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26 November 2021
Stephen O'Donoghue
Director Resource Assessments
Department of Planning Industry and Environment
12 Darcy St, Locked Bag 5022
Parramatta NSW 2124

Dear Stephen,

We refer to your requests dated 8, 10, 15 and 18 November 2021 for further information in relation to the Bulli Seam Operations (MP08_0150) Modification 3 Application.

The following are provided in response to the requests:

- Summary of the responses (Attachment A).
- Summary of responses to Wollondilly Shire Council letter dated 26 October 2021 (Attachment B).
- Memorandum regarding potential silica emissions (EMM, November 2021) (Attachment C).
- Memorandum regarding selection of background monitoring locations (RWDI, November 2021) (Attachment D).
- Addendum to Appin Mine Ventilation and Access Project BDAR – Targeted Surveys (Niche Environment and Heritage, November 2021) (Attachment E).
- Concept Plans (Attachment F).

If you have any queries or require additional information, please contact the undersigned.

Yours sincerely,

Gary Brassington
Manager Approvals
0438 042 897

Attachment A – Summary of Responses

Timing for construction of acoustic sheds

Department comment:
The Department notes that the anticipated project schedule in the Modification Report (Section 3.5) indicates that the site establishment activities (bulk earthworks, construction of utilities pre-sinking, access upgrades) and the ventilation shaft sinking and lining operations would occur sequentially. Please confirm at what stage the construction of the acoustic sheds would occur following the commencement of the shaft sinking and lining operations (ie. length of time these activities would occur without sheds).

The 'site establishment' phase includes the enabling works required to prepare for the construction of the shafts and surface infrastructure. Activities are undertaken in a sequence, however some activities occur concurrently as per the indicative project schedule (Table 3-5 and Section 3.7.2 of the Modification Report). It is anticipated that pre-sink activities will commence towards the end of the site establishment phase, once bulk earthworks are complete in the shaft sinking areas, relevant equipment has been mobilised and the required utilities for shaft sinking are in place. Transition into the Ventilation Shaft 8 main sink will take priority following the pre-sink, as per Table 3-5.

The pre-sink is anticipated to occur over a period of 3 to 4 months, depending on the selected shaft sinking contractor's methodology. The pre-sink phase would involve the construction of a temporary headframe and winder, establishment of a shaft collar and intake evase, and excavation of the shaft to the required depth for the installation of the sinking stage in preparation for the main shaft construction (the initial 30-50m, depending on geological conditions).

During the pre-sink phase, shaft sinking activities are proposed to occur during the day-time only. As noted in Section 5.3.3 of the Noise and Vibration Impact Assessment (NVIA) (RWDI, June 2021), all reasonable and feasible measures will be applied to manage construction noise emissions from the site during this phase.

During the pre-sink, the shaft sinking contractor will also be establishing various attenuation measures required to meet the relevant Noise Management Levels (NMLs) to commence 24/7 shaft sinking. Given the practical considerations which would influence the timing and construction of acoustic sheds (outlined in our letter dated 4 October) IMC is working with specialised shaft sinking contractors to determine the most effective combination of noise mitigation options to be established during the pre-sink. A combination of noise mitigation options will be utilised, including acoustic sheds and options presented in Table 28 of the NVIA, to ensure the relevant NMLs are met.

As noted in our letter dated 4 October and the NVIA, if quieter construction methods are able to be used, the acoustic performance of the mitigations could be lowered. Additionally, the required acoustic performance of the mitigations could be lowered further by entering into negotiated noise agreements with some of the most potentially affected receivers.

Establishing noise mitigations as early as practical will provide benefits to mitigate receiver impacts as well as schedule benefits to the Project. Once the required noise mitigations are in place, 24/7 shaft sinking operations will commence. Its noted that 24/7 blasting operations are only proposed following approval of an adaptive Blast Management Strategy, and as such construction blasts will continue being undertaken during the day time until that strategy is approved.

Potential silica emissions

Department comment:
The Department notes that a representation on the modification raised concerns regarding windborne dust from the proposed stockpiles/bunds surrounding the site containing silica, and potential health impacts this may cause to nearby residences. The Department notes that this issue does not appear to be considered in the Air Quality and Greenhouse Gas Assessment prepared by EMM Consulting Pty Ltd (Appendix C of the Modification Report). The Department requests that the air quality consultant provide advice on potential health risks associated with silica dust from the stockpiling/bunding of the spoil from the ventilation shafts around the site, particularly given it will primarily consist of Hawkesbury sandstone which is known to contain a high silica content. The advice should consider the length of time the stockpiles/bunds may be exposed to wind prior to revegetation.

As per the Department's request, EMM Consulting Pty Ltd have undertaken an analysis of the potential for respirable crystalline silica to impact sensitive receivers as a result of the Project. Please refer to Attachment C.

As noted in the attachment, the highest predicted annual average $PM_{2.5}$ concentration at an off-site residential location is 0.2 µg/m^3. Taking the conservative assumption that all $PM_{2.5}$ emissions generated during construction would contain 76.4% silica, the maximum annual average prediction for respirable crystalline silica is 0.15 µg/m^3, or 5% of the adopted assessment criterion. As noted in the attached, there is no potential health risk from silica dust emissions at an off-site residential location predicted.

The assessment considered all activities that generate dust emissions, not just those activities involving the handling of spoil containing Hawkesbury sandstone. Therefore, scaling the total modelling prediction to derive a silica dust exposure level is considered conservative. Further, the emission inventory used for modelling in EMM (2021) did not apply controls for the revegetation of stockpiles over this period, and as such all emissions including wind erosion from stockpiles are considered.

As noted in Section 6.4.2.2 of the Modification Report, various controls for effective dust suppression/mitigation will be implemented during the construction phase. Relevant to the bunds and stockpiles, this can include controls such as use of water spray, dust suppressants, stabilisation of exposed area, revegetation of stockpiles, monitoring and inspections.

In addition, it's also noted that the risks of workplace exposure to crystalline silica will be managed and monitored in accordance with the relevant Work Health and Safety legislation and Safe Work NSW requirements during construction. The focus of these mitigations is to protect workers undertaking mechanical processes on natural stone or products that contain silica.

Site alternatives

Department comment:
The Department notes that numerous representations on the modification raised concerns that there was insufficient information provided in the Modification Report or the Submission Report on the consideration of specific alternative locations for the mine ventilation and access site. The Department notes that further information on this issue was provided in email advice from Nicola Curtis on 26 October 2021, however this did not consider specific alternative sites.
One representation proposed an alternative site to the east of the Hume Hwy near the Partridge VC Rest Area and just to the east of longwall 707B (located marked up in the attached image), which:

- *is located directly above the Simpson Mains;*
- *has direct access from the Hume Hwy via the Partridge VC Rest Area;*
- *has high voltage power and communication in close proximity; and*
- *has no directly affected neighbours.*

The Department requests clarification about whether this site was considered in IMCs site options analysis and whether IMC can provide any additional information that would support or discount this specific site as a viable alternative.

Location selection process

The location assessment is outlined in Section 1.4.6.5 of the Modification Report. The location assessment conducted prior to lodgment of the Modification Application included a range of alternative Project locations and of alternative concept designs to facilitate those locations. The assessment considered factors including:

- Underground constraints and alignment, including:
    - Proximity to proposed current and future longwall mining areas
    - Proximity to existing and planned ventilation roadways (main and development headings)
    - Distance to other ventilation shafts and interaction with the existing mine ventilation system
    - Geometry of underground workings
    - Arrangement of fresh and return air roadways
    - Proximity to underground services
    - Resultant air velocities in underground workings
- Local geology, including mapped faults.
- Surface constraints such as existing land use, surrounding land use, site accessibility, impacts to environment, proximity to neighbors and land ownership.
- Alternate engineering designs to investigate alternative locations including inclined drifts (rather than vertical shafts) and multiple smaller shafts.

As noted in the Modification Report, this assessment concluded, of the available land, the proposed Site is the optimal location.

Consideration of the proposed alternate location

The specific alternative location provided in the Department's request described as "*to the east of longwall 707B (located marked up in the attached image)"* is assumed to be

the location to the east of Longwall (LW) 708B extraction (at that time), as marked by the darkest black circle on Figure 1. This map does not represent critical elements required for the shaft planning (namely completed longwall lengths, mains location, indicative future workings, existing property boundaries etc.). The location has been identified on Figure 2, in relation to the underground mining workings and key surface features.

This location is not considered as a suitable location, primarily because it is located directly above the approved extraction area of LW708B, which has been extracted. Shafts cannot be constructed into areas where the seam has been extracted (goaf).

In relation to the proposed benefits of this location, its noted that this alternate location is over LW707B, rather than directly above Simpsons Mains. The alternate location also overlaps multiple Lots and is within proximity to potential receivers on the various Lots surrounding the location, including R13 which is located immediately to the west.

Figure 1 Map provided in request for information (alternate location is darkest black circle)

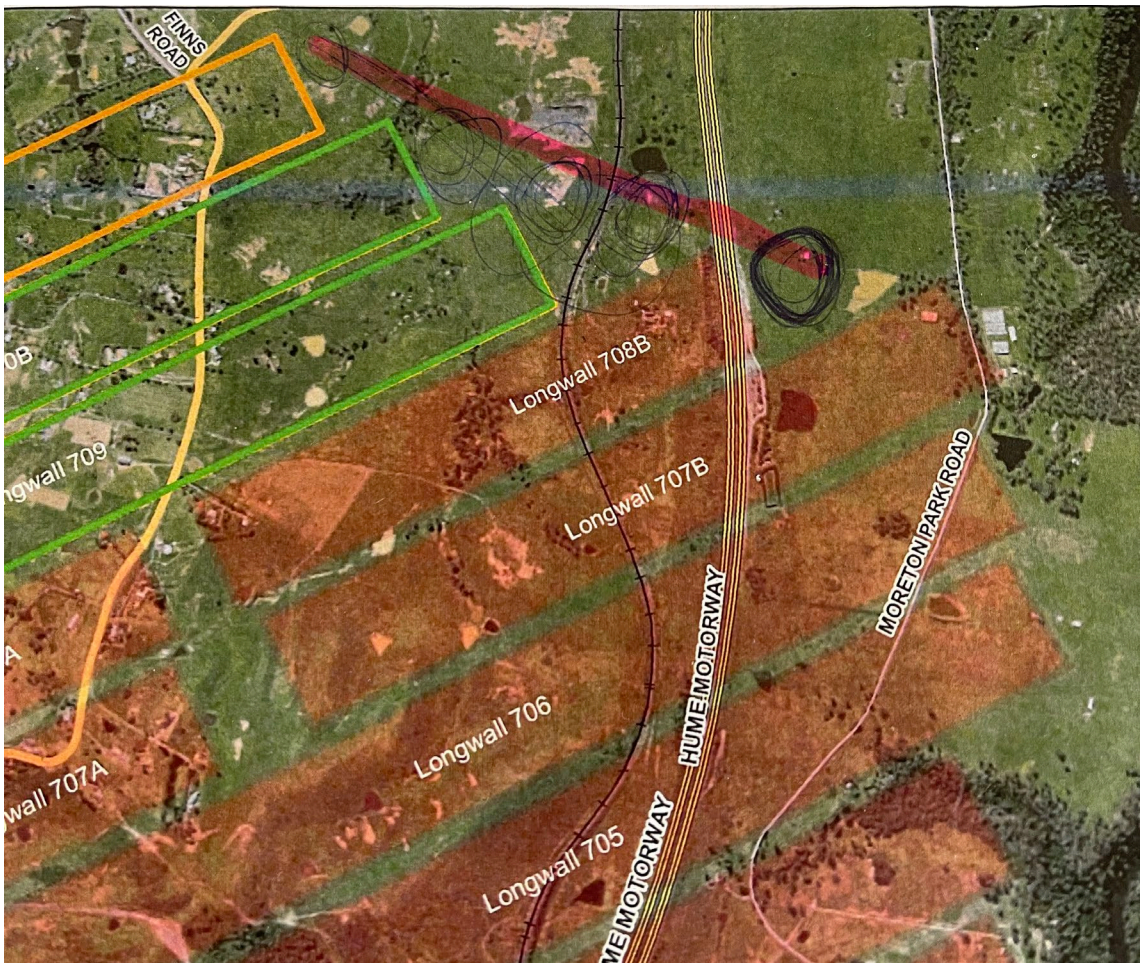
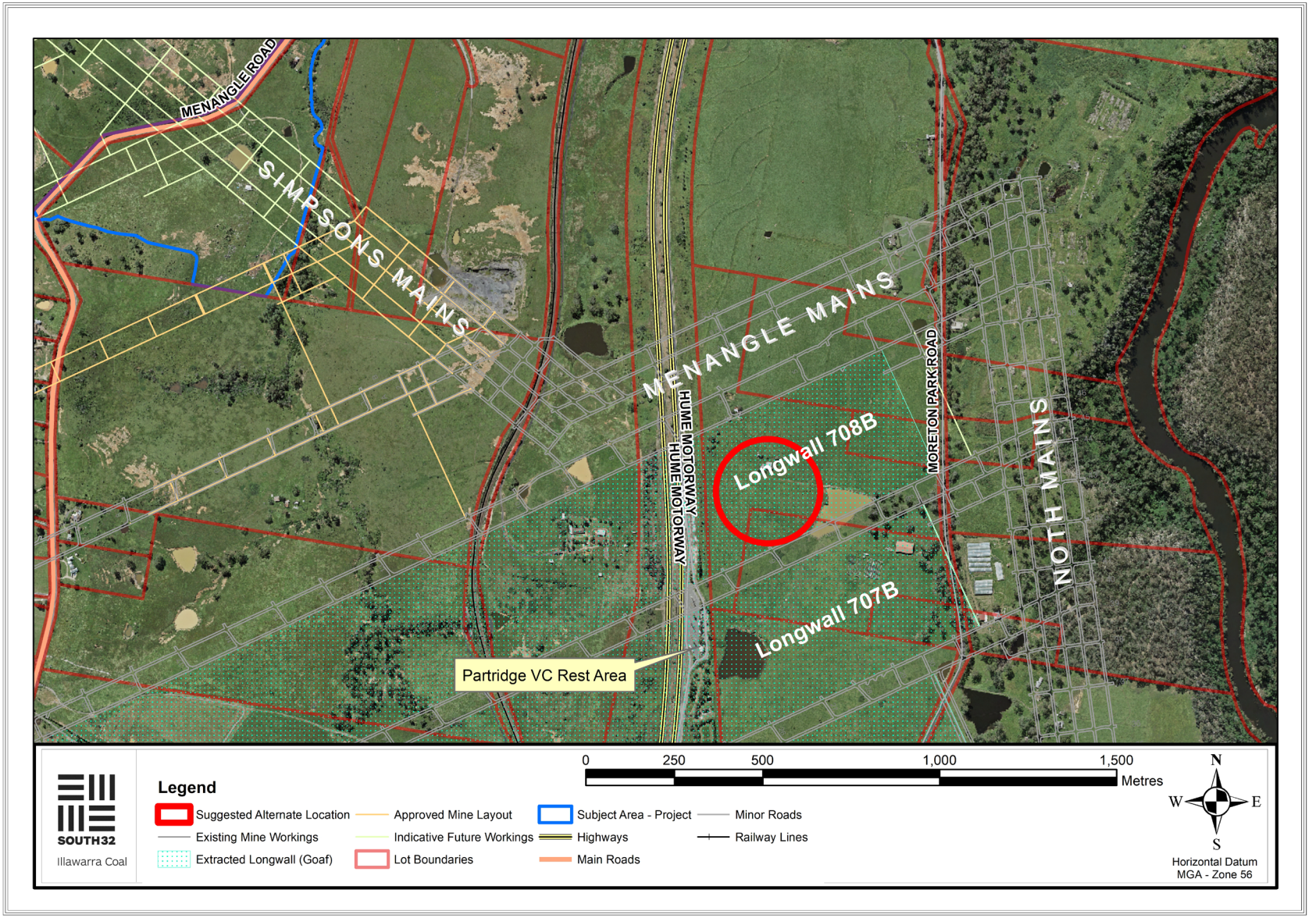


Figure 2 Location proposed in DPIE request for information (approximate location shown by red circle)



Consideration of locations above Menangle Mains

It can be confirmed that potential locations above Menangle Mains, in the vicinity of the suggested alternate location noted above, were considered in the location assessment. The general area above Menangle Mains is indicated in pink on Figure 3. The key considerations in the assessment of potential shafts over Menangle Mains are as follows:

- Development of the underground roadways of Menangle Mains was completed between approximately 2016 and 2020, and as such, the geology in this location was well understood when the assessment was being undertaken.

- Significant geotechnical features (faults, disturbed ground and a 'boggy zone') at the coal seam level were encountered during development of Menangle Mains (Figure 3). Given the highly disturbed nature of the geology and additional controls required to manage the conditions, development of the existing underground roadways in this area was difficult and slow.

- The excavation of shafts through faulted and highly disturbed ground is geotechnically challenging and presents unacceptable stability risks for construction and operation of the shafts and the underground mine access area (as the roadways need to be expanded to accommodate the shaft bottom/access).

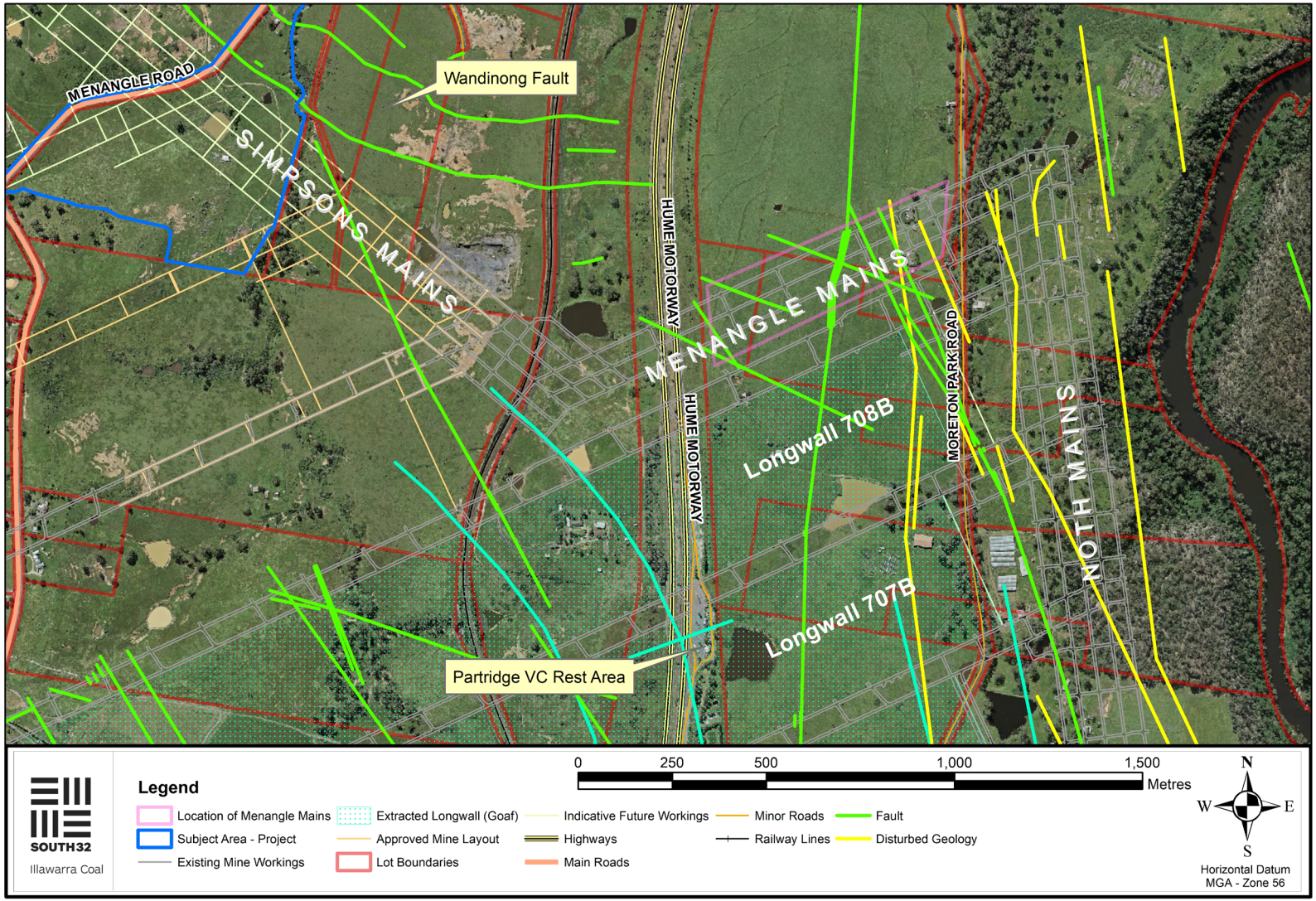
- Six underground roadways are required to be developed in-bye (towards the active mining area) of the shafts to facilitate underground access and ventilation (seven are preferred). As such, an additional three to four roadways would have been required to be developed north of the existing Menangle Mains (to maintain barrier pillar stability adjacent to LW708B). Developing additional roadways in this highly disturbed area would create additional geotechnical challenges (as above).

- Further, given the conditions, the time required to establish additional roadways in this area would have delayed operation of the ventilation shafts. The diversion of development resources from Simpsons Mains would have further impacted underground operations. As noted in the Modification Report, the proposed ventilation shafts are required to be operational on or before 2025 to maintain continuity of safe underground operations.

As noted above, other surface and underground parameters were considered as part of the location assessment. Primarily however, locating the shafts over Menangle Mains is not considered optimal due to the geotechnical conditions and inability of shafts in this location to meet scheduling requirements.

Its noted that the location of the Wandinong Fault constrains the location of the Simpsons Mains to the north, and the Simpsons Mains has been located to avoid the faulted zone, and as such the construction of shafts and underground development at Simpsons Mains is optimal. The further benefits of the location proposed in the Modification Report are described in Section 1.4.6.5.

Figure 3 Menangle Mains location and geological mapping



Concept Designs

Department comment:
The Modification Report does not include schematic diagrams of key surface infrastructure and buildings showing dimensions, making it difficult for community members to understand the dimensions (height and width) of the surface infrastructure and buildings in the landscape. The Department notes that schematics of VS7 shown in Figures 3-14, 3-15 and artist impressions in Figure 3-16 and 3-18 do not include dimensions.
The Department requests more detailed concept designs of key surface infrastructure be provided, including dimensions.

As per the request, concept schematic diagrams of key infrastructure, as well as a plan showing indicative footprints and heights of key infrastructure is provided in Attachment F. It is noted that the designs and related dimensions are based on the concept designs, which are being adjusted and optimised during the current detailed design process.

Concept dimensions of key infrastructure including the winder tower, downcast evase area, ventilation fans, and storage area are also provided in the description of each facility in the Modification Report in Section 3.7.4.1, Section 3.7.4.2, Section 3.7.4.3 and Section 3.7.5.

Prior to lodgement of the Modification Application, videos and imagery of the concept designs were developed by visualisation specialists, Truescape, to be utilised during online and in person community and stakeholder engagement. The Truescape viewpoints, virtual 3D fly-over video and drive-by video are available on our Project website[1].

IMC also developed a virtual 3D model of the concept designs prior to lodgement to assist community members in understanding the scale of the Site within the landscape, and the effectiveness of proposed visual impact mitigations (such as tree screens). The 3D model can be navigated live with assistance from our engineers, viewpoints can be generated from each property within the vicinity of the Project, and measurements can be taken of heights and distances. The 3D model has been shared with the broader community, nearby residents, the MAP and visitors to our Community Information Sessions.

[1] https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/appin-mine-ventilation-and-access-project/appin-mine-ventilation-fact-sheets

Background Noise

Department comment:
The Noise and Vibration Impact Assessment (NVIA) (Wilkinson Murray, June 2021) indicates that background noise monitoring was undertaken at the four locations representing the "most potentially affected sensitive receivers near the Site". However, the Department notes that background noise monitoring was not undertaken at the nearest affected premises (NAPs) to the site (ie. R2 or R3). The Department considers that background noise monitoring undertaken at M2 and M3 are likely to have been influenced by traffic noise at the Finns Road and Menangle Road intersection and traffic along Finns Road (south) (refer to Figure 5 of the NVIA). Noise at location M4 would be heavily influenced by traffic noise along the Hume Motorway. M1 is considered to be most representative of NAP background noise levels, however may also be influenced by traffic noise along Menangle Road when compared to R2 or R3 which are both set further back from the road. The Department requests further justification for conducting background noise monitoring at these locations, and implications for noise predictions associated with the project considering the above.

In accordance with the Department's request, RWDI Pty Ltd have provided further information on the selection of the background monitoring sites utilised in the NVIA (RWDI, June 2021). Please refer to Attachment D.

As noted, the noise monitoring locations were selected as they were considered representative of the noise conditions at the nearest, potentially most affected receivers to the site.

Regarding the applicability of monitoring location M1 to receivers R2 and R3, it is noted that Menangle Road carries low volumes of intermittent traffic, where there are frequent periods of no traffic along this roadway. The LA_{90} descriptor (which is used to calculate the minimum rating background levels (RBL)) quantifies the noise level that is exceeded for 90% of the measurement period and, given the intermittent traffic flow along Menangle Road, the LA_{90} would be representative of the noise level during the lulls between individual car pass-bys. Considering this, it has been confirmed that the measured LA_{90} will not vary appreciably with distance from Menangle Road and so the LA_{90} measured at monitoring location M1 will be representative of the background noise levels at receivers R2 and R3.

Regarding locations M2 and M3, given that traffic flow along Finns Road is also intermittent in nature with frequent periods of no traffic, a similar line of reasoning has been applied to confirm that the noise levels measured at monitoring locations M2 and M3 will be representative of the noise conditions at the residential receivers along Finns Road and as well as the receivers further to the west of the site.

It is acknowledged that the measured LA_{90} at monitoring location M4 could be influenced by traffic noise from the Hume Motorway as traffic flow along the Motorway will be more continuous in nature. However, this monitoring location was selected to capture the representative noise environment of the residential receivers near the Hume Motorway, such as R13, R14, R15 and R17, and not for residential receivers closer to the site such as R2 and R3. However, it is noted that the measured noise levels at location M4 were not used to establish the RBLs at any of the identified receivers.

It is noted that close to four weeks of noise monitoring was conducted at monitoring locations M1, M2 and M3, and over two weeks of monitoring conducted at location M4. This has yielded far more than 7 days of noise data that is unaffected by inclement weather, as recommended by the EPA's Noise Policy for Industry (2017).

Furthermore, to provide a conservative assessment, the lowest background levels measured during the day, evening and night time periods across all four noise monitoring locations have been adopted (identified in bold in Table 2 in Attachment D). These conservative background levels have been applied to all identified residential receivers in determining the Project Noise Trigger Levels.

Given all of the above, it is reasonable to conclude that the noise monitoring conducted on site as part of the NVIA provides a comprehensive survey of the noise environment at the identified residential receivers, and that the approach taken in formulating noise emission criteria for the development is conservative in nature to ensure that noise impacts at the residences are minimised.

Mine Access Building Alarm

Department comment:
The NVIA indicates that the most likely potential source of maximum noise levels during site operations would be the audible alarm that sounds prior to the operation of the winder/cage. The sleep disturbance assessment for the alarm, which was based on calm and NE winds, indicated that the predicted LAmax noise levels comply with the maximum noise trigger level of 54 dB(A) at all receivers.
The Department requests further assessment of the maximum noise levels from the alarm at R3 during SE winds which were determined to be a dominant wind in the area (refer to Section 5.4 of the Air Quality and Greenhouse Gas Assessment).

Section 3.4.4 of the NVIA (RWDI, June 2021) includes an assessment of the winder alarm using CadnaA noise modelling software for both standard meteorological conditions ("calm") and noise enhancing ("NE") meteorological conditions. References to "NE" in the NVIA report refer to the assessment of 'worst-case wind direction' conditions, rather than assessment of a north-east wind direction.

As outlined in Section 3.2.1, the CadnaA noise modelling software includes a feature that allows the model to be run with the "worst-case wind direction", which produces the highest noise level for each receiver under noise enhancing winds at that receiver. This option has been used in the model and the results are presented as the "NE" scenario.

As such, an assessment of the relevant "worst case wind direction" for each receiver has already been completed. The predicted LAmax noise levels under "NE" conditions due to the operation of the winder/cage alarm are predicted to comply with the maximum noise trigger levels at all receivers (Table 13 of the NVIA).

In consideration of concerns regarding the noise of the winder alarm raised during the consultation process, as outlined in the Submissions Report (Sections 6.1.3.4 and 6.6.3.2) and during consultation with the MAP, investigation of alternatives to the use of warning alarms will be included in the detailed design phase. The detailed design will

consider how the winder alarm design can ensure the necessary audible alarm is directed in the immediate vicinity of the winder cage and contained within the relevant buildings to avoid noise spill. Visual signals will also be investigated (lights etc.) as noted in the Submissions Report.

Traffic Accidents

Department comment:
The Guide to Traffic Generating Developments (RTA, 2002) indicates that a traffic impact study should consider the accident history of the road network in the vicinity of a proposed development.
However, the Traffic Assessment (Transport & Urban Planning Pty Limited, May 2021) does not indicate that Menangle Road is a crash zone, or provide any accident history of the road network in the area.
The Department requests that the Traffic Assessment be revised to consider the accident history of the road network in the vicinity of a site, including any provisions to reduce the potential for accidents.

The Traffic Assessment (Transport & Urban Planning Pty Ltd, May 2021) has been undertaken in accordance with the requirements of Roads and Traffic Authority, now Transport for NSW, *Guide to Traffic Generating Developments October* (2002). The guideline states (underlined for emphasis):

> *" It is advisable that three-year accident histories of adjacent intersections and proposed transport routes, are obtained for developments with the potential of <u>significantly</u> adding to total traffic movements and / or heavy vehicle movement."*

In undertaking the assessment, Transport & Urban Planning Pty Ltd determined that the Project would not generate a significant volume of traffic movements or heavy vehicle movements such that an accident analysis was required. The operational phase weekday volume increases due to the Project are relatively low, representing a 1.2% increase in weekday traffic volumes on Menangle Road, south of Woodbridge Road, and a 9.6% increase in daily volumes on Menangle Road, south of Finns Road.

The assessment concludes that the Project is not expected to have any negative impacts on road safety. Further, it notes that the site intersection upgrade proposed will contribute to enhancing the condition of the existing Menangle Road. Given the assessment results and advice from Transport & Urban Planning Pty Ltd, a revision of the assessment is not warranted.

However, IMC notes that as part of our consultation with Wollondilly Shire Council regarding the proposed intersection design, multiple Road Safety Audits will be prepared (both pre and post construction of the intersection). These audits will be prepared for Council as part of the intersection design review and approval process and will inform the design of the intersection on Menangle Road. These audits will consider the existing condition of Menangle Road in relation to the proposed design.

Water Carts

Department comment:
The Modification Report estimates that up to 25 kilolitres per day (kL/day) of water would be required for site establishment and construction phases and that up to 22 kL/day would be required for the operational phase of the project. It is understood that the water would be sourced from the existing water supply at the Ventilation Shaft 6 (VS6) site and transported to the site via water cart.
The Department requests confirmation of the number of water trucks required to supply water to the site during construction and operation (if the permanent water supply be unavailable or delayed) and whether these trucks were considered in the Traffic Assessment.

The estimated water usage during the site establishment and construction phases would be approximately 25 kilolitres (kL) per day. However, water usage would fluctuate depending on the type of construction activity occuring. During this phase, heavy vehicle deliveries to the Site are expected to average 11-13 per day with a peak period (six to eight weeks) of up to 44 heavy vehicles per day. The traffic assessment includes movements associated with transport of water during construction (approximately one to two water carts, or four heavy vehicle movements per day).

During the operational phase, the water demand is estimated at 21.8 kL/day (peak). It is proposed in the Modification Report that a permanent water supply will be established during the construction phase. An application has been made to Sydney Water for the extension of the Menangle water supply network, following required water mains network upgrades. Since the Modification Report, IMC has continued the application process with Sydney Water and anticipates a restricted (off-peak) water supply can be made available for the Project, which will meet the Projects operational needs. Detailed design and engagement with Sydney Water is ongoing.

As noted by DPIE, IMC has considered two contingency options should the permanent water supply be unavailable or delayed, being either continuation of the construction phase water supply or establishment of a dedicated pipeline from VS6 to the Site (with further assessment under the Mine Surface Activities Management Plan). Generally, heavy vehicles deliveries associated with the mine operations would total 12 heavy vehicles per day. Should the potable water source be unavailable, and the contingency option be required, it is anticipated that one to two heavy vehicles per day would be accommodated within this allowance, and any additional impacts minor and consistent with the current traffic assessment.

Sewerage Treatment Plant

Department comment:
The Department notes the commitment that the proposed on-site sewage treatment facility (STP) would be connected to a centralised sewerage system, should one with sufficient capacity become available during the life of the project. However, the Department understands that it is unlikely that a centralised sewerage system would be available for connection in the foreseeable future.
It is therefore proposed that wastewater treated at the STP would be discharged via irrigation spray fields located in the southern portion of the site.
The Department requests additional information and assessment of the proposed wastewater treatment and disposal systems necessary for all wastewater predicted to be generated on site.
Information should include the required treatment and capacity specifications, irrigation areas, buffer distances, and mitigation and management measures necessary to minimise impacts to the surrounding environment.

The permanent sewerage treatment plant (STP) and irrigation spray area would be developed during construction of the mine access facilities (commencing Quarter 3, 2024), in accordance with the indicative Project schedule. During construction, temporary ablution facilities would be utilised, and a licensed waste removal contractor will remove and dispose of waste water / effluent at a licensed discharge facility as required.

The permanent effluent management system (EMS) would be designed in accordance with relevant guidelines including:

- Environmental Guidelines: Use of Effluent by Irrigation (Department of Environment and Conservation DECC, 2004); and
- Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (AGWR – EPHC, 2006).

Conceptual design and assessment of the proposed EMS has been completed based on the predicted volumes and types of effluent to be treated. Additional information on the conceptual design requested is as follows:

- The STP has been designed for a capacity of 25 kL per day. This is based on the approximate volume of effluent anticipated to be generated by the Site.
- The spray field would have similar specifications to the existing Appin West irrigation field. The indicative location options for the spray field are shown in Appendix 2 of the Modification Report. Area A1 is 8,500m2 and Area A2 is 7,700m^2.
- The indicative locations were selected to comply with relevant buffer zone guidelines including; being greater than 100m from permanent creeks, 10m from the Lot boundary, 250m from domestic groundwater wells and bores, 40m from onsite dams and storages, and in consideration of the distance between other site facilities and driveways, depth of bedrock and other sensitive features. The applicable buffers will be confirmed during detailed design.
- Appropriate long-term daily water, nutrient and salt balance modelling would be undertaken (such as the Model for Effluent Disposal using Land Irrigation (MEDLI) or NSW EPA design tool (ERIM)).

Mitigation and management measures to minimise impacts to the surrounding environment would be developed to align with the detailed design, however would generally include:

- Vegetation that is suited to the application of effluent, preferably with high water and nutrient requirements (such as ryegrass pasture) would be established and maintained over the irrigation area.
- Soil amendments or improvements, as required, would occur to ensure long term stability of the spray area.
- Irrigation schedules, rates and wet weather management procedures would be deigned at appropriate levels for the location, soil type, vegetation and slope.
- Establishment of adequate storage to manage irrigation scheduling and wet-weather storage to prevent over-irrigation of the EMS and ensure sustainable operation of the treated effluent irrigation scheme at the Site.
- Construction and operation of the EMS in accordance with the requirements of an approved Environmental Protection Licence (EPL), as amended.

It is noted that ahead of construction and operation, the proposed EMS will require an approval to vary the Mine's current EPL. All detailed plans and assessments required as part of that application will be prepared ahead of construction (commencing 2024).

Consistent with the Appin West and Appin North EMS, the proposed EMS would be operated in accordance with the EPL and the Appin Mine Water Management Plan.

Air Emissions

Department comment:
The EPA has provided supplementary advice on the air impact assessment. That advice is now public on the Department's website at https://www.planningportal.nsw.gov.au/major-projects/project/40511.
Please provide further information to address the EPA's comments. It would also be appreciated if you provide further assessment of the potential for construction dust impacts at nearby residences.

EPA comment:
The EPA recommend that DPIE seek further clarity from the proponent that the assessment of air quality impacts is based on the proposed total ventilation rate. Where the air quality impact assessment is not based on the proposed total ventilation rate then the AQIA should be revised to ensure reasonable worst-case impacts have been assessed.

RWDI Pty Ltd have confirmed that the Air Quality and Greenhouse Gas Assessment (EMM, June 2021), assesses reasonable worst-case impacts, as recommended by EPA. Please refer to Section 2 of Attachment D.

The Air Quality and Greenhouse Gas Assessment is based on the total ventilation rate, with the 2033 emissions scenario representing the maximum potential total flow. The operational phase assessment, presented in Section 8.3, represents the total ventilation rate of both the 2025 and 2033 scenarios.

As described in Section 7.2.2, two fans are assumed to be operating at any one time (i.e. 2 fans emissions are accounted for in the model), and the 3rd fan is designed for redundancy. Table 7.3 presents the ‘total flow rate’ and the ‘flow rate per fan’, with the ‘total flow rate’ being the split between the two fans. The ‘emission rates’ in Table 7.3 are per fan.

Wollondilly Shire Council

Department comment:
Wollondilly Council has provided comments on the Submissions Report for the modification. (Available here https://www.planningportal.nsw.gov.au/major-projects/project/40511). It would be appreciated if you would respond to Council's comments.

Please refer to Attachment B which summarises responses to the concerns raised by Council in their letter to DPIE dated 26 October 2021, and attachments.

Transport for NSW

Department comment:
TfNSW has requested a sketch of the proposed site intersection treatment and swept path of vehicles entering/exiting the site. Their advice is attached. It would be appreciated if you could provide this information prior to determination for consideration.

The requested information was provided to TfNSW via email on 19 November 2021, with a request for a meeting to review the information provided. IMC will continue to engage with Council and TfNSW on the proposed intersection upgrade as the detailed design process continues.

Attachment B – Summary of responses to Wollondilly Shire Council letter dated 26 October 2021

Wollondilly Shire Council - Biodiversity Impacts

Council comment:
Council's submission requested a number of amendments to the Biodiversity Development Assessment Report (BDAR) and suggested a site specific Biodiversity Management Plan (BMP) as a suitable response mechanism. The stated commitment in the Modification Report to update the Appin Mine BMP prior to the commencement of construction in regard to the riparian corridor is welcomed. However, there is an absence of reference to biodiversity on other parts of the site. The DPIE is consequently requested to require the preparation and implementation of a site specific BMP that addresses all matters raised in Council's submission.

Attachment 2
Council would expect that the Determination contain the following conditions based on issues raised in its submission as well as review of the Summary Report.
Biodiversity and landscaping

- *…*
- *The site specific Biodiversity Management Plan be required to be updated to incorporate the ventilation shaft and recommended amendments to the BDAR contained in this submission that applies to the riparian corridor as well as retained biodiversity on other parts of the site prior to the commencement of any construction.*

<u>Biodiversity Management Plan</u>

The Council submission (4 August 2021) included the following recommendation in relation to the BMP:

> *"Section 3.2.5 of the BDAR is noted to state "Management and mitigation measures to be implemented during the construction and operational phases of the Project will be documented within the Biodiversity Management Plan (BMP) or relevant management plans to be developed for the Project". It is further noted to state that "a BMP has been developed for the BSO and will be reviewed/updated accordingly to include the subject land (IMC 2019)". It is requested that the DPIE require as a condition of consent that the BMP be required to be updated to incorporate the ventilation shaft and recommended amendments to the BDAR contained in this submission prior to the commencement of any works."*

The Council's subsequent submission contains the following statements in relation to a BMP:

> *"The stated commitment in the Modification Report to update the Appin Mine BMP prior to the commencement of construction in regard to the riparian corridor is welcomed. However, there is an absence of reference to biodiversity on other parts of the site."*
>
> *and*

"The site specific Biodiversity Management Plan be required to be updated to incorporate the ventilation shaft and recommended amendments to the BDAR contained in this submission that applies to the riparian corridor as well as retained biodiversity on other parts of the site prior to the commencement of any construction."

In accordance with the recommendations of the Biodiversity Development Assessment Report (BDAR) (Niche, June 2021), Section 6.8.3 of the Modification Report, Section 6.4.3.3 of the Submissions Report, and the Council submission (4 August 2021), IMC confirms that the BSO BMP (IMC 2019) would be updated to include the Project prior to the commencement of construction. This would include the entire Site (subject area), including the riparian corridor and any biodiversity retained within the Site.

IMC considers that the updated BSO BMP is sufficient to protect and manage important biodiversity values at the Site, in accordance with the BDAR recommendations.

IMC notes the further comment in relation to the BMP:

The DPIE is consequently requested to require the preparation and implementation of a site specific BMP that addresses all matters raised in Council's submission.

Matters raised in the Council submission (4 August 2021) were addressed in Section 6.4 of the Submissions Report.

Council comment:
Attachment 2
Council would expect that the Determination contain the following conditions based on issues raised in its submission as well as review of the Summary Report.
Biodiversity and landscaping
- *Landscaping screening be required to include specific reference to this recommendation of Council's Draft Scenic Landscapes Study and Management Strategy.*

The Council submission (dated 4 August 2021) noted that the proposed screening in the Modification Report was recognised as having consistency with the Council's Draft Scenic Landscapes Study and Management Strategy. Tree screening along the boundary of the site consists of locally endemic native plant species, generally consistent with the Council's Development Control Plan (particularly Part 11.2, Recommended Species (for landscaping)). It is confirmed that further tree screening on the Site will be similar in nature and consistent with that described in the Modification Report.

Council comment:
The review of the Submission Report by staff involved in the preparation of the Report have identified that the following broad issues raised in council's submission have been adequately addressed with no further response from the applicant required:
- *Targeted pre-clearance surveys for threatened flora species with the potential to exist on the site.*

In accordance with the commitments made in the Submissions Report, targeted surveys for *Meridolum corneovirens* (Cumberland Plain Land Snail) and *Pimelea spicata (*Spiked Riceflower) within the Subject Land have been undertaken. A report on the field survey prepared by Niche Environment and Heritage has been provided to DPIE and is appended to this letter (Attachment E). The survey results were consistent with the findings of the BDAR.

Wollondilly Shire Council - Noise Impacts

Council comment:
The Submission Report is considered to have adequately responded to the request in Council's submission for ongoing monitoring of noise impacts associated with the Ventilation Shaft. However, Council's Team Leader Environmental Health has advised "Where noise modelling identifies potential noise issues, particularly during night time periods, the noise producing activity should cease until such time as further acoustic controls, to control noise impacts are investigated which may include limiting blasting to daytime hours". The inclusion of a condition in the Determination is considered a suitable mechanism to address this comment.

Attachment 2
Council would expect that the Determination contain the following conditions based on issues raised in its submission as well as review of the Summary Report.
Noise Related Impacts

- *Blast monitoring in accordance with the guidelines provided in Australian Standard 2187.2-2006: Explosives-Storage and use, Part 2: Use of explosives (AS 2187.2-2006) and the installation and implementation of an automated monitoring system that allows for the instant and automatic uploading of collected data to a central server be required.*
- *Noise producing activities be required to cease in the event of modelling identifying potential noise issues, particularly during night time periods, the until such time as further acoustic controls, to control noise impacts are investigated which may include limiting blasting to daytime hours.*

Monitoring of Blasting

The Blast Management Strategy will be developed in consultation with the DPIE and EPA and will include details of the proposed blasting monitoring program. The monitoring program would closely monitor the construction blasts and allow for continuous improvement during the construction blasting program. It is proposed to implement an automated monitoring system, whereby monitoring data is collected in real time. As noted in Section 3.7.3.4 of the Modification Report, blast monitoring would be carried out in accordance with the guidelines provided in *AS 2187.2-2006*.

Noise Producing Activities

As noted in Section 5.3.3 of the NVIA, all reasonable and feasible measures will be applied to manage construction noise emissions from the Site. A combination of noise mitigation options will be utilised, including the options presented in Table 28 of the NVIA.

IMC will develop a construction specific Noise Management Plan containing construction noise management measures. The plan will include provision for noise

monitoring, which will be defined in consultation with the DPIE and EPA. The objectives of the monitoring will be to:

- Measure noise levels experienced by nearby residential receivers.
- Assess the effectiveness of noise controls.
- Measure Project related noise levels.
- Detect any adverse changes in construction noise.
- Acquire sufficient and reliable data to inform the assessment of compliance with Project noise criteria.

Noise monitoring equipment would be operated for diagnostic purposes, providing data for internal assessment of noise and potential impacts from construction and operations. The data can also be used for investigation of any community complaints. If any noise complaints are received, they will be managed under IMC's complaint handling and investigation procedure. IMC will continue to work closely with the community through all phases of the Project in mitigating noise impacts.

Wollondilly Shire Council - Wastewater

Council comment:
The review of the Submission Report by staff with technical expertise in different aspects associated with the Modification Application identified the following shortcomings in response to these issues raised in Council's submission:

- *The considered continued absence of a wastewater report and associated site plans showing the location of any on-site sewage management system or related effluent disposal area.*
- *….*

The reasoning in relation to each of the above residual concerns is attached to this correspondence as assistance.

Attachment 1 – PRODUCTION OF A WASTEWATER REPORT
Overview of Council's submission
There is a considered absence of a wastewater report associated with these activities as site plans showing the location of any on-site sewage management system or related effluent disposal area. It is considered important and requested that the DPIE require this information prior to Determination given the large areas of hard surface site coverage and proximity to Foot Onslow Creek.
Comments on the Submissions Report
The following is based on updated comments provided by Council's Team Leader Environmental Health
The submissions report advises that the project sewerage treatment facility will be connected to a centralised sewerage system, should one with sufficient capacity become available in the area. Sydney Water typically provides reticulated wastewater disposal to towns and villages. The connection to a centralised sewerage system would appear to be outside the scope of Sydney Water's scope, and capacity at this point in time. There are consequently concerns over the treatment of sewerage with potential associated environmental impacts if this connection cannot be provided
As an alternative, the application is noted to propose a sewage treatment plant with surface spray irrigation. However, there is no apparent evidence of where a wastewater report has been provided and similarly, site plans which show the location of any on-site sewage management system or related effluent disposal area. ***To ensure that adequate effluent disposal area/s are provided, taking into account all development upon the site, and relevant buffer distances, a detailed Wastewater Assessment should be provided for review), prior to consent for the project being granted.*** *This Assessment should include a comprehensive assessment of flow rates, details of climate, geology, hydrogeology, topography, soil composition and vegetation coverage of any related effluent application area/s, together with an assessment of the site. Specifications of the sewage treatment plant and operation and maintenance requirements should be required at design stage.*

Attachment 2
Council would expect that the Determination contain the following conditions based on issues raised in its submission as well as review of the Summary Report.
Wastewater Impacts

- *A wastewater report and associated site plans showing the location of any on-site sewage management system or related effluent disposal area be required prior to the commencement of any construction activity.*

Information on the sewerage treatment plant (STP) and irrigation spray area location, construction and operation are provided in Attachment A.

During construction, temporary ablution facilities would be utilized, and a licensed waste removal contractor will remove and dispose of waste water / effluent at a licensed discharge facility as required. As such, the activities would be included in the relevant construction environmental management plan.

The permanent STP and irrigation spray area would be developed during construction of the mine access facilities. As per the indicative project schedule (Table 3-5 of the Modification Report) this is not anticipated to commence until Q3, 2024. Ahead of construction and operation, the proposed irrigation spray area will require an application to vary the Mine's current EPL, and all required waste water assessments and plans required for that application would be undertaken.

The Appin West and Appin North effluent management systems are operated in accordance with the Appin Mine EPL and the Appin Mine Water Management Plan. IMC would prefer to continue to apply this consistent approach in regard to the Project and suggests the relevant Plans would be updated in relation to the Project STP ahead of the construction and operation of the STP (in approximately 2024).

Wollondilly Shire Council - Groundwater

Council comment:
The review of the Submission Report by staff with technical expertise in different aspects associated with the Modification Application identified the following shortcomings in response to these issues raised in Council's submission:

- *….*
- *The completion of a satisfactory detailed groundwater study which considers potential impacts of the installation of the shaft. The intended modelling is welcomed however this is not considered to sufficiently respond to Council's submission.*
- *….*

The reasoning in relation to each of the above residual concerns is attached to this correspondence as assistance.

Attachment 1 – THE COMPLETION OF A DETAILED GROUNDWATER STUDY
Overview of Council's submission
Council's submission expressed concern that the Modification Application does not include a site-specific assessment of potential impacts on the local groundwater environment during the establishment and operation of the Ventilation Shaft that could be based on the Bulli EA. The submission also expressed concern over a number of generic statements over the likelihood of such impacts. It requested a groundwater analysis based on received specialist advice from a structural geologist who is co-author of a draft Characterization and Modelling of Geological Fault Zones Guidelines recently exhibited by the Commonwealth Independent Expert Scientific Committee.

Comments on the Submissions Report
The statement in the Submission Report that "a groundwater assessment was not initially proposed due to the very low level of impact anticipated and that the progressive lining of the shaft with an in-situ concrete lining system will act to reduce the ingress of groundwater into the shaft" is not opposed in principle. However, the description on the establishment of the Shaft in both the Modification Report for the Application and Assessment Report contain a number of statements regarding the interaction with groundwater sources. The assessment of potential impacts from the installation of the shaft broadly in accordance with Section 4.15 of the Environmental Planning and Assessment Act 1979 is therefore viewed as warranted. The Submission Report also states in relation to this matter, IMC has commissioned further groundwater modelling to inform the detailed design of the project, specifically the ventilation shaft construction. The intention to carry out such modelling is welcomed as a means of obtaining a level of understanding over the groundwater environment. However, it does not adequately respond to the requested groundwater assessment based on received specialist advice.
The Submission Report further states in relation to this matter that "the outcomes of the assessment, which is being prepared in consideration of the concerns raised in the submissions (including an assessment of private bores), will be supplied to OPIE upon completion': It is (alternatively to this approach), requested that a groundwater analysis with the following components be carried out, (as requested in Council's submission) to enable the consent authority to adequately carry out its statutory responsibilities:

- *A study of the existing fracture network and groundwater environment in the immediate vicinity of the site to the full depth of the ventilation shaft.*
- *The potential for the sinking of the shaft to enhancing existing geologic fractures or create new fractures.*
- *The potential for groundwater to migrate through any enhanced fracture network including any pathway for its upward migration as a consequence of dewatering operations during the installation and operation of the ventilation shaft.*
- *The potential for impacts to shallow groundwater sources and any interconnected surface waters identified from the above analysis.*

The Submission Report states that the groundwater assessment will be supplied to DPIE upon completion. A condition requiring the completion of the analysis with all components outlined above prior to the commencement of the installation is requested.

Attachment 2 – Recommended Conditions for Inclusion in the Determination
Council would expect that the Determination contain the following conditions based on issues raised in its submission as well as review of the Summary Report.
Water Related Impacts

- *The completion of a satisfactory detailed groundwater study which considers potential impacts of the installation of the shaft as well as private bores and farm dams be required prior to the commencement of any construction activity.*

In accordance with the commitments made in the Submissions Report, HGEO Pty Ltd was engaged to prepare a detailed assessment of the potential impacts of the Project on local groundwater resources. This was provided to the Department in our letter dated 4 October 2021, which can be found on the Departments Major Projects website[2].

The scope of the groundwater assessment considered the information requested by DPIE in their letter dated 12 August 2021, and the submission made by Wollondilly Shire Council in relation to the Modification Report (4 August 2021). In particular, the groundwater assessment focused on:

- Quantification of groundwater 'take' or diversion during shaft sinking operations;
- Predicted impact of groundwater 'take' on local groundwater resources, including bores and farm dams;
- Proposed groundwater mitigation, management and monitoring measures, including the shaft lining and grouting system proposed to minimise ingress of groundwater; and
- Capacity of the existing groundwater access licences to account for predicted groundwater take.

In the Council's letter dated 26 October 2021, the request for the groundwater assessment to consider four matters has been reiterated. The groundwater assessment prepared by HGEO Pty Ltd has considered these matters as follows:

(1) "A study of the existing fracture network and groundwater environment in the immediate vicinity of the site to the full depth of the ventilation shaft."

The hydrogeological model developed for the groundwater assessment utilised data from boreholes S2523 and S2525, which are located immediately adjacent to the locations of the proposed ventilation shafts and were drilled to the full depth of the proposed shafts (refer to Section 2.5). Packer permeability test results conducted in boreholes S2524 and S2525 were used to establish the hydraulic conductivity of the existing surrounding strata. The measured hydraulic conductivity includes the effects of fracture networks intersected by the test holes which extend beyond the full depth of the ventilation shaft. As such, the existing fracture network, or permeability, of the strata has been assessed as part of this study.

The Wandinong Fault is the most significant known geological structure in the vicinity of the proposed shafts. As outlined in Section 3.2, the groundwater assessment considered both the potential for the fault zone being less transmissive (a barrier) and more transmissive (a conduit) than the host formation. The impact of the fault in both scenarios is predcited to be negligible.

(2) "The potential for the sinking of the shaft to enhancing existing geologic fractures or create new fractures."

During shaft excavation, controlled blasts are inherently designed to minimise impact to the surrounding strata, in order to maintain the geotechnical stability of the shaft walls and ensure the safety and efficiency of the shaft sink. Where fractured ground is encountered, as noted in the groundwater assessment, mitigation measures will be implemented during construction (such as targeted and advance pre-grouting). A concrete lining is also installed closely behind the working area during excavation of the shaft.

[2] https://www.planningportal.nsw.gov.au/major-projects/project/40511

The submission made by Council in relation to the Modification Report (4 August 2021) included the following statement:

> *"The Modification Report is noted to indicate a recognition of the potential for impacts on geological structures and groundwater during the installation (sink) of the shaft. However, the wording in relation to the extent and likelihood of impacts within the Modification Report is viewed as being generic in nature. For example, the "Project is unlikely to impact groundwater systems and at the substantial depths of cover in the Project area" and "connective cracking from the ground surface to the mined coal seam is not expected".*

IMC notes that the quoted statements provided by Council in the submission were not made in the Modification Report. IMC appreciates the clarification in the Council's recent letter, that the installation of the shafts does not involve subsidence.

> *(3) "The potential for groundwater to migrate through any enhanced fracture network including any pathway for its upward migration as a consequence of dewatering operations during the installation and operation of the ventilation shaft."*

As outlined in Section 4.2 of the groundwater assessment, depressurisation in all formations from surface to seam is predicted to occur due to construction and operation of the ventilation shafts. The results show a sharp decline in groundwater pressures in the immediate vicinity of the ventilation shafts but subtle water table drawdown. Maximum predicted drawdown at groundwater receptors, including registered bores, farm dams and the Nepean River, is presented in Section 4.3 of the groundwater assessment. Predicted drawdown is negligible at most registered bores, there are negligible predicted impacts on farm dams and measurable drawdown from the Project will not extend to the Nepean River during construction or operation of the shafts. 'Upward migration' of groundwater is not predicted to occur as a result of the shaft sinking or operation.

> *(4) "The potential for impacts to shallow groundwater sources and any interconnected surface waters identified from the above analysis."*

As above, the assessment predicted negligible impacts for local shallow groundwater sources or surface waters.

In the letter dated 26 October 2021, Council have requested the following be provided ahead of determination:

> *"The completion of a satisfactory detailed groundwater study which considers potential impacts of the installation of the shaft as well as private bores and farm dams.*

The letter also provides a recommended condition in relation to this study:

> "*The completion of a satisfactory detailed groundwater study which considers potential impacts of the installation of the shaft as well as private bores and farm dams be required prior to the commencement of any construction activity.***"**

IMC considers that the request and proposed condition have been met by the report prepared by HGEO Pty Ltd (October 2021).

Wollondilly Shire Council – Air Quality

Council comment:

(ii) Technical impacts in regard to groundwater and air quality

The review of the Submission Report by staff with technical expertise in different aspects associated with the Modification Application identified the following shortcomings in response to these issues raised in Council's submission:

- *….*
- *….*
- *The intended air quality monitoring during construction be expanded to occur as part of the operation of the ventilation shaft. The advice provided by South32 at the council workshop that such monitoring is being investigated is welcomed and is recommended to be required as a condition of consent.*

The reasoning in relation to each of the above residual concerns is attached to this correspondence as assistance.

Attachment 1 – AIR QUALITY AND GREENHOUSE GAS ASSESSMENT

Overview of Council's submission

Air quality impacts has been the dominant issue raised by local residents in feedback received to date regarding the proposed ventilation shaft. As a broad position, Council would expect that concerns raised by the local community regarding air quality be adequately addressed during the assessment, construction and operation of the ventilation shaft. Council would also expect as a broad position that the installation of the ventilation shaft would not result in a net adverse impact to local air quality.

Comments on the Submissions Report

The Submission Report is noted to state that air quality monitoring was "not originally proposed based on the recommendation of the specialist Assessment that such monitoring was not needed as the Project would not result in exceedences of NSW EPA air quality impact assessment criteria during construction or operational phases". This position is not supported in principle by Council staff given the potential for emissions beneath the EPA criteria to impact on local air quality and residents

Council's submission also requested a peer review of the Air Quality Assessment based on received related community concerns and the specialised nature of the Assessment. The response by South 32 that "the request for a peer review of the Air Quality and Greenhouse Gas Assessment is considered unnecessary as the potential impacts to sensitive receivers is anticipated to be minor is not viewed as a sufficient response to Council's submission. ***The DPIE is requested to require a peer review as a means of providing a demonstrated transparent response to the community feedback prior to the granting of Determination.***

The Air Quality and Greenhouse Gas Assessment (EMM, 10 June 2021) concluded that the Project would not result in exceedances of NSW EPA air quality impact assessment criteria at any assessment location (receiver), during construction or operational phases.

The EPA's Air Technical Advisory Unit has reviewed the Air Quality and Greenhouse Gas Assessment as outlined in their letter dated 11 November 2021, and noted:

> *"The AQIA does not predict exceedances of the EPA's impact assessment criteria contained in the Approved Methods for Modelling and Assessment of Air Pollutants in NSW."*

and,

"The EPA considers that the AQIA has been conducted in general accordance with the Approved Methods for Modelling and Assessment of Air Pollutants in NSW."

Clarifications in relation to their review have been provided earlier in this letter and confirm the assessment is based on the total ventilation rate, as recommended by EPA's Air Technical Advisory Unit. As the assessment is compliant with the relevant guidelines, further peer review of the Air Quality and Greenhouse Gas Assessment is considered unnecessary

In consideration of the submissions made on the Project, as per the Submissions Report, IMC has committed to developing a site air quality monitoring program for the construction phase of the Project, in consultation with DPIE (refer to Section 6.7.3.2 for more information). This monitoring program would be documented in the relevant Construction Management Plan and has been added to the Project Statement of Commitments. The existing Appin Mine Air Quality and Greenhouse Gas Management Plan will be updated to include the arrangements for operational monitoring for the Site, ahead of the operational phase.

Wollondilly Shire Council – Water Management Plan

Council comment:
Attachment 1 – SITE SPECIFIC WATER MANAGEMENT PLAN
Overview of Council's submission
Council's submission expressed concerns over the adequacy of the intended approach involving the updating of the Appin Mine Management Plan in providing a sufficient water management framework given the questionable direct applicability of this Plan to the ventilation shaft site. It consequently requested that the Determination require a site Water Management Plan that specifically applies to the site that could be based and/or have consistency with the Appin Mine Surface Water Management Plan.
Comments on the Submission Report
The submission report is noted to state that in updating the Plan (the Appin Mine Surface Water Management Plan), the Project must take into consideration the practical elements of construction activities that will be defined in association with the shaft sinking contractor. While this consideration in part responds to the above request in Council's submission, a Site Water Management Plan (within the overall context of the Appin Plan if needed) is still viewed as warranted to provide a framework that is specific to the site. ***The inclusion of a condition for such a Plan is therefore recorded in accordance with Council's submission on the Application.***

Attachment 2 - Recommended Conditions for Inclusion in the Determination
Council would expect that the Determination contain the following conditions based on issues raised in its submission as well as review of the Summary Report.
Water Related Impacts
- *The development of a site specific Water Management Plan that could be based and/or have consistency with the Appin Mine Surface Water Management Plan be required prior to the commencement of any construction activity.*

The following is provided in the Modification Report:

Detailed processes for management of construction water will be developed during detailed design in conjunction with the shaft sinking contractor and in accordance with established surface water management processes detailed in the Mine Surface Water Management Plan [Section 3.7.3.6].

and,

Activities during the construction phase of the Project will be undertaken in accordance with the relevant environmental management plans.

During the operational phase, potential surface water and soil impacts at the Site will be managed in accordance with the existing Appin Mine Water Management Plan, which will be updated to incorporate any site-specific mitigation measures. Furthermore, discharge from the Site will be conducted in accordance with conditions set in the EPL, which will be amended as part of the Project [Section 6.7.3].

It is confirmed that during the construction phase, IMC will prepare a construction environmental management plan which details the processes and controls for management of surface water. This will be aligned with established surface water management processes detailed in the Appin Surface Water Management Plan.

Ahead of operations, the Appin Surface Water Management Plan will be updated, to include operation of the Project site.

Wollondilly Shire Council - Community Engagement

Council comment:
The recent community consultation and further advice over previous and intended consultation by South32 is welcomed. However, feedback received indicates the need for raising awareness of the ventilation shaft and ongoing consultation during its implementation. The implementation of a community engagement strategy that applies to the construction and operation of the ventilation shaft (consistent with the resolution of Council referred to above) is therefore recommended.
Councillors requested the following specific actions to be considered for future community engagement:

- *Installation of an informative sign relating to the project at a safe location, either on the roadside or at the entry gate of the property at 345 Menangle Road.*
- *Consultation is to be extended beyond the residents of Menangle and Douglas Park to include residents of Appin, Picton, Wilton, Razorback and Camden Park.*

Attachment 1 - COMMUNITY ENGAGEMENT
Overview of Council's submission
The submission raised the following concerns over the approach of the community engagement based on advice received from Council's Community Engagement Section

- *The community engagement both undertaken and proposed is more like communication (informing), and consultation with a view to identifying concerns in order to provide relevant information, rather than involving the community in decisions.*
- *The Community Engagement Section also seems more focused on outputs rather than explicitly showing how community concerns were addressed (recognising there are tables present which categorise issues raised through the engagement).*

The submission requested that DPIE require the development and implementation of a community engagement strategy that applies to the construction and operation of the ventilation shaft.
Comments on the Submission Report
The following is based on updated comments provided by Council's Senior Community Engagement Officer
The statement in the Submission Report that the Community and Stakeholder Engagement Strategy (CSES) developed for the Project will continue during the determination process and, if the Project is approved, the construction and operational phases is consistent with the recent resolution of Council and is viewed as positive. However, the commitment to ongoing engagement in Appendix B that IMC will continue to liaise with and provide information regarding surface activities via the IMC Community Consultative Committee, or any other such community group that is deemed appropriate is viewed as .generic and not providing specific details in regard to community and landowner consultation: A more clear commitment in the report to ongoing consultation I communication with landowners and the community in the provision of information, understanding community concerns, and taking appropriate action to address or mitigate those concerns is consequently requested.
In relation to this matter, the further consultation events by South 32 regarding the Ventilation Shaft is viewed as positive in responding to the above comments. It is the preferred position of Council Staff that the Determination not be granted to allow for potential adjustments to the application in response to feedback received as well as incorporation of the consultation event outcomes into the conditions.

Attachment 2 - Recommended Conditions for Inclusion in the Determination
Council would expect that the Determination contain the following conditions based on issues raised in its submission as well as review of the Summary Report.
Community Engagement

- *The development of a community engagement strategy that applies to the construction and operation of the ventilation shaft (consistent with the resolution of Council referred to above) and extends Community and Stakeholder Engagement Strategy (CSES) developed for the Project be required.*

Informative Sign

Design is underway on the informative sign to be erected on 345 Menangle Road. IMC will work with Council in approving the design and appropriate approval pathway prior to erection.

Consultation Area

As noted in the Submissions Report, community interest in the Project has been predominantly local to the Project (within 5km) and most of the feedback and interest received via our Community Information Sessions and Community Call Line has originated from Menangle and Douglas Park.

Community engagement commenced in September 2020. Since this time, IMC has engaged with residents across the Macarthur area, with a focus on the closest communities of Douglas Park and Menangle. The dissemination of information via posted newsletters has targeted over 900 households in the Menangle and Douglas Park areas. Our online communication (including the Project website and email distributions) is also available publicly.

Community engagement has also included the Menangle Advisory Panel (MAP), which is the key stakeholder group for consultation with the local community. It is governed by an independent chairperson and a terms of reference which allows for open and transparent discussion with representatives from the local community, from concept through to the operation (if approval is granted). Project information is also shared with members of the Appin Mine Community Consultative Committee (CCC), which includes representatives from the wider MacArthur region

In response to this feedback, our Bulli Seam Operations Project newsletters, which have a broader distribution area will, in future, include information on the Appin Mine Ventilation and Access Project.

Development of a Community and Stakeholder Engagement Strategy

As outlined in Section 5 of the Modification Report, a detailed Communication and Stakeholder Engagement Strategy (CSES) has been developed for the Project to guide activities associated with stakeholder engagement and management.

The CSES is an internal IMC document which is reviewed and updated regularly to ensure effective, relevant and timely input from stakeholders and the community. The Project CSES:

- profiles the area surrounding the Site.
- identifies key stakeholders.
- identifies potential community views.
- outlines key messages.
- describes consultation processes and engagement mechanisms for the different stages of the Project (the stages being conceptual, approval, construction and operational).

- identifies potential risks and mitigations.

IMC has successfully prepared and implemented several CSES across its operations and projects.

As outlined in the engagement strategy (Section 5.1.1 of the Modification Report) the level of engagement and delivery methods in the CSES vary based on the level of interest from or potential impact on the stakeholder. This includes varying engagement types from inform (providing the stakeholder with balanced and objective information to assist with understanding) to consult (where feedback is actively sought).

It is confirmed that engagement in accordance with the CSES will continue throughout the determination process and, if the Project is approved, through the construction and operational phase of the Project. The approach to the continued implementation of the CSES during construction and operation is included in Section 5.4 of the Modification Report.

Commitments regarding ongoing consultation

The Statement of Commitments (Appendix B of the Modification Report) includes existing commitments that relate to the current operation of the Bulli Seam Operations Project (as per MP 08_0150) and additional commitments for the Project including:

- IMC will continue to liaise with and provide information regarding surface activities via the IMC Community Consultative Committee, or any other such community group that is deemed appropriate (Existing).
- IMC will continue to operate the 24-hour telephone line to provide an alternative method for public information (Existing).
- IMC will continue to liaise with and provide information regarding Project construction via the Menangle Advisory Panel (Proposed).

Information regarding the approach to ongoing engagement during construction and operation under the CSES is included in Section 5.4 of the Modification Report.

Incorporation of feedback received from the community and stakeholders

As outlined in Section 5.1.1 of the Modification Report, feedback received from all stakeholders during consultation is shared with the Project team via a register. Feedback is investigated and a response is provided to the stakeholders with regards to the outcome or further actions/mitigations being undertaken, where appropriate. Examples of instances where community feedback has been incorporated into the Project are provided in Section 6.1.3.4 of the Submissions Report.

IMC have been undertaking engagement and consultation via numerous forums since September 2020. The primary mechanisms for receiving and responding to feedback during this period have included:

- Consultation with representatives of the local community via the MAP (refer to the Project website for meeting minutes[3]) and the CCC.
- IMCs 24-hour telephone line.
- IMCs community information email address.
- Meeting individually with nearby residents, including commencing proactive mitigation works at properties.
    - Community information sessions (both in person and online) in July, October and November 2021.
    - The public Modification Application submissions process.

Recently, IMC held a number of targeted Community Information Sessions. Over four days approximately 41 groups visited, seeking further information relating to the Project. The sessions demonstrated the effective work being achieved by the MAP in adequately raising queries from a community perspective, as the questions and concerns raised were generally consistent with those identified by the MAP during our meetings.

As noted above, consultation will continue in accordance with the CSES, and opportunities to receive and incorporate feedback will be ongoing.

[3] https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/appin-mine-ventilation-and-access-project/appin-mine-menangle-advisory-panel

Wollondilly Shire Council - Road Design

Council comment:
Council's submission provided a number of conditions provided by council's Assets, Transport and Engineering Team on the design of the intersection, road design and traffic management. It is noted that consultation with council has been occurring with the applicant to progress the design of the road intersection. The Team Leader has further advised that updated conditions for inclusion in the Determination based on the outcomes of this discussion as soon as practically possible.
In relation to this matter, Council's submission requested that a detailed reviews should be conducted with council at the design stage, construction phase and approval stage. The Submission Report indicates this timing may not occur in stating "the design of the intersection is a high priority and all necessary approvals will be obtained". Updated comments provided by the Team Leader in relation to this timing is presented in the attachment for consideration and response.

Attachment 1 - TRAFFIC MANAGEMENT
Overview of Council's submission
Council's submission stated that a detailed design and construction phase review and approval stage should be conducted with Council prior to development works on site commencing. It also stated that there is limited details on the proposed road property widening required for the intersection and that a detailed plan should be provided on any road widening proposed or the arrangements to be made for the placement of public infrastructure on private land. In addition, it provided a recommended condition "To ensure traffic is adequately managed during the construction phase of the development, the construction of the Ventilation Shaft should not commence until a Certificate of Practical Completion for the site access intersection is issued by Council'.
Comments on the Submissions Report
The following updated comments have been provided by Council's Engineering Development Leader.
Council has concerns over the management of construction traffic for the shaft construction stages. A satisfactory permanent access is likely to be achieved for management of traffic along Menangle Road. The applicant is in discussions with Council in relation to design requirements, however there are a considerable number of design elements that must be finalised before an approved design can be issued. While it is understood that delays in commencing ground works is critical for the success of the project, there must be controls relating to the staging of construction of adequate site access. Works should not commence until a 100% approved design is reached. There should be an undertaking that site access construction works be completed to the satisfaction of Council within a reasonable timeframe after commencement of first stage works.

As per the indicative project schedule (Table 3-5 of the Modification Report) site intersection works will be completed as a matter of priority, and site establishment activities will occur concurrently to reduce the duration of the Project schedule and the resulting impacts on the community and to prepare the site for the main shaft excavation period.

Work on construction of the intersection would not commence until the relevant approvals for the proposed intersection design are received. During the intersection construction, traffic management will be in place to ensure the road and primary site access for all construction work remains safe and serviceable for road users. Should commencement of the intersection works be delayed traffic management would be utilized, as required, to ensure safe access for traffic during of the site establishment activities. IMC will continue to consult with Wollondilly Shire Council regarding the

intersection upgrade design and will seek the relevant approval under Section 138 of the NSW Roads Act 1993.

Attachment C – Memorandum regarding potential silica emissions (EMM November 2021)

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25 November 2021

Nicola Curtis
Principal Mining Approvals
Illawarra Metallurgical Coal
Nicola.Curtis@South32.net

Re: MOD 3 Appin Mine Ventilation and Access Project - response to submissions on air quality

Dear Nicola,

It is understood that a request for information (RFI) was received from the Department of Planning, Industry and Environment (DPIE), relating to potential silica emissions associated with construction of the project, as follows:

> *"The Department requests that the air quality consultant provide advice on potential health risks associated with silica dust from the stockpiling/bunding of the spoil from the ventilation shafts around the site, particularly given it will primarily consist of Hawkesbury sandstone which is known to contain a high silica content. The advice should consider the length of time the stockpiles/bunds may be exposed to wind prior to revegetation."*

In addition, the NSW Environment Protection Authority sought clarification that the assessment of air quality impacts is based on the proposed total ventilation rate.

The following provides a response to the RFI.

1 Response on potential health risks from silica dust

1.1 Introduction

Silica (SiO_2 - silica dioxide) is a naturally occurring mineral which can exist in crystalline or amorphous forms depending on the structural arrangement of the oxygen and silicon atoms. The most common form of crystalline silica is quartz, which is a basic component of sand, stone, granite and many other rocks. Only the crystalline forms are known to increase scar tissue in the lungs and only the respirable particles (those which are capable of reaching the gas exchange region of the lungs) are considered in determining health effects – i.e. respirable crystalline silica. Depending on the level of exposure, inhalation of respirable crystalline silica particles is known to cause silicosis, an inflammation and scarring in the lungs reducing the capacity to absorb oxygen from air. The International Agency for Research on Cancer has classified crystalline silica as a human carcinogen[1].

As outlined in the RFI from DPI, Hawkesbury sandstone has a high silica content and the majority of the spoil excavated from the shafts will be Hawkesbury sandstone (approximately 95%). As reported in Pells (2004), the quartz content of Hawksesbury Sandstone ranges from 58.4% (standard deviation of 13%) to 68%. Secondary quartz and secondary silicates were reported as 6% and 8.4% respectively. Therefore, for the

[1] US Department of Health and Human Services, National Toxicology Program, 12th Report on Carcinogens http://ntp.niehs.nih.gov/ntp/roc/twelfth/profiles/Silica.pdf

purpose of assessing potential impacts from silica dust, a total quartz content of 76.4% is assumed for Hawkesbury sandstone excavated and stockpiled for the project.

1.2 Exposure criteria for silica

Australia has industrial exposure criteria, limiting the allowable concentration of crystalline silica in the workplace environment. However, there are no National or NSW limits for crystalline silica in the ambient air. Several jurisdictions in the US have ambient air quality standards limiting the presence of crystalline silica in ambient air. In 2005, the California Office of Environmental Health Hazard Assessment adopted a chronic Reference Exposure Level (REL) for respirable crystalline silica of 3 µg/m^3 (measured as PM_4). A chronic REL is defined as "an airborne level of a chemical at or below which no adverse health effects are anticipated in individuals indefinitely exposed to that level" and is assessed as an annual average.

EPA Victoria adopted the assessment criterion of 3 µg/m^3 for mining and extractive industries (EPA Victoria, 2007) based on the California REL. Similar to the California REL, the criterion is for chronic exposure and is therefore expressed as an annual average. In Victoria it is applied to the $PM_{2.5}$ size fraction.

The EPA Victoria criterion of 3 µg/m^3 is adopted for this assessment, expressed as an annual average and applied to the $PM_{2.5}$ size fraction of the dust.

1.3 Assessment of ambient concentrations of silica

The Air Quality and Greenhouse Gas Assessment prepared by EMM Consulting Pty Ltd (EMM 2021) presented annual average predictions for $PM_{2.5}$ for the construction phase. The highest predicted annual average $PM_{2.5}$ concentration at an off-site residential location is 0.2 µg/m^3.

Taking the conservative assumption that all $PM_{2.5}$ emissions generated during construction would contain 76.4% silica, the maximum annual average prediction for respirable crystalline silica is 0.15 µg/m^3, or 5% of the adopted assessment criterion. It is expected that the existing ambient background concentrations of respirable crystalline silica would be minimal.

It is noted that the adopted criterion (the REL) is defined by the California Office of Environmental Health as the level below which no adverse health effects are anticipated in individuals indefinitely exposed to that level. With modelling predictions at 5% of the REL, there is no potential health risk from silica dust exposure predicted.

It is also noted that the assessment considered all activities that generate dust emissions, not just those activities involving the handling of spoil containing Hawkesbury sandstone. Therefore, scaling the total modelling prediction to derive a silica dust exposure level is considered conservative.

The form of the adopted criterion is expressed as an annual average, therefore the assessment assumes all dust emissions, including wind erosion from stockpiles, occurs over a period of one year. The emission inventory used for modelling in EMM (2021) did not apply controls for the revegetation of stockpiles over this period.

2 Response to EPA on modelled ventilation rate

The Air Quality and Greenhouse Gas Assessment (EMM 2021) is based on the total ventilation rate, with the 2033 emissions scenario representing the maximum potential total flow. The operational phase assessment, presented in Section 8.3, represents the total ventilation rate for both the 2025 and 2033 scenarios.

As described in Section 7.2.2 of EMM (2021), two fans are assumed to be operating at any one time (i.e. emissions from two fans are accounted for in the model), with the 3rd fan designed for redundancy. Table 7.3 in EMM (2021) presents the 'total flow rate' and the 'flow rate per fan', with the 'total flow rate' being the split between the two fans. The 'emission rates' in Table 7.3 of EMM (2021) are per fan.

Yours sincerely

Ronan Kellaghan
Associate - Air Quality
rkellaghan@emmconsulting.com.au

References

EMM (2021), Appin Mine Ventilation and Access Project, Air Quality and Greenhouse Gas Assessment, June 2021

EPA Victoria (2007), Victoria State Environment Protection Policy (Air Quality Management) for Mining and Extractive Industries

Pells P. J. N., (2004), Substance and mass properties for the design of engineering structures in the Hawkesbury Sandstone, Australian Geomechanics Vol 39 No3, September 2004.

Attachment D – Memorandum regarding selection of background monitoring locations (RWDI, November 2021)

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ABN: 86 641 303 871

MEMORANDUM

DATE:	25 November 2021	**RWDI REFERENCE #:** 2101914
TO:	Nicola Curtis	**Email:** Nicola.Curtis@south32.net
FROM:	Justin Leong	**Email:** justin.leong@rwdi.com
	John Wassermann	**Email:** john.wassermann@rwdi.com
RE:	**Response to DPIE Request for Information – Noise Criteria Appin Mine Ventilation and Access Project Menangle, NSW**	

Dear Nicola,

This memorandum has been prepared in response to the request for information (RFI) provided by the NSW Department of Planning, Industry and Environment (DPIE) with respect to the Noise and Vibration Impact Assessment (NVIA), RWDI#2101914, dated 24 June, 2021 for the Appin Mine Ventilation and Access Project MP08_0150-Mod-3.

The RFI from the DPIE states the following:

"2. Background Noise

The Noise and Vibration Impact Assessment (NVIA) (Wilkinson Murray, June 2021) indicates that background noise monitoring was undertaken at the four locations representing the "most potentially affected sensitive receivers near the Site". However, the Department notes that background noise monitoring was not undertaken at the nearest affected premises (NAPs) to the site (i.e. R2 or R3). The Department considers that background noise monitoring undertaken at M2 and M3 are likely to have been influenced by traffic noise at the Finns Road and Menangle Road intersection and traffic along Finns Road (south) (refer to Figure 5 of the NVIA). Noise at location M4 would be heavily influenced by traffic noise along the Hume Motorway. M1 is considered to be most representative of NAP background noise levels, however may also be influenced by traffic noise along Menangle Road when compared to R2 or R3 which are both set further back from the road. The Department requests further justification for conducting background noise monitoring at these locations, and implications for noise predictions associated with the project considering the above"

Existing Environment

Noise Monitoring Locations Sensitive Receivers

To provide context, the sensitive residential receivers identified in the NVIA are presented in Table 1 and shown in Figure 1. In addition the noise monitoring locations are also shown in Figure 1.

The receiver identified as "R1", owned by the Proponent, is located within the construction boundary, is currently unoccupied, and will be demolished as part of the preparatory works or utilised by the Project for the duration of the Project construction and operation phase. R1 is therefore not considered as a sensitive receiver in this assessment.

Table 1: Sensitive Receivers

Receiver ID	Address
R1	345 Menangle Road, Menangle
R2	310 Menangle Road, Menangle
R3	30 Finns Road, Menangle
R4	15 Finns Road, Menangle
R5	3 Finns Road, Menangle
R6	430 Menangle Road, Menangle
R7	436 Menangle Road, Menangle
R8	450 Menangle Road, Menangle
R9	470 Menangle Road, Menangle
R10	475 Menangle Road, Menangle
R11	485 Menangle Road, Menangle
R12	486 Menangle Road, Menangle
R13	775 Moreton Park Road, Menangle
R14	251 Menangle Road, Menangle
R15	235 Menangle Road, Menangle
R16	310 Menangle Road, Menangle
R17	195 Menangle Road, Menangle
R18	110 Finns Road, Menangle
R19	25 Carrolls Road, Menangle
R20	47 Carrolls Road, Menangle
R21	45 Finns Road, Menangle
R22	45 Carrolls Road, Menangle
R23	35 Finns Road, Menangle
R24	5 Finns Road, Menangle

Receiver ID	Address
R25	454 Menangle Road, Menangle
R26	460 Menangle Road, Menangle
R27	474 Menangle Road, Menangle
R28	514 Menangle Road, Menangle
R29	490 Menangle Road, Menangle
R30	510 Menangle Road, Menangle
R31	520 Menangle Road, Menangle
R32	530 Menangle Road Douglas, Park
R33	516 Menangle Road, Menangle
R34	165 Carrolls Road, Menangle
R35	115 Carrolls Road, Menangle

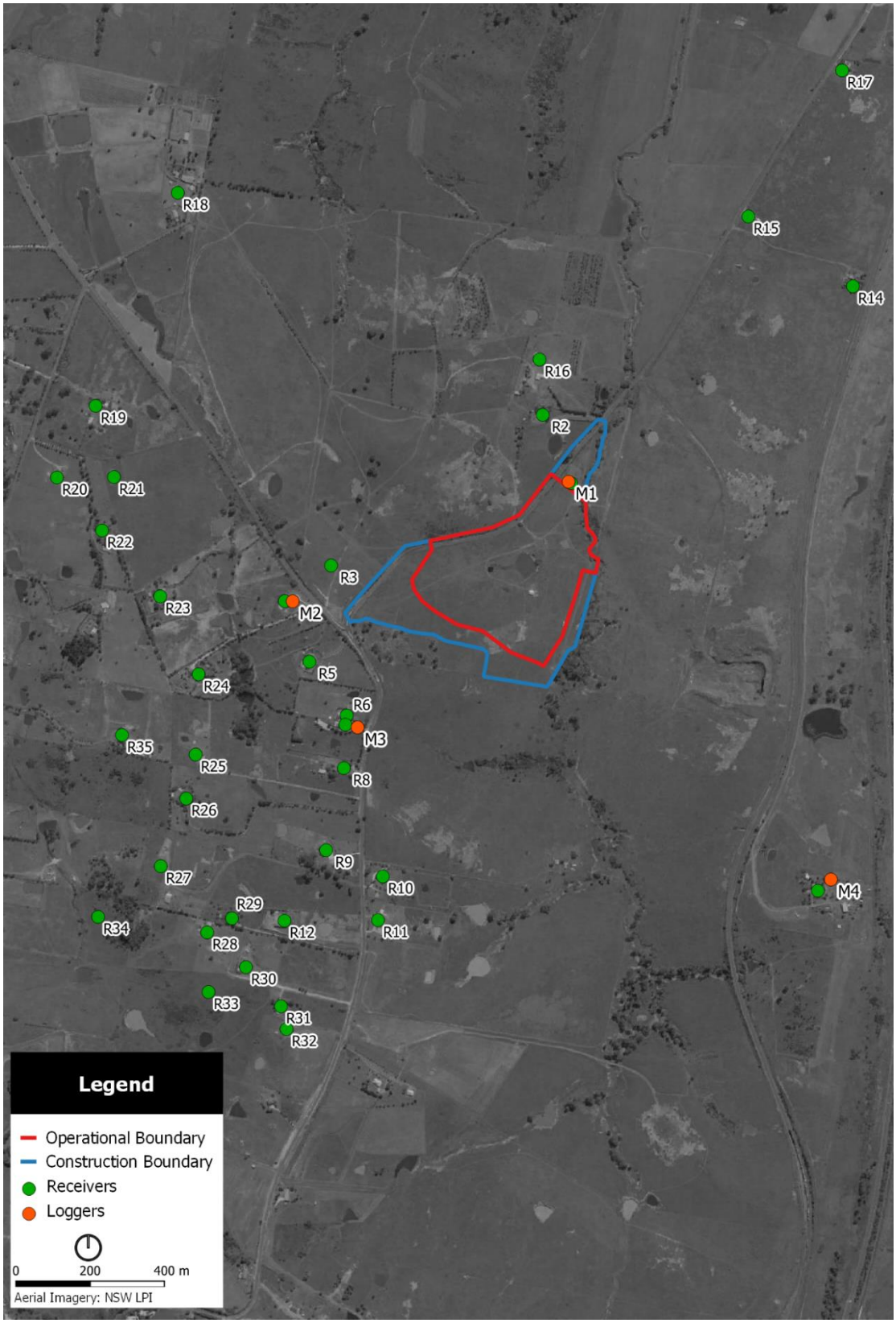


Figure 1: Noise Monitoring Locations and Sensitive Receivers

Measured Noise Levels

The unattended noise monitoring was conducted in October and November 2020 to quantify the existing ambient noise levels at the sensitive receivers. The results of the noise monitoring are summarised in Table 2.

As noted in the NVIA, some level of insect noise was noted at some locations during site visits and through aural analysis of the logger data. Accordingly, the minimum rating background levels (RBL) for the day, evening and night time assessment periods, which have been confirmed as not being affected by insect noise via aural analysis, were used to represent existing background noise levels at sensitive receivers considered in the EIS noise assessment. These RBL values are highlighted in Table 2 via bold text.

Table 2: Ambient Noise Monitoring Results

Monitoring Location	Monitoring Period	Time of Day [a]	Noise Level (dBA)	
			RBL $L_{A90, period}$	$L_{Aeq,period}$
M1 – 345 Menangle Road, Menangle	19/10/20 – 03/11/20	Day	43	62
		Evening	41	62
		Night	39	56
	11/11/20 – 23/11/20	Day	40	64
		Evening	**39**	**59**
		Night	**34**	**55**
M2 –15 Finns Road, Menangle	19/10/20 – 03/11/20	Day	41	65
		Evening	42	62
		Night	39	58
	11/11/20 – 23/11/20	Day	**38**	**63**
		Evening	43	60
		Night	39	59
M3 – 436 Menangle Road, Menangle	19/10/20 – 03/11/20	Day	42	64
		Evening	41	60
		Night	40	60
	11/11/20 – 23/11/20	Day	40	64
		Evening	42	59
		Night	40	55
M4 – 775 Moreton Park Road, Menangle	19/10/20 – 03/11/20	Day	48	65
		Evening	44	62
		Night	39	58

a. Day = 7.00am – 6.00pm; Evening = 6.00pm – 10.00pm; Night = 10.00pm – 7:00am

Suitability of Noise Monitoring

The noise monitoring locations presented above were selected as they were considered representative of the noise conditions at the nearest, potentially most affected receivers to the site.

In response to the DPIE's concern that monitoring location M1 may not be suitable due to receivers R2 and R3 being set further back from Menangle Road than location M1, we note that Menangle Road carries low volumes of intermittent traffic, where there are frequent periods of no traffic along this roadway. The L_{A90} descriptor (which is used to calculate the RBL) quantifies the noise level that is exceeded for 90% of the measurement period and, given the intermittent traffic flow along Menangle Road, the L_{A90} would be representative of the noise level during the lulls between individual car pass-bys. Considering this, it can be concluded that the measured L_{A90} will not vary appreciably with distance from Menangle Road and so the L_{A90} measured at monitoring location M1 will be representative of the background noise levels at receivers R2 and R3.

We also note that traffic flow along Finns Road, similar to Menangle Road, is also intermittent in nature with frequent periods of no traffic. Therefore, a similar line of reasoning as above can be applied to conclude that the background noise levels measured at monitoring locations M2 and M3 will be representative of the noise conditions at the residential receivers along Finns Road and as well as the receivers further to the west of the site.

We agree with the DPIE's comment that the measured L_{A90} at monitoring location M4 could be influenced by traffic noise from the Hume Motorway as traffic flow along the Motorway will be more continuous in nature. However, this monitoring location was selected to capture the representative noise environment of the residential receivers near the Hume Motorway, such as R13, R14, R15 and R17, and not for residential receivers closer to the site such as R2 and R3. Further, as inferred from the discussion below and as per Table 2, the measured noise levels at location M4 were not used to establish the RBLs at any of the identified receivers.

It is stressed that close to four weeks of noise monitoring has been conducted at monitoring locations M1, M2 and M3, and over two weeks of monitoring conducted at location M4. This has yielded far more than 7 days of noise data that is unaffected by inclement weather as recommended by the EPA's Noise Policy for Industry 2017.

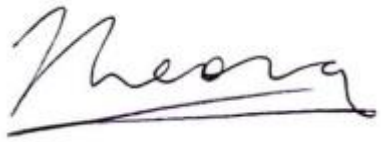
Furthermore, to provide a conservative assessment, the lowest RBLs measured during the day, evening and night time periods across all four noise monitoring locations have been adopted (identified in bold in Table 2) and applied to all identified residential receivers in determining the Project Noise Trigger Levels.

Given all of the above, it is reasonable to conclude that the noise monitoring conducted on site as part of the NVIA provides a comprehensive survey of the noise environment at the identified residential receivers, and that the approach taken in formulating noise emission criteria for the development is conservative in nature to ensure that noise impacts at the residences are minimised.

We trust this information is sufficient. Please contact us if you have any further queries.

Yours Sincerely,

RWDI



Justin Leong, M.Des.Sc. (Audio & Acoustics), MAAS
Acoustical Consultant

John Wassermann, B.Eng. Mech, M.Eng.Sc., GradDipMgnt, MAAS, C.P.Eng. (Civil/ Mech)
Senior Technical Director

Attachment E – Addendum, Appin Mine Ventilation and Access Project BDAR – Targeted Surveys (Niche Environment and Heritage, November 2021)

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Excellence in your environment

16 November 2021

Nicola Curtis
Principal Mining Approvals
Illawarra Metallurgical Coal (IMC)

Dear Nicola,

Re: Addendum – Appin Mine Ventilation and Access Project BDAR – Targeted Surveys

A Biodiversity Development Assessment Report (BDAR) was prepared in June this year as part of the Appin Mine Ventilation and Access Project (the Project) Modification Report (the Modification Report), commissioned by Illawarra Metallurgical Coal (IMC). The Modification Report was submitted to the NSW Department of Planning, Industry and Environment (DPIE) in July 2021. Submissions from the community and agencies (including Environment, Energy and Science [EES] in the DPIE and Wollondilly Shire Council [WSC]) regarding the project were received. Submissions relevant to the BDAR recommended further targeted surveys for threatened species, namely *Pimelea spicata* (Spiked Rice-flower) and *Meridolum corneovirens* (Cumberland Plain Land Snail [CPLS]).

The following information is provided as an Addendum to the submitted BDAR regarding the Project at 345 Menangle Road, Menangle, NSW (the Subject Land[1]). This Addendum addresses those comments from EES and Council regarding threatened species.

Yours sincerely,

Stephen Bloomfield
Senior Ecologist and BAM Accredited Assessor (BAAS18054)
Niche Environment and Heritage

[1] Noted to be used interchangeably with 'site' within agency submission and correspondence.

Relevant comments

The comments received by EES and Wollondilly Shire Council relevant to the BDAR and addressed in this Addendum have been summarised below along with Niche's response that was provided in the response to submissions.

EES

- The BDAR states the potential habitat for *Pimelea spicata* is limited to the small area of Plant Community Type (PCT) 849 shrubland, however, EES considers the potential habitat also includes the areas of PCT 849 grassland and PCT 849 woodland.
- In the submission dated 4 August 2021, EES recommended targeted surveys for *Pimelea spicata* be undertaken across the entire area of the PCT 849 identified on the site in accordance with the guidelines ('Surveying threatened plants and their habitats, NSW survey guide for the Biodiversity Assessment Method' [DPIE 2020] and Threatened Biodiversity Data Collection [TBDC] [DPIE 2021]). Alternatively, it was recommended an expert report should be provided stating that the species is unlikely to occur within the PCT 849 areas.
- During the preparation of the response to the submission, Niche wrote to EES stating our position that:
    - Niche agree that further targeted survey for *Pimelea spicata* is required in PCT 849 shrubland and PCT 849 woodland, but do not agree that PCT 849 grassland supports suitable habitat for this plant and, as such, does not warrant targeted surveys.
    - Given the Subject Land's long history of grazing and disturbance, and the extremely low vegetation integrity score (5.9) of the grassland habitat, this vegetation zone is unlikely to support *Pimelea spicata*. In addition, the habitat notes within BioNet for this plant state that Blackthorn (*Bursaria spinosa*) is often present at sites where *Pimelea spicata* is recorded, and may be important in protection from grazing. Hence why the PCT 848 shrubland was targeted. Blackthorn does not occur throughout the grassland area, and as such these open areas of grassland have been subject to grazing pressure for a long time.
- In their response to Niche, EES provided further comment disagreeing with Niche's assessment that the grassland habitat did not provide habitat for *Pimelea spicata*.
- As noted in the Submissions Report (Niche, October 2021), targeted surveys for *Pimelea spicata* within the Subject Land, including within PCT 849 grassland, were arranged, as described below.

Wollondilly Shire Council

- In their submission dated 4 August 2021 (Identification of Biodiversity Values (Section 2: Landscape Values) WSC requested that targeted surveys for CPLS be undertaken at the base of mature trees and in areas of the site supporting woody debris/litter cover, despite the assessment of likely habitat as low in the BDAR.
- Niche provided the following advice to IMC in relation to this submission:
    - CPLS has a low likelihood of occurrence within the Subject Land given a lack of woody vegetation, woody debris and litter cover.

- While it is unlikely the CPLS is present at the base of the isolated tree in PCT 849 woodland, a targeted survey of this area can be undertaken concurrently with the *Pimelea spicata* investigation.

- As noted in the Submissions Report (Niche, October 2021), targeted surveys for CPLS within the Subject Land were arranged, as described below.

Additional Survey at 345 Menangle Road

Methods

Pimelea spicata

Targeted investigations for *Pimelea spicata* were conducted in accordance with DPIE's survey guidelines for plants, 'Surveying threatened plants and their habitats, NSW survey guide for the Biodiversity Assessment Method' (DPIE 2020) and the requirements provided in the TBDC (DPIE 2021). The TBDC states:

Survey: Use flowers to locate and identify as species is inconspicuous. Flowering is unpredictable and rain dependent. Survey 4 weeks after at least a 30 millimetres rainfall event. In drier times plants are often not visible above ground unless soils remain moist. Multiple surveys may be required. Survey at least 3 times, each at least a month apart unless found.

As such, parallel transects were conducted across the Subject Land (Attachment A) on 22 September 2021 by Niche Ecologist Nathan Browne with assistance from Christie Chapman. The survey was undertaken around four weeks after a rainfall event of greater than 30 millimetres (25 August) (Bureau of Meteorology [BoM] 2021) (Attachment B). Subsequent to this survey, analysis of the survey tracks identified that they deviated slightly from the guidelines (DPIE 2020). To rectify this issue, an additional targeted survey was conducted on 11 November 2021 by Niche Ecologists Nathan Browne and Sophia Dunn (Attachment A). The survey was undertaken around four weeks after a rainfall event of greater than 30 millimetres (14 October) (BoM 2021) (Attachment B).

Immediately prior to each targeted investigation, a reference site at Mountbatten (Douglas Park), known to retain a population of *Pimelea spicata* individuals, was visited. The reference site occurs approximately 2.5 kilometres south of the Subject Land. Flowering individuals were observed at this site on both occasions.

Cumberland Plain Land Snail

A survey targeting the CPLS was conducted around the isolated tree in PCT 849 woodland (Attachment B). This involved the researcher searching underneath fallen debris and accumulation of leaf litter at the base of the eucalypt tree for approximately 10 minutes, searching for live individuals or their discarded shells; in accordance with TBDC shells indicate the presence of CPLS.

Where any shells were observed, these were sent off to Dr Stephanie Clark (Director at Invertebrate Identification Australasia) for identification. Dr Clark is an expert in invertebrate taxonomy, specialising in marine and non-marine molluscs, and known expert on the CPLS.

Results

At the completion of the field survey:

- No *Pimelea spicata* individuals were observed within the Subject Land.
- No living CPLS individuals or their discarded shells were observed.
- Numerous snail shells were collected during the parallel transects. These were identified by Stephanie Clark as the introduced *Cornu aspersum* (Common Garden Snail) and *Bradybaena similaris* (Asian trampsnai).

Subsequent to the field survey, DPIE was consulted regarding whether any further site inspections were required for *Pimelea spicata* based on:

- The targeted investigation coinciding with flowering individual present at the reference site; and
- Survey conducted four weeks after a suitable rain event (>30 millimetres as stipulated in TBDC [DPIE 2021]).

DPIE advised that no further site inspections were required (Attachment C).

Conclusion

In line with the BDAR:

- The proposed Appin Mine Ventilation and Access Project will not impact any *Pimelea spicata* or CPLS individuals.
- Neither species is required to be offset under the Biodiversity Offsets Scheme (Section 6, NSW *Biodiversity Conservation Act 2016*).
- The offset obligation for the Project, provided within Section 4 of the BDAR, is to remain the same, being:
    - Two ecosystem credits for PCT 849.
    - No species credits.

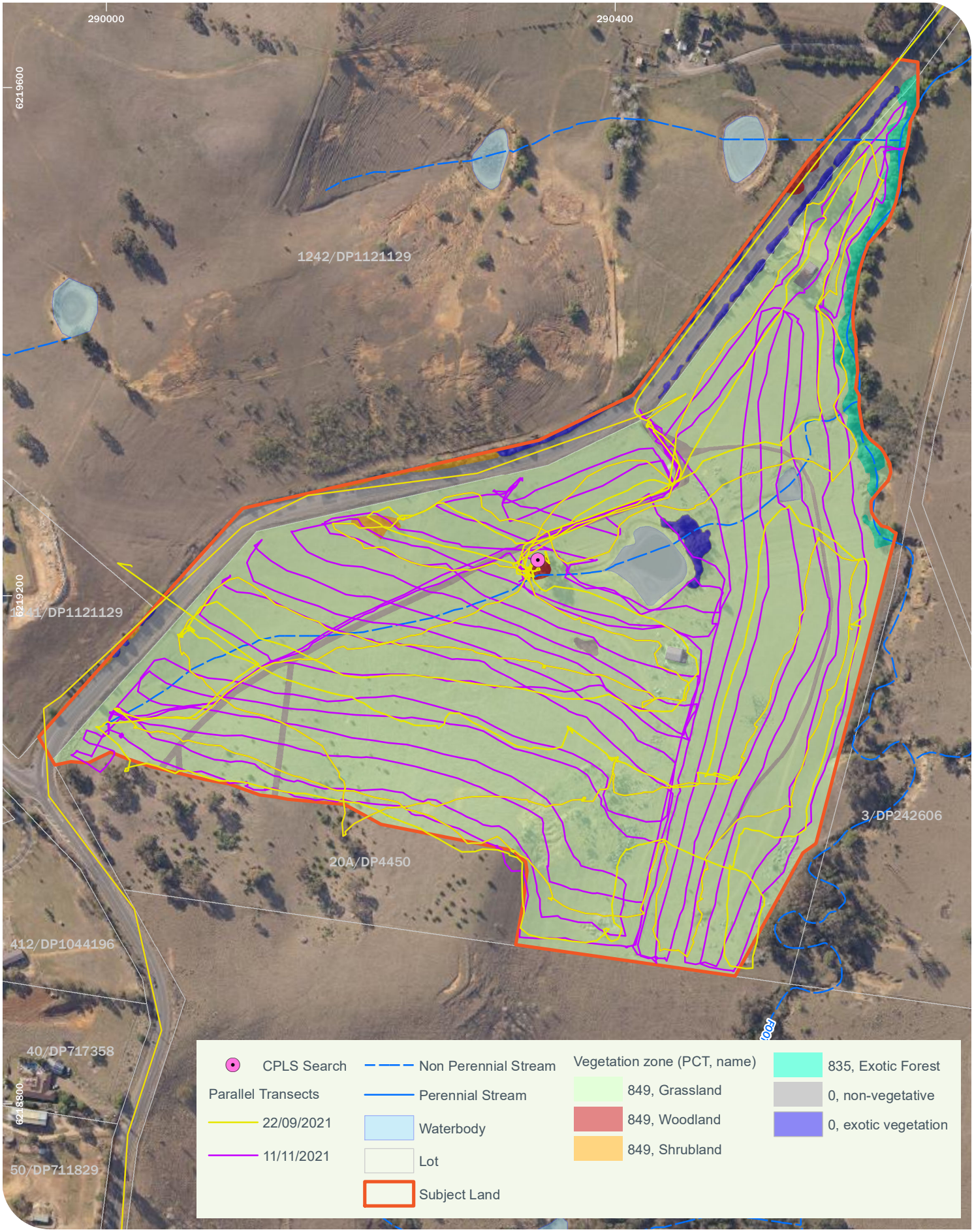
References

Bureau of Meteorology (2021) Daily rainfall, Menangle Bridge (Nepean River). http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=136&p_display_type=dailyDataFile&p_startYear=&p_c=&p_stn_num=068216 (accessed September 2021).

DPIE (2021) BioNet Threatened Biodiversity Data Collection. Department of Planning, Industry and Environment. http://www.bionet.nsw.gov.au/ (accessed October 2021).

DPIE (2020) Surveying threatened plants and their habitats, NSW survey guide for the Biodiversity Assessment Method. State of NSW and Department of Planning, Industry and Environment.

Attachment A. Figure



niche Environment and Heritage

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m
GDA 1994 MGA Zone 56

Threatened Species Survey Effort
Appin Mine Ventilation and Access Project

Niche PM: Stephen Bloomfield
Niche Proj. #: 6418
Client: Illawarra Metallurgical Coal

Drawn by: Neil Berry File: T:\spatial\projects\a6400\a6418_AppinMineAccessandVentilation_BDAR_NSW\Maps\report\Targetted Surveys\6418_Figure_1_SiteMap.mxd Last updated: 11/16/2021 11:12:35 AM

v2.0

Attachment B. Rainfall Data (BoM)

Daily rainfall

Menangle Bridge (Nepean River)

About this page

1 year of data | All years of data | PDF

Observations of Daily rainfall are nominally made at 9 am local clock time and record the total for the previous 24 hours. Rainfall includes all forms of precipitation that reach the ground, such as rain, drizzle, hail and snow. About rainfall data

Station: Menangle Bridge (Nepean River) Number: 68216 Opened: 1963 Now: Open
Lat: 34.12° S Lon: 150.74° E Elevation: Unknown Details

Show in table...

Key: Units = mm *12.3* = Not quality controlled. ↓ = Part of accumulated total
28.0 Move mouse over rainfall total to view the period of accumulation.

2021	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Graph												
1st	0	0	0	0	0	0	1.0	0	0	4.0	0	
2nd	3.0	30.0	0	0	0	0	3.0	0	0	15.0	0	
3rd	12.0	0	0	0	0	0	0	1.0	0	2.0	0	
4th	1.0	0	0	0	0	7.0	0	0	0	0	0	
5th	8.0	0	0	0	14.0	0	1.0	0	11.0	0	47.0	
6th	0	0	0	0	17.0	0	0	0	0	0	0	
7th	0	3.0	0	0	45.0	0	0	0	0	0	2.0	
8th	0	0	0	0	0	0	0	0	0	0	20.0	
9th	0	0	0	0	0	7.0	0	0	0	0		
10th	0	0	0	0	0	0	6.0	0	0	0		
11th	0	0	0	0	1.0	6.0	0	0	0	10.0		
12th	0	0	1.0	0	9.0	0	0	0	0	2.0		
13th	0	21.0	0	0	1.0	0	0	0	0	9.0		
14th	0	3.0	16.0	0	0	0	0	0	6.0	13.0		
15th	0	0	5.0	0	0	0	0	0	0	0		
16th	0	0	0	0	0	0	2.0	0	0	0		
17th	0	0	1.0	3.0	0	7.0	0	0	0	0		
18th	0	0	3.0	0	0	0	0	0	0	0		
19th	0	6.0	28.0	0	0	1.0	0	0	0	0		
20th	1.0	0	13.0	0	0	0	0	0	0	1.0		
21st	0	0	86.0	0	0	0	0	0	0	7.0		
22nd	0	0	36.0	0	0	0	0	0	0	0		
23rd	0	0	41.0	0	0	0	1.0	0	0	0		
24th	0	0	32.0	0	5.0	0	1.0	21.0	0	12.0		
25th	0	5.0	0	0	2.0	1.0	1.0	24.0	0	0		
26th	0	12.0	0	0	0	0	0	0	2.0	0		
27th	0	0	0	0	0	0	0	0	0	0		
28th	16.0	0	0	0	0	0	0	0	0	0		
29th	1.0		0	0	0	0	0	0	0	0		
30th	13.0		0	0	0	10.0	0	0	5.0	0		
31st	3.0		0		0		0	0		0		
Highest Daily	16.0	30.0	86.0	3.0	45.0	10.0	6.0	24.0	11.0	15.0	47.0	
Monthly Total	58.0	80.0	262.0	3.0	94.0	39.0	16.0	46.0	24.0	75.0		

Annual total to Oct this year = *697.0* mm View all monthly data Plot year of daily data

Attachment C. DPIE correspondence

From: Richard Bonner
To: Stephen Bloomfield
Subject: RE: Bulli Seam Operations Modification 3 - Appin Mine Ventilation and Access Project (MP08_0150 MOD 3)
Date: Friday, 15 October 2021 2:23:58 PM

As discussed, yes I did mean to advise that additional visits to the development site are not required. Also, in relation my advice on an acceptable distance of a subject site from a reference site, this needs to considered on a case-by-case basis. Up to 10km may be acceptable but it will depend on a range of factors. DPIE advice should be sought on whether the location of a particular reference site is acceptable.

Regards

Richard Bonner
Senior Conservation Planning Officer, Greater Sydney Branch

Biodiversity and Conservation Division | Biodiversity, Conservation and Science Directorate | Environment, Energy and Science Group
T 02 9995 6917 | **E** richard.bonner@environment.nsw.gov.au
12 Darcy Street, 4 Parramatta Square, PARRAMATTA NSW 2150 | Locked Bag 5022
www.dpie.nsw.gov.au

The Department of Planning, Industry and Environment acknowledges that it stands on Aboriginal land. We acknowledge the traditional custodians of the land and we show our respect for elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

Please note, I work part-time. My usual work days are: Monday, Thursday and Friday.
From: Stephen Bloomfield <sbloomfield@niche-eh.com>
Sent: Friday, 15 October 2021 12:57 PM
To: Richard Bonner <Richard.Bonner@environment.nsw.gov.au>
Subject: RE: Bulli Seam Operations Modification 3 - Appin Mine Ventilation and Access Project (MP08_0150 MOD 3)

Hi Richard,

Thankyou for getting back to me. I just had a query around your reply. I tried calling just now and left a messge. You state “additional visits to the *reference* site are not required”. I assume you mean additional visits to the *development* site are not required?

Could you please clarify?

Kind regards,

Stephen Bloomfield *BAppSc (Coastal Mgmt), Accredited BAM Assessor*
Senior Ecologist
0458 000 560

NSW South Coast – Illawarra

niche Environment and Heritage
Excellence in your environment

NSW Head Office – Sydney
L4/460 Church Street
Parramatta NSW 2150
02 9630 5658
niche-eh.com

From: Richard Bonner <Richard.Bonner@environment.nsw.gov.au>
Sent: Thursday, 14 October 2021 5:27 PM
To: Stephen Bloomfield <sbloomfield@niche-eh.com>
Subject: RE: Bulli Seam Operations Modification 3 - Appin Mine Ventilation and Access Project (MP08_0150 MOD 3)

Hi Stephen,

Up to 10 km away is ok as long as the same rain fell. As your reference site is only 3-ish km, it will be acceptable. Additional visits to the reference site are not required.

Regards

Richard Bonner
Senior Conservation Planning Officer, Greater Sydney Branch

Biodiversity and Conservation Division | Biodiversity, Conservation and Science Directorate | Environment, Energy and Science Group
T 02 9995 6917 | **E** richard.bonner@environment.nsw.gov.au
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NSW GOVERNMENT | Planning, Industry & Environment

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Please note, I work part-time. My usual work days are: Monday, Thursday and Friday.
From: Stephen Bloomfield <sbloomfield@niche-eh.com>
Sent: Thursday, 14 October 2021 4:27 PM
To: Richard Bonner <Richard.Bonner@environment.nsw.gov.au>
Subject: Re: Bulli Seam Operations Modification 3 - Appin Mine Ventilation and Access Project (MP08_0150 MOD 3)

Hi Richard,

The reference site was just north of Douglas Park. I'm also hoping to use this as reference for a project near eastern creek/prospect.

Thanks.

Steve

STEPHEN BLOOMFIELD
Ecologist
Niche Environment and Heritage
0458 000 560 | niche-eh.com

From: Richard Bonner <Richard.Bonner@environment.nsw.gov.au>
Sent: Thursday, October 14, 2021 4:18:14 PM
To: Stephen Bloomfield <sbloomfield@niche-eh.com>
Subject: RE: Bulli Seam Operations Modification 3 - Appin Mine Ventilation and Access Project (MP08_0150 MOD 3)

Hi Stephen, can you advise on the location of the reference site.

Regards

Richard Bonner
Senior Conservation Planning Officer, Greater Sydney Branch

Biodiversity and Conservation Division | Biodiversity, Conservation and Science Directorate | Environment, Energy and Science Group
T 02 9995 6917 | **E** richard.bonner@environment.nsw.gov.au
12 Darcy Street, 4 Parramatta Square, PARRAMATTA NSW 2150 | Locked Bag 5022
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Please note, I work part-time. My usual work days are: Monday, Thursday and Friday.

From: Stephen Bloomfield <sbloomfield@niche-eh.com>
Sent: Wednesday, 13 October 2021 8:17 PM
To: Richard Bonner <Richard.Bonner@environment.nsw.gov.au>
Cc: Rose-Anne Hawkeswood <Rose-Anne.Hawkeswood@planning.nsw.gov.au>; Susan Harrison <Susan.Harrison@environment.nsw.gov.au>; BAM_QA <bam_qa@niche-eh.com>
Subject: RE: Bulli Seam Operations Modification 3 - Appin Mine Ventilation and Access Project (MP08_0150 MOD 3)

Hi Richard,

Thankyou for getting back to me and providing that clarification. So I did also visit a reference site where P. spicata was flowering. In conjunction with my site visit being 4 weeks after a 30mm rain event am I still required to undertake the 2 additional visits?

Also, is there a distance from the subject land that the reference site will be deemed inappropriate?

Kind regards,

Stephen Bloomfield *BAppSc (Coastal Mgmt), Accredited BAM Assessor*
Senior Ecologist
0458 000 560
NSW South Coast – Illawarra

niche
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NSW Head Office – Sydney
L4/460 Church Street
Parramatta NSW 2150
02 9630 5658
niche-eh.com

From: Richard Bonner <Richard.Bonner@environment.nsw.gov.au>
Sent: Wednesday, 13 October 2021 4:37 PM
To: Stephen Bloomfield <sbloomfield@niche-eh.com>
Cc: Rose-Anne Hawkeswood <rose-anne.hawkeswood@planning.nsw.gov.au>; Susan Harrison <Susan.Harrison@environment.nsw.gov.au>
Subject: RE: Bulli Seam Operations Modification 3 - Appin Mine Ventilation and Access Project (MP08_0150 MOD 3)

Hi Stephen,

The TSPD Guidelines state 'Survey 4 weeks after at least a 30 mm rainfall event. In drier times plants are often not visible above ground unless soils remain moist. Multiple surveys may be required. Survey at least 3 times, each at least a month apart unless found.' So in answer to your questions:

1. Yes, you may need to survey 2 more times.
2. Each survey must be 4 weeks after a 30mm rain event.

Regards

Richard Bonner
Senior Conservation Planning Officer, Greater Sydney Branch

Biodiversity and Conservation Division | Biodiversity, Conservation and Science Directorate | Environment, Energy and Science Group
T 02 9995 6917 | **E** richard.bonner@environment.nsw.gov.au
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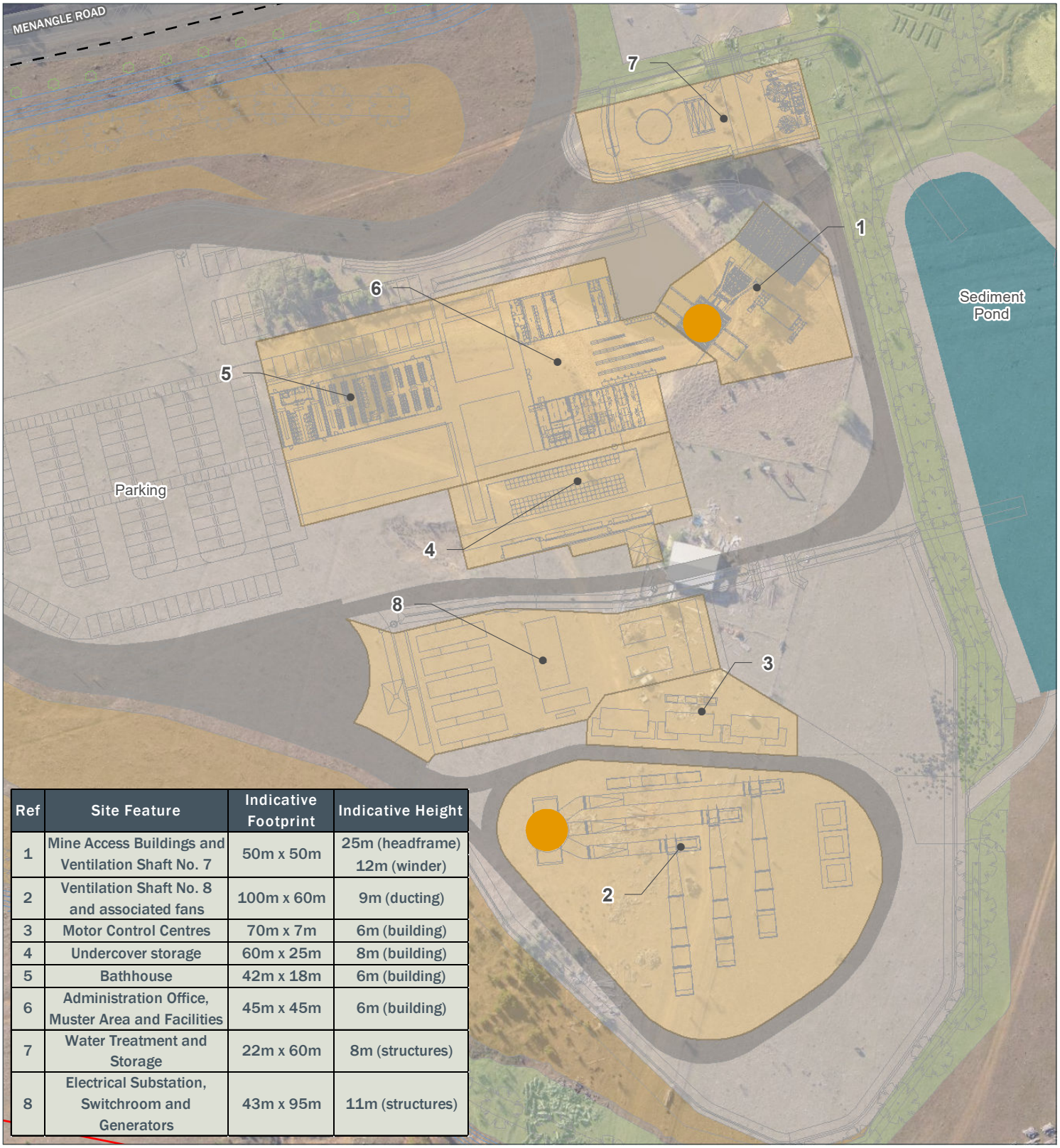
Please note, I work part-time. My usual work days are: Monday, Thursday and Friday.

Attachment F – Concept Plans



Ref	Site Feature	Indicative Footprint	Indicative Height
1	Mine Access Buildings and Ventilation Shaft No. 7	50m x 50m	25m (headframe) 12m (winder)
2	Ventilation Shaft No. 8 and associated fans	100m x 60m	9m (ducting)
3	Motor Control Centres	70m x 7m	6m (building)
4	Undercover storage	60m x 25m	8m (building)
5	Bathhouse	42m x 18m	6m (building)
6	Administration Office, Muster Area and Facilities	45m x 45m	6m (building)
7	Water Treatment and Storage	22m x 60m	8m (structures)
8	Electrical Substation, Switchroom and Generators	43m x 95m	11m (structures)

Subject Area

IMC Owned Land

Planted Tree Screening

Ventilation Shaft

Indicative Operational Layout

Site Infrastructure

General clean water diversion drain

Internal Road

Concept Design Detail

General Hardstand

General Cut Batter

General Fill Batter

Sediment Pond

SOUTH32

FIGURE 4

Concept Site Design - Indicative Dimensions

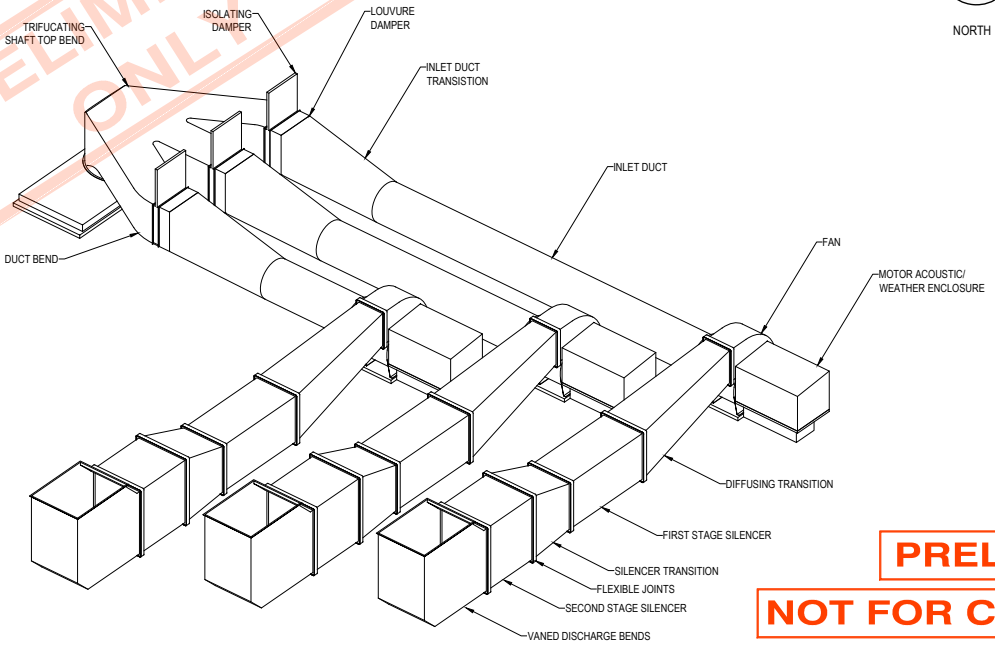
Appin Mine Ventilation and Access Project

N

0 20 40

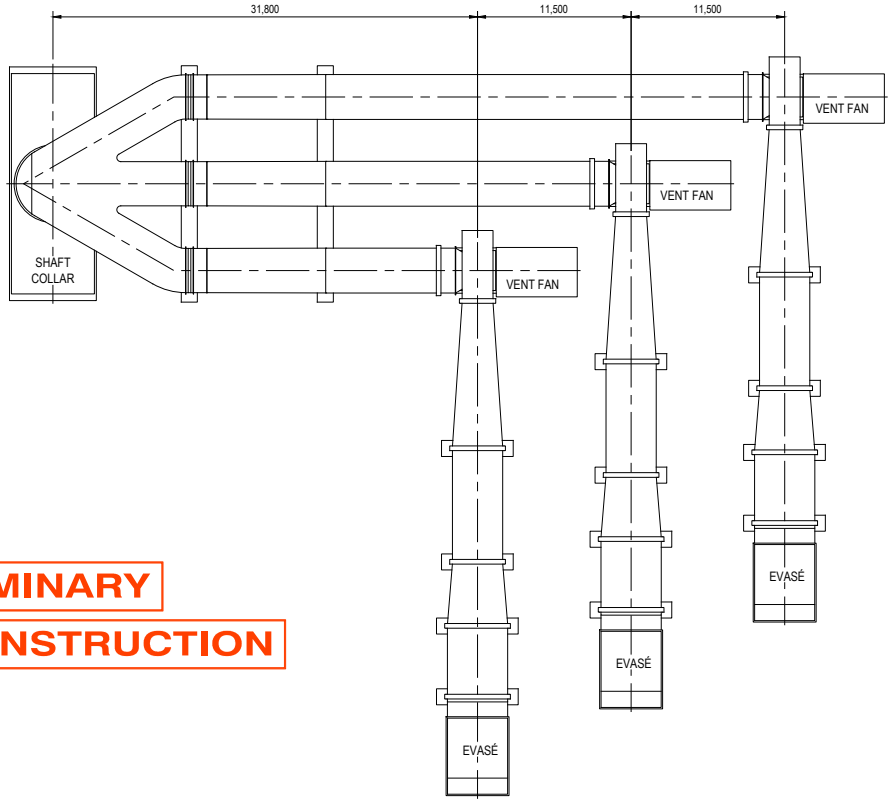
m

GDA 1994 MGA Zone 56



ISOMETRIC VIEW

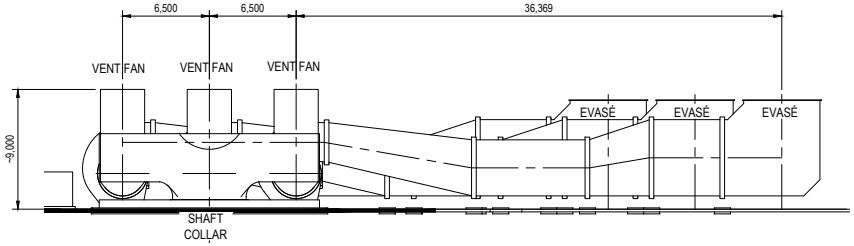
NORTH



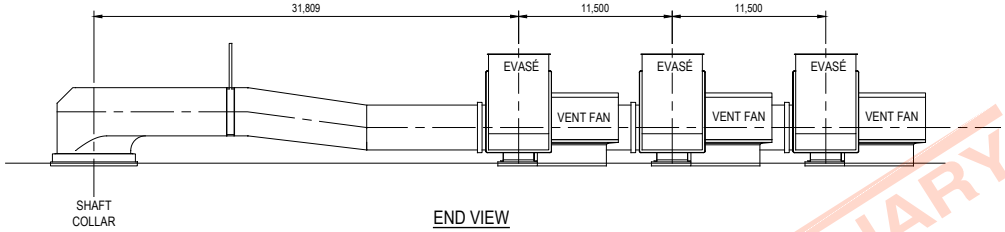
PLAN
SCALE 1:200

PRELIMINARY

NOT FOR CONSTRUCTION



SIDE VIEW
SCALE 1:200



END VIEW
SCALE 1:200

REVISIONS									
REV	DATE	DESCRIPTION	DRN	CKD	ENG	DES MAN	ENG MAN	CLIENT	RPEQ NO.

DRAWN
DRG CKD
DESIGNED
DESIGN CKD
APPROVED

SCALE 1:200

DRAWING COORDINATE SYSTEM: MGA-56 (MAP GRID OF AUSTRALIA ZONE 56, GDA94 DATUM)

ORIGINAL SIZE A1

PROJECT No.

CALIBRE DRG No.

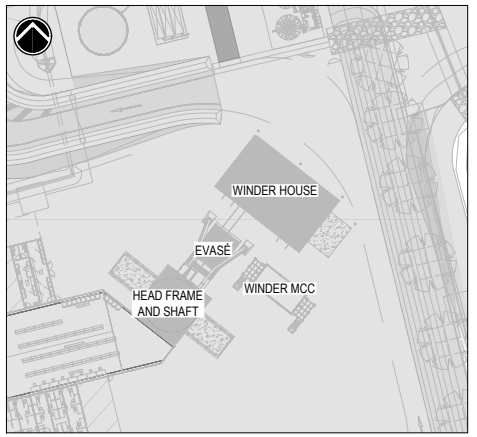
CLIENT DRG No.

REV

TITLE
SOUTH32 ILLAWARRA METALLURGICAL COAL
VENTILATION SYSTEM
CONCEPT FAN AND DUCTWORK PLAN AND ISOMETRIC

PRELIMINARY

NOT FOR CONSTRUCTION



GENERAL ARRANGEMENT
NTS

NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE

SECTION A
SCALE 1:75

PRELIMINARY ONLY

REVISIONS									
REV	DATE	DESCRIPTION	DRN	CKD	ENG	DES MAN	ENG MAN	CLIENT	RPEQ NO.

DRAWN
DRG CKD
DESIGNED
DESIGN CKD
APPROVED

SCALE 1:75

DRAWING COORDINATE SYSTEM: MGA-56 (MAP GRID OF AUSTRALIA ZONE 56, GDA94 DATUM)

ORIGINAL SIZE A1

SOUTH32

PROJECT No.

TITLE
SOUTH32 ILLAWARRA METALLURGICAL COAL
HEAD FRAME & WINDER
CONCEPT DESIGN SECTION AND DETAILS

CALIBRE DRG No.

CLIENT DRG No.

REV