LOCK THE GATE ALLIANCE
AUSTRALIANS WORKING TOGETHER TO PROTECT OUR LAND, WATER, AND FUTURE

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SUBMISSION: SOUTH32'S APPLICATION (SSD-8194) FOR THE DENDROBIUM MINE EXTENSION PROJECT

Thank you for the opportunity to make a submission on this project. We oppose further longwall mining inside the Special Area, therefore this application should be refused. If this application were to be refused by the IPC, and South32's response was to subsequently submit a bord and pillar plan such a plan would need to be carefully assessed against the criteria and concerns outlined in our submission. We may take the opportunity to make a supplementary submission following the publication of the final report from the Independent Expert Panel for Mining in the Catchment.

SUMMARY

South32 predicts its annual surface water take will be in excess of 2.8GL/year from the proposed extension of longwall mining at Dendrobium.[1] This loss will further diminish Greater Sydney's unique and precious drinking water supply. To put 2.8 GL/year in perspective, it represents almost 6% of total inflows to the Upper Nepean Catchment in 2018/19.[2] In times of drought, this is a significant amount of drinking water to lose for the sake of a single coal mining project.

Compounding this problem, climate change will result in more heat, more evaporation and dryer soils in the Greater Sydney Catchment. Together with higher demand from a growing population (an extra 1.74 million people are expected by 2036), this will place long-term pressure on our drinking water supply. In this context, a new mine proposal inside the Special Area, that South32 itself predicts will take water that would otherwise flow to storage, is the wrong proposal in the wrong place at the wrong time.

[1] Dendrobium Mine – Plan for the Future: Coal for Steelmaking, APPENDIX B, Groundwater Assessment, HydroSimulations, pg 99
[2] Sunday Telegraph, Day zero: the dates we will run out of water, 15 September 2019. Inflows to the Upper Nepean Catchment were reported as being 48GL in 18/19 against avergare annual inflows of 346GL.

South32 has lodged a development application to continue longwall mining despite WaterNSW's unequivocal recommendation that *"no further approvals should be given for mining that would permit the level of environmental impacts and consequences that have occurred in Wongawilli Creek, WC21, and Swamps 1a, 1b and 5 at Dendrobium."* Given that the environmental impacts and consequences at WC21 and Dendrobium were not foreseen by the environmental assessments undertaken for the mines, this latest assessment will require particular caution.

The planning process requires consideration of alternatives to the development but the proponent has not presented the alternative of a bord and pillar mine plan, which would potentially allow coal extraction to occur with greatly reduced environmental impacts. Wollongong Coal has abandoned plans to continue longwall mining inside this Special Area. In its July 2019 Preferred Project Report, Wollongong Coal said it has abandoned longwall mining in order to *"significantly"* reduce the potential for *"subsidence-related mining impacts on groundwater, surface water and biodiversity within the Cataract Reservoir catchment."* South32 should be required by the Department to consider a lower-impact mining method as an alternative to this development.

A key economic justification for this project is the continued supply of coking coal to BlueScope Steel. Lock the Gate notes that Bluescope Steel declined an opportunity provided by the *Illawarra Mercury* to support assertions by South32 that further supply of longwall-mined coal from Dendrobium was critical to Bluescope's future.[3] Instead, BlueScope said that coking coal supply from the Southern Coalfields more broadly is critical to its steel-making business. We note that the primary purpose of the Special Area in which Dendrobium want to continue longwall mining is to supply drinking water and that this drinking water is threatened by further longwall mining. If it is possible to supply coking coal to the steelworks in a way which does not further threaten water supply such an alternative should be pursued.

South32's application is to continue mining until 2048. We believe that the twin pressures of tightening climate policy and technological innovation, may see Illawarra steel-making shift to a low-carbon model well before that time, rendering the key economic justification for this new project redundant. Evidence accepted by the Land and Environment Court in the significant Rocky Hill decision, underscored this point, and proposed that *"The advent of new technology developments could well see the need for coking coal in steel production removed within the life of the proposed project"*.[4]

Regarding the economic justification for this project, the replacement cost of water has been dramatically undervalued by South32. South32 proposes compensation to WaterNSW for the volume of surface water diverted from the Catchment should be calculated at $53.85 per ML**.** The Cadence Economics assessment however, uses IPART's 2016-2020 volumetric

[3] Ben Langford, Illawarra Mercury, JULY 28 2019, BlueScope won't say Dendrobium closure could finish steelworks, https://www.illawarramercury.com.au/story/6295531/bluescope-wont-say-dendrobium-closure-could-finish-steelworks/

[4] Caselaw, Point 472, https://www.caselaw.nsw.gov.au/decision/5c59012ce4b02a5a800be47f#_Toc431201

charge of $76.80 per ML.[5] Finally, we note that in December 2015 WaterNSW considered the replacement value of water in the same Special Area to be $2,276 per ML.[6]

This is a matter that requires clarification by the proponent and the Department. If the quantum of water loss predicted by the proponent is accurate, our calculations indicate a range of the replacement cost of water per annum being somewhere between $150,780 and $6,372,800. If the upper range more accurately reflects the true cost, it seems likely the costs of this project will outweigh its benefits. This case would strengthen if the water catchment damage projected to last until at least 2150 were included in the cost benefit analysis which at present appears to only include the cost of water losses out to 2085. A further question arises from South32's statement that it expects to pay *"$100,000 per annum during peak predicted surface water losses"*. This statement appears to value water at just $35.71 per ML given the expected peak annual loss of 2,800ML.

Finally, the 2016 Catchment Audit recommended that WaterNSW "activate" licencing under s60I of the *Water Management Act 2000*. Section 60I of the *Water Management Act* is in force and requires any coal mine that is causing a loss of surface water whether because of current or historic mining activity to hold a water access licence to account for this take. As it does not hold Water Access Licences for the water already seeping into mine workings from the catchment surface, the Dendrobium mine is already taking water unlawfully. The proponent states that it has sufficient licences to account for its groundwater take, but the information provided in Table 6.7 demonstrates that this is not the case. The proponent holds sufficient licences in the Sydney Basin - Nepean Management Zone 2 source, but not Management Zone 1. South32 describes this gap as its licences being *"not currently distributed to all of the administrative water sources and management zones modelled to experience some impact from the Dendrobium Mine and the Project"* which demonstrates a misunderstanding of the operation of Water Sharing Plans and Water Access Licences.

The proponent holds no entitlements at all in the Upper Nepean and Upstream Warragamba Water Source to account for the 3,300ML a year it says represents its maximum take from that source. The proponent proposes monetary *"compensation"* for this water loss, and states that *"Such payments would be in addition to holding appropriate licences under the Water Management Act 2000."* But the EIS makes it clear that South32 does not believe it will be able to acquire the necessary licences and instead will rely on the Government *"creating additional licences or entitlements available to facilitate the development of the Project in the applicable adjoining Water Sharing Plan management areas and zones."*

We note that this issue was identified by the Department of Planning in a compliance investigation into the damage inflicted by the Dendrobium mine nearly four years ago, but no action has been taken by the Department, WaterNSW or the Natural Resources Access Regulator. The Department of Planning's review of mining impacts in Area 3B of the Dendrobium mine, stated that *"Reporting by Illawarra Coal indicates that surface water may be being diverted (ie 'taken' under the water legislation) which is not being properly*

[5] Cadence Economics, APPENDIX L, ECONOMIC IMPACT ASSESSMENT OF THE DENDROBIUM MINE – PLAN FOR THE FUTURE: COAL FOR STEELMAKING, pg 44-45

[6] Planning Assessment Commission Review Second Report on Russell Vale Underground Expansion Project, pg 23 https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2015/10/russell-vale-colliery-underground-expansion-project--second-review/review-report/russellvaleiireviewreportfinalpdf.pdf

accounted for. This matter needs to be further examined as Illawarra Coal is required to hold a water access licence with sufficient allocation to account for this water take. These issues are to be resolved between Illawarra Coal and DPI-Water separately." [7]

Background

South32 is seeking development consent for Dendrobium Mine to expand further beneath the Special Areas by extracting additional coal from Areas 5 and 6, north of its existing operations and close to Avon and Cordeaux Reservoirs. The Project seeks to extract an additional 77.6 million tonnes (Mt) of run-of-mine (ROM) coal from Area 5 and Area 6, at an extraction rate of up to approximately 5.2 Mt of ROM coal per annum, over the period 2020 to 2048. The Project will produce 64.6 Mt of saleable coal, which includes 48.8 Mt of high quality metallurgical coal. The remainder is made up of thermal coal and Pulverised Coal Injection (PCI) coal, 6.2 Mt and 9.6 Mt respectively.[8]

The history of under-estimation of environmental impacts of this mine is relevant background for consideration of this project. In March 2019, WaterNSW found that there *"is now strong evidence that the environmental consequences from mining in the Special Areas are greater than predicted when the mining was proposed and approved. Importantly, some of these environmental consequences have caused (or are likely to cause) breaches of conditions in the relevant development consents, including performance criteria to protect watercourses and Sydney's drinking water catchment."* [9]

Specifically regarding the damage caused at Dendrobium, WaterNSW found that there is *"now a long list of environmental features that have likely experienced greater impacts than predicted when the mining was approved at Dendrobium".*[10] The authority found that *"the accumulation of multiple unexpected mining impacts is a growing concern for WaterNSW, particularly given the sensitive nature of the Special Areas."* WaterNSW state that *"it is now clear that subsidence effects … are causing impacts on groundwater levels and surface water flows,"* [11] which is to the detriment of both the quantity and quality of water available in the Special Areas.

WaterNSW has argued that decision-making about future mining activities needs to be informed by past experiences:

> *"The continued exceedance of predictions demonstrates the fundamental uncertainties associated with assessing potential impacts of mining in this environment. These exceedances significantly reduce confidence in the ability of mining companies to reliably predict the likely impacts of mining activities. With the benefit of hindsight, it can be observed that predicted impacts and consequences*

[7] Department of Planning and Environment, December 2015. "Mining Impacts at Dendrobium Coal Mining Area 3B" http://www.planning.nsw.gov.au/Assess-and-Regulate/Compliance-functions/~/media/552A59CD88EE4207BC8C791420DA63C6.ashx
[8] Cadence Economics, ECONOMIC IMPACT ASSESSMENT OF THE DENDROBIUM MINE – PLAN FOR THE FUTURE: COAL FOR STEELMAKING
[9] WaterNSW, Submission to the Independent Expert Panel for Mining in the Catchment, March 2019.
[10] ibid
[11] ibid

have often proved to be underestimates, with decision-making about future mining activities then being informed by these under-estimates." [12]

Damage above the Dendrobium mine includes:

- *"Irreversible permanent changes contributing to adverse cumulative impact on Wongawilli and Sandy Creek sub-catchments."*
- Damage to watercourse 21 which WaterNSW considers to be *"severe both from a watercourse scale and a sub-catchment scale."*

In addition to damage that has clear consequences for the catchment, there is yet more damage, the consequences of which are not fully understood:

> *"The cumulative assessment of the environmental consequences of undermining of 12 swamps including Swamps 1a, 1b, 5 (part of DCC and DC13 creek system) and 8 (part of the WC21 creek system) in terms of changes in swamp size, species changes and structural integrity of swamps are still unknown."*

WaterNSW has a set of Principles for Managing Mining and Coal Seam Gas Impacts in Declared Catchment Areas'. Principle number 1, 'Protection of water quantity' is summarised succinctly by WaterNSW as:

> *"In Declared Catchment Areas mining and coal seam gas activities must not result in a reduction in the quantity of surface and groundwater inflows to storages or loss of water from storages or their catchments."*

This principle has already been breached by this mining operation, but the company has suffered few consequences as a result.

Water losses

Lock the Gate understands that there are two primary ways that mining impacts may have reduced the quantity of surface water and groundwater reaching Lake Cordeaux or Lake Avon:

1. reductions in stream flows due to diversions induced by cracking and/or reduced stream baseflows due to lowered groundwater levels; and

2. reductions in baseflow contributed directly to the reservoir by surrounding groundwater in neighboring ridgeline aquifers.[13]

The Independent Expert Panel on Mining in the Catchments (IEPMC) is currently investigating the extent of impacts of Dendrobium and Metropolitan mines in the Metropolitan Special Area. The Panel's Initial Report, and the PSM report (Height of

[12] WaterNSW, Submission to the Independent Expert Panel for Mining in the Catchment, March 2019.
[13] ibid, pg 4.

Cracking – Area 3B) which preceded it, confirmed that the extent of connectivity between the surface water resources and the Dendrobium Mine goaf is much greater and quicker than the company predicted when it was first assessed.

We note that WaterNSW's submission to the expert panel inquiry notes that in 2012 modelling advice from Coffey Geotechnics did predict that surface to seam connective cracking was likely in some locations and that surface depressurisation would occur, but that Illawarra Coal subsequently replaced this company with a different set of consultants, from Hydrosimulations, which predicted that surface depressurisation would *not* occur. This history is relevant when considering the reliability of the company's environmental assessment for this project.

The Surface Water report provides an analysis of swamp and catchment flow reductions, but does not provide a clear comparison of how the surface water modelling compares and cumulates relative to the groundwater modelling predictions. No totals are provided in the surface water modelling, nor is water licencing mentioned.

Impact during dry conditions

South32's proposed extension of longwall mining at Dendrobium will further diminish Greater Sydney's unique and precious drinking water supply and the environmental assessment demonstrates that this impact is particilarly severe in dry periods, such as we are currently experiencing. For example, the surface water assessment found that *"Swamp water levels are likely to fall more rapidly during prolonged dry periods and take longer to recover during wetting periods."* For catchments overlying Area 5, model results suggest that there would be a 6-22% reduction in streamflow due to the Project during a median climatic year but that this reduction increases to 63-100% in a 10th percentile climatic year. In Area 6, the 10th percentile dry years would see streamflow reduced by 19-51%.

It is notable that the rainfall runoff modelling for ungauged catchments suggested that a total of 11 out of 12 catchments overlying Area 5 (Avon River, Donalds Castle Creek and Avon Reservoir tributaries) are predicted to cease to flow during dry periods (10^{th} percentile rainfall).[14] In Area 6, two tributaries of Cordeaux River are predicted to cease to flow up to 90% of the time. These continue the distressing trend for streams (including WC21, DCC and SC10C) to become dry for much or all of the time following undermining. As we now understand that the supporting groundwater levels have fallen dramatically and are unlikely to fully recover, these streams are likely to be permanently dry.

In its Initial report, the IEPMC (Nov 2018) warned that the *"greatest consequences of mining on surface water supply volumes are likely to be during extreme drought periods. Therefore, water balances should include drought periods and results for these periods should be highlighted."* NSW is in the midst of a severe drought. The Greater Sydney catchment is experiencing record low inflows. On 5 September 2019, the Bureau of Meteorology published an update that is illustrative of the pressures on supply to Greater Sydney and the

[14] Dendrobium Mine – Plan for the Future: Coal for Steelmaking – Environmental Impact Statement, Appendix C: Surface Water Assessment, Hydro Engineering & Consulting HEC (2019) p ix

Illawarra:

- *Rainfall deficiencies have affected most of the New South Wales… since the start of 2017. These longer-term deficiencies extend to parts of the New South Wales coast, particularly in the Hunter and Illawarra districts ...*[15]

- *The winter runoff from Sydney water storage catchments was the second lowest on record due to very dry soils and limited rainfall.*[16]

In 2018/2019, Warragamba Dam received less than 10% of its annual average of 1,069GL (105GL). Inflows to the Upper Nepean Catchment weren't much better at about 14% (48GL made it to storages when average annual inflows are 346GL).[17]

The Environmental Assessment predicts that the annual surface water take by this expansion will be in in excess of 2.8GL/year. This represents 2.7% of the inflow to Greater Sydney's biggest water storage in 2018/19.[18] For the people of the Illawarra and Greater Sydney who draw water from the Upper Nepean, the more relevant (and alarming) prediction is that in dry years - like 18/19 - water loss from Dendrobium would be in the vicinity of almost 6% of total inflows to the Upper Nepean Catchment.[19] By any standard, this is a significant amount of water lost from a single coal mining project.

According to WaterNSW data, under a worst-case scenario, water supply from Warragamba *could* stop flowing by January 2022 if we don't get any rain and if we fail to take aggressive water saving / water recycling action. The same data set predicted that *"most of Sydney's water supply will remain flowing until at least October 2021 when, under the worst-case scenario, the upper Nepean River will run dry."* [20]

While the surface water assessment mentions the influence of climate change on precipitation, it does not appear to us that a sensitivity analysis has been conducted that considers the possibility that the 10% and 1% of lowest inflows may occur more often and how that would affect the estimated consequences of this project. Nor is there mention in the surface water assessment of increased rates of evaporation as a result of hotter weather.

Together with higher demand from a growing population, the changing climate will place long-term pressure on our drinking water supply. In this context, it is the wrong place and the wrong time to permit new mining inside the Special Area that South32 itself predicts will take water that would otherwise flow to storage.

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[15] BoM, Drought: Rainfall deficiencies and water availability, 5 September 2019, http://www.bom.gov.au/climate/drought/#tabs2=Rainfall-deficiencies,
[16] BoM, Drought: Rainfall deficiencies and water availability, 5 September 2019, http://www.bom.gov.au/climate/drought/#tabs2=Water&tabs=Drought
[17] Sunday Telegraph, Day zero: the dates we will run out of water, 15 September 2019
[18] Sunday Telegraph, Day zero: the dates we will run out of water, 15 September 2019. Inflows to the Upper Nepean Catchment were reported as being 48GL in 18/19 against avergare annual inflows of 346GL. (2.8GL from inflows of 105GL = 2.7%. Annual average inflows for the previous decade were 1069GL)
[19] Sunday Telegraph, Day zero: the dates we will run out of water, 15 September 2019. Inflows to the Upper Nepean Catchment were reported as being 48GL in 18/19 against avergare annual inflows of 346GL. 2.8GL from inflows of 48GL = 5.83%.
[20] Paul Karp, The Guardian, 'Critical': parts of regional NSW set to run out of water by November, 15 September, 2019, https://www.theguardian.com/australia-news/2019/sep/15/parts-of-regional-nsw-set-to-run-out-of-water-by-november

Significant water losses to date and in future

WaterNSW has urged a precautionary approach to the assessment and determination of mining proposals within the Special Areas. There must be a high degree of confidence that any proposed mining will not exceed key predictions or performance measures in development consents, Subsidence Management Plans (SMPs) and Extraction Plans.

In May 2018, WaterNSW warned that *"subsidence induced by the Dendrobium Mine longwalls is likely to be resulting in significant diversion of surface water which would otherwise contribute to Greater Sydney's water supply."* [21] The IEPMC initial report has estimated surface flow losses currently at Dendrobium to be 2.4 ML per day.[22]

The proponent contends that future mining at Dendrobium will result in the overall loss of approximately 2600-2800 ML/yr of stream flow from the Cordeaux River catchment and the Avon River catchment.[23] The volumes of water which are predicted to be lost due to Areas 5 and 6 are unnecessary and unacceptable, especially when considered in the context of cumulative mining.

We note that, as has occurred in the past, the assessment material prepared by the mine is based on estimates of water losses that are significantly lower than those estimated by the IEPMC and WaterNSW. In HydroSimulations' groundwater model, surface water losses contribute on average about 15% to 25% of mine inflows, with peaks of around 35%, which could increase up to 43% during wet years.[24] This is lower than the methodology applied by the IEPMC and WaterNSW considers the Panel's estimates to be conservative.

The only discussion on the significance of these volumes of water which are being removed from the surface water volumes in the EIS is a repetition of DPE's comments made in relation to the Longwalls 14 and 15 Subsidence Management Plan.[25] We note that WaterNSW stated in its initial submission to the Panel that it does not agree with this assessment, and that it does not consider 830 ML/year to be a negligible volume to be lost due to mining. DPE's contextual comments comparing this with the volumes of water in the dams when full and evapotranspiration appear misguided, especially as the current drought unfolds and the dams become drier.

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[21] WaterNSW submission to the Independent Expert Panel on Mining in Sydney Catchment – Task 1 Matters, May 2018, pg 11

[22] Independent Expert Panel for Mining in the Catchment, Initial report on specific mining activities at the Metropolitan and Dendrobium coal mines, 12 November 2018, pg 125

[23] Groundwater Assessment, pg 99

[24] Dendrobium Mine – Plan for the Future: Coal for Steelmaking, APPENDIX B, Groundwater Assessment, HydroSimulations, pg 38

[25] Dendrobium Mine – Plan for the Future: Coal for Steelmaking – Environmental Impact Statement, Appendix C: Surface Water Assessment, Hydro Engineering & Consulting HEC (2019) p 64

Duration of impact

South32's consultants predict that *"losses from surface water would peak in the period 2040-2046"* with recovery to pre-mining levels taking up to 100 years.[26] We include this information to highlight the long-term damage to the catchment and the risk to water supply that will persist for at least the next 130 years, if further longwall mining is approved. This is a question of intergenerational equity, a concept it is difficult to locate in the Environmental Assessment.

- **Longwall 502 in Area 5:** Water levels are predicted to recover to above pre-mining levels in about 2100.[27]

- **At a location adjacent to the Avon dam wall, 900 m west of Area 5:** Maximum drawdown is predicted to occur for about 40 years before recovery begins in about 2080.[28]

- **Eastern edge of proposed Longwall 601B in Area 6:** Water level recovery is predicted for the seams by about the year 2100 (i.e. after 50 years).[29]

- **At a location adjacent to the Cordeaux River, 400 m north of Area 6:** Recovery to pre-mining levels (and then above those levels) is simulated to occur in about year 2150 (i.e. take almost 100 years).[30]

It is appropriate, given the long duration of these predicted impacts, for the proponent to treat intergenerational equity and climate change more seriously. The proponent should consider the quantum of water demand likely to be experienced in Sydney in 2150, changes in rainfall patterns and evaporation rates as a result of climate change and the different valuation people in 2150 would likely place on lost water in that year versus coal mined and burnt more than a century previously.

Bord and pillar vs longwall

South32 have lodged a development application to continue longwall mining while just a few kilometres north at Russell Vale, Wollongong Coal have abandoned plans to continue longwall mining inside the same Special Area. In its July 2019 Preferred Project Report, Wollongong Coal explains its decision to abandon longwall mining in order to *"significantly"* reduce the potential for *"subsidence-related mining impacts on groundwater, surface water and biodiversity within the Cataract Reservoir catchment."*[31] The first and most obvious question which arises from this is why South32 has not provided in this environmental assessment a consideration of that alternative.

[26] Dendrobium Mine – Plan for the Future: Coal for Steelmaking, APPENDIX B, Groundwater Assessment, HydroSimulations, pg 98
[27] ibid, pg 94
[28] ibid, pg 94
[29] ibid pg 94
[30] ibid pg 95
[31] Russell Vale revised Underground Expansion Project, Revised Preferred Project Report and Response to Second PAC Review, July 2019, pg i

In January 2019, a WaterNSW spokesman told the Sydney Morning Herald that *"WaterNSW holds the firm view that no further longwall mining should be approved within the Special Areas with dimensions of the size currently undertaken at the Dendrobium mine."* [32] The agency has argued that:

> *"The continued exceedance of predictions demonstrates the fundamental uncertainties associated with assessing potential impacts of mining in this environment. These exceedances significantly reduce confidence in the ability of mining companies to reliably predict the likely impacts of mining activities. With the benefit of hindsight, it can be observed that predicted impacts and consequences have often proved to be underestimates, with decision-making about future mining activities then being informed by these under-estimates."* [33]

The Department must require the proponent to investigate alternative mining methods, because further longwall mining is not acceptable. AQC Dartbrook Management Pty Ltd recently submitted a bord and pillar plan for Dartbrook Mine which was determined in August of this year. The Department of Planning's Assessment Report for Dartbrook concluded that:

> *"the proposed bord and pillar mining method would reduce the mine's subsidence and groundwater impacts compared to the presently approved longwall mining method".* [34]

Approval of prior longwall mining in the area has occurred partly due to the belief that damage to water supply could remediated. WaterNSW is now of the opinion that there is a low likelihood that damage to watercourses and swamps can be fixed. For example, the agency has stated that the *"almost total drying"* of WC21 and its supporting aquifer *"makes the likelihood of recovering natural flows very low."* Having found a *"high level of uncertainty about the likely success of future remediation efforts in both watercourses and swamps."*

WaterNSW has also warned that *"that further mining in the Special Areas should not be approved on the basis that potential impacts could be remediated at some point in the future."* [35] And yet, this is precisely what the proponent contends. It would be preferable that no further mining of any kind be permitted in the Special Areas, but at the very least, the Department should direct the proponent to change this mine plan to a bord and pillar operation, as other operations in sensitive locations have done.

Surface water licensing

WaterNSW confirms that there *"is a unique surface water licensing arrangement currently in operation within the Special Areas of the catchment"* that is *"generally inconsistent with*

[32] Peter Hannam, 07/01/19, 'No Place for Mining': coal mines drain water from dams. Sydney Morning Herald. Accessed 31/08/2019 from https://www.smh.com.au/environment/conservation/no-place-for-mining-coal-mines-drain-water-from-dams-20190106-p50pu3.html
[33] WaterNSW submission to the Independent Expert Panel on Mining in Sydney Catchment – March 2019, pg 3
[34] NSW IPC, Statement of Reasons for Decision, Dartbrook Coal Mine - Modification 7, 09/08/19, pg 10
[35] WaterNSW submission to the Independent Expert Panel on Mining in Sydney Catchment – March 2019, pg 5

licensing arrangements elsewhere in NSW and changes the obligations on mining companies to hold appropriate surface water licences for any water take." [36]

The 2016 Catchment Audit recommended that WaterNSW *"activate"* licencing under s60I of the Water Management Act 2000 so that mines actually have licences to account for the water they take from the catchment. Contrary to the phrasing chosen by the Catchment Audit authors, there is no need to *"activate"* section 60I of the Water Management Act. It is in force, and requires any coal mine that is causing a loss of surface water whether because of current or historic mining activity to hold a water access licence to account for this take. The Dendrobium mine is taking water unlawfully because it does not have a licence to do so, but no agency has taken action to enforce the law and require South32 to acquire the necessary Water Access Licences.

There is no mention in the environmental assessment of the need for the proponent to hold water access licences to account for its take of ground and surface water in the course of mining. This is information that is routinely required and provided in the environmental assessments for other mines and its absence here, for a damaging mining proposal in the most sensitive and strategic water catchments in the state is extraordinary and unacceptable.

Justification

There are central public policy and long-term planning questions that arise from South32's application to continue mining with a discredited mining method on land specifically set aside to protect Sydney and the Illawarra's drinking water.

If maintaining the supply of coking coal to Port Kembla is a matter of strategic importance and public interest for New South Wales, then there is a broader assessment and analysis that needs to be undertaken by the Department of Planning, Industry and Environment to consider the least-harm options for supplying this product whilst a transition to low-carbon steel making occurs. The proponent has not established its case that this longwall proposal is necessary but in any case, the damage it would inflict, added to the damage that has already been done, is clearly unacceptable.

In a February 2019 submission to the IEPMC, Bluescope advised that the Port Kembla Steelworks *"consumes approximately 3 million tonnes per annum of coal, of which over 90 per cent is sourced from mines in the Illawarra region"*. Currently, those sources are Dendrobium, Appin mines, Metropolitan and Tahmoor mines.

On 28 July 2019, Ben Langford from the Illawarra Mercury sought clarification on how reliant Bluescope is on Dendrobium's coal in particular. The Mercury reported that *"BlueScope has not backed South32's claim that the steelworks would be forced to close if the miner does not get permission to expand its Dendrobium coal mine."* The article further noted that

[36] WaterNSW submission to the Independent Expert Panel on Mining in Sydney Catchment – March 2019, pg 10

"BlueScope has not made any comments to investors or to analysts about the possibility of the steelworks being forced to close." [37]

In the context of one of the worst droughts on record, with a rapidly growing population and with inflows, desalination and transfers currently failing to match demand for water, the long-term damage that would be caused to Sydney and the Illawarra's drinking water catchments by this project clearly outweighs any economic benefits of longwall mining in the Special Area, which are relatively narrow and of short duration, compared to the impacts.

We urge the Department to interrogate the replacement cost of water per megalitre in 2019 and throughout the life of the project and the duration of its impacts. South32's calculations and assumptions about compensation for lost water are not provided in the assessment material but are marked as 'Confidential' in Table 15: Summary of indirect costs impacts.

Value of water

South32 value lost water at $76.50 per megalitre, but proposes to compensate at the rate of $53.85 per megalitre. In 2015, WaterNSW estimated the value of water in Sydney's catchment as $2,276 a megalitre.[38]

South32 claims that *"surface water losses are predicted to result in negligible changes to catchment yields"* and proposes to pay WaterNSW *"for the volume of surface water diverted from the Drinking Water Catchment (i.e. as it would be no longer available for sale to other water users)."*

South32 has proposed that payment would be calculated based on a price per megalitre of $53.85 per ML *"consistent with the Independent Pricing and Regulatory Tribunal (IPART) determination for WaterNSW's prices for bulk water operations in the Greater Sydney area for Council use of bulk water (IPART, 2016)."*

South32 proposes to account for climate variability and the progressive stage of longwall mining by quantifying actual losses annually using a combination of streamflow, mine inflow and climate data, and predictive groundwater and catchment runoff modelling. It is expected that this would result in payment of approximately $100,000 per annum during peak predicted surface water losses for the Project.

Prima facie, the replacement cost of water appears to have been dramatically undervalued by South32. In Section 6 of the EIS, the proponent states that payment to WaterNSW for the volume of surface water diverted from the Drinking Water Catchment would be calculated based on the price per megalitre of **$53.85**, consistent with the Independent Pricing and Regulatory Tribunal (IPART) determination for WaterNSW's prices for bulk water operations

[37] Ben Langford, Illawarra Mercury, JULY 28 2019, BlueScope won't say Dendrobium closure could finish steelworks, https://www.illawarramercury.com.au/story/6295531/bluescope-wont-say-dendrobium-closure-could-finish-steelworks/

[38] Planning Assessment Commission Review Second Report on Russell Vale Underground Expansion Project, pg 23 https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2015/10/russell-vale-colliery-underground-expansion-project--second-review/review-report/russellvaleiireviewreportfinalpdf.pdf

in the Greater Sydney area for Council use of bulk water (IPART, 2016). In the Cadence Economics assessment however, a different figure is used. The economic assessment uses IPART's 2016-2020 Volumetric charge of **$76.80** ($/ML).[39] In December 2015, WaterNSW considered the actual replacement value of water to be **$2,276** per ML.[40]

As Table 1 demonstrates, this is a matter that requires investigation and clarification since these different per megalitre values produce widely different total compensation costs of between $150,780 and $6,372,800. Indeed, if WaterNSW's 2015 valuation is applied to an average 2,800ML lost per annum and this loss is sustained over the 65 years modelled in the economic assessment, then an extraordinary water replacement cost of something like $414,232,000 could be imposed by the people of NSW. This case would strengthen considering the duration of the water catchment loss which is projected to last until at least 2150. At present, the cost benefit analysis only appears to cost water losses out to 2085.

We note that Table 15: Summary of indirect costs impacts at page 22 of the Cadence Economics assessment marks South32's estimate of the costs associated with this water loss to the people of NSW as confidential.

Table 1: The replacement cost of drinking water

	Predicted loss to water storage per annum (overall) ML	**Predicted loss to water storage over 65 years (overall) ML**	**Cost per ML**	**Cost per annum of water storage losses**	**Cumulative cost of water storage losses over 65 years**
South32's proposed rate of compensation	2,800	182,000	$53.85	$150,780	$9,800,700
South32's costing for their CBA			$76.80	$215,040	$13,977,600
WaterNSW's replacement cost of water 2015			$2,276	$6,372,800	$414,232,000

[39] Cadence Economics, APPENDIX L, ECONOMIC IMPACT ASSESSMENT OF THE DENDROBIUM MINE – PLAN FOR THE FUTURE: COAL FOR STEELMAKING, pg 44-45

[40] op cit PAC Review, Russell Vale, pg 23

Given the dramatic difference in replacement costs associated with this project depending on which figure for water value is used, we recommend an independent analysis is commissioned by the Department to assess South32's proposed compensation and whether water losses modelled by South32 reflect full and accurate indirect costs.

Endangered ecological communities

The proposed mine expansion will damage and undermine the Coastal Upland Swamp of the Sydney Basin Bioregion TEC, listed as 'endangered' under the BC Act and the EPBC Act (NSW Scientific Committee, 2012; DoE, 2014a). We understand that there are 46 upland swamps identified within 600 m of the proposed longwalls (37 of which contain vegetation communities that represent the upland swamp TEC). We oppose further mining that will damage endangered ecological communities.