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UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTRE

Operational Noise Review

22 May 2025

John Holland

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40 YEARS 1982-2022 ACOUSTIC ENGINEERING EXCELLENCE

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Upper South Creek Advanced Water Recycling Centre – Concept and Stage 1. Condition of Approval E56 Operational Noise Review – Acoustics Advisor Verification

This letter confirms our review and verification of Revision 5 of the Operational Noise Review (ONR) for the Sydney Water Upper South Creek Project (USCP), in fulfilment of our responsibilities under Condition of Approval E56 of planning approval SSI 8609189.

The full text of the condition is included at Annex A to this letter.

In fulfillment of my role as Acoustics Advisor I have:

- reviewed and commented on previous revisions of the ONR
- met with the ONR authors to discuss and resolve comments
- visited and viewed the Advanced Water Recycling Centre site during its construction to gain an appreciation of relevant issues such as the location of future noise sources, the location of noise sensitive receivers, and potential intermediate locations for noise verification.

In my approach to verifying the ONR, I note that CoA E56(b) requires a validated noise model using measurements. However, it is not possible to measure operational noise as operations cannot commence before acceptance of the ONR, as required by the last paragraph of CoA E56.

My approach to verification has therefore largely focussed on the ONR including appropriate content to facilitate the noise performance verification monitoring required by CoA E57, which will then satisfy the intent of CoA E56(b).

I understand that a register of Sydney Water's, and my, comments, and responses to our comments, will be appended to the A9 Consultation Summary Report.

Yours sincerely,

Larry Clark

Larry Clark

Acoustics Advisor, Upper South Creek Project
Acoustic Specialist, Consultant.

Annex A:

Condition E56 of the Infrastructure Approval for the Sydney Water Upper South Creek Advanced Water Recycling Centre – Concept and Stage 1 (SSI-8609189)

E56

An Operational Noise Review (ONR) must be prepared to confirm noise control measures that would be implemented for the operation of Stage 1 of the CSSI. The ONR must be prepared in consultation with relevant council(s) and the EPA and must:

(a) confirm the appropriate operational noise and vibration objectives and levels for surrounding development, including existing sensitive land use(s);

(b) confirm the operational noise predictions based on the final design. Confirmation must be based on an appropriately calibrated model(s) (which has incorporated noise monitoring, and concurrent traffic counting, where necessary for calibration purposes). The assessment must specifically include verification of noise levels at all fixed facilities, based on noise monitoring undertaken at appropriately identified noise catchment areas surrounding the facilities;

(c identify all noise and vibration mitigation measures including location, type and timing of mitigation measures, with a focus on:

(i) source control and design; and

(ii) 'best practice' achievable noise and vibration outcome for each activity;

(d) include a consultation strategy to seek feedback from directly affected landowners on the noise measures; and

(e) procedures for the management of operational noise complaints, including investigation and monitoring (subject to complainant agreement).

The ONR must be verified by the AA or an independent acoustic expert. The ONR must be undertaken at the projects expense and submitted to the Planning Secretary for information at least 12 months prior to the commencement of operation, unless otherwise agreed by the Planning Secretary.

The identified noise measures must be implemented and the ONR must be made publicly available.

Executive summary

Renzo Tonin & Associates (NSW) Pty Ltd has prepared this Operational Noise Review (ONR) on behalf of John Holland to satisfy the Conditions of Approval for the Upper South Creek Advanced Water Recycling Centre Project (the Project).

This ONR has been prepared to specifically address CoA E56 and to satisfy other relevant CoAs. CoA E56 requires this ONR to identify the operational noise and vibration targets, present noise predictions using an appropriate noise model, identify mitigation measures, and outline the consultation strategy and procedures for addressing noise complaints.

Noise and vibration objectives were set out in the Project's environmental documentation and have been adopted in this ONR for consistency with the Project's consent and to satisfy CoAs A1, A2 andA3. Noise objectives are based on the targets given in the NSW EPA Noise Policy for Industry.

Predicted noise levels were produced using a noise model based on the final design and the Land Use Survey developed to satisfy CoA E39. Industrial noise emissions were determined using a detailed computer noise model using the best available data at the time of the assessment, as it is not possible to operate the site in accordance with the Consent until this ONR is accepted. Instead, model validation will be carried out after commencement of site operations, as this is a requirement to satisfy CoA E57. Potential road traffic noise emissions due to the Project were modelled using the anticipated traffic volumes for the AWRC. This road traffic noise model was prepared using accepted methods set out in the NSW EPA Road Noise Policy and was validated based on traffic flows observed during operator-attended noise measurements.

Noise mitigation measures have been incorporated into the final design and are described in this ONR, particularly to address noise sources with the potential to exceed the nominated noise objectives. Wall and roof constructions for AWRC buildings were informed by the potential noise levels within the buildings and insulation has been incorporated into the final design where needed. Some doors and louvres have been included with a higher noise reduction to control noise breakout from key buildings. Pipeline valves are located within concrete pits with Gatic covers.

The Project has been designed to operate as efficiently as possible and to minimise the number of noise-generating items to achieve the Project's approved purpose. Some plant and equipment are located outside of dedicated buildings, and noise walls and enclosures were considered for these outdoor noise sources. However, noise walls and enclosures could not be feasibly adopted without impacting the safe and efficient operation of the site. Additionally, the potential noise reduction offered by noise walls and enclosures did not reasonably offset the financial costs to the Project, nor did it justify the additional maintenance costs, reduced plant/equipment performance/lifespan, and inhibited accessibility.

A consultation strategy has been developed by the Project and forms part of the Project's Community and Stakeholder Engagement Plan (CSEP). Relevant components of the CSEP are reproduced in this ONR to address the requirement for a consultation strategy in relation to noise mitigation measures.

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1 Introduction

This Operational Noise and Vibration Review (ONR) seeks to meet the requirements of the conditions stipulated in Part E of the Conditions of Approval (CoA), dated 28 November 2022 for the Upper South Creek Advanced Water Recycling Centre (AWRC).

This report outlines the operational noise objectives, noise modelling results, the location and type of noise mitigation measures, and proposed noise monitoring program to be implemented following the completion and opening of the Project. Noise sensitive receptors that will be exposed to operational noise from the Project are considered in this report.

Noise emissions from the operation of the AWRC and the pipelines have been assessed against noise objectives set by the NSW 'Noise Policy for Industry' (NPfI) in accordance with CoA E56.

2 Purpose and objectives

2.1 Purpose

The purpose this ONR is to review the predicted operational noise emissions from the Project and ensure appropriate operational noise mitigation measures are designed and installed by:

- Confirming the operational noise and vibration goals and objectives for nearby sensitive land uses,
- Confirming the operational noise predictions and impacts for the Project based on the final design and a calibrated noise model,
- Reviewing the suitability of the operational noise mitigation measures identified in the Upper South Creek Advanced Water Recycling Centre Environmental Impact Statement, and Upper South Creek Advanced Water Recycling Centre Amendment report,
- Outlining a consultation strategy for the noise and vibration mitigation measures, and
- Describing a procedure for the management of noise complaints.

2.2 Objectives

The relevant noise assessment objectives and commitments to the community are described in the Conditions of Approval for the Project and the following environmental documents:

- Upper South Creek Advanced Water Recycling Centre – Environmental Impact Statement, Appendix S Technical Report I Noise and Vibration Impact Assessment, Aurecon Arup, April 2021
- Upper South Creek Advanced Water Recycling Centre – Pipeline amendment, Appendix D Technical Report I Noise and Vibration Impact Assessment – Amendment report, Aurecon Arup, December 2021
- Upper South Creek Advanced Water Recycling Centre Amendment Report, dated March 2022
- Upper South Creek Advanced Water Recycling Centre Submissions Report, dated March 2022
- Response to DPE RFI 1, regarding responses to advice received on the Response to Submissions Report, dated 1 June 2022, 1 July 2022 and 11 July 2022
- Upper South Creek Advanced Water Recycling Centre – Modification 1 Environmental Flows Pipeline, dated March 2023
- Upper South Creek Advanced Water Recycling Centre – Modification 2 Pipeline alignments, Appendix F Modification 2 Pipeline alignments Noise and Vibration Impact Assessment – Addendum report, Aurecon Arup, June 2023

Additionally, this ONR will meet the following ISC SMART (Infrastructure Sustainability Council Specific, Measurable, Achievable, Relative, Time-based) targets:

- Target 1 - *Prior to the commencement of operations, the noise generated at the AWRC and Pipelines during the operational phase will be assessed and modelled in accordance with the NSW 'Noise Policy for Industry' (EPA, 2017). The Project's objective is to achieve the Project Specific Noise Trigger Levels for the night period, which is the most sensitive time for residential receivers. It is mandatory to complete noise modelling that details the levels generated by the Project and ensures they remain within the specified noise trigger levels prior to commencement of operations. The more stringent value of the Project intrusiveness noise level and project amenity noise level, as defined by the Noise Policy for Industry, will serve as the criteria for determining all trigger levels.*

- Target 2 - *The Project is to maintain operational noise levels within the Project Specific Noise Trigger Levels of 41 dB(A) at night and 45 dB(A) day/evening at residential receivers neighbouring the AWRC. The assessment of noise trigger levels and maximum noise levels will be carried out at identified residential receivers and sensitive land use(s) in accordance with Section 2.6 of the NSW Noise Policy for Industry (NPfI), 2017.*

3 Environmental and legal obligations

3.1 Conditions of approval

Table 3-1 summarises the relevant Conditions of Approval (CoA) for application number SSI 8609189.

Table 3-1: Conditions of approval relevant to operational noise

CoA No.	CoA Details	Reference in this document
General		
A1	The Proponent must carry out Stage 1 of the CSSI in accordance with the terms of this approval and generally in accordance with the: a) *Upper South Creek Advanced Water Recycling Centre Environmental Impact Statement*, dated September 2021; b) *Upper South Creek Advanced Water Recycling Centre Submissions Report,* dated March 2022; c) *Upper South Creek Advanced Water Recycling Centre Amendment Report,* dated March 2022; d) *Upper South Creek Advanced Water Recycling Centre Submissions Report – Project Amendments,* dated April 2022; e) Response to DPE RFI 1, regarding responses to advice received on the Response to Submissions Report (dated, 1 June 2022, 1 July 2022, and 11 July 2022); f) Response to DPE RFI 2, regarding additional information on Flood Impact Assessment (dated, 11 July 2022); g) In accordance with modification application SSI-8609189-Mod-1 and supporting documentation; and h) In accordance with modification application SSI-8609189-Mod-2 and supporting documentation	This document (described in Section 2)
A2	Stage 1 of the CSSI must only be carried out in accordance with all procedures, commitments, preventative actions, performance criteria and mitigation measures set out in the documents listed in **Condition A1** unless otherwise specified in, or required under, this approval.	This document (described in Section 2)
A3	In the event of an inconsistency between: a) the terms of this approval and any documents listed in **Condition A1** inclusive, the terms of this approval will prevail to the extent of the inconsistency; and b) Any document listed in **Condition A1** inclusive, the most recent document will prevail to the extent of the inconsistency. Note: *For the purposes of this condition, there will be an inconsistency between a term of this approval and any document if it is not possible to comply with both the term and the document.*	This document (described in Section 2)

CoA No.	CoA Details	Reference in this document
A9	Where the terms of this approval require consultation to be undertaken, evidence of the consultation undertake must be submitted to the Planning Secretary and ER (as relevant) with the corresponding documentation. The evidence must include: a) Documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval; b) A log of the dates of engagement or attempted engagement with the identified party; c) Documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations; d) Outline of the issues raised by the identified party and how they have been addressed; and e) A description of the outstanding issues raised by the identified party and the reasons why they have not been addressed.	Section 3.5
Noise and vibration		
E39	A detailed land use survey must be undertaken to confirm sensitive land use(s) (including critical working areas such as operating theatres and precision laboratories) potentially exposed to construction noise and vibration, construction ground-borne noise and operational noise. The survey may be undertaken on a progressive basis but must be undertaken in any one area before the commencement of activities which generate construction or operational noise, vibration or ground-borne noise in that area. The results of the survey must be included in the Noise and Vibration CEMP Sub-plan required by Condition C4.	APPENDIX B
E56	An Operational Noise Review (ONR) must be prepared to confirm noise control measures that would be implemented for the operation of Stage 1 of the CSSI.	This document
	The ONR must be prepared in consultation with relevant council(s) and the EPA and must:	Section 3.5
a	confirm the appropriate operational noise and vibration objectives and levels for surrounding development, including existing sensitive land use(s);	Section 4, Section 5 & APPENDIX B
b	confirm the operational noise predictions based on the final design. Confirmation must be based on an appropriately calibrated model(s) (which has incorporated noise monitoring, and concurrent traffic counting, where necessary for calibration purposes). The assessment must specifically include verification of noise levels at all fixed facilities, based on noise monitoring undertaken at appropriately identified noise catchment areas surrounding the facilities;	Section 9 & APPENDIX C
c	identify all noise and vibration mitigation measures including location, type and timing of mitigation measures, with a focus on: (i) source control and design; and (ii) 'best practice' achievable noise and vibration outcome for each activity;	Section 8 & APPENDIX C
d	include a consultation strategy to seek feedback from directly affected landowners on the noise measures; and	Section 10
e	procedures for the management of operational noise complaints, including investigation and monitoring (subject to complainant agreement).	Section 10 & Section 11
Operational Noise Validation		
E57	Within 12 months of the commencement of operation of Stage 1 of the CSSI, monitoring of operational noise must be undertaken to compare actual noise performance of Stage 1 of the CSSI against the noise performance predicted in the review of noise mitigation measures required by Condition E56.	Section 11

3.2 Updated management measures

Table 3-2 summarises the Updated Management Measures (UMMs) that would require consideration as part of the detailed design of Project noise mitigation. The UMMs listed were presented in Appendix B of the Modification 2 Report.

Table 3-2: Updated management measures relevant to operational noise

Impact	Reference	Environmental management measure	Reference in this document
Operational noise performance	NV10	Investigate opportunities to reduce the operational noise from the project, particularly at the AWRC. This will include: • pump selection with reduced noise levels • barriers and enclosures around noisy equipment to comply with AS 2436-2010 • building materials.	Section 8 & APPENDIX C

3.3 Legislation

Key environmental legislation relating to the management of noise and vibration includes:

- Environmental Planning and Assessment Regulation 2000
- Protection of the Environment Operations Act 1997
- Protection of the Environment Administration Act 1991
- Environment Planning and Assessment Act 1979
- Local Government Act 1993

3.4 Guidelines and background documents

The key references relevant to noise and vibration management include:

- Road Noise Policy (RNP), NSW EPA, March 2011
- NSW Noise Policy for Industry (NPfI), NSW EPA, October 2017
- Assessing Vibration: a technical guideline, Department of Environment and Conservation, 2006

Background studies and assessment of potential noise impacts from operation of the Project include:

- Upper South Creek Advanced Water Recycling Centre – Environmental Impact Statement, Appendix S Technical Report I Noise and Vibration Impact Assessment, Aurecon Arup, 28 April 2021
- Upper South Creek Advanced Water Recycling Centre – Pipeline amendment, Appendix D Technical Report I Noise and Vibration Impact Assessment – Amendment report, Aurecon Arup, December 2021

- Upper South Creek Advanced Water Recycling Centre – Modification 2 Pipeline alignments, Appendix F Modification 2 Pipeline alignments Noise and Vibration Impact Assessment – Addendum report, Aurecon Arup, June 2023
- Upper South Creek Advanced Water Recycling Centre Submissions Report, March 2022
- Community & Stakeholder Engagement Plan, Upper South Creek Advanced Water Recycling Centre and Pipelines, Sydney Water & John Holland Pty Ltd, April 2023

3.5 Consultation, verification and approval

The CSSI approval requires that the ONR must be prepared in consultation with the following parties:

- NSW Environment Protection Authority (EPA)
- Relevant Councils, including:
    - Wollondilly Shire Council
    - Penrith City Council
    - Canterbury-Bankstown Council

A Consultation Summary Report has been prepared in accordance with CoA A9 of the CSSI approval to document the consultation undertaken and is included in APPENDIX E.

The ONR has been verified by the project's independent Acoustic Advisor (AA), evidence of which has been inserted into this document, immediately following the ONR document details and document control page.

The ONR has been provided to the Planning Secretary for information at least 12 months prior to the commencement of operation of the facility.

4 Study area and existing noise environment

4.1 Sensitive land uses

Sensitive land uses are defined in the Terms and Definitions of the Project's Consent as:

"…residences, educational institutions (including preschools, schools, universities, TAFE colleges), health care facilities (including nursing homes, hospitals), religious facilities (including churches), child care centres and passive recreation areas (including outdoor grounds used for teaching). Receivers that may be considered to be sensitive include commercial premises (including film and television studios, research facilities, entertainment spaces, temporary accommodation such as caravan parks and camping grounds, restaurants, office premises, and retail spaces) and industrial premises as identified by the Planning Secretary."

These sensitive land uses have been identified in a Land Use Survey prepared for the Project in accordance with CoA E39. The Land Use Survey has been progressively updated during the delivery of the Project and the latest version of the Land Use survey forms the basis of this ONR.

The Land Use Survey maps showing the identified sensitive land uses are present in the Project's Noise and Vibration CEMP Sub-Plan and are reproduced in APPENDIX B.

This ONR differentiates between sensitive land uses that are residential and non-residential, with the latter category referring to all sensitive land use types (except residences) identified in the Consent's Terms and Definitions. Additionally, reference to 'residential land uses' (or 'residences') and 'non-residential land uses' in this ONR should be read as referring to sensitive land uses as defined in the Consent which are residential and non-residential, respectively.

4.1.1 Residential sensitive land uses

Residential sensitive land uses identified in the Land Use Survey have, for the purposes of this ONR, been assigned to noise catchment areas (NCAs). These NCAs were established in the Project's EIS and, for consistency with the EIS (in accordance with CoA A1), have been adopted to facilitate the assignment of appropriate noise objectives in accordance with CoA E56(a). Residential sensitive land uses are approximately 520-1300m away from the AWRC and Table 4-1 contains a selection of the NCAs identified in the EIS which have one or more residential land uses assessed in this ONR.

Table 4-1: Noise catchment areas (NCAs)

NCA	Description	Main sources of background noise[1]
NCA T1	Residential land uses near the AWRC Centre	Natural noise and minimal influence on the noise environment from existing road traffic noise sources.
NCA T7	Residential land uses along Silverdale Road	No monitoring undertaken, assumed rural environment. Areas with negligible transportation.

NCA	Description	Main sources of background noise[1]
NCA T8	Residential land uses along Bents Basin Road	No monitoring undertaken, assumed rural environment. Areas with negligible transportation.
NCA B17	Residential land uses along the Hume Highway	No monitoring undertaken, assumed urban industrial environment. Areas with dense transportation OR with some commerce or industry

Notes

1. The commentary relating to background noise sources is reproduced from the EIS.

4.1.2 Non-residential sensitive land uses

Non-residential sensitive land uses have been identified in the Land Use Survey and are depicted in the maps in APPENDIX B. Table 4-2 provides a non-exhaustive list of non-residential land uses within the Project study area to demonstrate the distances between these land uses and the AWRC and/or pipeline. Residential land uses are closer to the AWRC and pipelines noise sources.

Table 4-2: Non-residential / other sensitive land uses

NCA ID	Name	Address	Type	Approximate distance to AWRC, m
NCA T1	Cleanaway Kemps Creek Resource Recovery Park	1725A Elizabeth Drive, Badgerys Creek 2178	Industrial premise	1100
NCA T1	Kingsfield Stud	1669A Elizabeth Drive, Badgerys Creek 2555	Industrial premise	1200
NCA B1	Muhammadi Welfare Association	81-89 Clifton Avenue, Kemps Creek 2178	Place of worship	1700
NCA B1	TreeServe	90-145 Clifton Avenue, Kemps Creek	Industrial premise	1400
NCA B1	Animal Welfare League	1605 Elizabeth Drive, Kemps Creek	Commercial premise	1700

4.2 Noise monitoring locations

4.2.1 M12 EIS noise monitoring locations

Long-term noise monitoring from the M12 Environmental Impact Statement was adopted to quantify ambient noise levels for the AWRC Environmental Impact Statement for locations in proximity to the AWRC. The relevant noise monitoring locations are summarised in Table 4-3. The Land Use Survey maps presented in APPENDIX B show all noise monitoring locations in the EIS.

Table 4-3: EIS long-term noise monitoring locations

ID	NCA	Noise monitoring location address
L06	NCA T1	203 Clifton Avenue, Kemps Creek

4.3 Existing noise levels

4.3.1 M12 EIS noise monitoring

Ambient noise surveys were conducted for the M12 Motorway EIS and adopted in the Project's EIS. For consistency with the EIS (in accordance with CoA A1), these noise monitoring results have been retained for the formulation of residential noise targets.

The relevant unattended noise logging results in the Project EIS, include the Rating Background Level (RBL) for the Day, Evening and Night periods, are summarised in Table 4-4.

Table 4-4: EIS long-term noise monitoring results

Noise monitoring location	Rating Background Level, dB(A)[1]		
	Day	Evening	Night
L06	34	35	31

Notes:

1. NPfI periods – Day: 7am to 6pm Monday to Saturday, 8am to 6pm Sunday; Evening: 6pm to 10pm; Night: 10pm to 7am Monday to Saturday, 10pm to 8am Sunday.

4.3.2 Noise catchment area RBLs

The measured RBLs from the M12 EIS have been adopted for residential land uses near to the AWRC. For the remaining NCAs, a qualitative assessment was conducted as part of the Project EIS that established RBLs based on AS1055.3-1997 typical background noise levels and guidance in the NPfI.

The RBLs adopted for each NCA are detailed in Table 4-5.

Table 4-5: Summary of NCA RBLs

NCA	Monitoring location	Rating Background Level, dB(A)		
		Day	Evening	Night
NCA T1	L06	35 (34)[1]	35	31
NCA T7	Note 2	40	35	30
NCA T8	Note 2	40	35	30
NCA B17	Note 2	55	50	45

Notes:

1. Fact Sheet B of the NPfI specifies a minimum background noise level of 35 dB(A) for the Day period
2. Adopted from AS1055.3-1997

5 Operational noise and vibration objectives

5.1 Project requirements

CoA E56(a) requires the confirmation of operational noise and vibration objectives to be achieved at existing sensitive land uses neighbouring the Project. These objectives depend on the type of sensitive land use and the classification of the noise source by various NSW policies and guidelines.

The main sources of noise and vibration from regular operation of the Project have been identified as the following:

- Fixed facilities (industrial noise sources), including:
  - Plant and equipment operating on the AWRC site
  - The Nepean and Lansvale sites
- AWRC traffic travelling onto the road network (road traffic noise sources).

5.2 Operational noise objectives

5.2.1 Relevant NCAs and adopted background noise levels

The background noise levels detailed in Section 4.3 represent noise levels before the operation of the M12. According to the Project EIS, the anticipated background noise levels at the sensitive land uses near the AWRC were estimated to increase by 5 dB(A) or more due to the operation of the M12. The EIS concluded that the resulting background noise levels would fall into the Urban residential category as defined in the NPfI.

Table 5-1 identifies the relevant NCAs and the catchments where a correction to the background noise level has been applied.

Table 5-1: Relevant NCAs and corresponding RBLs

NCA	Residential Category	Rating Background Level, dB(A)		
		Day	Evening	Night
NCA T1	Urban[1]	40[2]	40[2]	36[2]
NCA T7	Rural	40	35	30
NCA T8	Rural	40	35	30
NCA B17	Urban	55	50	45

Notes:

1. Areas near the AWRC to be classified as urban due to the operation of the M12 in accordance with the EIS.
2. 5 dB increase to the RBL in rural areas in addition to being reclassified as urban near the AWRC due to the operation of the M12 in accordance with the EIS.

5.2.2 Intrusive noise trigger level

In accordance with the NPfI, the intrusive noise trigger level is applicable to residential land uses only and is established relative to the existing background noise level, as follows:

- $L_{Aeq(15min)} \leq$RBL plus 5 dB(A)

5.2.3 Recommended and project amenity noise levels

In accordance with the NPfI, the ambient noise level within an area from all industrial noise sources combined should remain below the Recommended Amenity Noise Levels (RANL) specified in Table 2.2 of the NPfI where feasible and reasonable. To determine the noise objectives from a single industrial development the Project Amenity Noise Level (PANL) is adopted, which is established as follows:

- PANL = RANL minus 5 dB(A)

The PANL is determined over an assessment period and the intrusive noise level is determined over a 15-minute period. To compare the PANL with the intrusive noise level 3 dB(A) is added to the PANL to standardise the time period.

5.2.4 Project specific noise trigger levels

The noise objectives established in the Project's EIS, which are based on the NPfI, are presented in Table 5-2.

Table 5-2: Noise objectives for AWRC and pipeline operational noise

Residential NCA or land use type	Period	Intrusive Noise Trigger Levels $L_{Aeq(15min)}$	Project Amenity Noise Level $L_{Aeq(period)}$	Project Amenity Noise Level $L_{Aeq(15min)}$[3]	Project-Specific Noise Trigger Level $L_{Aeq(15min)}$
NCA T1	Day	45[1]	55[2]	58	**45**
	Evening	45[1]	45[2]	48	**45**
	Night	41[1]	40[2]	43	**41**
NCA T7	Day	45	45	48	**45**
	Evening	40	40	43	**40**
	Night	35	35	38	**35**
NCA T8	Day	45	45	48	**45**
	Evening	40	40	43	**40**
	Night	35	35	38	**35**
NCA B17	Day	60	55	58	**58**
	Evening	55	45	48	**48**
	Night	50	40[4]	43	**43**
Place of worship (internal)	When in use	-	35	38	**38**[5]
Active recreation	When in use	-	50	53	**53**

Residential NCA or land use type	Period	Intrusive Noise Trigger Levels $L_{Aeq(15min)}$	Project Amenity Noise Level $L_{Aeq(period)}$	Project Amenity Noise Level $L_{Aeq(15min)}$ [3]	Project-Specific Noise Trigger Level $L_{Aeq(15min)}$
Commercial	When in use	-	60	63	**63**
Industrial	When in use	-	65	68	**68**

Notes:

1. Refer to Section 5.2. Consistent with the EIS, a 5 dB increase in RBL has been assumed due to M12 operation.
2. According to the EIS, based on Urban residential typical criteria as per Table 2.3 of the NPfI, Section 5.2 and Section 5.3.
3. Includes a conversion factor of 3 dB to convert LAeq(period) to LAeq(15minutes) in accordance with the NPfI.
4. The EIS classified this NCA as 'urban industrial' when it defined the assumed background noise levels along the project alignment. The 'urban residential' amenity category from the NPfI is assumed to be the corresponding receiver category for the purpose of defining amenity goals.
5. Internal noise objective. The equivalent external noise objective would likely be at least 10 dB(A) higher, depending on façade construction.

5.3 Sleep disturbance

The potential for sleep disturbance from maximum noise level events from premises during the night-time period needs to be considered. In accordance with NPfI, a detailed maximum noise level event assessment should be undertaken where the subject development night-time noise levels at a residential location exceed:

- $L_{Aeq,15min}$ 40dB(A) or the prevailing RBL plus 5dB, whichever is the greater, and/or
- L_{AFmax} 52dB(A) or the prevailing RBL plus 15dB, whichever is the greater.

If noise events are found to exceed the initial screening level, further analysis is undertaken to identify:

- The likely number of events that might occur during the night assessment period,
- The extent to which the maximum noise level exceeds the rating background noise level.

The sleep disturbance noise levels for the project are presented in Table 5-3.

Table 5-3: Sleep disturbance assessment levels

Land use type	NCA	Assessment level $L_{Aeq,15min}$	Assessment level L_{AFmax}
Residential	NCA T1	36 + 5 = 41	52
	NCA T7	40	52
	NCA T8	40	52
	NCA B17	45 + 5 = 50	45 + 15 = 60

The noise sources associated with the Project are steady-state or quasi-steady-state, so there is unlikely to be significant variation between $L_{Aeq,15min}$ values and L_{AFmax} values. Even if there was a difference of 10 dB(A) between the $L_{Aeq,15min}$ values and L_{AFmax} values, the project trigger noise level would still be the controlling criterion. Therefore, compliance with the more stringent project trigger noise level presented in Table 5-2 will result in compliance with the project's sleep disturbance noise objectives set out in Table 5-3.

5.4 Road traffic noise

Road traffic noise from the road traffic generated by the operation of the AWRC is assessed against the noise objectives outlined in the NSW Road Noise Policy (RNP). Traffic accessing the AWRC site is anticipated to travel on Elizabeth Drive, Clifton Avenue and Badu Muru Grove.

Table 5-4 sets out the noise objectives for road traffic noise. These targets are for assessment against façade corrected noise levels when measured in front of a building façade. In Table 5-4, freeways, arterial roads and sub-arterial roads are grouped together and attract the same criteria.

Table 5-4: RNP road traffic noise criteria

Road (RNP category)	Type of project/land use	Assessment criteria (dB(A))	
		Day 7 am – 10 pm	Night 10 pm – 7 am
Elizabeth Drive (Freeway/arterial/ sub-arterial roads)	Existing residences affected by additional traffic on existing freeways/arteria/sub-arterial roads generated by land use developments	60 $L_{Aeq(15hour)}$ (external)	55 $L_{Aeq(9hour)}$ (external)
Clifton Avenue (Local roads)	Existing residences affected by additional traffic on existing local roads generated by land use developments	55 $L_{Aeq(1hour)}$ (external)	50 $L_{Aeq(1hour)}$ (external)
Badu Muru Grove (Local roads)	Existing residence affected by new road generated by access road	55 $L_{Aeq(1hour)}$ (external)	50 $L_{Aeq(1hour)}$ (external)

Where existing traffic noise levels are above the noise assessment criteria, the primary objective is to reduce these through feasible and reasonable measures to meet the assessment criteria. In assessing feasible and reasonable mitigation measures, an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person.

A secondary objective is to protect against excessive decreases in amenity as the result of a project by applying the relative increase criteria. The relative increase criteria applies to road traffic noise from freeways/arterial/sub-arterial roads and is equal to the existing traffic noise plus 12 dB(A). When the main subject road is a local road, the relative increase criterion does not apply.

For existing residences and other sensitive land uses affected by *additional traffic on existing roads generated by land use developments*, any increase in the total traffic noise level (where the assessment criteria cannot be achieved) should be limited to 2 dB above that of the corresponding 'no build option'. This is consistent with Step 4 of the criteria application process outlined in Section 3.4.1 of the RNP.

5.5 Vibration

Vibration from the operation of AWRC and pipelines is not addressed in the Project EIS. To satisfy CoA E56(a) and identify appropriate vibration objectives for the Project, the guidance from the NSW Assessing Vibration: A Technical Guideline (AVTG) is briefly reproduced in this section.

The AVTG provides criteria which are based on the British Standard BS 6472-1992 '*Evaluation of human exposure to vibration in buildings (1-80Hz)*'. Sources of vibration are defined as either 'Continuous', 'Impulsive' or 'Intermittent'. Table 5-5 provides definitions and examples of each type of vibration.

Table 5-5: Types of vibration

Type of vibration	Definition	Examples
Continuous vibration	Continues uninterrupted for a defined period (usually throughout the day-time and/or night-time)	Machinery, steady road traffic, continuous construction activity (such as tunnel boring machinery).
Impulsive vibration	A rapid build-up to a peak followed by a damped decay that may or may not involve several cycles of vibration (depending on frequency and damping). It can also consist of a sudden application of several cycles at approximately the same amplitude, providing that the duration is short, typically less than 2 seconds	Infrequent: Activities that create up to 3 distinct vibration events in an assessment period, e.g. occasional dropping of heavy equipment, occasional loading and unloading.
Intermittent vibration	Can be defined as interrupted periods of continuous or repeated periods of impulsive vibration that varies significantly in magnitude	Trains, nearby intermittent construction activity, passing heavy vehicles, forging machines, impact pile driving, jack hammers. Where the number of vibration events in an assessment period is three or fewer, this would be assessed against impulsive vibration criteria.

Source: Assessing Vibration; a technical guideline, Department of Environment & Climate Change, 2006

The preferred and maximum values for continuous and impulsive vibration are defined in Table 2.2 of the guideline and are reproduced in Table 5-6.

Table 5-6: Preferred and maximum levels for human comfort (weighted RMS acceleration, m/s^2)

Location	Assessment period[1]	Preferred values		Maximum values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Continuous vibration (weighted RMS acceleration, m/s^2, 1-80Hz)					
Critical areas[2]	Day- or night-time	0.005	0.0036	0.010	0.0072
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day- or night-time	0.020	0.014	0.040	0.028
Workshops	Day- or night-time	0.04	0.029	0.080	0.058
Impulsive vibration (weighted RMS acceleration, m/s^2, 1-80Hz)					
Critical areas[2]	Day- or night-time	0.005	0.0036	0.010	0.0072
Residences	Daytime	0.30	0.21	0.60	0.42

Location	Assessment period[1]	Preferred values		Maximum values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day- or night-time	0.64	0.46	1.28	0.92
Workshops	Day- or night-time	0.64	0.46	1.28	0.92

Notes: 1. Daytime is 7:00am to 10:00pm and night-time is 10:00pm to 7:00am.

2. Critical areas would include hospital operating theatres and precision laboratories where sensitive operations are occurring. There may be cases where sensitive equipment or delicate tasks require more stringent criteria than the human comfort criteria specify above. Stipulation of such criteria is outside the scope of their policy and other guidance documents (e.g. relevant standards) should be referred to. Source: BS 6472-1992.

Similarly, the preferred and maximum levels for human comfort can be expressed in velocity (mm/s) and decibel levels (dBv re 1nm/s). These are defined in Table C1.1 of the guideline and reproduced in Table 5-7.

Table 5-7: Preferred and maximum levels for human comfort

Location	Assessment period[1]	Preferred values		Maximum values	
Continuous vibration (velocity, mm/s, 1-80Hz)					
Critical areas[2]	Day- or night-time	0.10	0.29	0.20	0.57
Residences	Daytime	0.20	0.57	0.40	1.14
	Night-time	0.14	0.40	0.28	0.80
Offices, schools, educational institutions, and places of worship	Day- or night-time	0.40	1.14	0.80	2.28
Workshops	Day- or night-time	0.80	2.28	1.60	4.56
Continuous vibration (velocity, dB_v re 1nm/s. 1-80Hz)					
Critical areas[2]	Day- or night-time	100	109	106	115
Residences	Daytime	106	115	112	121
	Night-time	103	112	109	118
Offices, schools, educational institutions, and places of worship	Day- or night-time	112	121	118	127
Workshops	Day- or night-time	118	127	124	133

Notes: 1. Daytime is 7:00am to 10:00pm and night-time is 10:00pm to 7:00am.

2. Critical areas would include hospital operating theatres and precision laboratories where sensitive operations are occurring. There may be cases where sensitive equipment or delicate tasks require more stringent criteria than the human comfort criteria specify above. Stipulation of such criteria is outside the scope of their policy and other guidance documents (e.g. relevant standards) should be referred to. Source: BS 6472-1992.

6 Design inputs for assessment

6.1 Assessment approach

CoA E56(b) requires noise modelling to rely on measured noise data where necessary. It is not yet possible to measure all noise sources that will be associated with the Project, as CoA E56 also prevents operation of the Project before acceptance of the ONR. Coupled with the limited information offered by equipment manufacturers in relation to noise, it is not possible to thoroughly quantify the predicted noise levels in 1/3 octave bands, which are necessary to screen for the risk of annoying characteristics described in the NPfI Fact Sheet C.

Instead, this ONR relies on the best data available, as well as recent experience of similar facilities and plant/equipment. The data sources and, where necessary, assumptions relevant to the assessment are outlined in the following sections. The design process has also been undertaken to reduce the risk of annoying noise characteristics where it is feasible and reasonable to do so. For example, the correct sizing and selection of plant/equipment would prevent excessive wear and tear which could result in tonal noise.

Confirmation of the assessment approach is required already as part of the noise monitoring required to satisfy CoA E57. If, for example, tonal noise is detected during the monitoring required by CoA E57, then the Project is required to address site noise in order to achieve the nominated noise targets, which would require the source of annoying noise to also be addressed. As a result, the intention of CoA E56(b) requiring the inclusion of measured noise levels in the ONR noise assessment is considered to be satisfied through this assessment approach.

6.2 AWRC

6.2.1 Regular operations

The primary operational plant and equipment associated with the AWRC are:

- Pumping stations
- Blower building
- Advanced water treatment plant (AWTP) building
- Transfer pump station
- Odour control fans

Additionally vehicular traffic associated with the operation of the AWRC are:

- Heavy vehicles delivery chemicals/ pick up biosolids to and from the site
- Staff light vehicles to and from the site

The site layout of the AWRC of the IFC (Issued For Construction) design at the time of preparing this ONR is shown below in Figure 6-3. While there may be refinement of minor site details, these would not affect noise source levels, propagation or attenuation. For this reason, the design considered in this ONR is the final design for the purposes of assessing noise. The noise source locations are shown in the maps in APPENDIX C.

Noise levels from plant and equipment were determined during the designing of the Project. Where possible, the modelled noise source levels for each piece of equipment were based on supplier information. Where supplier information was not available, indicative noise source emissions were estimated based on either:

- Data provided from the construction contractor John Holland Pty Ltd (in the form of sound pressure levels at 1m from the noise source),
- Sound power levels of similar equipment sourced from existing noise libraries and noise databases, or
- Empirical calculations methods provided in Engineering Noise Control 5th Edition (Bies & Hansen, 2017).

Noise sources were modelled with 1/1 octave band spectral band noise data where available. Where no spectral data is available the noise source were modelled with frequency band, usually 500 Hz or 1 kHz depending on the typical noise emission spectrum for the specific type of equipment.

The overall sound power levels, frequency spectra (if available) and origins of the noise data and locations of the noise generating plant and equipment is shown in APPENDIX C.

6.2.2 Emergency power generator

An emergency power generator adjacent to the main switchroom has been proposed for use during emergency situations where backup energy is required. In addition to being used during emergency situations, the generator would also need to be operated during testing and maintenance activities. The emergency power generator will be a 330kVA Cummins C330D5 diesel generator. Sound power levels and spectral data for the generator is detailed in APPENDIX C. The noise assessment is presented in Section 9.1.2.

The testing and maintenance of the generator will only occur during the day period.

Due to the infrequent and non-typical operating nature of these emergency plant and equipment items, they do not operate as part of normal reasonable worst-case operations as they are for emergency and stand-by usage only. For this reason, they do not form part of the reasonable worst case 15-minute scenario modelling.

6.3 Pipelines

6.3.1 Pipeline control valve stations

The operation of the Project will include the operation of a brine water control valve station and a treated water control valve station.

The brine water control valve station located near the North Georges River Submain at Lansdowne, as seen in Figure 6-4, consists of two valves operating within the pit. The noise emissions data supplied by GHD/Jacobs Design Joint Venture (DJV), which in turn was sourced from the equipment supplier, for the brine water valves is shown below in Figure 6-1. The brine water control valve will operate at a flow rate of 100L/s, at 82% open, which corresponds to a sound power level of a single brine water control valve to be 91 dB(A).

The treated water control valve station located near the water release at the Nepean River, as seen in Figure 6-5, consists of two valves operating within the pit. The noise emissions data supplied by the equipment supplier (via the DJV) for the treated water valves is shown below in Figure 6-2. The treated water control valve will operate at a flow rate of 100L/s, at 82% open, which corresponds to a sound power level of a single treated water control valve to be 100 dB(A).

Both control valve pits are proposed to be constructed with Gatic covers on the access hatch. Assuming the worst case scenario the valve pumps operating has been modelled assuming access hatches are open.

Figure 6-1: Noise emission from a single brine water control valve, sound pressure level dB(A) at 1 metre

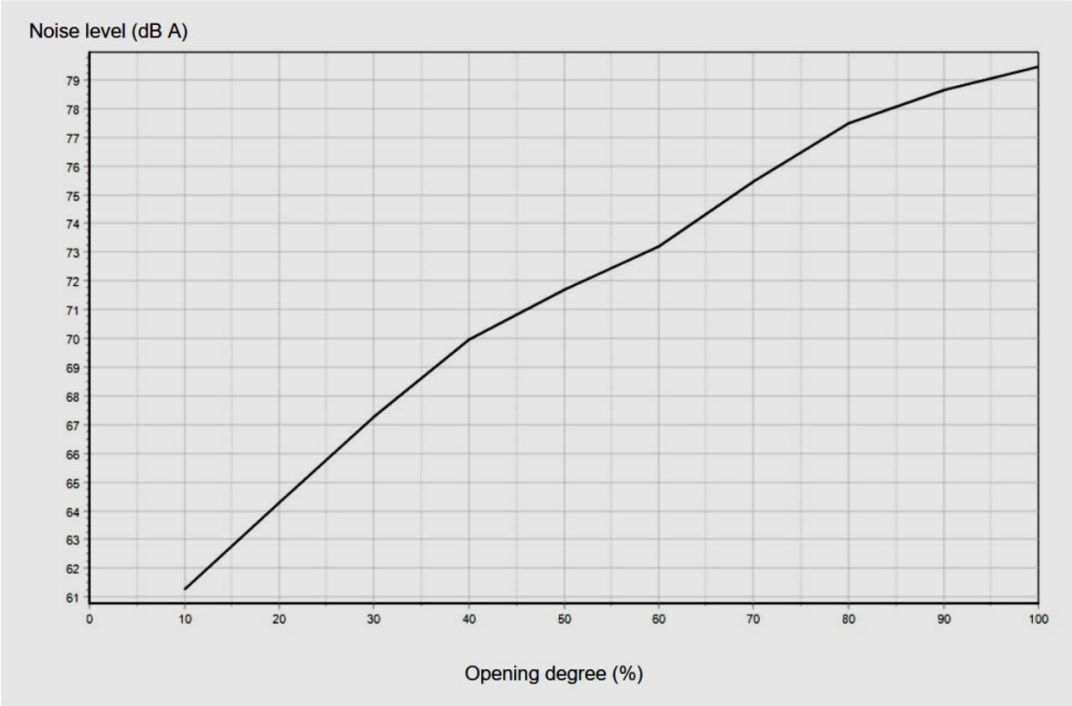
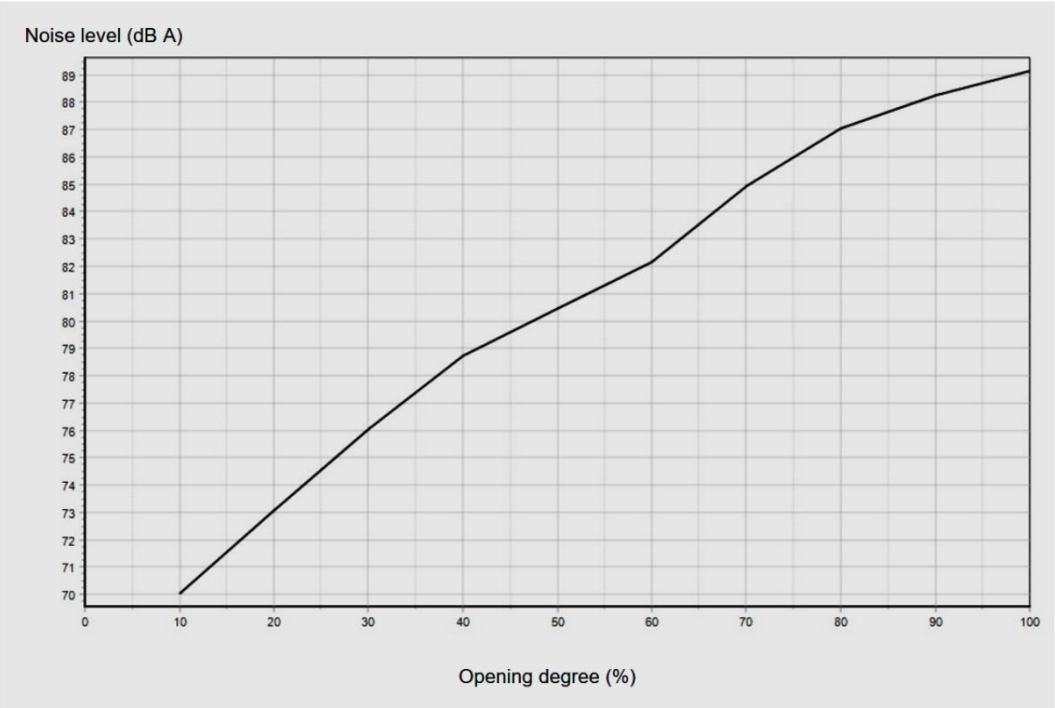


Figure 6-2: Noise emission from a single treated water control valve, sound pressure level dB(A) at 1 metre



6.3.2 Pipeline release

The pipeline release located at the Nepean River will operate consistent with the Project's EIS and is anticipated to produce similar noise emissions to the levels presented in the EIS. The sound power level and spectral data for the pipeline release is detailed in APPENDIX C. The location of the pipeline release is shown in Figure 6-5.

Figure 6-3: IFC approved AWRC layout plan

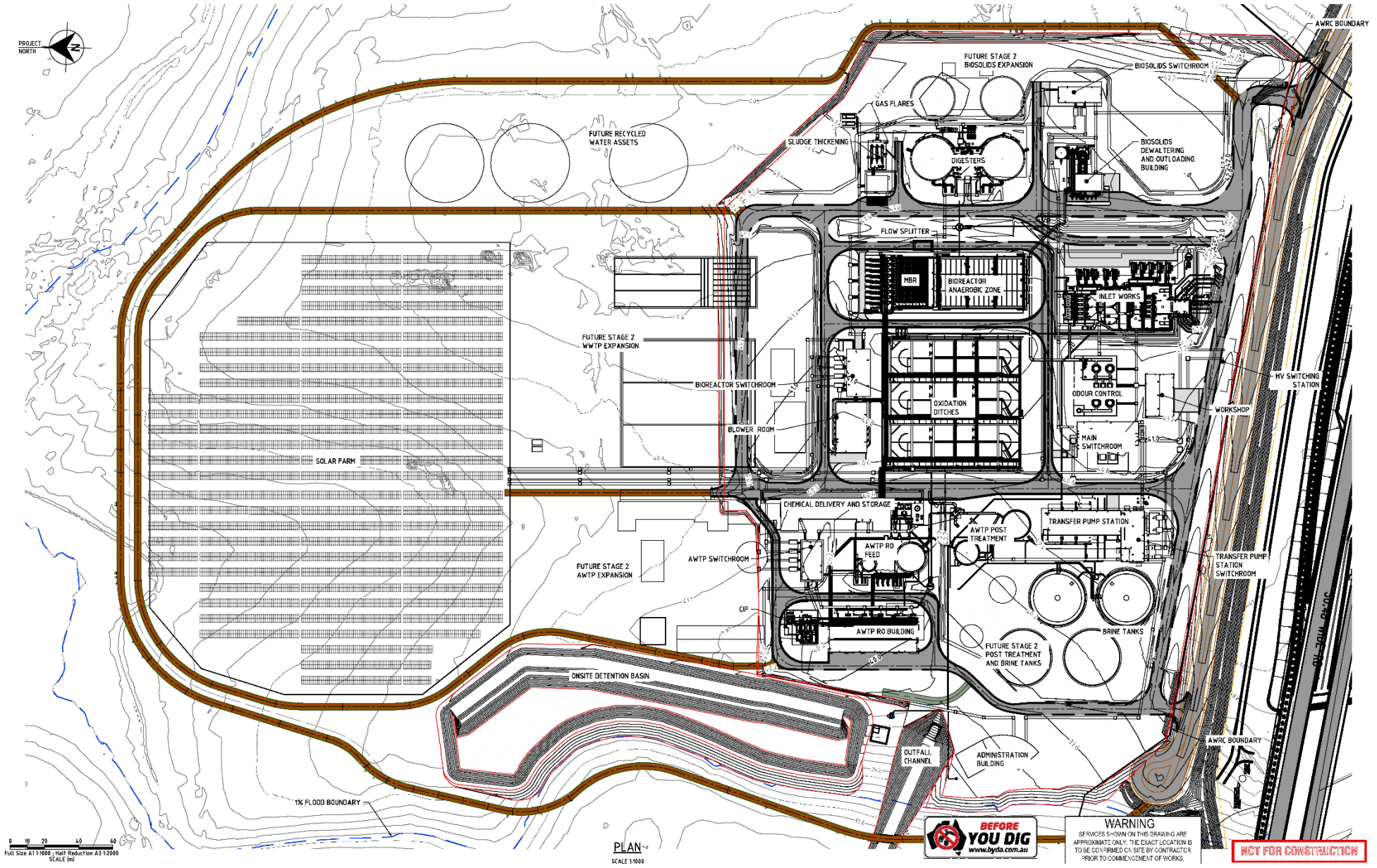


Figure 6-4: Brine water valve control station location

Figure 6-5: Treated water valve control station and pipeline water release location

7 Assessment methodology

7.1 Noise model

Noise emissions were determined by modelling the noise sources, sensitive land use locations, topographical features of the intervening area, and noise control treatments using the CadnaA computer noise model. The model calculates the contribution of each noise source at each specified receptor point and allows for the prediction of the total noise from a site.

The noise prediction model considers:

- location of noise sources and sensitive land uses.
- height of sources and land uses referenced to imported ground contours.
- separation distances between sources and land uses.
- ground type between sources and land uses.
- attenuation from barriers and buildings.

The noise prediction model inputs and settings are described in Table 7-1.

Table 7-1: Summary of noise modelling parameters and assumptions

Parameters	Inputs
Algorithm	CONCAWE
Ground topography at source and receiver	Terrain data was derived from a combination of the NSW Land Property Information (LPI) 10m resolution bare earth Digital Elevation Model (DEM).
AWRC geometry	Design drawings provided by John Holland.
Source noise levels	As shown in APPENDIX C.
Sensitive land use locations, building heights, angle of view	From Geoscape Australia and checked from aerial and terrestrial photography, supplemented by site checks and surveys.
Receiver heights	1.5m above ground level to represent 1.5m above ground floor level, or higher if confirmed by site surveys. Additional 3m height for every additional floor assessed (i.e. 4.5m above ground for first floor, 7.5m for second floor etc.).
Calculation method	Ray-tracing method adopted, as opposed to angle-scan method
Ground absorption factor	0.75
Maximal search radius	2,000m
For noise contour maps	10m x 10m noise contour grid 1.5m above local ground

The CONCAWE algorithm was used for the operational noise model for consistency with the EIS and because it allows for selection of meteorological conditions (specifically, Pasquil stability category, wind speed and wind direction). The specification of meteorological conditions is required when assessing

industrial noise as the NPfI requires consideration of either 'standard' or 'noise enhancing' meteorological conditions, which are described further in Section 7.3.

7.2 Potentially most-affected sensitive land uses

The noise levels at the potentially most-affected sensitive land uses are assessed to determine if the noise emissions comply with the nominated noise objectives in Section 5.2.

The residences listed in Table 7-2 were identified as being potentially the most-affected sensitive land uses near the AWRC and pipelines. If the noise goals are met at these land uses, it follows that the noise targets at other less-sensitive land uses would also be met. The locations of the assessed sensitive land uses are shown in the Land Use Survey maps in APPENDIX B.

Table 7-2: Closest residential land uses

Operation scenario	Representative land use ID	NCA	Address
AWRC	R1	NCA T1	146B Clifton Avenue, Kemps Creek NSW
	R2	NCA T1	203-229 Clifton Avenue, Kemps Creek NSW
	R3	NCA T1	917 Mamre Road, Kemps Creek NSW
	R4	NCA T1	9 Farmingdale Court, Luddenham NSW
	R5	NCA T1	1669A Elizabeth Drive, Badgerys Creek NSW
Pipeline release	R6	NCA T7	2595 Silverdale Road, Wallacia NSW
	R7	NCA T8	2720 Silverdale Road, Wallacia NSW
Treated water valve control station	R6	NCA T7	2595 Silverdale Road, Wallacia NSW
	R7	NCA T8	2720 Silverdale Road, Wallacia NSW
Brine water valve control station	R8	NCA B17	7 Henry Lawson Drive, Lansdowne NSW
	R9	NCA B17	3 Edith Street, Lansdowne NSW

7.3 Meteorological conditions

To assess the worst-case scenario the noise modelling of the AWRC operational noise takes into account the meteorological conditions. Meteorological data was sourced from the NSW Air Quality Monitoring Network station located in Bringelly (latitude -33.91766, longitude 150.76192, elevation 53m). Figure 7-1 shows the significant wind directions for winds up to 3 m/s at 10m above ground level, and Table 7-3 shows the adopted wind direction scenarios. Although wind direction is dependent on the time of day, all typical operation scenarios will be compared to the night noise objectives as it provides the most stringent noise limits.

Figure 7-1: Wind direction at surrounding area of AWRC from Bringelly DPE station data

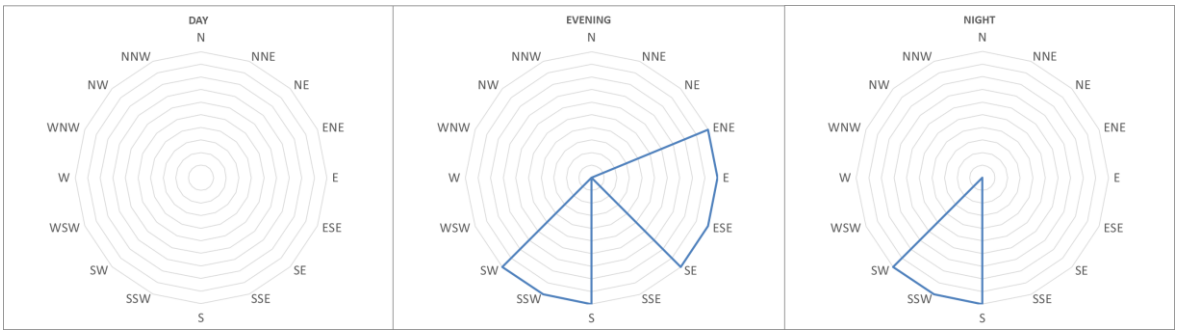


Table 7-3: Wind direction scenarios

Scenario id	Scenario[1]
No Wind	No significant wind
ENE	Wind from ENE (bearing 67.5°)
E	Wind from E (bearing 90°)
ESE	Wind from ESE (bearing 112.5°)
SE	Wind from SE (bearing 135°)
S	Wind from S (bearing 180°)
SSW	Wind from SSW (bearing 202.5°)
SW	Wind from ESW (bearing 225°)
Worst case wind[2]	Wind from any direction

Notes:

1. Wind speed is up to 3 m/s during the Day, and up to 2 m/s during the Evening and Night
2. Included as F class stability conditions are deemed to be relevant for this assessment (refer Table 7-4)

Temperature inversions are deemed to be a significant feature of the site during Evening and Night, according to the process described in Fact Sheet D of the NPfI. For this reason, Table 7-3 also includes a 'worst case wind' scenario, as Fact Sheet D of the NPfI requires consideration of all wind vectors that occur under F class conditions. Further discussion of the relevant wind directions at this site is given in Section 7.3.1.

Table 7-4 shows the prevalence of Category F and G stability which indicate a temperature inversion. If the occurrence of a temperature inversion exceeds 30% the noise-enhancing meteorological conditions should be considered.

Table 7-4: Prevalence of temperature inversions in area surrounding AWRC

DPE Station	Time period	% of Winter nights (F-Class)	% of Winter nights (G-Class)	% of Winter nights (F+G-Class)
Bringelly	1/1/2023 to 31/12/2023	95	1	96

Based on the assessed meteorological conditions, the wind and temperature inversion conditions listed in Table 7-5 have been adopted.

Table 7-5: Summary of noise-enhancing meteorological conditions for are surrounding AWRC

Time period	Temperature inversion[1]	Wind[2]								
		No wind	ENE	E	ESE	SE	S	SSW	SW	Worst case wind
Day		✓								
Evening	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Night	✓						✓	✓	✓	✓

Notes:

1. Tick denotes Pasquil stability class F (applicable during Evening and Night). No tick denotes Pasquil stability class D.
2. 3m/s (Day), 2m/s (Evening/Night).

7.3.1 Wind direction

It is noted that Fact Sheet D of the NPfI requires consideration of any wind vector while F class conditions are maintained. However, it should be noted that the Project is located within the same region as Western Sydney Airport, where wind has been extensively studied over many years. The prevailing wind direction is highly consistent such that, according to the Bureau of Meteorology in the Western Sydney Airport Environmental Impact Statement, the adopted runway orientation (runway 05/23, and no perpendicular runway) would result in a high level of useability and exceed the 95 percent usability target recommended for international airport design.

An analysis of the 2023 meteorological data used to inform this assessment found that the wind direction during the Night when F class stability conditions are prevalent are mostly from the south-southwest. Table 7-6 lists the frequency of occurrence of wind from each direction, as a percentage of the times when class F conditions occur.

Table 7-6: Wind direction during class F conditions

Wind direction	Bearing, degrees	Frequency of occurrence during class F conditions
N	0	3%
NNE	22.5	2%
NE	45	2%
ENE	67.5	4%
E	90	5%
ESE	112.5	5%
SE	135	7%
SSE	157.5	7%
S	180	15%
SSW	202.5	31%
SW	225	9%

Wind direction	Bearing, degrees	Frequency of occurrence during class F conditions
WSW	247.5	4%
W	270	2%
WNW	292.5	2%
NW	315	2%
NNW	337.5	1%

This assessment presents and assesses noise predictions assuming any wind vectors in accordance with Fact Sheet D. Predicted noise levels from the wind directions identified as significant are also provided to show the effect of this variable on the Project's potential noise emissions.

7.4 Sleep disturbance

Typical plant and equipment for the AWRC emit noise with little to no fluctuation. The primary source of instantaneous noise events are heavy vehicles whilst on the site, but these sources are present during the Day only.

The L_{Amax} sleep disturbance targets are at least 10 dB(A) higher than the L_{Aeq} target. Since all equipment have been mitigated to meet the lower L_{Aeq} target level, and since the L_{Amax} emission of these items is expected to be within 10 dB(A) of the L_{Aeq} emission, then sleep disturbance is not expected to be an issue for any noise sources at the AWRC. No special or additional noise mitigation measures are required to mitigate L_{Amax} noise events over and above the measures described in the sections below required and designed to mitigate L_{Aeq} noise.

7.5 Road traffic noise

7.5.1 Road traffic noise modelling approach and validation

The potential impact of operational road traffic noise to nearby residential land uses has been estimated using the US Department of Transportation Federal Highway Administration's Traffic Noise Model (TNM) method, as implemented in CadnaA. When assessing local roads, the 1-hour traffic volume for the 'assessment period' (i.e. day or night) is used to predict the L_{Aeq1h} noise levels for the 'assessment period'. The posted speed limit of the road has been adopted as the vehicle speed limit. For Badu Muru Grove, a speed limit of 50 km/h has been adopted as this is the default speed limit for NSW roads and is consistent with the existing speed limit on Clifton Avenue.

To confirm the validity of this modelling approach, validation noise measurements were conducted on 27 February 2025 to determine the road traffic noise emissions from a known number of vehicles on the local roads affected by the Project. This is to determine if the algorithm is suitable for use in the Project's environment. Note that the traffic volumes used for the validation include construction traffic from the Project and neighbouring projects. The noise model described above was found to agree with measured road traffic noise levels to within less than 1 dB(A). A summary of the road noise model validation is given in Table 7-7 and the validation locations are depicted in Figure 7-2 and Figure 7-3.

Table 7-7: Road noise model validation results

Road	Time	Vehicle count during measurement	Percentage heavy vehicles	Measured noise level, dB(A) $L_{eq,T}$	Predicted level, dB(A) $L_{eq,T}$	Deviation, measured minus predicted
Clifton Avenue	14:15-14:45	68	22%	64.5	64.0	0.5
Badu Muru Grove	15:00-15:45	63	22%	63.3	63.0	0.3

Figure 7-2: Validation location, Clifton Avenue

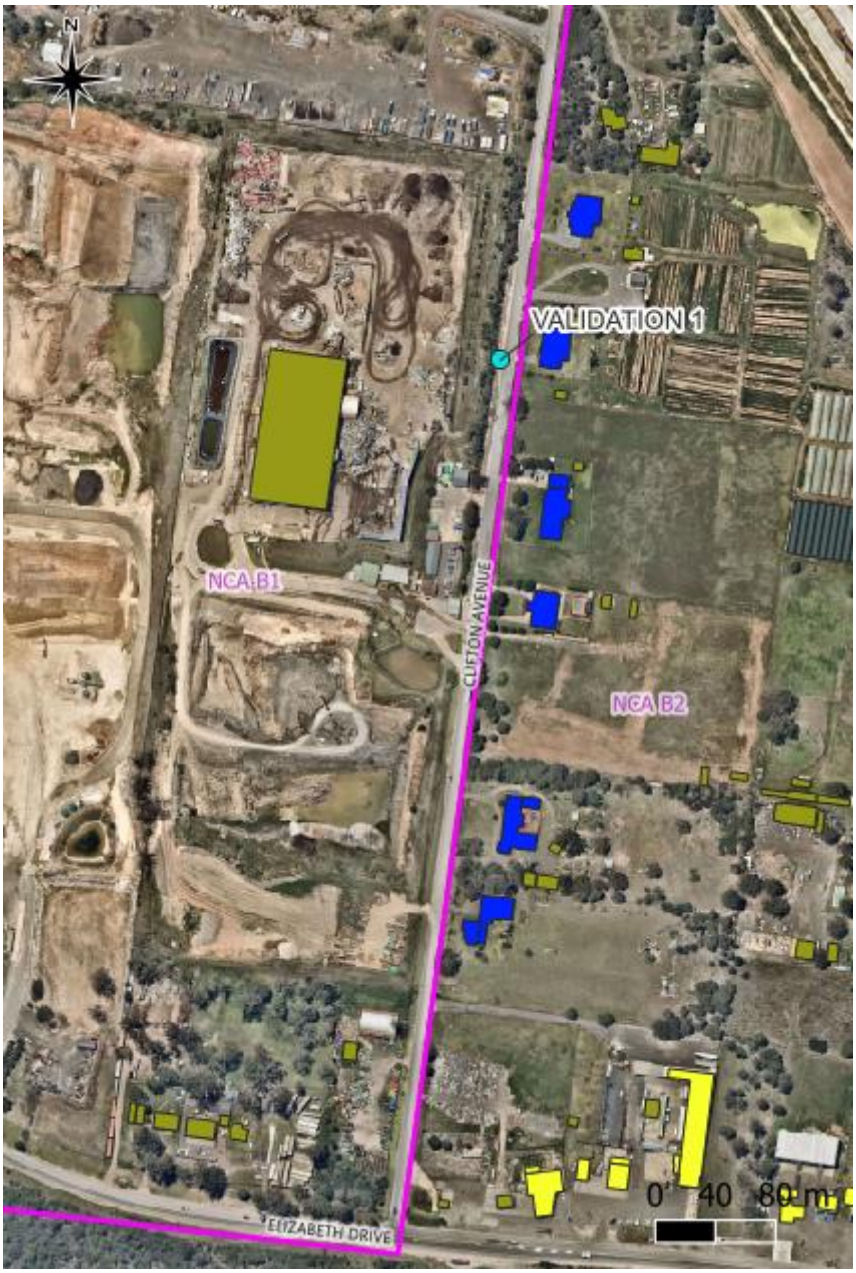


Figure 7-3: Validation location, Badu Muru Grove

7.5.2 Assessed traffic volumes

The following assessed traffic volumes were included in a copy of the validated noise model described in Section 7.5.1.

Traffic volumes are consistent with the Traffic and Transport Technical Report prepared for the EIS and the generated traffic by the operation of the AWRC is detailed in Table 7-8.

Table 7-8: Total daily movements during AWRC operation

Activity	Vehicle type	Number of vehicles (Peak) per day	Period of operation
Biosolids outload (50ML)	Heavy vehicle	2	Day
Screening removal	Heavy vehicle	1	Day
Grit removal	Heavy vehicle	1	Day
Other deliveries (50ML)	Heavy vehicle	7	Day
Staff	Light vehicle	15	Day and night

John Holland has confirmed that heavy vehicles will enter or exit the AWRC during the day period only. Emergency vehicles may require access to the site outside of the day period in the event of an emergency.

Heavy vehicles movements would be distributed throughout the day depending on the exact needs of the AWRC. Although unlikely and not ideal for AWRC operations, it is realistically possible for all heavy vehicles to arrive or depart the site within the same hour. Similarly for light vehicles, most staff would be present on-site during standard working hours, but some vehicles would be associated with night shift staff.

To quantify an upper level for road traffic noise generation, the traffic assessment has been modelled assuming a worst-case scenario where all heavy vehicles and light vehicles are travelling into or out of the AWRC within a 1 hour period. This totals to 11 heavy vehicles and 15 light vehicles during a 1 hour interval in the day period, and 15 light vehicles in a 1 hour interval during the night period.

7.5.3 Existing road traffic

The Project's EIS identified the peak hour road traffic volumes for existing local roads, and average daily volumes for sub-arterial/arterial roads. It is noted that inclusion of Project traffic alongside peak existing traffic would not conclusively demonstrate that a +2 dB(A) increase is avoided. However, this method still allows for comparison of the worst $L_{Aeq,1hour}$ to the RNP road noise objectives, which is a step taken if an increase of more than 2 dB(A) is predicted. For this reason, the adopted assessment method for road traffic noise is considered conservative as the assessment approach proceeds as if a +2 dB(A) increase were predicted.

The existing traffic volumes on Clifton Avenue are reproduced from Section 6.3 of Appendix S of the EIS in Table 7-9.

Table 7-9: Existing peak hour traffic volumes on existing local roads

Road	AM peak (7-8am)	PM peak (4-5pm)
Clifton Avenue	52	55

7.5.4 Elizabeth Drive

According to Appendix C of the Traffic and Transport Technical Report prepared for the EIS, Elizabeth Drive carries an average of 12,039 vehicles per day between Clifton Avenue and Western Road (based on RMS survey data from 2015). Operational road traffic from the operation of the AWRC would increase the traffic volume on Elizabeth Drive by less than 1%, which would have negligible impact on road traffic noise.

7.5.5 Clifton Avenue

Clifton Avenue is a local road linking Elizabeth Drive to the AWRC access road. The EIS states the number of vehicles during the AM and PM peak hours, but does not identify the average daily number of vehicles using this road. However, as Clifton Avenue is a local road servicing a limited number of houses (before commencement of the Project), it is likely that total road traffic on Clifton Avenue is low and road traffic may increase by 2 dB(A) or more due to operational traffic.

Operational road traffic noise has been assessed with consideration of the following;

- The nearest residence to Clifton Avenue is 442 Clifton Avenue, approximately 15m from the edge of the southbound carriageway.
- Vehicle speed is 50 km/h (posted speed limit).

- The highest Day $L_{Aeq1hour}$ from existing traffic on Clifton Avenue occurs during the PM peak hour (not explicitly specified in the Traffic and Transport Technical Report but understood to be before 10pm).
- Existing PM peak hour traffic volumes are listed in the Traffic and Transport Technical Report as 15 northbound and 28 southbound (traffic survey 2020). 5% existing traffic is assumed to be heavy vehicles.
- Negligible road traffic on Clifton Avenue during the Night.

7.5.6 Badu Muru Grove

Badu Muru Grove is a new access road constructed to connect the AWRC to Clifton Avenue, which will have low traffic volumes as it will consist primarily of AWRC traffic. This road would be classified as a new local road.

Operational road traffic noise has been assessed with consideration of the following:

- The nearest residence to the access road is 203-229 Clifton Avenue, approximately 10m from the edge of the eastbound carriageway.
- Vehicle speed is 50 km/h (default speed limit, consistent with posted speed limit for Clifton Avenue)

8 Noise mitigation measures

CoA E56(c) requires the Proponent to identify noise and vibration mitigation measures with a focus on at-source control to achieve best-practice achievable noise and vibration outcomes.

The noise objectives in this ONR were initially determined in the Project's EIS in line with best-practice noise management guidance (namely the NPfI). The NPfI remains relevant at the time of this assessment. The Project Noise Trigger Level (PNTL) derived using the methods in the NPfI are intended to serve as a threshold where, if the predicted noise is above the PNTL, feasible and reasonable mitigation measures should be considered and adopted. For this reason, if the PNTLs are achieved by the Project, then the best-practice achievable noise outcomes are also achieved.

As noted in Section 5.5, vibration levels from operation of the Project are expected to be negligible due to the significant distances between the Project and sensitive land uses, as well as the low to negligible vibration generated by the Project's plant/equipment.

8.1 Adopted noise mitigation measures

Reasonable and feasible mitigation measures to reduce noise from the Project have been applied through the design of the AWRC, particularly through designing buildings to limit the transmission of noise from the source within to the exterior. These measures include:

- The adoption of 75mm thick × 32kg/m^3 Bradford Acoustiguard insulation to the underside of the treated water pump station and blower building roofs, in addition to fire rated plasterboard ceiling panels.
- The adoption of 100mm Bradford AnticonHP insulation to the underside of the RO building and dewatering and outloading building roofs.
- The adoption of 100mm Bradford AnticonHP insulation to the underside of all switchrooms, in addition to suspended fire rated plasterboard and/or concrete ceiling panels.
- Adoption of concrete or grout filled concrete brick walls for the treated water pump station, blower building and all switchrooms.
- Adoption of SL-300 acoustic louvres on the treated water pump station building.
- Adoption of Hudson 300 acoustic louvres of the blower building.
- Adoption of steel-clad solid-core external personnel access doors where required.
- ≥75mm of 11kg/m2 glass wool, such as Bradford Acoustigard, applied to all walls of the dewatering building from 5m above ground level to the ceiling level (approx. 17.8m high relative to ground).
- Roller door of the dewatering building on the southern façade acoustically treated to achieve R_w 17.

- Roller door of the blower room on the western façade acoustically treated to achieve R_w 17.
- Generator exhaust pointed to the west.

Both the treated water and brine control valves have been mitigated by locating the valve within a pit and through the adoption of a steel and concrete solid Gatic cover of at least 48mm thickness.

8.2 Timing of noise sources

The AWRC and pipelines would be required to operate 24 hours a day, 7 days a week, to ensure the safe and efficient operation of the Project and to prevent adverse environmental outcomes. However, plant/equipment usage would be minimised during times of lower load. Additionally, John Holland has confirmed that heavy vehicle movements would be limited to the day and would not occur during the night.

8.3 Vibration

Vibration generating equipment has been identified and includes the centrifuge, effluent transfer pumps and brine transfer pumps. However, these items are not substantial sources of vibration and will be installed with standard mounting and installation practices. The risk of vibration generation is further reduced through regular maintenance in accordance with the equipment supplier's recommendations.

Given the low vibration source levels and the substantial distance between potential vibration sources and sensitive land uses (greater than 500m), the feasible and reasonable mitigation measures to achieve best-practice vibration levels include:

- Install plant/equipment in accordance with supplier requirements,
- If required by the supplier, balance the equipment, and
- Conduct regular maintenance of plant/equipment.

Additional vibration controls are not considered feasible or reasonable as the change in vibration at a sensitive land use is likely to be negligible and imperceptible and already represents the best-practice achievable vibration outcome.

Consistent with the Project's EIS, and noting the low risk of vibration impacts from the Project's plant/equipment, vibration levels have not been quantified in detail and are not assessed further in this ONR.

9 Noise compliance

9.1 AWRC

Based on the design inputs in Section 6, the assessment methodology in Section 7, and the noise mitigation measures in Section 8, the following L_{Aeq} noise levels are predicted at the nearest and most affected sensitive land uses. The predicted noise levels are for the night-time period which is the period controlling the acoustic design, and in each case the predicted noise levels comply with the Project's noise objectives.

9.1.1 Regular operation

The predicted noise levels for the nearest and most affected sensitive land uses for regular operations are detailed in Table 9-1. In all scenarios the noise levels at all sensitive land uses are below the noise objectives for the night period, therefore complies with the requirements set out in the NPfI.

The noise contour maps in APPENDIX D provide predicted noise levels at 1.5m above ground level.

Table 9-1: Noise compliance for AWRC regular operations - Night

ID	Address	NCA	$L_{Aeq,15min}$ noise level contribution, dB(A)				Noise objectives (Night) dB(A) $L_{eq,15min}$	Complies?
			S	SSW	SW	Worst case wind		
R1	146B Clifton Avenue, Kemps Creek NSW	NCA T1	36	36	37	39	41	Yes
R2	203-229 Clifton Avenue, Kemps Creek NSW	NCA T1	37	38	38	39	41	Yes
R3	917 Mamre Road, Kemps Creek NSW	NCA T1	39	39	39	39	41	Yes
R4	9 Farmingdale Court, Luddenham NSW	NCA T1	31	30	29	31	41	Yes
R5	1669A Elizabeth Drive, Badgerys Creek NSW	NCA T1	33	33	33	35	41	Yes

9.1.2 Emergency power generator

As stated in Section 6.2.2, the testing and maintenance activities for the emergency generator will only occur during the day period. However, the predicted noise levels from the generator under 100% load have been assessed during day, evening and night.

As detailed in Section 7.3, the assessment meteorological conditions during the day are 0 m/s wind and Class D stability, while Category F stability and 2 m/s wind from source to receiver is considered during evening and night.

Predicted noise levels from emergency power generator operation for the nearest and most affected sensitive land uses are detailed in Table 9-2 and shown in the maps in APPENDIX B.

The noise contour maps in APPENDIX D provide predicted noise levels at 1.5m above ground level.

Table 9-2: Predicted noise levels for AWRC emergency generator testing and maintenance

ID	Address	Predicted noise level, dB(A) $L_{eq15min}$			Noise objective, dB(A)			Complies?
		Day	Evening	Night	Day	Evening	Night	
R1	146B Clifton Avenue, Kemps Creek NSW	21	25	25	45	41	41	Yes
R2	203-229 Clifton Avenue, Kemps Creek NSW	<20	<20	<20	45	41	41	Yes
R3	917 Mamre Road, Kemps Creek NSW	23	27	27	45	41	41	Yes
R4	9 Farmingdale Court, Luddenham NSW	<20	<20	<20	45	41	41	Yes
R5	1669A Elizabeth Drive, Badgerys Creek NSW	<20	20	20	45	41	41	Yes

9.2 Pipelines

9.2.1 Pipeline control valve stations

The operational noise of the two water valve control stations has been considered for the closest sensitive land uses near the water release location. Table 9-3 shows the predicted pipeline valve control station noise level at the nearest sensitive land uses. The land uses are depicted in the maps in APPENDIX B.

Table 9-3: Noise compliance for pipeline control valve station

ID	Address	NCA	L_{Aeq} noise level contribution, dB(A)	Noise objective (Night), dB(A)
Treated water valve control station				
R6	2595 Silverdale Road, Wallacia NSW	NCA T7	<20	**35**
R7	2720 Silverdale Road, Wallacia NSW	NCA T8	<20	**35**
Brine water valve control station				
R8	7 Henry Lawson Drive, Lansdowne NSW	NCA B17	<20	**43**
R9	3 Edith Street, Lansdowne NSW	NCA B17	<20	**43**

With the adopted noise mitigation measures described in Section 8.1, noise from both the treated water and brine control valve stations is predicted to meet the noise objectives (Section 5.2.4). It should also be noted that noise from the brine water valve control station would still meet the noise objective

without the nominated mitigation measures, but the mitigation has still been adopted to ensure the best achievable noise outcome in accordance with CoA E56(c).

9.2.2 Pipeline release

The pipeline release noise at the Nepean River has been considered for the closest sensitive land uses near the water release location. Table 9-4 shows the predicted pipeline release noise level at the nearest noise sensitive land uses. The land uses are depicted in the maps in APPENDIX B.

Table 9-4: Noise compliance for pipeline release

ID	Address	NCA	L_{Aeq} noise level contribution, dB(A)	Noise objective (Night), dB(A)
R6	2595 Silverdale Road, Wallacia NSW	NCA T7	21	**35**
R7	2720 Silverdale Road, Wallacia NSW	NCA T8	<20	**35**

The noise levels from the pipeline release are below the established noise objectives at all sensitive land uses.

Receiver R6 (2595 Silverdale Road) is located between the water release and treated water valve control station and may receive noise from both the pipeline release and treated water control valve station. Given that the noise contributions from the pipeline release (as seen in Table 9-4) and treated water valve control station (as seen in Table 9-3) are substantially below the noise objective, there is minimal risk of cumulative noise impacts from the pipeline release.

9.3 Road traffic noise

Operational road traffic noise levels have been predicted for Clifton Avenue and Badu Muru Grove. The predicted noise levels are presented in Table 9-5 and the representative residential land uses are depicted in Figure 9-1 and Figure 9-2. Road traffic noise from Clifton Avenue and Badu Muru Grove, considering both the AWRC operational traffic and existing traffic before Project construction, are predicted to be below the road traffic noise objectives. As a result, the risk of road traffic noise impacts from the operation of the AWRC is considered low.

Table 9-5: Predicted road traffic noise levels

Road	Most affected sensitive land use	Period	Target dB $L_{Aeq(1hour)}$	Existing road traffic noise dB $L_{Aeq(1hour)}$[1]	Operational + existing road traffic noise dB $L_{Aeq(1hour)}$
Clifton Avenue	442 Clifton Avenue	Day	55 (Day)	47	55
		Night	50 (Night)	-	41
Badu Muru Grove	229 Clifton Avenue	Day	55 (Day)	-	54
		Night	50 (Night)	-	41

Notes

1. Noise levels from existing road traffic were not explicitly stated in the EIS. The values in this column were calculated using existing traffic volumes in EIS (if this information was available) and the validated road traffic noise model described in Section 7.5.1.

Figure 9-1: Assessment location, Badu Muru Grove

Figure 9-2: Road noise assessment location, Clifton Avenue

10 Consultation and feedback

10.1 Consultation strategy

CoA E56(d) requires a consultation strategy to seek feedback from affected stakeholders in relation to operational noise and the associated measures taken to address operational noise impacts. The consultation strategy is to be included in the ONR.

To ensure consistency of approach across all facets of the Project, the consultation strategy is set out in the Community and Stakeholder Engagement Plan (CSEP) developed for the Project. The CSEP includes the strategy that the Project has adopted for seeking feedback on operational noise measures. The current version when this ONR was prepared (Revision B) was approved by the Environmental Representative on 28 April 2023.

The consultation strategy for various aspects of the project, including AWRC operational noise and pipeline locations, is outlined in Appendix B of the Project's approved CSEP. Relevant aspects of the strategy are included in this ONR and comprise the following:

- Adoption of a personal communication approach with neighbouring sensitive land uses, including door-knocking and site visits.
- Explain the function of the AWRC to assist neighbouring sensitive land uses in understanding the operations of the AWRC.
- If a neighbouring sensitive land use requires additional information or has further queries, the Project may use the following information dissemination methods:
    - Prepare and provide fact sheets in relation to the AWRC's operations,
    - Provide technical information and relevant sections of the Project's EIS,
    - Update the Project website with information about operational noise, and
    - Before commencement of operations, offer tours of similar facilities to demonstrate and explain how the AWRC may operate.

The consultation strategy for feedback on noise mitigation measures for affected sensitive land uses shall be managed in accordance with the CSEP.

10.2 Complaints management

CoA E56(e) requires this ONR to include a procedure for managing operational noise complaints. This ONR has adopted the definition of 'complaint' as defined in Sydney Water's Complaint Policy. A 'complaint' is defined as:

…an expression of dissatisfaction made to or about Sydney Water related to its products, services, staff or the handling of a complaint, where a response or resolution is explicitly or implicitly expected or legally required.

Operational noise complaints shall be managed in accordance with Sydney Water's Complaint Policy and the CSEP.

It is noted that the Sydney Water Complaint Policy applies to a variety of complaints and is not solely concerned with noise complaints. When a complaint specific to noise and/or vibration is received, the following procedure is recommended to address the intent and requirements of the Sydney Water Complaint Policy:

- Review and investigate the nature of the complaint to determine the potential cause of the complaint.
- If deemed necessary and subject to the complainant's consent, conduct noise and/or vibration monitoring at the complainant's property to quantify the nature of the complaint.
- Subject to monitoring results, review and/or inspect all reasonable and feasible mitigation. measures implemented to confirm the adequacy of the implemented noise mitigation.
- Where the noise mitigation measures are deemed to be not adequate, investigate any additional or alternative reasonable and feasible noise mitigation measures.
- Communicate the outcome of the investigation to the complainant.
- If the complainant is dissatisfied with Sydney Water's response, the complaint may be escalated in accordance with Section 2.2 of the Sydney Water Complaint Policy.

11 Operational noise monitoring program

A procedure for conducting operational noise monitoring is required to partially satisfy CoA E56(e) and the actual noise monitoring is needed to address CoA E57. Operational noise monitoring is also relevant to CoA E56(b), as this part of the CoA requires an appropriately calibrated model incorporating noise monitoring where necessary. However, operation of the Project cannot commence until this ONR has been accepted, meaning that the verification noise monitoring required to satisfy CoA E57 will also be used in partial fulfilment of CoA E56(b).

Therefore, this section:

- Identifies a procedure for obtaining noise data to validate the operational noise model (noting the limits to operation before acceptance of this ONR), to satisfy CoA E56(b),
- Outlines the investigation and noise monitoring aspects of the complaints handling procedure, to satisfy CoA E56(e), and
- Describes the necessary steps to undertake verification noise monitoring to satisfy the requirements of CoA E57.

11.1 Noise monitoring options

To determine compliance with the noise limits, the NPfI specifies several options for measurement of operational noise:

- direct measurement at compliance locations
- direct measurement at alternative or intermediate locations

11.2 Measurements at compliance locations

Direct measurement of operational noise levels from the Project at the compliance locations can be compared to the noise limits in Section 9 to determine compliance.

This method is appropriate where the noise at the compliance location is dominated by noise from the subject site and/or extraneous noise can be filtered out of the measurement. Direct measurement at the compliance locations is generally unlikely to be suitable to determine compliance for the development as extraneous noise from other sources is likely to impact the measurements. This is due to a combination of factors including the following:

- Large distances between the AWRC and the compliance locations.
- Low predicted operational noise levels at the compliance locations.
- Extraneous noise in the area including Elizabeth Drive and Mamre Road, ambient environmental noise and future sources of noise such as industrial noise from other developments.

The above factors would likely make it difficult to determine the operational noise contribution from the Project. Regardless, compliance monitoring should include measurements at locations representative of the compliance locations (i.e. accessible areas near the residences in the compliance location) to determine the ambient noise levels and audible noise sources in these areas during the noise monitoring survey.

11.3 Measurements at alternative or intermediate locations

Direct measurements at alternative or intermediate locations allows operational noise to be measured at locations where the site is dominant and/or extraneous noise can be filtered out of the measurements. The measured levels are then compared to a reference level at the intermediate location, which is correlated to the noise limits at the compliance locations.

Preliminary intermediate locations are nominated in Table 11-1 and shown in Figure 11-1. However, it should be noted that these intermediate locations may not be suitable depending on the prevailing conditions (for example, if there are extraneous noise sources nearby). Where the measured noise level is not higher than the reference level at the intermediate location, then compliance is achieved at the respective compliance area. Where the measured contribution noise level is higher than the reference level, a combination of at-source measurements and model predictions may be used to determine compliance status and/or the cause of any exceedance of the noise limits.

Table 11-1: Preliminary locations for intermediate noise verification measurements

Location ID	Description	Predicted noise level, dB(A) $L_{eq15min}$		
		Day	Evening	Night
RV01	Badu Muru Grove, approximately 365m west of 203 Clifton Avenue and 95m from entrance to AWRC site	51	51	51
RV02	AWRC, approximately 100m northwest of gas flare	59	58	58
RV03	AWRC, approximately 70m northeast of AWTP switchroom	58	59	59
RV04	Western end of Badu Muru Grove, approximately 860m northeast of 1669A Elizabeth Drive Badgerys Creek.	53	56	56
RV05	Badu Muru Grove, approximately 550m north of 917 Mamre Road Kemps Creek and 175m west of entrance to AWRC	56	51	51

Figure 11-1: Preliminary intermediate location for verification noise measurements

11.4 Noise measurement requirements

Operational noise measurements are to be conducted in accordance with the requirements of Section 7 of the NPfI and the Approved Methods for the Measurement and Analysis of Environmental Noise in NSW (NSW EPA, 2022) (the Approved Methods).

Attended noise measurements must be undertaken by a suitably qualified and experienced person, such as an acoustic consultant. Unattended noise measurements may also be considered

All items of acoustic instrumentation utilised shall be designed to comply with AS/NZS IEC 61672.1-2019 Electroacoustics – Sound level meters (AS IEC 61672) and carry current calibration certificates.

The noise measurements must include the following, at a minimum:

- 15-minute measured A-weighted noise levels at the monitoring location, including L_{Amax}, L_{A10}, L_{Aeq}, and L_{A90}, and measured Z-weighted frequency spectrum in 1/3 octaves.
- Contribution of the development to the measured noise levels.

- Details of the activities being undertaken onsite during the measurement, associated noise sources and contributions to the measured noise levels. This should identify which the location of discernible noise sources.
- Details of any extraneous noise during the measurement, including its source (if discernible) and contribution to the measured noise levels.
- Wind speed and direction during the measurement.
- The prevailing meteorological conditions during the measurement, including cloud cover.
- Any other relevant observations made during the measurement.

The noise measurements should be representative of the typically noisiest operations during each period, if it is feasible and reasonable to adjust the operating conditions of plant/equipment to facilitate the verification noise measurement. Consideration should also be given to other factors affecting noise emissions, including but not limited to the prevailing weather and actual plant/equipment operating settings.

Where noise measurements are undertaken to facilitate the calculation of the source sound power level, a measurement duration of less than 15 minutes may be adopted if the noise source is steady- or quasi-steady-state, or if the suitably qualified person conducting the noise measurement is satisfied that the measured noise levels are suitably representative of the operation of the plant/equipment.

Safety of personnel and noise measurement equipment must be considered before commencing validation measurements. If it is deemed to be unsafe to undertake noise measurements at a given location, then an alternate measurement location may be nominated. If no alternate measurement location can be identified, then it may be appropriate to use a prediction-based approach consistent with the guidance set out in the Approved Methods.

11.5 Noise reporting requirements

A noise monitoring report will be prepared following each noise monitoring survey. These reports will be kept on file for reference and provided to the relevant regulatory authorities if requested. The results of the noise monitoring reports will be included in any compliance reporting for the development, where required.

The noise monitoring report must include the following, at a minimum:

- The type of measurements conducted (e.g, direct measurement at compliance location, measurement at intermediate location, sound power level measurement of source, etc).
- Details of the noise monitoring location.
- Name and position of personnel undertaking measurements.

- The acoustic instrumentation used for the measurements, including serial numbers where applicable.
- Details of the date, time, and duration of the measurements.
- All relevant measurement details.
- Details of the weather conditions during the measurement, including the instrumentation and/or weather station where applicable.
- The relevant noise limits at compliance locations, and reference levels at intermediate locations if applicable.
- The results of the noise measurements at each monitoring location, including comparison to the reference levels (if intermediate locations are used) and the noise limits at the relevant compliance locations.
- Where modelling is used in conjunction with source measurements, the details of the modelling and the predicted noise levels will be included in the monitoring report.
- A statement outlining the development's compliance status, and the reasons for any identified noncompliance.

Where the development is found to be non-compliant, the Proponent will determine applicable noise mitigation and management measures to be implemented to manage the noise exceedances. This would be undertaken following provision of the noise monitoring report to the Proponent.

11.6 Frequency of noise monitoring

Operational noise monitoring will be undertaken in accordance with this program under the following circumstances:

- As required for compliance reporting for the development.
- In response to a complaint, where appropriate, and in accordance with the Proponent's relevant operating procedures.
- At the request of the relevant regulatory authorities.

12 Conclusion

Noise emissions associated with the operation of the USC AWRC and pipelines have been described in this ONR to assess the potential environmental risks associated with operational noise and vibration. Operational noise and vibration objectives have been established consistent with the Conditions of Approval for the Project and the EIS.

AWRC operational noise

The predicted noise impacts from the regular operation of the AWRC are expected to be below the established noise objectives for all relevant meteorological scenarios.

The predicted noise impacts from the activities associated with the testing and maintenance are expected to be below the established noise objectives given that these activities are undertaken during the day only.

AWRC operational vibration

Due to the distance between the AWRC and the nearest sensitive land uses, vibration is expected to be insignificant and inconsequential, so has not been considered further in this assessment.

Pipeline operational noise

The pipeline operation major noise sources include the two (2) valve control stations and the pipeline water release. The predicted noise impacts from these noise sources are expected to be below the established noise objectives .

Construction traffic

The predicted noise impacts are assessed as low and meet the nominated road traffic noise goals.

Consultation strategy and complaints handling

With the inclusion of the identified noise mitigation measures in this ONR, the operation of the AWRC and Pipelines is predicted to produce noise emissions that are below the established noise objectives for all identified sensitive land uses. Consultation with neighbouring sensitive land uses will be undertaken in accordance with the Project's Community and Stakeholder Engagement Plan, which involves disseminating information about operational noise and related mitigation measures. Complaints will be addressed through existing Sydney Water processes including Sydney Water's Complaints Policy and, where needed, will be supplemented with investigations and noise monitoring following the approach outlined in this ONR.

APPENDIX A Glossary of terminology

The following is a brief description of the technical terms used in this document.

Absorption Coefficient α	The absorption coefficient of a material, usually measured for each octave or third-octave band and ranging between zero and one. For example, a value of 0.85 for an octave band means that 85% of the sound energy within that octave band is absorbed on coming into contact with the material. Conversely, a low value below about 0.1 means the material is acoustically reflective.
Air-borne noise	Noise which is fundamentally transmitted by way of the air and can be attenuated by the use of barriers and walls placed physically between the noise source and receiver.
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Amenity	A desirable or useful feature or facility of a building or place.
AS	Australian Standard
Assessment period	The time period in which an assessment is made. e.g. Day 7am-10pm & Night 10pm-7am.
Assessment Point	A location at which a noise or vibration measurement is taken or estimated.
Attenuation	The reduction in the level of sound or vibration.
Audible Range	The limits of frequency which are audible or heard as sound. The normal hearing in young adults detects ranges from 20 Hz to 20 kHz, although some people can detect sound with frequencies outside these limits.
A-weighting	A filter applied to the sound recording made by a microphone to approximate the response of the human ear.
Background noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the LA90 noise level if measured as an overall level or an L90 noise level when measured in octave or third-octave bands.
Barrier (Noise)	A natural or constructed physical barrier which impedes the propagation of sound and includes fences, walls, earth mounds or berms and buildings.
Berm	Earth or overburden mound.
Bund	A bund is an embankment or wall of brick, stone, concrete or other impervious material, which may form part or all of the perimeter of a compound.
BS	British Standard
CoA	Condition(s) of Approval
Decibel [dB]	The units that sound is measured in. The following are examples of the decibel readings of common sounds in our environment:

threshold of hearing	0 dB	The faintest sound we can hear, defined as 20 micro Pascal
	10 dB	Human breathing
almost silent	20 dB	
	30 dB	Quiet bedroom or in a quiet national park location
generally quiet	40 dB	Library
	50 dB	Typical office space or ambience in the city at night
moderately loud	60 dB	CBD mall at lunch time
	70 dB	The sound of a car passing on the street
loud	80 dB	Loud music played at home
	90 dB	The sound of a truck passing on the street
very loud	100 dB	Indoor rock band concert
	110 dB	Operating a chainsaw or jackhammer
extremely loud	120 dB	Jet plane take-off at 100m away
threshold of pain	130 dB	
	140 dB	Military jet take-off at 25m away

dB(A)	A-weighted decibel. The A- weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter is denoted as dB(A). Practically all noise is measured using the A filter.
dB(C)	C-weighted decibels. The C-weighting noise filter simulates the response of the human ear at relatively high levels, where the human ear is nearly equally effective at hearing from mid-low frequency (63Hz) to mid-high frequency (4kHz), but is less effective outside these frequencies. The dB(C) level is not widely used but has some applications.
Diffraction	The distortion of sound waves caused when passing tangentially around solid objects.
EPA	Environment Protection Authority
Field Test	A test of the sound insulation performance in-situ. See also 'Laboratory Test' The sound insulation performance between building spaces can be measured by conducting a field test, for example, early during the construction stage or on completion. A field test is conducted in a non-ideal acoustic environment. It is generally not possible to measure the performance of an individual building element accurately as the results can be affected by numerous field conditions.
Fluctuating Noise	Noise that varies continuously to an appreciable extent over the period of observation.
Free-field	An environment in which there are no acoustic reflective surfaces. Free field noise measurements are carried out outdoors at least 3.5m from any acoustic reflecting structures other than the ground.
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Ground-borne noise	Vibration propagated through the ground and then radiated as noise by vibrating building elements such as wall and floor surfaces. This noise is more noticeable in rooms that are well insulated from other airborne noise. An example would be vibration transmitted from an underground rail line radiating as sound in a bedroom of a building located above.
Habitable Area	Includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom. Excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods.
Heavy Vehicle	A truck, transporter or other vehicle with a gross weight above a specified level (for example: over 8 tonnes).
IFC	Issued for construction
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.
Intrusive noise	Refers to noise that intrudes above the background level by more than 5 dB(A).
L1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L10	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L90	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
LAeq or Leq	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time, which would produce the same energy as a fluctuating sound level. When A-weighted, this is written as the LAeq.

LAeq(1hr)	The LAeq noise level for a one-hour period. In the context of the NSW EPA's Road Noise Policy it represents the highest tenth percentile hourly A-weighted Leq during the period 7am to 10pm, or 10pm to 7am (whichever is relevant).
LAeq(9hr)	The LAeq noise level for the period 10pm to 7am.
LAeq(15hr)	The LAeq noise level for the period 7am to 10pm.
Lmax	The maximum sound pressure level measured over a given period. When A-weighted, this is usually written as the LAmax.
Lmin	The minimum sound pressure level measured over a given period. When A-weighted, this is usually written as the LAmin.
Microphone	An electro-acoustic transducer which receives an acoustic signal and delivers a corresponding electric signal.
NCA	Noise Catchment Area. An area of study within which the ambient noise environment is substantially consistent.
Noise	Unwanted sound
NPfI	NSW Noise Policy for Industry, EPA 2017
Receiver	See *Sensitive land use(s)*. In the context of the noise prediction/modelling process, a receiver is a specific location to which noise is calculated.
Reflection	Sound wave reflected from a solid object obscuring its path.
RMS	Root Mean Square value representing the average value of a signal.
Rw	Weighted Sound Reduction Index A measure of the sound insulation performance of a building element. It is measured in very controlled conditions in a laboratory. The term supersedes the value STC which was used in older versions of the Building Code of Australa. Rw is measured and calculated using the procedure in ISO 717-1. The related field measurement is the DnT,w. The higher the value the better the acoustic performance of the building element.
R'w	Weighted Apparent Sound Reduction Index. As for Rw but measured in-situ and therefore subject to the inherent accuracies involved in such a measurement. The higher the value the better the acoustic performance of the building element.
RNP	Road Noise Policy, NSW, March 2011
Sensitive land use(s)	Residences, educational institutions (including preschools, schools, universities, TAFE colleges), health care facilities (including nursing homes, hospitals), religious facilities (including churches), child care centres and passive recreation areas (including outdoor grounds used for teaching). Receivers that may be considered to be sensitive include commercial premises (including film and television studios, research facilities, entertainment spaces, temporary accommodation such as caravan parks and camping grounds, restaurants, office premises, and retail spaces) and industrial premises as identified by the Planning Secretary.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound absorption	The ability of a material to absorb sound energy by conversion to thermal energy.
Sound Insulation	Sound insulation refers to the ability of a construction or building element to limit noise transmission through the building element. The sound insulation of a material can be described by the Rw and the sound insulation between two rooms can be described by the DnT,w.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 pico watt.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone referenced to 20 mico Pascal.

Tonal Noise	Sound containing a prominent frequency and characterised by a definite pitch.
Transmission Loss	The sound level difference between one room or area and another, usually of sound transmitted through an intervening partition or wall. Also the vibration level difference between one point and another. For example, if the sound level on one side of a wall is 100dB and 65dB on the other side, it is said that the transmission loss of the wall is 35dB. If the transmission loss is normalised or standardised, it then becomes the Rw or R'w or DnT,w.

APPENDIX B NCA and noise monitoring locations

Plot Date: 14/11/24 - 19:03 Layout: TM588 NCAs

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz

LUDDENHAM ROAD
LENORE DRIVE
WESTERN MOTORWAY
GREAT WESTERN HIGHWAY
BURLEY ROAD
FERRERS ROAD
PROSPECT HIGHWAY
JERSEY ROAD
BAKERS LANE
ALDINGTON ROAD
MAMRE ROAD
WARREN ROAD
BETTS ROAD
PINE ROAD
NCA T1
L06
CLIFTON AVENUE
L05
L03
NCA B1
NCA T2
NCA B2
L01
WESTLINK
NCA B3
NCA B4
NCA B5
NCA B6
NCA B7
SMITHFIELD ROAD
NCA B8
NCA B9
NCA B10
NCA B11
JOSEPH STREET
CAMBRIDGE STREET
NCA B13
NCA B14
NCA B15
NCA B16
NCA B17
NCA B18
ORANGE GROVE ROAD
HUME HIGHWAY
COPELAND STREET
RAMSAY ROAD
WHITAKER ROAD
BOYD STREET
BELLFIELD AVENUE
HUME HIGHWAY
SOUTH WESTERN MOTORWAY
CAMDEN VALLEY WAY

0 1,000 2,000 3,000 4,000 m

LEGEND

- Project NCAs
- AWRC
- M12 EIS Monitoring Locations
- Valve control station
- Water release
- Brine Pipeline
- Treated Water Pipeline

REV	BY	DATE	DESCRIPTION	APPROVER
r1	DA	14/11/24	Alignment updated	AM
r0	DA	04/10/24	Prepare figures	

A3 Original

Co-ordinate System: MGA Zone 56

0 1,000 2,000 3,000 4,000 m

1:70,000 At size A3

FULL SIZE A3, REDUCED TO A4

NOTE: Do not scale from this drawing.

N

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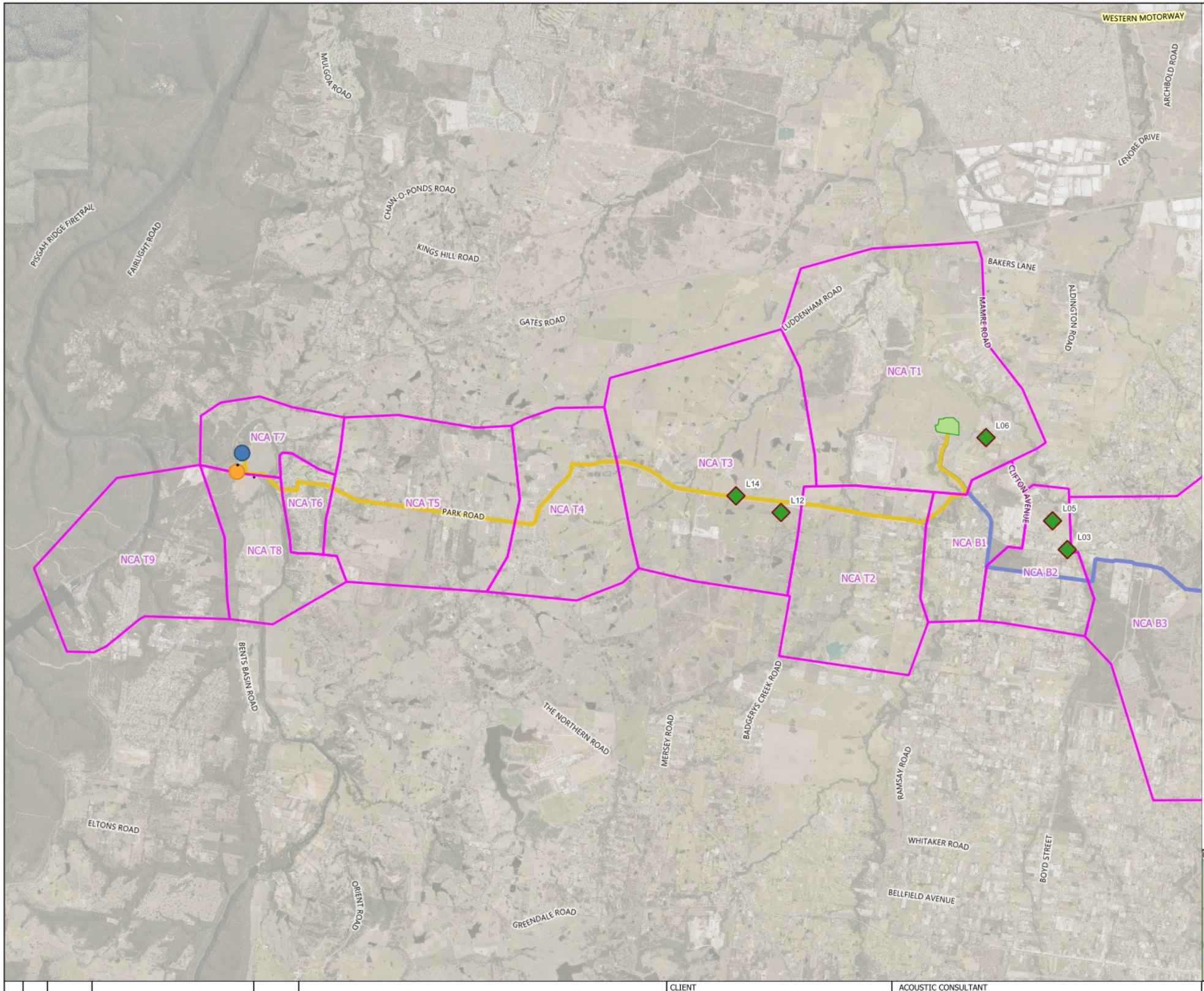
UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Brine Pipeline NCA Overview

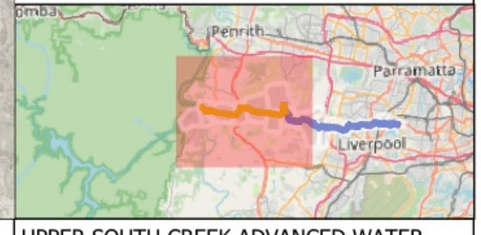
Plot Date: 14/11/24 - 19:03 Layout: TM588 NCAs

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz



LEGEND

- Project NCAs
- AWRC
- M12 EIS Monitoring Locations
- Valve control station
- Water release
- Brine Pipeline
- Treated Water Pipeline



0 1,000 2,000 3,000 4,000 m

REV	BY	DATE	DESCRIPTION	APPROVER
r1	DA	14/11/24	Alignment updated	..
r0	DA	04/10/24	Prepare figures	AM

A3 Original

Co-ordinate System: MGA Zone 56

0 1,000 2,000 3,000 4,000 m

1:70,000 At size A3

FULL SIZE A3, REDUCED TO A4

NOTE: Do not scale from this drawing.

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UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Treated Wate Pipeline NCA Overview

Plot Date: 14/11/24 - 18:54

Layout: TM588 Representative Receivers

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz

3 EDITH STREET, LANSDOWNE NSW 2163

R9

R8

7 HENRY LAWSON DRIVE, LANSDOWNE, NSW

NCA B17

NCA B18

MOORE STREET

WOODVILLE ROAD

HUME HIGHWAY

BELAR AVENUE

DERRIBONG STREET

EDITH STREET

TILLETT PARADE

WATT PARADE

LANSDOWNE ROAD

HENRY LAWSON DRIVE

BEDWELL AVENUE

HANLY STREET

NAUGHTON AVENUE

LEGEND

Noise Sensitive Receivers

- Childcare
- Commercial
- Community centre
- Educational
- Horse Stable
- Hotel/Motel/Hostel
- Industrial
- Medical
- Mixed-use
- Non-receiver
- Place of Worship
- Recreational
- Recreational - Active
- Recreational - Passive
- Residential
- Under construction

- Representative Receivers
- Project NCAs
- Valve control station
- Brine Pipeline

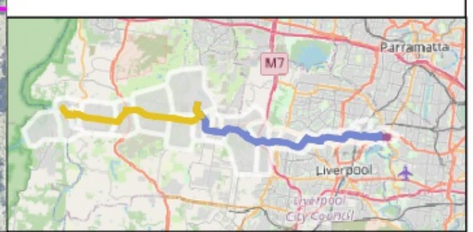
280 m

210

140

70

0



REV	BY	DATE	DESCRIPTION	APPROVER
r1	DA	14/11/24	Alignment updated	AM
r0	DA	04/10/24	Prepare figures	AM

A3 Original

Co-ordinate System: MGA Zone 56

0 40 80 120 160 m

1:3,000 At size A3

FULL SIZE A3, REDUCED TO A4

NOTE: Do not scale from this drawing.

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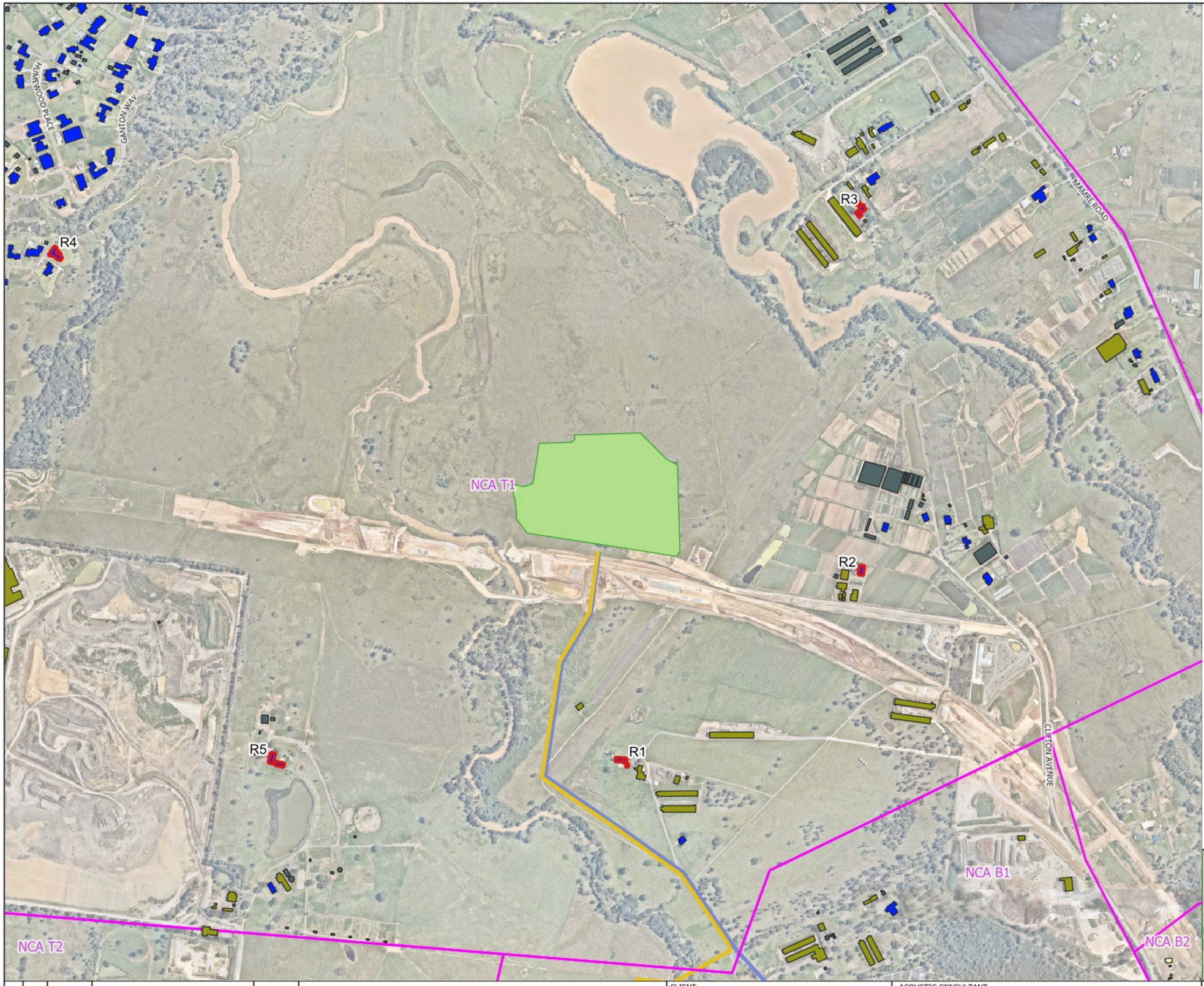
UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Brine Water Valve Control Station

Plot Date: 14/11/24 - 18:54 Layout: TM588 Representative Receivers

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz



LEGEND

Noise Sensitive Receivers

- Childcare
- Commercial
- Community centre
- Educational
- Horse Stable
- Hotel/Motel/Hostel
- Industrial
- Medical
- Mixed-use
- Non-receiver
- Place of Worship
- Recreational
- Recreational - Active
- Recreational - Passive
- Residential
- Under construction

- Representative Receivers
- Project NCAs
- AWRC
- Brine Pipeline
- Treated Water Pipeline

0 200 400 600 800 m

REV	BY	DATE	DESCRIPTION	APPROVER
r1	DA	14/11/24	Alignment updated	AM
r0	DA	04/10/24	Prepare figures	AM

A3 Original

Co-ordinate System: MGA Zone 56

0 160 320 480 640 m

1:10,000 At size A3

N

FULL SIZE A3, REDUCED TO A4

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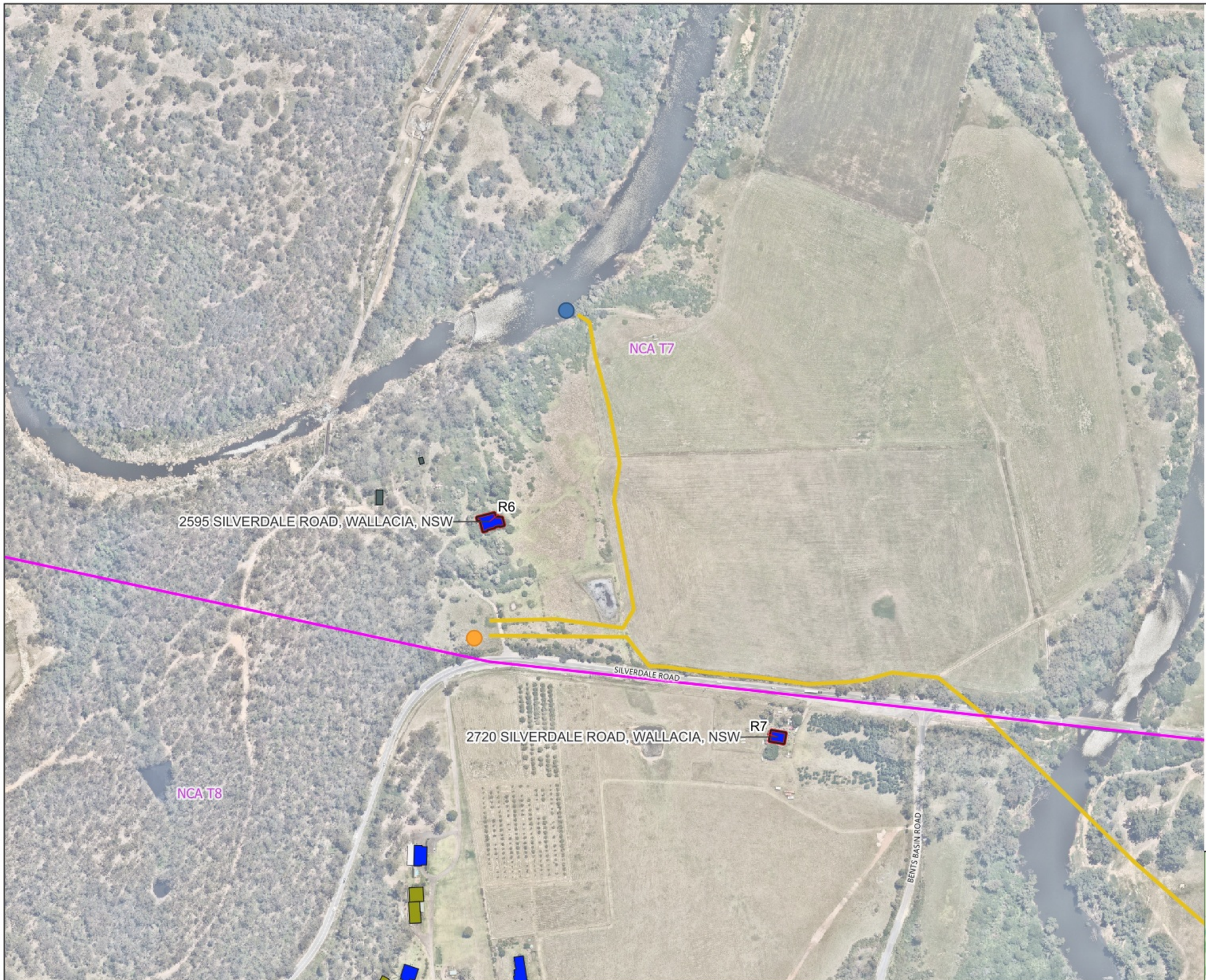
UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER
AWRC

Plot Date: 14/11/24 - 18:55

Layout: TM588 Representative Receivers

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz



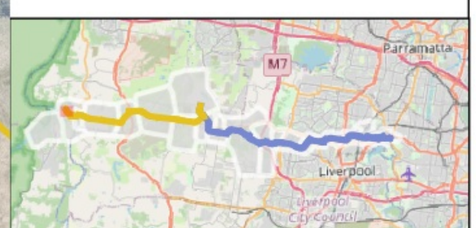
0 90 180 270 360 m

LEGEND

Noise Sensitive Receivers

- Childcare
- Commercial
- Community centre
- Educational
- Horse Stable
- Hotel/Motel/Hostel
- Industrial
- Medical
- Mixed-use
- Non-receiver
- Place of Worship
- Recreational
- Recreational - Active
- Recreational - Passive
- Residential
- Under construction

- Representative Receivers
- Project NCAs
- Valve control station
- Water release
- Treated Water Pipeline



REV	BY	DATE	DESCRIPTION	APPROVER
r1	DA	14/11/24	Alignment updated	AM
r0	DA	04/10/24	Prepare figures	AM

A3 Original

Co-ordinate System: MGA Zone 56

0 60 120 180 240 m

1:4,000 At size A3

FULL SIZE A3, REDUCED TO A4

NOTE: Do not scale from this drawing.

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UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Water Release & Treated Water Valve Control Station

Sheet 3 of 3

APPENDIX C Layout and noise sources of AWRC

Plot Date: 01/10/24 - 18:40 Layout: TM588 Noise Source Map copy

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz

PMP7112
TRNFMR_AWTP_3
TRNFMR_AWTP_1
TRNFMR_AWTP_2
TRNFMR_AWTP_4
TNK7108
TNK7104
AWTP Switchroom
HVAC_EXT_AWTP_3
HVAC_EXT_AWTP_2
HVAC_EXT_AWTP_1
PMP7117
PMP7116
Chemical Delivery and Storage
AWTP RO Building
MTR8803
MTR8804
MTR8801
PMP8801
PMP7301
PMP7102
MTR7102
MTR7301
MIX7035
AWTP RO Feed Tank
PMP7207
MTR7207
MTR7005
PMP7005
MTR7006
PMP7006
MTR7204
PMP7204
PMP7003
AWTP RO Feed Tank
MTR7201
PMP7201
PMP8401
MTR8401
PMP7617
MTR7611
MTRe1561
PMP7619
PMP7009
MTR7009
MTR7607
FAN7613
MTR7615
Unplanned Tank
RO Feed Flow Splitter
AWTP Post Treatment Tank
PMP8415
PMP8414
Treated Water Flow Splitter
PMP8404
Outloading Trucks around site to exit
TRNFMR_B_2
TRNFMR_B_4
TRNFMR_B_1
TRNFMR_B_3
FAN47XX
FAN47XXQ
MTR47XXQ
Blower Room
Bioreactor Switchroom
HVAC_EXT_B_4
HVAC_EXT_B_3
HVAC_EXT_B_2
HVAC_EXT_B_1
OXIDATION DITCHES
SWITCHROOM
BLOWER ROOM

LEGEND

AWRC Operational Footprint

Fixed Noise Sources

- Oxidation ditch
- Inlet works
- Blower room
- Bioreactor switchroom
- Odour control
- Biosolids dewatering
- Biosolids switchroom
- Gas flare
- Sludge thickening
- RE
- MBR
- Digester
- On-site vehicles
- Uncategorised
- MBR

On-site vehicle movements

- On-site vehicles

AWRC Buildings

- AWRC Buildings
- AWRC buildings with noise breakout

60 m
40
20
0

REV	BY	DATE	DESCRIPTION	APPROVER
r0	DA	01/10/24	Prepare figures	AM

A3 Original

Co-ordinate System: MGA Zone 56

0 7 14 21 28 35 m

1:600 At size A3

FULL SIZE A3, REDUCED TO A4

NOTE: Do not scale from this drawing.

N

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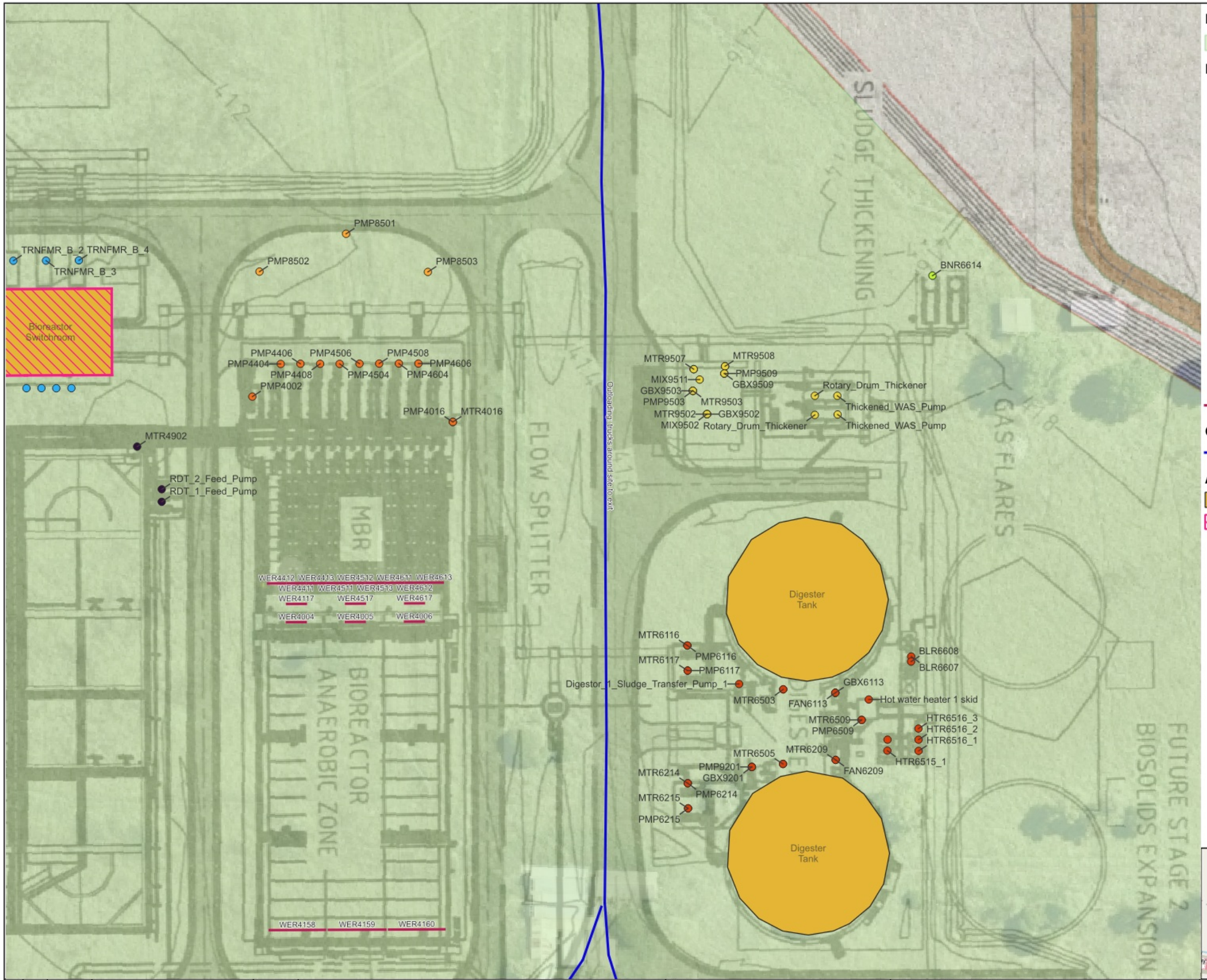
UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Source Locations

Plot Date: 01/10/24 - 18:40 Layout: TM588 Noise Source Map copy

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz



LEGEND

AWRC Operational Footprint

Fixed Noise Sources

- Oxidation ditch
- Inlet works
- Blower room
- Bioreactor switchroom
- Odour control
- Biosolids dewatering
- Biosolids switchroom
- Gas flare
- Sludge thickening
- RE
- MBR
- Digester
- On-site vehicles
- Uncategorised
- MBR

On-site vehicle movements

- On-site vehicles

AWRC Buildings

- AWRC Buildings
- AWRC buildings with noise breakout

REV	BY	DATE	DESCRIPTION	APPROVER
r0	DA	01/10/24	Prepare figures	AM

A3 Original

Co-ordinate System: MGA Zone 56

0 7 14 21 28 35 m

1:600 At size A3

FULL SIZE A3, REDUCED TO A4

NOTE: Do not scale from this drawing.

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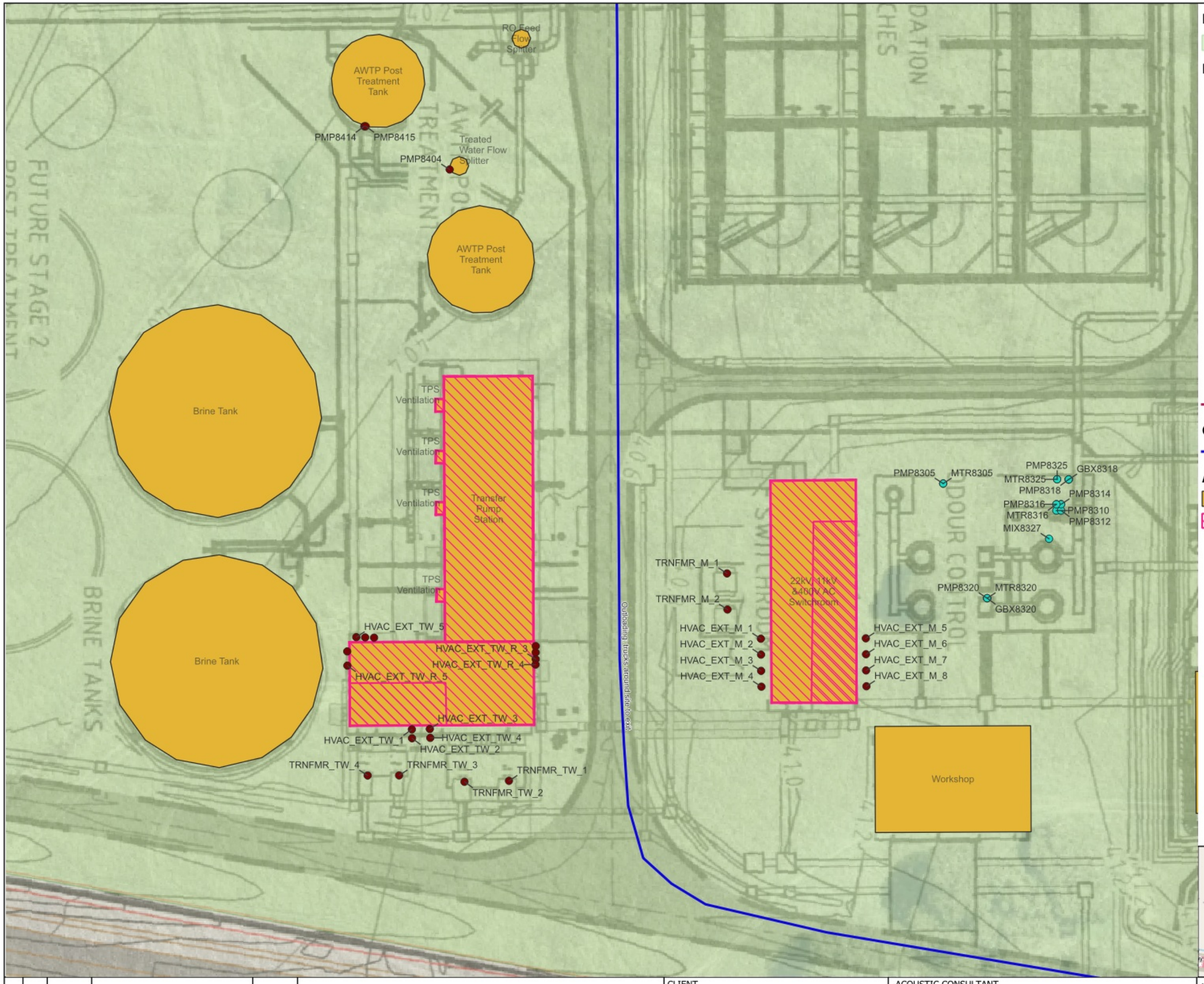
UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Source Locations

Plot Date: 01/10/24 - 18:41 Layout: TM588 Noise Source Map copy

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz



LEGEND

AWRC Operational Footprint

Fixed Noise Sources

- Oxidation ditch
- Inlet works
- Blower room
- Bioreactor switchroom
- Odour control
- Biosolids dewatering
- Biosolids switchroom
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- Sludge thickening
- RE
- MBR
- Digester
- On-site vehicles
- Uncategorised
- MBR

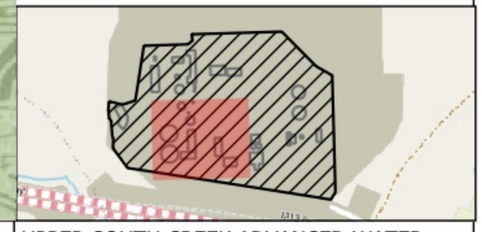
On-site vehicle movements

On-site vehicles

AWRC Buildings

AWRC Buildings

AWRC buildings with noise breakout



REV	BY	DATE	DESCRIPTION	APPROVER
r0	DA	01/10/24	Prepare figures	AM

A3 Original

Co-ordinate System: MGA Zone 56

0 7 14 21 28 35 m

1:600 At size A3

FULL SIZE A3, REDUCED TO A4

NOTE: Do not scale from this drawing.

N

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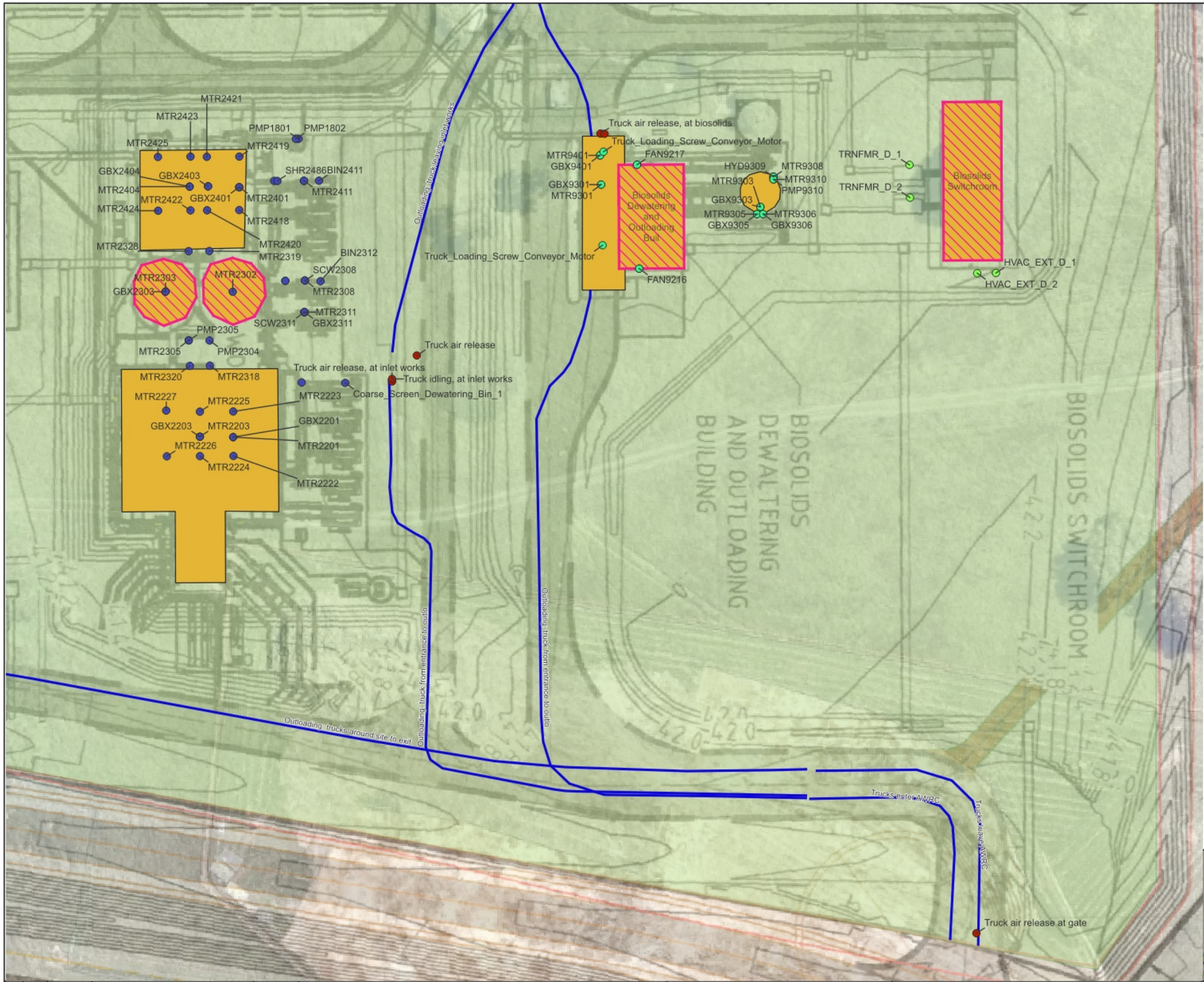
UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Source Locations

Plot Date: 01/10/24 - 18:41 Layout: TM588 Noise Source Map copy

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz



60 m
40
20
0

LEGEND

AWRC Operational Footprint

Fixed Noise Sources

- Oxidation ditch
- Inlet works
- Blower room
- Bioreactor switchroom
- Odour control
- Biosolids dewatering
- Biosolids switchroom
- Gas flare
- Sludge thickening
- RE
- MBR
- Digester
- On-site vehicles
- Uncategorised

MBR

On-site vehicle movements

On-site vehicles

AWRC Buildings

AWRC Buildings

AWRC buildings with noise breakout

REV	BY	DATE	DESCRIPTION	APPROVER
r0	DA	01/10/24	Prepare figures	AM

A3 Original

Co-ordinate System: MGA Zone 56

0 7 14 21 28 35 m

1:600 At size A3

FULL SIZE A3, REDUCED TO A4

NOTE: Do not scale from this drawing.

N

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UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Source Locations

Table C1: AWRC point sources

Name	X	Y	Height above ground, m	1/1 octave band sound power level (dB)									Overall dB(A) sound power level
				31	63	125	250	500	1000	2000	4000	8000	
BIN2312	294102	6251160	1.0	-	-	-	-	75	-	-	-	-	72
BIN2411	294101	6251176	1.0	-	-	-	-	75	-	-	-	-	72
BLR6607	294183	6251255	1.0	-	-	-	-	91	-	-	-	-	88
BLR6608	294183	6251254	1.0	-	-	-	-	91	-	-	-	-	88
BNR6614	294185	6251316	6.2	1	100	110	104	100	99	87	95	96	104
Coarse_Screen_Dewatering_Bin_1	294106	6251144	3.4	-	43	56	66	87	77	77	72	62	86
Coarse_Screen_Press	294099	6251144	1.1	-	37	50	60	81	71	72	66	56	80
Digestor_1_Sludge_Transfer_Pump_1	294155	6251250	0.7	-	53	65	75	91	86	85	81	72	92
FAN47XX	294022	6251308	2.7	-	96	91	89	88	85	83	82	80	91
FAN47XXQ	294022	6251306	2.7	-	96	91	89	88	85	83	82	80	91
FAN6113	294171	6251249	0.9	-	79	77	73	72	71	69	66	66	76
FAN6209	294171	6251238	1.0	-	79	77	73	72	71	69	66	66	76
FAN7609	293962	6251276	4.2	-	79	77	73	72	71	69	66	66	76
FAN7613	293963	6251272	4.2	-	79	77	73	72	71	69	66	66	76
FAN9216	294153	6251164	0.6	-	79	77	73	72	71	69	66	66	76
FAN9217	294152	6251180	0.9	-	79	77	73	72	71	69	66	66	76
FAN9308	294174	6251179	1.5	-	79	77	73	72	71	69	66	66	76
Fine_Screen_Press_1	294094	6251176	1.1	-	63	66	68	84	71	70	65	57	82
GBX2201	294089	6251135	10.0	-	-	-	-	86	-	-	-	-	83
GBX2203	294083	6251135	10.0	-	-	-	-	86	-	-	-	-	83
GBX2303	294077	6251158	8.4	-	-	-	-	79	-	-	-	-	75
GBX2311	294099	6251155	3.5	-	-	-	-	96	-	-	-	-	93
GBX2314	294096	6251160	1.9	-	-	-	-	79	-	-	-	-	75
GBX2401	294089	6251175	8.1	-	-	-	-	86	-	-	-	-	83
GBX2403	294084	6251175	8.1	-	-	-	-	86	-	-	-	-	83
GBX2404	294081	6251175	8.1	-	-	-	-	86	-	-	-	-	83
GBX2411	294099	6251176	3.5	-	-	-	-	81	-	-	-	-	78
GBX6113	294171	6251249	0.9	-	-	-	-	67	-	-	-	-	64
GBX8318	294049	6251176	0.9	-	-	-	-	96	-	-	-	-	93
GBX8320	294037	6251156	1.9	-	-	-	-	96	-	-	-	-	93
GBX9201	294158	6251237	0.8	-	-	-	-	90	-	-	-	-	87
GBX9301	294146	6251177	8.2	-	-	-	-	86	-	-	-	-	83
GBX9303	294172	6251174	11.4	-	-	-	-	81	-	-	-	-	78
GBX9305	294171	6251173	3.2	-	-	-	-	90	-	-	-	-	87
GBX9306	294172	6251173	3.2	-	-	-	-	90	-	-	-	-	87
GBX9401	294146	6251181	8.2	-	-	-	-	86	-	-	-	-	83
GBX9502	294149	6251293	1.0	-	-	-	-	72	-	-	-	-	69
GBX9503	294147	6251296	0.7	-	-	-	-	67	-	-	-	-	64
GBX9507	294147	6251300	1.1	-	-	-	-	72	-	-	-	-	69
GBX9508	294152	6251301	0.9	-	-	-	-	72	-	-	-	-	69
GBX9509	294152	6251299	0.9	-	-	-	-	72	-	-	-	-	69
Hot water heater 1 skid	294176	6251248	1.2	-	68	71	73	105	76	75	70	62	101
HTR6515_1	294179	6251240	2.7	-	-	-	-	91	-	-	-	-	87
HTR6515_2	294179	6251241	2.8	-	-	-	-	91	-	-	-	-	87
HTR6516_1	294184	6251240	2.7	-	-	-	-	91	-	-	-	-	87
HTR6516_2	294184	6251242	2.7	-	-	-	-	91	-	-	-	-	87
HTR6516_3	294184	6251243	2.7	-	-	-	-	91	-	-	-	-	87
HVAC_EXT_AWTP_1	293944	6251322	1.7	-	78	84	83	78	75	67	61	67	80
HVAC_EXT_AWTP_2	293944	6251324	1.7	-	78	84	83	78	75	67	61	67	80
HVAC_EXT_AWTP_3	293944	6251327	1.7	-	78	84	83	78	75	67	61	67	80
HVAC_EXT_B_1	294047	6251294	1.5	-	78	84	83	78	75	67	61	67	80
HVAC_EXT_B_2	294045	6251294	1.5	-	78	84	83	78	75	67	61	67	80
HVAC_EXT_B_3	294042	6251294	1.5	-	78	84	83	78	75	67	61	67	80
HVAC_EXT_B_4	294040	6251294	1.5	-	78	84	83	78	75	67	61	67	80
HVAC_EXT_D_1	294210	6251164	1.8	-	78	84	75	73	70	69	62	68	77
HVAC_EXT_D_2	294207	6251164	1.8	-	78	84	75	73	70	69	62	68	77
HVAC_EXT_M_1	294001	6251149	1.8	-	78	84	75	73	70	69	62	68	77
HVAC_EXT_M_2	294001	6251146	1.8	-	78	84	75	73	70	69	62	68	77
HVAC_EXT_M_3	294001	6251144	1.8	-	74	80	75	73	70	65	60	66	75
HVAC_EXT_M_4	294001	6251141	1.8	-	74	80	75	73	70	65	60	66	75
HVAC_EXT_M_5	294017	6251149	2.0	-	74	80	77	70	69	63	60	66	75
HVAC_EXT_M_6	294018	6251147	1.9	-	74	80	77	70	69	63	60	66	75
HVAC_EXT_M_7	294018	6251144	1.9	-	78	84	75	73	70	69	62	68	77

Name	X	Y	Height above ground, m	1/1 octave band sound power level (dB)									Overall dB(A) sound power level
				31	63	125	250	500	1000	2000	4000	8000	
HVAC_EXT_M_8	294018	6251142	1.8	-	78	84	75	73	70	69	62	68	77
HVAC_EXT_TW_1	293945	6251133	1.6	-	78	84	75	73	70	69	62	68	77
HVAC_EXT_TW_2	293945	6251131	1.6	-	78	84	75	73	70	69	62	68	77
HVAC_EXT_TW_3	293948	6251133	1.6	-	78	84	75	73	70	69	62	68	77
HVAC_EXT_TW_4	293948	6251131	1.6	-	78	84	75	73	70	69	62	68	77
HVAC_EXT_TW_5	293936	6251147	1.1	-	-	-	-	73	-	-	-	-	70
HVAC_EXT_TW_6	293937	6251147	1.1	-	-	-	-	73	-	-	-	-	70
HVAC_EXT_TW_7	293939	6251147	1.1	-	-	-	-	73	-	-	-	-	70
HVAC_EXT_TW_R_1	293965	6251147	4.5	-	86	80	78	78	44	61	63	61	77
HVAC_EXT_TW_R_2	293965	6251146	4.5	-	84	78	73	68	44	55	57	55	70
HVAC_EXT_TW_R_3	293965	6251145	4.5	-	84	78	73	68	44	55	57	55	70
HVAC_EXT_TW_R_4	293965	6251144	4.5	-	86	80	78	78	44	61	63	61	77
HVAC_EXT_TW_R_5	293934	6251143	4.5	-	81	75	70	62	44	53	55	54	66
HVAC_EXT_TW_R_6	293934	6251145	4.5	-	78	73	69	61	44	53	55	53	65
HYD9309	294174	6251179	1.5	-	95	95	92	89	84	83	78	74	91
MIX7035	293919	6251291	1.1	-	81	78	74	68	65	56	46	34	71
MIX7606	293962	6251276	5.0	-	81	78	74	68	65	56	46	34	71
MIX7608	293963	6251272	5.1	-	81	78	74	68	65	56	46	34	71
MIX8327	294046	6251166	2.0	-	81	78	74	68	65	56	46	34	71
MIX9502	294149	6251293	1.0	-	81	78	74	68	65	56	46	34	71
MIX9507	294147	6251300	1.1	-	81	78	74	68	65	56	46	34	71
MIX9511	294148	6251298	1.0	-	81	78	74	68	65	56	46	34	71
MTR2201	294089	6251135	10.0	-	76	79	81	84	84	83	78	70	89
MTR2203	294083	6251135	10.0	-	76	79	81	84	84	83	78	70	89
MTR2222	294089	6251132	10.5	-	58	61	63	66	66	65	60	52	70
MTR2223	294088	6251139	10.5	-	58	61	63	66	66	65	60	52	70
MTR2224	294083	6251132	10.5	-	58	61	63	66	66	65	60	52	70
MTR2225	294083	6251139	10.5	-	58	61	63	66	66	65	60	52	70
MTR2226	294078	6251132	10.5	-	58	61	63	66	66	65	60	52	70
MTR2227	294078	6251139	10.5	-	58	61	63	66	66	65	60	52	70
MTR2302	294088	6251158	8.4	-	63	66	68	71	71	70	65	57	76
MTR2303	294077	6251158	8.4	-	63	66	68	71	71	70	65	57	76
MTR2305	294081	6251150	1.1	-	75	78	80	83	83	82	77	69	87
MTR2308	294099	6251160	3.5	-	61	64	66	69	69	68	63	55	73
MTR2311	294099	6251155	3.5	-	61	64	66	69	69	68	63	55	73
MTR2314	294096	6251160	1.9	-	70	73	75	78	78	77	72	64	82
MTR2318	294085	6251146	10.3	-	58	61	63	66	66	65	60	52	70
MTR2319	294084	6251165	8.6	-	58	61	63	66	66	65	60	52	70
MTR2320	294081	6251146	10.3	-	58	61	63	66	66	65	60	52	70
MTR2328	294081	6251164	8.6	-	58	61	63	66	66	65	60	52	70
MTR2401	294089	6251175	8.1	-	76	79	81	84	84	83	78	70	89
MTR2403	294084	6251175	8.1	-	76	79	81	84	84	83	78	70	89
MTR2404	294081	6251175	8.1	-	76	79	81	84	84	83	78	70	89
MTR2411	294099	6251176	3.5	-	70	73	75	78	78	77	72	64	82
MTR2418	294089	6251171	8.6	-	58	61	63	66	66	65	60	52	70
MTR2419	294088	6251180	8.0	-	58	61	63	66	66	65	60	52	70
MTR2420	294083	6251171	8.6	-	58	61	63	66	66	65	60	52	70
MTR2421	294083	6251180	8.0	-	58	61	63	66	66	65	60	52	70
MTR2422	294081	6251171	8.6	-	58	61	63	66	66	65	60	52	70
MTR2423	294081	6251180	8.0	-	58	61	63	66	66	65	60	52	70
MTR2424	294076	6251171	8.6	-	58	61	63	66	66	65	60	52	70
MTR2425	294075	6251179	8.0	-	58	61	63	66	66	65	60	52	70
MTR4016	294108	6251290	1.2	-	78	81	83	86	86	85	80	72	90
MTR47XX	294022	6251308	2.7	-	75	78	80	83	83	82	77	69	87
MTR47XXQ	294022	6251306	2.7	-	75	78	80	83	83	82	77	69	87
MTR4902	294058	6251285	4.5	-	68	71	73	76	76	75	70	62	81
MTR6113	294171	6251249	0.9	-	51	54	56	59	59	58	53	45	64
MTR6116	294147	6251256	1.4	-	73	76	78	81	81	80	75	67	86
MTR6117	294147	6251252	1.4	-	73	76	78	81	81	80	75	67	86
MTR6209	294171	6251238	1.0	-	51	54	56	59	59	58	53	45	64
MTR6214	294148	6251234	1.3	-	73	76	78	81	81	80	75	67	86
MTR6215	294148	6251230	1.3	-	73	76	78	81	81	80	75	67	86
MTR6503	294162	6251249	1.1	-	73	76	78	81	81	80	75	67	86
MTR6505	294163	6251237	1.2	-	73	76	78	81	81	80	75	67	86

Name	X	Y	Height above ground, m	1/1 octave band sound power level (dB)									Overall dB(A) sound power level
				31	63	125	250	500	1000	2000	4000	8000	
MTR6509	294175	6251245	0.9	-	68	71	73	76	76	75	70	62	81
MTR7005	293917	6251279	0.7	-	87	90	92	95	95	94	89	81	99
MTR7006	293917	6251277	0.8	-	87	90	92	95	95	94	89	81	99
MTR7009	293953	6251273	0.6	-	70	73	75	78	78	77	72	64	82
MTR7102	293918	6251297	0.8	-	85	88	90	93	93	92	87	79	98
MTR7201	293900	6251267	1.0	-	93	95	95	95	95	95	92	85	101
MTR7204	293900	6251276	1.0	-	93	95	95	95	95	95	92	85	101
MTR7207	293900	6251286	1.0	-	93	95	95	95	95	95	92	85	101
MTR7301	293900	6251295	1.0	-	93	95	95	95	95	95	92	85	101
MTR7605	293962	6251276	4.2	-	61	64	66	69	69	68	63	55	73
MTR7606	293962	6251276	5.0	-	51	54	56	59	59	58	53	45	64
MTR7607	293963	6251272	4.2	-	61	64	66	69	69	68	63	55	73
MTR7608	293963	6251272	5.0	-	51	54	56	59	59	58	53	45	64
MTR7609	293962	6251276	4.2	-	55	58	60	63	63	62	57	49	68
MTR7610	293962	6251276	4.2	-	58	61	63	66	66	65	60	52	70
MTR7611	293962	6251276	4.2	-	53	56	58	61	61	60	55	47	65
MTR7613	293963	6251272	4.2	-	55	58	60	63	63	62	57	49	68
MTR7614	293963	6251272	4.2	-	58	61	63	66	66	65	60	52	70
MTR7615	293963	6251272	4.2	-	53	56	58	61	61	60	55	47	65
MTR7617	293959	6251275	1.2	-	43	46	48	51	51	50	45	37	56
MTR7619	293959	6251273	1.2	-	43	46	48	51	51	50	45	37	56
MTR8305	294029	6251174	2.4	-	55	58	60	63	63	62	57	49	68
MTR8314	294048	6251172	0.9	-	75	78	80	83	83	82	77	69	87
MTR8316	294047	6251172	0.9	-	75	78	80	83	83	82	77	69	87
MTR8318	294049	6251176	0.9	-	72	75	77	80	80	79	74	66	85
MTR8320	294037	6251156	1.9	-	90	93	95	98	98	97	92	84	103
MTR8325	294047	6251176	0.9	-	30	33	35	38	38	37	32	24	43
MTR8401	293953	6251280	0.7	-	78	81	83	86	86	85	80	72	90
MTR8801	293917	6251300	1.6	-	80	83	85	88	88	87	82	74	93
MTR8803	293918	6251300	1.6	-	80	83	85	88	88	87	82	74	93
MTR8804	293919	6251300	1.6	-	80	83	85	88	88	87	82	74	93
MTR9201	294158	6251237	0.8	-	75	78	80	83	83	82	77	69	87
MTR9216	294153	6251164	0.7	-	75	78	80	83	83	82	77	69	87
MTR9217	294152	6251180	0.9	-	75	78	80	83	83	82	77	69	87
MTR9301	294146	6251177	8.2	-	70	73	75	78	78	77	72	64	83
MTR9303	294172	6251174	11.4	-	66	69	71	74	74	73	68	60	78
MTR9305	294171	6251173	3.2	-	75	78	80	83	83	82	77	69	87
MTR9306	294172	6251173	3.2	-	75	78	80	83	83	82	77	69	87
MTR9308	294174	6251179	1.5	-	53	56	58	61	61	60	55	47	65
MTR9310	294174	6251178	1.5	-	75	78	80	83	83	82	77	69	87
MTR9401	294146	6251181	8.2	-	70	73	75	78	78	77	72	64	83
MTR9502	294149	6251293	1.0	-	57	60	62	65	65	64	59	51	69
MTR9503	294147	6251296	0.7	-	51	54	56	59	59	58	53	45	64
MTR9507	294147	6251300	1.1	-	57	60	62	65	65	64	59	51	69
MTR9508	294152	6251301	0.9	-	57	60	62	65	65	64	59	51	69
MTR9509	294152	6251299	0.9	-	57	60	62	65	65	64	59	51	69
MTRe1561	293962	6251276	4.2	-	28	31	33	36	36	35	30	22	41
PMP1801	294098	6251183	3.9	-	86	87	89	89	92	89	85	79	95
PMP1802	294097	6251183	3.9	-	86	87	89	89	92	89	85	79	95
PMP2304	294084	6251150	1.1	-	71	72	74	74	77	74	70	64	81
PMP2305	294081	6251150	1.1	-	89	90	92	92	95	92	88	82	99
PMP4002	294076	6251294	1.3	5	83	84	86	86	89	86	82	76	93
PMP4016	294108	6251290	1.2	-	76	77	79	79	82	79	75	69	86
PMP4404	294081	6251299	1.2	3	83	84	86	86	89	86	82	76	93
PMP4406	294084	6251299	1.2	3	83	84	86	86	89	86	82	76	93
PMP4408	294087	6251299	1.2	3	83	84	86	86	89	86	82	76	93
PMP4504	294090	6251299	1.2	3	83	84	86	86	89	86	82	76	93
PMP4506	294093	6251299	1.2	3	83	84	86	86	89	86	82	76	93
PMP4508	294096	6251299	1.2	3	83	84	86	86	89	86	82	76	93
PMP4604	294100	6251300	1.2	3	83	84	86	86	89	86	82	76	93
PMP4606	294103	6251300	1.2	3	83	84	86	86	89	86	82	76	93
PMP6116	294147	6251256	1.4	-	76	77	79	79	82	79	75	69	86
PMP6117	294147	6251252	1.4	-	76	77	79	79	82	79	75	69	86
PMP6214	294148	6251234	1.3	-	76	77	79	79	82	79	75	69	86

Name	X	Y	Height above ground, m	1/1 octave band sound power level (dB)									Overall dB(A) sound power level
				31	63	125	250	500	1000	2000	4000	8000	
PMP6215	294148	6251230	1.3	-	76	77	79	79	82	79	75	69	86
PMP6503	294162	6251249	1.1	-	76	77	79	79	82	79	75	69	86
PMP6505	294163	6251237	1.2	-	76	77	79	79	82	79	75	69	86
PMP6509	294175	6251245	0.9	-	71	72	74	74	77	74	70	64	81
PMP7003	293927	6251276	0.4	-	64	65	67	67	70	67	63	57	73
PMP7005	293917	6251279	0.7	-	89	90	92	92	95	92	88	82	99
PMP7006	293917	6251277	0.8	-	89	90	92	92	95	92	88	82	99
PMP7009	293953	6251273	0.6	-	77	78	80	80	83	80	76	70	86
PMP7102	293918	6251297	0.8	-	86	87	89	89	92	89	85	79	95
PMP7112	293893	6251340	1.2	-	83	84	86	86	89	86	82	76	93
PMP7116	293890	6251316	1.6	-	64	65	67	67	70	67	63	57	73
PMP7117	293891	6251316	1.6	-	64	65	67	67	70	67	63	57	73
PMP7201	293900	6251267	1.0	-	93	94	96	96	99	96	92	86	103
PMP7204	293900	6251276	1.0	-	93	94	96	96	99	96	92	86	103
PMP7207	293900	6251286	1.0	-	93	94	96	96	99	96	92	86	103
PMP7301	293900	6251295	1.0	-	93	94	96	96	99	96	92	86	103
PMP7617	293959	6251275	1.2	-	74	75	77	77	80	77	73	67	84
PMP7619	293959	6251273	1.2	-	74	75	77	77	80	77	73	67	84
PMP8305	294029	6251174	2.4	-	68	69	71	71	74	71	67	61	78
PMP8310	294047	6251171	0.9	-	83	84	86	86	89	86	82	76	93
PMP8312	294048	6251171	0.9	-	83	84	86	86	89	86	82	76	93
PMP8314	294048	6251172	0.9	-	88	89	91	91	94	91	87	81	97
PMP8316	294047	6251172	0.9	-	88	89	91	91	94	91	87	81	97
PMP8318	294049	6251176	0.9	-	78	79	81	81	84	81	77	71	88
PMP8320	294037	6251156	1.9	-	91	92	94	94	97	94	90	84	101
PMP8325	294047	6251176	0.9	-	54	55	57	57	60	57	53	47	63
PMP8401	293953	6251280	0.7	-	81	82	84	84	87	84	80	74	91
PMP8404	293949	6251223	0.7	-	64	65	67	67	70	67	63	57	73
PMP8414	293935	6251229	0.6	-	37	49	58	63	70	68	64	56	73
PMP8415	293935	6251229	0.6	-	64	65	67	67	70	67	63	57	73
PMP8501	294091	6251320	1.5	-	83	84	86	86	89	86	82	76	93
PMP8502	294077	6251314	1.5	-	57	68	78	83	89	88	83	75	93
PMP8503	294104	6251314	1.5	-	57	68	78	83	89	88	83	75	93
PMP8801	293917	6251300	1.6	-	57	68	77	83	89	87	83	75	93
PMP8803	293918	6251300	1.6	-	57	68	77	83	89	87	83	75	93
PMP8804	293919	6251300	1.6	-	57	68	77	83	89	87	83	75	93
PMP9201	294158	6251237	0.8	-	78	79	81	81	84	81	77	71	88
PMP9310	294174	6251178	1.5	-	80	81	83	83	86	83	79	73	89
PMP9503	294147	6251296	0.7	-	62	63	65	65	68	65	61	55	71
PMP9508	294152	6251301	0.9	-	70	71	73	73	76	73	69	63	79
PMP9509	294152	6251299	0.9	-	70	71	73	73	76	73	69	63	79
RDT_1_Feed_Pump	294062	6251276	0.5	-	53	65	75	91	86	85	81	72	92
RDT_2_Feed_Pump	294062	6251278	0.5	-	53	65	75	91	86	85	81	72	92
Rotary_Drum_Thickener	294166	6251296	4.5	-	50	61	71	84	82	81	77	68	87
Rotary_Drum_Thickener	294166	6251293	4.5	-	50	61	71	84	82	81	77	68	87
SCW2308	294099	6251160	3.5	-	-	-	-	79	-	-	-	-	75
SCW2311	294099	6251155	3.5	-	-	-	-	79	-	-	-	-	75
SHR2486	294095	6251176	1.9	-	-	-	-	78	-	-	-	-	75
Thickened_WAS_Pump	294170	6251296	0.6	-	54	66	75	92	87	86	81	72	93
Thickened_WAS_Pump	294170	6251293	0.6	-	54	66	75	92	87	86	81	72	93
TRNFMR_AWTP_1	293924	6251337	3.0	-	88	90	85	85	79	74	69	62	85
TRNFMR_AWTP_2	293929	6251338	3.0	-	88	90	85	85	79	74	69	62	85
TRNFMR_AWTP_3	293935	6251338	3.0	-	88	90	85	85	79	74	69	62	85
TRNFMR_AWTP_4	293940	6251338	3.0	-	88	90	85	85	79	74	69	62	85
TRNFMR_B_1	294032	6251314	3.1	-	88	90	85	85	79	74	69	62	86
TRNFMR_B_2	294037	6251314	3.1	-	88	90	85	85	79	74	69	62	86
TRNFMR_B_3	294043	6251315	3.1	-	88	90	85	85	79	74	69	62	86
TRNFMR_B_4	294048	6251315	3.1	-	88	90	85	85	79	74	69	62	86
TRNFMR_D_1	294195	6251181	3.0	-	88	90	85	85	79	74	69	62	85
TRNFMR_D_2	294196	6251176	3.0	-	88	90	85	85	79	74	69	62	85
TRNFMR_M_1	293995	6251159	4.1	-	91	93	88	88	82	77	72	65	89
TRNFMR_M_2	293995	6251153	4.1	-	91	93	88	88	82	77	72	65	89
TRNFMR_TW_1	293961	6251125	2.4	-	87	89	84	84	78	73	68	61	84
TRNFMR_TW_2	293954	6251125	2.4	-	87	89	84	84	78	73	68	61	84

Name	X	Y	Height above ground, m	1/1 octave band sound power level (dB)									Overall dB(A) sound power level
				31	63	125	250	500	1000	2000	4000	8000	
TRNFMR_TW_3	293943	6251125	2.8	-	86	88	83	83	77	72	67	60	84
TRNFMR_TW_4	293938	6251125	2.9	-	86	88	83	83	77	72	67	60	84
Truck air release	294118	6251149	3.6	83	81	86	79	79	83	84	84	81	90
Truck air release at gate	294209	6251059	3.6	83	81	86	79	79	83	84	84	81	90
Truck air release, at biosolids	294146	6251185	3.6	83	81	86	79	79	83	84	84	81	90
Truck air release, at inlet works	294114	6251145	3.6	83	81	86	79	79	83	84	84	81	90
Truck idling, at biosolids	294147	6251185	1.5	102	103	98	93	94	91	89	83	78	96
Truck idling, at inlet works	294114	6251145	3.6	102	103	98	93	94	91	89	83	78	96
Truck_Loading_Screw_Conveyor_Motor	294147	6251182	6.7	-	46	59	68	88	80	80	75	65	88
Truck_Loading_Screw_Conveyor_Motor	294147	6251167	6.7	-	46	59	68	88	80	80	75	65	88
VIB7605	293962	6251276	4.3	-	-	-	-	84	-	-	-	-	81
VIB7607	293963	6251272	4.3	-	-	-	-	84	-	-	-	-	81
Emergency Generator - exhaust	293993	6251164	2.6	89	110	98	89	84	79	80	76	73	89
Emergency Generator	293993	6251164	1.1	101	108	102	98	92	84	81	78	73	94
Brine valve control	312533	6247924	0.0	-	-	-	-	54	-	-	-	-	57
Treated valve control	280785	6250372	0.0	-	-	-	-	63	-	-	-	-	66
Water release	280897	6250712	3.0	3	68	70	73	74	74	72	71	71	79

Table C2: AWRC line sources

Name	Length, m	Average height above ground, m	Point source sound power level, dB(A)	Number of moving sources per hour			1/1 octave band sound power level per metre (dB)									Overall dB(A) sound power level
				Day	Evening	Night	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
WER4904	3.42	0.07	N/A	-	-	-	-	72	63	69	69	72	74	71	-	89
WER2448	3.65	5.64	N/A	-	-	-	-	72	63	69	69	72	74	71	-	88
WER2447	3.70	5.64	N/A	-	-	-	-	72	63	69	69	72	74	71	-	88
SCW9311	2.95	6.79	N/A	-	-	-	-	-	-	-	79	-	-	-	-	87
SCW9306	3.06	3.31	N/A	-	-	-	-	-	-	-	80	-	-	-	-	86
SCW9305	3.09	3.31	N/A	-	-	-	-	-	-	-	79	-	-	-	-	85
SCW9303	3.64	11.57	N/A	-	-	-	-	-	-	-	79	-	-	-	-	82
CON9401	2.80	5.44	N/A	-	-	-	-	-	-	-	79	-	-	-	-	90
CON9301	3.62	10.66	N/A	-	-	-	-	-	-	-	79	-	-	-	-	90
WER4617	2.60	1.92	N/A	-	-	-	-	72	63	69	69	72	74	71	-	85
WER4613	3.42	2.61	N/A	-	-	-	-	72	63	69	69	72	74	71	-	84
WER4612	3.65	2.64	N/A	-	-	-	-	72	63	69	69	72	74	71	-	84
WER4611	3.70	2.68	N/A	-	-	-	-	72	63	69	69	72	74	71	-	84
WER4517	2.95	2.02	N/A	-	-	-	-	72	63	69	69	72	74	71	-	85
WER4513	3.06	2.71	N/A	-	-	-	-	72	63	69	69	72	74	71	-	84
WER4512	3.09	2.74	N/A	-	-	-	-	72	63	69	69	72	74	71	-	84
WER4511	3.64	2.77	N/A	-	-	-	-	72	63	69	69	72	74	71	-	84
WER4413	2.80	2.80	N/A	-	-	-	-	72	63	69	69	72	74	71	-	84
WER4412	3.62	2.87	N/A	-	-	-	-	72	63	69	69	72	74	71	-	84
WER4411	2.60	2.84	N/A	-	-	-	-	72	63	69	69	72	74	71	-	84
WER4160	1.94	1.29	N/A	-	-	-	-	72	63	69	69	72	74	71	-	90
WER4159	1.66	1.34	N/A	-	-	-	-	72	63	69	69	72	74	71	-	90
WER4158	1.79	1.43	N/A	-	-	-	-	72	63	69	69	72	74	71	-	90
WER4117	1.80	2.12	N/A	-	-	-	-	72	63	69	69	72	74	71	-	85
WER4006	1.91	1.81	N/A	-	-	-	-	72	63	69	69	72	74	71	-	85
WER4005	1.70	1.92	N/A	-	-	-	-	72	63	69	69	72	74	71	-	85
WER4004	1.86	2.03	N/A	-	-	-	-	72	63	69	69	72	74	71	-	85
Outloading: truck from entrance to outload bldg	1.69	1.50	106	4	-	-	66	79	68	66	68	68	65	53	-	93
Trucks leave AWRC	1.71	1.50	106	8	-	-	69	82	71	69	71	71	68	56	-	92
Outloading: truck from outload bldg around site to exit	1.77	1.50	106	4	-	-	66	79	68	66	68	68	65	53	-	87
Outloading: trucks around site to exit	1.94	1.50	106	8	-	-	69	82	71	69	71	71	68	56	-	104
Outloading: truck leaving inlet works	1.76	1.50	106	4	-	-	66	79	68	66	68	68	65	53	-	90
Outloading: truck from entrance to outload bldg	1.77	1.50	106	4	-	-	66	79	68	66	68	68	65	53	-	93
Trucks enter AWRC	1.88	1.50	106	8	-	-	69	82	71	69	71	71	68	56	-	91

Table C3: AWRC area sources

Building	Element	Area, m2	Attenuation	1/1 octave band sound power level per square metre (dB)									Overall dB(A) sound power level
				31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
Grit vortex chamber 1	Roof	80.90	-	-	81	-	-	-	-	73	-	-	89
Grit vortex chamber 2	Roof	80.90	-	-	81	-	-	-	-	73	-	-	89
Blower room	Roof	530.60	Spandek Roof Sheeting 0.48mm + AnticonHP + 2x16mm Thick fire rated plasterboard	-	531	-	59	51	43	47	31	29	73
Dewatering building	Roof	172.30	Double skin	-	172	-	79	75	58	45	31	30	83
TWPS	Roof	605.00	Spandek Roof Sheeting 0.48mm + AnticonHP + 2x16mm Thick fire rated plasterboard	-	605	-	53	45	38	33	26	23	64
AWTP	Roof	769.70	Spandek Roof Sheeting 0.48mm + AnticonHP	-	770	-	33	30	30	64	26	17	90
Blower SR	Roof	382.80	Spandek Roof Sheeting 0.48mm+AnticonHP+3x16mm Thick fire rated plasterboard	-	383	-	35	31	20	23	7	5	48
Main SR	Roof	487.50	Spandek Roof Sheeting 0.48mm + AnticonHP + Concrete Panel	-	488	-	25	15	8	19	6	-	44
Biosolids SR	Roof	235.30	Spandek Roof Sheeting 0.48mm+AnticonHP+3x16mm Thick fire rated plasterboard	-	235	-	26	22	15	24	-	-	45
TWPS	Roof	395.70	Spandek Roof Sheeting 0.48mm + AnticonHP + Concrete Panel	-	396	-	22	12	5	27	3	-	50
AWTP SR	Roof	252.00	Spandek Roof Sheeting 0.48mm + AnticonHP + 16mm Thick fire rated plasterboard	-	252	-	44	40	29	40	16	13	61
TWPS Ventilation	Roof	2.70	Steel Plate	-	3	-	62	56	51	46	48	46	56
TWPS Ventilation	Roof	2.70	Steel Plate	-	3	-	62	56	51	46	48	46	56
TWPS Ventilation	Roof	2.70	Steel Plate	-	3	-	62	56	51	46	48	46	56
TWPS Ventilation	Roof	2.60	Steel Plate	-	3	-	62	56	51	46	48	46	56
AWTP	RoofVent	33.40	-	-	33	-	44	45	47	83	49	46	95
Main SR	PlasterboardCeiling	204.70	Spandek Roof Sheeting 0.48mm+AnticonHP+3x16mm Thick fire rated plasterboard	-	205	-	28	25	17	19	2	-	41
TWPS	Plasterboard Ceiling	105.60	Spandek Roof Sheeting 0.48mm+AnticonHP+3x16mm Thick fire rated plasterboard	-	106	-	25	22	14	27	-	-	44

Table C4: AWRC vertical area sources

Building	Element	Length, m	Z extent, m	Attenuation	1/1 octave band sound power level per square metre (dB)									Overall dB(A) sound power level
					31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
Grit vortex chamber 1	Facade01	3.42	4.26	-	-	-	-	-	73	-	-	-	-	81
Grit vortex chamber 1	Facade02	3.65	4.26	-	-	-	-	-	73	-	-	-	-	82
Grit vortex chamber 1	Facade03	3.70	4.26	-	-	-	-	-	73	-	-	-	-	82
Grit vortex chamber 1	Facade04	2.95	4.26	-	-	-	-	-	73	-	-	-	-	81
Grit vortex chamber 1	Facade05	3.06	4.26	-	-	-	-	-	73	-	-	-	-	81
Grit vortex chamber 1	Facade06	3.09	4.26	-	-	-	-	-	73	-	-	-	-	81
Grit vortex chamber 1	Facade07	3.64	4.26	-	-	-	-	-	73	-	-	-	-	82
Grit vortex chamber 1	Facade08	2.80	4.26	-	-	-	-	-	73	-	-	-	-	81
Grit vortex chamber 1	Facade09	3.62	4.26	-	-	-	-	-	73	-	-	-	-	82
Grit vortex chamber 1	Facade10	2.60	4.26	-	-	-	-	-	73	-	-	-	-	80
Grit vortex chamber 2	Facade01	3.42	4.26	-	-	-	-	-	73	-	-	-	-	81
Grit vortex chamber 2	Facade02	3.65	4.26	-	-	-	-	-	73	-	-	-	-	82
Grit vortex chamber 2	Facade03	3.70	4.26	-	-	-	-	-	73	-	-	-	-	82
Grit vortex chamber 2	Facade04	2.95	4.26	-	-	-	-	-	73	-	-	-	-	81
Grit vortex chamber 2	Facade05	3.06	4.26	-	-	-	-	-	73	-	-	-	-	81
Grit vortex chamber 2	Facade06	3.09	4.26	-	-	-	-	-	73	-	-	-	-	81
Grit vortex chamber 2	Facade07	3.64	4.26	-	-	-	-	-	73	-	-	-	-	82
Grit vortex chamber 2	Facade08	2.80	4.26	-	-	-	-	-	73	-	-	-	-	81
Grit vortex chamber 2	Facade09	3.62	4.26	-	-	-	-	-	73	-	-	-	-	82
Grit vortex chamber 2	Facade10	2.60	4.26	-	-	-	-	-	73	-	-	-	-	80
Blower room	Facade01_Louvre	1.94	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	88
Blower room	Facade01_Louvre	1.66	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	87
Blower room	Facade03_Louvre	1.79	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	87
Blower room	Facade01_Louvre	1.80	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	87
Blower room	Facade01_Louvre	1.91	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	87
Blower room	Facade01_Louvre	1.70	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	87
Blower room	Facade01_Louvre	1.86	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	87
Blower room	Facade02_Louvre	1.69	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	87
Blower room	Facade02_Louvre	1.71	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	87
Blower room	Facade03_Louvre	1.77	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	87
Blower room	Facade03_Louvre	1.94	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	88
Blower room	Facade03_Louvre	1.76	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	87
Blower room	Facade03_Louvre	1.77	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	87
Blower room	Facade03_Louvre	1.88	1.80	Acoustic Louvre (Hudson 300)	-	87	84	82	84	70	62	55	40	87
Blower room	Facade03_Door	1.06	2.45	Steel Clad Solid Core Door	-	59	58	56	65	56	59	51	36	69
Blower room	Facade04_Door	1.14	2.45	Steel Clad Solid Core Door	-	59	58	56	65	56	59	51	36	70
Blower room	Facade04_RollerDoor	5.02	5.23	Roller door Rw17	-	74	70	76	86	74	68	62	51	98
Blower room	Facade01	29.30	7.50	175mm Precast Concrete	-	59	54	45	48	34	24	12	-	70
Blower room	Facade02	18.11	7.50	175mm Precast Concrete	-	59	54	45	48	34	24	12	-	68
Blower room	Facade03	29.31	7.50	175mm Precast Concrete	-	59	54	45	48	34	24	12	-	70
Blower room	Facade04	18.11	7.50	175mm Precast Concrete	-	59	54	45	48	34	24	12	-	68
Dewatering building	Facade01_RollerDoor	3.45	3.91	Roller door Rw17	71	75	68	69	71	62	53	49	39	81
Dewatering building	Facade01_Louvre	2.81	0.75	Acoustic Louvre (SL-300)	-	81	78	72	71	60	56	56	49	74
Dewatering building	Facade02_Door	0.98	2.14	Steel Clad Solid Core Door	-	59	56	50	51	44	44	37	23	55

Building	Element	Length, m	Z extent, m	Attenuation	1/1 octave band sound power level per square metre (dB)									Overall dB(A) sound power level
					31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
Dewatering building	Facade02_Door	0.99	2.40	Steel Clad Solid Core Door	-	59	56	50	51	44	44	37	23	55
Dewatering building	Facade02_Louvre	2.12	0.85	Acoustic Louvre (SL-300)	-	81	78	72	71	60	56	56	49	73
Dewatering building	Facade02_Louvre	2.09	0.85	Acoustic Louvre (SL-300)	-	81	78	72	71	60	56	56	49	73
Dewatering building	Facade02_ConveyorHole	0.88	1.14	-	-	87	85	82	83	78	74	70	62	83
Dewatering building	Facade02_ConveyorHole	0.95	1.14	-	-	87	85	82	83	78	74	70	62	84
Dewatering building	Facade02_PipeHole	0.47	0.61	-	-	87	85	82	83	78	74	70	62	78
Dewatering building	Facade02_PipeHole	0.56	0.61	-	-	87	85	82	83	78	74	70	62	79
Dewatering building	Facade03_Louvre	2.58	0.75	Weather Louvre	-	85	83	80	81	76	72	68	60	85
Dewatering building	Facade04_Door	1.02	2.15	Steel Clad Solid Core Door	-	59	56	50	51	44	44	37	23	55
Dewatering building	Facade04_ConveyorHole	0.83	1.16	-	-	87	85	82	83	78	74	70	62	83
Dewatering building	Facade04_ConveyorHole	0.87	1.16	-	-	87	85	82	83	78	74	70	62	83
Dewatering building	Facade04_PipeHole	0.23	0.20	-	-	87	85	82	83	78	74	70	62	70
Dewatering building	Facade04_PipeHole	0.31	0.20	-	-	87	85	82	83	78	74	70	62	71
Dewatering building	Facade04_Louvre	2.06	0.85	Weather Louvre	-	85	83	80	81	76	72	68	60	84
Dewatering building	Facade04_Louvre	2.09	0.85	Weather Louvre	-	85	83	80	81	76	72	68	60	84
Dewatering building	Facade01	10.39	17.40	0.48mm sheet steel with 50mm insulation	-	84	77	69	64	52	45	31	23	89
Dewatering building	Facade02	16.59	17.40	0.48mm sheet steel with 50mm insulation	-	84	77	69	64	52	45	31	23	91
Dewatering building	Facade03	10.39	17.40	0.48mm sheet steel with 50mm insulation	-	84	77	69	64	52	45	31	23	89
Dewatering building	Facade04	16.59	17.40	0.48mm sheet steel with 50mm insulation	-	84	77	69	64	52	45	31	23	91
TWPS	Facade02_Louvre	1.50	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade02_Louvre	1.37	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade02_Louvre	1.48	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade02_Louvre	1.64	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade02_Louvre	1.51	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade02_Louvre	1.47	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade02_Louvre	1.46	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade02_Louvre	1.62	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade02_Louvre	1.61	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade02_Louvre	1.24	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	76
TWPS	Facade02_Louvre	1.34	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade02_Louvre	1.65	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade02_Door	1.14	2.33	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	62
TWPS	Facade02_Door	1.15	2.33	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	62
TWPS	Facade02_Door	1.09	2.33	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	62
TWPS	Facade02_Door	1.10	2.33	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	62
TWPS	Facade02_Door	1.10	2.33	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	62
TWPS	Facade02_Door	1.11	2.33	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	62
TWPS	Facade02_RollerDoor	4.51	4.68	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	71
TWPS	Facade02_PipeHole(Sealed)	0.79	0.84	Steel Plate	-	60	55	48	43	46	44	32	17	49
TWPS	Facade03_Louvre	1.59	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade03_Louvre	1.56	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade03_Louvre	1.41	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade03_Louvre	1.51	1.30	Acoustic Louvre (SL-300)	-	75	75	73	72	67	65	64	56	77
TWPS	Facade04_Door	1.11	2.22	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	61
TWPS	Facade04_Door	1.05	2.22	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	61

Building	Element	Length, m	Z extent, m	Attenuation	1/1 octave band sound power level per square metre (dB)									Overall dB(A) sound power level
					31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
TWPS	Facade04_Door	1.07	2.22	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	61
TWPS	Facade04_Door	1.14	2.22	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	62
TWPS	Facade04_Door	1.10	2.22	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	61
TWPS	Facade04_Door	1.22	2.22	Steel Clad Solid Core Door	-	53	53	51	52	51	54	45	31	62
TWPS	Facade04_PipeHole(Sealed)	0.77	0.84	Steel Plate	-	60	55	48	43	46	44	32	17	49
TWPS	Facade01	14.21	8.50	200mm Precast Concrete	-	45	40	42	34	28	23	13	-	58
TWPS	Facade02	42.55	8.50	200mm Precast Concrete	-	45	40	42	34	28	23	13	-	63
TWPS	Facade03	14.23	8.50	200mm Precast Concrete	-	45	40	42	34	28	23	13	-	58
TWPS	Facade04	42.55	8.50	200mm Precast Concrete	-	45	40	42	34	28	23	13	-	63
AWTP	Facade01_Door	1.00	2.20	Steel Clad Solid Core Door	-	17	16	15	51	15	16	8	-	51
AWTP	Facade01_Door	1.00	2.20	Steel Clad Solid Core Door	-	17	16	15	51	15	16	8	-	51
AWTP	Facade02_Louvre	1.47	1.65	Weather Louvre	-	43	43	45	81	48	44	39	32	82
AWTP	Facade02_Louvre	1.41	1.65	Weather Louvre	-	43	43	45	81	48	44	39	32	82
AWTP	Facade02_Louvre	1.50	1.65	Weather Louvre	-	43	43	45	81	48	44	39	32	82
AWTP	Facade02_Louvre	1.41	1.65	Weather Louvre	-	43	43	45	81	48	44	39	32	82
AWTP	Facade02_Louvre	1.56	1.65	Weather Louvre	-	43	43	45	81	48	44	39	32	82
AWTP	Facade03_Door	1.00	2.20	Steel Clad Solid Core Door	-	17	16	15	51	15	16	8	-	51
AWTP	Facade04_RollerDoor	5.04	5.00	Standard Roller Door	-	36	32	39	73	40	37	30	23	84
AWTP	Facade04_RollerDoor	5.39	5.00	Standard Roller Door	-	36	32	39	73	40	37	30	23	84
AWTP	Facade04_RollerDoor	5.09	5.00	Standard Roller Door	-	36	32	39	73	40	37	30	23	84
AWTP	Facade04_RollerDoor	5.14	5.00	Standard Roller Door	-	36	32	39	73	40	37	30	23	84
AWTP	Facade04_RollerDoor	5.04	5.00	Standard Roller Door	-	36	32	39	73	40	37	30	23	84
AWTP	Facade04_Louvre	1.63	1.65	Weather Louvre	-	43	43	45	81	48	44	39	32	82
AWTP	Facade04_Louvre	1.67	1.65	Weather Louvre	-	43	43	45	81	48	44	39	32	82
AWTP	Facade04_Louvre	1.64	1.65	Weather Louvre	-	43	43	45	81	48	44	39	32	82
AWTP	Facade04_Louvre	1.71	1.65	Weather Louvre	-	43	43	45	81	48	44	39	32	83
AWTP	Facade04_Louvre	1.60	1.65	Weather Louvre	-	43	43	45	81	48	44	39	32	82
AWTP	Facade01	15.18	9.83	Spandek Sheeting 0.48mm	-	36	34	35	70	33	25	17	4	89
AWTP	Facade02	50.86	9.83	Spandek Sheeting 0.48mm	-	36	34	35	70	33	25	17	4	94
AWTP	Facade03	15.09	9.83	Spandek Sheeting 0.48mm	-	36	34	35	70	33	25	17	4	89
AWTP	Facade04	50.85	9.83	Spandek Sheeting 0.48mm	-	36	34	35	70	33	25	17	4	94
Blower SR	Facade01_Door	1.01	2.40	Steel Clad Solid Core Door	-	39	43	36	46	35	38	29	28	49
Blower SR	Facade01_Door	1.16	2.40	Steel Clad Solid Core Door	-	39	43	36	46	35	38	29	28	50
Blower HVAC	Facade01_HVACLouvre	0.23	0.20	Weather Louvre	-	57	68	70	77	77	77	72	78	70
Blower HVAC	Facade01_HVACLouvre	0.21	0.20	Weather Louvre	-	57	68	70	77	77	77	72	78	70
Blower HVAC	Facade01_HVACLouvre	0.34	0.20	Weather Louvre	-	57	68	70	77	77	77	72	78	72
Blower HVAC	Facade01_HVACLouvre	0.21	0.20	Weather Louvre	-	57	68	70	77	77	77	72	78	70
Blower SR	Facade02_DoubleDoor	2.30	2.80	Steel Clad Solid Core Door	-	39	43	36	46	35	38	29	28	53
Blower SR	Facade03_WeatherLouvre	0.20	0.20	Weather Louvre	-	65	70	66	76	67	66	60	64	62
Blower SR	Facade04_Door	0.82	2.50	Steel Clad Solid Core Door	-	39	43	36	46	35	38	29	28	48
Blower SR	Facade01	27.70	4.50	300mm Concrete Panels	-	30	32	23	26	10	5	-	-	46
Blower SR	Facade02	13.82	4.50	300mm Concrete Panels	-	30	32	23	26	10	5	-	-	43
Blower SR	Facade03	27.70	4.50	300mm Concrete Panels	-	30	32	23	26	10	5	-	-	46
Blower SR	Facade04	13.82	4.50	300mm Concrete Panels	-	30	32	23	26	10	5	-	-	43
Main SR	Facade01_DoubleDoor	2.27	2.50	Steel Clad Solid Core Door	-	33	37	33	42	30	31	25	24	48

Building	Element	Length, m	Z extent, m	Attenuation	1/1 octave band sound power level per square metre (dB)									Overall dB(A) sound power level
					31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
Main SR	Facade01_DoubleDoor	2.57	2.50	Steel Clad Solid Core Door	-	33	37	33	42	30	31	25	24	48
H2S Scrubber	Facade01_H2SScrubberOutlet	0.36	0.20	-	-	-	-	-	80	-	-	-	-	65
Main SR	Facade02_Door	1.24	2.50	Steel Clad Solid Core Door	-	33	37	33	42	30	31	25	24	45
Main SR	Facade02_Door	1.06	2.50	Steel Clad Solid Core Door	-	33	37	33	42	30	31	25	24	45
Main SR	Facade02_Door	1.10	2.50	Steel Clad Solid Core Door	-	33	37	33	42	30	31	25	24	45
TWPS HVAC	Facade02_T351Louvre	0.41	0.20	-	-	50	62	67	79	72	70	68	74	69
Main SR	Facade02_WeatherLouvre	0.40	0.20	-	-	60	65	65	74	63	60	58	62	61
TWPS HVAC	Facade02_T351Louvre	0.31	0.20	-	-	50	62	67	79	72	70	68	74	68
Main SR	Facade02_WeatherLouvre	0.33	0.20	-	-	60	65	65	74	63	60	58	62	61
Main SR	Facade03_DoubleDoor	2.30	2.50	Steel Clad Solid Core Door	-	33	37	33	42	30	31	25	24	48
Main SR	Facade03_DoubleDoor	2.54	2.50	Steel Clad Solid Core Door	-	33	37	33	42	30	31	25	24	48
Main HVAC	Facade03_T171Louvre	0.34	0.20	Weather Louvre	-	49	61	64	71	68	66	65	71	63
Main HVAC	Facade03_T171Louvre	0.26	0.20	Weather Louvre	-	49	61	64	71	68	66	65	71	62
Main SR	Facade03_WeatherLouvre	0.33	0.20	Weather Louvre	-	58	64	63	72	62	59	56	61	59
H2S Scrubber	Facade04_H2SScrubberOutlet	0.35	0.20	-	-	-	-	-	80	-	-	-	-	65
Main SR	Facade04_WeatherLouvre	0.30	0.20	Weather Louvre	-	58	64	63	72	62	59	56	61	59
Main SR	Facade01	13.65	5.30	190mm Brick Wall, Filled with grout	-	23	23	17	27	10	1	-	-	43
Main SR	Facade02	35.73	5.30	190mm Brick Wall, Filled with grout	-	23	23	17	27	10	1	-	-	47
Main SR	Facade03	13.70	5.30	190mm Brick Wall, Filled with grout	-	23	23	17	27	10	1	-	-	43
Main SR	Facade04	35.57	5.30	190mm Brick Wall, Filled with grout	-	23	23	17	27	10	1	-	-	47
Biosolids SR	Facade01_Door	1.12	2.50	Steel Clad Solid Core Door	-	30	34	31	46	27	28	22	21	48
Biosolids SR	Facade02_Door	1.16	2.50	Steel Clad Solid Core Door	-	30	34	31	46	27	28	22	21	48
Biosolids SR	Facade02_Door	1.07	2.50	Steel Clad Solid Core Door	-	30	34	31	46	27	28	22	21	48
DGTR HVAC	Facade02_HVACLouvre	0.28	0.20	Weather Louvre	-	49	60	66	75	70	68	66	72	65
DGTR HVAC	Facade02_HVACLouvre	0.27	0.20	Weather Louvre	-	49	60	66	75	70	68	66	72	65
Biosolids SR	Facade02_WeatherLouvre	0.26	0.20	Weather Louvre	-	56	61	61	77	60	56	53	58	61
Biosolids SR	Facade02_WeatherLouvre	0.27	0.20	Weather Louvre	-	56	61	61	77	60	56	53	58	61
Biosolids SR	Facade03_DoubleDoor	2.37	2.80	Steel Clad Solid Core Door	-	30	34	31	46	27	28	22	21	52
Biosolids SR	Facade04_WeatherLouvre	0.26	0.20	Weather Louvre	-	56	61	61	77	60	56	53	58	61
Biosolids SR	Facade01	9.30	4.50	300mm Concrete Panels	-	21	23	18	27	3	-	-	-	40
Biosolids SR	Facade02	25.30	4.50	300mm Concrete Panels	-	21	23	18	27	3	-	-	-	45
Biosolids SR	Facade03	9.30	4.50	300mm Concrete Panels	-	21	23	18	27	3	-	-	-	40
Biosolids SR	Facade04	25.30	4.50	300mm Concrete Panels	-	21	23	18	27	3	-	-	-	45
TWPS	Facade01_Door	1.07	2.20	Steel Clad Solid Core Door	-	30	34	30	49	27	28	22	20	50
TWPS HVAC	Facade01_HVACLouvre	0.23	0.20	Weather Louvre	-	49	60	66	77	70	68	66	72	65
TWPS	Facade02_DoubleDoor	2.42	2.20	Weather Louvre	-	55	61	60	80	59	56	53	57	84
TWPS	Facade02_DoubleDoor	2.43	2.20	Weather Louvre	-	55	61	60	80	59	56	53	57	84
H2S Scrubber	Facade02_H2SScrubberOutlet	0.34	0.20	-	-	-	-	-	80	-	-	-	-	65
TWPS	Facade03_DoubleDoor	2.33	2.20	Steel Clad Solid Core Door	-	30	34	30	49	27	28	22	20	53
TWPS	Facade03_VSDRoomLouvre	2.04	2.30	Acoustic Louvre (SL-300)	-	51	56	52	70	43	40	41	46	73
TWPS	Facade03_VSDRoomLouvre	2.05	2.30	Acoustic Louvre (SL-300)	-	51	56	52	70	43	40	41	46	73
TWPS	Facade04_Door	1.10	2.20	Steel Clad Solid Core Door	-	30	34	30	49	27	28	22	20	50
TWPS	Facade04_DoubleDoor	2.32	2.20	Steel Clad Solid Core Door	-	30	34	30	49	27	28	22	20	53
TWPS HVAC	Facade04_HVACLouvre	0.28	0.20	Weather Louvre	-	49	60	66	77	70	68	66	72	66
TWPS	Facade01	29.57	6.00	190mm Brick Wall, Filled with grout	-	20	20	15	35	7	-	-	-	54

Building	Element	Length, m	Z extent, m	Attenuation	1/1 octave band sound power level per square metre (dB)									Overall dB(A) sound power level
					31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
TWPS	Facade02	13.38	6.00	190mm Brick Wall, Filled with grout	-	20	20	15	35	7	-	-	-	51
TWPS	Facade03	29.57	6.00	190mm Brick Wall, Filled with grout	-	20	20	15	35	7	-	-	-	54
TWPS	Facade04	13.38	6.00	190mm Brick Wall, Filled with grout	-	20	20	15	35	7	-	-	-	51
AWTP SR	Facade01_Door	1.01	2.50	Standard Roller Door	-	57	59	59	76	59	58	50	55	77
AWTP SR	Facade01_Door	1.05	2.50	Steel Clad Solid Core Door	-	38	43	35	53	35	38	29	27	55
AWTP HVAC	Facade01_HVACLouvre	0.30	0.20	Weather Louvre	-	57	68	70	82	77	77	72	78	72
AWTP HVAC	Facade01_HVACLouvre	0.23	0.20	Weather Louvre	-	57	68	70	82	77	77	72	78	71
AWTP HVAC	Facade01_HVACLouvre	0.25	0.20	Weather Louvre	-	57	68	70	82	77	77	72	78	71
AWTP SR	Facade01_WeatherLouvre	0.24	0.20	Weather Louvre	-	64	70	65	84	67	65	59	64	68
AWTP SR	Facade02_Door	1.00	2.50	Steel Clad Solid Core Door	-	38	43	35	53	35	38	29	27	55
AWTP SR	Facade03_WeatherLouvre	0.25	0.20	Weather Louvre	-	64	70	65	84	67	65	59	64	68
AWTP SR	Facade03_WeatherLouvre	0.30	0.20	Weather Louvre	-	64	70	65	84	67	65	59	64	69
AWTP SR	Facade04_DoubleDoor	2.37	2.50	Steel Clad Solid Core Door	-	38	43	35	53	35	38	29	27	58
AWTP SR	Facade01	22.30	4.50	300mm Concrete Panels	-	29	32	22	34	10	4	-	-	51
AWTP SR	Facade02	11.30	4.50	300mm Concrete Panels	-	29	32	22	34	10	4	-	-	48
AWTP SR	Facade03	22.30	4.50	300mm Concrete Panels	-	29	32	22	34	10	4	-	-	51
AWTP SR	Facade04	11.30	4.50	300mm Concrete Panels	-	29	32	22	34	10	4	-	-	48
TWPS Ventilation	Facade04_IntakeAcousticLouvre	2.01	1.80	Acoustic Louvre (SL-300)	-	77	76	76	75	69	67	65	56	82
TWPS Ventilation	Facade04_IntakeAcousticLouvre	2.03	1.80	Acoustic Louvre (SL-300)	-	77	76	76	75	69	67	65	56	82
TWPS Ventilation	Facade04_IntakeAcousticLouvre	2.00	1.80	Acoustic Louvre (SL-300)	-	77	76	76	75	69	67	65	56	82
TWPS Ventilation	Facade04_IntakeAcousticLouvre	2.03	1.80	Acoustic Louvre (SL-300)	-	77	76	76	75	69	67	65	56	82
TWPS Ventilation	Facade01	1.34	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	57
TWPS Ventilation	Facade02	2.01	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	59
TWPS Ventilation	Facade03	1.28	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	57
TWPS Ventilation	Facade04	2.01	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	59
TWPS Ventilation	Facade01	1.36	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	57
TWPS Ventilation	Facade02	2.00	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	59
TWPS Ventilation	Facade03	1.33	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	57
TWPS Ventilation	Facade04	2.03	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	59
TWPS Ventilation	Facade01	1.36	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	57
TWPS Ventilation	Facade02	2.01	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	59
TWPS Ventilation	Facade03	1.30	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	57
TWPS Ventilation	Facade04	2.00	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	59
TWPS Ventilation	Facade01	1.37	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	57
TWPS Ventilation	Facade02	2.00	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	59
TWPS Ventilation	Facade03	1.34	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	57
TWPS Ventilation	Facade04	2.03	2.40	Steel Plate	-	62	56	51	46	48	46	33	17	59

APPENDIX D Noise contours

Plot Date: 04/10/24 - 16:19 Layout: TM588 Noise Contour

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz

1,500 m

1,000

500

0

R4

R3

NCA T1

R2

R5

R1

NCA B1

NCA B2

NCA T2

No Wind

LEGEND

Noise Sensitive Receivers

- Childcare
- Commercial
- Community centre
- Educational
- Horse Stable
- Hotel/Motel/Hostel
- Industrial
- Medical
- Mixed-use
- Non-receiver
- Place of Worship
- Recreational
- Recreational - Active
- Recreational - Passive
- Residential
- Under construction

- Representative Receivers
- Project NCAs
- AWRC Footprint

Areas of Equal Noise Emission from AWRC Operation with No Wind

- 30-35 dB(A)
- 36 - 40 dB(A)
- 41 - 45 dB(A)
- 46 - 50 dB(A)
- >50 dB(A)

REV	BY	DATE	DESCRIPTION	APPROVER
r0	DA	04/10/24	Prepare figures	AM

A3 Original

Co-ordinate System: MGA Zone 56

0 150 300 450 600 m

1:10,000 At size A3

FULL SIZE A3, REDUCED TO A4

NOTE: Do not scale from this drawing.

N

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JOHN HOLLAND

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RENZO TONIN & ASSOCIATES

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UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Contour Map

Plot Date: 04/10/24 - 16:19 Layout: TM588 Noise Contour

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz

1,500 m

1,000

500

0

R4

R3

R2

R5

R1

NCA T1

NCA T2

NCA B1

NCA B2

Wind ENE

LEGEND

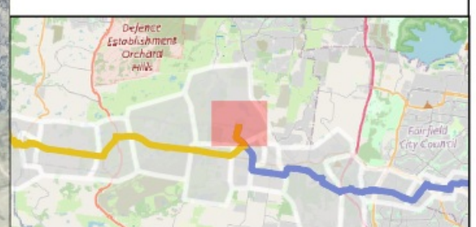
Noise Sensitive Receivers

- Childcare
- Commercial
- Community centre
- Educational
- Horse Stable
- Hotel/Motel/Hostel
- Industrial
- Medical
- Mixed-use
- Non-receiver
- Place of Worship
- Recreational
- Recreational - Active
- Recreational - Passive
- Residential
- Under construction

- Representative Receivers
- Project NCAs
- AWRC Footprint

Areas of Equal Noise Emission from AWRC Operation with Wind ENE

- 30-35 dB(A)
- 36 - 40 dB(A)
- 41 - 45 dB(A)
- 46 - 50 dB(A)
- >50 dB(A)



REV	BY	DATE	DESCRIPTION	APPROVER
r0	DA	04/10/24	Prepare figures	AM

A3 Original

Co-ordinate System: MGA Zone 56

0 150 300 450 600 m

1:10,000 At size A3

FULL SIZE A3, REDUCED TO A4

NOTE: Do not scale from this drawing.

N

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UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Contour Map

Plot Date: 04/10/24 - 16:20 Layout: TM588 Noise Contour

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz

1,500 m

1,000

500

0

R4

R3

R2

R1

R5

NCA T1

NCA T2

NCA B1

NCA B2

Wind E

LEGEND

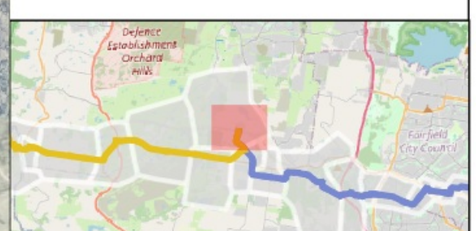
Noise Sensitive Receivers

- Childcare
- Commercial
- Community centre
- Educational
- Horse Stable
- Hotel/Motel/Hostel
- Industrial
- Medical
- Mixed-use
- Non-receiver
- Place of Worship
- Recreational
- Recreational - Active
- Recreational - Passive
- Residential
- Under construction

- Representative Receivers
- Project NCAs
- AWRC Footprint

Areas of Equal Noise Emission from AWRC Operation with Wind E

- 30-35 dB(A)
- 36 - 40 dB(A)
- 41 - 45 dB(A)
- 46 - 50 dB(A)
- >50 dB(A)



REV	BY	DATE	DESCRIPTION	APPROVER
r0	DA	04/10/24	Prepare figures	AM

A3 Original

Co-ordinate System: MGA Zone 56

0 150 300 450 600 m

1:10,000 At size A3

FULL SIZE A3, REDUCED TO A4

NOTE: Do not scale from this drawing.

N

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UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Contour Map

Plot Date: 04/10/24 - 16:20 Layout: TM588 Noise Contour

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz

1,500 m

1,000

500

0

R4

R3

R2

R5

R1

NCA T1

NCA T2

NCA B1

NCA B2

Wind ESE

LEGEND

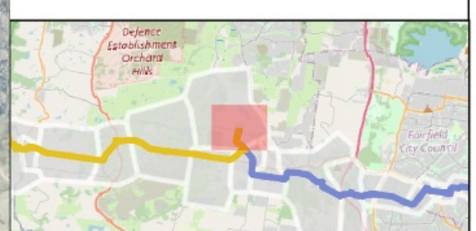
Noise Sensitive Receivers

- Childcare
- Commercial
- Community centre
- Educational
- Horse Stable
- Hotel/Motel/Hostel
- Industrial
- Medical
- Mixed-use
- Non-receiver
- Place of Worship
- Recreational
- Recreational - Active
- Recreational - Passive
- Residential
- Under construction

- Representative Receivers
- Project NCAs
- AWRC Footprint

Areas of Equal Noise Emission from AWRC Operation with Wind ESE

- 30-35 dB(A)
- 36 - 40 dB(A)
- 41 - 45 dB(A)
- 46 - 50 dB(A)
- >50 dB(A)



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r0	DA	04/10/24	Prepare figures	AM

A3 Original

Co-ordinate System: MGA Zone 56

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FULL SIZE A3, REDUCED TO A4

NOTE: Do not scale from this drawing.

N

CLIENT

JOHN HOLLAND

ACOUSTIC CONSULTANT

RENZO TONIN & ASSOCIATES
inspired to achieve
Ph (02) 8218 0500 Fax (02) 8218 0501

UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Contour Map

Plot Date: 04/10/24 - 16:20 Layout: TM588 Noise Contour

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz

1,500 m

1,000

500

0

R4

R3

R2

R5

R1

NCA T1

NCA T2

NCA B1

NCA B2

Wind SE

LEGEND

Noise Sensitive Receivers

- Childcare
- Commercial
- Community centre
- Educational
- Horse Stable
- Hotel/Motel/Hostel
- Industrial
- Medical
- Mixed-use
- Non-receiver
- Place of Worship
- Recreational
- Recreational - Active
- Recreational - Passive
- Residential
- Under construction

- Representative Receivers
- Project NCAs
- AWRC Footprint

Areas of Equal Noise Emission from AWRC Operation with Wind SE

- 30-35 dB(A)
- 36 - 40 dB(A)
- 41 - 45 dB(A)
- 46 - 50 dB(A)
- >50 dB(A)

REV	BY	DATE	DESCRIPTION	APPROVER
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Co-ordinate System: MGA Zone 56

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NOTE: Do not scale from this drawing.

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UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Contour Map

Plot Date: 04/10/24 - 16:20 Layout: TM588 Noise Contour

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz

1,500 m

1,000

500

0

R4

R3

R2

R5

R1

NCA T1

NCA T2

NCA B1

NCA B2

Wind S

LEGEND

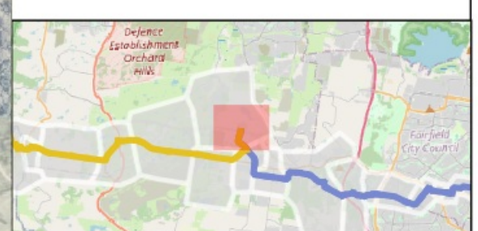
Noise Sensitive Receivers

- Childcare
- Commercial
- Community centre
- Educational
- Horse Stable
- Hotel/Motel/Hostel
- Industrial
- Medical
- Mixed-use
- Non-receiver
- Place of Worship
- Recreational
- Recreational - Active
- Recreational - Passive
- Residential
- Under construction

- Representative Receivers
- Project NCAs
- AWRC Footprint

Areas of Equal Noise Emission from AWRC Operation with Wind S

- 30-35 dB(A)
- 36 - 40 dB(A)
- 41 - 45 dB(A)
- 46 - 50 dB(A)
- >50 dB(A)



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Co-ordinate System: MGA Zone 56

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UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Contour Map

Plot Date: 04/10/24 - 16:20 Layout: TM588 Noise Contour

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz

1,500 m

1,000

500

0

R4

R3

R2

R1

R5

NCA T1

NCA T2

NCA B1

NCA B2

Wind SSW

LEGEND

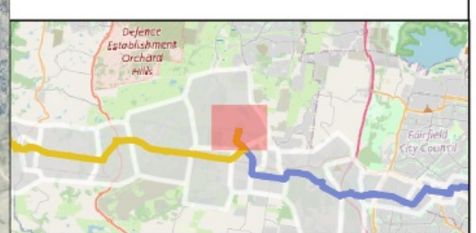
Noise Sensitive Receivers

- Childcare
- Commercial
- Community centre
- Educational
- Horse Stable
- Hotel/Motel/Hostel
- Industrial
- Medical
- Mixed-use
- Non-receiver
- Place of Worship
- Recreational
- Recreational - Active
- Recreational - Passive
- Residential
- Under construction

- Representative Receivers
- Project NCAs
- AWRC Footprint

Areas of Equal Noise Emission from AWRC Operation with Wind SSW

- 30-35 dB(A)
- 36 - 40 dB(A)
- 41 - 45 dB(A)
- 46 - 50 dB(A)
- >50 dB(A)



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Co-ordinate System: MGA Zone 56

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UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Contour Map

Plot Date: 04/10/24 - 16:20 Layout: TM588 Noise Contour

GIS File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz

1,500 m

1,000

500

0

R4

R3

R2

R5

R1

NCA T1

NCA T2

NCA B1

NCA B2

Wind SW

LEGEND

Noise Sensitive Receivers

- Childcare
- Commercial
- Community centre
- Educational
- Horse Stable
- Hotel/Motel/Hostel
- Industrial
- Medical
- Mixed-use
- Non-receiver
- Place of Worship
- Recreational
- Recreational - Active
- Recreational - Passive
- Residential
- Under construction

- Representative Receivers
- Project NCAs
- AWRC Footprint

Areas of Equal Noise Emission from AWRC Operation with Wind SW

- 30-35 dB(A)
- 36 - 40 dB(A)
- 41 - 45 dB(A)
- 46 - 50 dB(A)
- >50 dB(A)

REV	BY	DATE	DESCRIPTION	APPROVER
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A3 Original

Co-ordinate System: MGA Zone 56

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NOTE: Do not scale from this drawing.

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UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Contour Map

Layout: TM588 Noise Contour generator

Plot Date: 21/03/25 - 20:54

File: R:\AssocSydProjects\TM551-TM600\TM588 mt Upper South Creek\5 Calcs\00 GENERAL\01 GIS\TM588 - DA.qgz

1,500 m

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500

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HUMEWOOD PLACE

GANTON WAY

MAMRE ROAD

CLIFTON AVENUE

R1

R2

R3

R4

R5

NCA T1

NCA T2

NCA B1

NCA B2

LEGEND

Noise Sensitive Receivers

- Childcare
- Commercial
- Community centre
- Educational
- Horse Stable
- Hotel/Motel/Hostel
- Industrial
- Medical
- Mixed-use
- Non-receiver
- Place of Worship
- Recreational
- Recreational - Active
- Recreational - Passive
- Residential
- Under construction

- Representative Receivers
- Project NCAs
- AWRC Footprint
- Emergency generator

Areas of Equal Noise Emission from AWRC Emergency generator operation

- 30-35 dB(A)
- 36 - 40 dB(A)
- 41 - 45 dB(A)
- 46 - 50 dB(A)
- >50 dB(A)

REV	BY	DATE	DESCRIPTION	APPROVER
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A3 Original

Co-ordinate System: MGA Zone 56

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NOTE: Do not scale from this drawing.

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UPPER SOUTH CREEK ADVANCED WATER RECYCLING CENTER

Noise Contour Map - Emergency generator

Sheet of

APPENDIX E Consultation summary report

Upper South Creek

Advanced Water Recycling Centre and Pipelines

CoA A9 Consultation Summary Report
Operational Noise Review

Revision: 01

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Table of Contents

1 Introduction

1.1 Background

The Upper South Creek Advanced Water Recycling Centre and Pipelines project (the project) has been proposed to support the population growth and economic development of the Western Sydney Aerotropolis Growth Area (WSAGA or Aerotropolis), South West Growth Area (SWGA) and the new Western Sydney International Airport. The project will provide wastewater services to Western Sydney to produce high-quality treated water for non-drinking reuse and for release to local waterways.

The project will comprise the following components:

- A new Advanced Water Recycling Centre (AWRC) to collect wastewater from businesses and homes and treat it, producing high-quality treated water, renewable energy and biosolids for beneficial reuse
- A new green space area around the AWRC, adjacent to South Creek and Kemps Creek, to support the ongoing development of a green spine through Western Sydney
- New infrastructure from the AWRC to South Creek, to release excess treated water during significant wet weather events, estimated to occur about 3 – 14 days each year
- A new treated water pipeline from the AWRC to Nepean River at Wallacia Weir, to release high-quality treated water to the river during normal weather conditions
- A new brine pipeline from the AWRC connecting into Sydney Water's existing wastewater system to transport brine to the Malabar Wastewater Treatment Plant
- A range of ancillary infrastructure.

The Department of Planning and Environment (DPE) issued the final Secretary's Environmental Assessment Requirements (SEARs) for the project in January 2021. Sydney Water prepared an Environmental Impact Statement (EIS) responding to these requirements, which was on public exhibition on the major projects planning portal for 28 days from 21/10/2021 to 17/11/2021. During this time, due to its importance, the project was declared to be State Significant Infrastructure (SSI) and Critical State Significant Infrastructure (CSSI) by the then Minister for Planning and Public Spaces on 9 November 2021. Sydney Water submitted an Amendment Report for the proposal on 11 March 2022. This report provided a description of amendments to the proposal that occurred since the exhibition of the EIS. The Amendment Report was on public exhibition on the major projects planning portal from 23 March 2022 to 05 April 2022.

On 28 November 2022, the Department of Planning and Environment (DPE) approved the construction and operation of the project (SSI 8609189) (herein referred to as the USC project).

Following determination of the project at a state level by the NSW Minister for Public Spaces, the project was referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) for a decision about whether the project was likely to have a significant impact on any matters of national environmental significance under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.

A detailed description of the project is provided in Chapter 4 of the Upper South Creek AWRC Environmental Impact Statement (EIS), Volume 2.

The USC project will be built in stages, consisting of:

Stage 1

- building and operating the AWRC to treat a daily wastewater flow, known as the average dry weather flow (ADWF), of up to 50 megalitres per day (ML/day)
- building the treated water and brine pipelines to cater for up to 100 ML/day flow coming through the AWRC (but only operating them to transport and release volumes produced by Stage 1).

Future Stages

It is expected that the AWRC will ultimately require expansion to treat wastewater flows up to 100 ML/day. Sydney Water will remain flexible on the size and timing of these future upgrades to accommodate changes in population projections over time. Future stages will be subject to further environmental assessment.

Further detail on project staging is provided in the Upper South Creek AWRC EIS.

John Holland has been appointed by Sydney Water to deliver the USC project works, with detailed design and construction planning for treating a daily wastewater flow of up to 35ML/day. Greater flow capacities (including up to 50ML/day and 100ML/day, as explored in the EIS, are not covered in Stage 1. The environmental flows pipeline is not part of John Holland's scope.

1.2 Purpose of this Consultation Summary Report

This Consultation Summary Report has been prepared to meet the requirements of the CSSI approval, in particular Condition of Approval (CoA) A9. CoA A9 outlines the requirements for undertaking and documenting consultation undertaken during the preparation of approval documents or monitoring programs required under relevant CoA for those documents. This Consultation Summary Report has been prepared to consolidate the consultation undertaken during the preparation of the following documents:

- CoA E56: Operational Noise Review (ONR)

Consultation required during development of these documents is detailed in Table 1-1.

Table 1-1 Consultation Requirements

Reference	Document Name	Consultation Requirement
CoA E56	Upper South Creek Advanced Water Recycling Centre Operational Noise Review	• NSW EPA • Relevant Councils, including: ◦ Penrith City Council (for the AWRC site) ◦ Wollondilly Shire Council (for the treated water pipeline discharge structure located in Wallacia, NSW) ◦ Canterbury-Bankstown City Council (for the brine water discharge into the Sydney Water NGRS structure located in Lansdowne Reserve, NSW)

1.3 CoA Compliance

This section discusses the compliance of this Consultation Summary Report with the relevant CoA as applicable to consultation required to be undertaken during the development of the ONR.

Table 1-2 lists the applicable CoA, where and how they have been addressed in this Consultation Summary Report.

Table 1-2 CoA relevant to Consultation Summary Report

CoA ID	CoA Detail	How and where Addressed
A9	Where the terms of this approval require consultation to be undertaken, evidence of the consultation undertaken must be submitted to the Planning Secretary and ER (as relevant) with the corresponding documentation. The evidence must include:	This document (Consultation Summary Report)
A9	a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval;	Section 2 and Appendices of Consultation Summary Report
A9	b) a log of the dates of engagement of attempted engagement with the identified party;	Section 2 and Appendices of Consultation Summary Report
A9	c) documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations.	Section 2 and Appendices of Consultation Summary Report
A9	d) outline of the issues raised by the identified party and how they have been addressed	Section 2
A9	e) a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed	Section 2
E56	An Operational Noise Review (ONR) must be prepared to confirm noise control measures that would be implemented for the operation of Stage 1 of the CSSI. The ONR must be prepared in consultation with relevant council(s) and the EPA and must: (a) confirm the appropriate operational noise and vibration objectives and levels for surrounding development, including existing sensitive land use(s); (b) confirm the operational noise predictions based on the final design. Confirmation must be based on an appropriately calibrated model(s) (which has incorporated noise monitoring, and concurrent traffic counting, where necessary for calibration purposes). The assessment must specifically include verification of noise levels at all fixed facilities, based on noise monitoring undertaken at appropriately identified noise catchment areas surrounding the facilities; (c) identify all noise and vibration mitigation measures including location, type and timing of mitigation measures, with a focus on: (i) source control and design; and (ii) 'best practice' achievable noise and vibration outcome for each activity; (d) include a consultation strategy to seek feedback from directly affected landowners on the noise measures; and (e) procedures for the management of operational noise complaints, including investigation and monitoring (subject to complainant agreement). The ONR must be verified by the AA or an independent acoustic expert. The ONR must be undertaken at the projects expense and submitted to the Planning Secretary for information at least 12 months prior to the commencement of operation, unless otherwise agreed by the Planning Secretary. The identified noise measures must be implemented and the ONR must be made publicly available.	Consultation Summary Report

1.4 Consultation Process

Consultation with stakeholders and agencies was undertaken using the following means:

- Formal correspondence (standard email)

2 Stakeholder and Agency Consultation

This section of the Consultation Summary Report provides detail of consultation undertaken with each stakeholder and agency in the preparation of the ONR. It contains:

A consultation log that identifies:

- Consultation dates (actual and attempted)
- Form of consultation
- Whether responses and / or comments were received
- Summary of the issues raised, including how they have been addressed

Documentary evidence of all the correspondence received and sent through the consultation phase is contained in the appendices at the end of this report. The appendices and this section are broken down by stakeholder and agency.

2.1 NSW EPA

Consultation with NSW EPA commenced on 03 April 2025 and concluded 06 May 2025.

Table 2-1 below includes the details of engagement between NSW EPA and the project regarding the ONR. Table 2-2 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix 1 of this report.

Table 2-1 Engagement log – ONR – NSW EPA

#	Date	Correspondence		From	Recipient
		Form/Type	Purpose		
1	03-04-2025	Email	Issuing of ONR for consultation in accordance with CoA E56	Alyce Harrington	Fabiana Quinton Matthew Hart
2	02-05-2025	Email	Follow-up with the EPA requesting any comments or feedback on the ONR issued.	Alyce Harrington	Fabiana Quinton Matthew Hart
3	05-05-2025	Email	Email received from Fabiana Quinton inclusive of comments on the ONR (refer to Table 2-2 below).	Fabiana Quinton	Alyce Harrington
4	06-05-2025	Email	Response provided to EPA re their comments raised.	Alyce Harrington	Fabiana Quinton Matthew Hart

Table 2-2 below summarises the consultation comments received from NSW EPA on the ONR.

Table 2-2 Summary of issues – ONR – NSW EPA

Document Section, CoA/REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
ONR (general comment)	Please ensure the ONR is consistent with the Protection of the Environment Operations Act 1997 and relevant guidelines, including the Noise Policy for Industry (2017), where applicable.	05-05-2025	John Holland response – Section 3.3 and 3.4 of the ONR addresses the relevant legislation and guidelines and background documents, respectively, referenced in the ONR. This includes the Protection of the Environment Operations Act 1997 and the Noise Policy for Industry (2017).
ONR	Please also note that an environment protection licence will be required for the operation of the facility and conditions regulating noise emissions	05-05-2025	John Holland response – Since October 2024, Sydney Water with support from John Holland, has been engaging with

(general comment)	may be included in the licence which will be decided during the licensing process.		the NSW EPA regarding the environmental protection licensing requirements for the commissioning and operating phases of the USC AWRC, scheduled to commence in the coming months. Sydney Water issued draft commissioning and operating EPL conditions to the EPA in December 2024 for consideration and since then a draft Water Quality Monitoring Program (WQMP) (prepared in accordance with SSI-8609189, condition of approval E119 and E120) has also been issued in February 2025. Engagement between Sydney Water and the NSW EPA will continue as requirements around relevant regulatory matters, including noise emissions during operation of the facility, are incorporated into the EPL.

2.2 ONR – Relevant Councils

Consultation with the relevant councils commenced on 03 April 2025 and concluded 20 May 2025.

Table 2-5 below includes the details of engagement between the project and the relevant councils regarding the ONR. Table 2-6 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence with relevant councils is provided in the following appendices:

Appendix 2 - Wollondilly Shire Council

Appendix 3 - Penrith City Council

Appendix 4 - Canterbury Bankstown City Council

Table 2-5 Engagement log – ONR– Relevant Councils

#	Date	Correspondence		From	Recipient
		Form/Type	Purpose		
Wollondilly Shire Council					
1	03-04-2025	Email	Issuing of ONR for consultation in accordance with CoA E56	Alyce Harrington	Sharon O'Regan
2	02-05-2025	Email	Follow-up with the EPA requesting any comments or feedback on the ONR issued.	Alyce Harrington	Sharon O'Regan
3	05-05-2025	Email	Email from Samual Barnard, Team Leader Environmental Health at WSC requesting access to the ONR be provided to his email address as Sharon O'Regan no longer works at WSC.	Samual Barnard	Alyce Harrington
4	06-05-2025	Email	Access to the ONR be provided to Samual Barnard.	Alyce Harrington	Samual Barnard
5	08-05-2025	Email	Email response from Samual Barnard confirming he has no further comments on the ONR.	Samual Barnard	Alyce Harrington

Penrith City Council					
1	03-04-2025	Email	Issuing of ONR for consultation in accordance with CoA E56	Alyce Harrington	Brooke Levingston Natasha Williams Andrew Jackson
2	02-05-2025	Email	Follow-up with PCC requesting any comments or feedback on the ONR issued.	Alyce Harrington	Brooke Levingston Natasha Williams Andrew Jackson
3	20-05-2025	Email	Follow-up with PCC requesting any comments or feedback on the ONR issued.	Alyce Harrington	Brooke Levingston Natasha Williams Andrew Jackson
4	22-05-2025	Email	Response from Brooke Levingston acknowledging ONR consultation email and a response will be provided soon.	Brooke Levingston Natasha Williams Andrew Jackson	Alyce Harrington
5	26-05-2025	Email	Brooke Levingston provided a response indicating that no specific concerns on the ONR had been raised by their Environmental Health team.	Brooke Levingston Natasha Williams Andrew Jackson	Alyce Harrington
6	26-05-2025	Email	A 'thank you' email issued to PCC for their response.	Alyce Harrington	Brooke Levingston Natasha Williams Andrew Jackson
Canterbury Bankstown City Council					
1	07-04-2025	Email	Issuing of ONR for consultation in accordance with CoA E56	Alyce Harrington	David Milner
2	02-05-2025	Email	Follow-up with CBCC requesting any comments or feedback on the ONR issued.	Alyce Harrington	David Milner
3	20-05-2025	Email	Follow-up with CBCC requesting any comments or feedback on the ONR issued.	Alyce Harrington	David Milner
4	21-05-2025	Email	Response from David Milner acknowledging ONR consultation email and a response will be provided soon.	David Milner	Alyce Harrington
5	21-05-2025	Email	Email from Alyce Harrington to David Milner acknowledging his email.	Alyce Harrington	David Milner
6	26-05-2025	Email	David Milner provided a response indicating that no specific concerns on the ONR had been raised by their Environmental Health team.	David Milner	Alyce Harrington
7	26-05-2025	Email	A 'thank you' email issued to CBCC for their response.	Alyce Harrington	David Milner

Table 2-6 below summarises the consultation comments received from the relevant councils on the ONR.

Table 2-6 Summary of issues – ONR – Relevant Councils

Relevant council	Document Section, CoA/REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
Wollondilly	ONR	Response received from Samual Barnard: 'Thank you for sending through the updated link. I have reviewed the acoustic report and don't have any addition comments or concerns to provide at this stage'.	08-05-2025	n/a
Penrith	ONR	Response received from Brooke Levingston: 'Our Environmental Health team has not raised any specific concerns on the submitted documents. They noted that the Department is the consent authority, and the NSW EPA is the environmental regulator for the project. As such, they will need to determine if the report satisfies the requirements of the SSI conditions of approval. It is also noted that the conclusion of the report indicates that the AWRC operational noise impacts, the AWRC operation vibration impacts, the pipeline operation noise impacts, and the construction noise impacts have been predicted to comply with the noise objective established for the project'.	26-05-2025	n/a
Canterbury Bankstown	ONR	Response received from David Milner: 'A member of our Environmental Health team has reviewed the operational noise report and has no comments / concerns to provide'.	26-05-2025	n/a

A register summarising the review of the ONR by the independent Acoustic Advisor (AA) has been included in Appendix 5.

Appendix 1 - EPA - Evidence of Consultation

Alyce Harrington-JHG

From: Alyce Harrington-JHG
Sent: Tuesday, 6 May 2025 4:06 PM
To: Fabiana Quinton
Cc: Cheryl Cahill; Ben Bracken; Larry Clark; Matthew Hart
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (EPA)

Good afternoon Fabiana,

John Holland appreciates the comments provided by the EPA on the USC AWRC ONR in their email dated 05 May 2025.

We would like to provide the following response to the items raised:

- *Please ensure the ONR is consistent with the Protection of the Environment Operations Act 1997 and relevant guidelines, including the Noise Policy for Industry (2017), where applicable.*
  John Holland response – Section 3.3 and 3.4 of the ONR addresses the relevant legislation and guidelines and background documents, respectively, referenced in the ONR. This includes the *Protection of the Environment Operations Act 1997* and the Noise Policy for Industry (2017).

- *Please also note that an environment protection licence will be required for the operation of the facility and conditions regulating noise emissions may be included in the licence which will be decided during the licensing process.*
  John Holland response – Since October 2024, Sydney Water with support from John Holland, has been engaging with the NSW EPA regarding the environmental protection licensing requirements for the commissioning and operating phases of the USC AWRC, scheduled to commence in the coming months. Sydney Water issued draft commissioning and operating EPL conditions to the EPA in December 2024 for consideration and since then a draft Water Quality Monitoring Program (WQMP) (prepared in accordance with SSI-8609189, condition of approval E119 and E120) has also been issued in February 2025. Engagement between Sydney Water and the NSW EPA will continue as requirements around relevant regulatory matters, including noise emissions during operation of the facility, are incorporated into the EPL .

Thank you again for your response. If you have any further questions or comments, please do not hesitate to contact me.

Kind Regards,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

From: Fabiana Quinton <Fabiana.Quinton@epa.nsw.gov.au>
Sent: Monday, 5 May 2025 11:59 AM
To: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Cc: Cheryl Cahill <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>; Matthew Hart <Matthew.Hart@epa.nsw.gov.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (EPA)

Hi Alyce

Thank you for your email.

Please ensure the ONR is consistent with the Protection of the Environment Operations Act 1997 and relevant guidelines, including the Noise Policy for Industry (2017), where applicable.

Please also note that an environment protection licence will be required for the operation of the facility and conditions regulating noise emissions may be included in the licence which will be decided during the licensing process.

Regards

Fabiana Quinton

Regulatory Operations Metro South
NSW Environment Protection Authority

D 02 9995 5371

www.epa.nsw.gov.au @EPA_NSW

The EPA acknowledges the traditional custodians of the land and waters where we work. As part of the world's oldest surviving culture, we pay our respect to Aboriginal elders past, present and emerging.

Report pollution and environmental incidents 131 555 or +61 2 9995 5555

From: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Sent: Friday, 2 May 2025 3:57 PM
To: Fabiana Quinton <Fabiana.Quinton@epa.nsw.gov.au>; Matthew Hart <Matthew.Hart@epa.nsw.gov.au>
Cc: Cheryl Cahill <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (EPA)

Good afternoon Fabiana,

I was hoping to follow up with you on my recent email correspondence regarding the USC AWRC Operational Noise Review (ONR) required under SSI-8609189 Condition of Approval E56.

We'd greatly appreciate any comments or feedback that the EPA can to provide concerning the ONR that has been prepared for the operation phase of the USC AWRC.

Thank you,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

From: Alyce Harrington-JHG
Sent: Thursday, 3 April 2025 12:01 PM
To: Fabiana Quinton <fabiana.quinton@epa.nsw.gov.au>; Matthew Hart <Matthew.Hart@epa.nsw.gov.au>
Cc: CHERYL.CAHILL <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (EPA)

Good afternoon,

John Holland, on behalf of Sydney Water, is currently constructing the Upper South Creek Advanced Water Recycling Centre (USC AWRC) in Kemps Creek, NSW. Construction commenced in August 2023 and has been progressing in accordance with the SSI-8609189 planning approval and associated Minister's Conditions of Approval (CoA). As we progress towards planning for the commissioning and operating phases of the project, John Holland has begun preparing key documents and deliverables required for these phases under the approval.

CoA E56 requires the preparation of an **Operation Noise Review (ONR)** to confirm noise control measures that would be implemented for the operation of Stage 1 of the CSSI. The condition requires that the ONR must be prepared in consultation with the EPA. As such, please use the following link to access the Operational Noise Review prepared for the USC AWRC. During its development, the ONR has undergone an initial review by the project's Acoustic Advisor (AA) and environmental representatives from Sydney Water and any comments raised have been satisfactorily addressed prior to commencing consultation with stakeholders nominated under the condition.

USC AWRC ONR (Rev 4)

Please download the document from this link and save it to a suitable location as the link will expire in the coming days.

It would be greatly appreciated if any comments regarding this submission are provided by close of business Friday 02 May 2025.

If you have any questions regarding this submission, please contact me.

Thank you,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

Make flexibility work – if you receive an email from me outside of normal business hours, it's because I'm sending it at a time that suits me. I'm not expecting you to read it or reply until normal business hours.

Appendix 2 – Wollondilly City Council – Evidence of Consultation

Alyce Harrington-JHG

From: Alyce Harrington-JHG
Sent: Friday, 9 May 2025 8:56 AM
To: Samuel Barnard
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (Wollondilly Shire Council)

Good morning Sam,

Thanks so much for responding so promptly, I really appreciate you taking the time to provide feedback.

Kind Regards.

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

From: Samuel Barnard <Samuel.Barnard@wollondilly.nsw.gov.au>
Sent: Thursday, 8 May 2025 1:21 PM
To: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (Wollondilly Shire Council)

Hi Alyce,

Thankyou for sending through the updated link. I have reviewed the acoustic report and don't have any addition comments or concerns to provide at this stage.

Please let me know if you require any further information or wish to discuss this matter further

Kind regards
Sam

Wollondilly Shire Council

Samuel Barnard
Acting Manager Health & Regulatory Services

T 0246779654
A P.O. Box 21 Picton, NSW, 2571
E Samuel.Barnard@wollondilly.nsw.gov.au
W http://www.wollondilly.nsw.gov.au

From: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Sent: Tuesday, 6 May 2025 11:50 AM
To: Samuel Barnard <Samuel.Barnard@wollondilly.nsw.gov.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (Wollondilly Shire Council)

Hi Sam,

Thanks so much for getting back to me.

Please use the following link to access the USC AWRC ONR, I have added your email to the share link.

USC AWRC ONR (Rev 4)

Thank you,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

Make flexibility work – if you receive an email from me outside of normal business hours, it's because I'm sending it at a time that suits me. I'm not expecting you to read it or reply until normal business hours.

From: Samuel Barnard <Samuel.Barnard@wollondilly.nsw.gov.au>
Sent: Monday, 5 May 2025 9:28 AM
To: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (Wollondilly Shire Council)

Good Morning Alyce,

Sorry for the delayed response to your initial email. Sharon no longer works for Wollondilly Shire Council and so the original email was not received.

I have just tried to open the document however it sends the verification code to Sharon's Email address. If possible can you please update the verification email to my email address.

Should you have any questions r wish to discuss this matter please contact me on the number below

Kind regards
Sam

Samuel Barnard
Team Leader Environmental Health

T 0246779654
A P.O. Box 21 Picton, NSW, 2571
E Samuel.Barnard@wollondilly.nsw.gov.au
W http://www.wollondilly.nsw.gov.au

From: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Sent: Friday, 2 May 2025 3:58 PM
To: Sharon O'Regan <Sharon.ORegan@wollondilly.nsw.gov.au>; Wollondilly Shire Council <council@wollondilly.nsw.gov.au>
Cc: Cheryl Cahill <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (Wollondilly Shire Council)

Good afternoon Sharon,

I was hoping to follow up with you on my recent email correspondence regarding the USC AWRC Operational Noise Review (ONR) required under SSI-8609189 Condition of Approval E56.

We'd greatly appreciate any comments or feedback that Wollondilly Shire Council can to provide concerning the ONR that has been prepared for the operation phase of the USC AWRC.

Thank you,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

Make flexibility work – if you receive an email from me outside of normal business hours, it's because I'm sending it at a time that suits me. I'm not expecting you to read it or reply until normal business hours.

From: Alyce Harrington-JHG
Sent: Thursday, 3 April 2025 12:07 PM
To: Sharon O'Regan <Sharon.ORegan@wollondilly.nsw.gov.au>
Cc: CHERYL.CAHILL <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (Wollondilly Shire Council)

Good afternoon,

John Holland, on behalf of Sydney Water, is currently constructing the Upper South Creek Advanced Water Recycling Centre (USC AWRC) in Kemps Creek, NSW. Construction commenced in August 2023 and has been progressing in accordance with the SSI-8609189 planning approval and associated Minister's Conditions of Approval (CoA). As we progress towards planning for the commissioning and operating phases of the project, John Holland has begun preparing key documents and deliverables required for these phases under the approval.

CoA E56 requires the preparation of an **Operation Noise Review (ONR)** to confirm noise control measures that would be implemented for the operation of Stage 1 of the CSSI. The condition requires that the ONR must be prepared in consultation with the relevant councils, including Wollondilly Shire Council. As such, please use the following link to access the Operational Noise Review prepared for the USC AWRC. During its development, the ONR has undergone an initial review by the project's Acoustic Advisor (AA) and environmental representatives from Sydney Water and any comments raised have been satisfactorily addressed prior to commencing consultation with stakeholders nominated under the condition.

USC AWRC ONR (Rev 4)

Please download the document from this link and save it to a suitable location as the link will expire in the coming days.

It would be greatly appreciated if any comments regarding this submission are provided by close of business Friday 02 May 2025.

If you have any questions regarding this submission, please contact me.

Thank you,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

Make flexibility work – if you receive an email from me outside of normal business hours, it's because I'm sending it at a time that suits me. I'm not expecting you to read it or reply until normal business hours.

Appendix 3 – Penrith City Council – Evidence of Consultation

Alyce Harrington-JHG

From: Alyce Harrington-JHG
Sent: Monday, 26 May 2025 11:42 AM
To: Brooke Levingston
Cc: Andrew Jackson; Christine Gough
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (Penrith City Council)

Good morning Brooke,

Thank you so much for your response, I really appreciate you taking the time to get back to me.

If there is anything else I can help you with regarding the matter, please do not hesitate to contact me.

Sincerely,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

From: Brooke Levingston <Brooke.Levingston@penrith.city>
Sent: Monday, 26 May 2025 8:36 AM
To: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Cc: Andrew Jackson <Andrew.Jackson@penrith.city>; Christine Gough <Christine.Gough@penrith.city>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (Penrith City Council)

Hi Alyce

I apologise again for our delayed response.

Our Environmental Health team has not raised any specific concerns on the submitted documents. They noted that the Department is the consent authority, and the NSW EPA is the environmental regulator for the project. As such, they will need to determine if the report satisfies the requirements of the SSI conditions of approval. It is also noted that the conclusion of the report indicates that the AWRC operational noise impacts, the AWRC operation vibration impacts, the pipeline operation noise impacts, and the construction noise impacts have been predicted to comply with the noise objective established for the project.

Kind regards,

Brooke Levingston
Executive Planner
City Planning

E Brooke.Levingston@penrith.city
T +61247327436 | M +61483160217
PO Box 60, PENRITH NSW 2751
www.visitpenrith.com.au
www.penrithcity.nsw.gov.au

PENRITH CITY COUNCIL

Follow us

From: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Sent: Tuesday, 20 May 2025 5:06 PM
To: Brooke Levingston <Brooke.Levingston@penrith.city>; Natasha.Williams@penrith.city; Andrew Jackson <Andrew.Jackson@penrith.city>
Cc: Cheryl Cahill <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (Penrith City Council)

Good evening,

I am following up on my recent email correspondence regarding the USC AWRC Operational Noise Review (ONR) required under SSI-8609189 Condition of Approval E56.

As the consultation phase draws to a close, we'd greatly appreciate any comments or feedback that Penrith City can provide concerning the ONR that has been prepared for the operation phase of the USC AWRC.

Thank you,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

From: Alyce Harrington-JHG
Sent: Friday, 2 May 2025 3:59 PM
To: Brooke.Levingston@penrith.city; Natasha.Williams@penrith.city; andrew.jackson@penrith.city
Cc: CHERYL.CAHILL <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (Penrith City Council)

Good afternoon,

I was hoping to follow up with you on my recent email correspondence regarding the USC AWRC Operational Noise Review (ONR) required under SSI-8609189 Condition of Approval E56.

We'd greatly appreciate any comments or feedback that Penrith City can to provide concerning the ONR that has been prepared for the operation phase of the USC AWRC.

Thank you,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

From: Alyce Harrington-JHG
Sent: Thursday, 3 April 2025 1:18 PM
To: Brooke.Levingston@penrith.city; Natasha.Williams@penrith.city; andrew.jackson@penrith.city
Cc: CHERYL.CAHILL <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (Penrith City Council)

Good afternoon,

John Holland, on behalf of Sydney Water, is currently constructing the Upper South Creek Advanced Water Recycling Centre (USC AWRC) in Kemps Creek, NSW. Construction commenced in August 2023 and has been progressing in accordance with the SSI-8609189 planning approval and associated Minister's Conditions of Approval (CoA). As we progress towards planning for the commissioning and operating phases of the project, John Holland has begun preparing key documents and deliverables required for these phases under the approval.

CoA E56 requires the preparation of an **Operation Noise Review (ONR)** to confirm noise control measures that would be implemented for the operation of Stage 1 of the CSSI. The condition requires that the ONR must be prepared in consultation with the relevant councils, including Penrith City Council. As such, please use the following link to access the Operational Noise Review prepared for the USC AWRC. During its development, the ONR has undergone an initial review by the project's Acoustic Advisor (AA) and environmental

representatives from Sydney Water and any comments raised have been satisfactorily addressed prior to commencing consultation with stakeholders nominated under the condition.

USC AWRC ONR (Rev 4)

Please download the document from this link and save it to a suitable location as the link will expire in the coming days.

It would be greatly appreciated if any comments regarding this submission are provided by close of business Friday 02 May 2025.

If you have any questions regarding this submission, please contact me.

Thank you,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

Appendix 4 – Canterbury Bankstown City Council – Evidence of Consultation

Alyce Harrington-JHG

From: Alyce Harrington-JHG
Sent: Monday, 26 May 2025 4:55 PM
To: David Milner
Cc: Cheryl Cahill; Ben Bracken; Larry Clark
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (CBCC)

Hi David,

Thanks very much for your response.

If there is anything else you need regarding the matter, please do not hesitate to contact me.

Sincerely,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

From: David Milner <David.Milner@cbcity.nsw.gov.au>
Sent: Monday, 26 May 2025 3:30 PM
To: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Cc: Cheryl Cahill <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (CBCC)

Hi Alyce,

A member of our Environmental Health team has reviewed the operational noise report and has no comments/concerns to provide.

Regards

CANTERBURY BANKSTOWN

David Milner - Senior Infrastructure Services Officer
T 02 9707 9345
E David.Milner@cbcity.nsw.gov.au
www.cbcity.nsw.gov.au

The City of Canterbury Bankstown acknowledges the Traditional Custodians of the land, water and skies of Canterbury-Bankstown, the Darug (Darag, Dharug, Daruk, Dharuk) People. We recognise and respect Darug cultural heritage, beliefs and relationship with the land. We acknowledge the First Peoples' continuing importance to our Canterbury-Bankstown community.

From: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Sent: Wednesday, 21 May 2025 10:40 AM
To: David Milner <David.Milner@cbcity.nsw.gov.au>
Cc: Cheryl Cahill <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (CBCC)

Morning David,

No problem, thank you so much for getting back to me.

I look forward to hearing from you next week.

Cheers,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

From: David Milner <David.Milner@cbcity.nsw.gov.au>
Sent: Wednesday, 21 May 2025 8:56 AM
To: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Cc: Cheryl Cahill <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (CBCC)

Hi Alyce,

Apologies on delay in responding to your emails and providing feedback.

I have forwarded on the review document to our Environmental Health team to provide any comments they have and asked for any comments to be provided on or before next Wednesday 28/5/25.

Regards

David Milner - Senior Infrastructure Services Officer
T 02 9707 9345
E David.Milner@cbcity.nsw.gov.au
www.cbcity.nsw.gov.au

@ourcbcity
Like & follow us

The City of Canterbury Bankstown acknowledges the Traditional Custodians of the land, water and skies of Canterbury-Bankstown, the Darug (Darag, Dharug, Daruk, Dharuk) People. We recognise and respect Darug cultural heritage, beliefs and relationship with the land. We acknowledge the First Peoples' continuing importance to our Canterbury-Bankstown community.

From: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Sent: Tuesday, 20 May 2025 5:07 PM
To: David Milner <David.Milner@cbcity.nsw.gov.au>
Cc: Cheryl Cahill <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (CBCC)

Good evening,

I am following up on my recent email correspondence regarding the USC AWRC Operational Noise Review (ONR) required under SSI-8609189 Condition of Approval E56.

As the consultation phase draws to a close, we'd greatly appreciate any comments or feedback that Canterbury-Bankstown City can provide concerning the ONR that has been prepared for the operation phase of the USC AWRC.

Thank you,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908

E. Alyce.Harrington@jhg.com.au

From: Alyce Harrington-JHG
Sent: Friday, 2 May 2025 4:00 PM
To: David Milner <David.Milner@cbcity.nsw.gov.au>
Cc: CHERYL.CAHILL <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: RE: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (CBCC)

Good afternoon David,

I was hoping to follow up with you on my recent email correspondence regarding the USC AWRC Operational Noise Review (ONR) required under SSI-8609189 Condition of Approval E56.

We'd greatly appreciate any comments or feedback that Canterbury-Bankstown City Council can provide concerning the ONR that has been prepared for the operation phase of the USC AWRC.

Thank you,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

From: Alyce Harrington-JHG
Sent: Monday, 7 April 2025 10:06 AM
To: David Milner <David.Milner@cbcity.nsw.gov.au>
Cc: CHERYL.CAHILL <CHERYL.CAHILL@sydneywater.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Subject: Upper South Creek (SSI 8609189) CoA E56 - Operational Noise Review (ONR) - for consultation (CBCC)

Good morning David,

John Holland, on behalf of Sydney Water, is currently constructing the Upper South Creek Advanced Water Recycling Centre (USC AWRC) in Kemps Creek, NSW. Construction commenced in August 2023 and has been progressing in accordance with the SSI-8609189 planning approval and associated Minister's Conditions of Approval (CoA). As we progress towards planning for the commissioning and operating phases of the project, John Holland has begun preparing key documents and deliverables required for these phases under the approval.

CoA E56 requires the preparation of an **Operation Noise Review (ONR)** to confirm noise control measures that would be implemented for the operation of Stage 1 of the CSSI. The condition requires that the ONR must be prepared in consultation with the relevant councils, including Canterbury Bankstown City Council (CBCC). As such, please use the following link to access the Operational Noise Review prepared for the USC AWRC. During its development, the ONR has undergone an initial review by the project's Acoustic Advisor (AA) and environmental representatives from Sydney Water and any comments raised have been satisfactorily addressed prior to commencing consultation with stakeholders nominated under the condition.

USC AWRC ONR (Rev 4)

Please download the document from this link and save it to a suitable location as the link will expire in the coming days.

It would be greatly appreciated if any comments regarding this submission are provided by close of business Friday 02 May 2025.

If you have any questions regarding this submission, please contact me.

Thank you,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

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Appendix 5 – AA/SWC ONR Review Register

ONR review by the Acoustic Advisor

Acoustic Advisor (AA) - Review 01 (21/01/2025)					John Holland (Response 1)		AA - Review 02			John Holland (Response 2)		AA - Review 03 (post-consultation)		
Item	Condition/ Plan Section	Requirement/ Comment	Status	Additional Remarks	Response Comments	By	Reviewer Close-out Comments	Response Status	Date Closed	Response Comments	By	Reviewer Close-out Comments	Response Status	Date Closed
1	Section 2.2	Reference to ISC SMART targets. These are not included in Glossary in Appendix A - what are they?	O		References to the ISC SMART targets have been removed from the ONR.	AM (RTA)			31-Mar-25	Please ignore previous JH response on this item. Now updated to reflect correct referencing: Infrastructure Sustainability Council Specific Measurable Achievable Relative Targets	AH	Closed.		02-Jun-25
2	Section 2.2	Target 2 reference to future residential receivers. CoA E56 does not include a requirement in relation to future residential receivers so why is there a reference to future residential receivers in this document? This is a potentially significant unknown and could result in a potentially signification liability to Sydney Water. I suggest deleting this unnecessary reference to future residenital receivers.	O		References to the ISC SMART targets have been removed from the ONR.	AM (RTA)			31-Mar-25	Please ignore previous JH response on this item. Agreed, target has been revised in response to Review items 02 & 03 to "The Project is to maintain operational noise levels within the Project Specific Noise Trigger Levels of 41 dB(A) at night and 45 dB(A) day/evening at residential receivers neighbouring the AWRC. The assessment of noise trigger levels and maximum noise levels will be carried out at identified residential receivers and sensitive land use(s) in accordance with Section 2.6 of the NSW Noise Policy for Industry (NPfI), 2017."	AH	Closed.		02-Jun-25
3	Section 2.2	Target 2 reference to residential receivers. Where is the assessment location? I suggest referencing Section 2.6 of the NSW NPfI, so that it is clear that the property boundary is not an appropriate assessment location in the rural residential situations where the propoerty boundary can be a long way from a residence, such as is the case near the AWRC and valve stations.	O		References to the ISC SMART targets have been removed from the ONR.	AM (RTA)			31-Mar-25	Please ignore previous JH response on this item. Agreed, target has been revised in response to Review items 02 & 03 to "The Project is to maintain operational noise levels within the Project Specific Noise Trigger Levels of 41 dB(A) at night and 45 dB(A) day/evening at residential receivers neighbouring the AWRC. The assessment of noise trigger levels and maximum noise levels will be carried out at identified residential receivers and sensitive land use(s) in accordance with Section 2.6 of the NSW Noise Policy for Industry (NPfI), 2017."	AH	Closed.		02-Jun-25
4	Section 4	This section refers to "sensitive receivers and adjoining development along the route". What route? I suggest changing this to something like "outlet pipeline routes".	O		Updated to "outlet pipeline routes"	AM (RTA)	I cannot find "outlet pipeline routes" in the document.		31-Mar-25	The term route has been removed as Section 4.1.1 refers to residences near the Project (rather than only along the pipeline route).	MT	Closed.		02-Jun-25
5	section 4	Reference to "sensitive receivers". CoA E56 (a) refers to sensitive land use(s), which is a defined term in the Project Approval. This ONR needs to address CoA E56 (a) and the sensitive land uses defined in the Project Approval.	O		Updated to use the term "sensitive land uses". Additional words also included to specify the terminology used in the ONR	AM (RTA)			31-Mar-25					
6	Section 4.1	The last sentence above Table 4-1 states that table 4-1 lists NCAs…potentiall impacted by operational noise. However Table 4-1 appears to list all NCAs, including along the routes of the buried pipelines where there should be no operational noise impact. I suggest editing out of Table 4-1 NCAs where there will be no potential operational noise or vibration impact from the project.	O		Adopted - Table 4-1 has been amended to include only the relevant NCAs	AM (RTA)			31-Mar-25					
7	Section 4.2	This section and Table 4-2 refer to non-residential receivers that have been considered in the operational traffic noise assessment. Why haven't these receivers been considered in the AWRC and pipeline operation?	O		This line included the word 'traffic' erroneously. The non-residential receivers have been considered in the assessment but, as their noise targets are less onerous than for residential receivers at Night, they do not form a key part of the noise assessment. This section has been amended to clarify that non-residential sensitive land uses have been identified but are further away from the project than residential land uses.	AM (RTA)			31-Mar-25					
8	Section 5.1	First sentence states that "MCoA E56(a) requires the operational noise from the AWRC and pipelines achieve to (sic) the noise criteria outlined in the EIS…" Where does it say this in MCoA E56(a)? MCoA E56(a) states "confirm the appropriate operational noise and vibration objectives and levels for surrounding development, including existing sensitive land use(s)".	O		Amended words in Section 5.1 to better align with the condition	AM (RTA)			31-Mar-25					
9	Section 5.1	Reference to intermittent operation of the air valves located along the underground pipelines. There appears to be no further information on these valves in the document. Where are they, how, why and when will they be operated, for how long, and what are the operational noise impacts of their operation?	O		This noise source was identified in the EIS but was not assessed further as it would be a noise source only present during abnormal operation only (e.g. a surge event) and is readily addressed through placing it in a concrete pit. Section 6.5 of Appendix S of the EIS also noted that standard noise criteria should not apply during surge events. Therefore, mention of the air valves has been removed from this section.	AM (RTA)			31-Mar-25					
10	Table 5-1	The table title and the text referring to the table indicates that corrections have been made to the background noise levels. There are notes indicating the corrections to the NCA in the first row of the table but not for the remaining 3 rows - what corrections were applied to the background levels of NCAs T7, T8 and B17 in Table 5-1?	O		Amended title of Table 5-1 as the corrections were only applied to NCA T1 (and this correction was applied in the EIS and carried over to this ONR).	AM (RTA)			31-Mar-25					
11	Section 5.2.5	Emergency Generator	O		Removed statement about emergency generators to reduce confusion.	AM (RTA)			31-Mar-25					
12	Table 5-2	The criteria in Table 5-2 are for residential receivers only - what about non-residential receivers that are included in E56(a) and the Project Approval Definition of sensitive land uses?	O		Added Table 5-3 to list noise criteria for non-residential land uses.	AM (RTA)	No Table 5-3, but note that non-resi have been added to Table 5-2		31-Mar-25	Table 5-2 includes both residential and non-residential land used. No change required.	MT	Closed.		02-Jun-25
13	Section 5.2.6	Reference to NPfI duration correction in Table C3 of the NPfI. Why not reproduce that table in this document - either in the text or as an Appendix?	O		Reference to duration corrections has been removed from this noise criteria section.	AM (RTA)			31-Mar-25					

Acoustic Advisor (AA) - Review 01 (21/01/2025)					John Holland (Response 1)		AA - Review 02			John Holland (Response 2)		AA - Review 03 (post-consultation)		
Item	Condition/ Plan Section	Requirement/ Comment	Status	Additional Remarks	Response Comments	By	Reviewer Close-out Comments	Response Status	Date Closed	Response Comments	By	Reviewer Close-out Comments	Response Status	Date Closed
14	Section 5.3	Second paragraph reference to initial screening test of 2dBA increase. I can't find this stated in the RNP - where is this stated in the RNP ? Why not follow RNP Section 3.4..1 "Process for Applying the Criteria"?	O		Limiting the increase in total traffic noise level to +2dB above the "no build" option is described in Step 4 of Section 3.4.1. This approach is considered relevant as the project is a land use development which could add traffic to existing roads. Additionally, the EIS adopted an approachwhere the first check is to screen for +2 dB(A) increase and, if exceeded, compare road traffic noise to the RNP criteria levels (refer section 6.1.2 of Appendix S of EIS). Updated wording in report to clarify this.	AM (RTA)			31-Mar-25				
15	Section 5.4	The last sentence of the first paragraph does not really address E56(c).	O		Section 5.4 has been amended to address CoA E56(a) and include vibration targets. Section 8.2 addresses CoA E56(c).	AM (RTA)	The notes numbering in Tables 5-6 and 5-7 needs fixing		31-Mar-25	Notes numbering updated in both tables	MT	Closed.		02-Jun-25
16	Section 6.1.1	I can't see the locations of the primary operational plant and equipment on Figure 6-3 - where is this plant and equipment located?	O		Noise source locations areshown in Appendix C as showing all sources on this single map resulted in excessive clutter	AM (RTA)	What does IFC stand for?		31-Mar-25	Issued for construction, added in the glossary	MT	Closed.		02-Jun-25
17	Section 6.1.1	How is potential tonality of noise sources addressed if they were modelled with 1/1 octave band spectral band noise data, or a single frequency band where no spectral data was available?	O		We have used best data available and relied on experience to determine that tonality is a low risk and is more appropriately addressed through the measurement phase required under CoA E57. If tonal noise is detected during the monitoring required by CoA E57, then CoA E57 will require the Project to address this noise source to achieve the nominated noise targets. A description of this is now included in section 6.1.1.	AM (RTA)			31-Mar-25				
18	Section 6.1.2	The emergency power generator is listed as a 330kVA Cummins C330D5I, with an overall dBA value of 119 for "emergency generator exhaust" in Appendix C. It is not stated in Appendix C whether the overall value of 119 is a sound power level (Lw), sound pressure level (Lp) at a specific distance, or other. Internet searches suggest a sound pressure level of 77dBA at 1 m from the engine canopy of a Cummins 330kVA C330D5I. The value used in Appendix C seems excessive. Modern generators can be extensively noise attenuated, and particularly when they are part of a permanent installation. Why can't a generator be obtained and installed that will meet the noise objectives?	O		The sound power level is for the exhaust. The case breakout was included in the noise model, but was less significant than the exhaust. The sound power level for thegenerator was updated based on an updated equipment specification supplied by JH which shows a substantially lower sound powe level than was previously modelled and is more in line with expected values for generators.	AM (RTA)			31-Mar-25				
19	Section 6.1.2	Last paragraph in relation to the absence of any directly relevant NSW guideline of specific guidance for emergency equipment (in relation to the generator). This is because emergency generator operation is not excluded from application of the Noise Policy for Industry. Portable generators can be highly noise attenuated within enclosures, and a generator installed for backup power to an industrial premises can be located within an acoustic enclosure that has been designed and built to meet the noise objectives of the rest of the plant. In the event of an outage of mains power lasting overnight, or for days or even weeks, it is feasible, reasonable, and appropriate for the emergency backup generator to be installed in an acoustic enclosure designed to meet the operational noise objectives for the premises.	O		Line relating to the absence of specific gudiance for emergency equipment has been removed. The sound power level for the generator was updated based on an updated equipment specification supplied by JH which shows a substantially lower sound powe level than was previously modelled and is more in line with expected values for generators.	AM (RTA)	I note the assessment of impact in Section 9.1.2		31-Mar-25	added reference of the assessment of impact (Section 9.1.2) in Section 6.22	MT	Closed.		02-Jun-25
20	Section 6.2.1	How is the value of 91dBA obtained from Figure 6-1 for the brine water control valve operating at a flow rate of 100L/s, 82% open?	O		This information was provided by the design joint venture and was,in turn, supplied by the equipment supplier. Confirmation of this has been added to the report.	AM (RTA)	Brine water control valve station figure reference needs changing from 6-5 to 6-4.		31-Mar-25	Updated	MT	Closed.		02-Jun-25
21	Section 6.2.1	How is the value of 100dBA obtained from Figure 6-2 for the brine water control valve operating at a flow rate of 100L/s, 82% open?	O		This information was provided by the design joint venture and was,in turn, supplied by the equipment supplier. Confirmation of this has been added to the report.	AM (RTA)			31-Mar-25					
22	Figure 6-5	Please fix up the legend so that the explanation for the blue dot is not obscured.	O		Updated figure	AM (RTA)			31-Mar-25					
23	Table 7-1	Why is the CONCAWE algorithm being used? Why not use ISO 9613-2:1996 implementing quality standard ISO 17534-1:2015 as is done in the Gatewave model?	O		CONCAWE was used for the operational noise model for consistenct with the EIS and because it allows for finer control over the assumed meteorological conditions, giving greater certainty of meeting the NPfI's requirement to consider either 'standard'or 'noise enhancing' meteorological conditions. In RTA's experience, ISO9613-2 is a general-purpose algorithm which has proven to be useful for presenting realistic worst-case construction noise predictions which is why it has been used for construction-phase noise predictions via Gatewave.	AM (RTA)			31-Mar-25				
24	Section 7.2	First sentence. Where in the NPfI does it require that operation of the project must comply with the criteria in Section 5.2? The NPfI is a guideline document for assessing potential noise impacts and arriving at noise limits - see " About this document" on page iii of the NPfI. Criteria must be complied with (i.e it is mandatory) when those criteria are specified in statutory documents such as Environment Protection Licences or Project Approvals.	O		Agree and this sentence has been amended.	AM (RTA)			31-Mar-25					
25	Section 7.3	Reference to Bringelly DPE station. What is a DPE station?- its not in the Glossary.	O		Amended sentence to clarify that this is the Bringelly station in the NSW Air Quality Monitoring Network.	AM (RTA)			31-Mar-25					
26	Section 7.3	Should the reference to Table 7-4 between tables 7-4 and 7-5 be a reference to Table 7-5?	O		Agreed and amended	AM (RTA)			31-Mar-25					
27	Table 7-5	What wind speeds are these?	O		3m/s day, 2m/s evening/night. Added as table note.	AM (RTA)			31-Mar-25					
28	Table 7-5	What strenght temperature inversions are these (in degC per 100m or PG stablility class)?	O		Category F evening/night. Added as table note.	AM (RTA)			31-Mar-25					
29	Section 7.3.1	What has the information in this section got to do with the assessment above?	O		It is anticipated that verification noise monitoring may show a different value to the predicted levels calculated in accordance with the NPfI and presented in the ONR. This section aims to provide context and to assist in comparing the verification measurements to the prediction model in the future.	AM (RTA)			31-Mar-25					
30	Section 7.5	Second paragraph refers to construction road traffic noise. Isn't this about operational road traffic noise, not construction traffic noise?	O		Amended to remove erroenous reference to construction traffic	AM (RTA)			31-Mar-25					

Acoustic Advisor (AA) - Review 01 (21/01/2025)					John Holland (Response 1)		AA - Review 02			John Holland (Response 2)		AA - Review 03 (post-consultation)		
Item	Condition/ Plan Section	Requirement/ Comment	Status	Additional Remarks	Response Comments	By	Reviewer Close-out Comments	Response Status	Date Closed	Response Comments	By	Reviewer Close-out Comments	Response Status	Date Closed
31	Section 7.5	Second paragraph refers to US FHWA TNM. Please confirm the requirements of CoA E56(b) including the model calibration details, incorporating noise monitoring and concurrent traffic counting.	O		Added description of road traffic noise model validation	AM (RTA)			31-Mar-25					
32	Section 7.5	Last sentence. Please clarify is this 11 HV in one hour of the day, and 15 LV in one hour of the night, or are these numbers averaged over the day and night periods?	O		Assumed traffic would be within a 1 hour interval during each period as a worst-case. In reality it is expected that the trucks would be distributed throughout the day.	AM (RTA)			31-Mar-25					
33	Section 7.5.2	Clifton Avenue 50km/hr speed is indicated as being from a posted speed limit. Street view does not show any speed signs on Clifton Avenue - please confirm the source of this speed limit.	O		As there were no visible speed limit signs in Google Street View, the NSW default speed limit of 50 km/h was initially adopted. This was confirmed in a site visit which found there are recently installed speed limit signs showing 50 km/h.	AM (RTA)			31-Mar-25					
34	Section 7.5.2	3rd bullet point. Please provide the traffic counts or other information supporting that the highest day LAeq,1hr occurs during the PM peak.	O		The highest day Leq1hr is occuring during the PM peak is a realistic worst-case assumption and a description of the reasons for this are given in Section 7.5.2. Light vehicle movements are not necessarily restricted to the morning and afternoon peaks, but have been assumed to occur within these peak hours (this assessment approach is consistent with the EIS). Although heavy vehicle movements are anticipated to occur throughout the day, the exact timing is not known as it would be variable and dependent on multiple factors (e.g. AWRC operating conditions, truck timings, road network delays etc). Although unlikely, it is not possible to rule out all heavy vehicles conducting a movement in the PM peak hour.	AM (RTA)			31-Mar-25					
35	Section 7.5.3	Last sentence of first paragrah: the relevance of not being able to assess and increase of 2dBA is not clear. Please provide an assessment against the NSW RNP, specifically addressing the Relative Increase Criterion.	O		Removed mention of +2dBA increase	AM (RTA)			31-Mar-25					
36	Section 8	First paragraph, first sentence - Condition E56(c) does not mention the NPfI - please directly address the requirements of MCoA E56(c).	O		Amended first paragraph to clarify that the mitigation measures are to address E56c	AM (RTA)			31-Mar-25					
37	Section 9.1	Please predict at intermediate assessment locations, where monitoring can be done, as well as at the nearest and most affected sensitive receivers.	O		Added intermediate locations and commentary around selecting new locations depending on site conditions e.g. limited access, refer section 11	AM (RTA)			31-Mar-25					
38	Table 9-1	Include intermediate assessment locations, where monitoring can be done, as well as at the nearest and most affected sensitive receivers.	O		Added intermediate locations and commentary around selecting new locations depending on site conditions e.g. limited access, refer section 11	AM (RTA)			31-Mar-25					
39	Section 9.1.2	Should the reference in the first sentence be to Table 9-1, not 9-2?	O		Amended sentence to reference emergency power generator instead of regular operations	AM (RTA)			31-Mar-25					
40	Table 9-2	Where are these locations? Please show them on a map.	O		Locations are shown in the maps in Appendix B	AM (RTA)			31-Mar-25					
41	Section 9.2.1	Reference under Table 9-3 to Section 5.2.3 - should this be 5.2.5?	O		Amended to reference section 5.2.5	AM (RTA)	No reference now to either 5.2.3 or 5.2.5		31-Mar-25	Included reference to Section 5.2.4	MT	Closed.		06-Jun-25
42	Table 9-5	Badu Muru Grove is not shown on satellite imagery. Please show location on a map. And please assess for Relative Increase Criterion as per RNP.	O		Badu Muru Grove is shown in Figure 7-3. Added discussion noting that RIC does not apply to local roads in accordance with RNP	AM (RTA)			31-Mar-25					
43	Section 10.1	I can't see the consultation requirements of MCoA E56 addressed in the CSEP Rev E.	O		It is noted that the Compliance Table in the CSEP does not explicitly mention CoAE56. However, the CSEP includes the consultation strategy for addressing CoA E56(d), notably Appendix B which outlines the strategy for consultation relating to operational noise.	AM (RTA)			31-Mar-25					
44	Section 10.2	Last paragraph sets out a recommended procedure, but what is the procudure in the relevant Sydney Water documents?	O		Sydney Water's Complaints Policy does not specifically include a noise monitoring process. The last paragraph is a recommended procedure that elaborates on the Sydney Water Complaints Policy and is consistent with the guidance relied upon by the ONR e.g. NPfI.	AM (RTA)			31-Mar-25					
45	Section 11	What is the relevance of this section to CoA E56? Is it just for information?	O		CoA E56(b) requires a validated noise model using measurements. However it is not possible to measure operational noise as operations cannot commence before acceptance of the ONR. Discussion of CoA E57 has been included to show that a subsequent phase of works (i.e. noise verification measurements) will be undertaken which will satisfy the intent of CoA E56(b). Section 11 has been updated to include an explanation of this approach.	AM (RTA)			31-Mar-25					
46	Section 11	First paragraph refers to MCoA E57 monitoring requirements and states that operational noise monitoring must be undertaken in accordance witn Section 7 of NPfI, but where in CoA E57 is this stated as a requirement?	O		Amended first paragraph to remove mention of NPfI as being required by CoA E57.	AM (RTA)			31-Mar-25					
47	Section 11.3	This is a good section on assessing compliance by measuring at alternative or intermediate locations, which is exactly what needs to happen. But for it to work this report needs to include predictions at such intermediate reference locations - please include them in this report.	O		Added preliminary intermediate locations, as well as discussion of the risk of these locations not being viable.	AM (RTA)			31-Mar-25					
48	Section 11.4	Second paragraph refers to attended noise measurements, but what about unattended, longer term logging? (Section 7 of NPfI)	O		Included mention of use of unattended measurements in line with Section 7 of NPfI	AM (RTA)			31-Mar-25					
49	Section 12	Last paragraph does not address the E56(d) requieremnt for a consultation strategy.	O		Amended to address E56(d)	AM (RTA)			31-Mar-25					
50	Appendix C	Where in the layout is the emergency generator? Please show its location.	O		Emergency generator location shown in emergency generator contour map	AM (RTA)			31-Mar-25					
51	Table C1	Please repeat the header rows at the top of each page.	O		Header rows repeated on each page	AM (RTA)			31-Mar-25					
52	Table C1	What are the values - sound power level, Lw, sound pressure level at a specific distance, or other?	O		Amended table headers to clarify the values	AM (RTA)			31-Mar-25					
53	Appendix D	include noise contours for emergency generator	O		Noise contours included	AM (RTA)			31-Mar-25					

Acoustic Advisor (AA) - Review 01 (21/01/2025)					John Holland (Response 1)		AA - Review 02			John Holland (Response 2)		AA - Review 03 (post-consultation)		
Item	Condition/ Plan Section	Requirement/ Comment	Status	Additional Remarks	Response Comments	By	Reviewer Close-out Comments	Response Status	Date Closed	Response Comments	By	Reviewer Close-out Comments	Response Status	Date Closed
54	Appendix D	include noise contours for sources other than AWRC	O		Given that the noise from pipeline sources are very low (below 20 dB(A)), noise contours have not been produced	AM (RTA)			31-Mar-25					
55	Appendix D	predictions for various wind conditions - will a meterological station be located and operated on the AWRC site?	O		A meteorological station will not be located and operated on the AWRC site. The predictions for various wind conditions has been included to assist with the measurements required to address CoA E57.	AM (RTA)			31-Mar-25					
56	Document	CoA E56 *"The ONR must be prepared in consultation with relevant Council(s) and the EPA".* No evidence of mandatory consultation sighted in document. Please provide evidence of mandatory consultation.	O		An A9 Consultation Summary Report will be prepared and appended to the ONR following close out of consultation required under condition E56 with relevant councils and the NSW EPA.	AH	Noted that this response is included in Section 3.5.		31-Mar-25	Section 3.5 has been updated with the following text following consultation: *'Section 3.5 Consultation, verification and approval* *The CSSI approval requires that the ONR must be prepared in consultation with the following parties:* *•NSW Environment Protection Authority (EPA)* *•Relevant Councils, including:* *oWollondilly Shire Council* *oPenrith City Council* *oCanterbury-Bankstown Council* *A Consultation Summary Report has been prepared in accordance with CoA A9 of the CSSI approval to document the consultation undertaken and is included in Appendix E.* *The ONR has been verified by the project's independent Acoustic Advisor (AA), evidence of which has been inserted into this document, immediately following the ONR document details and document control page.* *The ONR has been provided to the Planning Secretary for information at least 12 months prior to the commencement of operation of the facility.'* Additionally, Appendix E of the ONR (A9 Consultation Summary Report) is now appended to the document for review.	AH	Closed.		06-Jun-25
57	Document	CoA E56 *"The ONR must…(a) confirm the appropriate operational noise and vibration objectives and levels for surrounding development, including existing sensitive land use(s)"* . Table 5-2 lists "noise criteria", but are these the operational noise and vibration objectives and levels? Please clarify. Table 5-2 is for residential only. What about other sensitive land use(s), as defined in the Project Approval?	O		Amended "noise criteria" to "noise objectives" throughout the document.	AM (RTA)			31-Mar-25					
58	Document	CoA E56 *"The ONR must…(b) confirm the operational noise predictions based on the final design. Confirmation must be based on an appropriately calibrated model(s) (which has incorporated noise monitoring, and concurrent traffic counting, where necessary for calibration purposes). The assessment must specifically include verification of noise levels at all fixed facilities, based on noise monitoring undertaken at appropriately identified noise catchment areas surrounding the facilities"* No statement that this document is based on final design? Where is the model calibration? Where is the information about calibration incorporating noise monitoring? Where is the concurrent traffic counting? Where is the verification of noise levels at all fixed facilities, based on noise monitoring undertaken at appropriately identified noise catchment areas surrounding the facilities?	O		Section 6.1 amended to note that the design used to inform the ONR is the final design in relation to the factors affecting noise source levels, propagation and attenuation. Model calibration is discussed in Section 7.5.1 for road traffic noise. Section 6.1 has been included to address the limitation on what measurements can be taken and the data available to addrtess CoA E56(b).	AM (RTA)	Include IFC in definitions and glossary.		31-Mar-25	Included in the glossary	MT	Closed.		06-Jun-25
59	Document	CoA E56 *"The ONR must…(c) identify all noise and vibration mitigation measures including location, type and timing of mitigation measures, with a focus on: (i) source control and design; and (ii) 'best practice' achievable noise and vibration outcome for each activity;". Section 5.4 dismisses vibration. Section 8 is not clear on source control and design or on "best practice".* Appendix C includes a list, and diagrams, which do not show all the sources. No information about timing. How is this requirement addressed?	O		Included additional commentary in Section 8 relating to source control and design and timing.	AM (RTA)			31-Mar-25					
60	Document	. 'CoA E56 *"the ONR must… (d) include a consultation strategy to seek feedback from directly affected landowners on the noise measures"* . Not found in document. Section 10 refers to another document, but the consultation strategy for this ONR was not found in that document either. Please provide consultation strategy.	O		The Community Stakeholder and Engagement Plan (CSEP) includes the consultation strategy in relation to operational noise and how the Project is addressing these impacts. The ONR has been updated to include reference to and extracts of relevant sections of the CSEP.	AM (RTA)			31-Mar-25					
61	Table 9-1	Include LAmax. I suggest at 10dB above Leq, as per discussion above.	O		Lmax targets have been included in section 5.3. Note that the operations of the site are steady-state and the PNTL remain more stringent event with +10dBA for Lmax	AM (RTA)			31-Mar-25					
62	Glossary	Include relevant defintions from the Project Approval, eg Sensitive land use(s).	O		Included definition in glossary based on the definition in the CoA	AM (RTA)			31-Mar-25					
63							New comment raised from ONR (Rev 3) review: Glossary - Include IFC in definitions in glossary			Issued for construction, added in the glossary	MT	Closed.		06-Jun-25

Acoustic Advisor (AA) - Review 01 (21/01/2025)					John Holland (Response 1)		AA - Review 02			John Holland (Response 2)		AA - Review 03 (post-consultation)		
Item	Condition/ Plan Section	Requirement/ Comment	Status	Additional Remarks	Response Comments	By	Reviewer Close-out Comments	Response Status	Date Closed	Response Comments	By	Reviewer Close-out Comments	Response Status	Date Closed
64							New comment raised from ONR (Rev 3) review: Section 6.3.1, 2nd paragraph - Brine water control valve station figure reference needs changing from 6-5 to 6-4.			Updated	MT	Closed.		06-Jun-25
65							New comment raised from ONR (Rev 3) review: Section 5.4 - The notes numbering in Tables 5-6 and 5-7 needs fixing			Updated	MT	Closed.		06-Jun-25
66							New comment raised from ONR (Rev 3) review: Section 7.5.1, 1st paragraph - Second sentence doesn't make sense.			Updated to read :"When assessing local roads, the 1-hour traffic volume for the 'assessment period' (i.e. day or night) **is used** to predict the LAeq1h noise levels for the 'assessment period'.	MT	Closed.		06-Jun-25
67							New comment raised from ONR (Rev 3) review: Section 7.5.3 - First para seems to be contradicted by first sentence of second para.			RTA wanted to point out with the first sentece of second para that the EIS does not present detailed traffic volumes (e.g. hourly traffic counts) but only peak volumes. This sentence has been removed to avoid confusion.	MT	Closed.		06-Jun-25

ONR review by Sydney Water

Sydney Water - Review 01 (21/01/2025)					John Holland		Sydney Water - Review 02		
Item	Condition/ Plan Section	Requirement/ Comment	Status	Additional Remarks	Response Comments	By	Reviewer Close-out Comments	Response Status	Date Closed
1	Section 3.5	*The evidence will be submitted in the form of a consultation summary memorandum which will include all correspondence, including mails and meeting minutes, undertaken as part of the consultation process.* Not included, assume will be included later? Any summary of consultation with EPA and councils, during development for the E65 report, as required by the condition?	O		An A9 Consultation Summary Report will be prepared and appended to the ONR following close out of consultation required under condition E56 with relevant councils and the NSW EPA.	AH			23-Mar-25
2	Section 6.1.2	*To reduce the noise impacts the closest receivers the generator will be orientated so the exhaust faces to the West.* Missing text: "…to the"	O		Updated to include missing text	AM (RTA)	Seems reference deleted in section 6.2.2, but included in mitigation list in section 8.1		23-Mar-25
3	Section 6.2.1	*The brine water control valve station located near the water release at the Nepean River, as seen in Figure 6-5, consists of two valves operating within the pit.* Update text: should this read "treated water" rather than brine?	O		Updated text to 'treated water'	AM (RTA)			23-Mar-25
4	Figure 6-3: IFC approved AWRC layout plan	Should there be some highlight on the figure indicating where the noise generating sources of equipment are located?	O		Noise source locations are shown in the maps in Appendix C to minimise clutter	AM (RTA)			23-Mar-25
5	Figure 6-5: Treated water valve control station and pipeline water release location	The key included in the figure has been cut off. Please correct.	O		Amended figure to fix key	AM (RTA)			23-Mar-25
6	Section 7.5	*John Holland has proposed that no heavy vehicles will enter or exit the AWRC during the night period.* Assume if needed for emergency work, it is excluded? Should there be a note to this statement? eg excluding vehicles during an emergency?	O		Emergency vehicles are not included in the road traffic noise assessment as it would be unreasonable to assess (and design for) emergency vehicle traffic, given the low likelihood and uncertain quantity of vehicles. Included mention of emergency vehicles in section 7.5.2	AM (RTA)			23-Mar-25
7	Section 9.2.2	Update text / typo: Tothere is minimal risk of cumulative noise impacts from the pipeline release.	O		Updated typo	AM (RTA)			23-Mar-25
8	Section 10.1	Is there anything more targeted to address E56d? Updates on operational noise?	O		Included additional discussion about how the CSEP is the main document and have reproduced relevant portions in this ONR	AM (RTA)			23-Mar-25
9	Apendix B, sheet 2/3 (AWRC)	(AWRC) Footprint smaller than other drawings, or is this representative of the main noise sources?	O		Footprint is representative of area with main noise sources.	AM (RTA)			23-Mar-25

ONR AA confirmation of closeout and verification

Alyce Harrington-JHG

From: Larry Clark <larry.clark@acousticstudio.com.au>
Sent: Friday, 6 June 2025 11:45 AM
To: Alyce Harrington-JHG
Cc: Cheryl Cahill; Ben Bracken; David Hanson
Subject: RE: [External] E56 ONR comments
Attachments: 20250606 SW USCP ONR AA verification.pdf; 20250527 ONR_consolidated comments register_JH response.xlsx

ACOUSTIC STUDIO

Hi Alyce,

As discussed, attached is my verification letter, and the comment register updated with my close out comments.

I have copied in my colleague, David Hanson, as an approved Alternate Acoustics Advisor for the USC Project, for his information.

Please call if you require further information or would like to discuss.

Regards,

Larry Clark (he/him)
Acoustic Specialist, Consultant

M: +61 417 133 871

27/43-53 Bridge Road, Stanmore NSW 2048 Australia (Gadigal Country)
acousticstudio.com.au

From: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Sent: Tuesday, 27 May 2025 1:28 PM
To: Larry Clark <larry.clark@acousticstudio.com.au>; Ben Bracken <ben.bracken@bbenviro.com.au>
Cc: Cheryl Cahill <CHERYL.CAHILL@sydneywater.com.au>
Subject: RE: [External] E56 ONR comments

Good afternoon all,

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Please use the following link to access the revised ONR (Rev 5) and updated comment register that closes out the remaining open comment re Section 3.5 (ONR consultation and the preparation of a summary report) and other residual (new) comments made by Larry in the last round of document review.

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The following items are included in the link:

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- ONR AA and SWC comment register (@Larry Clark when you are satisfied with the register, I'll also be including a copy of it in Appendix 5 of the A9 consultation summary report for completeness)

Please note that I have also included in section 3.5 reference to Larry's verification role and evidence of this letter being included immediately following the cover / doc control page at the beginning of the ONR (consistent with the approach we've taken with the CEMP and sub-plans and ER and/or AA endorsement letters). I propose doing this once verification is received from Larry and prior to the ONR being issued to the Department for information.

@Ben Bracken – re-confirming again, did you want to include an ER endorsement letter once all matters are

addressed?

If you have any questions, please do not hesitate to contact me.

Thank you,

Alyce Harrington
Planning, Environment & Approvals Director
Upper South Creek

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

From: Larry Clark <larry.clark@acousticstudio.com.au>
Sent: Thursday, 3 April 2025 10:23 AM
To: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Cc: Ben Bracken <ben.bracken@bbenviro.com.au>; Cheryl Cahill <CHERYL.CAHILL@sydneywater.com.au>
Subject: RE: [External] E56 ONR comments

Hi Alyce,

Thank you for addressing those comments. I am satisfied with the responses and have no further comments.

Updated CTR attached.

Regards,

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Hi Larry,

Thanks for your response.

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Please let me know if you are satisfied with the updated document, and once I get your confirmation, I will use this revision (Rev 4) to commence consultation with the relevant parties nominated in condition of approval E56.

Thank you,

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Upper South Creek

JOHN HOLLAND

Clifton Avenue, Kemps Creek NSW
M. +61 409 633 908
E. Alyce.Harrington@jhg.com.au

From: Larry Clark <larry.clark@acousticstudio.com.au>
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To: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Cc: Ben Bracken <ben.bracken@bbenviro.com.au>; Cheryl Cahill <CHERYL.CAHILL@sydneywater.com.au>
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Happy to discuss.

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Acoustic Specialist, Consultant

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From: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Sent: Monday, 24 March 2025 9:19 AM
To: Cheryl Cahill <CHERYL.CAHILL@sydneywater.com.au>; Larry Clark <larry.clark@acousticstudio.com.au>
Cc: Ben Bracken <ben.bracken@bbenviro.com.au>

Subject: RE: [External] E56 ONR comments

Good Morning all,

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The comment tracking register has been attached also with responses to each comment provided.

I'm preparing to commence consultation with the relevant stakeholders by **Monday 07 April** to ensure we meet the timing requirements specified in the condition.

@Cheryl Cahill – I'll also issue the attached formally via InEight.

Any questions, please let me know.

Thank you,

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From: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
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> **CAUTION:** This email originated from outside the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Good morning Larry,

Happy New Year! Hope you had a lovely break.

I wanted to follow-up with you re your review of the Operational Noise Review and any comments or questions you may have on the document thus far.

Please let me know if I can be of any assistance.

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Make flexibility work – if you receive an email from me outside of normal business hours, it's because I'm sending it at a time that suits me. I'm not expecting you to read it or reply until normal business hours.

ONR ER confirmation verification not required

Alyce Harrington-JHG

From: Ben Bracken <ben.bracken@bbenviro.com.au>
Sent: Thursday, 5 June 2025 3:27 PM
To: Alyce Harrington-JHG; Larry Clark
Cc: Cheryl Cahill
Subject: Re: [External] E56 ONR comments

Hey Alyce – just trawling through emails from last month and came across this one – apologies for not replying sooner.

In relation to your query below regarding ER endorsement of the ONR, I can confirm that this is not a requirement under the approval. Condition E56 only requires the ONR to be verified by the AA, with no specific ER involvement.

Happy to discuss further.

Regards,

Ben Bracken
BBEnviro Pty Ltd
M +61 410 409 897 | E ben.bracken@bbenviro.com.au

From: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Date: Tuesday, 27 May 2025 at 1:28 pm
To: Larry Clark <larry.clark@acousticstudio.com.au>, Ben Bracken <ben.bracken@bbenviro.com.au>
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