence associated with human occupation and agricultural activities since colonisation.</li> </ul>	Partial (possible visual and vibration)  Tarwyn Park and Iron Tank: Draft Conservation Management Plan revised to include management measures for the horse burials to remain and to amend visual mitigation and management measures for the Revised Mine Plan.	<ul style="list-style-type: none"> <li>• GML’s 2017 assessment of the impact on the site remains the same.</li> </ul>
Bylong National Trust Landscape Conservation Area (BLCA)	<ul style="list-style-type: none"> <li>• Direct impact to the natural landscape, aesthetic value of views and vistas (Goulburn River National Park) to the north of Tarwyn Park that is part of the Bylong Conservation Area.</li> </ul>	Partial impact on BLCA (removal of heritage items and landscape impacts)  KEPCO argues that the project would only be visible to around 0.6% of publicly accessible locations with the	<ul style="list-style-type: none"> <li>• GML’s acknowledges KEPCO’s plans to ameliorate views of the mining infrastructure including overburden emplacement areas, open cut and underground mining</li> </ul>

Heritage Feature	Impact GML 2017 Report	Revised Mining Plan	GML Comments 2019
		<p>BCLA with minimal direct views along the main Bylong Valley Way tourist drive and from the Bylong Village precinct due to woodland vegetation and intervening ridgelines associated with Growee range. Direct impacts from mining estimated to around only 2% of the total BCLA area.</p> <p>KEPCO Response to PAC in Conservation Management Plan (executive summary 20 December 2017) outlines mitigation measures including:</p> <ul style="list-style-type: none"> <li>• introduction of endemic plant communities layered along the contour as stands of 'paddock trees' with patches of more complex plant associations in the Overburden Emplacement Areas (OEA) area to break up uniformity of the landform and reduce the extent against the skyline;</li> <li>• further visual modulation of the interface between floodplain, cleared lower slopes and steep, forested upper slopes; and</li> <li>• bringing a cover of dense forest further down the OEA slopes where practicable or introducing bands of endemic plant communities layered along the contour as described above to better reflect the existing character of Bylong Valley.</li> </ul>	<p>operations. The Revised Mine Plan will directly impact the natural landscape including aesthetic values.</p> <p>As outlined in Section 1.2 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 that has been shaped by natural and cultural over millennia.</p> <p>The proposed Mine project will impact the setting, as defined by the Burra Charter (Article 8).</p> <p>Mitigation measures to recreate and reinstate landforms and vegetation will impact the natural and historic cultural landscape and its character. The landscape's authenticity and integrity will be permanently impacted as will the appreciation of heritage significance.</p> <p>While the visual impacts and the visual effects have been addressed in the Revised Mine Plan, with regard to views, the fundamental issue remains that the visual integrity and authenticity of the Bylong Valley Landscape Conservation will be permanently changed, and this gives rise to a</p>

GML Heritage

Heritage Feature	Impact GML 2017 Report	Revised Mining Plan	GML Comments 2019
			<p>significant heritage impact. The ability to view and appreciate the visual character will be lost.</p>
<p>Tarwyn Park Driveway and Entrance</p>	<ul style="list-style-type: none"> <li>Direct impacts to historic driveway and entrance to Tarwyn Park that is a key element of the functional rural industrial landscape that retains the ability to demonstrate historic patterns of movement across the land.</li> <li>Adverse material impact to the driveway's connection to Upper Bylong Road and on historic land use and layout/pattern of use and circulation between the properties, including patterns of movement within the properties and relationships to other items in the Bylong Valley including the church and post office.</li> <li>Direct impact that will adversely impact physical evidence associated with Tarwyn Park's historic association with the Melbourne Cup evidenced by the burial at the entry to Tarwyn Park of 'Rain Lover' (winner of 1968 and 1969 Melbourne Cups). Adverse impact on physical evidence associated with thoroughbred horse breeding though proposed removal of other horse burials including 'Eloisa' and a possible third horse near the current entry gates.</li> </ul>	<p>Partial (possible visual and vibration)</p> <p>Upper Bylong Road partially decommissioned to make way for Eastern Open Cut</p> <p>Partial (possible visual and vibration)</p>	<ul style="list-style-type: none"> <li>There will be a direct impact on the historic link between Tarwyn Park and Bylong Village, and its historic land use/layout. The linking portion of Upper Bylong Road will be decommissioned, and Open Cut Mining Infrastructure Area built (Figure 14 Open Cut Area Reduction).</li> <li>The impact to horse burials is mitigated by the repositioning of the open cut footprint.</li> </ul>
<p>Tarwyn Park</p>	<ul style="list-style-type: none"> <li>Adverse impact on the historic setting and agricultural cultural landscape pattern associated with Tarwyn Park homestead and stables and Iron Tank.</li> <li>Mine infrastructure will give rise to a material impact on the surrounding rural agricultural landscape setting associated with the homestead complex.</li> <li>Detrimental visual impacts to views to and from the homestead complex. Visual impacts to the setting of the homestead's associated aesthetic, historic and social cultural values of the locality and its wider setting due to haul</li> </ul>	<p>Partial (possible visual and vibration)</p> <p>Reduction in the footprint of the Western Open Cut to maintain wooded ridgeline (northern spur), retaining existing views from the Tarwyn Park homestead.</p>	<ul style="list-style-type: none"> <li>There will be an adverse impact on the historic setting and agricultural landscape pattern associated with Tarwyn Park homestead and stables and Iron Tank.</li> <li>Mine infrastructure will give rise to a material impact on the surrounding historic rural agricultural landscape setting associated with</li> </ul>

Heritage Feature	Impact GML 2017 Report	Revised Mining Plan	GML Comments 2019
	<p>roads and surrounding open cut mines.</p> <ul style="list-style-type: none"> <li>Blasting and blast-related operations will give rise to aural impacts on the rural agricultural setting and sensory qualities of the cultural landscape. Blasting activity will impact the ability to appreciate the historic agricultural values and that associated ambient sounds.</li> <li>Some subsidence impacts on farm structures considered likely. Depending on the nature and extent of these impacts they could be material and adverse and further impact the ability of the property to demonstrate its cultural significance related to agricultural land use.</li> <li>Impact on the research potential associated with the historical archaeological evidence associated with Tarwyn Park.</li> </ul>	<p>Main structures impacted immediately by blasting in the proposed extraction area are Tarwyn Park homestead and stables (Appendix I, Conservation Management Plan, page 3). Open cut mining and blasting moved from within 107m of the Tarwyn Park complex to more than 1.4km.</p>	<p>Tarwyn Park homestead.</p> <ul style="list-style-type: none"> <li>Subsidence impacts will be monitored but remain a risk to the northeast of the property where underground mining operations are planned.</li> <li>The impact on research potential associated with the historical archaeological evidence has not been assessed except for the Higginbotham 2015 report on horse burials.</li> </ul>
Tarwyn Park Stables	<ul style="list-style-type: none"> <li>Impact on historic use of Tarwyn Park as thoroughbred horse stud and stables in early twentieth century and connection to network of studs in the Bylong and Widden Valleys and around Mudgee.</li> </ul>	<ul style="list-style-type: none"> <li>The Plan notes a reduction of 16.1% on the Equine Critical Industry Cluster. The specific consideration of Tarwyn Park's connection to the network of studs in the Bylong and Widden Valleys and around Mudgee.</li> <li>Proposed ongoing use of the homestead as a collaborative research and education centre (subject to suitable arrangements with institutions).</li> </ul>	<ul style="list-style-type: none"> <li>There will be an impact on historic use remains as assessed by GML in 2017.</li> </ul>
Equine Facilities	<ul style="list-style-type: none"> <li>Direct impact on other equine facilities within the Bylong Valley which will more broadly impact on the significant pattern of use associated with horse breeding.</li> </ul>	<p>Plan does not comment.</p>	<ul style="list-style-type: none"> <li>Direct impact on equine facilities as assessed by GML in 2017.</li> </ul>

Heritage Feature	Impact GML 2017 Report	Revised Mining Plan	GML Comments 2019
Natural Sequence Farming	<ul style="list-style-type: none"> <li>• 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 of use and management of land and water.</li> <li>• Material impact on NSF infrastructure through the removal of NSF features (crushed limestone, hay bale and boxthorn vegetation) in the southwest corner of the property where the Eastern Open Cut Mine is proposed.</li> </ul>	<ul style="list-style-type: none"> <li>• Direct disturbance from open cut mining and emplacement areas now avoided.</li> <li>• Maintaining or enhancing soil hydrology techniques (natural sequence farming) with commitments identified in a Draft Farm Management Plan.</li> <li>• Maintaining reasonable access for external study of these techniques.</li> <li>• Potential to establish a research and education centre, subject to suitable arrangements with institutions.</li> <li>• Maintain agricultural production on the Tarwyn Park landholding.</li> </ul>	<ul style="list-style-type: none"> <li>• There will be a direct impact on the wider alluvial and consequently historic patterns of use and management of land and water.</li> <li>• Material impacts on NSF infrastructure have been mitigated but there will be a material impact on the water and soil values of the wider landscape which underpins NSF and the property's ability to demonstrate the technique.</li> </ul>
Renfrew Park Remains (1900)	<ul style="list-style-type: none"> <li>• Renfrew Park remnant on the outside border of Tarwyn Park where the Eastern Open Cut mine area is proposed. Adverse impact on cultural significance through the proposed removal, as the ability to demonstrate the historic agricultural land use pattern in this area of the Bylong Valley will be lost.</li> </ul>	Direct/whole destroyed	Adverse impact.
Cheese Factory Remains (1910)	<ul style="list-style-type: none"> <li>• The remains of the Cheese Factory on the border of Tarwyn Park will be directly impacted as it is proposed for removal. This will impact the significance of the Bylong Valley's historic patterns of agricultural use in the area.</li> </ul>	Direct/whole destroyed	Adverse impact.

**c) The eligibility of the Bylong Valley as an item of state significance, with reference to the Heritage Council’s criteria for listing on the State Heritage Register, in light of the Revised Mine Plan**

The Bylong Valley was listed by the National Trust of NSW in August 2013. In 1978 the National Trust prepared guidelines regarding the conservation of scenic landscapes. The concept of a scenic landscape was based on the combined appreciation of historical factors and evidence in landscape and value of the natural characteristics and features. In 1981 the Department of Planning and Environment established Environment Protection Zones. ‘Scenic’ included a system for analysing the scenic qualities and the identification of visually prominent areas. At this time the assessment was based on a system

developed by the US Forest Service. Archaeology, historic and scientific values covered the definition of environmental heritage. It was considered that heritage items found in rural areas were likely to include buildings and their fixtures, Aboriginal cultural heritage, historic sites and relics, works, bridges, dams, precincts including groupings of structures and related places. Historic villages and farm complexes, combined with small natural areas, geological sites and soils of scientific, educational or heritage interest, were also incorporated. In the early 1980s the National Trust turned its attention to cultural landscapes in the Hunter Valley. In 1988 the Department of Planning issued a revised edition of *Rural Land Evaluation: a manual for conducting a rural lands evaluation exercise at a local planning level*. This revised edition included a section on 'cultural landscapes'. In the manual the definition of scenery and scenic quality recognised the 'character of components... is influenced by factors such as the time settlement commenced, technological changes and the sequence of land use changes'.<sup>4</sup>

We note that the Heritage Council stated in correspondence dated 23 February 2018 that more substantive, in-depth assessment of like natural landforms (including the set of 'Ways' transecting the Great Dividing Range and northern NSW hinterland) is required to better understand the comparative heritage values of these landscapes to determine the level of significance. We concur with this. Further assessment across New South Wales is required to understand the natural and cultural significance of such areas in the course and pattern of the state's history. While some attention has been paid to understanding the significance of cultural landscapes in NSW the Heritage Council has not significantly progressed this work since workshops and papers were prepared in 2003.

Notwithstanding 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. Considering the guidelines for inclusion under criterion (c) the area is assessed as being aesthetically distinctive and has landmark qualities. Recognising that eligibility is defined as the ability to satisfy certain conditions, the Revised Mine Plan, notwithstanding the modifications, is likely to detrimentally impact the ability of the Bylong Valley to demonstrate and satisfy the historic and aesthetic significance at this threshold. Some aspects of the aesthetics, as evidenced by the composition of landforms, have been attended to and will be recreated progressively during mine operations and post mining through rehabilitation. Yet the authenticity and integrity of the 'original' will be lost. Reconstruction according to Article 20 is 'appropriate only where a place is incomplete through damage and alteration'. Reconstruction 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.

#### **d) The impacts of the Revised Mine Plan (if any) on the Bylong Landscape Conservation Area, as listed on the National Trust Register**

KEPCO has noted that impact on the Bylong Landscape Conservation Area represents only 2% of the total Bylong Landscape Conservation Area.

The impacts from the Revised Mine Plan are direct, indirect, visual, temporary and permanent, and physical and cultural. The direct impacts, which include two open cut mining areas and overburden emplacement areas, will result in the physical loss of parts of the Bylong Landscape Conservation Area; Hector Abrahams notes that open cut mining will remove all of the cultural landscape elements, vegetation, soils, geological substrates from two large areas in the Lee Creek Valley and the Bylong Valley. In turn, these interventions alter part of the setting which includes significant associations and relationships to Tarwyn Park. While many direct physical impacts to Tarwyn Park have been avoided in

the Revised Mine Plan, the direct impacts remain on the natural and cultural landscape setting. The direct impacts to the Bylong Landscape Conservation Area are permanent and irreversible.

We note that the Revised Mine Plan has endeavoured to address and reduce the visual impacts of the scenic landscape, through the modification of the scale, placement and composition of the proposed mining activities. However, areas of the valley's natural and cultural landforms and patterns that contribute to its distinctive qualities will be irrecoverably altered.

### 1.4 Endnotes

- <sup>1</sup> *Bylong Coal Project, Tarwyn Park and Iron Tank, DRAFT Conservation Management Plan*, AECOM 15 January 2018, p 109.
- <sup>2</sup> *Assessing Heritage Significance*, NSW Heritage Office, 2001, pp 12,14, 24.
- <sup>3</sup> Decipher, 'Your Guide to Mine Rehabilitation in Australia', viewed 29 May 2019 <<https://decipher.com.au/wp-content/uploads/2019/05/Your-Guide-To-Mine-Rehabilitation-in-Australia.pdf>>.
- <sup>4</sup> Meredith Walker, Heritage Futures, *Annexure A, Change In rural landscapes – concepts for development, building and conservation*, viewed 29 May 2019 <[www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)>.