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NSW Department of Planning Industry and Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Director – Coal and Quarries Assessments

Your Ref:	SSD 8194
Our Ref:	Z19/198100
File:	DE-2017/22
Date:	18 September 2019

Dear Sir / Madam

DENDROBIUM MINE EXTENSION PROJECT (AREAS 5 & 6)

Thank you for providing Council with the opportunity to make comment on the Dendrobium Mine Extension project.

Council recognises the importance of this project to the Illawarra economy and to local steel production. In reviewing the project EIS Council also notes that there are a range of aspects of the proposal which should be reviewed and modified to mitigate adverse environmental and social impacts. This is particularly important given the size of the mine expansion and the sensitive water catchment areas involved. The attached submission outlines key areas of concern, and Council looks forward to reviewing the proponent's response in due course.

Should you have any enquiries or wish to discuss this matter further, please contact Mr Ron Zwicker, Special Projects & Planning Support Manager on telephone number (02) 4227 7111.

This letter is authorised by

Mark Riordan
Manager Development Assessment & Certification
Wollongong City Council
Telephone (02) 4227 7111

WOLLONGONG CITY COUNCIL SUBMISSION – DENDROBIUM EXTENSION PROJECT

Economic Importance of the Continuation of Dendrobium Mine by South 32 (Illawarra Coal)

Council recognises that the ongoing supply of metallurgical coal to BlueScope Steel's Port Kembla Steelworks is essential to the Illawarra economy. The steelworks at Port Kembla were originally developed due to proximity to the Southern Coalfields of the Illawarra.

The EIS states that there is currently no economically viable, commercial-scale alternative to the use of metallurgical coal in the blast furnace method of steelmaking, which is employed at the Port Kembla Steelworks operated by Bluescope Steel.

The steelworks consume around 3 million tonnes per annum of coal, 90 percent which is sourced from mines in the Illawarra region. The principal mines are South32's Dendrobium and Appin mines, Peabody's Metropolitan mine and the SIMEC Tahmoor mine.

Currently, the coal mined at Dendrobium (Wongawilli seam) is blended with coal from South32 Appin's mine (Bulli seam) to produce the 'Illawarra Blend' which is purchased by local and international steelmakers. However, it is unclear whether South 32 will continue to produce the 'Illawarra Blend' since the Bulli seam coal in the subject Dendrobium project (Area 5) appears to be the same composition as the Bulli seam coal from Appin mine.

South32 currently supply around 60% of BlueScope Steelworks' metallurgical coal. Surplus coal is currently transported to the Port Kembla Coal Terminal, where it is transported to Liberty Primary Steel Whyalla Steelworks or for export. South32's operations also currently account for approximately 50% of throughput at the Port Kembla Coal Terminal.

The Cadence Economics Economic Impact Assessment (EIA) report was included within the EIS. The Cadence report found the following potential benefits of the project:

- Continued employment for the existing Dendrobium workforce of 400 employees, and employment of a further 100 people for the project.
- The creation of 200 jobs during project construction.
- Continued support for local suppliers.
- Continued payment of royalties, taxes and rates.
- Contribution to the viability of Port Kembla Coal Terminal, as the majority of throughput is from South32's operations.
- Benefits to the NSW Economy and Greater Wollongong region.

Economic benefits potentially forgone if the project does not proceed amounts to a net benefit of $1,073 million in Net Present Value (NPV) terms ($2,872 million in real, undiscounted terms) to the State of NSW and $431 million in NPV terms ($1,149 million in real, undiscounted terms) to the greater Wollongong Region. This includes an estimated $272.1 million in royalties, payroll tax and Council rates in NPV terms ($714 million in real, undiscounted terms).

If approved, the project would require a $956 million investment and support the ongoing employment of 500 staff (direct and indirect) along with an additional 200 jobs during the construction period.

If operations were to cease by 2024, South 32 state this would have a negative economic impact across the Illawarra region due to significant supply chain interruptions and would put at risk the viability of the Port Kembla Coal Terminal.

Notwithstanding this, the current mine layout for the project is likely to cause a number of adverse issues and impacts. These issues are discussed in detail in the following parts of this submission. In Council's view, the issues warrant a major redesign of the mine layout. This would enable the project to minimise its impact, whilst allowing South 32 to continue to supply metallurgical coal to BlueScope Steel's Port Kembla Steelworks, Whyalla Steelworks and to the Port Kembla Coal Terminal for exporting of coal.

Subsidence, Groundwater & Surface Water Issues & Impact upon Coastal Upland Swamps

The Environmental Impact Statement (EIS) (page ES-13) acknowledges that *"Extraction of coal by longwall mining methods results in the vertical and horizontal movement of the land surface. The land surface movements are referred to as subsidence effects. The type and magnitude of subsidence effects are dependent on a range of variables that include the mine geometry and topography, the depth of mining, the number of seams mined, the coal recovery from each seam, the nature of overlying strata and other geological factors. The subsidence effects pertinent to the project include non-conventional and systematic subsidence movements."*

According to the EIS (page ES-13), the proposed mine layout has been designed to take into consideration the following:

- 1 kilometre setbacks for longwalls from both the Avon and Cordeaux Dam walls;
- No direct undermining of the existing Avon and Cordeaux Dam waterbodies with a minimum 300 metre longwall setback adopted from the existing dam Full Supply Levels; and
- Longwall setbacks from named watercourses (ie Cordeaux River, Avon River and Donalds Castle Creek) to achieve 200 millimetres or less of predicted project subsidence-related closure.

The EIS (page ES-13) further indicates that South32 would also avoid the direct undermining of mapped "key stream features" (ie pools <100 cubic metres and permanent waterfalls >5 metres and with a permanent pool at the base) as identified during site investigations of all mapped streams overlying the subject mining areas (Areas 5 & 6).

However, the ephemeral streams directly above the proposed longwalls in Areas 5 and 6 will be affected by subsidence related issues. The Hydro Engineering & Consulting surface water assessment report in the EIS (page 26) confirms that *"Sections of streams that are directly undermined could experience the full range of subsidence impacts, including cracking, associated diversion of flows (when they are present in ephemeral streams) and localised pulses of iron / manganese that may potentially affect water quality."* This report notes that there would likely be a reduction in flow durations in the ephemeral streams overlying the longwalls as a result of surface flow diversion to groundwater and / or downstream.

The Hydro Simulations groundwater assessment report in the EIS (page 66) further notes that the fracturing of creek beds is likely to streams directly above the proposed longwall mining in Area 5 (in particular) and Area 6, based on previous effects in Areas 3A and 3B in the Dendrobium Mine area. The report acknowledges that *"Fracturing of creek and river beds is an observed phenomenon around the Southern Coalfield (eg at Dendrobium, Tahmoor, Appin and Metropolitan). At Dendrobium, the stream known as WC21 (in the north-eastern part of Area 3B) has had a fracture network develop sufficient to divert all but flood flows. Other streams eg tributaries LA4 and DC13, and the upper part of Donalds Castle Creek, have also experienced changes or reductions in flow, as reported in the End of Panel Reports."*

The Hydro Simulations report (page 67) also states that given the similarity in geology and longwall geometry, the effects of longwall mining on the upland swamps in Areas 5 and 6 are likely to be similar to those observed in Areas 3A and 3B of Dendrobium Mine. It is expected that the swamps that are located directly above or within 60 metres distance will be at a high risk of being affected by a reduction in water levels and / or an increase in the rate of drainage of these features after heavy rainfall events. These effects are a result of fracturing of the sandstone base of swamps and enhanced rates of groundwater shallow drainage beneath the swamp deposits.

The Niche biodiversity assessment report (page vi) also acknowledges that the 25 coastal upland swamps (directly above the longwalls or within 60 metres of the longwalls) have the potential to be affected by hydrological changes, by namely:

1. Reduction in groundwater levels or desaturation of the upland swamp sediments
2. Transition of the coastal upland swamp to a drier vegetation type
3. Desaturation of soil particles exposing swamp to peat desiccation where a reduction in the water table from subsidence may result in changes to the cohesion of the soils within the upland swamp and resulting changes to the organic matter which causes the sediments in the organic matter becoming loose and highly erodible

4. Exposure to greater bushfire intensity due to loss of inundation and
5. Increased scour and erosion events.

The biodiversity assessment report (page 219) states that the coastal upland swamps of the study area which are to be mined beneath are likely to exhibit degrees of subsidence related impacts. This is readily detected in the swamp piezometer monitoring for the project. The report (page 219) further states that regardless of the monitoring results to date, there is a risk that the project would change the natural cycle of coastal upland swamps with the subject area. The report also acknowledges that it is possible that a change in swamp hydrological function from subsidence exposes coastal upland swamps above a longwall to a range of indirect impacts.

However, Council is not aware of any successful remediation strategies in the southern coalfield for coastal upland swamps damaged by subsidence related impacts. Therefore, in Council's view, the protection of the coastal upland swamps from subsidence related impacts is considered of critical importance. Further, Council does not consider that biodiversity offsetting (due to subsidence related impacts to upland swamps) is appropriate. The long term preservation of upland swamps is considered the most appropriate response. Accordingly, a redesign of the mine layout for Areas 5 & 6 is warranted, in order to ameliorate the subsidence related impacts on the upland swamps.

The Hydro Simulations report (page 99) states that for Areas 5 & 6 the predicted average reduction in surface water flows is almost 25% of total mine inflow to the end of Area 6 (Year 2048), peaking at approximately 35% in Years 2043 – 2046. This report (page 99) concludes that Dendrobium Mine as a whole is likely to result in the loss of up to approximately 1300 – 1400 Megalitres per year (ML/yr) of stream flow from the Cordeaux River catchment and a similar amount from the Avon River catchment (including the reservoirs). Further, the report (page 113) states that the predicted 'take' from watercourses is up to 2,782 – 3,340 ML/yr from the whole of Dendrobium Mine including Areas 5 & 6. The incremental take due to mining in Areas 5 and 6 is predicted to be up to about 1,632 – 1,938 ML/yr.

The Hydro Engineering & Consulting surface water assessment report in the EIS (page 101) indicates that the project area only contributes to 3.9% of the total water supply catchment to Lake Avon. With a 14% average reduction in streamflow under median climatic conditions, this equates to an estimated average of 0.55% reduction in yield to Lake Avon. This report assumes that the streamflow contribution to Lake Avon is consistent for all sub-catchments and represents a reduction in yield of approximately 384 ML/yr in comparison to an estimated total yield of 70,111 ML/yr to Lake Avon. Further, the proportion of the project area reporting to Pheasants Nest Weir is 4.3% of the total water catchment. With a 9% average reduction in streamflow under median climatic conditions, this equates to an estimated average of 0.39% reduction in yield to Pheasants Nest Weir. Assuming that the streamflow contribution to Pheasants Nest Weir is consistent for all sub-catchments, this represents a reduction in yield of approximately 1,036 ML/yr in comparison to an estimated total yield of 267,400 ML/yr to Pheasants Nest Weir. The report however acknowledges that no allowance has been made for water storage or environmental flow release.

Council notes that the Independent Expert Panel for Mining in the Catchment has been established to provide informed expert advice to the Department on the impact of mining activities in the Greater Sydney Water Catchment Special Areas, with particular emphasis on the risks to the quantity of water in the Catchment Special Areas.

The Independent Expert Panel for Mining in the Catchment has three specific Terms of Reference, namely:
1. Undertake an initial review and report on specific coal mining activities at the Metropolitan and Dendrobium Coal Mines in the Greater Sydney Water Catchment Special Areas;
2. Undertake a review of current coal mining in the Greater Sydney Water Catchment Special Areas with a particular focus on risks to the quantity of water available, the environmental consequences for swamps and the issue of cumulative impacts associated with the Dendrobium, Metropolitan, Russell Vale and Wongawilli Coal Mines; and
3. Provide advice as required to the Department on mining activities in the Greater Sydney Water Catchment Special Areas and specifically future EIS applications / extraction plans / subsidence management plans for each of the mines.

The Independent Expert Panel produced the *"Initial Report on Specific Mining Activities at the Metropolitan and Dendrobium Coal Mines"* as the first part of their Terms of Reference. This report found that up to 3 megalitres per day of surface water and groundwater seepage occurred into Dendrobium Coal Mine workings instead of the creeks and reservoirs. At Metropolitan Coal Mine, approximately 500,000 litres per day of surface water and groundwater seepage may be going into the mine workings instead of Woronora Reservoir or creeks. The report also notes that groundwater, surface water and subsidence issues are very complex and difficult to understand.

In light of the above, Council is concerned about the extent of subsidence related impacts upon streams and coastal upland swamps within the project area as a result of the proposed mine layout for Areas 5 & 6. Council is specifically concerned about the cumulative loss of water to reservoirs, creeks and upland swamps due to mining activities. Council does not want to see any further water losses to reservoirs, creeks and upland swamps as a result of mining activities.

Therefore, Council requests that the project for Dendrobium Mine (Areas 5 & 6) be considered by the Independent Expert Panel for Mining in the Catchment, as a precautionary peer review measure. This is because there is a potential risk that the water losses may in fact be greater than predicted from the proposed mining of Areas 5 & 6. The Independent Expert Panel for Mining in the Catchment should review the proposal's potential impact upon the quantity and quality of water available in the catchment for drinking water supplies in reservoirs and for the health of the creeks and upland swamps. The Panel is also requested to consider the cumulative impact that the proposed Dendrobium Mine extension and other coal mines have on drinking water supplies and the health of the creeks and upland swamps in the Greater Sydney Water Catchment Special Areas. Further, the Panel is requested to make recommendations on necessary amendments to the mine layout for the project areas to resolve any impacts upon drinking water supplies and the health of creeks and upland swamps.

Historic Heritage

The proposal is supported by a Historical Heritage Assessment (HHA) report prepared by Niche dated May 2019. The HHA report (page i) notes that the Dendrobium Colliery Pit Top is to be upgraded, expanded and parts decommissioned. The report further notes that the concept design has not been developed but then states *"however based on the conceptual design it is unlikely that the heritage values of the Nebo Colliery would be significantly impacted by the project".* Therefore, Council requests that concept plans for the Dendrobium Colliery Pit Top be provided to Council for heritage comment, The concept plans should be supported by a Heritage Impact Statement to address the heritage impact of the proposed works to the pit top and to consider the following matters:

- Which buildings have heritage significance?
- How the expansion and redevelopment will impact on these values and any archaeological potential? E.g. The former Pioneer Kerosene Works (which may not be mapped accurately on the LEP and requires further investigation).
- Which infrastructure is planned to be decommissioned and removed?
- How are the potential impacts to values and significance of the Colliery and Kembla Heights CA minimise by the design?

The proposed car parking area requires the demolition of a shed that is currently housing the decommissioned collection of the Mt Kembla Mining Museum. The historical significance of this shed has, at this stage, not been established.

The HHA report also recommends that a Conservation Management Plan (CMP) be developed prior to the commencement of any works. However, the CMP should be prepared at this stage of the assessment process, in order to ensure that any project approval is consistent with the recommendations of the CMP and allows for heritage impacts to be adequately considered.

Council supports the recommendations for monitoring and investigative works regarding the potential for subsidence to be caused at the Cordeaux and Avon Dams. Both Dams are likely to experience 20mm of subsidence related impacts relating due to the underground longwall mining in Areas 5 and 6. However, these impacts should be carefully considered by the NSW Heritage Council.

The impacts of the proposed 15 metre high ventilation shafts on the Illawarra Escarpment Conservation Area are not addressed in the HHA report. A brief visual impact assessment is integrated into the HHA report showing the view line from Avon and Cordeaux Dams. However, the report does not provide an assessment of the visual absorption capacity of the Illawarra Escarpment. In Council's view, a comprehensive visual impact assessment should be prepared and included as part of the EIS.

Aboriginal Heritage

The project is supported by an Aboriginal Cultural Heritage Report dated May 2019 prepared by Niche. The report indicates that 58 known Aboriginal sites are recorded with Area 5 and 6 including 23 axe grooving sites and 34 sandstone shelter sites. The rating of various shelter and art sites as of "low" scientific value due to weathering impacts or commonalty of motifs is questioned. Given the number of these sites within the subject area and the various types of motifs, they present opportunities for scientific research.

Shelter and axe grooving sites (which make up the majority of sites within the subject area) may be impacted by subsidence related impacts and are at a high risk of cracking, delamination, block fall and overhang collapse due to the proposed longwall mining. 1 in 10 or 5 of 52 sites in the Southern Coalfield since the 1990s have shown demonstrated changes attributed to subsidence.

The Niche report appears to contain a number of inconsistencies which should be clarified, to ensure that the Aboriginal Community is properly informed about the material impacts of the project. In this regard, the Niche report (page 79) states that *"When considered against the principles of Inter-generational equity and ecologically sustainable development, the potential impacts of the Project can be considered relatively minor because they directly harm only a relatively small number of sites, one of moderate scientific value, one of high significance and the remaining being of low scientific value. There is no significant detrimental effect to quality or benefit that the Aboriginal history and archaeology of the Subject Area may provide to future generations."* However, Table 22 notes that all 58 sites will either be directly or indirectly impacted by the project. Part 12.3.3 of the report also notes that 11 axe grinding sites are located directly above the longwalls and that they are likely to experience fracturing and cracking due to the fracturing of bedrock directly below them and along waterways.

Table 22 in the report also notes that 17 sites will be directly impacted by longwall mining, whilst another 41 sites will be indirectly impacted. This equates to 58 sites in total for the subject area. The executive summary of the report notes that *"All sites (58) may be subject to some subsidence impacts from the project."* However, in Part 12.5.1, the report notes that 43 of the total 57 recorded Aboriginal sites are in the angle of draw for the subject site and are expected to be impacted. Therefore, an inconsistency exists in the actual total number of sites, which should be clarified.

Table 20 in the report notes that the site known as "Upper Avon 47" is rated as "High Scientific" value and is likely to experience 50mm of subsidence related impacts. It is unclear why sites with much higher impacts as per the same Table (Table 20) are not noted in Part 12.3.2 as experiencing subsidence impacts. Part 12.3.2 of the report should be reviewed and the impacts of the predicted subsidence made clearer. Sites with "moderate" and "high" scientific value should not be impacted. The rating of "low" sites is also questionable given the amount of sites listed as "low" scientific significance. It is recommended that explanations be provided for each of the 58 sites that detail why each individual site is listed as either "low", "moderate" or "high" scientific significance.

Part 12.5 of the report (which deals with the cumulative impacts of the project) states the project will only "directly harm only a relatively small number of sites" and that "there is no significant detrimental effect to quality or benefit that the Aboriginal history and archaeology of the subject area may provide to future generations." However, subsidence related impacts (either directly or indirectly) to 100% of sites cannot be considered a small number. Accordingly, it is considered that this part of the report fails to provide an adequate assessment of the cumulative impacts of the project. Subsidence related impacts to such a large number of sites is also not considered an acceptable Aboriginal Heritage outcome.

Given the above issues, Council considers that a major redesign of the project mine layout for Areas 5 & 6 is required, in order to mitigate the subsidence impact upon the majority of Aboriginal sites within the subject area. This would also necessitate a revised Aboriginal cultural heritage assessment report to be prepared and assessed.

The report also recommends that the 43 sites that are predicted to be impacted should be added to the Monitoring Program undertaken in the Southern Coalfield. However, all 58 known sites that are proposed to be impacted as per the report should be monitored.

The design of ventilation shaft locations and infrastructure should avoid harm to known sites. However, no overlay of known sites and the location of ventilation shafts is provided. It is noted that one site is located within close proximity. The location of this ventilation shaft and potential impacts should be carefully considered to reduce any potential impacts upon the known site.

Following the redesign of the mine layout (to reduce the impact upon the majority of the 58 Aboriginal sites), an Aboriginal Heritage Management Plan should be developed for the project. The Aboriginal Heritage Management Plan should detail the mitigation and management measures in accordance with the recommendations of Part 14 in the report. This plan should be prepared prior to any project approval, to ensure that the Registered Aboriginal Parties (RAPs) have a chance to negotiate important outcomes such as access to cultural sites, prior to approval being granted.

Council notes that a further Aboriginal Cultural Heritage Assessment Report (ACHAR) is being prepared by WaterNSW, although it is unclear what this is in relation to. This document should be prepared prior to any approval so that the recommendations of the report can be meaningfully considered. This ACHAR should be provided to Council for comment.

Social Impact Assessment

It is noted that in the Aboriginal Cultural Heritage Report, the RAPs requested:

1. Access for the Aboriginal Community onto the subject areas to visit cultural sites for education and teaching purposes and to maintain connection to Country;
2. Guarantee of job opportunities for Indigenous people.

The Social Impact Assessment prepared by Elliot Whiteing notes that “the project adopted detailed avoidance, mitigation and management measure to reduce potential impacts on Aboriginal heritage” however no measures (apart from existing monitoring) are outlined in the Aboriginal Cultural Heritage Report. It is unclear what these measures are or how the key values noted in Part of the SIA including “protection of cultural heritage sites and artefacts” is being upheld?

The SIA states that there are “no impacts to social use of the area” however this is due to the fact there is no current access to the site. The high density of sites including shelters and art clearly show that the site is an important cultural landscape that was heavily occupied by the Traditional Custodians. Further, several of the RAPs raised the question of access to visit their traditional sites for educational and cultural purposes. This is not considered an adequate assessment of the restriction of social use of the area. The issue of access to cultural sites for the Traditional owners and Indigenous groups should be addressed.

The recommended actions in part 4.4.5 and 4.4.6 relating to Indigenous employment and training opportunities should be integrated as key conditions on any future project approval (should the project ultimately be approved). Further, a procurement policy that encourages the engagement of Indigenous businesses should be adopted.

Impact on Threatened Fauna Species

The Niche biodiversity assessment report found that the project will have a significant impact upon two threatened frog species, namely, the Giant Burrowing Frog and the Littlejohn’s Tree Frog. The Assessment of Significance Test for the Giant Burrowing Frog found that the project will cause a significant adverse impact on the Giant Burrowing Frog for the following reasons: (i) alteration of known and potential foraging, sheltering and breeding habitat through potential hydrological changes to coastal upland swamps and draining of creeks (ii) impact on the reproductive and dispersal viability of the species and (iii) the loss of breeding sites which may reduce the immediate reproduction of the species. Additionally, the Assessment of Significance Test for Littlejohn’s Tree Frog found that the project will cause a significant adverse impact on this frog species for the same reasons as experienced by the Giant Burrowing Frog.

A redesign of the project mine layout for Areas 5 & 6 is considered warranted, in order to mitigate the subsidence impact upon the Giant Burrowing Frog and Littlejohn's Tree Frog species as well as mitigating the impacts upon the majority of Aboriginal sites, creeks and coastal upland swamps within the subject area.

Impact upon Maldon – Dombarton Rail Corridor

The proposed longwalls in Area 5 underlie the Maldon- Dombarton Rail Corridor.

The Maldon – Dombarton Rail Line was proposed in the early 1980's to provide improved linkages between the southern and western coalfields and the newly constructed Port Kembla Coal Terminal. Construction on the line started in 1983 when coal traffic through the Port Kembla Coal Terminal was estimated to grow from 10 Million tonnes per annum (Mtpa) in 1983 to 26 Mtpa in 1990 with 17 Mtpa proposed to be carried on the Maldon – Dombarton line. However, construction work was suspended in 1988. The Commonwealth Government then provided $25.5 Million in 2011, for planning to enable Transport for NSW to complete all pre-construction documentation. This was to enable private sector involvement in the design, construction and operation of the rail line.

The completion of the Maldon – Dombarton Rail Line is critical to building NSW's rail freight capacity. If completed, the new rail link would provide additional rail freight capacity in and out of Port Kembla, helping to cater for the forecast growth in NSW freight over the next 20 years. The project would also result in reduced freight impact on the South Coast Line, potentially enabling increased passenger capacity on that line. Therefore, the protection of the Maldon- Dombarton Rail Corridor is considered of vital importance.

The Report: Subsidence Predictions and Impact Assessments by MSEC Mine Subsidence Engineering Consultants dated July 2019 (page 77) at Appendix A to the EIS indicates that surface cracking in the cutting and embarkment is likely and it is possible that soil erosion channels could develop at the larger cracks if these were left untreated.

The MSEC report (page 77) also indicates that *"The predicted final tilt at the drainage culvert is 5 mm/m (ie 0.5% or 1 in 200). The mining-induced tilt could adversely impact the serviceability of the drainage channel, by reducing or reversing the as-built grade and potentially affecting the flow of water through it. If increased ponding were to occur upstream of the culvert, it may be necessary to reconstruct or relevel it."*

The MSEC report further notes that *"The maximum predicted subsidence parameters and hence, the potential impacts on the section of the disused railway corridor within Area 5 are less than those for the section within Area 3B. There have been no impacts on the disused railway corridor, other than minor cracking, buckling and increased ponding, due to the extraction of LW9 and LW13 in Area 3B. It is expected, therefore, that the disused railway corridor would only experience minor impacts due to extraction of the proposed longwalls in Area 5, similar to that previously observed along the corridor."*

The EIS (page 8-3) states that *"South32 would undertake periodic inspections of the disused Maldon-Dombarton Railway Corridor during active subsidence, and remediate larger surface cracking in the embankment and cutting if this were to occur as a result of the Project."* Further, the EIS (page 8-3) states that *"If the railway were to be completed prior to active subsidence at the Project, a management plan for the project would be developed to manage subsidence impacts on the Maldon-Dombarton Rail Corridor, in consultation with the ARTC."*

In Council's view, the integrity of the Maldon-Dombarton Rail Corridor should be preserved. Therefore, Council requests that an appropriate management plan and monitoring program be developed to manage subsidence related impacts on the Maldon-Dombarton Rail Corridor, in consultation with the Australian Rail Track Corporation (ARTC).

Wollongong City Council Declaration of Climate Emergency & the Greenhouse Gas Emissions of the Project

Council at its Ordinary Meeting of Council on 12 August 2019 considered a Notice of Motion concerning a Declaration of Climate Emergency and resolved, as follows:

"

1. *Council recognises we are in a state of climate emergency that requires urgent action by all levels of government.*
2. *A report or briefing be provided that includes options to best articulate how Council's actions to combat climate change can be explained and promoted to local residents, businesses, government agencies and other stakeholders.*
3. *The report or briefing above include, but not be limited to-*
    a. *Exploring the production of a 'state of the environment' type report that details actions Council is presently undertaking or has plans or budgets for, in climate change mitigation and environmental protection.*
    b. *Updating Council's progress in responding to obligations under the Global Covenant of Mayors.*
    c. *Describing how residents, businesses, government agencies and other agencies will be engaged within the Global Covenant of Mayors noting that the region's heavy industries play an important ongoing role in the local economy and will play a key role in developing and meeting targets within the Covenant process.*
    d. *Investigating an annual public event to help promote a-c above.*
    e. *Identifying options to seek ideas, project opportunities and potential partnerships to reduce the impacts of climate change on our community.*
    f. *Investigating cost effective local power generation, water and energy saving initiatives, waste reduction strategies and projects (perhaps through the Joint Organisation of Councils) as a response to obligations under the Global Covenant of Mayors."*

In light of the above Council resolution, Council is of the view that any new mining project (including the subject Dendrobium extension project) should thoroughly review its likely operational performance, in order to ameliorate any potential climate change impacts by minimising greenhouse gas (GHG) emissions.

Further, Section 4.15(1)(a) of the Environmental Planning & Assessment Act 1979 requires the consent authority, in determining a development application, to take into consideration the provisions of any environmental planning instrument. In this regard, the Mining SEPP applies to this project.

Clause 14(1) of the Mining SEPP provides:

"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 the following-

(a) That impacts on significant water resources, including surface and groundwater resources, are avoided, or are minimised to the greatest extent practicable.
(b) That impacts on threatened species and biodiversity, are avoided, or are minimised to the greatest extent practicable,
(c) That greenhouse gas emissions are minimised to the greatest extent practicable."

Clause 14(2) of the Mining SEPP also provides:

"Without limiting subclause (1), in determining a development application for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider an assessment of the greenhouse gas emissions (including downstream emissions) of the development, and must do so having regard to any applicable State or national policies, programs or guidelines concerning greenhouse gas emissions."

In this regard, the EIS provides a brief outline of applicable state and national policies, programs and guidelines pertaining to greenhouse gas (GHG) emissions. However, it is considered that the consent authority

(Minister for Planning or delegate) is not in a position to properly assess as to whether the project complies with or addresses the various international, state and national policies, programs and guidelines pertaining to GHG emissions given the brevity of information provided.

In *Gloucestor Resources Limited v Minister for Planning* [2019] for a proposed coal mine in Gloucestor, Preston, CJ held that a consent authority, in determining a development application, is also required to take into consideration the likely impacts of the development, including environmental impacts on the natural and built environments. The likely impacts of a development include both direct and indirect environmental impacts.

The EIS (page 6-149) states that the key potential project GHG emission sources and their respective scopes include:

- Direct emissions from continued diesel consumption by existing on-site plant and equipment (Scope 1).
- Direct emissions from flaring of gas for pre- and post-drainage and venting of gas (via mine ventilation air) (Scope 1).
- Residual (post-mining) fugitive emissions from stockpiled coal (Scope 1).
- Direct emissions from gas consumption at the existing Dendrobium CPP (Scope 1).
- Fugitive emissions from the continued transportation of ROM coal on the existing Kemira Valley Rail Line and by road from Dendrobium CPP to the Port Kembla Coal Terminal (Scope 1).
- Fugitive emissions from the continued transportation of coal wash to the West Cliff Coal Wash Emplacement Area (Scope 1).
- Indirect emissions from the continued consumption of purchased electricity (Scope 2).
- Downstream emissions generated from end use of product coal (Scope 3).

The EIS (page 6-150) indicates that the total direct (Scope 1) emissions over the life of the project are estimated to be between approximately 17 to 22 Mt CO2-e (depending upon the proportion of methane able to be flared). Annual average Scope 1 GHG emissions are expected to be between 0.59 to 0.77 Mt CO2-e per annum over the life of the project. The EIS also indicates that *"A portion of Project Scope 1 emissions are associated with activities that are currently occurring as the Approved Mine (and could continue to operate as currently approved until 2030). Existing greenhouse gas emissions from these existing activities, and venting from the current Approved Mine would be captured in current national and state greenhouse gas accounting."*

Council considers that it is likely that the methane gas content will be higher in the Bulli seam workings of the project (Area 5) than the current Wongawilli seam operations of Dendrobium mine. The methane gas content may be in the order of 12 to 14 cubic metres of methane per tonne of in-situ coal, similar to South 32's Appin mine workings in the Bulli seam. The high methane content (from the Bulli seam in Area 5 of the project) has the potential to markedly impact upon the climate system, through GHG emissions and global warming effects.

The EIS (page 6-150) states that the key GHG minimisation measure for project Scope 1 emissions is the flaring of pre-and post-drainage gas to the greatest extent practicable to convert methane to carbon dioxide since methane has a global warming potential 21 times that of carbon dioxide.

The EIS (page 6-150) also acknowledges that gas volumes and methane content in Areas 5 & 6 will require a gas drainage program (and associated gas flaring) to facilitate safe mining. The EIS however states that gas liberated during the proposed mining of Areas 5 and 6 is expected to be highly variable in content and composition. On this basis, South 32 have determined that the use of gas for electricity generation would not be feasible for the project.

According to the EIS, Scope 1 GHG emissions from all of South 32's assets are managed via company wide GHG (and energy) targets.

The EIS (page 6-150) states that *"South 32's Climate Change Strategy includes the following targets:*

- *Staying below a baseline Scope 1 greenhouse gas emissions level (established based on financial year 2015) until 2021.*
- *Reviewing and reducing greenhouse gas emissions every five years from 2021 to achieve a goal of net-zero Scope 1 greenhouse gas emissions by 2050 (including carbon offsetting for any residual emissions)."*

The EIS (page 6-150) states that the total Scope 2 (indirect) emissions over the life of the project are estimated to be approximately 1.7 Mt CO2-e with an average of approximately 0.1 Mt CO2-e per annum. The EIS confirms that the majority of electricity consumption for the project is associated with activities that are currently occurring at the Approved Mine and Dendrobium CPP (and could continue to operate as currently approved until 2030). Existing Scope 2 GHG emissions associated with electricity consumption from these existing activities would be captured in current national and state GHG accounting.

The EIS (page 6-150) states that energy efficiency and reduction is a key consideration by South 32 for the purchase and upgrade of equipment. Electricity consumption and associated Scope 2 emissions are reduced as far as practicable.

Page 6-151 of the EIS states that as part of its Climate Change Strategy, South 32 regularly reviews its energy supply options to identify opportunities for sustainable energy supply. Notwithstanding, the emissions intensity of purchased electricity for the project is outside the control of South 32. If the emissions intensity of electricity generation reduces over time, Scope 2 emissions from the project will reduce accordingly.

The EIS (page 6-151) states that the total Scope 3 (indirect) emissions over the life of the project are estimated to be approximately 237 Mt CO2-e with an average of approximately 8.2 Mt CO2-e per annum. These Scope 3 emissions are associated with the end use of coal by third parties such as Bluescope Steel's Port Kembla Steelworks and Liberty Primary Steel's Whyalla Steelworks. It is noted that the Air Quality and Greenhouse Gas Assessment Report at Appendix I to the EIS (page 65) also provides a table for estimated annual GHG emissions for project sources, processing and transport of coal for the mine.

Page 6-152 of the EIS indicates that South 32 would review and update its existing Greenhouse Gas & Energy Efficiency Management Plan. This plan describes a number of GHG abatement measures and mining efficiency improvement projects.

Preston, CJ held in *Gloucestor Resources Limited v Minister for Planning* [2019] that the consent authority must determine the acceptability of those GHG emissions and the likely impacts on the climate system, the environment and people. However, in Council's view, the EIS fails to provide any detailed assessment on the likely impacts on the climate system, the environment and people through climate change impacts. The EIS also fails to identify the degree in which the project's direct and indirect GHG emissions contribute to the cumulative impacts of climate change. Therefore, it is considered that the consent authority is not in a position to properly assess how much the project's GHG emissions contribute to the cumulative impacts of climate change.

Further, the EIS does not provide any specific details of carbon capture and storage or offsetting the GHG emissions of the development by increasing the removal of GHGs in the atmosphere by establishing sinks, such as reafforestation or afforestation of land. The Dendrobium project is not carbon neutral and the EIS does not propose to balance the GHG source emissions with removals by sinks.

The EIS also fails to provide calculations and detailed assessment on the thermal coal component with regard to GHG emissions over the life of the project.

<u>Recommendations based on Summary of Issues</u>

Given the above issues, Council requests that the Dendrobium Mine Extension Project (Areas 5 & 6) be subject to the following actions (before any project approval recommendation is made):

1. Consideration of the project by the Independent Expert Panel for Mining in the Catchment, as a precautionary peer review measure. This is because there is a potential risk that water losses may in fact be greater than predicted from the proposed mining of Areas 5 & 6. If the Panel finds that the proposal will cause adverse potential impacts upon the quantity and quality of water available in the catchment for drinking water supplies and for the health of the creeks and upland swamps, Council would recommend a major redesign to the mine layout. This would necessitate changes to the length and / or width of the proposed longwall panels in Areas 5 & 6. The Panel is therefore, requested to make recommendations on necessary amendments to the mine layout for the project areas to resolve any impacts upon drinking water supplies and the health of creeks and upland swamps.
2. The redesign of the mine layout for Areas 5 & 6, in order to mitigate the subsidence impacts upon the majority of Aboriginal sites (especially "high" and "moderate" valued sites) within the subject area. This would require a revised Aboriginal cultural heritage assessment report to be prepared and assessed.

3. The revised Aboriginal cultural heritage assessment report should provide explanations for each of the 58 Aboriginal sites that detail why each individual site is listed as either “low”, “moderate” or “high” scientific significance value. The report should also provide a detailed assessment as to the cumulative impacts of the project.
4. The preparation of an Aboriginal Cultural Heritage Management Plan which details the mitigation and management measures to be adopted for all Aboriginal sites. The plan shall reflect the redesigned mine layout for Areas 5 & 6 and be in accordance with the recommendations contained in Part 14 of the Niche Aboriginal Cultural Heritage Assessment report.
5. Further advice / information being submitted to Council on the WaterNSW Aboriginal Cultural Heritage Assessment Report (ACHAR).
6. The preparation of an updated Social Impact Assessment that includes discussion of Access for Indigenous Groups.
7. Concept plans for the expansion, redevelopment and decommissioning of parts of the Dendrobium Colliery Pit Top and accompanying Heritage Impact Statement, to be submitted to Council for review.
8. A Preliminary Historic Archaeological Report being prepared and submitted to Council. The report should include investigation of the pioneer archaeological potential of the kerosene works site.
9. A Conservation Management Plan for Nebo Colliery and Dendrobium Pit Top being prepared and submitted to Council for review / comment.
10. The preparation of a Visual Impact Assessment report that addresses potential impacts of ventilation shafts on the Illawarra Heritage Conservation Area and views to and from the Kembla Heights Conservation Area. This should be submitted to Council for review / comment.
11. An appropriate management plan and monitoring program be developed to manage subsidence related impacts on the Maldon-Dombarton Rail Corridor, in consultation with the Australian Rail Track Corporation (ARTC).
12. The preparation of a revised greenhouse gas assessment report. The report should provide a detailed assessment on the proposal’s likely impacts on the climate system, the environment and people and how it compares with international, national and State greenhouse gas policies and programs. The report should also identify the degree in which the project’s direct and indirect GHG emissions contribute to the cumulative impacts of climate change. Further, the report should outline specific details of carbon capture and storage or offsetting the GHG emissions of the development by increasing the removal of GHGs in the atmosphere by establishing sinks. The report should also provide calculations and detailed assessment on the thermal coal component of the project with regard to GHG emissions over the life of the project.