SHENSTONE PARK PSP - PANEL HEARING

Acoustic Evidence

Prepared for:

Donnybrook JV Pty Ltd
Instructed by: Gadens

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Donnybrook JV Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
640.11432-R01-v0.1	28 October 2020	Jim Antonopoulos	GR	JA

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1 Witness Statement

1. My name is Jim Antonopoulos and I am a Principal grade acoustical consultant employed by SLR Consulting Australia Pty Ltd at Level 11, 176 Wellington Parade, East Melbourne, Victoria. I have previously worked for Graeme E. Harding & Associates (1996 to 2003) and Heggies Pty Ltd (2003 to 2010). SLR Consulting Australia Pty Ltd acquired Heggies Pty Ltd in 2010.

2. My academic qualifications include a Bachelor of Applied Science (Applied Physics) and I am a Member of the Australian Acoustical Society (M.A.A.S). A short CV is provided in **Appendix A**.

3. I have worked as an acoustical consultant in Melbourne since 1996. My areas of expertise include building and environmental acoustics. I have undertaken numerous acoustical assessments of transportation, mining and industrial noise projects. In the last five to ten years, I have been heavily involved in planning related acoustical matters and have regularly advised Councils and private developers on such matters, and presented expert testimony in VCAT and in Planning Panel Hearings.

4. With regard to the Shenstone Park Precinct Structure Plan (PSP) I have been directed by Gadens on behalf of Donnybrook JV Pty Ltd (DJV) to prepare this expert witness statement for the Panel Hearing. This Statement provides my findings and position on the matter, and is primarily related to the proposed use of 960 Donnybrook Road, Donnybrook (subject site).

5. My works in relation to this matter have included:

   (a) Review of the provided material associated with the PSP, and in particular the 2017 GHD Pty Ltd *Quarry Impact Assessment* and addendum to that report issued in 2019.

   (b) Preparation of my own 3D computer noise model and predictions of noise from the existing Woody Hill Quarry operations (WA 492), Woody Hill Quarry expansions (WA 6437) and the proposed future Phillips Quarry (WA 6825).

   (c) Review and assessment of operational noise from the existing and future quarry operations to 960 Donnybrook Road.

   (d) Review of blasting noise and vibration impacts to the 960 Donnybrook Road site from existing and future quarry operations.

2 Supplied Information and Information Relied Upon

6. My instructions were provided by Gadens lawyers in their correspondence dated 10 August 2020. These are included in **Appendix D**. Specific instructions were as follows:

   You are instructed to review and provide your professional opinion of the Quarry Impact Assessment and Addendum, so far as they relate to noise and vibration at the Woody Hill Quarry and Phillips Quarry. In particular, you are instructed to focus on the likely acoustic impacts of the Woody Hill Quarry and Phillips Quarry quarrying activities on the Property, and more particularly on the areas within the proposed 550m Sensitive Use Buffers, if quarrying activities were undertaken in accordance with approved Work Authorities 492 and 6437 and proposed work authority 6852.

7. I have been provided with the relevant documents associated with the exhibited PSP as well as information relating to the adjacent quarry operations. The documents that relate to my review are listed below.

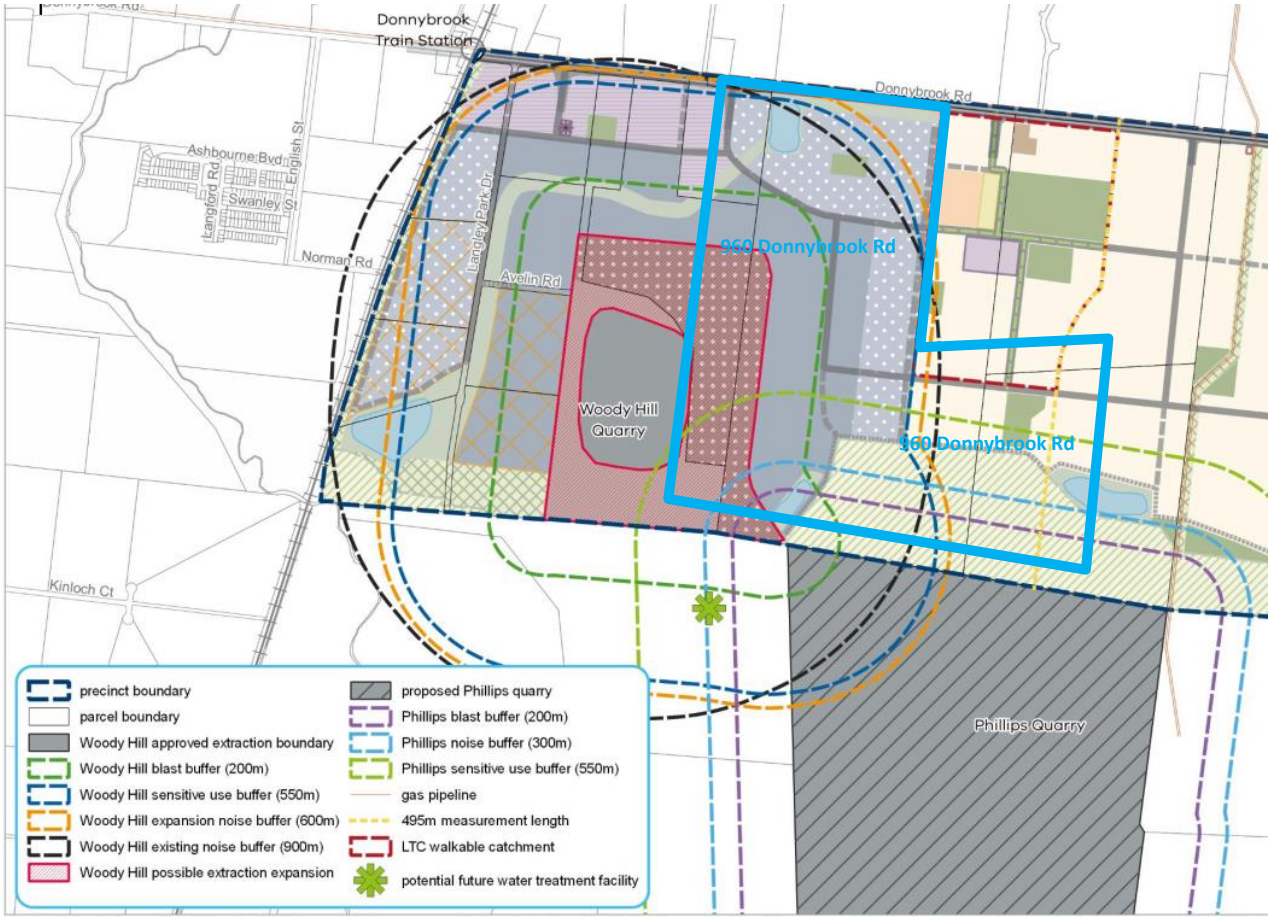
   - Shenstone Park Precinct Structure Plan, *Victorian Planning Authority,* September 2019 (PSP).

- Updated 'For Discussion' Shenstone Park Precinct Structure Plan, *Victorian Planning Authority,* October (2020 PSP).
- Quarry Impact Assessment, *GHD Pty Ltd,* November 2017 and addendum to that report issued in 2019
- State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 (SEPP N-1).
- Information provided by Barro Group / Enfield Acoustics (including email and telephone correspondence). This has included quarry staging plans, operational details and noise source levels, locations of current and future plant and equipment associated with the facility and future pit locations. Predicted blasting vibration and noise levels, prepared by Terrock Consulting Engineers on behalf of Barro Group, have also been provided to me. I have included copies of relevant emails / data received from Enfield Acoustics / Barro Group in **Appendix D**.
- Victorian Governments Environmental Guidelines for *Ground Vibration and Airblast Limits for Blasting in Mines and Quarries (online version)*
- Australian Standard AS2187.2 – 2006 *Explosives – Storage and Use, Part 2: Use of Explosives*

3 Background Information

8. There are three (3) work authorities for quarries located in close proximity to 960 Donnybrook Road being:
   - Work Authority 492 (approved): part of the Woody Hill Quarry (an active sandstone / mudstone quarry) which adjoins the western boundary of 960 Donnybrook Road.
   - Work Authority 6437 (approved): part of the Woody Hill Quarry, and includes expansion primarily to the north; and
   - Work Authority 6852 (proposed): the proposed Phillips Quarry (an inactive basalt quarry) which will be located on land adjoining the south boundary of 960 Donnybrook Road.
   - Operating hours of the above uses vary as follows:
     - Woody Hill Quarry: 6 am to 6 pm Monday to Saturday
     - Phillips Quarry: 7 am to 6 pm Monday to Friday, 7 am to 1 pm Saturday
9. The PSP presents the developed buffers associated with the existing and future quarry operations. Eight (8) buffers are provided in Plan 15 of the PSP, including a 550 m Sensitive Use Buffer (from the boundary of the Woody Hill Quarry possible extraction expansion area). The figure is reproduced below, and also includes the 960 Donnybrook Road site highlighted for reference.

Figure 1 PSP Plan 15 - Buffers



10. The above indicates a possible expansion of the Woody Hill Quarry into 960 Donnybrook Road. It has been confirmed by Barro Group (the operator of the Woody Hill Quarry) that there are no rights to carry out the indicated extraction expansion into 960 Donnybrook Road and the existing Woody Hill Quarry work authorities only extend to the boundary of the two properties.

11. The buffers in relation to noise / amenity impacts were developed based on the GHD Quarry Impact Assessment report. I provide below a high level review of this report.

4 Review of GHD Quarry Impact Assessment Report

12. The GHD report provides an assessment of the likely impacts from the existing and future quarry uses to surrounding land. Assessment of operational noise as well as blasting noise and vibration are considered.

13. The report develops operational noise limits in general accordance with State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 (SEPP N-1).

14. The noise limits are primarily based on background noise monitoring undertaken at 1030 Donnybrook Road, a location approximately 1.25 km east of the existing Woody Hill Quarry. The report advises that noise from the quarry was not audible at this location and as such it is appropriate and representative.

15. There are some aspects of the background monitoring measurements and analysis that are not in accordance with SEPP N-1 procedure and not appropriate in relation to setting the noise limits. These are summarised below.

Background Noise Levels and Noise Limits

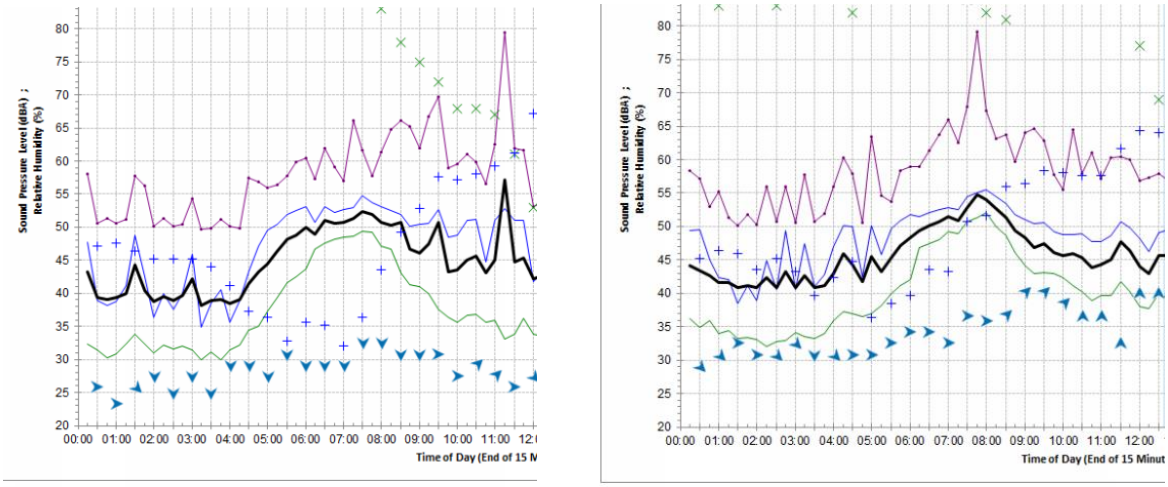
16. The noise monitoring was undertaken using 15 minute sampling. This is not in accordance with SEPP N-1 which specifies hourly background noise monitoring. 15 minute monitoring is used in NSW under their industrial noise policy (which has different noise limit determination procedures).

17. There is a critical error in how the night period background levels have been analysed. The night period background levels have been based on averaging of the entire night period background data (from 10 pm to 7am). This is not appropriate for the subject quarry operations. The background level is meant to be determined only for the periods which the industry operates. In the case of the quarry operations, the only night period operations are from 6 am to 7 am, and this should be the only hour used for determining the night period noise limits. The definition of 'background level' from SEPP N-1 is reproduced below, with the key aspects relating to the above underlined.

    "Background level" for a day, evening or night period means the arithmetic average of the LA90 levels for each hour of that period for which the commercial, industrial or trade premises under investigation normally operates. The background level shall include all noise sources except noise from commercial, industrial or trade premises which appears to be intrusive at the point where the background level is measured.

18. The 6 am to 7 am period often represents elevated background levels in many situations compared to the rest of the night as traffic and general activity builds up during this time. This can be clearly observed in Appendix D of the GHD Report noise logging results, which shows a significant ramp-up of background levels typically starting from 5 am, from Monday to Saturday. An example extract from two weekdays is provided below. The green line represents the 15 minute 'L90' level which is the parameter used to define background level. By 6 am, it can be observed there is a significant increase (10 to 15 dBA) compared to earlier in the night.

Figure 2 Excerpt from GHD Quarry Impact Assessment Report Appendix D (29 and 30 August 2017 Noise Logging Results)



19. I re-analysed the data from the Appendix D graphs to obtain an estimate of the 6 am to 7 am background levels and determined a value of 45 dBA, L90 (based on typical lowest 6 am to 6.15 am data). This is significantly higher than the adopted 28 dBA background level used in the GHD report based on the quietest all-night background level. The implications of this difference are significant, with noise limits being increased to 48 dBA for the night operations, compared to 37 dBA as adopted in the GHD report.

20. Similar to the night period background noise determination, the GHD report has also derived evening period background levels and noise limits based on a data set that is not appropriate. The background level adopted is based on the entire week of background monitoring. The quarry operations do not operate on weekday evenings (ie 6 pm to 10 pm weekdays). The only 'evening' operation period is that from 1 pm to 6 pm on Saturdays (SEPP N-1 definition). As such, only monitoring data from this period should be used in developing SEPP N-1 noise limits for evening operations. Based on GHD's own monitoring, the Saturday background levels (at both 1030 Donnybrook Road and 960 Donnybrook Road) was 39 dBA, and this would provide a more representative basis for setting noise limits rather than the 29 dBA used based on weeknight (6 pm to 10 pm) data. The implications of this are that evening noise limits for Saturday would be 44 dBA instead of 40 dBA as determined by GHD. I note that only a single Saturday of data was collected for the survey so this does represent a potentially small sample of data.

Noise Assessment

21. The predictions of noise from the quarry provided in the GHD report are based on a 3D computer model developed by GHD. The model did not include any specific consultation with Barro Group, or measurement of their actual noise sources. The model was developed using aerial photography, boundary inspections, and using reference data for similar sources at other sites. The model does not incorporate any noise control treatments.

22. GHD acknowledge the limitations of their model and state that the developed buffers could be revised if actual operations are quantified and noise controls at the quarries are undertaken in future.

23. In the context of both the incorrect derivation of noise limits, and the preliminary nature of the noise modelling, it is appropriate to reinvestigate the noise impacts for the purpose of buffer determination.

5 Noise Criteria

24. I have determined the SEPP N-1 noise limits based on:

    - Consideration of the relevant background periods for the quarry operations, and in particular with careful consideration of 6 am to 7 am background noise data for the night period, and 1 pm to 6 pm on Saturdays.
    - Reference to the GHD Report logging data at 1030 Donnybrook Road.
    - Land use zoning based on an indicative future use structure plan layout as provided to me by DJV (reference *FUSP – Employment Land Design Response*, dated 26/10/2020). This is included in **Appendix C**. I have assumed all 'residential' development area to be a 'Type 1' area under SEPP N-1, and the 'light industry' area to the west of the residential area to be a 'Type 2' area under the SEPP N-1 definitions (which is normal for light industry or general commercial use land). A 'Type 3' industrial use designation could be applied to the western most part of the 960 Donnybrook Road site, but this does not provide any bearing on the determined noise limits in the residential area.

25. SEPP N-1 noise limits only apply at noise sensitive receivers that are residential in nature. Noise in commercial or industrial areas is not assessable to any noise policies or guidelines and higher noise levels are expected and tolerated within such areas.

26. The noise limits are based on both the land use zoning within 200 m of a specific residential location, and the existing background noise levels.

27. Current background levels do not necessarily represent future background levels after an area is developed. Commercial and residential activity in such areas can increase general background levels compared to background levels on a greenfield site prior to development.

28. The noise limits in an area are in most cases purely based on the zoning based 'zoning levels' as developed under the SEPP N-1 procedure. Noise limits only vary from the zoning based levels when background levels are unusually high or low for a particular location. It is therefore reasonable to adopt zoning based noise limits in most instances (or at least allow for a small to moderate increase in background levels) especially when trying to estimate a long term background environment for a future developed area.

29. I consider adoption of zoning based noise limits a reasonable position to take for the day and evening (Saturday) operations in the area.

30. The exception is the 6 am to 7 am period. Clearly this period would have high background levels (currently and in the future) given this will always represent the morning peak shoulder period (due to traffic / activity ramp up) compared to the rest of the night.

31. Adopting the above process I have developed the following noise limits for the site based on receiver locations either wholly within the residential zone (and at least 200 m from industrial / commercial zones) and receivers at the light industry interface (ie closest to the existing quarry use). The image below shows the SEPP N-1 140 m and 400 m diameter circles overlayed on the two indicative locations.

Figure 3 DJV FUSP Plan with SEPP N-1 Zoning Circles Overlayed

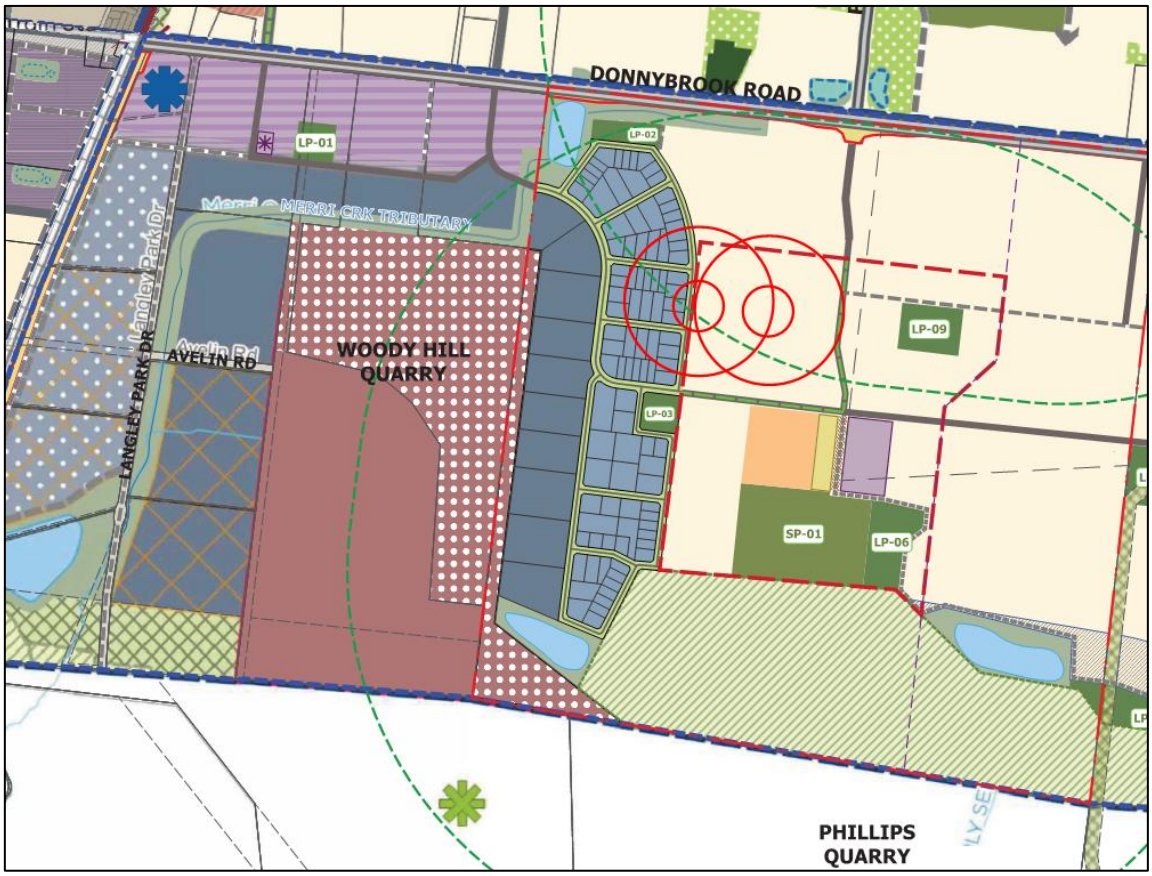


Table 1 Noise Limit Calculation – West Boundary of Residential Zone (commercial / industry interface)

Operational Period	Zoning Level (IF=0.23)	Background Level Measured or assumed	SEPP N-1 Noise Limit
Day	54	'neutral'	54
Evening (Sat 1-6pm)	48	'neutral'	48
Night (6-7am)	43	'high' 45 dBA, L90	48

Table 2 Noise Limit Calculation –Residential Zone at least 200 m from industrial / commercial zone

Operational Period	Zoning Level (IF=0)	Background Level Measured or assumed	SEPP N-1 Noise Limit
Day	50	'neutral'	50
Evening (Sat 1-6pm)	44	'neutral'	44
Night (6-7am)	39	'high' 45 dBA, L90	48

32. The above shows higher noise limits at the residential / industrial interface zone for day and evening periods. Night noise limits, due to the 'high' background conditions from 6 am to 7 am, are the same throughout the site at 48 dBA.

33. Noise limits would gradually reduce from the western most residential location as you move to a central part of the site (eg from 54 dBA to 50 dBA for the day).

34. Note the **Table 2** noise limits would also apply along the southern boundary of the residential allocation when at least 200 m from the light industrial boundary.

6 Noise Modelling

35. I have prepared a 3D predictive noise model to determine potential impacts from future operations of quarry expansions to the 960 Donnybrook Road site. This work has been undertaken in direct consultation with Barro Group (the quarry operator) and Mr Darren Tardio of Enfield Acoustics.

36. The noise model has been prepared in SoundPlan V8.1 utilising the ISO 9613-2 *Acoustics – Attenuation of sound during propagation outdoors*" calculation algorithms. The ISO 9613-2 algorithm assumes an enhanced noise propagation condition between source and receiver to account for a well-developed moderate ground based temperature inversion, such as that which commonly occurs on clear, calm nights or 'downwind' conditions. As such, it can be considered a reasonable representation of indicative worst case impacts to a receiver.

37. The 3D model incorporates 3D ground terrain and accounts for ground and atmospheric absorption as well as barrier / shielding effects. Settings in the model were as follows:

    - Prediction height: 1.5 m above ground level.
    - Ground absorption: 0.5 at quarry sites and general surrounds, 1.0 in grassland (if it is to remain in future) and 0.3 through the 960 Donnybrook site assumed after it is developed (ie a predominantly 'hard' ground cover).

- Most noise sources were set to 2 m above ground level or as per the data file provided by Enfield (based on their observations of heights of sources).

38. The quarry has a number of mobile and fixed noise sources. Enfield Acoustics has undertaken the detailed site testing required to quantify the noise output ('Sound Power Level') of every major source at the existing facility, and this information has been provided to me for the purposes of my own noise modelling. **Appendix B** of this Statement presents the nominated sound power levels. I note this is the noise data for actual sources of noise currently used on the subject site, as well as from equipment used by Barro on their other sites, and represents a significantly more robust dataset than was used by GHD in their studies.

39. The provided noise data appears reasonable and consistent with data collected by SLR on similar quarry sites.

40. Barro Group / Enfield Acoustics have also provided representative future operations scenarios, showing the proposed equipment, pit locations and truck haul routes. This information has allowed for me to prepare my own noise model.

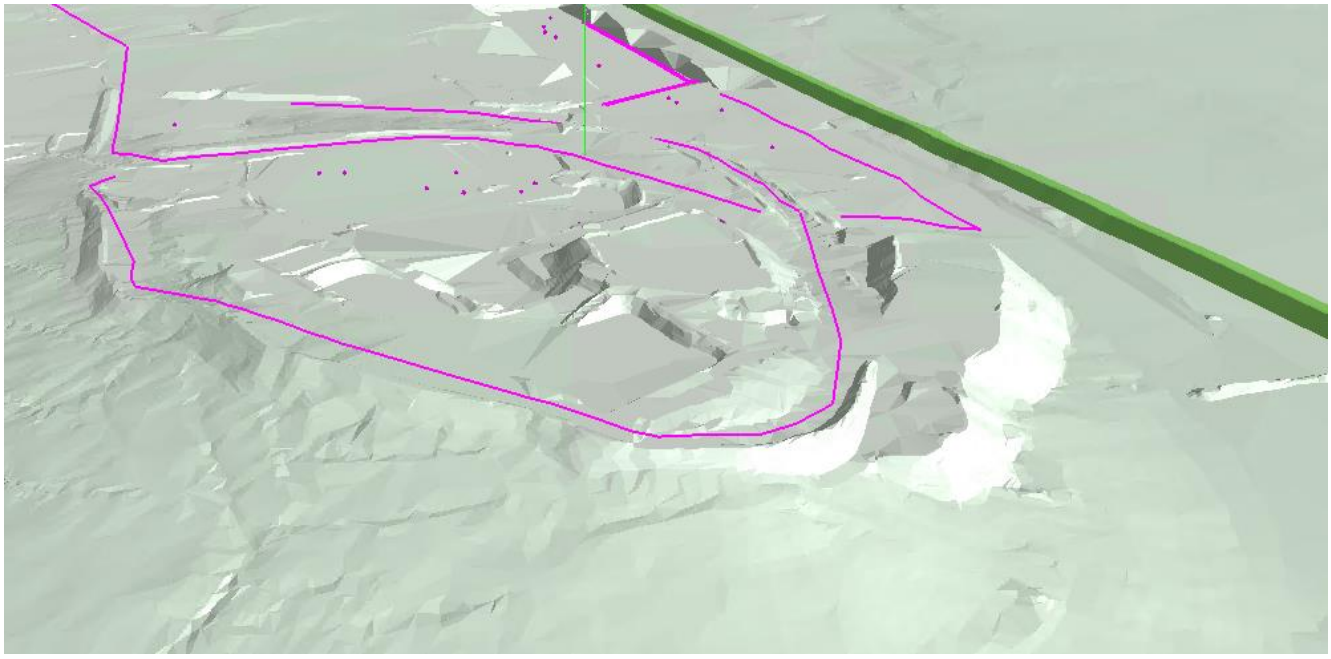
41. I selected what I judged to be the worst case scenarios for each of the expansion areas. These scenarios include the most amount of plant and machinery at the highest elevations – ie at the start of a particular pit excavation. Noise levels would typically decrease as works further progress into a deeper pit or move further away from the 960 Donnybrook Road boundary. The modelled scenarios are summarised below.

Table 3 Noise Modelling Scenarios

Code	Summary of Operations	Other Comments
Existing Woody Hill	Existing Woody Hill Quarry	
Existing + S1	Existing Woody Hill Quarry + Woody Hill Expansion (WA6437) – S1 Pit (north east of existing operations), closest to eastern boundary	Includes 7.8 m boundary bund
Existing + S1 + S4	Existing Woody Hill Quarry + Woody Hill Expansion (WA6437) – S1 and S4 Pit (north east and east of existing operations)	Includes 7.8 m boundary bund
Existing + S1 + S4 + Phillips 1C	Existing Woody Hill Quarry + Woody Hill Expansion (WA6437) – S1 and S4 Pit (north east and east of existing operations) + Philips Quarry Operations (WA 6852) – Stage 1C initial operations	Includes 7.8 m boundary bund Includes fixed processing plant centrally in Philips Quarry

42. I note that the future expansions include allowance for a 7.8 m high bund along the eastern boundary of the existing (and northern expansion) quarry operations, and a similar bund along the entire northern boundary of the Phillips Quarry expansion. These have been incorporated in the model. An indicative view of the 3D noise model is provided below.

Figure 4 Soundplan noise model 3D perspective view from south west (Woody Hill Existing + S1 + S4)



43. The last two modelled scenarios in **Table 3** represent the worst case scenarios as they include cumulative impacts from the most pit areas and quarry fixed plant operations. The noise prediction contours for these scenarios are provided below. Note two different operational modes were calculated being:

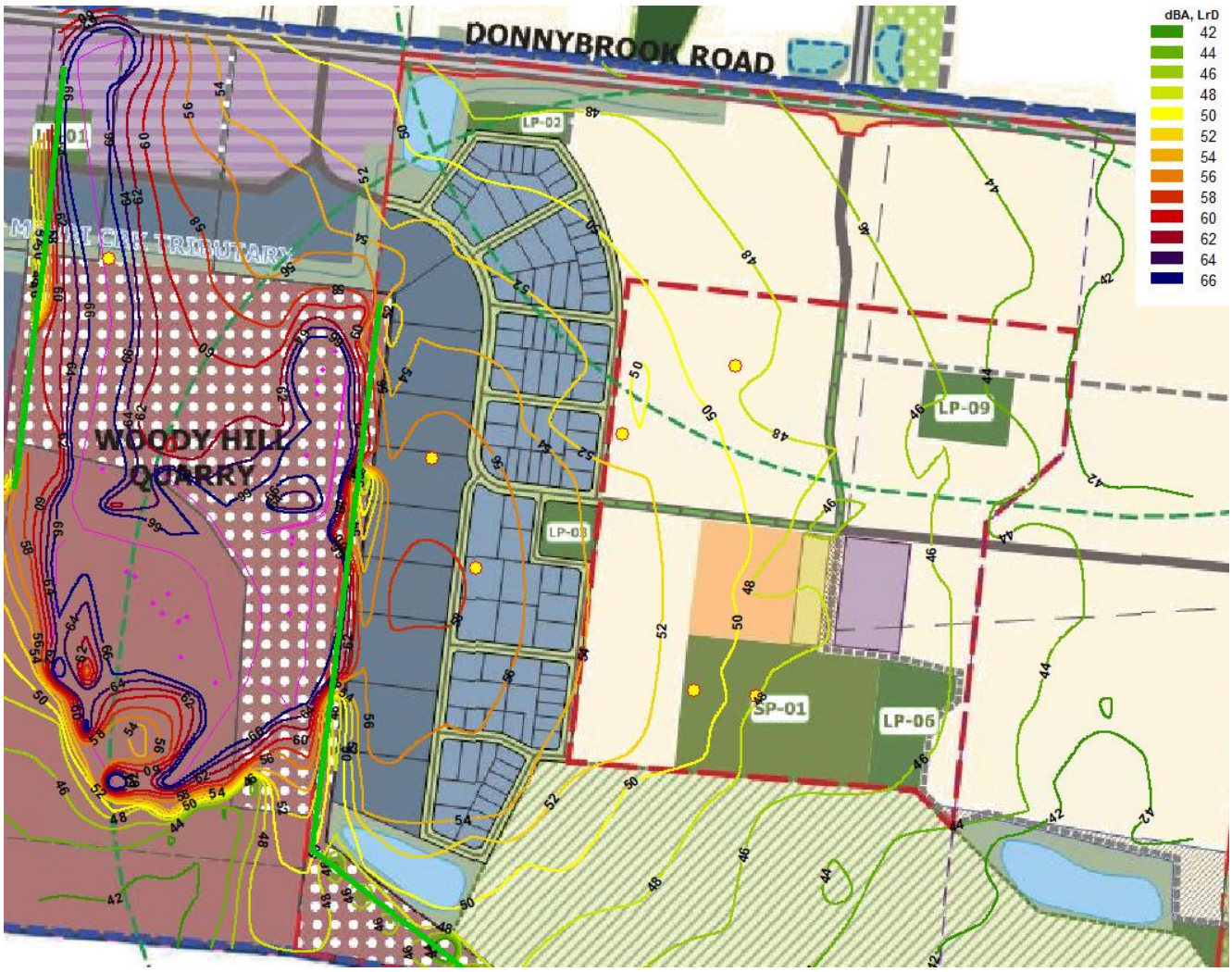
    - full operations with all rock-breakers operating, and peak sales trucks accessing the site.
    - reduced operations with no rock-breakers operating, and approximately 35 sales truck movements in a 30 minute period. This scenario was developed in consultation with Barro / Enfield to achieve a more favourable noise assessment outcome during night (6 am to 7 am) and evening (Saturday 1 pm to 6 pm) operations.

44. The relevant noise contours and comments are provided below.

Existing Woody Hill and Expansion + S1 + S4 Noise Modelling Results

45. The predicted noise levels from these operations are shown in **Figure 5**, with full / peak operations. The noise contours have been overlayed on the provided DJV Future Urban Structure Plan (FUSP).

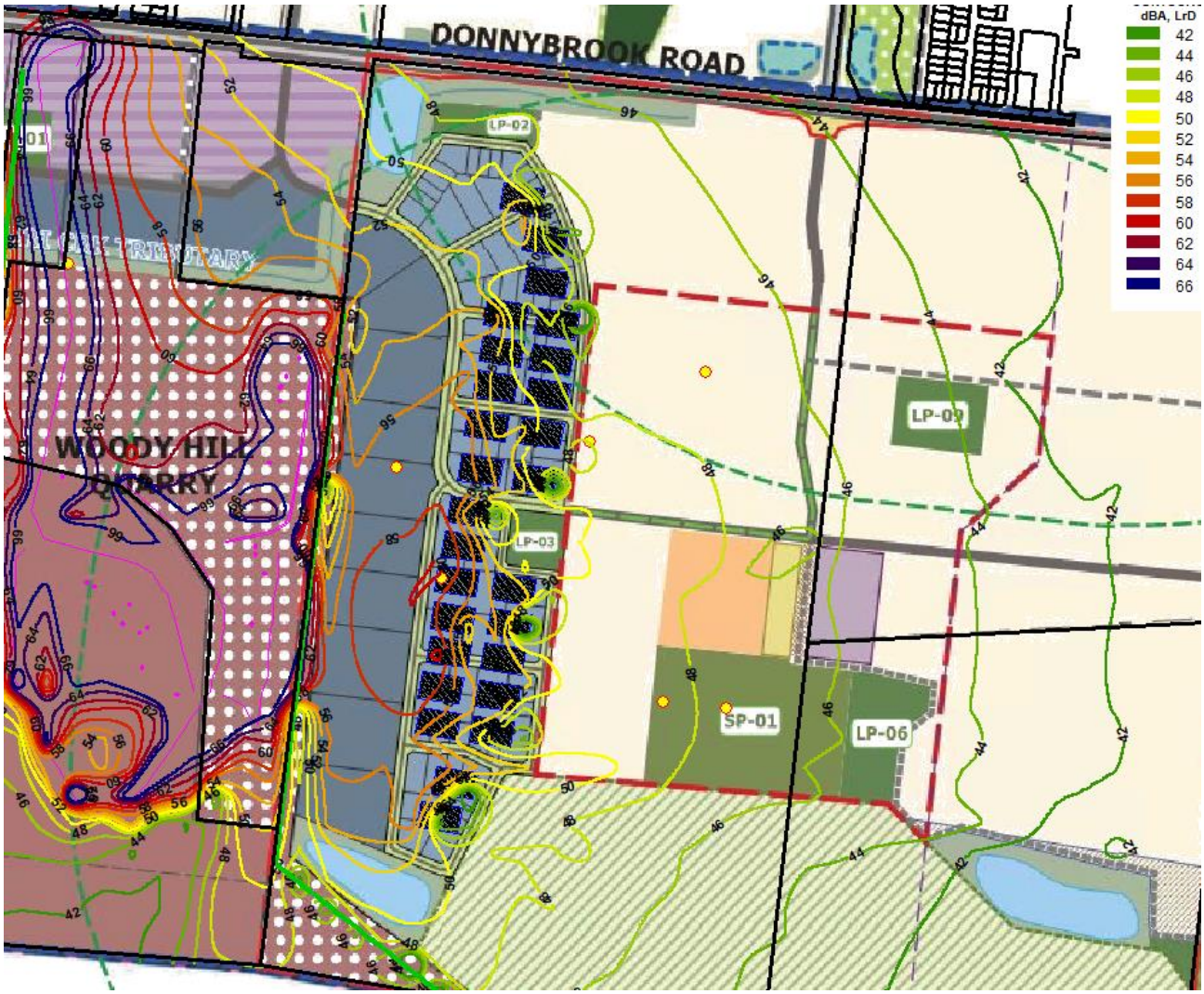
Figure 5 Woody Hill + Expansions (WA 6437) S1 and S4 Pits – Peak Operations (Day)



46. The above noise contours show that the critical noise limit of 54 dBA (day period operations noise limit) is met at the light industry / residential interface boundary. Noise levels drop further into the residential part of the site and generally achieve the nominal 50 dBA target for locations that are fully in residential zoning (for 200 m in all directions). Note that the above model includes no buildings whatsoever. Noise levels in the central part of the site will be lower than what is shown due to the shielding offered by buildings as they are constructed. As such, achieving the west boundary limit can be assumed to result in long term compliance through the rest of the site.

47. Further to the above, any commercial / industrial buildings developed between the quarry and residential uses would provide further benefits in shielding. Adding indicative commercial / industrial buildings in the 'light industry' nominated zone above (7-9 m height buildings used) and rerunning the model shows at least a 2 dBA noise reduction through the site as can be seen below (limited by gaps between buildings).

Figure 6 Woody Hill + Expansions (WA 6437) S1 and S4 Pits – Full Peak Operations (day) + Indicative Commercial / Industrial Buildings



48. **Figure 7** shows the predicted noise levels across the site with no rock-breakers operating, and reduced sales truck movements (note the sales trucks did not make a significant change; the rock-breakers are the critical noise source).

Figure 7 Woody Hill + Expansions (WA 6437) S1 and S4 Pits – No rock-breakers and reduced sales trucks

49. The above noise contours show a significantly reduced noise level across the site with the rock-breakers not operating. The critical noise limit for night (6 am to 7 am) and Saturday afternoon (1 pm to 6 pm) is 48 dBA at the western residential interface / boundary, which appears to be achieved (although could be marginally over at the southern most end location over a small zone). This overall appears to provide a reasonably compliant outcome, and as discussed above, noise levels through the central part of the site can be expected to be less than the contours suggest as buildings are developed and if any commercial / industrial buildings are developed in the western part of the site.

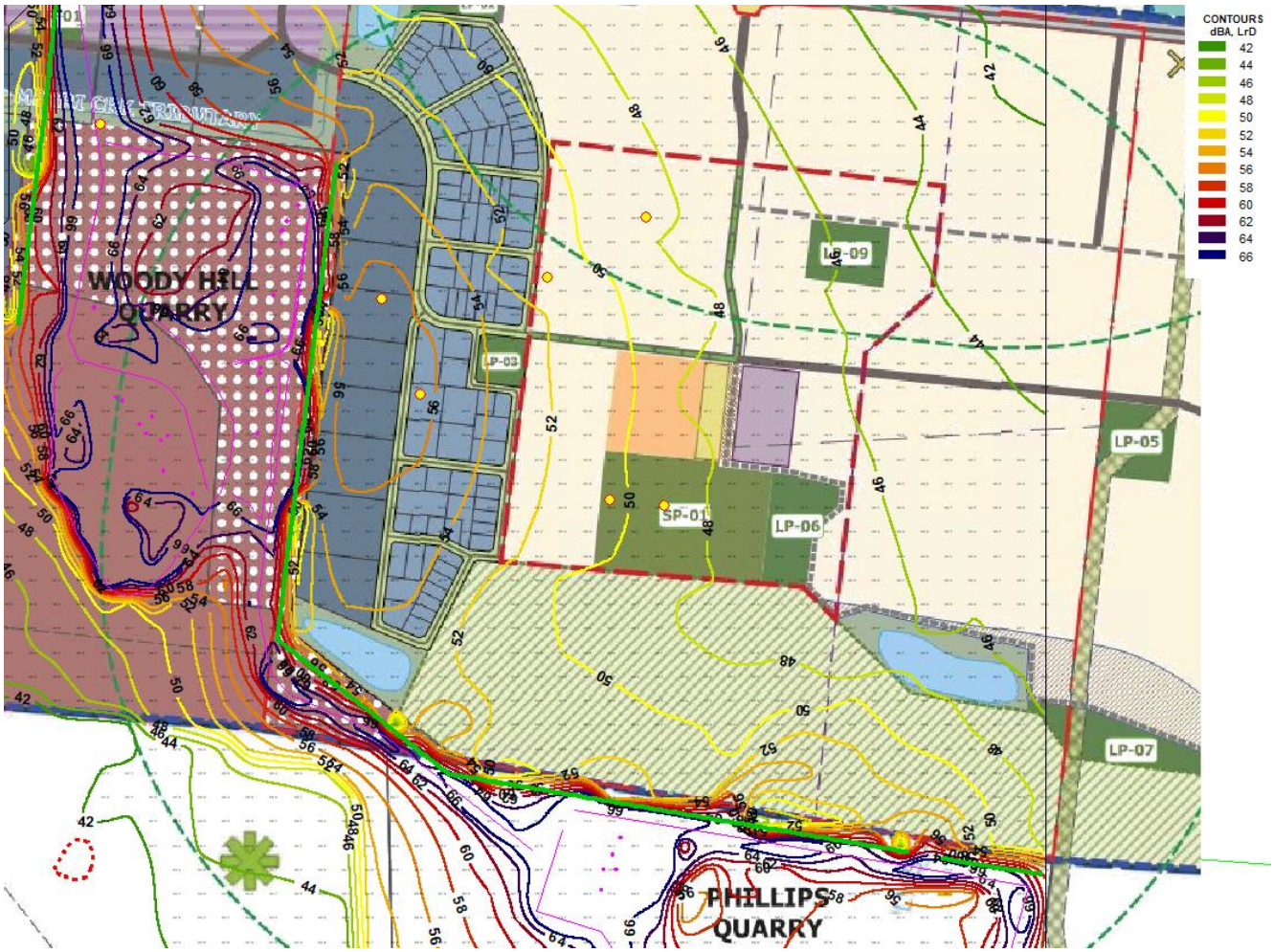
Existing Woody Hill and Expansion + S1 + S4 + Phillips Quarry Operations Stage 1C Noise Modelling Results

50. **Figure 8** presents the noise contours for the future expansions combining existing Woody Hill Quarry operations, expansions to the north / north east (WA 6437) and expansion to Phillips Quarry (WA 6825). The Phillips Quarry Stage 1C pit is included (being one of the closest to 960 Donnybrook Road) as well as the fixed processing plant facility centrally on the Phillips Quarry. Note the rock-breaker at the existing Woody Hill Quarry has also been moved to a location further south-west from the original modelling as this is

considered more representative of the future forecasted operations at the time of the Phillips Quarry operations.

51. There is one further technical variation in the way this model was prepared. The Phillips Quarry used a different prediction algorithm which is based on neutral weather conditions (CONCAWE Category 4). It was considered overly conservative and unrealistic to have wind blowing from both the Woody Hill quarry to the residential area and from the Phillips quarry to the residential area at the same time (which is effectively what ISO 9613 would be doing if used for the modelling for both quarries).

Figure 8 Existing Woody Hill + Expansions (WA 6437) S1 and S4 Pits + Phillips Quarry (WA 6437) Stage 1C



52. The modelling shows similar noise levels across the residential allocation of the site to those provided with the Woody Hill Quarry S1 and S4 expansions. The 54 dBA target is met at the commercial / residential interface, and levels drop to 50 dBA through the site (noise limit once you are at least 200 m from the commercial / industrial boundary).

53. As previously noted, any buildings in the light industrial nominated zone and within the residential area itself will further reduce noise levels throughout the 960 Donnybrook Road site.

54. In conclusion, the noise modelling using the Barro Group provided noise sources and future operational scenarios, and the implemented 7.8 m boundary bund, appears to achieve a reasonable noise outcome across the DJV FUSP site layout plan, with SEPP N-1 noise limits generally achieved throughout the site. This

plan includes residential development at smaller distances than the PSP (nominally 450 m from quarry boundary). The noise modelling supports a reduced noise buffer.

7 Blasting

55. I have been provided with predicted airblast noise and vibration contours prepared by Terrock Consulting Engineers on behalf of Barro Group. The provided contours are reproduced below (and include my own superimposed distance scale).

Figure 9 Predicted Blasting Vibration Levels from proposed Woody Hill Quarry Expansions (Terrock Consulting)

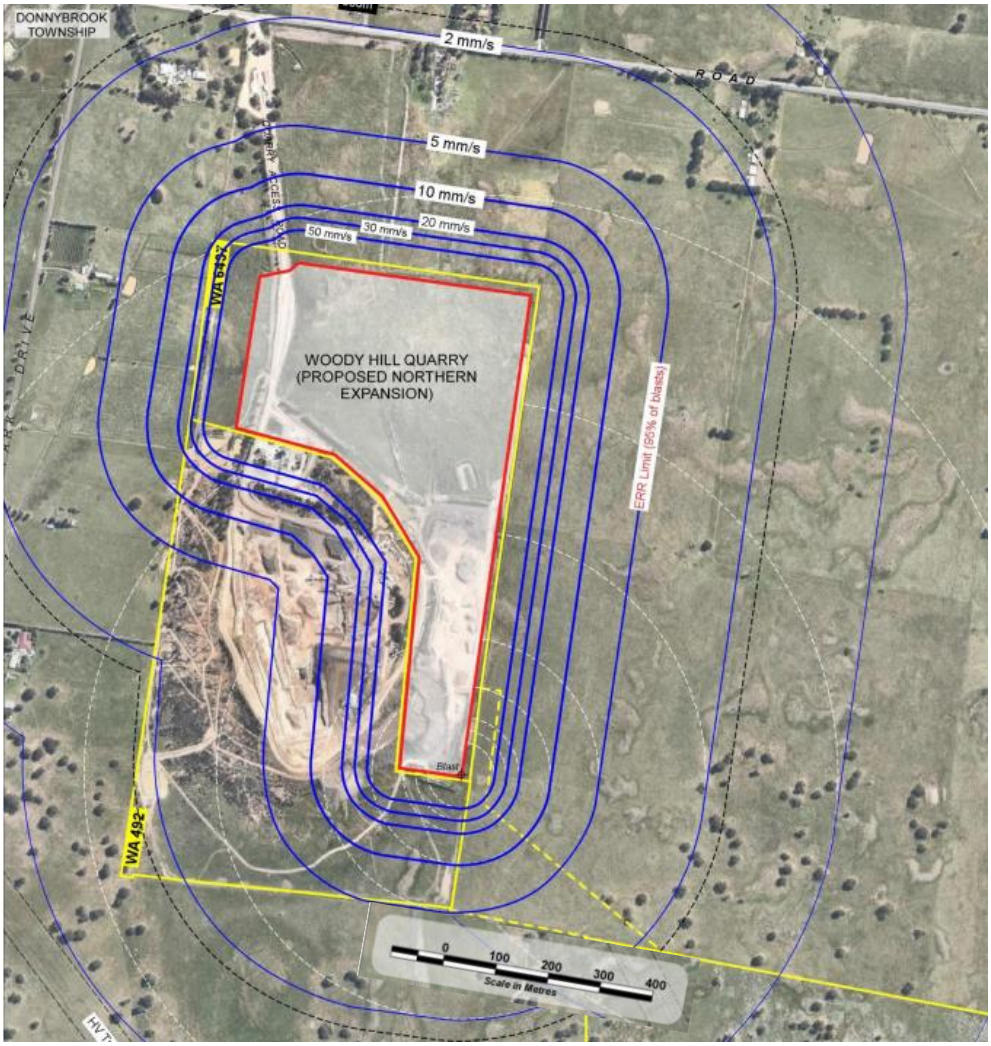


Figure 10 Predicted Air Blast Sound Levels from proposed Woody Hill Quarry Expansions (Terrock)

Figure 11 Predicted Blasting Vibration Levels from proposed Phillips Quarry (Terrock)

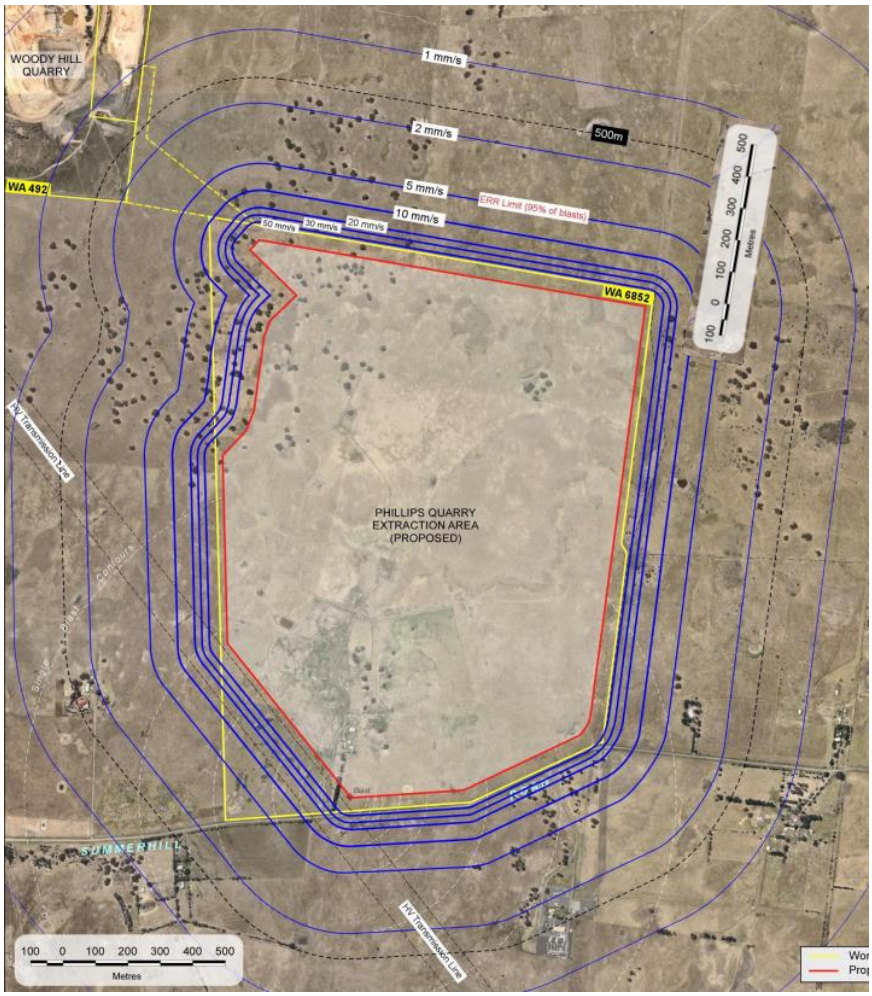
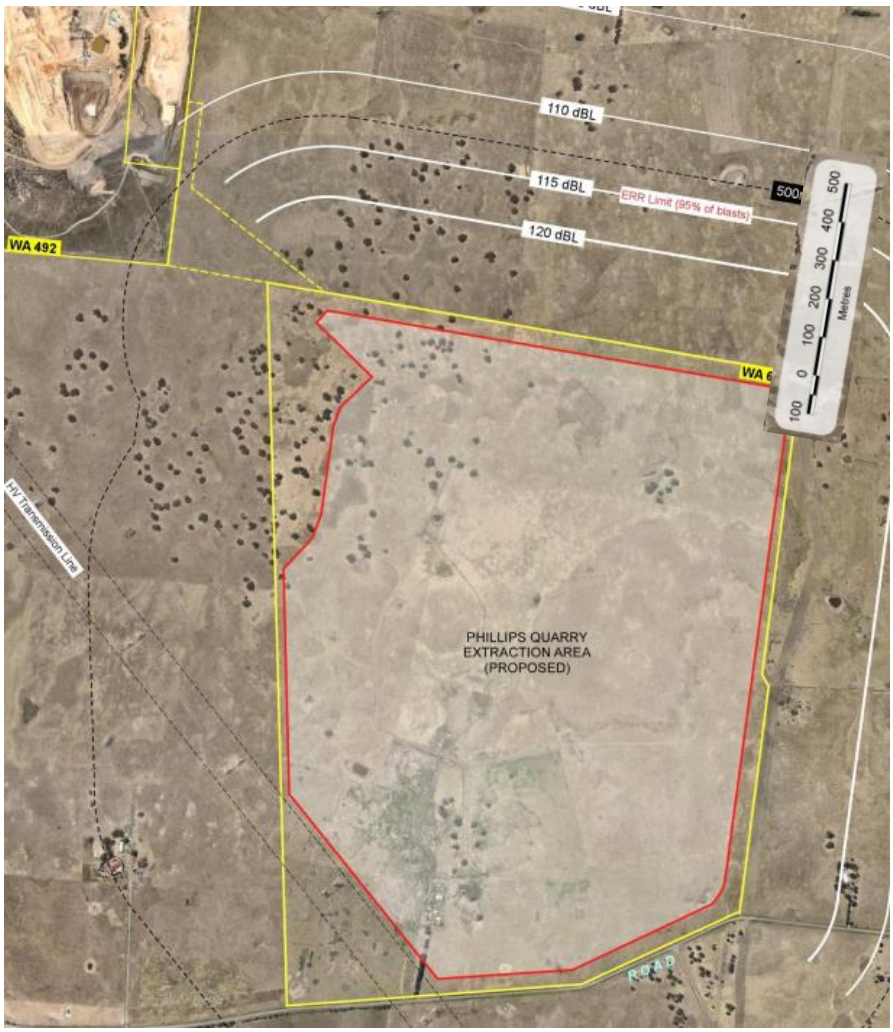


Figure 12 Predicted Airblast Sound Levels from proposed Phillips Quarry (Terrock)



56. Note the two criterion lines shown for airblast noise and vibration are as follows:
    - 115 dB criterion for airblasts noise levels
    - 5 mm/s limit for vibration
57. These criteria are the normally adopted criteria to residential uses for mining and quarry related blasting, and are included in the Victorian Governments Environmental Guidelines for *Ground Vibration and Airblast Limits for Blasting in Mines and Quarries*. The criteria are based on the Australian and New Zealand Environment and Conservation Council's *Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration*, September 1990 (ANZECC Guidelines). I note these are specifically for residential or similar sensitive receivers, and it is stated in the Environmental Guidelines that these limits *"do not apply to control of impacts at commercial or industrial premises where less stringent standards may be appropriate"*
58. In relation to impacts to commercial or industrial sites, appropriate guidance is provided in Australian Standard AS2187.2 – 2006 *Explosives – Storage and Use, Part 2: Use of Explosives*. Tables J4.5 (A) and J5.4(A) of that Standard present the relevant criteria, which includes the same criterion for residential uses as the

above Environmental Guidelines, and additional criteria for commercial / industrial uses. These are reproduced below.

Table 4 Extracts from Australian Standard AS2187.2 Ground Vibration and Airblast limits for human comfort

TABLE J4.5(A)

GROUND VIBRATION LIMITS FOR HUMAN COMFORT CHOSEN BY SOME REGULATORY AUTHORITIES (see Note to Table J4.5(B))

Category	Type of blasting operations	Peak component particle velocity (mm/s)
Sensitive site*	Operations lasting longer than 12 months or more than 20 blasts	5 mm/s for 95% blasts per year 10 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Sensitive site*	Operations lasting for less than 12 months or less than 20 blasts	10 mm/s maximum unless agreement is reached with occupier that a higher limit may apply
Occupied non-sensitive sites, such as factories and commercial premises	All blasting	25 mm/s maximum unless agreement is reached with occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that can be shown to adversely effect the equipment operation

*A sensitive site includes houses and low rise residential buildings, theatres, schools, and other similar buildings occupied by people.

NOTE: The recommendations in Table J4.5(A) are intended to be informative and do not override statutory requirements with respect to human comfort limits set by various authorities. They should be read in conjunction with any such statutory requirements and with regard to their respective jurisdictions.

TABLE J5.4(A)

AIRBLAST LIMITS FOR HUMAN COMFORT CHOSEN BY SOME REGULATORY AUTHORITIES (see Note to Table J5.4(B))

Category	Type of blasting operations	Peak sound pressure level (dBL)
Human comfort limits		
Sensitive site*	Operations lasting longer than 12 months or more than 20 blasts	115 dBL for 95% blasts per year. 120 dBL maximum unless agreement is reached with occupier that a higher limit may apply
Sensitive site*	Operations lasting for less than 12 months or less than 20 blasts	120 dBL mm/s for 95% blasts. 125 dBL maximum unless agreement is reached with occupier that a higher limit may apply
Occupied non-sensitive sites, such as factories and commercial premises	All blasting	125 dBL maximum unless agreement is reached with the occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that can be shown to adversely effect the equipment operation

* A sensitive site includes houses and low rise residential buildings, hospitals, theatres, schools, etc., occupied by people.

59. The criteria for general commercial / industrial uses are indicated to be 25 mm/s for vibration and 125 dBL Peak for airblast sound levels. The Standard also indicates higher or lower criteria can be implemented with agreement of occupants or via consideration of specific equipment requirements that a building may have.

60. In summary, with reference to the nominated criteria and the predictions prepared by Terrock, it can be concluded that:

    - The 115 dBL airblast limit for residential use is achieved from all quarry operations beyond 400 m. As such, allocated areas planned for residential development at 960 Donnybrook Road will easily comply with this target.
    - The 5 mm/s vibration target for residential use is typically achieved at 250 m from the quarry boundaries. All allocated areas planned for residential development on 960 Donnybrook Road will easily comply with this target.
    - In relation to commercial / industrial uses, the 125 dBL notional airblast target can be estimated to be achieved at approximately 150 m from the Woody Hill quarry nearest boundary. The vibration limit of 25 mm/s appears to be achievable at distances less than 100 m.

61. The blasting noise and vibration would appear to be less of a constraint on any residential development in the area than operational noise is. Commercial or industrial uses within 150 m of quarry may not be appropriate while there is blasting undertaken at the nearest part of the quarry site, although this could still be possible according to AS2187.2 for some industries if appropriate consultation is undertaken between the industrial operators and the quarry.

8 Summary and Conclusions

62. I have reviewed the provided material in relation to the PSP, Woody Hill Quarry and Phillips Quarry and associated expansions, and the DJV preferred FUSP in relation to 960 Donnybrook Road.

63. My noise modelling, which is based on measured noise source levels undertaken by Barro Group and their provided future operational scenarios, indicates that residential development could be provided in areas closer to the quarry boundary than indicated in the PSP. It should be noted that the presented noise modelling in this report represents the identified worst case operations of future scenarios in terms of locations and numbers of items of plant and equipment. There are numerous stages of operations in both quarries (Woody Hill and Phillips) where noise levels would be lower than those predicted and presented in this report.

64. The buffers developed in the original PSP were not unreasonable in the absence of having detailed operational information and noise source levels for the quarries, but the more detailed analysis of specific site operations, future scenarios and incorporation of shielding from the new bund, support a smaller buffer zone for operational noise.

65. The DJV provided preferred FUSP plan includes industrial uses along the western portion of the 960 Donnybrook Road site. Development of this area with commercial / industrial building will provide further shielding to any future residential development and further reduced noise levels. However, the results of modelling indicate this shielding is not essential and noise limits can practically be achieved without these buildings.

66. Operational noise impacts to the commercial / industrial buildings are not considered to be unreasonable and such uses could be built close to the interface / boundary with the quarry uses.

67. Blasting related impacts to residential uses and potential buffers associated with those are not as critical as the operational noise buffer zone. The 200 m blast buffer is reasonable as indicated in the PSP for any development, although it would be possible to have industry closer than this (150 m) and still achieve airblast and vibration criteria nominated in AS2187.2.

68. In conclusion, the DJV preferred FUSP and associated reduced buffer distances for residential development are feasible from a noise and vibration perspective.

69. Having completed my investigations, I believe I have made all necessary enquiries and that no matters of significance, which I understand to be relevant to this matter, have been withheld from the Panel.

Prepared by:

Jim Antonopoulos BAppSc MAAS

Principal – Acoustics

APPENDIX A

Curriculum Vitae – Jim Antonopoulos, Principal Consultant, Noise and Vibration

CURRICULUM VITAE

JIM ANTONOPOULOS

PRINCIPAL PROJECT CONSULTANT

Acoustics, Asia Pacific

QUALIFICATIONS

BAppSc (Physics)	1996	Royal Melbourne Institute of Technology (RMIT)

EXPERTISE

- Architectural and Building Acoustics
- Mechanical Services Noise Control Design
- Environmental Noise Assessment
- Sound Power Measurement, Sound and Impact Insulation Testing FFT Analysis
- Expert Testimony at VCAT
- Noise Modelling (SoundPLAN)
- Vibration Measurement and Assessment

Jim Antonopoulos has over 20 years' experience in acoustical consulting and has specialist expertise in building and architectural acoustics, and in environmental noise prediction and assessment. He has managed major residential, educational and commercial development projects and also undertaken environmental assessments for large industrial, transportation, mining and infrastructure projects.

Jim regularly provides expert evidence at VCAT and Panel Hearings on a range of acoustical matters, including major rezoning and planning applications, and also provides regular advice to councils.

Jim has also provided acoustic training to council planners and engineering students at Victoria University of Technology

PROJECTS

Transportation

- Deer Park Bypass Noise Barrier Design
- Calder Highway, Eastern Freeway Extension and South Eastern Freeway Noise Monitoring
- Mitcham Frankston Motorway Tender Design
- Brisbane North-South Bypass Tunnel EIS
- Craigieburn Station noise and vibration assessment
- Beenleigh Gold Coast Rail Corridor upgrade

Building	• St Kilda Station Redevelopment (Residential and Commercial Development) • Highpoint Residential Development • Central Equity residential development projects throughout Melbourne (20+ developments) • Tarrawarra Museum of Art • IBM office fitout (Southbank) • Gordon Institute Recording Studio (Geelong) • Suncorp residential development (Brisbane)
Mechanical Services Design	• David Jones Foodstore (St Kilda Station Redevelopment) • Central Equity Projects • Myer Chadstone • Draeger office and warehouse development
Industrial	• SPI Powernet Terminal Stations (Richmond, Geelong, Redcliffs) • Cranbourne Terminal Station • Peerless Laverton and Braybrook Plants • South Pacific Tyres (Campbellfield) • Yallourn Power Station • Stramit facility relocation study (Dandenong) Moorabool Water Treatment Plant
Planning and Legal Representation	• Newport Village Blackshaws Road - Rezoning, Master Planning, Planning Panel and VCAT testimony • Ballarat and Mortlake Saleyards – Environmental Noise Impact Assessment, Planning Panel presentation (Ballarat) • City of Yarra – Expert Peer Review services and VCAT representation on various planning related matters (2012-current) • Kensington K1 and K2 – Rezoning noise assessment • Donald Mineral Sands Mining Project – Preparation of Noise Impact Assessment for EIS • Black Rock Biosolids Treatment Facility – Environmental Noise Impact Assessment • Mt Atkinson & Tarneit Planes PSP Planning Scheme Amendment C162 – Planning Panel Hearing Acoustic Evidence • 56-74 Station St Nunawading, Whitehorse Planning Scheme Amendment C155 = Planning Panel Hearing Acoustic Evidence
MEMBERSHIPS	Member of Australian Acoustical Society MAAS

APPENDIX B

Sound Power Level Inputs for Noise Modelling

The tables below provide the reference sound power levels used in all calculations for noise modelling. The sound power levels (and number and indicative locations of plant items) are as provided by Enfield Acoustics on behalf of Barro Group

Source Sound Power Levels (as provided by Barro Group)

Item / Description		No. off	dB(A)	OCTAVE BAND SOUND POWER LEVEL (Lin) per item 63	125	250	500	1k	2k	4k
Existting Woody Hill Operations										
deliveries	north section / entry of site	1	85	83	80	78	79	79	78	78
forklift	north section / entry of site	1	91	100	92	91	88	87	82	77
Loading_FEL		2	111	121	114	110	107	107	104	98
Main_Crusher		1	113	122	115	111	112	108	105	100
Rock_breaker		1	119	116	119	117	117	113	112	108
screen_crusher_2		2	115	122	108	108	108	108	110	109
Crusher_ch440		1	110	112	112	106	109	104	103	101
Front_loader_reverse		1	103	99	94	92	89	99	100	85
Haul Trucks	3 truck movements in a half hour period around main part of pit area	3	113	117	117	110	109	109	105	98
Sales Trucks	40 movements per half hour, 15 km/h	40	108	112	112	105	104	104	100	93
Batch Plant / Wash	Combined / partially enclosed	1	107	103	109	101	102	104	99	98

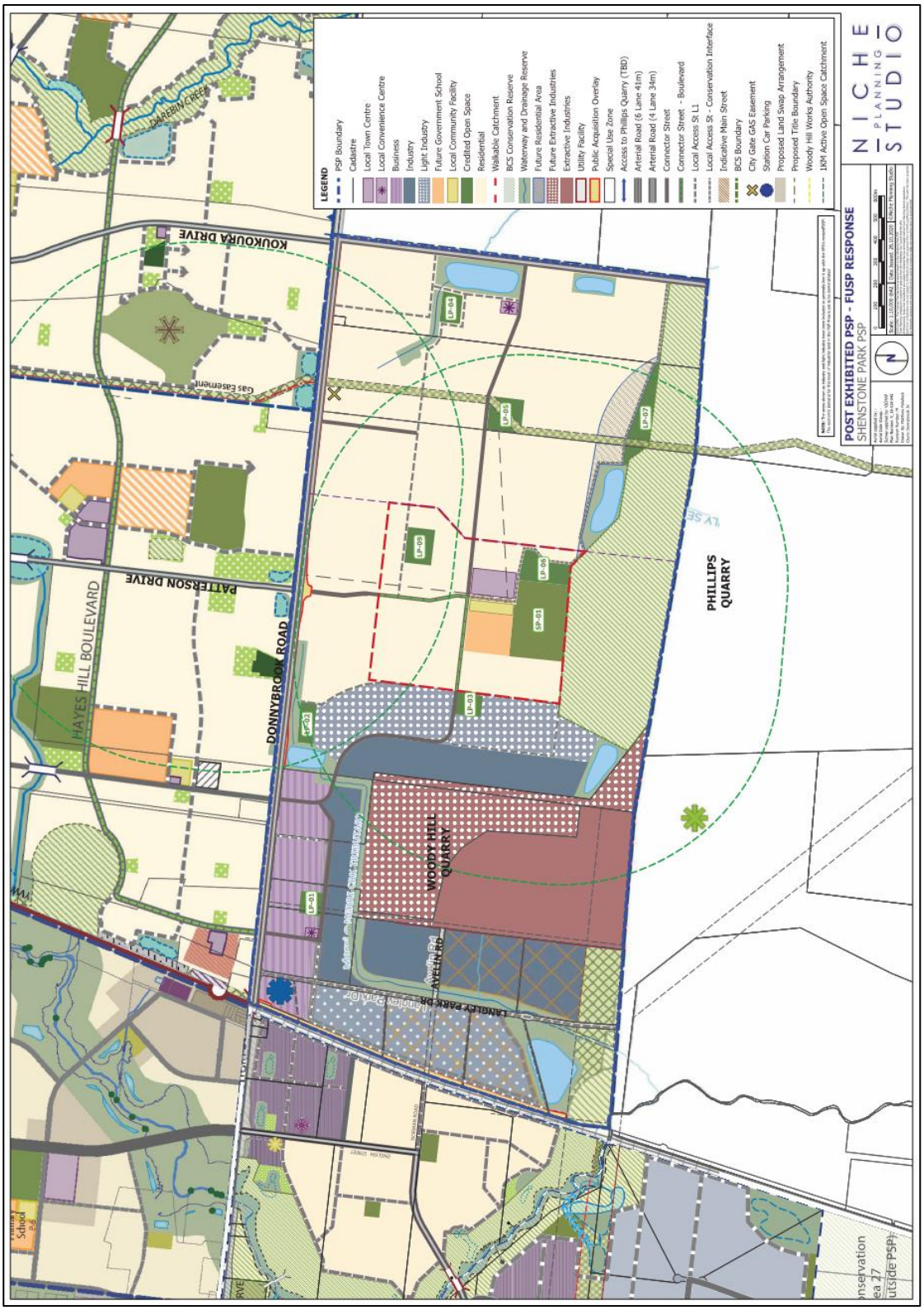
APPENDIX B

Existting Woody Hill Operations + Expansion S1 + S4										
Same sources as above for Existing Woody Hill Operations plus following										
Sales Trucks	80 movements per half hour, 15 km/h	80	108	112	112	105	104	104	100	93
Stage S1 Pit:										
Loading_FEL		1	111	121	114	110	107	107	104	98
Rock_breaker		1	119	116	119	117	117	113	112	108
Front_loader_reverse		1	103	99	94	92	89	99	100	85
Haul Trucks	3 truck movements in a half hour period accessing Pit S1	3	113	117	117	110	109	109	105	98
Stage S4 Pit:										
Loading_FEL		1	111	121	114	110	107	107	104	98
Idle haul truck		1	103	107	107	99	99	99	95	88
Haul Trucks	3 truck movements in a half hour period accessing Pit S4	3	113	117	117	110	109	109	105	98

Existting Woody Hill Operations + Expansion S1 + S4 + Phillips Quarry Stage 1C										
Same sources (including sales trucks) as above for Existing Woody Hill Operations + S1 + S4 plus following:										
Pit 1C:										
Loading_FEL		1	111	121	114	110	107	107	104	98
Rock_breaker		1	119	116	119	117	117	113	112	108
Idle haul truck		1	103	107	107	99	99	99	95	88
Fixed Processing Plant Area (central location Phillips):										
Loading_FEL		1	111	121	114	110	107	107	104	98
Main_Crusher		1	113	122	115	111	112	108	105	100
screen_crusher_2		2	115	122	108	108	108	108	110	109
Crusher_ch440		1	110	112	112	106	109	104	103	101
Idle haul truck		1	103	107	107	99	99	99	95	88
Haul Trucks	3 truck movements in a half hour period accessing Pit 1C and processing area	3	113	117	117	110	109	109	105	98

APPENDIX C

DJV Preferred Future Urban Structure Plan



APPENDIX D

Received Instructions and Technical Information received from Barro Group / Enfield Acoustics

Summary

Item	Source	Details
1	Gadens Lawyers	Instructions to Witness, letter dated 10 August 2020
2	Enfield Acoustics	Email Correspondence from 23 September to 27 October 2020
3	Gadens Lawyers	Email Correspondence dated 12 October 2020: *Ground Vibration & Airblast Materials - Shenstone Park PSP,*

gadens

Instructions to Expert Witness – Acoustics

DATE:	10 August 2020
TO:	Jim Antonopoulos – SLR Consulting
FROM:	Brihony Boan and Rachel Yard
FILE NO:	22005943
RE:	Shenstone Park PSP - Panel Hearing

1. Instructions

We act for Donnybrook JV Pty Ltd (**DJV**). Further to your discussions with DJV, we provide these formal instructions to provide expert acoustics evidence on behalf of DJV in relation to the proposed precinct structure plan for Shenstone Park including:

(a) reviewing these instructions and the documents annexed to this brief;

(b) undertaking desktop modelling as required;

(c) preparing an expert witness report (see section 5 for the scope of your instructions);

(d) if required, attend a conclave of expert witnesses as part of the panel process; and

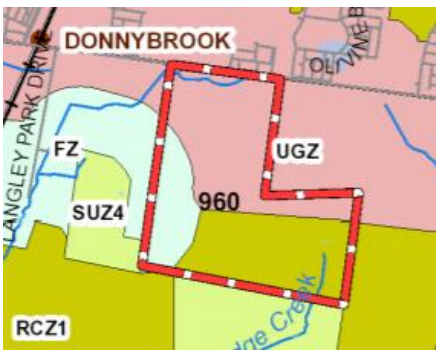
(e) if required, appearing at the panel hearing to present evidence, which is likely to be heard over 5-6 weeks commencing on Monday, 16 November 2020.

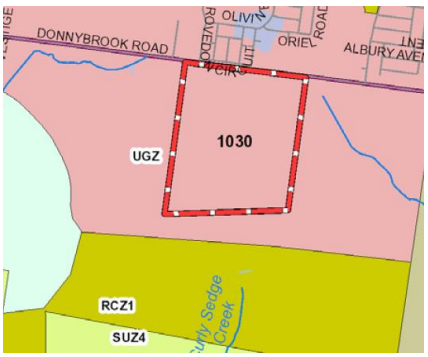
2. Background

DJV is the registered proprietor of:

(a) 960 Donnybrook Road, Donnybrook more particularly described as Lot 1 on TP374144X (contained in Certificate of Title Volume 11260 Folio 109) and Lot 1 on TP371225P (contained in Certificate of Title Volume 11260 Folio 110) (**960 Donnybrook**) and shown below; and

(b) 1030 Donnybrook Road, Donnybrook more particularly described as Lot 1 on TP380512K contained in Certificate of Title Volume 6229 Folio 723 (**1030 Donnybrook**) and shown below.





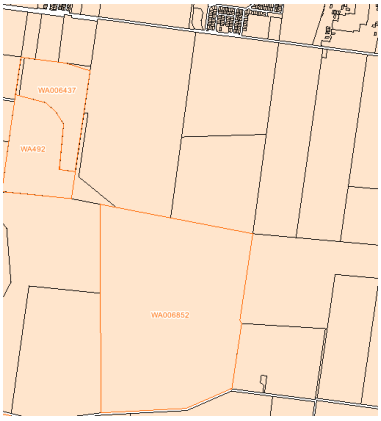
(collectively, the **Property**).

There are three (3) work authorities for quarries in close proximity to the Property, as follows (shown below):

(a) Work Authority 492 (approved): part of the Woody Hill quarry (an active sandstone / mudstone quarry) which adjoins the western boundary of the Property (**Woody Hill Quarry**);

(b) Work Authority 6437 (approved): part of the Woody Hill Quarry; and

(c) Work Authority 6852 (proposed): the proposed Phillips quarry (an inactive basalt quarry) which will be located on land adjoining the south east boundary of the Property (**Phillips Quarry**).

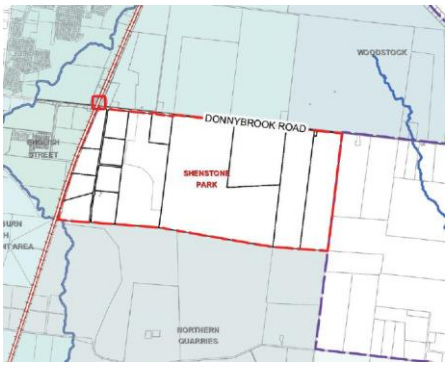


Extractive activities are currently only being undertaken at Woody Hill Quarry under Work Authority 492. However, it is likely that the quarry operator will expand its operations at the Woody Hill Quarry to the area approved by Work Authority 6437.

3. Shenstone Park PSP

On 4 October 2019, the Shenstone Park Precinct Structure Plan was exhibited as part of Amendment C241 to the Whittlesea Planning Scheme (**Exhibited PSP**). A copy of the Future Urban Structure Plan contained in the Exhibited PSP is contained in Annexure A.

The Exhibited PSP covers 628 ha in the City of Whittlesea bounded by Donnybrook Road to the north, the Sydney-Melbourne railway line to the West, the Wollert suburb boundary to the South and the Urban Growth Boundary to the east (shown below) (**PSP Land**). The Property comprises approximately 275 ha, or approximately 44%, of the PSP Land.



The Woody Hill Quarry is included within the PSP Land. In December 2017, as part of the preparation of the Exhibited PSP, GHD Pty Ltd prepared a Quarry Impact Assessment (**Quarry Impact Assessment**). An addendum to the Quarry Impact Assessment was

prepared in September 2019 (**Addendum**). The Quarry Impact Assessment and Addendum each included a noise and vibration impact assessment.

4. Relevant Submissions

Below is a summary of DJV's submissions that will be relevant in preparing your advice:

(a) Extent of Quarry Operations

The Exhibited PSP sets aside 11.25 ha of 960 Donnybrook for 'future extractive industries' (shown in yellow below).

There are no approved work authorities over any part of the Property, and Barro Group Pty Ltd (**Barro**) which owns and operates the Woody Hill Quarry and Phillips Quarry, has informed VPA that there are no rights to carry out extractive operations over the above area, which forms part of the Property. As noted above, the boundaries of the existing work authorities for the Woody Hill Quarry and Phillips Quarry only extend to the boundaries of adjoining properties.

(b) Buffers

The Exhibited PSP includes eight (8) buffers, as shown on Plan 15 of the Exhibited PSP a copy of which is contained in Annexure B, including the Woody Hill Sensitive Use Buffer – a 550 metre radial buffer from the boundaries of the 'Woody Hill possible extraction expansion' area.

The Quarry Impact Assessment and Addendum both note that specific information regarding the detailed operations at the Woody Hill Quarry was not available at the times of the reports. In its submission to VPA concerning the Exhibited PSP, Barro Group noted that the '*assumptions and background research underpinning the GHD work do not accurately reflect the current and proposed operations on the Barro Group land and consequently does not accurately reflect potential off-site amenity impacts and associated buffer distances*'.

5. Scope of Instructions

You are instructed to review and provide your professional opinion of the Quarry Impact Assessment and Addendum, so far as they relate to noise and vibration at the Woody Hill Quarry and Phillips Quarry. In particular, you are instructed to focus on the likely acoustic impacts of the Woody Hill Quarry and Phillips Quarry quarrying activities on the Property, and more particularly on the areas within the proposed 550m Sensitive Use Buffers, if quarrying activities were undertaken in accordance with approved Work Authorities 492 and 6437 and proposed work authority 6852.

Your assessment will likely be provided to Peter Ramsay of Peter J Ramsay & Associates to assist him in preparing his expert report in relation to the amenity buffers contained in the Exhibited PSP.

6. Guide to Expert Evidence

As you would be aware, as an expert witness before the Panel, you will be required to be aware of the contents of the Guide to Expert Evidence issued by Planning Panels, a copy of which is included in your brief of documents.

7. Counsel / Experts

DJV has briefed or intends to brief the following Counsel and additional experts in this matter:

(a) Stuart Morris QC (Senior Counsel)

(b) Paul Chiappi (Junior Counsel)

(c) Rob Milner of Kinetica (Town Planning)

(d) Mark Sheppard of Kinetica (Urban Design)

(e) Rhys Quick of Urbis (Economic)

(f) Peter Ramsay of Peter J Ramsay & Associates (Buffers)

(g) David Maltby of Zone Environmental (Extractive Resources)

(h) Bryce Raworth (Heritage)

(i) Jason Walsh of Traffix Group (Traffic)

8. Next Steps

As noted above, the Panel Hearing will likely run for 5-6 weeks, commencing on Monday, 16 November 2020. A directions hearing was held on Monday, 31 August 2020 (a copy of the directions is included in your brief of documents). The relevant information / directions resulting from the directions hearing that are relevant to you are:

(a) Conclave of Experts (Directions 19(a) and 21): The Panel has indicated that it may require all acoustics experts to participate in a conclave of expert witnesses. We will provide further information in relation to any potential conclave as it becomes available.

(b) Provision of Expert Witness Report (Direction 19(a)): DJV will be required to provide your expert witness report to the Panel by 4:00pm on Wednesday, 28 October 2020. We would appreciate it if you could provide a draft of your report to us by **Monday, 19 October 2020**.

(c) Contents of Expert Witness Report (Direction 18): Please ensure that your expert witness report complies with the requirements set out in Direction 18, in that it must:

  (i) comply with the Guide to Expert Evidence (see section 6 above);

  (ii) not refer to any individual submitter by name (use the submission number if it is necessary to refer to a submitter); and

(iii) be provided as an unlocked document.

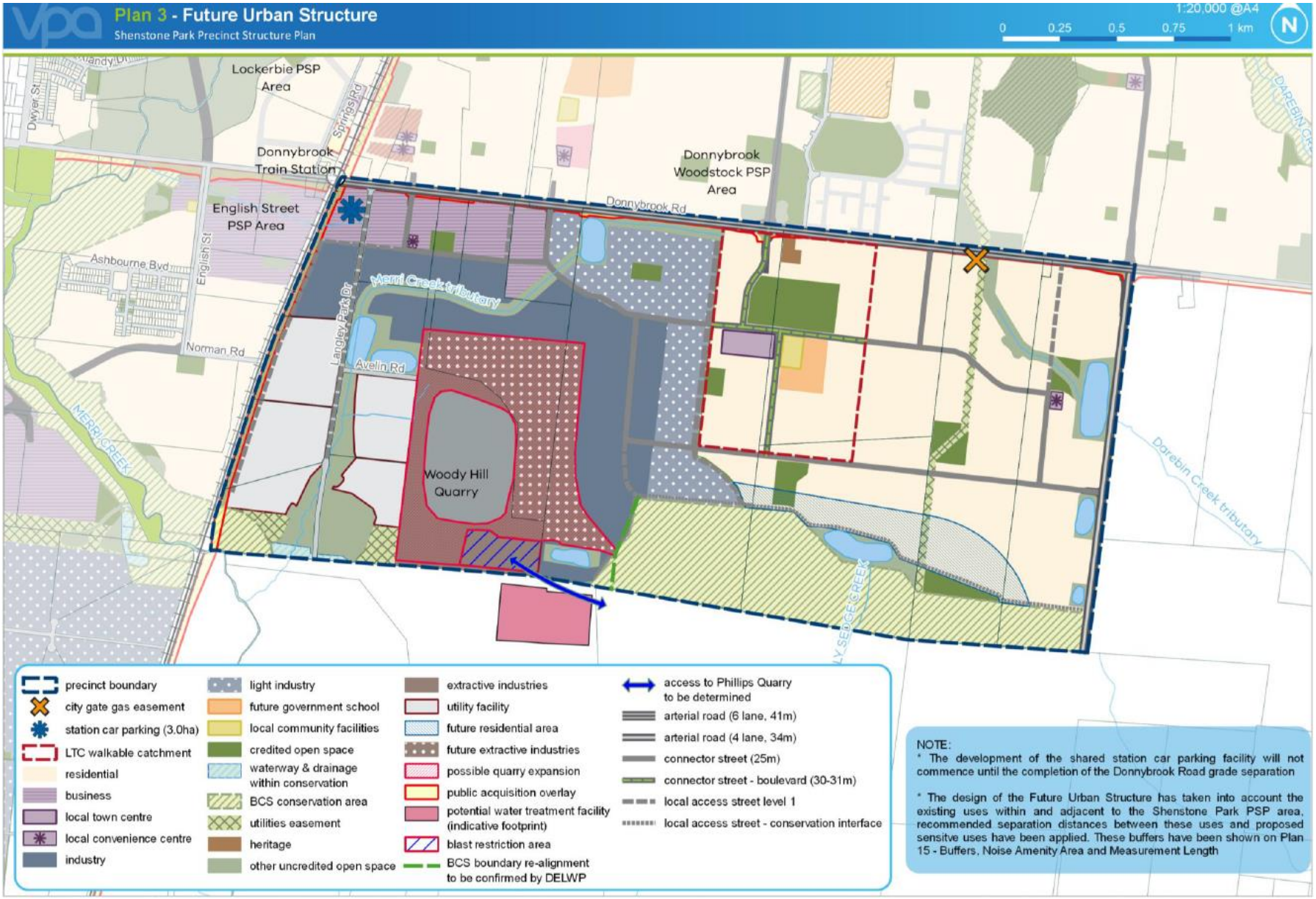
(d) DJV Evidence: DJV is expected to be making its submissions and presenting its evidence between **1 December 2020 and 4 December 2020**.

In the meantime, please provide us with your fee estimate for approval by DJV.

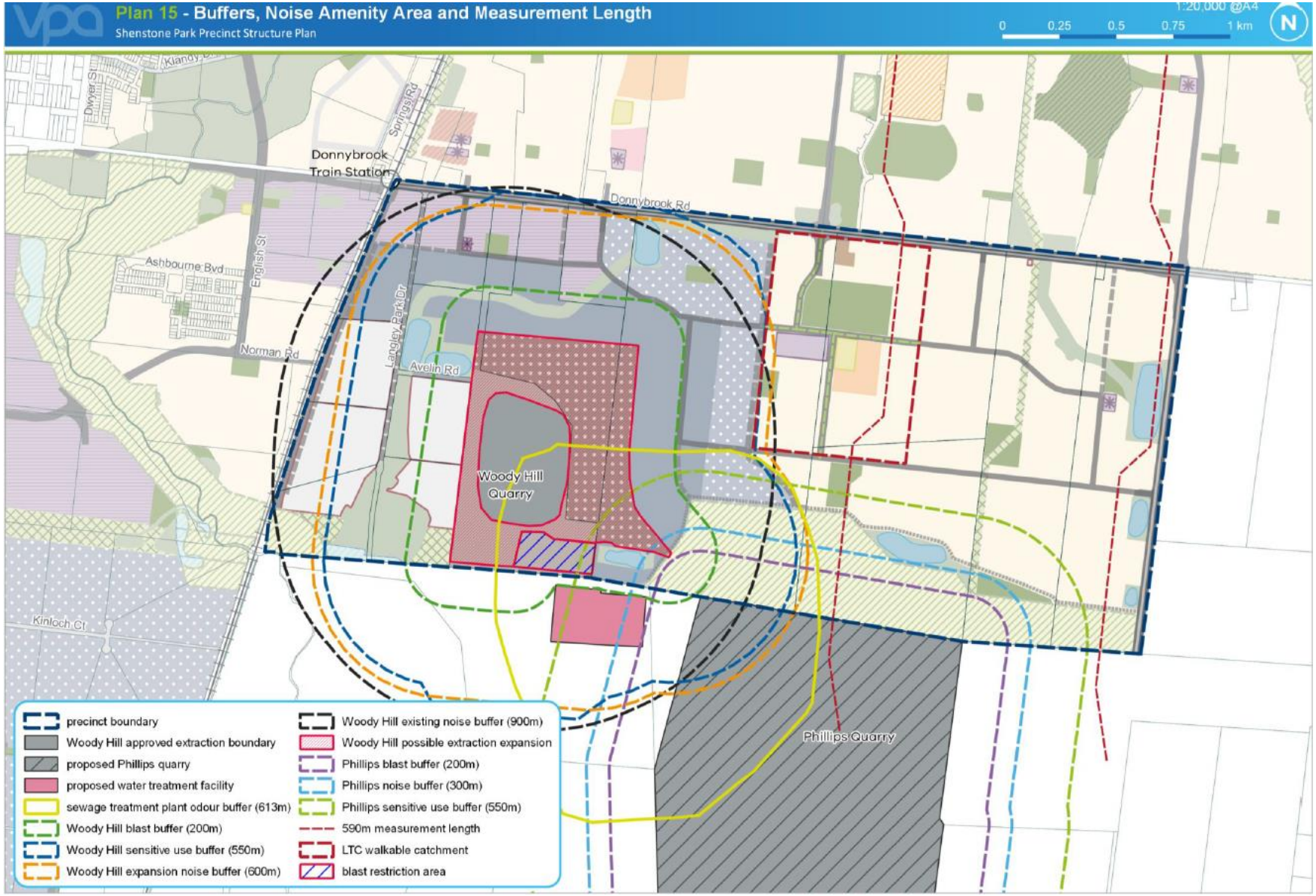
Please let us know if you require any further information, documentation or instructions to proceed with the above.

Brihony Boan
Partner
Gadens
E: brihony.boan@gadens.com
T: (03) 9252 7726

Annexure A - Exhibited PSP Future Urban Structure Plan



Annexure B – Exhibited Buffer Zone Plan



APPENDIX D

Barro Noise Model Information

DT

Darren Tardio <darren@enfieldacoustics.com.au>
To Jim Antonopoulos
Cc Leon Ponte

23-Sep-2020

You replied to this message on 07-Oct-2020 10:46 AM.

Existing contours.dwg
15 MB

Hi Jim,

As discussed yesterday, please find the attached ground contour file we are using in our noise model, so you can make a start on your end.

Looking to finalise pit staging plans and source information later this week and will send further details on this asap.

Darren Tardio
Director

Office (03) 9111 0090
Mobile 0499 049 212
Email darren@enfieldacoustics.com.au

Enfield Acoustics Pty Ltd
PO Box 920 North Melbourne VIC 3051

APPENDIX D

RE: Barro Noise Model Information

DT

Darren Tardio <darren@enfieldacoustics.com.au>
To Jim Antonopoulos
Cc Leon Ponte

24-Sep-2020

You replied to this message on 24-Sep-2020 12:36 PM.

Hi Jim,

Here's a link to the dxf https://enfieldacoustics-my.sharepoint.com/:f:/g/personal/darren_enfieldacoustics_com_au/ElofulYAXn5AnG6idXXArVMBdECyMdepqek?e=hh6SXy

Dwg was previously sent due to file size.

I will upload all future files to the above link.

Darren Tardio
Director

Office (03) 9111 0090
Mobile 0499 049 212
Email darren@enfieldacoustics.com.au

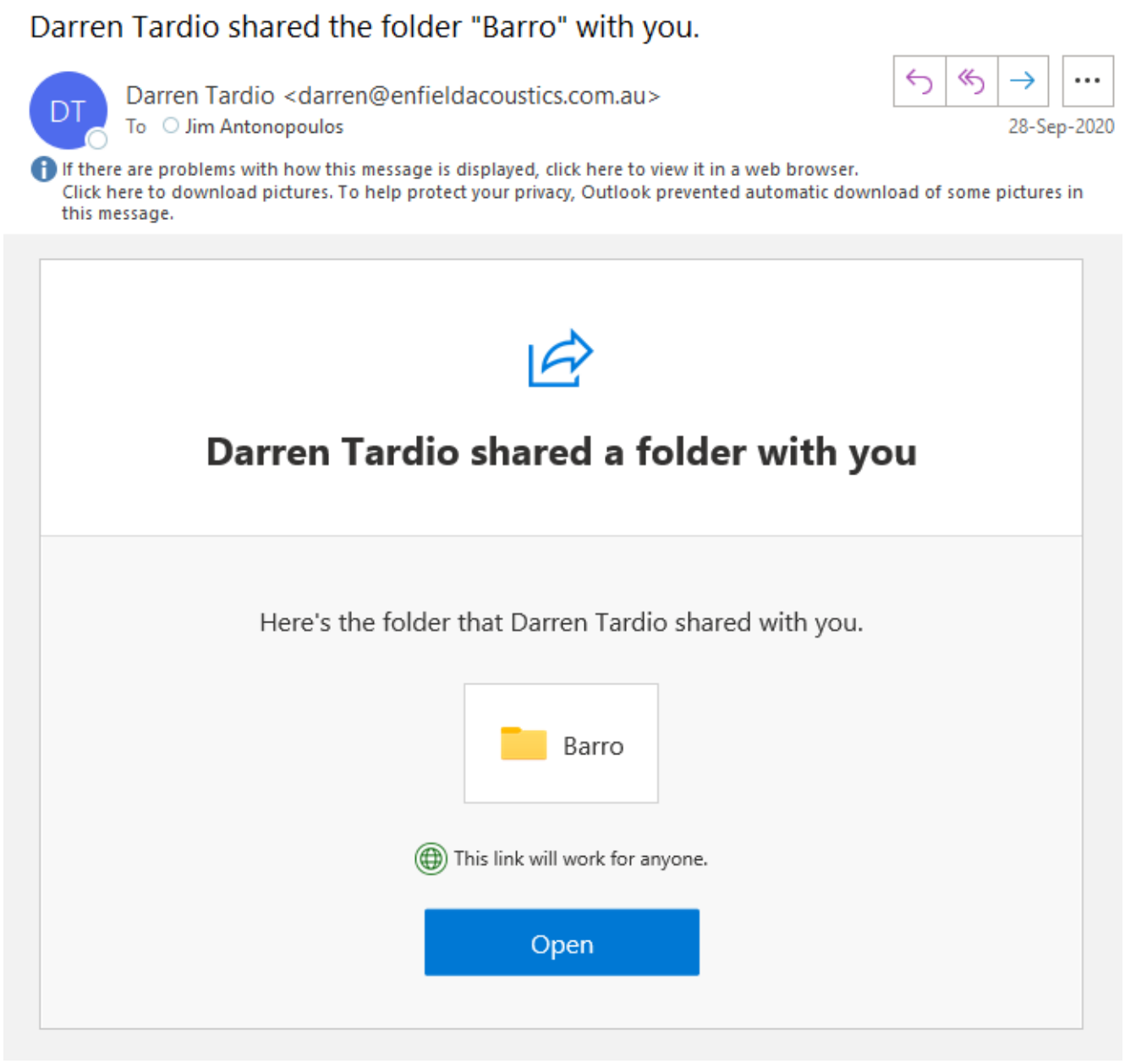
Enfield Acoustics Pty Ltd | PO Box 920 North Melbourne VIC 3051

From: Jim Antonopoulos <jantonopoulos@slrconsulting.com>
Sent: 23 September, 2020 9:21 AM
To: Darren Tardio <darren@enfieldacoustics.com.au>
Cc: Leon Ponte <lponte@ponteblfb.com.au>
Subject: RE: Barro Noise Model Information

Thanks Darren, much appreciated.
Could I make a request though – any chance you can issue this (and future files) as DXF instead of DWG?
And can you let me know projection (MGA55 or WGS84 etc.)?

Rgs Jim

APPENDIX D


Darren Tardio shared the folder "Barro" with you.
DT
Darren Tardio <darren@enfieldacoustics.com.au>
To Jim Antonopoulos
28-Sep-2020
If there are problems with how this message is displayed, click here to view it in a web browser.
Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.
Darren Tardio shared a folder with you
Here's the folder that Darren Tardio shared with you.
Barro
This link will work for anyone.
Open

APPENDIX D

RE: Barro Noise Model Information

DT

Darren Tardio <darren@enfieldacoustics.com.au>
To Jim Antonopoulos

07-Oct-2020

You replied to this message on 13-Oct-2020 11:28 AM.

All Scenarios.rar
8 MB

Table of Sources.xlsx
26 KB

Hi Jim,

Please find the attached:

1. Revised snapshots of each operational/modelled scenario. You should be able to zoom in to these with better resolution now
2. Spreadsheet where you relate ID's to sources and SWL's

A couple of things on the legend worth noting:

- BP = Batching Plant
- FEL = Front End Loader
- Trucks have been modelled as point sources when in pit / loading areas. Otherwise modelled as moving point sources
- FPA = Fixed Plant Area (Phillips will have mobile and fixed plant at different times)
- MPA = Mobile Plant Area (as above)
- S1, etc = Stage No.
- WH = Existing Woody Hill Quarry, WA492
- P = Phillips Quarry
- EXT = WA6437 extension to the north
- The -100 under column C just means a source is turned off for the night period
- Truck moving point sources is based on Lmax levels recorded, so the exposure correction happens in the path length

I think that's everything! As always, give me a call if anything is still not clear.

Darren Tardio
Director

Office (03) 9111 0090
Mobile 0499 049 212
Email darren@enfieldacoustics.com.au

Enfield Acoustics Pty Ltd
PO Box 920 North Melbourne VIC 3051

APPENDIX D

Trucks

DT

Darren Tardio <darren@enfieldacoustics.com.au>
To Jim Antonopoulos

12-Oct-202

You forwarded this message on 13-Oct-2020 10:29 AM.

Hey Jim,

I found my instructions on trucks. Note that there isn't an exact breakdown on trucks for each area so we have taken an even split where unknown. From observation though, I definitely have noticed more concrete trucks going to the batching plant. For future operations when Phillips (WA6852) and the Extension (WA6437) are going, I have also assumed that the truck volumes do not change for Woody Hill (WA492) and the batching plant. I'm still not convinced that this many trucks could get through the weighbridge in an hour. Hope this helps.

TRUCKS/TRAFFIC

11. **WA 492/Concrete Batching Plant** (February 5, 2019)

    7:15 a.m. – 8:15 a.m. (peak hour)

        44 in
        36 out

    4:00 p.m. – 5:00 p.m. (peak hour)

        7 in
        15 out

12. **Trade Supplies** (estimated)

    AM peak hour

        15 in
        15 out

    PM peak hour

        36 in
        36 out

13. **WA 492/WA 6437/Concrete Batching Plant /WA 6852** (estimated)

    AM peak hour

        88 in
        72 out

    PM peak hour

        14 in
        30 out

14. **WA 492/WA 6437/Concrete Batching Plant/Trade Supplies/WA 6852** (estimated)

    AM peak hour

        103 in
        87 out

    PM peak hour

        50 in
        66 out

Darren Tardio
Director

Office (03) 9111 0090
Mobile 0499 049 212
Email darren@enfieldacoustics.com.au

APPENDIX D

Late changes

DT

Darren Tardio <darren@enfieldacoustics.com.au>
To Jim Antonopoulos

Tue 1:55 PM

You replied to this message on 28-Oct-2020 10:08 AM.

Hi Jim,

Apologies for the late notice but I've just had confirmation on a couple of items which changes my model slightly.

1. All crushing removed from pits for both 6437 and 6852. We had mobile crushers in pits which I assume you also had. This means the only crushing plant will be Woody Hill and the centre of Phillips now. I am re-running contours today but I expect this will reduce noise levels 1-2dB
2. Saturday afternoon truck volumes now confirmed to be no more than 34/hr. I have split these based on previous ratios, however I do not think the split is critical now.
    a. 3 movements to Woody Hill
    b. 3 movements to 6437 (extension)
    c. 28 movements to batching plant

I will call to discuss.

Darren Tardio
Director

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APPENDIX D

Ground Vibration & Airblast Materials - Shenstone Park PSP [VICGAD-VICPro...

RY

Rachel Yard <Rachel.Yard@gadens.com>
To Jim Antonopoulos
Cc Brihony Boan; Ingrid Davoli

12-Oct-2020

BRR-2001_Blast Vibration-DJV_V2.pdf
6 MB

Annexure 6 (e) (ii) Staging Plan for WA 6852.pdf
1 MB

Annexure 6 (e) (i) Staging Plan for WA 492 and WA 6437.pdf

Hi Jim

We refer to our expert witness instructions of 10 September 2020 in relation to Amendment C241 / Shenstone Park PSP.

Barro Group, who is the quarry operator of both the Woody Hill and Phillips quarries, has provided the attached information which may be relevant in the preparation of your expert witness report on the noise and vibration impacts of the Woody Hill and Phillips quarries:

1. Preliminary ground vibration and airblast contours for the existing Woody Hill quarry, proposed expansion of the Woody Hill quarry and proposed Phillips quarry

2. Initial staging plan for Work Authority WA6852 (Phillips quarry)

3. Initial Staging Plan for Work Authorities WA492 and WA6437 (existing and proposed expansion of Woody Hill quarry)

Please do not hesitate to contact me if you require any further information or documentation.

Kind regards
Rachel

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