Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Introduction</td>
<td>1</td>
</tr>
<tr>
<td>1.1 Background</td>
<td>1</td>
</tr>
<tr>
<td>1.2 Document purpose</td>
<td>2</td>
</tr>
<tr>
<td>2 Response to questions from the Commission</td>
<td>3</td>
</tr>
<tr>
<td>2.1 Overview</td>
<td>3</td>
</tr>
<tr>
<td>2.2 GHG emissions</td>
<td>3</td>
</tr>
<tr>
<td>2.2.1 Comparison of GHG emissions to other mines</td>
<td>3</td>
</tr>
<tr>
<td>2.2.2 Source and abatement of Scope 1 GHG emissions</td>
<td>4</td>
</tr>
<tr>
<td>2.3 Approach to the existing development consents</td>
<td>7</td>
</tr>
<tr>
<td>2.4 Financial viability of shortening longwalls</td>
<td>8</td>
</tr>
<tr>
<td>2.5 Ventilation shafts and biodiversity</td>
<td>9</td>
</tr>
<tr>
<td>2.6 Bore drawdown</td>
<td>10</td>
</tr>
<tr>
<td>3 Response to matters raised in DPIE’s assessment report</td>
<td>11</td>
</tr>
<tr>
<td>3.1 Overview</td>
<td>11</td>
</tr>
<tr>
<td>3.2 Surface water</td>
<td>11</td>
</tr>
<tr>
<td>3.3 Groundwater</td>
<td>14</td>
</tr>
<tr>
<td>3.4 Subsidence</td>
<td>15</td>
</tr>
<tr>
<td>3.5 Greenhouse gas emissions</td>
<td>15</td>
</tr>
<tr>
<td>4 Response to matters raised in the public hearing</td>
<td>16</td>
</tr>
<tr>
<td>4.1 Opening address by the Chair</td>
<td>16</td>
</tr>
<tr>
<td>4.2 Subsidence</td>
<td>16</td>
</tr>
<tr>
<td>4.2.1 Estimated cost to repair subsidence related effects</td>
<td>16</td>
</tr>
<tr>
<td>4.2.2 Time for subsidence to occur</td>
<td>17</td>
</tr>
<tr>
<td>4.2.3 Repairs of subsidence if the mine ceases to operate</td>
<td>18</td>
</tr>
<tr>
<td>4.2.4 Building standards</td>
<td>19</td>
</tr>
<tr>
<td>4.3 Surface water quality</td>
<td>19</td>
</tr>
<tr>
<td>4.4 GHG submissions</td>
<td>20</td>
</tr>
<tr>
<td>4.5 Emerging steel technologies and project justification</td>
<td>21</td>
</tr>
<tr>
<td>4.6 Matters for consideration under section 4.15 of the EP&amp;A Act</td>
<td>21</td>
</tr>
<tr>
<td>4.6.1 State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007</td>
<td>21</td>
</tr>
<tr>
<td>4.6.2 Principles of ESD</td>
<td>27</td>
</tr>
<tr>
<td>4.6.3 Suitability of the site</td>
<td>27</td>
</tr>
<tr>
<td>4.6.4 Procedural fairness</td>
<td>28</td>
</tr>
<tr>
<td>4.6.5 Recommended conditions</td>
<td>28</td>
</tr>
<tr>
<td>4.7 Economic assessment</td>
<td>28</td>
</tr>
<tr>
<td>4.8 Employment</td>
<td>29</td>
</tr>
</tbody>
</table>
4.9  Comparison to the Hume Coal Project ................................................................. 29
5  Summary of additional commitments ........................................................................ 32
6  Closing .......................................................................................................................... 33
7  References .................................................................................................................... 35

Figure 4.1  Timeline of Subsidence for a theoretical property in the middle of the mining domain................................................................. 17

Table 2.1  Comparison of Scope 1 GHG emissions to other coking coal mine projects .......... 3
Table 2.2  Predicted Scope 1, 2 and 3 GHG emissions for the Project ................................. 4
Table 2.3  Fugitive methane emissions (Scope 1) – abated ................................................. 6
Table 2.4  Fugitive methane emissions (Scope 1) – unabated ............................................... 7
Table 3.1  Summary of comments on surface water in DPIE’s assessment report ............... 12
Table 3.2  Summary of comments on groundwater in DPIE’s assessment report .............. 14
Table 4.1  Required water quality specifications of treated water from the WWTP .............. 19
Table 4.2  Comparison of the Tahmoor South Project to the Hume Coal Project ................. 30

Appendix A  SA NSW Surface Development Guidelines
Appendix B  Updated summary of GHG mitigation measures
Appendix C  EY response to the Australia Institute
1 Introduction

1.1 Background

Tahmoor Coal Pty Ltd (Tahmoor Coal) is seeking approval for the Tahmoor South Project under Part 4 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act), being an extension of underground coal mining at Tahmoor Mine, to the south of Tahmoor Coal’s existing mining area (the Project), in the Southern Coalfields of New South Wales (NSW).

The development application (DA) and accompanying environmental impact statement (EIS) for the Project (AECOM 2018) was publicly exhibited between 23 January and 5 March 2019 by the NSW Department of Planning, Industry and Environment (DPIE).

On 20 February 2020, a submissions report (AECOM 2020a) was lodged with DPIE which responded to all submissions made during exhibition of the EIS. At the same time (ie 20 February 2020), a project amendment report (AECOM 2020b) was lodged with DPIE to document amendments made to the Project in response to the submissions and to reduce its potential environmental impacts.

The amendments to the Project documented in the amendment report included, among other things, changes to the mine plan and the coal reject emplacement area (REA). The changes to the mine plan included the removal of a longwall in the northern part of the mine (LW109), reconfiguration of the longwall layout to comprise two series of shorter longwall panels, the reduction of the width of the longwalls, and a reduction in the height of extraction within the longwalls. The changes to the REA included a reduction in the proposed extension area by increasing the height of the REA by 5 metres (m).

In response to the submissions report and project amendment report, DPIE received advice from several government agencies and Wollondilly Shire Council (WSC). Tahmoor Coal subsequently submitted a second amendment report in August 2020 (EMM 2020). Amendments included the removal of longwalls LW107B and LW108B to reduce subsidence impacts on the township of Bargo, the containment of the REA within its approved disturbance footprint to reduce impacts to biodiversity; and amendments to the construction layout of the ventilation shafts (TSC1 and TSC2) and associated transmission lines to also reduce impacts to biodiversity.

On 27 October 2020, the NSW Minister for Planning and Public Spaces requested that the NSW Independent Planning Commission (the Commission) conduct a public hearing into the carrying out of the Project and make its determination of the DA within 12 weeks of receiving DPIE’s assessment report.

Following submission of the second amendment report, DPIE undertook an assessment of the Project and prepared an assessment report (December 2020). DPIE’s assessment report concluded that on balance the project is in the public interest and is approvable.

On 17 December 2020, DPIE then referred the Project (with the assessment report) to the Commission, as the consent authority for the Project, for determination.

On 9 February 2021, the IPC attended a site visit accompanied by Tahmoor Coal and a community representative. On 10 February 2021, Tahmoor Coal attended a meeting with the Commission where several questions passed by the Commissioners were taken on notice.
Between 15 and 17 February 2021, a public hearing was held by the Commission. Speakers spoke both in support and against the Project.

1.2 Document purpose

The purpose of this submission is to:

1. Provide the Commission with answers to questions taken on notice during the meeting between Tahmoor Coal and the commissioners and during the public hearing;
2. Clarify some matters identified within DPIE’s assessment report; and
3. Provide responses to matters raised by various speakers at the public hearing.
2 Response to questions from the Commission

2.1 Overview

During the meeting with the Commission on 10 February 2021, several questions asked by the Commissioners were taken on notice by Tahmoor Coal, to enable a detailed response to be provided to the Commission. Questions related to greenhouse gas (GHG) emissions, the location of the ventilation shafts and the extent of clearing associated with the shafts, the financial viability of shortening some longwalls, and the staging of the existing consents and how these consents would interact with Tahmoor North. Answers to these questions are provided in the sub-sections below.

2.2 GHG emissions

2.2.1 Comparison of GHG emissions to other mines

A comparison of the Scope 1 GHG emissions predicted for Tahmoor South and other NSW coking coal mines is provided in Table 2.1.

<table>
<thead>
<tr>
<th></th>
<th>Tahmoor South Project (Mt CO2-e)</th>
<th>Appin Mine (Bulli and adjacent)²</th>
<th>Dendrobium Mine Extension Project (Mt CO2-e)³</th>
<th>Russell Vale Revised Underground Expansion² (Mt CO2-e)</th>
<th>Wongawilli MOD 2 – North West Mains² (Mt CO2-e)²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Life of Mine Scope 1</td>
<td>19.3</td>
<td>-</td>
<td>22 (vented)</td>
<td>1.42</td>
<td>1.81</td>
</tr>
<tr>
<td>Annual average Scope 1/t coal</td>
<td>1.61</td>
<td>2.15²</td>
<td>0.77</td>
<td>0.28</td>
<td>0.37</td>
</tr>
<tr>
<td>LOM</td>
<td>10 years (2032)</td>
<td>-</td>
<td>18 years</td>
<td>5 years</td>
<td>5 years</td>
</tr>
<tr>
<td>Annual ROM production</td>
<td>Up to 4 Mtpa</td>
<td>3.56²</td>
<td>5.2 Mtpa</td>
<td>&lt;1 Mt</td>
<td>Up to 2 Mtpa</td>
</tr>
<tr>
<td>Coal seam mined</td>
<td>Bulli</td>
<td>Bulli</td>
<td>Wongawilli</td>
<td>Wongawilli</td>
<td>Wongawilli</td>
</tr>
</tbody>
</table>

Notes: 1 Source: Appin Mine Annual Review FY20  
2 Actual Scope 1 emissions for FY20, as reported in the Appin Mine Annual Review FY20  
3 Actual production, as reported in the Appin Mine Annual Review FY20  
4 Ramboll 2019, Dendrobium Mine Air Quality and Greenhouse Gas Assessment  
5 Umwelt 2019, Russell Vale Revised Underground Expansion Project, Revised Preferred Project Report and Response to Second PAC Review  
6 EIS currently on public exhibition  
7 EMM 2020, Wongawilli MOD2 NW Mains, Air Quality and Greenhouse Gas Assessment
Of the examples provided, Appin Mine is the most relevant and comparable to Tahmoor South; Appin is also a longwall mine and extracts coal from the same seam as Tahmoor. As shown, the total annual Scope 1 GHG emissions and the Scope 1 emissions per tonne of coal predicted for the Project are less than that reported for Appin in the last financial year.

### 2.2.2 Source and abatement of Scope 1 GHG emissions

Tahmoor Coal’s response to the second request for information (RFI) from DPIE summarised the predicted GHG emissions for the Project. For ease of reference, the predicted Scope 1, 2 and 3 GHG emissions are re-produced in the table below.

**Table 2.2 Predicted Scope 1, 2 and 3 GHG emissions for the Project**

<table>
<thead>
<tr>
<th>Year</th>
<th>Diesel</th>
<th>Unleaded petrol</th>
<th>Fugitive methane</th>
<th>SF6</th>
<th>Post-mining Total activities</th>
<th>Electricity</th>
<th>Energy production</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>519</td>
<td>2</td>
<td>222,905</td>
<td>0.4</td>
<td>6,614</td>
<td>230,041</td>
<td>14,764</td>
</tr>
<tr>
<td>2022</td>
<td>2,265</td>
<td>9</td>
<td>972,126</td>
<td>1.7</td>
<td>28,844</td>
<td>1,003,246</td>
<td>64,389</td>
</tr>
<tr>
<td>2023</td>
<td>3,695</td>
<td>14</td>
<td>1,586,076</td>
<td>2.8</td>
<td>47,061</td>
<td>1,636,849</td>
<td>105,054</td>
</tr>
<tr>
<td>2024</td>
<td>4,638</td>
<td>18</td>
<td>1,990,826</td>
<td>3.5</td>
<td>59,071</td>
<td>2,054,557</td>
<td>131,863</td>
</tr>
<tr>
<td>2025</td>
<td>4,161</td>
<td>16</td>
<td>1,785,918</td>
<td>3.1</td>
<td>52,991</td>
<td>1,843,089</td>
<td>118,291</td>
</tr>
<tr>
<td>2026</td>
<td>4,663</td>
<td>18</td>
<td>2,001,262</td>
<td>3.5</td>
<td>59,380</td>
<td>2,065,327</td>
<td>132,555</td>
</tr>
<tr>
<td>2027</td>
<td>4,676</td>
<td>18</td>
<td>2,006,737</td>
<td>3.5</td>
<td>59,543</td>
<td>2,070,977</td>
<td>132,917</td>
</tr>
<tr>
<td>2028</td>
<td>5,196</td>
<td>20</td>
<td>2,230,323</td>
<td>3.9</td>
<td>66,177</td>
<td>2,301,721</td>
<td>147,727</td>
</tr>
<tr>
<td>2029</td>
<td>4,198</td>
<td>16</td>
<td>1,801,681</td>
<td>3.1</td>
<td>53,459</td>
<td>1,859,357</td>
<td>119,335</td>
</tr>
<tr>
<td>2030</td>
<td>4,554</td>
<td>17</td>
<td>1,954,385</td>
<td>3.4</td>
<td>57,990</td>
<td>2,016,949</td>
<td>129,450</td>
</tr>
<tr>
<td>2031</td>
<td>3,978</td>
<td>15</td>
<td>1,707,174</td>
<td>3.0</td>
<td>50,654</td>
<td>1,761,824</td>
<td>113,076</td>
</tr>
<tr>
<td>2032</td>
<td>1,053</td>
<td>4</td>
<td>451,849</td>
<td>0.8</td>
<td>13,407</td>
<td>466,314</td>
<td>29,928</td>
</tr>
<tr>
<td>Total</td>
<td>43,596</td>
<td>167</td>
<td>18,711,262</td>
<td>33</td>
<td>555,191</td>
<td>19,310,249</td>
<td>1,239,350</td>
</tr>
<tr>
<td>Annual average</td>
<td>1,609,187</td>
<td>103,279</td>
<td>5,486,050</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Options to manage Scope 1 GHG emissions are gas capture, power generation and flaring. This is considered best practice methane management for underground coal mining operations. Tahmoor Coal uses a combination of all these options and is committed to reducing Scope 1 emissions through the continued use of the existing gas extraction plant, power generation plant and flares for Tahmoor South.

The predicted emissions for the Project as presented in Table 2.2 include the flaring and production of power from fugitive methane captured by pre and post-gas drainage (ie the abated scenario). In the RFI, predicted GHG emissions were also presented for the case where no fugitive methane emissions are abated through flaring or power generation. This amounts to approximately 28 million tonnes (Mt) of Scope 1 and 2 emissions. It is important to note that the predicted unabated emissions were only presented in the RFI to provide a comparison to the abated emissions and therefore quantify the amount of methane that will be abated by the Project, as is the case now for existing operations.

Further to the above, a breakdown of the Scope 1 emissions for fugitive methane at Tahmoor Mine is provided below in Table 2.3, as requested by the Commission at the meeting with Tahmoor Coal on 10th February 2021. The unabated emissions (refer to Table 2.4) are also presented simply to demonstrate how much of the pre and post-drainage methane will be abated by power generation and flaring.

The sources of CO₂-e at Tahmoor Mine is broken down between the following streams:

- mine ventilation air;
- pre and post-gas drainage;
- flaring (which converts fugitive methane to CO₂); and
- power generation.

Comparing the two tables demonstrates that 98.75 per cent of methane captured in pre and post-drainage will be abated through power generation or flaring. This is consistent with current operations. That is, without abatement, pre and post-gas drainage operations would result in the emission of approximately 8.7 Mt CO₂-e, over the life of the Project, whereas with flaring and power generation in place, only 0.1 Mt CO₂-e would be emitted as result of the necessary gas drainage operations.

Overall, the use of the existing gas plant, power generation and flaring reduce predicted Scope 1 emissions by approximately 28 per cent for Tahmoor South, from 26.7 Mt CO₂-e if these abatement measures were not in place, to 19.3 Mt CO₂-e.
<table>
<thead>
<tr>
<th>Year</th>
<th>Run of mine (ROM) coal (tonnes per annum (tpa))</th>
<th>Mine ventilation air (t CO₂-e)</th>
<th>Pre / Post drainage (t CO₂-e)</th>
<th>Flares (t CO₂-e)</th>
<th>Power generation (t CO₂-e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>389,055</td>
<td>207,132</td>
<td>1,292</td>
<td>8,577</td>
<td>5,904</td>
</tr>
<tr>
<td>2022</td>
<td>1,696,732</td>
<td>903,335</td>
<td>5,637</td>
<td>37,404</td>
<td>25,750</td>
</tr>
<tr>
<td>2023</td>
<td>2,768,309</td>
<td>1,473,839</td>
<td>9,197</td>
<td>61,027</td>
<td>42,013</td>
</tr>
<tr>
<td>2024</td>
<td>3,474,754</td>
<td>1,849,947</td>
<td>11,543</td>
<td>76,601</td>
<td>52,735</td>
</tr>
<tr>
<td>2025</td>
<td>3,117,111</td>
<td>1,659,540</td>
<td>10,355</td>
<td>68,716</td>
<td>47,307</td>
</tr>
<tr>
<td>2026</td>
<td>3,492,968</td>
<td>1,859,645</td>
<td>11,604</td>
<td>77,002</td>
<td>53,011</td>
</tr>
<tr>
<td>2027</td>
<td>3,502,524</td>
<td>1,864,732</td>
<td>11,636</td>
<td>77,213</td>
<td>53,156</td>
</tr>
<tr>
<td>2028</td>
<td>3,892,768</td>
<td>2,072,497</td>
<td>12,932</td>
<td>85,816</td>
<td>59,079</td>
</tr>
<tr>
<td>2029</td>
<td>3,144,623</td>
<td>1,674,187</td>
<td>10,447</td>
<td>69,323</td>
<td>47,724</td>
</tr>
<tr>
<td>2030</td>
<td>3,411,150</td>
<td>1,816,085</td>
<td>11,332</td>
<td>75,199</td>
<td>51,769</td>
</tr>
<tr>
<td>2031</td>
<td>2,979,672</td>
<td>1,586,368</td>
<td>9,899</td>
<td>65,687</td>
<td>45,221</td>
</tr>
<tr>
<td>2032</td>
<td>788,650</td>
<td>419,875</td>
<td>2,620</td>
<td>17,386</td>
<td>11,969</td>
</tr>
<tr>
<td>Total</td>
<td>32,658,317</td>
<td>17,387,180</td>
<td>108,493</td>
<td>719,950</td>
<td>495,639</td>
</tr>
</tbody>
</table>
Table 2.4  Fugitive methane emissions (Scope 1) – unabated

<table>
<thead>
<tr>
<th>Year</th>
<th>ROM (tpa)</th>
<th>Mine ventilation air (t CO₂-e)</th>
<th>Pre / Post drainage (t CO₂-e)</th>
<th>Flares (t CO₂-e)</th>
<th>Power generation (t CO₂-e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>389,055</td>
<td>207,132</td>
<td>103,651</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2022</td>
<td>1,696,732</td>
<td>903,335</td>
<td>452,038</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2023</td>
<td>2,768,309</td>
<td>1,473,839</td>
<td>737,523</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2024</td>
<td>3,474,754</td>
<td>1,849,947</td>
<td>925,732</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2025</td>
<td>3,117,111</td>
<td>1,659,540</td>
<td>830,450</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2026</td>
<td>3,492,968</td>
<td>1,859,645</td>
<td>930,584</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2027</td>
<td>3,502,524</td>
<td>1,864,732</td>
<td>933,130</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2028</td>
<td>3,892,768</td>
<td>2,072,497</td>
<td>1,037,098</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2029</td>
<td>3,144,623</td>
<td>1,674,187</td>
<td>837,780</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2030</td>
<td>3,411,150</td>
<td>1,816,085</td>
<td>908,787</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2031</td>
<td>2,979,672</td>
<td>1,586,368</td>
<td>793,834</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2032</td>
<td>788,650</td>
<td>419,875</td>
<td>210,109</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>32,658,317</td>
<td>17,387,180</td>
<td>8,700,715</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

As shown in Tables 2.3 and 2.4, mine ventilation air is not flared or used in power generation. This is due to the very low concentration of methane in this gas stream of between 0.3 to 0.4 per cent. By contrast, the methane content in the pre and post-drainage gas stream is around 50 per cent, making it possible to beneficially use the gas in power generation or to flare it and convert it to CO₂, which has a much less global warming potential (21 times) than methane.

2.3 Approach to the existing development consents

There are six development consents that apply to the existing operations at Tahmoor Mine as follows:

1. the Bargo consent (162/76) dated 1975;
2. the Tahmoor Mine consent (7105/47) dated 1975;
3. the second Tahmoor Mine consent (76/20188) dated 1979;
4. the Tahmoor gas extraction consent (190/85) dated 1985;
5. the Tahmoor North consent, dated 1994; and
6. the second Tahmoor North consent, dated 1999.
Should approval be granted for the Project, four of the development consents will be relinquished relatively quickly once the relevant activities approved under these consents are completed, and as described in condition A20 and A21 of the conditions of development consent recommended by DPIE. These four consents, and when they will be surrendered, are listed below:

- the Bargo consent (162/76) - will be surrendered prior to the commencement of secondary workings at Tahmoor South;
- the Tahmoor Mine consent (7105/47) - will be surrendered following the completion of current mining activities and mine closure/rehabilitation associated with this consent;
- the second Tahmoor Mine consent (76/20188) - will be surrendered following the completion of current mining activities and mine closure/rehabilitation associated with this consent; and
- the Tahmoor gas extraction consent (190/85) - will be surrendered following the completion of current mining activities and mine closure/rehabilitation associated with this consent.

The Tahmoor North consent, dated 1994, will remain active for two years after commencement of the Project. This is to enable activities to continue on the REA in accordance with existing noise criteria, while the noise mitigation measures committed to as part of the Project are implemented. This consent will be relinquished once the mitigation measures are in place, which will be within two years of commencement as per condition B2 of the recommended consent conditions.

The second Tahmoor North consent, dated 1999, will likely remain active to allow for the storage of water in the underground workings in Tahmoor North. However, if underground water storage is required for the Project, this consent will need to be modified to enable this activity.

### 2.4 Financial viability of shortening longwalls

The mine design has been carefully considered throughout the development of the Project, evolving on the basis of outcomes of detailed technical studies and consultation with government agencies and the community. The Project design strikes a balance between the benefits, impacts and financial viability of the Project. The financials for the Project were assessed through a valuation model and an independent economic impact assessment.

The mine design and longwall layout for which approval is sought follows significant modifications made to the Project from the EIS to the first amendment report and second amendment report, as follows:

- **EIS to the first amendment report:**
  - change in longwall width and extraction height, and the removal of LW109;
  - subsequent reduction in ROM coal from 48 Mt to 43 Mt (approximate 10 per cent reduction); and
  - reduction in product coking coal from 35 Mt to 30 Mt and thermal coal from 3.5 Mt to 2 Mt.
- **First amendment to the second amendment:**
  - removal of LW107B and LW108B;
  - reduction in ROM coal from 43 Mt to 33 Mt (approximate 23 per cent reduction); and
- reduction in product coking coal from 30 Mt to 23 Mt and thermal coal from 2 Mt to 1.4 Mt.

It is noted that prior to the EIS being submitted, the longwall layout was amended to avoid any longwalls extending into the Metropolitan Special Area, such that no longwall mining will occur within the Sydney drinking water catchment. LW102B was also shortened to avoid the four highly significant Aboriginal sites that were identified in the vicinity of the original longwall footprint.

Despite the significant amendments already made to the Project, in its assessment report, DPIE recommended LW103B be shortened by 400 m to avoid mining near Dog Trap Creek. If it were to be shortened, a further 350,000 t of product coal would become sterilised. This longwall is further discussed in Section 3.4.

If LW104B was reduced by approximately 700 m to also avoid mining directly beneath Dog Trap Creek, this would result in a further 600,000 t of product coal becoming sterilised.

While not raised by the Commission, a number of presentations at the public hearing discussed LW106B. If this longwall were to be removed from the Project, a significant amount of coal would become sterilised, at approximately 3,700,000 t. If LW106B was halved, this would result in approximately 1,850,000 t of product coal becoming sterilised. Either of these modifications would significantly impact the financials for the Project, taking into account the removal of LW107B, LW108B and LW109 that has already occurred and the possible condition to shorten LW103B. In addition, these further amendments would substantially reduce the resource recovery from the mine; a brownfield mine where the infrastructure is in place to extract it. These resources would effectively become sterilised.

2.5 Ventilation shafts and biodiversity

The Project proposes the construction of two new ventilation shafts; an upcast shaft on land owned by Tahmoor Coal (TSC1), and a downcast shaft on Crown land (TSC2). Both ventilation shaft sites contain the critically endangered ecologically community (CEEC) Shale Sandstone Transition Forest, noting that it varies in condition from ‘good’ on the TSC2 Crown land site, to a derived form of lower condition on the TSC1 site.

The question was asked of Tahmoor Coal at the meeting between the Commission and Tahmoor Coal as to whether the shafts could both be accommodated on Tahmoor owned land (ie on the TSC1 site), being the property with the lower condition CEEC.

Tahmoor Coal has undertaken further investigations on this matter since the meeting, and while the current proposal is the preferred approach from a ventilation efficiency perspective, if required to do so, TSC2 could be constructed on the same site as TSC1. This would completely avoid clearing of the CEEC that is in good condition (2.8 hectares (ha)). The area of CEEC to be cleared for the Project would therefore reduce from 10.1 ha to approximately 7.3 ha.

Notwithstanding the above, it is noted that the 10.1 ha proposed to be cleared by the Project in the second amendment report is a very small percentage of the 12,500 ha remaining of the CEEC. Further, biodiversity credits are available on the market to retire to enable the offsetting of impacts to 10.1 ha.
2.6 Bore drawdown

One of the questions asked at the meeting between the Commission and Tahmoor Coal related to how Tahmoor Coal has responded to impacts to bores at Tahmoor North.

The groundwater model prepared for Tahmoor North predicted up to 72 bores would be drawn by more than 2 m. However, only two bores to date in Tahmoor North have required implementation of make good measures, as follows:

- one bore was managed directly by Subsidence Advisory NSW (SA NSW) under previous subsidence compensation legislation via the lodgement of a claim, and a new bore was installed at the property. An alternative water supply was provided to the property while this bore was being installed; and
- the second bore is being compensated with an ongoing supply of town water.

As noted in the Second Amendment Report (EMM 2020), the fact that only two bores have required the implementation of make good measures over the life of Tahmoor Mine demonstrates the conservatism in the combination of the modelling and in the 2 m minimal impact consideration set by the Aquifer Interference Policy (NSW Office of Water 2012). Because a bore could be drawn down by 2 m or more does not necessarily mean that water supply will be impacted. Particularly for Tahmoor, the 2 m threshold is very low in an environment where available drawdowns are typically 30–90 m. The potential impacts to supply depend on a range of factors such as this depth and yield of the aquifer, as well as the bore construction and the location of the bore relevant to the longwall. A 2 m variation in water levels is of similar magnitude to seasonal fluctuation, and 2 m or even 10 m drawdown will only be a fraction of the available drawdown, and therefore will not affect yield for local users to a noticeable degree, the majority of whom are domestic users and do not require high groundwater yields (such as might be required for municipal water supply).

The bores predicted to be affected by the Tahmoor South Project have been identified by HydroSimulations and classified by the perceived risk of effects being discernible and requiring make-good. This classification was based on model predictions of drawdown, proximity to longwalls and a review of historical effects and requirements for make-good on bores around the Tahmoor North mine operation (which has been using longwall methods since 1987 (ie >30 years)). Based on the HydroSimulations (2020) assessment, 10 bores have been classified as ‘at risk’ of requiring ‘make good’ provisions as a result of the Project. Taking into account the experience from Tahmoor North and the available drawdown, it is likely that the vast majority of these bores will not observe an effect on performance. Of the 10 ‘high risk’ bores:

- five are used for domestic purposes;
- three bores are understood to be used for business purposes; and
- the purpose is unknown for the remaining two.

Tahmoor Coal is committed to implementing ‘make-good’ provisions for affected groundwater users.
3 Response to matters raised in DPIE’s assessment report

3.1 Overview

Tahmoor Coal supports DPIE’s recommendation for approval of the Project. While the assessment report provides a comprehensive analysis of the Project and its potential impacts, there are a few matters to be clarified, as detailed in the following subsections.

3.2 Surface water

Clarification of a few points relating to surface water in DPIE’s Assessment Report is provided in Table 3.1.

As outlined below, a key point is the interpretation of the number of pools predicted to have a potential for impact as a result of the Project. Section 6.4 of the Assessment Report (DPIE 2020) states that 15 pools could be impacted. HEC, who prepared the surface water impact assessment for the Project, assigned a potential level of risk of impacts occurring to pools as a percentage, based on subsidence predictions; however, it is not accurate to take these percentages to calculate a total number of pools.

As described in the subsidence assessment for the Project (MSEC 2020), where longwalls mine directly beneath streams, fracturing could occur to pools above these longwalls, resulting in surface water flow diversion from the stream bed to the strata beneath it. In some of these locations, fracturing could affect the holding capacity of the pools. The key point however, in terms of the impact to surface water resources, is that it is very unlikely there would be any net loss of water from the catchment, since any redirected flow would not intercept any flow path that would allow the water to be diverted into deeper strata or the mine. That is, the lack of surface to seam cracking means that water would not be lost to the underground mine workings or deep strata, but rather would re-appear downstream in the catchment. This is consistent with what has been observed in Tahmoor North.

Further to this, if cracking and diversion of water in any pool because of the Project occurs, Tahmoor Mine has developed a remediation process which will be implemented to ensure that the cracking is appropriately remediated, and the creek bed restored to its pre-mining condition. In this regard, Tahmoor Mine has worked closely with the Resources Regulator to develop a remediation process for creeks affected by subsidence. This process involves grouting the cracks which, along with natural sealing processes that occur through sediment infilling, has proven successful in retaining pool water in the trials at Redbank Creek and Myrtle Creek. This remediation process is continually being improved, based on the experience in Tahmoor North.

Further, Tahmoor Mine acknowledges DPIE’s recommended development consent condition relating to rehabilitation (condition B55), which requires pre-mining surface flows and pool holding capacity to be restored as soon as reasonably practical. Tahmoor is committed to ensuring successful remediation in accordance with this condition, a commitment that is demonstrated by the remediation program underway in Tahmoor North.
Table 3.1 Summary of comments on surface water in DPIE’s assessment report

<table>
<thead>
<tr>
<th>Report reference</th>
<th>Text</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exec. Summary p.xii “Subsidence-induced impacts to watercourses”</td>
<td>“Modelling based on past experience of mining beneath streams estimates that of the 62 pools located above the proposed longwalls, around 15 pools (24%) could be impacted”.</td>
<td>This conclusion was not made by HEC, who prepared the Surface Water Impact Assessment for the Project. The table provided in Section 5 of the Response to DPIE’s Request for Information No. 2 dated 23 October 2020) lists the number of pools likely to experience a “Type 3” impact at different risk levels: &lt;10%, &lt;20%, &lt;30%, &lt;40% and &gt;40%.</td>
</tr>
<tr>
<td>Section 6.4, para 330</td>
<td>“...and slightly low (acidic) pH values, are typical to the surface water systems within the region. This is likely caused by a combination of mining activities, increased urbanisation and runoff from agricultural activities across the Bargo River catchment.”</td>
<td>The slightly acidic pH values may also be naturally occurring, eg Bargo River at SW1 which has a minimum pH of 5.87. The pH of water within the Upper Nepean catchment has been found to be invariably below the ANZECC trigger value of 6.5. The low pH arises naturally due to the equilibration of waters with silicic acid derived from dissolution of silica and the leaching of small concentrations of low molecular weight organic acids from peats and other organic matter.</td>
</tr>
<tr>
<td>Section 6.4, para 333</td>
<td>“The AWBM was used to simulate surface runoff and baseflow processes...”</td>
<td>The AWBM does not simulate these processes but rather provides catchment scale estimates of surface runoff and baseflow.</td>
</tr>
<tr>
<td>Section 6.4, para 335</td>
<td>“HEC indicated that monitoring of flows and water quality in these tributaries prior to and during mining at Tahmoor North also provided a useful data set which was used to calibrate the AWBM model for watercourses within the Project area, including Tea Tree Hollow and Dog Trap Creek”</td>
<td>This statement appears to imply that AWBM for Redbank and Myrtle Creeks were used to calibrate AWBM for Tea Tree Hollow and Dog Trap Creek. This is not correct. Rather “...examination of the past effects of mining on these creeks provides a basis for assessing the potential impacts to watercourses within the Project Area (ie Tea Tree Hollow and Dog Trap Creek).” The AWBM simulation of recorded flows at gauging stations on the Bargo River Upstream, Dog Trap Creek and Eliza Creek were used to characterise pre-project flows in those creeks and then assess impact of baseflow reductions.</td>
</tr>
<tr>
<td>Section 6.4, para 348</td>
<td>“As discussed in Section 2.2 and shown in Figure 20, a large number of pools (17) were located directly above or adjacent to the original extended southern end of LW103B. HEC predicted that many of these pools had a high likelihood (40% or greater) of impact.”</td>
<td>The likelihood of a “Type 3” impact was based on subsidence predictions by MSEC (2020). 7 of 62 pools with 40% or greater likelihood of a “Type 3” impact are not considered to be “many”. The 7 pools do not overlie nor are they adjacent to the southern end of LW103B - they overlie 101B and 102B. Refer to Figure 20 in the DPIE assessment report.</td>
</tr>
</tbody>
</table>

Table 3.1  Summary of comments on surface water in DPIE’s assessment report

<table>
<thead>
<tr>
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<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>“…the Department has recommended that the mine plan be further amended to avoid mining directly below these pools, resulting in significantly reduced potential for impact to pools along Dog Trap Creek (refer to Figure 20A and B).”</td>
<td></td>
<td>This will not affect the 7 pools that HEC has estimated have a 40% or greater likelihood of impact. The pools directly above or adjacent to the southern end of LW103B have either a less than 40% (red in Figure 20A) or less than 30% (yellow in Figure 20A) risk of impact.</td>
</tr>
<tr>
<td>Section 6.4, para 354</td>
<td>“HEC’s analysis predicts that of the 62 pools located above the proposed longwalls, around 15 pools (24%) could be impacted.</td>
<td>This numerical conclusion has not been reached by HEC. Rather DPIE appear to have calculated this by multiplying the number of pools in each column of Table 16 by an assigned (discrete) likelihood. This is not considered a statistically valid method for calculating an overall 'expected' impact.</td>
</tr>
<tr>
<td>Section 6.4, para 370</td>
<td>“…HEC indicates that the moderate level of change in Cows Creek may be detectable, while the predicted significant level of change to baseflows at Dog Trap Creek would be detectable, particularly during normal periods of low flow.”</td>
<td>For Cow Creek the SWIA report states &quot;This level of change may be detectable during normal periods of low flow and distinguishable from natural variability in catchment conditions&quot; – rather than &quot;particularly during normal periods of low flow &quot;. HEC did not use the term &quot;moderate level of change&quot;. 3.45% is not considered moderate.</td>
</tr>
<tr>
<td>Section 6.4, para 380</td>
<td>“More notable changes were predicted on the south-western sides of Tea Tree Hollow above LW 102A (30-140 Pa) and 103A (30-70 Pa).”</td>
<td>Rather than “the south-western sides of Tea Tree Hollow”, this should say: Tea Tree Hollow on the south-western sides of LW102A and LW103A.</td>
</tr>
<tr>
<td></td>
<td>“Overflows from S11 are predicted to average around 10 ML/year for the life of the mine…”</td>
<td>This is not correct. The highest median annual discharge is predicted to be less than 10 ML/year. Average predicted discharge is approximately 18 ML/year.</td>
</tr>
</tbody>
</table>
### 3.3 Groundwater

Clarification of a few points relating to surface water in DPIE’s Assessment Report is provided in Table 3.2.

#### Table 3.2  Summary of comments on groundwater in DPIE’s assessment report

<table>
<thead>
<tr>
<th>Reference</th>
<th>DPIE comment</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 8 (p.29)</td>
<td>“In relation to cumulatively impacted bores, DPIE-Water recommended that the responsibility of the impact be placed on the latest applicant.”</td>
<td>A simple method like assigning responsibility on the basis of application timing might work, however it is noted there might be issues if the order of the applicants is not the same order as the actual operations, and if there is disagreement between applicants and agencies as to the cause of an issue at a landholder bore.</td>
</tr>
<tr>
<td>Table 14, p.73</td>
<td>High risk criteria for bores described as those “above longwall pillars”</td>
<td>This should read “above longwalls, associated pillars and gate roads”.</td>
</tr>
</tbody>
</table>
| Item 297, p.75 | “DPIE-Water raised the issue of apportionment of responsibility for cumulatively impacted bores, stating that those impacted should not need to engage in multiple processes with various companies to gain compensation for impact. DPIE Water indicated that the responsibility of the impact should be placed with the latest applicant. As BSO is already an approved operation, the onus would be on Tahmoor Coal to provide make good to these landowners.” | We agree that the landowners should not have to deal with multiple mining companies regarding make-good. However, assigning responsibility for ‘make good’ to the latest applicant could raise potential issues in the fact that the operation that is approved last might not yet be operational in the vicinity of a bore, in which case the cause of issues at a landholder bore may lie with an earlier applicant or some other factor. A proposed make good strategy for bores was presented by Tahmoor Coal as part of the Response to agency feedback on the Second Project Amendment Report (dated 14 September 2020). This strategy included suggested procedures for appropriately managing cumulatively impacted bores as follows. Tahmoor Coal would liaise with adjacent mines and seek to establish a committee and protocols for managing cumulative impacts to bores, with the goal of the committee being to ensure that a landholder does not suffer any detriment due to their bore being impacted by more than one mine. To implement make good arrangements for bores predicted to be cumulatively impacted by mining, that is, impacted more than the 2 m AIP criterion, it is envisaged that the process and the arrangements would be the same as those documented for Project alone impacts. Tahmoor Coal and the adjacent mines would resolve which bores are monitored by which company. This would potentially be based on the }
Table 3.2  Summary of comments on groundwater in DPIE’s assessment report

<table>
<thead>
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<tbody>
<tr>
<td></td>
<td></td>
<td>contribution of the modelled degree of impact on the bore. In addition, Tahmoor Coal and the adjacent mines would resolve the proportion of costs for implementing make good options if required, again potentially based on modelled degree of impact. The protocols for the proposed committee would include a dispute resolution process to ensure resolution if the mines cannot resolve their level of contribution to any bore impact.</td>
</tr>
<tr>
<td>Item 312, p. 79</td>
<td>“The IESC advice on the EIS questioned the conclusion that Thirlmere Lakes would not be significantly impacted by associated with the Project. Of greatest concern to the IESC was the potential risks from regional groundwater drawdown that could occur along geological structures beyond the subsidence zone.”</td>
<td>Provisional findings from the OEH/BCS-led Thirlmere Lakes Research Program include “It appears unlikely that any identified geological structures are directly connected to [historical] mine workings from the subsurface below the lakes.” This is consistent with the findings in the EIS and groundwater assessment by Hydrosimulations.</td>
</tr>
</tbody>
</table>

3.4 Subsidence

As noted in Section 2.4, DPIE has recommended the shortening of LW103B by 400 m to avoid mining near Dog Trap Creek. It is understood that this recommendation is to reduce subsidence related impacts to the creek.

However, it is also noted that this area of Dog Trap Creek is in an area that is much less incised than creeks that have been mined directly beneath in Tahmoor North. The pools are often dry, and there is farmland owned by Tahmoor in close proximity to the area of the creek above LW103B, and therefore if remediation was required following mining, there is good access available to be able to remediate the creek. Further, the remediation program in place in Redbank and Myrtle Creek is proving to be successful, and this process, which has been approved by the Resources Regulator, would be used in Tahmoor South, as discussed above in Section 3.2.

3.5 Greenhouse gas emissions

It is noted that in Table 24 of DPIE’s Assessment Report, the annual average Scope 3 emissions are recorded as 7.81 Mt CO$_2$-e for the Project. This is not correct, as recorded in Tahmoor Coal’s response to the Second Request for Information from DPIE (dated 23 October 2020), the annual average Scope 3 emissions for the Project are 5,486,050 t CO$_2$-e.
4  Response to matters raised in the public hearing

4.1 Opening address by the Chair

In his opening address, the chair of the Commission for the Project noted that the proposal involved the mining of seven additional longwalls. The project proposes 12 longwalls, compromising two series of six longwalls in an A series and a B series, as shown in Figure 3.1 of the second amendment report (EMM 2020).

Further, it was stated that the Project was referred to the Commission for determination because it received more than 50 unique objections. However, as stated in the DPIE’s assessment report, there were less than 50 duly made submissions objecting to the Project during the exhibition period. The Department received 83 submissions from the community and special interest groups, of which only nine objected to the Project. Further, as neither Council objected to the Project during the exhibition period, and Tahmoor Coal has not made any reportable political donations, the NSW Minister for Planning and Public Spaces is the consent authority for the Project. However, in October 2020, the Minister requested that the Commission hold a public hearing into the carrying out of the Project and determine the DA. The NSW Minister for Planning and Public Spaces has therefore delegated his consent authority to the Commission.

4.2 Subsidence

The issue of subsidence was discussed throughout a number of presentations to the public hearing, and Tahmoor Coal would therefore like to take the opportunity to clarify a few points in relation to this issue.

4.2.1 Estimated cost to repair subsidence related effects

Concerns were raised in several presentations at the public hearing that the cost to repair subsidence related impacts from the Project has been underestimated by Tahmoor Coal. The cost of repairs assumed in the economic assessment of the Project is $13.8 million in NPV terms.

This cost was developed based on a number of factors, including the number of properties that could be potentially impacted, and published data by SA NSW on the average cost to repair houses affected by subsidence. It is therefore considered to be an appropriate estimate for the purpose of the economic assessment. However, regardless of the estimate used in the economic assessment, Tahmoor Coal will be liable for the costs associated with repairing all project subsidence related damages to a pre-mining state and is committed to meeting this obligation in accordance with the company’s commitment to the local community, and in accordance with the statutory procedures in place and governed by SA NSW.

In addition to the statutory framework provided by the Coal Mine Subsidence Compensation Act 2017 and managed by SA NSW, the rehabilitation security deposit held by the Resources Regulator for Tahmoor Coal also provides a further ‘safety net’ to ensure that funds will always be available to pay for required rehabilitation works. All exploration and mining title holders are required to lodge a security deposit with the Resources Regulator that covers the full rehabilitation costs of a mining or exploration operation. This requirement ensures that the NSW Government does not
incur financial liabilities in the unlikely event of a title holder defaulting on their rehabilitation obligations.

4.2.2 Time for subsidence to occur

The Commissioners asked Tahmoor Coal whether it was a common situation for subsidence to take up to five years to occur. Clarification is therefore provided regarding the historical timing of subsidence effects and the application of this to the Tahmoor South mine plan. As explained further below, it would be extremely unlikely for a property to experience ongoing subsidence effects for a period of five years after it is first observed.

Points on the surface typically experience active subsidence movements over a period of three months at Tahmoor during the extraction of a longwall. For properties located directly above the middle of a mining domain (for example above a theoretical LW3, as illustrated in Figure 4.1 below), they will experience minor subsidence movements from LWs 1 and 2, then experience the majority of subsidence movements from LW3 (directly beneath it) and LW4. Minor additional movements will typically occur during the mining of LW 5. In each case, the period of active subsidence will be approximately three months duration.

![Figure 4.1 Timeline of subsidence for a theoretical property in the middle of the mining domain](image)

It follows from the above that for properties located around the edges of a mining domain, the number of longwalls affecting it will be less than five.

When impacts occur to houses, they are generally not experienced until after it is directly mined beneath (ie LW 3 using the example above though some properties do not report impacts until LW 4). If impacts are reported during the mining of LW 3, additional impacts may occur during the extraction of LW 4 and repairs typically conducted after LW 5. For properties located directly above the middle of a mining domain, the time between impacts occurring and subsidence movements reducing to low levels is, therefore, approximately 2 to 3 years depending on when impacts occur (ie LW 3 or LW 4). There have been rare cases of impacts occurring early before a house is mined directly beneath (ie LW 2).
In the case of Tahmoor South, about 90 per cent of properties are expected to see nil to minor subsidence effects as a result of the Project. Of those properties that are predicted to experience effects by the Project, the period for subsidence to be completed after the longwall has passed beneath the house is forecast to be approximately three months for around half of the properties (ie around 70 houses), and generally less than 18 months (in the event that properties experience subsidence effects from the subsequent adjacent longwall). These 70 houses are the ones above longwalls LW106A and LW106B, as there are no longwalls to be mined subsequent to and adjacent to these longwalls, and LW103A, because after this longwall is mined coal extraction will shift to the B series, before returning to the A series after the B series is complete. In the unlikely event that a house experiences effects from two subsequent longwalls, the maximum period a property may experience subsidence effects is up to three years. However, it is anticipated this could only be the case for properties above LW103B (two houses), LW104A (22 houses) and LW104B (10 houses).

Importantly, the longwall which has the most properties directly above it (LW106B, 56 houses) is forecast to have subsidence effects cease within approximately three months of mining beneath a property, as there are no subsequent and adjacent longwalls that could add to the timing of subsidence effects occurring.

Notwithstanding the time it takes for subsidence to occur, each property that is mined beneath by Tahmoor Coal is assessed on a case-by-case basis, and the appropriate repairs are, and will be, made in consultation with the owners. Further, safety and serviceability will be maintained at all times, and therefore where there are serviceability or safety issues, these are repaired immediately.

It is also noted that there are now legislated timeframes for the management of subsidence claims under the Coal Mine Subsidence Compensation Act 2017 (CMSC Act), which is the legislative regime under which subsidence claims will be managed for the Project.

4.2.3 Repairs of subsidence if the mine ceases to operate

If the mine ceases to operate, claims for compensation would continue to be managed in accordance with the legislated process under the CMSC Act. In this regard, DPIE stated the following in their Assessment Report (paragraphs 178 and 179):

Under the provisions of the CMSC Act and associated regulation, mining companies are required to pay levies into a Coal Mine Subsidence Compensation Fund which is managed and controlled by SA NSW. SA NSW has confirmed that the levy amounts are estimated and paid annually, with the value based on coal extraction rates. The Department notes that any subsidence-related compensation to home owners would be paid by SA NSW via the fund, therefore ensuring security to home owners, irrespective of the mine company financial status.

The Department is satisfied that this is a well-established mechanism supported by legislation which is effective in maintaining and restoring structures to a condition equal to or better than their pre-mining state at no financial cost to owners.

As also described above in Section 4.2.1, the rehabilitation security deposit held by the Resources Regulator for Tahmoor Coal (as is required of all title holders), will ensure that adequate funds are available to complete rehabilitation and subsidence repairs in the unlikely event of unexpected closure of the mine.
4.2.4 Building standards

All development in a mine subsidence district, such as Bargo, must be constructed in accordance with SA NSW approval. SA NSW has set development guidelines to help landowners building within a mine subsidence district, which detail the requirements for building on a property based on potential subsidence risks.

Guidelines have been developed for mining areas where subsidence impacts are predicted to be ‘high’ (guideline 4), ‘moderate’ (guideline 5) and ‘minimal’ (guideline 6). These three guidelines are attached to this report in Appendix A.

4.3 Surface water quality

Several presentations raised the issue of surface water quality, describing matters relevant to the operations at Tahmoor North. As described in the Submissions Report (AECOM 2020a), Tahmoor Coal has been working in consultation with the EPA to install a new wastewater treatment plant (WWTP) to further improve surface water quality at the licensed discharge point. This WWTP will be installed prior to the commencement of secondary workings at Tahmoor South, and therefore will be in place for the Project (although it is noted that the WWTP does not form part of the Tahmoor South DA).

Tahmoor Coal has issued a specification for the design and construction of the new WWTP, with the pilot plant anticipated to be in operation by October 2021. The specified WWTP target water quality is to meet the relevant ANZECC guidelines. The specifications are detailed below in Table 4.1.

| Table 4.1 Required water quality specifications of treated water from the WWTP |
|---------------------------------|-----------------|-----------------|
| **Aspect**                     | **Unit of measure** | **100 Percentile** |
| pH                             |                  | 6.5-8.0         |
| Electrical conductivity        | uS/cm            | 350             |
| Bicarbonate Alkalinity         | mg/L             | 185             |
| Aluminium (dissolved)          | ug/L             | 55              |
| Barium (dissolved)             | ug/L             | 700             |
| Copper (dissolved)             | ug/L             | 1.4             |
| Nickel (dissolved)             | ug/L             | 11              |
| Zinc (dissolved)               | ug/L             | 8               |
| Total Nitrogen                 | ug/L             | 250             |
| Arsenic (dissolved)            | ug/L             | 24              |
4.4 GHG submissions

It was claimed during the public hearing that 28 Mt (CO$_2$-e) of Scope 1 and Scope 2 GHG emissions will be emitted over the life of the Project. This is not correct. The 28 Mt figure is the predicted *unabated* emissions; that is, the Scope 1 and 2 emissions that would be generated by the Project without the use of flaring to convert methane to CO$_2$ or the beneficial use of methane in power generation. The unabated emissions were presented in the GHG report for comparison to the abated emissions, to clearly demonstrate the proportion of methane that will be captured and abated. The Scope 1 and 2 emissions predicted to be emitted by the Project, accounting for the fact that the methane extracted through pre and post-drainage operation will be flared or used to generate power, is 20.5 Mt CO$_2$-e.

Tahmoor Mine has been actively capturing and abating its fugitive methane emissions through flaring and power generation for many years and remains committed to continuing this abatement throughout the life of the Project. The flare plant was installed at Tahmoor mine in 2012 with three Hofstetter Flares. The power generation plant is owned and operated by Energy Developments Limited (EDL). It has seven Jenbacher Gas Engines / 1 MW generators and has been operating onsite, reducing Scope 1 GHG emissions, for approximately 20 years.

As described above in Section 2.2.2, fugitive methane is produced via two streams from the mine; in the ventilation air that is extracted from underground workings, and via pre and post-gas drainage operations, where methane is actively extracted from the coal seam and goaf areas to ensure a safe environment for workers underground.

As much as practically possible of the methane extracted via the gas drainage operations (around 99 per cent) is either used to generate power onsite or flared, significantly reducing Scope 1 GHG emissions. Therefore, only one of the fugitive methane emission source streams, methane in the ventilation air, is vented to the atmosphere. Given the extremely low concentration of methane in this stream, which is approximately 0.3 to 0.4 per cent, the methane gas is not able to be captured and used in a beneficial manner.

SIMEC GFG acknowledges the urgent global need to curb GHG emissions, and therefore announced the commitment of the company in 2019 to achieving zero net carbon emissions by 2030. Significant work towards realising this commitment has commenced with SIMEC’s investment in GREENSTEEL, as was described at the public hearing by the GFG Alliance Executive Chairman, Mr Sanjeev Gupta, in his presentation, and discussed further below in Section 4.5.

As a responsible operator within heavy industry, and as part of the broader GFG Group carbon neutral by 2030 (CN30) goals, SIMEC is continuously looking at options to make our operations as sustainable as possible. We are in final stages of contractual negotiations to secure a renewable energy supply for our Tahmoor Coking Coal operations. It is our expectation the site will be receiving renewable energy supply later this year.

This will further lower the carbon footprint of Tahmoor Mine, and contribute towards the efforts of our integrated mining and steel businesses in Australia, to produce lower carbon steel as part of our journey towards GREENSTEEL and CN30.
4.5 Emerging steel technologies and project justification

Several presentations were given at the public hearing in relation to emerging technologies to produce steel, and alternatives to the use of coking coal in steel production. Presentations on this matter were provided by Tony Wood of the Gratton Institute and Associate Professor John Pye of the Australian National University.

Notably, the information presented on the latest research into hydrogen-based steel production, and the timing contemplated in these presentations for the viability of using hydrogen to produce steel fully aligns with SIMEC’s vision for GREENSTEEL and the timing of the Project.

The presentation by the Gratton Institute outlined the two phases for successful implementation of hydrogen-based steel production. During phase 1 (2020-2035), which we are in now, the focus is on businesses and developers positioning for the market opportunity of GREENSTEEL, and on developing the technology to realise the opportunity presented by hydrogen-based production and the significant iron ore reserves in Australia. This phase is expected to take up to 15 years to around 2035. Phase 2 is anticipated to be from around 2035 onwards, with the implementation and full-scale production of hydrogen-based steel.

The Project involves the extension of mining at Tahmoor Mine to continue the supply of coking coal until 2032, enabling a supply of high-quality coking coal while GREENSTEEL technology is developed to a point of viability and implementation. The Project is therefore a carefully considered and vital part of the transition to GREENSTEEL production and is consistent with the latest research and anticipated timing of the transition away from coal-based steel production. The Project will bridge the gap during this transition phase and will contribute to enabling the significant demand for steel to be met while the identified emerging technologies are developed and implemented.

It is noted that in recognition of the fact that green steel technologies are not yet fully commercially viable and that the widespread uptake of green steel technologies may not happen until the 2040s, Australia’s largest steemaker, BlueScope, announced in February 2021 (as reported in the Australian Financial Review 23 February 2021) that it is assessing options to upgrade its Port Kembla steelworks, with the most likely option being an $800 million reline of a blast furnace.

4.6 Matters for consideration under section 4.15 of the EP&A Act

Several matters were raised in relation to matters for consideration under section 4.15 of the EP&A Act in the oral submission of ‘Undermined Inc’ made by Matt Floro (EDO), Tony Wood (Grattan Institute) and Associate Professor John Pye (ANU) on Monday 15 February 2021. This section provides additional information and commitments in response to those matters. Additional information is also provided to address some matters raised in the oral submission of Mike Young (DPIE) made on Wednesday 17 February 2021 (Livestream 13:53:10 to 14:04:25).

4.6.1 State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

With regard to the submission of Matt Floro, we refer in particular to clause 14(1)(c) of the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP) which states:

(1) 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.

(our emphasis)

We make the following observations on this clause 14(1)(c).

- The clause does not constrain the consent authority’s discretion such that consent can be granted only if the development minimises GHG emissions to the greatest extent practicable.
- The duty the clause imposes is no more than a duty to consider whether to attach conditions of the identified kind. It is not a duty to in fact attach conditions. The IPC, having considered whether to attach conditions of the identified kind, has a discretion as to whether to impose such conditions. It may decide to impose conditions. It may decide not to.
- The subject of the consideration is '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 considerations to ensure ... that GHG are minimised to the greatest extent practicable'.
- The clause, in terms, directs attention to the practicability of proposed GHG mitigation measures. The IPC is not obliged to consider whether to attach conditions which minimise emissions regardless of the cost or feasibility of doing so. In discharging the duty imposed by clause 14(1)(c), it is appropriate for the IPC to consider the practicability of any proposed condition.

In this regard, Tahmoor Coal is committed to incorporating management and mitigation measures into the Project to reduce Scope 1, Scope 2 and Scope 3 GHG emissions where feasible and practicable.

Scope 1 and Scope 2
Section 11.12.4 of the EIS (AECOM 2018) provides:

General operations:

- the Applicant is committed to implementing the following fugitive methane emissions abatement measures:
  - flaring at the Tahmoor Mine Flare Plant (to lessen the carbon footprint by converting methane to carbon dioxide and water vapour);
  - methane recycling through the use of third-party power generation (WCMG Power Plant, if available); and
  - use of ventilation control devices in sections of the mine not in use enabling them not to be ventilated (unless required for safety purposes), thereby reducing fugitive emissions;
- an electric winder will continue to be used for the drift and man and materials winder in ventilation shaft 3, instead of diesel powered; and
- longwall panels will be sealed to reduce methane emissions from the goaf into the return ventilation where it is not feasible to capture.
Management plans:

- in accordance with the Guidelines for Energy Savings Action Plans (DEUS, 2005), the Applicant is committed to preparing and implementing an Energy Savings Action Plan. The Energy Savings Action Plan would include standards to minimise energy use and GHG emissions from the operation of the Project.

Tahmoor Coal notes that these commitments are already incorporated into the Recommended Conditions through the Definition of EIS. Recommended Condition A2 provides:

The development may only be carried out ... (c) generally in accordance with the EIS ...

In addition, Tahmoor Coal is committed to ensuring that any 'Air Quality and Greenhouse Gas Management Plan', as required by the Recommended Conditions, reflects these commitments.

Further, and although Tahmoor Coal is committed to incorporating an Energy Savings Action Plan into any 'Air Quality and Greenhouse Gas Management Plan', Tahmoor Coal is willing to accept additional Recommended Conditions specifically aimed at developing and implementing a standalone Energy Savings Action Plan.

Tahmoor Coal’s commitments to reduce Scope 1 and Scope 2 emissions where feasible and practical are summarised succinctly in Table 8.1 of Appendix K to the project amendment report (AECOM 2020b). Tahmoor Coal is also willing to expressly incorporate any of these commitments not already captured in the Statement of Environmental Management Commitments which currently forms Table 7-2 in the submissions report (AECOM 2020a) (Statement of Commitments), and have that Statement expressly incorporated into Recommended Condition A2 and annexed to the Conditions. Tahmoor Coal’s suggested mark-up updating the Statement of Commitments is attached at Appendix B.

We note that when Matt Floro refers to Scope 1 emissions over the life of the Project, he is referring to the unabated emissions as noted in Table 24 of the Assessment Report as opposed to the abated Scope 1 emissions as noted in Table 7 of the Response to DPIE’s Second Request for Information (SIMEC, dated 23 October 2020). Tahmoor Coal is committed to abating Scope 1 emissions through flaring and power generation.

We would also like to highlight the following submissions made by Mike Young (from DPIE) in relation to Scope 1 and Scope 2 emissions:

- while the existing mine is relatively gassy when compared to some other similar mines it is actually one of the few mines that has a system in place (that will continue if the Project is approved) to capture 99 per cent of gas drainage or gas that’s emitted in the form of methane and to either flare or use that gas for power generation; and

- of the small percentage of gas left there is no technology that the Department is aware of that can fully capture or address or burn or use for power generation as there is always a level of fugitive emissions that will occur through ventilation processes needed for occupational health and safety reasons etc; and

- the Applicant has a number of abatement or minimisation measures in place that are not at other coal mines (and these will continue), they are ‘concrete’ measures, and are not ‘trivial’.
Carbon neutrality

Section 7.10.3 of the project amendment report (AECOM 2020b) provides that Tahmoor Coal, through its affiliated companies in the Liberty Steel Group of the GFG Alliance, is further committed to reducing GHG emissions from the Liberty Steel Group’s consolidated operations, including reducing emissions from steelmaking operations in Australia and reducing emissions from this Project. The Liberty Steel Group has publicly stated its aim to be carbon neutral by 2030 (CN30) and is commencing the development of an organisational structure to investigate and implement necessary measures to achieve this aim. To date, the Liberty Steel Group has committed to developing large scale, low cost and reliable green energy capacity. At Tahmoor Coal’s affiliates’ steelmaking and iron ore sites in South Australia, a number of such operations are underway or in development, including:

- a large solar farm known as ‘Cultana Power Station’ is being installed across 740 hectares (ha), to produce 210 megawatts (MW) of electricity adjacent to the steelmaking operations. The solar farm is being developed by SIMEC Energy, an affiliate of the GFG Alliance;
- feasibility studies for a pumped hydro facility, to be installed in a disused iron ore pit, have been developed; and
- the steelmaking technology has been under review since late 2017, to investigate alternative methods of steelmaking that are aligned with GFG Alliance’s low-carbon metals and industrials strategy known as GREENSTEEL.

To support the CN30 program, and to support the objectives of the NSW Climate Change Policy Framework, Tahmoor Coal will continue to investigate similar opportunities for the reduction of Scope 1 and Scope 2 emissions from this Project as part of any Energy Savings Action Plan (or ‘Air Quality and Greenhouse Gas Management Plan’). Tahmoor Coal is willing to make specific reference to carbon neutrality commitments in any standalone Statement of Commitments.

Tahmoor Coal notes that the submissions of Tony Wood and John Pye which indicated that within 10 years (by 2030) GREENSTEEL will become commercially viable, actually justifies Tahmoor Coal’s:

- support of the CN30 program (which is a parent company target to achieve carbon neutrality by 2030); and
- support of the Project generally given the life of mine is proposed to end in 10 years (also around 2030).

The submissions of Tony Wood and John Pye are also supported by the Department in Table 24 of its Assessment Report where it notes that:

The Department recognises there are no current alternatives to the use of coking coal to produce large scale raw steel materials. Whilst there is potential for the development of coal-free steel making technologies over the medium to long term, these alternatives are unlikely to be available on a commercial scale during the life of the Project.

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1 https://www.gfgalliance.com/cn30/
Although, Tahmoor Coal notes that the financial viability of the Project in the face of the commercialisation of GREENSTEEL (or other coal free steel making technologies), the Project’s impact on the commercialisation of GREENSTEEL is not a relevant planning matter for consideration under section 4.15 of the EP&A Act. Lloyd J held in Fabcot Pty Ltd v Hawkesbury City Council (1997) 93 LGERA 373 at [378]:

It is not part of the assessment of a proposal under the Environmental Planning and Assessment Act for a consent authority to examine and determine the economic viability of a particular proposal or the effect of any such proposal on the economic viability of a trade competitor ...

Further to this Mike Young (from DPIE) submitted that the clear policy framework at both Commonwealth and State level does not require consent authorities or does not expect consent authorities to be managing global holistic GHG emissions through determination of individual development applications. Going further he said that the NSW Climate Change Policy Framework and the more recent Net Zero Plan Stage 1: 2020-2030 is the first stage in reaching net zero emissions by 2050, and that these policies clearly recognise the importance of the mining sector to State and regional economies and that any action on climate change should not undermine communities or businesses relying on this sector.

**Scope 3**

Section 7.10.3 of the project amendment report (AECOM 2020b) provides that Tahmoor Coal’s current end customers include:

- Australian consumers of metallurgical coking coal (notably the two steelmakers in Australia: BlueScope and Liberty Steel Group, which is an affiliated company of Tahmoor Coal);
- consumers of metallurgical coking coal located in Germany, Japan, India, United Kingdom and Netherlands; and
- end customers in other locations from time to time.

Tahmoor Coal’s current end customer base is located in countries that are signatories to the Paris Agreement within the United Nations Framework Convention on Climate Change. Tahmoor Coal is committed to continue to manage the reduction of the Scope 3 emissions from the Project to the greatest extent practicable by continuing to sell coal to customers with end users located in countries that are parties to the Paris Agreement, or countries with equivalent domestic policies for reducing GHG emissions.

We would also like to highlight that Mike Young (from DPIE) submitted in relation to Scope 3 that those emissions may occur either within Australia if the coal is used in steel making in Australia or overseas if the steel making occurs there, but that the NSW Government has a clear policy that those emissions are to be accounted for either at those facilities within Australia or indeed accounted for by the relevant countries to which those resources are exported.

To that end, Tahmoor Coal is willing to accept a Recommended Condition identical to conditions B32, B34, B35 and B36 'Management of Scope 3 Greenhouse Gas Emissions' of Part B 'Specific Environmental Conditions' of the United Wambo Open Cut Coal Mine (SSD 7142) Approval granted by the IPC on the 29 August 2019. These conditions provide:
Management of Scope 3 Greenhouse Gas Emissions

B32. The Applicant must prepare an Export Management Plan for the development to the satisfaction of the Planning Secretary. This plan must set out protocols that require the Applicant to use all reasonable and feasible measures to ensure that any coal extracted from the development that is to be exported from Australia, is only exported to countries that are:

a) parties to the Paris Agreement within the United Nations Framework Convention on Climate Change; or

b) countries that the Planning Secretary considers have policies for reducing greenhouse gas emissions that would otherwise be similar to policies that would be required of that country if it were a party to the Agreement at (a) above;

as at the date of sale. The purpose of the Export Management Plan is to ensure that all reasonable and feasible measures are adopted by the Applicant to minimise greenhouse gas emissions identified as Scope 3 emissions in the EIS to the greatest extent practicable.

B34. The Applicant must implement the Export Management Plan as approved by the Planning Secretary for the life of the development.

B35. The Planning Secretary may determine that the Export Management Plan should be amended if it is satisfied that a change to obligations arising under the United Nations Framework Convention on Climate Change or Paris Agreement, or the policies of a country that is within B32(b) above, necessitates an amendment to the Export Management Plan.

B36. The Planning Secretary may determine that the Applicant is no longer required to implement the Export Management Plan if due to the existence of other State or Federal legal mechanisms introduced by the NSW or Commonwealth Governments regulating the subject matter of the Export Management Plan, there is no longer any need for the Export Management Plan to be implemented by the Applicant.

Although that said, and with the particular objective of going some way to offsetting Scope 3 GHG emissions, Tahmoor Coal is willing to accept a Recommended Condition similar to or identical to the following:

Within 2 years of the date of commencement of development under this consent, unless otherwise agreed by the Planning Secretary, the Applicant must prepare a report investigating Carbon Sink options and recommendations for the Development that aim at offsetting the greenhouse gas emissions generated over the life of the Development.

**Carbon Sink** Forests and other ecosystems that absorb and store carbon for an indefinite period, thereby removing carbon from the atmosphere and offsetting CO2 emissions.

As a final point on GHG, and as noted above in Section 3.5, we note that in Table 24 of the Assessment Report, the annual average Scope 3 emissions are recorded as 7.81 Mt CO$_2$-e. This is not correct, as recorded in the GHG Assessment the annual average Scope 3 emissions are 5,486,050 t CO$_2$-e.
4.6.2 Principles of ESD

The environmental impact of the Project considered against the principles of ecologically sustainable development (ESD) has been discussed in various places throughout the application documents. In particular, section 6.1.12 of the submissions report (AECOM 2020a) provides that:

- As the Project utilises the existing Surface Facilities Area of Tahmoor North, this alleviates the need to develop additional undisturbed areas, in particular we note that the area proposed for the REA has been significantly reduced to only be within the bounds of the currently approved disturbance footprint (as a result, 34 ha of CEEC Shale Sandstone Transition Forest previously proposed to be directly impacted by the original design presented in the EIS has been avoided, as described in section 2.2.2(ii) of the second amendment report (EMM 2020)).

- The mine plan has been developed based on an extensive risk assessment process to avoid and minimise impacts to natural features, water catchments and conservation areas, cultural heritage and major infrastructure as far as possible.

- As the mine has been operating in the region since 1979, the geology and environmental conditions are well known and therefore allow informed impact predictions and identification of suitable and proven mitigation and management measures based on robust technical assessments.

- The Project represents the gradual transition of mining activities from Tahmoor North to the Tahmoor South area rather than the development of a greenfield mine adjacent to the current mine and as such impacts would be comparable to existing mining development.

With particular regard to the submission of Matt Floro, this submission provides additional information and commitments in regards to the GHG emissions impacts of the Project considered against the precautionary and intergenerational equity ESD principles.

4.6.3 Suitability of the site

With regard to the submission of Matt Floro, and the query of Richard Beasley SC as to whether section 4.15(1)(c) (the suitability of the site for the development) of the EP&A Act has any role to play, the suitability of the site has been considered in various places throughout the application documents.

Section 8.2.2 of the second amendment report (AECOM 2020b) succinctly summarises Tahmoor Coal’s position and provides that the continuation of mining into the Tahmoor South area would utilise a brownfield site, facilitating demand through existing facilities rather than establishing a new separate mine to access the coal resource. The use of an existing site is considered preferable to a new mine (as supported by the Strategic Statement on Coal Exploration and Mining in NSW, June 2020) from an environmental, economic and social perspective.

Tahmoor Coal further submits that any comparison between the Project and the mine proposed in the Rocky Hill case (Gloucester Resources Limited v Minister for Planning [2019] NSWLEC 7) is unwarranted given that the proposed Rocky Hill mine was an open cut, greenfield site mine. Further, as documented in section 6.8 of the submissions report (AECOM 2020a), in the Rocky Hill case at [548], the Tahmoor Colliery is recognised as being amongst the existing coal mines currently meeting future demand of coking coal, reinforcing the benefits of accessing the coal resource using existing pit top infrastructure on a brownfield site, rather than commencing a new mine elsewhere.
4.6.4 Procedural fairness

The IPC is obliged to afford procedural fairness. The IPC will be aware that its duty to afford procedural fairness requires it to inform the Applicant of ‘the nature and content of any adverse material’ (Tahiri v Minister for Immigration and Citizenship (2012) 87 ALJR 225 at [22] per French CJ, Bell and Gageler JJ). Whether material is adverse is determined prospectively; and information which could potentially be relied on adversely to an Applicant does not cease to be adverse because the decision-maker ultimately does not have regard to it (Applicant Veal of 2002 v Minister for Immigration and Multicultural and Indigenous Affairs (2005) 225 CLR 88 at [17] per Gleeson CJ, Gummow, Kirby, Hayne and Heydon JJ). Once that information is disclosed, it is necessary that the Applicant be afforded an opportunity to deal with it (Saeed v Minister for Immigration and Citizenship (2010) 241 CLR 252 at [2] per French CJ, Gummow, Hayne, Crennan and Kiefel JJ).

So that the IPC can discharge this duty, the Applicant respectfully requests that the IPC provide it with any further information, documentation or submissions that it receives from any government agency or any members of the public concerning the Project. The Applicant further requests that, once that information is disclosed, the Applicant be given time to consider and respond to it.

By way of example, if any further information is provided by those who made submissions during the Public Hearing and took questions on notice from the Commissioners and then provided a considered response and more information, documentation or submissions following the closing of the Hearing, the Applicant requests that it be provided with this information, documentation or submissions.

4.6.5 Recommended conditions

Tahmoor Coal agrees to this additional information and commitments being added to the Definition of EIS in the Recommended Conditions, so as to expressly incorporate any of the commitments within it.

If the IPC is considering whether to impose conditions for the purposes of clause 14(1) of the Mining SEPP and is not satisfied as to the appropriateness or sufficiency of those Recommended Conditions identified above, we respectfully ask the IPC to communicate with us so that we may consider revisions to, or supplementations of, the conditions we have described above, taking into account any concerns of the IPC.

4.7 Economic assessment

In his presentation to the public hearing, Roderick Campbell from the Australia Institute criticised the economic assessment prepared for the Project by EY, claiming that the assessment overstated the economic benefits of the Project. Criticism was particularly aimed at the inclusion of benefits to workers and benefits to suppliers in the economic model for the Project. This criticism is unfounded and incorrect. As explained by the response prepared by EY (refer to Appendix C), the inclusion of benefits to workers and suppliers is in accordance with the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals prepared by the NSW Government (2015).

Further, the estimated value of worker benefits and benefits to suppliers associated with the Project is $216.9 million and $233.2 million, respectively, in net present value (NPV) terms over the life of the Project (EY 2020). The total net benefit of the Project to NSW as reported by EY is $664.9 million. Therefore, even if worker benefits and benefits to supplies were not included in the cost benefit...
analysis of the Project, the net benefit of the Project would still be substantially positive, at $214.8 million, and the Project would still be highly justified and desirable from an economic efficiency perspective.

### 4.8 Employment

Claims were made at the public hearing by the State Member for Wollondilly, who objects to the proposal, that Tahmoor Mine can only support 245 full time equivalent (FTE) jobs. A source for his statement was not provided.

This claim is not correct. Tahmoor currently employs approximately 400 FTE workers, as described in the EIS (AECOM 2018), the amendment report (AECOM 2020) and the second amendment report (EMM 2020), and as used in the economic assessment for the Project (EY 2020).

### 4.9 Comparison to the Hume Coal Project

The presentation by the State Member for Wollondilly also provided a comparison of the Hume Coal Project to the Tahmoor South Project, noting that DPIE recommended refusal of the Hume Coal Project.

While DPIE recommended refusal of the Hume Coal development application in its initial assessment report, it is noted that the Commission in its review of that project stated more information was needed to make a determination, and the project is therefore back under assessment by DPIE.

The claims made are summarised in Table 4.2, and as demonstrated, a number of incorrect claims in the comparisons between the two projects were made.
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Hume Coal – as stated by State Member for Wollondilly</th>
<th>Tahmoor South – as stated by State Member for Wollondilly</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital investment</td>
<td>$640 million</td>
<td>$342 million</td>
<td>$342 million Tahmoor South is a brownfield mine, while the proposed Hume Coal project is a greenfield development. There are therefore very different capital costs involved in the two projects, and they can not be meaningfully compared.</td>
</tr>
<tr>
<td>Royalties</td>
<td>$148 million. (Incorrect - actual - $114 million)</td>
<td>$131.5 million</td>
<td>$131.5 million The State Member incorrectly quoted the estimated royalties for Hume Coal, which is $114M (NPV) (ie less than Tahmoor South) not $148M. The estimated royalties also depend on the projected coal price, which need to be considered when making this comparison.</td>
</tr>
<tr>
<td>Jobs</td>
<td>300 FTE</td>
<td>245 FTE</td>
<td>~ 400 FTE The jobs figure used by the State Member is incorrect and he failed to provide a source of his claim that Tahmoor South can only support 245 jobs. Tahmoor South will continue employment of the existing workforce which is approximately 400 FTE.</td>
</tr>
<tr>
<td>Number of bores to be impacted</td>
<td>94</td>
<td>228</td>
<td>10 bores are predicted to be at a high risk of requiring make good measures to continue water supply. Further discussion on the predicted impacts to bores at Tahmoor, and the likelihood of make good measures being required, is provided in Section 2.6.</td>
</tr>
<tr>
<td>Impact to rock shelters</td>
<td>None</td>
<td>10 significant sites</td>
<td>LW102B was specifically shortened to avoid the 4 rock shelters identified as being of high significance.</td>
</tr>
</tbody>
</table>

Table 4.2 Comparison of the Tahmoor South Project to the Hume Coal Project
An important difference between the two projects that the State Member for Wollondilly did not recognise is that Hume Coal is a greenfield project, and Tahmoor South is brownfield. Tahmoor South is an extension to an existing underground mine in an existing lease and will continue to use the same surface infrastructure that is already well-established. Further, as noted in the Rocky Hill case at [548] and mentioned above in Section 4.6.3, Tahmoor Coal is recognised amongst the existing coal mines currently meeting future demand of coking coal, reinforcing the benefits of accessing the coal resource using existing pit top infrastructure, rather than commencing a new mine elsewhere.

The State Member for Wollondilly did not acknowledge a number of other important facts in his presentation. One is that the Hume Coal Project received 12,212 objections following the public exhibition of the EIS, 11,241 of which were form letters and 929 were unique submissions. Tahmoor South received just nine. The level of community support for the two projects is immensely different. The Tahmoor South Project will also produce primarily coking coal; Hume Coal would produce both thermal and coking coal (an approximate mix of 55% to 45%, respectively). The demand for coking coal over the life of the Tahmoor South Project has been well-established as is further discussed in section 4.5.

We note we have attempted to meet with the State Member for Wollondilly to discuss the matters he has raised since announcing his public objection to the Project in December 2020 and would welcome the opportunity to discuss these matters further.
5 Summary of additional commitments

In recognition of matters raised at the site visit and in the meeting between the Commission and Tahmoor Coal in relation to biodiversity and GHG emissions, as outlined in this submission, Tahmoor Coal has put forward a number of additional commitments to mitigate these issues, as summarised below:

1. **Biodiversity** - the proposed downcast ventilation shaft TCS2 will be constructed on the same site as TSC1, which is located on land owned by Tahmoor Coal, and on land that has been historically cleared and contains a lower condition form of Shale Sandstone Transition Forest CEEC compared to the proposed TSC2 site. This would avoid clearing of the CEEC that is in good condition (2.8 hectares (ha)). The area of CEEC to be cleared for the Project would therefore reduce from 10.1 ha to approximately 7.3 ha.

2. **Greenhouse gas** –
   a) To support the CN30 program, and to support the objectives of the NSW Climate Change Policy Framework, Tahmoor Coal will continue to investigate opportunities for the reduction of Scope 1 and Scope 2 emissions from this Project as part of any Energy Savings Action Plan (or 'Air Quality and Greenhouse Gas Management Plan'). Tahmoor Coal is willing to make specific reference to carbon neutrality commitments in any standalone Statement of Commitments.

   b) Tahmoor Coal is willing to accept a Recommended Condition identical to conditions B32, B34, B35 and B36 'Management of Scope 3 Greenhouse Gas Emissions' of Part B 'Specific Environmental Conditions' of the United Wambo Open Cut Coal Mine (SSD 7142) Approval granted by the IPC on the 29 August 2019, relating to the preparation of an Export Management Plan, as described in 4.6.1.

   c) With the objective of going some way to offsetting Scope 3 GHG emissions, Tahmoor Coal is willing to accept a Recommended Condition relating to the investigation of carbon sink options, as described in 4.6.1.
6 Closing

The Tahmoor South Project has been the subject of rigorous assessment for many years, both by the applicant, Tahmoor Coal, and the many technical specialists and expert independent peer reviewers engaged to undertake environmental, social and economic assessments of the Project, as well as by the DPIE and their expert independent peer reviewers.

The Project design for which approval is sought represents the outcome of amendments made over a period of approximately eight years, based on robust technical studies and in response to community and government agency feedback. The Project achieves an appropriate balance between its benefits and impacts, which, can be successfully managed as demonstrated by operations at Tahmoor North.

DPIE’s assessment report concluded that, on balance, the Department considers that the benefits of the Project outweigh its residual costs, that the Project is in the public interest and is approvable, subject to strict conditions of consent.

If approved, Tahmoor South will enable:

- the continuation of a brownfield underground mine and additional resource recovery within existing leases using existing infrastructure;
- the continuation of employment of the workforce of around 400 people for another 10 years, with approximately 50-175 new jobs during the construction phase over a two year period;
- the continued supply of high-quality coking coal for steelmaking to both the domestic and export markets, using existing infrastructure;
- significant benefits to the state of NSW and the local region, with a net benefit of $664.9 M and $137.5 M respectively (in NPV terms);
- a vital contribution to the GFG Alliance Carbon Neutral 30 commitment; and
- continuation of the significant contribution Tahmoor makes to the local communities of Tahmoor and Bargo.

Tahmoor Mine is one of the largest employers in the Wollondilly Shire, and a very proud member of the community.

SIMEC GFG is committed to achieving net-zero GHG emissions by 2030 by the development and implementation of technology to enable the manufacture of steel with hydrogen. This commitment is fundamental to GFG’s purpose of creating a sustainable future for industry and society, and SIMEC’s commitment to achieving this is demonstrated through the commencement of the Whyalla Transformation Project. Work is well underway to convert the steelworks to a world leading GREENSTEEL facility. While the production of steel without coking coal is not currently commercially viable, which is expected to take approximately another 10 years, the Tahmoor South Project will bridge this gap over the next decade by continuing the supply of high-quality coking coal while SIMEC develops and implements new technologies in steel making.

Tahmoor Mine has been operating in the Wollondilly Shire since 1979. Over 40 years of experience has enabled the mine to gain an extensive understanding of the environment in which it operates; experience that will be brought to Tahmoor South. The Project will use the same equipment, same mining method and extract coal from the same seam as operations at Tahmoor North and will
enable the well-established demand for coking coal to be met while also enabling the continuation of significant benefits the mine brings to the local community and to the state of NSW.
7 References


NSW Department of Primary Industries - Office of Water 2012, *NSW Aquifer Interference Policy.*

Appendix A
SA NSW Surface Development Guidelines
Surface Development Guideline 4 – Active mining areas High predicted subsidence impact

Requirements, information and guidance for property owners likely to be undermined by future mine workings
Contents

1. Introduction .................................................................................................................................................. 3
2. Surface Development Guidelines .............................................................................................................. 3
3. Objective of Guideline 4 .............................................................................................................................. 3
4. Areas where this guideline applies ........................................................................................................... 4
5. Allowable residential construction ........................................................................................................... 4
6. Who can assess development applications on Guideline 4 properties ................................................... 5
7. Proposed developments that do not comply with the guideline .............................................................. 5
8. Other allowable additions and improvements .......................................................................................... 5
9. Certification requirements ......................................................................................................................... 5
10. How this guideline was developed ........................................................................................................ 5
11. Disclaimer .................................................................................................................................................. 5
1. **Introduction**

Subsidence Advisory NSW (SA NSW) is the NSW Government agency responsible for regulating and administering the mine subsidence compensation system in NSW.

SA NSW has developed and applied surface development guidelines (Guidelines) in accordance with the *Coal Mine Subsidence Compensation Act 2017*, to support, inform, and guide prospective home builders, property developers, local councils and other stakeholders to mitigate or eliminate the risk of damage to surface structures from mine subsidence within proclaimed mine subsidence districts.

In areas within active mining leases, the development guidelines are designed to effectively balance the interests of property owners and coal mine proprietors, providing mitigation measures against subsidence damage without imposing unreasonable costs and restrictions on the landowner or unreasonably sterilising coal resources.

2. **Surface Development Guidelines**

One of eight guidelines is assigned to each property within a mine subsidence district. The guideline applied depends on the subsidence risks at each property as detailed below:

- Guideline 1. Non-active mine workings at risk of pothole subsidence
- Guideline 2. Non-active mine workings possible subsidence risk
- Guideline 3. Non-active mine workings remote subsidence risk
- Guideline 4. Active mining areas – high predicted subsidence impact
- Guideline 5. Active mining areas – moderate predicted subsidence impact
- Guideline 6. Active mining areas – minimal predicted subsidence impact
- Guideline 7. On Application
- Guideline 8. No Restrictions

3. **Objective of Guideline 4**

This guideline explains what home builders and property developers must do in relation to obtaining approval for their development under the:

- *Coal Mine Subsidence Compensation Act 2017* (the Act)
- *Coal Mine Subsidence Compensation Regulation 2017* (the Regulation)

Compliance with this guideline is a requirement for persons planning to develop property within a mine subsidence district that has been assigned Guideline 4.

The purpose of this guideline is to:

- prevent or minimise damage to a residential building during mining
- ensure the residential building remains safe to persons inhabiting the residence
- ensure that when residential construction in future mining areas occurs, compliance with the Act and Regulation is as simple and inexpensive for the home builder as practicable.
4. **Areas where this guideline applies**


**Guideline 4** applies to properties within mine subsidence districts assessed by SA NSW as likely to be undermined in the future with subsidence-induced ground movements up to and including:

- Maximum Horizontal Ground Strain: 5mm/m tensile or compressive
- Maximum Tilt: 7mm/m
- Minimum Radius of Curvature: 3km (hogging and sagging).

5. **Allowable residential construction**

**Guideline 4** applies to applications for a single residential building that (a) is not a dual occupancy or unit development and (b) conforms with the following description. Commercial buildings or applications for more than one residential building will be assessed by SA NSW on merit.

The following residential construction is permitted within areas subject to **Guideline 4**:

Single storey clad frame residential buildings, erected on reinforced concrete strip footings or waffle raft slab to minimum H2 site classification to AS2870. Site classification “P” for mine subsidence site is to be ignored for these structures. Maximum height of foundation brickwork 1.5m.

These improvements are limited to a maximum length of 18 metres and a maximum footprint of 250 square metres.

The buildings are to be designed and constructed in accordance with the current editions of AS1684, AS 2870, AS3600, AS3700, AS4773, the Building Code of Australia, any other relevant applicable Australian Standards and good engineering practice.

The gradients on wet area floors and roof gutters shall be increased to ensure that they remain serviceable as mining occurs.

All services and external works shall be designed and constructed to accommodate;

- Maximum Horizontal Ground Strain: 5mm/m tensile or compressive.
- Maximum Tilt: 10mm/m (this is to ensure structure remains functional should tilts exceed 7mm/m).
- Minimum Radius of Curvature: 3km.

Flexible joints in pipes shall be designed in accordance with AS3500 to minimum H2 site classification specifications to accommodate curvature in any plane, coupled with tensile or compressive strain.

Branches, bends and valve stems shall be protected by flexible wrapping or shrouds to prevent shearing of the pipes as ground movement occurs. Flexible joints shall be provided where pipes are connected to chambers or gullies.
### 6. Who can assess development applications on Guideline 4 properties

SA NSW assesses all applications for development (both complying and non-complying) on properties subject to **Guideline 4**.

SA NSW generally processes development applications that comply with this guideline within five business days.

### 7. Proposed developments that do not comply with the guideline

Proposed improvements that do not comply with the guideline for the property, including higher density residential development and commercial buildings, must be assessed by SA NSW risk engineers on merit.

An application for approval must be lodged with SA NSW in accordance with Section 22 of the Act.

Building structures not covered by this guideline and in-ground concrete pools, garages with masonry walls and retaining walls, of masonry or concrete construction, greater than 1.0 metre in height, will require engineering design and shall be designed and constructed to accommodate:

- Maximum Horizontal Ground Strain: 5mm/m tensile or compressive.
- Maximum Tilt: 10mm/m (this is to ensure improvements remain functional should tilts exceed 7mm/m).
- Minimum Radius of Curvature: 3km (hogging and sagging).

### 8. Other allowable additions and improvements

Refer to SA NSW’s deemed approval list for other allowable additions and improvements on properties subject to **Guideline 4**.

### 9. Certification requirements

Following construction, a certifier must be engaged to certify that an improvement has been constructed in accordance with **Guideline 4**. A copy of this certification must be provided to SA NSW.

### 10. How this guideline was developed

SA NSW’s development guidelines were developed by SA NSW in consultation with an expert reference group comprising of structural engineers, mining experts and key mining and development industry stakeholders.

### 11. Disclaimer

Please note SA NSW’s surface development guidelines are subject to change
Surface Development Guideline 5 –
Active mining areas –
Moderate predicted subsidence impact

Requirements, information and guidance for property owners likely to be undermined by future mine workings
## Contents

1. Introduction .................................................................................................................................................. 3
2. Surface Development Guidelines ............................................................................................................... 3
3. Objective of Guideline 5 .............................................................................................................................. 3
4. Areas where Guideline 5 applies ................................................................................................................ 4
5. Allowable residential construction ............................................................................................................. 4
6. Who assesses whether development complies with Guideline 5 ............................................................. 5
7. Proposed developments that do not comply with the guideline ................................................................. 5
8. Certification requirements .......................................................................................................................... 5
9. Other allowable additions and improvements ............................................................................................. 5
10. How this guideline was developed .......................................................................................................... 5
11. Disclaimer ................................................................................................................................................... 5
1. **Introduction**

Subsidence Advisory NSW (SA NSW) is the NSW Government agency responsible for regulating and administering the mine subsidence compensation system in NSW.

SA NSW has developed and applied surface development guidelines (Guidelines) in accordance with the *Coal Mine Subsidence Compensation Act 2017*, to support, inform, and guide prospective home builders, property developers, local councils and other stakeholders to mitigate or eliminate the damage to surface structures from mine subsidence within proclaimed mine subsidence districts.

In areas within active mining leases, the development guidelines are designed to effectively balance the interests of property owners and coal mine proprietors, providing mitigation measures against subsidence damage without imposing unreasonable costs and restrictions on the landowner or unreasonably sterilising coal resources.

2. **Surface Development Guidelines**

One of eight guidelines has been applied to each property within a mine subsidence district. The guideline applied depends on the subsidence risks at each property as detailed below:

- **Guideline 1.** Non-active mine workings at risk of pothole subsidence
- **Guideline 2.** Non-active mine workings possible subsidence risk
- **Guideline 3.** Non-active mine workings remote subsidence risk
- **Guideline 4.** Active mining areas – high predicted subsidence impact
- **Guideline 5.** Active mining areas – moderate predicted subsidence impact
- **Guideline 6.** Active mining areas – minimal predicted subsidence impact
- **Guideline 7.** On Application
- **Guideline 8.** No Restrictions

3. **Objective of Guideline 5**

This guideline explains what home builders and property developers must do in relation to obtaining approval for their development under the:

- *Coal Mine Subsidence Compensation Act 2017* (the Act)
- *Coal Mine Subsidence Compensation Regulation 2017* (the Regulation)

Compliance with this guideline is a requirement for person planning to develop property within a mine subsidence district that has been assigned **Guideline 5**.

The purpose of **Guideline 5** is to:

- prevent or minimise damage to a residential building during mining. The most common damage to occur during mining is brickwork cracking due to inadequate articulation of the brickwork, refer AS4773, and issues with services due to lack of flexibility and adequate falls, refer AS3500.
- ensure the residential building remains safe to persons inhabiting the residence.
• ensure that when residential construction in future mining areas occurs, compliance with the Act and Regulation is as simple and inexpensive for the home builder as practicable.

4. Areas where Guideline 5 applies

Areas subject to Guideline 5 are identified on the NSW Planning Portal at www.planningportal.nsw.gov.au/find-a-property.

Guideline 5 applies to properties within mine subsidence districts assessed by SA NSW as likely to be undermined in the future with moderate subsidence-induced ground movements up to and including:

- Maximum Horizontal Ground Strain: 3mm/m tensile or compressive.
- Maximum Tilt: 7mm/m.
- Minimum Radius of Curvature: 5km (hogging and sagging).

5. Allowable residential construction

Guideline 5 applies to applications for a single residential building that (a) is not a dual occupancy or unit development and (b) conforms with the following description. Commercial buildings or applications for more than one residential building will be assessed on merit.

The following residential construction is allowable on properties subject to Guideline 5:

Single-storey or two-storey, clad frame or articulated brick veneer residential buildings, erected on reinforced concrete footings/slabs, designed and constructed to comply with AS 2870 for a minimum Class H2 site ignoring Class “P” for a Mine Subsidence site.

These buildings are limited to a maximum length of 24 metres and a maximum footprint of 400m²

The buildings are to be designed and constructed in accordance with the current editions of AS1684, AS 2870, AS3600, AS3700, AS4773, the Building Code of Australia, any other relevant applicable Australian Standards and good engineering practice. Masonry is to be articulated, in accordance with the current editions of Australian Standards AS3700 and AS4773.

The gradients on wet area floors, roof gutters and drainage shall be increased to ensure that they remain serviceable when subjected to 7mm/m tilts.

Flexible joints in pipes shall be designed in accordance with AS3500 to minimum H2 site classification specifications to accommodate curvature in any plane, coupled with tensile or compressive strain.

Branches, bends and valve stems shall be protected by flexible wrapping or shrouds to prevent shearing of the pipes as ground movement occurs. Flexible joints shall be provided where pipes are connected to chambers or gullies.

No internal or integrated retaining walls are permitted.
Note: Any development within a flood prone area will require assessment by SA NSW to determine the required floor level taking future subsidence into account.

6. Who assesses whether development complies with Guideline 5

The relevant council or an accredited certifier as defined in the *Environmental Planning and Assessment Act 1979* assesses whether development complies with Guideline 5.

7. Proposed developments that do not comply with the guideline

Proposed improvements that do not comply with the guideline for the property, including any development within a flood prone area, must be assessed by SA NSW risk engineers on merit. This includes higher density residential development or commercial buildings.

Depending on the type of construction and nature of the mine workings, SA NSW may require specific engineering design measures to be applied to the improvement, further geotechnical investigation to better understand the subsidence risk, or stabilisation of the mine workings.

An application for approval must be lodged with SA NSW in accordance with Section 22 of the Act.

8. Certification requirements

Following construction, a certifier must be engaged to certify that an improvement has been constructed in accordance with Guideline 5. A copy of this certification must be provided to SA NSW.

9. Other allowable additions and improvements

Refer to SA NSW’s deemed approval list for other allowable additions and improvements on properties subject to Guideline 5.

10. How this guideline was developed

SA NSW’s development guidelines were developed by SA NSW in consultation with an expert reference group comprising of structural engineers, mining experts and key mining and development industry stakeholders.

11. Disclaimer

Please note SA NSW’s surface development guidelines are subject to change.
Surface Development Guideline 6 – Active mining areas – Minimal predicted subsidence impact

Requirements, information and guidance for property owners likely to be undermined by future mine workings
## Contents

1. Introduction .......................................................................................................................... 3
2. Surface Development Guidelines ...................................................................................... 3
3. Objective of Guideline 6 .................................................................................................. 3
4. Areas where Guideline 6 applies .................................................................................... 4
5. Allowable residential construction .................................................................................. 4
6. Who can assess whether development complies with Guideline 6 ......................... 4
7. Proposed development that does not comply with the guideline .............................. 4
8. Certification requirements ............................................................................................... 5
9. Other additions and improvements allowable on Guideline 6 properties ............... 5
10. How this guideline was developed .............................................................................. 5
11. Disclaimer ....................................................................................................................... 5
1. Introduction

Subsidence Advisory NSW (SA NSW) is the NSW Government agency responsible for regulating and administering the mine subsidence compensation system in NSW.

SA NSW has developed and applied surface development guidelines (Guidelines) in accordance with the *Coal Mine Subsidence Compensation Act 2017*, to support, inform, and guide prospective home builders, property developers, local councils and other stakeholders to mitigate or eliminate the damage to surface structures from mine subsidence within proclaimed mine subsidence districts.

In areas within active mining leases, the surface development guidelines are designed to effectively balance the interests of property owners and coal mine proprietors, providing mitigation measures against subsidence damage without imposing unreasonable costs and restrictions on the landowner or unreasonably sterilising coal resources.

2. Surface Development Guidelines

One of eight guidelines has been applied to each property within a mine subsidence district. The guideline applied will depend on the subsidence risk at the property as detailed below:

- Guideline 1. Non-active mine workings at risk of pothole subsidence
- Guideline 2. Non-active mine workings possible subsidence risk
- Guideline 3. Non-active mine workings remote subsidence risk
- Guideline 4. Active mining areas - high predicted subsidence impact
- Guideline 5. Active mining areas – moderate predicted subsidence impact
- Guideline 6. Active mining areas – minimal predicted subsidence impact
- Guideline 7. On Application
- Guideline 8. No Restrictions

3. Objective of Guideline 6

This guideline explains what home builders and property developers must do in relation to obtaining approval for their development under the following legislation:

- *Coal Mine Subsidence Compensation Act 2017* (the Act)
- *Coal Mine Subsidence Compensation Regulation 2017* (The Regulation)

Compliance with this guideline is a requirement for persons wishing to develop property within a mine subsidence district that has been assigned **Guideline 6**.

The purpose of **Guideline 6** is to:

- prevent or minimise damage to a residential building during mining. The most common damage to occur during mining is brickwork cracking due to inadequate articulation of the brickwork, refer AS4773, and issues with services due to lack of flexibility and adequate falls, refer AS3500.
- ensure the residential building remains safe to persons inhabiting the residence.
• ensure that when residential construction in future mining areas occurs, compliance with the Act and Regulation is as simple and inexpensive for the home builder as practicable.

4. Areas where Guideline 6 applies


Guideline 6 applies to properties in mine subsidence districts assessed by SA NSW as likely to be undermined in the future with subsidence-induced ground movements up to and including:

• Maximum Horizontal Ground Strain: 2mm/m tensile or compressive.
• Maximum Tilt: 4mm/m.
• Minimum Radius of Curvature: 10km (hogging and sagging).

5. Allowable residential construction

Guideline 6 applies to applications for up to two residential buildings that conform with the following description. Commercial buildings or applications for more than two separate residential buildings will be assessed on merit.

The following residential construction is permitted within areas subject to Guideline 6 without further approval from SA NSW:

• Single-storey or two-storey clad frame or masonry veneer residential buildings, erected on reinforced concrete footings and slabs, designed and constructed to comply with AS 2870 for the relevant site classification. Ignore Classification “P” for Mine Subsidence Sites.
• Masonry is to be articulated, in accordance with the current editions of Australian Standards AS3700 and AS4773.
• These improvements are limited to a maximum length of 30 metres and a maximum footprint area of 500 square metres.

6. Who can assess whether development complies with Guideline 6

The relevant council or an accredited certifier as defined in the Environmental Planning and Assessment Act 1979 can assess whether development complies with Guideline 6.

7. Proposed development that does not comply with the guideline

Proposed improvements that do not comply with the guideline for the property must be assessed by SA NSW risk engineers on merit. This includes higher density residential development, commercial buildings and buildings more than two storeys.

Depending on the type of construction and nature of the mine workings, SA NSW may require specific engineering design measures to be applied to the improvement, further...
geotechnical investigation to better understand the subsidence risk, or stabilisation of the mine workings.

An application for approval must be lodged with SA NSW in accordance with Section 22 of the Act.

8. Certification requirements

Following construction, a certifier must be engaged to certify that an improvement has been constructed in accordance with Guideline 6. A copy of this certification must be provided to SA NSW.

9. Other additions and improvements allowable on Guideline 6 properties

Refer to SA NSW’s deemed approval list for other allowable additions and improvements on properties subject to Guideline 6.

10. How this guideline was developed

SA NSW’s development guidelines were developed by SA NSW in consultation with an expert reference group comprising of structural engineers, mining experts and key mining and development industry stakeholders.

11. Disclaimer

Please note SA NSW’s surface development guidelines are subject to change.
Appendix B
Updated summary of GHG mitigation measures
### Table 7-2 Summary of Mitigation Measures [Greenhouse Gas only]

<table>
<thead>
<tr>
<th>Ref#</th>
<th>Potential Impact</th>
<th>Management and Mitigation Measures</th>
<th>Proposed/existing commitment</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHG-1</td>
<td>Generation of GHG from operation of the proposed development</td>
<td>Implement fugitive emissions abatement measures, including flaring, and methane recycled through third party power generation (eg, the existing WCMG Power Plant), if available. Use of ventilation control devices in sections of the mine not in use enabling them not to be ventilated (unless required for safety purposes), thereby reducing fugitive emissions. Sealing of panels to reduce methane emissions from the goaf.</td>
<td>Proposed</td>
<td>Operation</td>
</tr>
<tr>
<td>GHG-2</td>
<td></td>
<td>Continue use of an electric winder as the primary method of materials transport for the mine rather than diesel transport</td>
<td>Existing</td>
<td>Pre-Construction</td>
</tr>
<tr>
<td>GHG-3</td>
<td></td>
<td>Monitor the upcast ventilation shaft sites to enable accurate measurements of ventilation emissions. Monitoring to be reported within the Annual Review. Use of real-time gas (methane and carbon dioxide), temperature, pressure and associated volumetric flow monitoring at the ventilation shaft site to allow accurate measurement of ventilation (including methane and carbon dioxide) emissions, which will then allow further feasibility assessment of reuse options.</td>
<td>Proposed</td>
<td>Operation</td>
</tr>
</tbody>
</table>
| GHG-4 |                                                                                | Prepare an Energy Savings Action Plan in accordance with the NSW Energy Administration Amendment (Water and Energy Savings) Act, 2005 and the Guidelines for Energy Savings Action Plans (DEUS, 2005). The plan will include standards to minimise energy use and GHG emissions from the proposed development’s operations, such as objectives, commitments, procedures and responsibilities for:  
- Assisting in researching and promoting low emission coal technologies.  
- Improving energy use and efficiency.  
- Considering the use of alternative fuels where economically and practically feasible.  
- Review of mining practices to minimise double handling of materials and ensuring that materials haulage is undertaken using the most efficient routes.  
- Ongoing scheduled and preventative maintenance to ensure that diesel and electricity powered plants operate efficiently.  
- Develop targets for GHG emissions and energy use and monitor and report against these.  
- Implementation of a detailed energy monitoring programme. This would include monitoring the electricity and diesel usage on-site to identify main sources of GHG emissions and apply appropriate reduction mechanisms where possible.  
- Regular maintenance of diesel powered equipment to ensure operation at peak efficiency.  
- Conduct baseline study of energy use.  
- Assess lighting plant efficiency.                                                                                                                          | Proposed                      | Operation |
<table>
<thead>
<tr>
<th>Ref#</th>
<th>Potential Impact</th>
<th>Management and Mitigation Measures</th>
<th>Proposed/existing commitment</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHG-5</td>
<td></td>
<td>Ensuring maintenance, calibration and record keeping is undertaken on the main ventilation shafts and fans to enable GHG emission calculations. Maintaining records for monthly electricity use and monthly ROM coal production to allow calculation of greenhouse gas emissions. Monitoring to be reported annually within the Annual Review.</td>
<td>Proposed</td>
<td>Operation</td>
</tr>
<tr>
<td>GHG-6</td>
<td></td>
<td>Creation of mine plan that maximises energy efficiency is a key consideration in the development of the mine plan. For example, significant savings of GHG emissions (through increased energy efficiency) can be achieved by mine planning decisions which minimise haul distances and therefore fuel use.</td>
<td>Proposed</td>
<td>Operation</td>
</tr>
</tbody>
</table>
Appendix C
EY Response to the Australia Institute
Response to comments on the Economic Impact Assessment at the Tahmoor South Coal Project (SSD 8445) public hearing conducted by the Independent Planning Commission

The Independent Planning Commission (IPC) held the public hearing into the State Significant Development application for the Tahmoor South Coal Project ("the Project") SSD 8445 over three days from the 15th to 17th of February 2021.

Tahmoor Coal Pty Ltd engaged EY to undertake an independent economic impact assessment of the proposed Tahmoor South Coal Project ("the Report") in accordance with the Guidelines for the economic assessment of mining and coal seam gas proposals, as published by the NSW government in December 2015 ("the Guidelines") and the Technical Notes supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals (the Technical Notes) published in April 2018.

Our report was completed on 28 July 2020 and submitted by Tahmoor Coal as a part of the application under Part 4 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act) and Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) for an extension of underground coal mining and associated activities at the Tahmoor Mine 1.

The NSW Department of Planning, Industry and Environment (DPIE) engaged Oxford Economics to undertake a peer review of our report. Overall, Oxford considered that the CBA was broadly consistent with the Economic Guidelines. A presentation was also made at the public hearing by a representative of The Australia Institute on 15 February 2021.

This response is aimed at addressing the comments on our Report made by the Australia Institute at the public hearing and with reference to the Oxford Economics peer review. This is consistent with our role in this process of providing an independent assessment of the costs and benefits of the Project consistent with the Guidelines based on data and assumptions outlined in our Report. The issues covered in detail below relate to the treatment of:

- Worker benefits
- Supplier benefits
- Uncertainties relating to coal markets

1 The Final Report, issued in August 2020, contains an updated set of input assumptions from the Report that was reviewed by Oxford Economics. The results of the updated Report finalised in July 2020 are referenced here.


Preliminary comments

Before addressing the issues above in detail there are some broad comments for the IPC to consider in relation to the analysis we have produced.

First, we believe it is important to recognise the relatively unique role that the economic cost benefit analysis (CBA) plays in the approvals process. It is common for government to undertake CBA when considering public expenditures such as large infrastructure developments or programs. As such, much of the common literature and practices of CBA are rooted in the conservatism of government decision making. Of course, the CBA undertaken in relation to the Project considers expenditure of private funds which has resulted in the approach outlined in the Guidelines.2

Second, and related to the nature of the analysis discussed above, the Guidelines that been developed explicitly account for the kinds of benefits that are more appropriate for decision makers to consider when accounting for private investment. In this context, the CBA outlined in the Guidelines is aimed at assessing the economic welfare benefits to New South Wales, including areas that might not be standard when assessing government expenditure programs such as worker and supplier benefits.

Third, by recognising a range of potential beneficiaries from the Project (at the State and local levels), the Guidelines are effectively identifying key stakeholders in the Project. What we observe in much of the commentary around the Report is calls for the exclusion of elements of the analysis based on obscure economic arguments (usually more appropriate for CBA relating to government expenditure) that have little basis in common sense. For example, to claim that the 400 direct employees at this mine who will earn a significant wage premium compared with average wage earners (over double) in New South Wales and yet want to exclude these benefits can only be justified under the most restrictive of circumstances.

Worker benefits

The Guidelines are clear in their allowance for the use of worker benefits as part of the CBA. As stated in our Report, we assume that the wage paid at the mine, which is significantly higher than the average wage in the region, is an appropriate measure of worker benefits. In seeking to have these benefits excluded from the analysis, two justifications are commonly used: 1) the average wage benchmark is inappropriate because the mine in question will simply employ workers from another mine; or 2) the wage premium paid simply covers the ‘disutility’ of working in a mine.

The first argument is unjustifiable in the context of the assumptions underpinning the CBA that are consistent with the guidelines. Specifically, the Project case in the CBA is additional to the base case. The ‘with project’ case is predicated on no underlying changes to economic activity except for the development of the project which implies that all existing mining activity also continues. Logically then, if an additional worker is required for the Project and taken from an existing mine, given activity in that existing mine must continue then an additional worker is required in that mine. Eventually the additional mine worker is required from somewhere and our assessment is based on taking that worker from the

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2 In considering the economic credentials of private investments governments tend to prefer economic modelling of the welfare impacts through the use of assessment tools such as computable general equilibrium models. The is discussed later in the note.
pool of existing workers at the average wage rate. The same applies in measuring the impact on economic activity for extending the life of an existing mine.\(^3\)

The second argument assigns 100% of the wage premium paid to mine workers to compensation for an unpleasant job. We discount this argument, rather focussing on the evidence to suggest that the wage premium paid to miners is more a function of their skill, particularly through the application of capital to generate higher returns. In addition, there does not appear to be a considerable body of evidence proffered to establish that working in a mine is considerably more unpleasant than working in any ‘average’ profession (which is the appropriate benchmark in this case).

One of the key benefits of private sector investment is the employment it creates. The Project is expected to employ a significant amount of workers, around 400 full time equivalent (FTE) positions for the bulk of the operation phase. Our Report shows the net present value of total wages paid to be around $395 million over the life of the Project with worker benefits calculated at around $217 million (around 54% of total wages paid). Our analysis also contains systematic sensitivity analysis on worker benefits to recognise the prospect of disutility of labour (a 25% reduction in wage premium).

**Supplier benefits**

One of the key benefits of private sector investment is through the establishment of supply chain networks that act to disperse the economic benefits of projects to a myriad of businesses.

The Guidelines are clear in their allowance for the use of supplier benefits as part of the CBA. Consistent with the Guidelines, we have made an estimate of the producer surplus associated with the additional demand for inputs into production. The Australia Institute has raised the issue of excluding supplier benefits for reasons that are unclear and seem to misinterpret the peer review from Oxford Economics. The peer review accepted the inclusion of supplier benefits (subject to some transparency concerns). Oxford Economics critique of the use of supplier benefits related solely to the difference between The Guidelines and Treasury Guidelines.

Simply, our analysis takes the amount of spending on goods and services that will take place under the Project, some $1.155 billion in net present value terms, and applies a simple metric of gross operating surplus from our in-house regional input output model (around 20%) to this figure to derive the increase in producer surplus. This yields a benefit of around $233 million in net present value terms.

Again, this figure is subject to sensitivity analysis in the Report.

**Coal price and demand assumptions**

The Report includes the (then) latest consensus price forecasts from KPMG as a basis for the forecast. While coal prices fell in 2020, the substantive coal production for The Project does not start until 2022 when the longwall operations are anticipated to be established if the Project is approved. While there may be a renewed focus on reducing emissions amongst several actors globally, over the timespan of The Project, to 2032, coal is still expected to remain a large contributor to demand in key markets.

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\(^3\) Note that a less conservative assumption would be that the person employed is drawn from the ranks of the unemployed (this kind of assumption would not be inconsistent with the line of logic underpinning our methodology.
Relatedly, coal prices have recovered, and the base case assumptions outlined in our report are in line with today’s market and assumptions.

To account for this potential volatility, the analysis includes a sensitivity, by reducing the coal price assumption by 25 per cent over the lifetime of the Project. The sensitivity demonstrates that the Project remains viable under this lower coal price assumption. The risk to the Project has been tested through this sensitivity, which indicates strong overall benefits to NSW under lower coal prices. The impact of lower prices will primarily impact on shareholder returns. Their ultimate decision to invest in the Project will consider the risks facing the Project today.

**CGE modelling**

A typical way for governments to assess the impacts of large projects is using Computable General Equilibrium (CGE) modelling. A CGE model is based on a more detailed representation of the economy, including the complex interactions between different sectors, such as labour market displacement associated with the increased demand associated with the Project, and takes into account international ownership (which results in the expropriation of profits). The analysis corroborates the results of the economic impact assessment. In the Wollondilly region, the Project is expected to increase Gross Regional Product (GRP) by $1,624.5 million in Net Present Value terms and providing larger net benefits to NSW and Australia.

**A final comment**

The analysis presented in the economic impact assessment of the Tahmoor South Coal Project follows a logical framework in accordance with The Guidelines, and further confirms this through the CGE modelling assessment.

The calls for key components of the analysis to be excluded, in our view, should be viewed with caution by the IPC. Taken to the extreme, given its foreign ownership, if the indirect benefits in the form of worker benefits and supplier benefits are not taken into consideration, the net remaining impact of the project is measured in taxes (corporate income taxes and royalties) in this project. By default, this renders government the primary stakeholder in the Project.

In our view this is contrary to the framework developed in The Guidelines which aims to consider the extent of the net increase in economic activity as a result from an investment, and through this, weigh up the economy-wide costs and benefits of the investment. In this manner, the estimates of the impacts of the Project should serve to support all stakeholders in assessing the relative merits of the Project.