MARSHALL DAY Acoustics

MINISTERIAL ADVISORY COMMITTEE

REFERENCE NO.: Mitchell Planning Scheme Amendments C158 and C161
Permit applications PLP268/19

IN THE MATTER OF: Beveridge North West Advisory Committee

Statement of Evidence of Christophe Frédéric Delaire

Prepared for: Yarra Valley Water
Instructed by: Norton Rose Fulbright Australia

Date of Statement of Evidence: 27 April 2022

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1.0 NAME AND ADDRESS

1.1 CHRISTOPHE FREDERIC DELAIRE

1.2 Co-CEO of Marshall Day Acoustics Pty Ltd (MDA)

1.3 6 Gipps Street, Collingwood Victoria 3066

2.0 AREA OF EXPERTISE

2.1 For over 19 years I have worked in the field of acoustics and noise control.

2.2 I am a member of the Australian Acoustical Society (MAAS).

2.3 My qualifications and experience are detailed in Appendix A.

2.4 I am sufficiently expert to make this statement because I have been involved in environmental noise impact assessments for major environmental projects such as extractive industries, wind farms and industrial plants as well as smaller developments such as restaurants, residential apartments and service stations.

3.0 SCOPE

3.1 Yarra Valley Water owns land within the Beveridge North West PSP (the PSP), located within the Mitchell Shire Council.

3.2 A planning application has been lodged for the use and development of land within the PSP as a quarry located at 175 Northern Highway, Wallan under WA1473 (the planning application).

3.3 The PSP specifies buffers around the proposed quarry which include land owned by Yarra Valley Water (YVW) and identified as potential residential areas.

3.4 A ministerial advisory committee (MAC) was appointed in October 2021 to advise the Minister for Planning on Amendments C158 and C161 to the Mitchell Planning Scheme and the planning application.

3.5 SLR Consulting has prepared the following report in support of the planning application:

- Report No. 640.11178-R02-v1.4 *Proposed North Central Quarry WA1473 - 175 Northern Highway, Wallan Environmental Noise Assessment*, dated 30 September 2019 (the SLR Report)

3.6 In their letter dated 21 March 2022, Norton Rose Fulbright Australia, on behalf of YVW, has instructed me to undertake the following:

> ***Permit Application***
>
> *(1) Perform a peer review of the assessments and supporting material that accompany the Permit Application;*
>
> *(2) Provide your opinion on the acceptability of the quarry as proposed in the Permit Application, having regard to the proposed Mitchell Planning Scheme as modified by the planning controls proposed by draft Amendment C158 and relevant guidelines, standards and legislation. Within this part of your scope, you should also consider what permit conditions are appropriate, if a permit were to issue.*
>
> ***Planning Scheme Amendment***
>
> *(3) Provide your opinion concerning the suitability of the planning framework proposed through Amendment C158 and any changes to the draft documents that you consider necessary, appropriate and/or desirable.*

3.7 The documents I have reviewed and referenced in this statement are listed in Appendix B.

3.8 A glossary of acoustic terminology is provided in Appendix C.

3.9 I prepared this statement of evidence with the assistance of the Marshall Day Acoustics' staff member listed in Table 1.

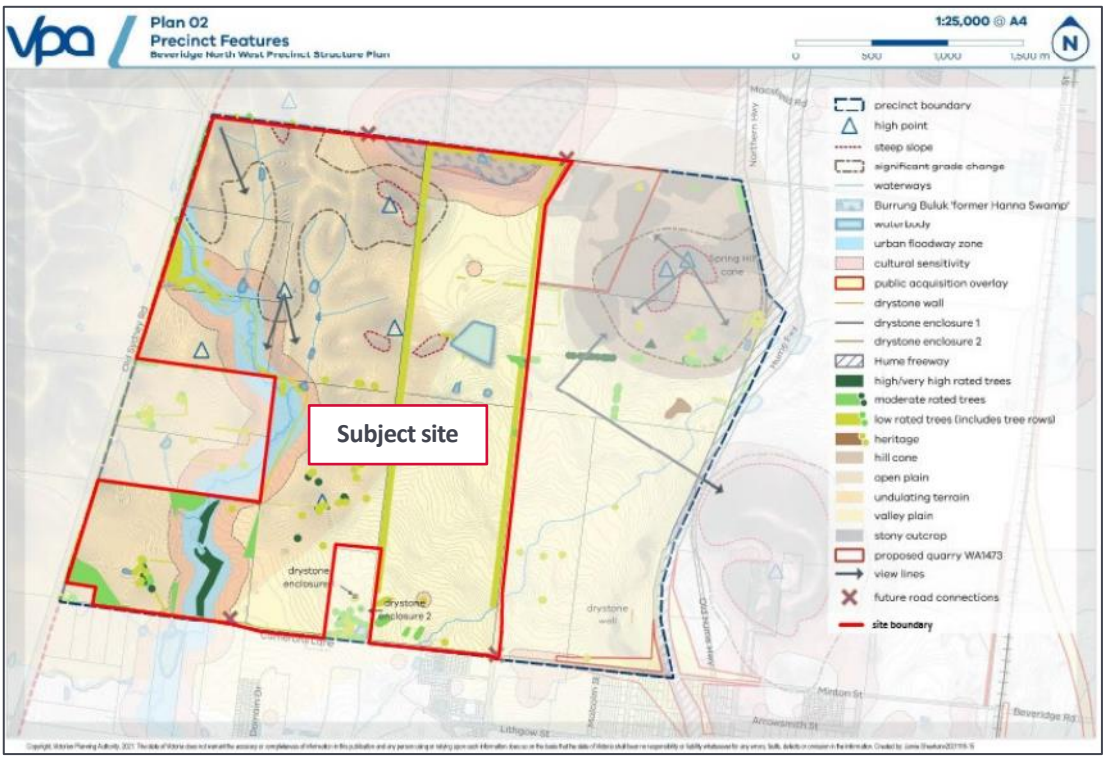
Table 1: Assisting MDA staff member

Staff member	Title	Tasks	Qualification
Travis Hancock	Senior Consultant	Detailed peer-review of the SLR Report Derivation of noise limits Review of evidence	BEng (Mech)

4.0 SITE DESCRIPTION

4.1 YVW is the landowner of the Hazelwynde property (the subject site), located approximately 4 km from the Wallan Town Centre, within the Beveridge North West PSP, as shown in Figure 1.

Figure 1: Subject site within the Beveridge North West PSP (Source: Figure 1 of YVW Submission)



4.2 The proposed quarry is located at 175 Northern Highway, Wallan, on the north eastern portion of the PSP, adjacent to the subject site.

4.3 The Incorporated Document *Extractive Industry & Buffer Area Beveridge North West Northern Highway Beveridge 3753*, dated November 2021 specifies the following buffers around the proposed quarry:

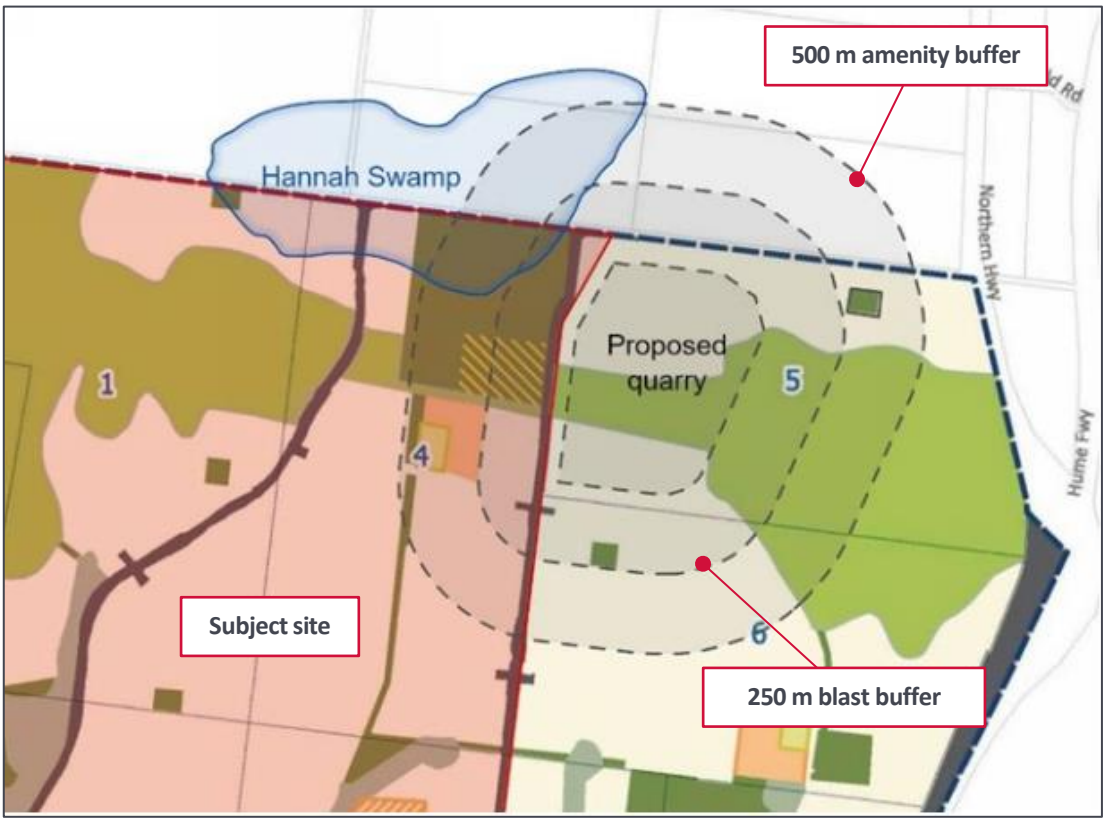
- Extractive Industry Blast Buffer Area (blast buffer); and
- Extractive Industry Sensitive Use Buffer Area (amenity buffer).

4.4 The blast buffer specified in the Incorporated Document extends 250 m from the proposed quarry. Construction of residential buildings are prohibited within the blast buffer area for the life of the quarry.

4.5 The amenity buffer specified in the Incorporated Document extends 500 m from the proposed quarry. Construction of residential buildings are prohibited within the blast buffer area until 2028. After that time, and for the remainder of the life of the quarry, a permit would be required for this type of development.

4.6 The proposed quarry and specified buffers are presented in Figure 2 together with the adjacent portion of the subject site.

Figure 2: Subject site, proposed quarry and surrounds (Source: Figure 2 of YVW Submission)



5.0 VICTORIAN LEGISLATION

5.1 The SLR report identifies the relevant noise policy and guidelines at the time of the assessment:

- EPA Publication 1411 *Noise from Industry in Regional Victoria* (NIRV)
- *State Environment Protection Policy (Control of noise from commerce, industry and trade) No. N1* (SEPP N-1)

5.2 As of 1 July 2021, both of these documents have been superseded by new environmental legislation, governed by the *Environment Protection Act 2017* (EP Act) and the following subordinate policy documents:

- the *Environment Protection Regulations 2021* (EP Regulations)
- EPA Publication 1826 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* (the Noise Protocol).

5.3 In addition to these documents there are also several newly introduced guidance documents and reference standards that would be relevant to consider as part of this assessment, including:

- EPA Publication 1996 *Assessing low frequency noise*;
- The *Environment Reference Standard* (ERS);
- EPA Publication 1856 *Reasonably practicable*; and
- EPA Publication 1823 *Mining and quarrying – guide to preventing harm to people and the environment*.

5.4 Central to the EP Act is the concept of the general environmental duty (GED), which requires *a person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution* [(including noise)] *or waste must minimise those risks, so far as reasonably practicable*.

5.5 Compliance with the GED is independent of compliance with the noise limits developed under the EP Regulations and the Noise Protocol.

5.6 As part of the release of the updated noise legislation, all of the subject site and the identified receiver locations are now contained within the major urban area boundary.

5.7 While the procedure for deriving noise limits in the Noise Protocol is largely the same as SEPP N-1 for urban areas and NIRV for rural areas, this change requires that the noise limits be rederived for Dwelling 1 as it is no longer 'rural'.

5.8 Due to the change in legislation, any future noise assessment for the proposed quarry would need to address the following key points:

- Zoning levels and operational noise limits to be updated in accordance with the Noise Protocol method, based on the updated urban growth boundary
- Consideration of the GED in relation to the proposed quarry operations, independent of the compliance status with the operational noise limits derived in accordance with the EP Regulations and the Noise Protocol.

  Further detail presented in Section 9.0.
- Consideration of the ERS for natural areas in the vicinity of the proposed quarry

  Further detail presented in Section 10.0.

6.0 SLR REPORT PEER REVIEW

6.1 The assessment method used in the SLR Report was appropriate at the time of preparing the report (i.e. before the introduction of the new environmental noise management framework). The assessment was conducted using an appropriate prediction method and assumptions, based on the information available at the time of preparing the report.

6.2 The key items that have been identified in the peer-review, relevant to the impact of the proposed quarry to future residential areas within subject site, are presented in the following sections.

Future proposed residential area

6.3 The SLR report does not present an objective assessment of noise levels at potential future receivers surrounding the quarry. Instead, it concludes that compliance with the relevant noise limits would be achieved within the 500 m amenity buffer area, stated as being required by the EPA.

6.4 The SLR report does not consider the potential for a reduced amenity buffer based on achieving compliance with the relevant noise limits at future residential areas identified in the PSP, including within the subject site.

6.5 Further discussion on the 500 m amenity buffer is provided in Section 8.0.

Background noise levels

6.6 An unattended survey was undertaken by SLR at two locations in September/October of 2015 to measure background noise levels representative of the existing receivers (Dwellings 1 and 3) identified in the vicinity of the proposed quarry. The background noise environment at the measurements locations is likely to have been significantly influenced by traffic along the nearby Hume Fwy.

6.7 It is therefore reasonable to expect that background noise levels at locations further from the Hume Fwy would be lower than those detailed in the SLR report.

6.8 As such, background noise levels used to derive the noise limits presented in the SLR report are not considered representative of future residential areas within the subject site.

Character adjustments

6.9 It is not clear from the SLR report whether consideration has been given to the appropriate application of any noise character adjustments for tonality, intermittency or impulsiveness or if low frequency noise has been considered as relevant in accordance with the new environmental noise management framework.

Mitigation measures

6.10 It is not apparent within the SLR report whether mitigation measures have been incorporated within the noise modelling inputs. Under the new environmental noise management framework, all reasonably practicable mitigation measures must be considered to comply with the GED, even if compliance with the noise limits is demonstrated.

7.0 APPLICABLE NOISE LIMITS

7.1 Considering the limitations discussed above with regard to the measured background noise levels, it is my opinion that *neutral* background noise levels, as defined in the Noise Protocol, are appropriate for the derivation of noise limits within the future residential areas of the subject site.

7.2 For receivers within land zoned for residential use, neutral background noise levels would be within the following ranges:

- Day period: 38-44 dB L_{A90}; and
- Night period: 30-36 dB L_{A90}.

7.3 Given the significant setback from the Hume Fwy and other major roads, these ranges are plausible. If lower background noise levels were measured once future residential areas within the subject site are developed, the outcome of this assessment would need to be revised.

7.4 The derivation of the noise limits, based on zoning levels for receivers located in the future residential areas, within the subject site, west of the proposed quarry is presented in Table 2.

Table 2: Applicable noise limits at future residential areas west of the proposed quarry

Period	Day of week	Start time	End time	Noise limit, dB L_{eff}
Day	Monday-Saturday	0700 hrs	1800 hrs	50
Night	Monday-Sunday	2200 hrs	0700 hrs	39

7.5 These noise limits have been used to inform this assessment.

8.0 AMENITY BUFFER

Definition

8.1 The EPA's response to the planning application (EPA reference: 5010167, dated 17 January 2020), references EPA Publication 1518 *Recommended separation distances for industrial residual air emissions* as the basis for determining appropriate setbacks for residual air emissions, not noise.

8.2 EPA Publication 1518 recommends a 500 m buffer for quarry sites with blasting and states the following:

> *This guideline applies only to off-site residual odour and dust emissions from industries which have the potential to impact on human health and wellbeing, local amenity and aesthetic enjoyment. Noise, vibration, ambient and hazardous air pollutants have not been considered in the development of this guideline.*

8.3 The EPA's response to the planning application further notes that *potential for noise impacts on the nearby sensitive land uses in accordance with Noise from Industry in Regional Victoria (NIRV; EPA Publication 1411, 2011) should be considered.*

8.4 In light of the changes to the environmental noise management framework, the amenity buffer should be based on compliance with the noise limits defined in accordance with the EP Regulations.

8.5 Based on the peer-review, I consider that the noise contours presented in the SLR report discussed in Section 6.0 can be used to inform appropriate amenity buffer distances from the proposed quarry.

Revised distances

8.6 I have reviewed the predicted noise contours in Appendix C to L of the SLR report against the applicable noise limits detailed in Table 2 to determine revised amenity buffer distances.

8.7 The discussion in this section primarily relates to potential future residential use located to the west of the quarry.

8.8 A summary of the required buffer zones during each stage of the quarry based on the SLR report results and comparison to the noise limits to the west of the quarry is presented in Table 3.

Table 3: Review of noise contour plots

Reference	Noise limit	Review comment
Appendix C Phase 1, Early Stage, Day	50 dB L_{eff}	The distance between the proposed quarry boundary and the 50 dB contour is up to approximately 380 m.
Appendix D Phase 1, Early Stage, Night	39 dB L_{eff}	The distance between the proposed quarry boundary and the 38 dB contour is up to approximately 160 m.
Appendix E Phase 1, Later Stage, Day	50 dB L_{eff}	The distance between the proposed quarry boundary and the 50 dB contour is up to approximately 140 m.
Appendix F Phase 1, Later Stage, Night	39 dB L_{eff}	Noise levels at the boundary of the proposed quarry are generally at or below the applicable night noise limit
Appendix G Phase 2, Day	50 dB L_{eff}	The distance between the proposed quarry boundary and the 50 dB contour is up to approximately 120 m.
Appendix H Phase 2, Night	39 dB L_{eff}	Noise levels at the boundary of the proposed quarry are generally at or below the applicable night noise limit
Appendix I Phase 3, Day	50 dB L_{eff}	The distance between the proposed quarry boundary and the 50 dB contour is up to approximately 110 m.
Appendix J Phase 3, Night	39 dB L_{eff}	Noise levels at the boundary of the proposed quarry are generally at or below the applicable night noise limit
Appendix K Phase 4, Day	50 dB L_{eff}	The distance between the proposed quarry boundary and the 50 dB contour is up to approximately 110 m.
Appendix L Phase 4, Night	39 dB L_{eff}	Noise levels at the boundary of the proposed quarry are generally at or below the applicable night noise limit

8.9 Based on the above review of the SLR predictions, the maximum buffer distance required for predicted noise levels from the proposed quarry to be below the applicable noise limits is 380 m, during the early stage operations of Phase 1.

8.10 During the later phase stage operations of Phase 1, after the fixed plant is lowered into the pit, and the level of screening increases, this maximum buffer distance is reduced to approximately 140 m.

Site rehabilitation

8.11 The Incorporated Document states that the proposed quarry site would need be rehabilitated in stages *to enable the land to be developed in accordance with the Beveridge North West PSP once any Extractive Industry use ceases*.

8.12 However, the rehabilitation phase has not been considered in the SLR report. It is therefore not clear whether rehabilitation operations would be staged in parallel with the quarrying operations or whether rehabilitation operations are undertaken once all quarrying operations have been completed.

8.13 If rehabilitation operations are undertaken after all quarrying operations have been completed, the following would occur with regard to the amenity buffers defined based on compliance with the EP Regulations noise limits, based on the predicted noise levels detailed in the SLR report:

- As quarry operations progress the required amenity buffer distance would reduce from 380 m during the early stage of Phase 1 to 110 m during Phase 4
- Once quarry operations have ceased and rehabilitation is underway, the required amenity buffer distance would then increase as operations move closer to the natural ground level.

8.14 The SLR report does not included sufficient information to determine the maximum required amenity buffer distance required to achieve the EP Regulations noise limits during the rehabilitation stages.

8.15 The fixed plant (crushers and screens) has been identified in the SLR report as the highest contributor to predicted noise levels during the early stage operations of Phase 1. I do not expect this type of plant would be required during the rehabilitation phase.

8.16 It is therefore my opinion that this modelled scenario would result in the highest predicted noise levels at receivers within the subject site over the life of the proposed quarry, including rehabilitation of the site.

8.17 Based on the predicted noise levels detailed in the SLR report, an amenity buffer distance of up to 380 m would allow compliance with the EP Regulations noise limits applicable at receivers in the future residential areas within the subject site, over the life of the proposed quarry, including rehabilitation of the site.

8.18 In order to inform the amenity buffer distances required to achieve compliance with the EP Regulations, a revised noise assessment of the proposed quarry would need to be prepared in accordance with the EP Act considering both quarrying and rehabilitation stages

9.0 GENERAL ENVIRONMENTAL DUTY

9.1 To comply with the GED, the quarry must be aware of, and minimise as far as reasonably practicable, noise related risks to human health from their operations.

9.2 The intent of the GED is that all reasonably practicable measures to minimise the risk of harm should be implemented, even if they are not required to demonstrate compliance with the noise limits derived under the EP Regulations.

9.3 The following points present example of reasonably practicable measures that could be investigated at the proposed quarry to address the GED:

- Provision of broadband reversing beepers on all mobile plant, as recommended in the SLR report;
- Selecting the lowest noise equipment that is available and suitable for both fixed and mobile plant;
- Enclosing fixed plant in acoustically design structures;
- Fitting proprietary noise reduction kits to mobile plant;
- Preparation and implementation of an offsite amenity plan to limit the impact of trucks on surrounding local roads in the early morning; and
- Routing all mobile plant and truck movements to maximise shielding from earthen berms and the quarry pit and to maximise distances from the residential interface.

9.4 The selection of mitigation measures would require a cost benefit analysis be undertaken by the quarry operator, considering EPA Publication 1856 and investigation into the magnitude of noise reduction to determine which measures would result in a material noise impact reduction at receiver.

9.5 The GED must be considered in any future noise assessment for the proposed quarry.

10.0 ENVIRONMENT REFERENCE STANDARD

10.1 The Environment Reference Standard (ERS) is an environmental benchmark. It includes environmental values, indicators and objectives that describe environmental and human health outcomes to be achieved or maintained in the whole or in parts of Victoria.

10.2 These values, indicators and objectives are used to assess and report on changing environmental conditions by providing a reference point for decision makers to consider whether a proposal or activity is consistent with the environmental values identified in the ERS.

10.3 The ERS also allows decision makers to evaluate potential impacts on human health and the environment that may result from a proposal or activity. The objectives contained in the ERS are not to be used as criteria or limits to be achieved and direct regulation takes precedence over the ERS.

10.4 Given the Noise Protocol assessment provides an objective assessment of noise from the proposed quarry, it is therefore not relevant to discuss the ERS values, indicators, and objectives with respect to the potential future residential land use within the subject site.

10.5 My review of the various submissions indicates that there is a swamp located immediately to the northwest of the quarry, as well as land set aside for 'local sports reserve' and 'landscape values' in the Future Urban Structure of the PSP.

10.6 As these uses are not covered by the legislative requirements of the EP Act, the ERS values, indicators, and objectives may be considered as relevant.

10.7 These would largely fall under Category V of the ERS, which does not have a prescriptive indicator, but a qualitative objective of a *sound quality that is conducive to human tranquillity and enjoyment having regard to the ambient natural landscape*.

10.8 The predicted noise contours presented in the SLR report indicate that noise levels during the day would likely be dominated by noise from the quarry in the vicinity of the swamp.

10.9 It is my opinion that the ERS should be considered in any future noise assessment for the proposed quarry.

11.0 PROPOSED PERMIT CONDITIONS

11.1 The following draft noise related permit conditions were provided for review:

Noise

18. The use and development must comply at all times with the noise requirements of the Environment Protection Regulations 2021 under the Environment Protection Act 2017 or other applicable noise standard that may apply from time to time

19. Prior to the commencement of works for each stage of the development, an acoustic report prepared by an independent and appropriately qualified acoustic consultant must be submitted to the satisfaction of the Responsible Authority outlining mitigation measures necessary to comply with the maximum permissible noise limits determined in accordance with condition 18 of this permit.

20. *Within three (3) months of each stage of the development commencing an acoustic impact assessment report prepared by an independent acoustic consultant must be submitted to the Responsible Authority. The report must detail whether the noise levels associated with the use are in accordance with condition s17 of this permit. If noise levels exceed those required by condition 17, the report must outline a program or measures to ameliorate or attenuate noise to ensure that the levels are met to the satisfaction of the Responsible Authority. The use must not continue until such time that the attenuation measures have been implemented to the satisfaction of the Responsible Authority. Thereafter the use must at all times accord with the recommendations of the Acoustic Impact Assessment report to the satisfaction of the Responsible Authority*

21. *A register of any complaints by the public concerning the operations must be maintained and the register must be made available to the Responsible Authority on request.*

11.2 The draft conditions satisfactorily address the element of the EP Regulations requirements concerning compliance with the appliable noise limits.

11.3 However, as discussed in Section 9.0, it is noted that EP Act also specifies obligations with regard to the GED.

12.0 DECLARATION

12.1 I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance which I regard as relevant have to my knowledge been withheld from the Committee.

Signed .....

Dated 27 April 2022

APPENDIX A CURRICULUM VITAE – CHRISTOPHE FREDERIC DELAIRE

CHRISTOPHE FREDERIC DELAIRE
Co-CEO, Marshall Day Acoustics, Melbourne, Australia

Master's Degree in Engineering (French equivalent), France 2001

Membership

Member of the Australian Acoustical Society, (MAAS)

Project Experience

Christophe Delaire graduated with a Masters Degree in Engineering (French equivalent) from Ecole Supérieure d'Ingénieurs de Poitiers (France) in 2002 and joined Marshall Day Acoustics the same year.

Christophe has acquired wide-ranging experience in environmental projects and residential developments. He has particularly developed his skill set in environmental acoustics and has been involved in the noise assessment of numerous wind farms since 2005, including most Victorian projects.

Christophe has given evidence at many hearings (VCAT and Panels Victoria) and is the author of several papers presented at International Wind Turbine Noise Conferences.

Employment

2017 – Present	Co-CEO, Marshall Day Acoustics, Melbourne
2002 – 2017	Associate, Marshall Day Acoustics, Melbourne
2001	Vacation employment, Marshall Day Acoustics, Melbourne

APPENDIX B DOCUMENTS TAKEN INTO ACCOUNT

I have reviewed the following documents to the extent necessary to prepare this statement of evidence:

- SLR Consulting Report No. 640.11178-R02-v1.4 *Proposed North Central Quarry WA1473 – 175 Northern Highway, Wallan Environmental Noise Assessment*, dated 30 September 2019
- Incorporated Document *Extractive Industry & Buffer Area Beveridge North West Northern Highway Beveridge 3753*, dated November 2021
- Draft *Beveridge NorthWest Precinct Structure Plan*, dated November 2021
- *Environment Protection Act 2017*
- *Environment Protection Regulations 2021*
- *Environmental Reference Standard*
- EPA Publication 1826.4 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues*
- EPA Publication 1996 *Assessing low frequency noise*
- EPA Publication 1856 *Reasonably practicable*
- EPA Publication 1823 *Mining and quarrying – guide to preventing harm to people and the environment*
- EPA document reference 5010167, dated 17 January 2020.

APPENDIX C GLOSSARY OF TERMINOLOGY

dB	Decibel The unit of sound level.
A-weighting	The process by which noise levels are corrected to account for the frequency response of the human ear.
L_{A90}	The A-weighted sound level exceeded for 90 % of the measurement period, measured in dB. Commonly referred to as the background noise level.
L_{eff}	The effective noise level from commercial, industrial or trade premises determined in accordance EPA Publication 1826.4 *Noise limit and assessment protocol for the control of noise from commercial, industry and trade premises and entertainment venues*. This is the L_{Aeq} noise level over a 30-minute period, adjusted for the character of the noise. Adjustments are made for tonality, intermittency and impulsiveness.