Our Ref: ATP250124_L-01
Enquiries to: Sasho Temelkoski

30 April 2025

Serenitas
Suite 3603, 60 Margaret Street
SYDNEY NSW 2000

Attention: Jordan Chiu & Jim Armstrong

Via e-mail: jim@mde.au

Dear Sir,

RE: Operational Noise Impact Assessment of Serenitas Community Sewerage Pump Station

ATP Consulting was engaged by Serenitas to prepare a noise impact assessment of the proposed sewerage pump station at the *Serenitas Community* within Precinct 11 of *Everleigh Estate* in Greenbank.

The sewerage pump station is located at the north-east corner of Precinct 11 with potential noise impacts from the operation of the sewerage pumps on the nearest future residential dwellings.

This document assesses the noise emissions from the operation of the proposed sewerage pump station against the relevant noise criteria from the *Logan Planning Scheme 2015.*

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2025/1625/1

Date: 8 December 2025

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1. Environmental Noise Criteria

1.1 Logan Planning Scheme 2015

The *LPS 2015* states that any noise level measured at a sensitive land use must meet the following objectives from Planning Scheme Policy 3:

a) The requirements identified in Table 3.2.1.3 – Noise immission standards.

The noise immission standard states that the indoor acoustic quality objectives as outlined in Schedule 1 of the *Environmental Protection (Noise) Policy 2008* must be achieved when measuring noise at a sensitive land use.

1.2 Environmental Protection (Noise) Policy 2008

Acoustic Quality Objectives

The *Environmental Protection (Noise) Policy 2008* identifies environmental values for the acoustic environment and sets acoustic quality objectives for sensitive receptors. The purpose of the acoustic quality objectives is to protect the acoustic amenity of the environment.

The criteria from Schedule 1 of the policy are presented in Table 1.1.

Table 1.1 Environmental noise criteria

Sensitive receptor	Location	Period	Acoustic quality objectives			Environmental value
			$L_{Aeq,adj,1\text{-}hr}$	$L_{A10,adj,1\text{-}hr}$	$L_{A01,adj,1\text{-}hr}$	
Dwelling	Indoors	Day time and evening	35	40	45	Health and wellbeing
		Night time	30	35	40	Health and wellbeing, in relation to the ability to sleep
	Outdoors	Day time and evening	50	55	65	Health and wellbeing
		Night time	**37** (30 + 7)	**42** (35 + 7)	**47** (40 + 7)	Health and wellbeing, in relation to the ability to sleep

The following is noted regarding the acoustic quality objectives:

- The *Noise Policy* also does not specify outdoor noise criteria for dwellings during nighttime. The outdoor noise criteria has been derived from the internal criteria, assuming 7dB noise reduction by the building envelope with windows partially open[1].

[1] Typical noise reduction for windows partially open, *Planning for Noise Control Guideline*, Dept. of Environment and Heritage Protection (DEHP).

In this case, the most stringent environmental noise criteria is the acoustic quality objective criteria, as presented in Table 1.2.

Table 1.2 Noise Criteria

Area of Occupancy	Time Period	Design Criteria $L_{eq,adj,1hr}$ dB(A)	Environmental Value
Outdoor	Night Time	37	Health and wellbeing, in relation to the ability to sleep

Based on the noise criteria presented in Table 1.2, the operation of the sewerage pump station should not be audible in the typical noise amenity at the boundary of the nearest noise sensitive receivers.

The nearest sensitive receivers to the pump station are the future dwellings to the south at Lots 9 and 196. There is a distance of approximately 20m from the pump well to the boundary of the nearest residences, as presented in Figure 1.1.

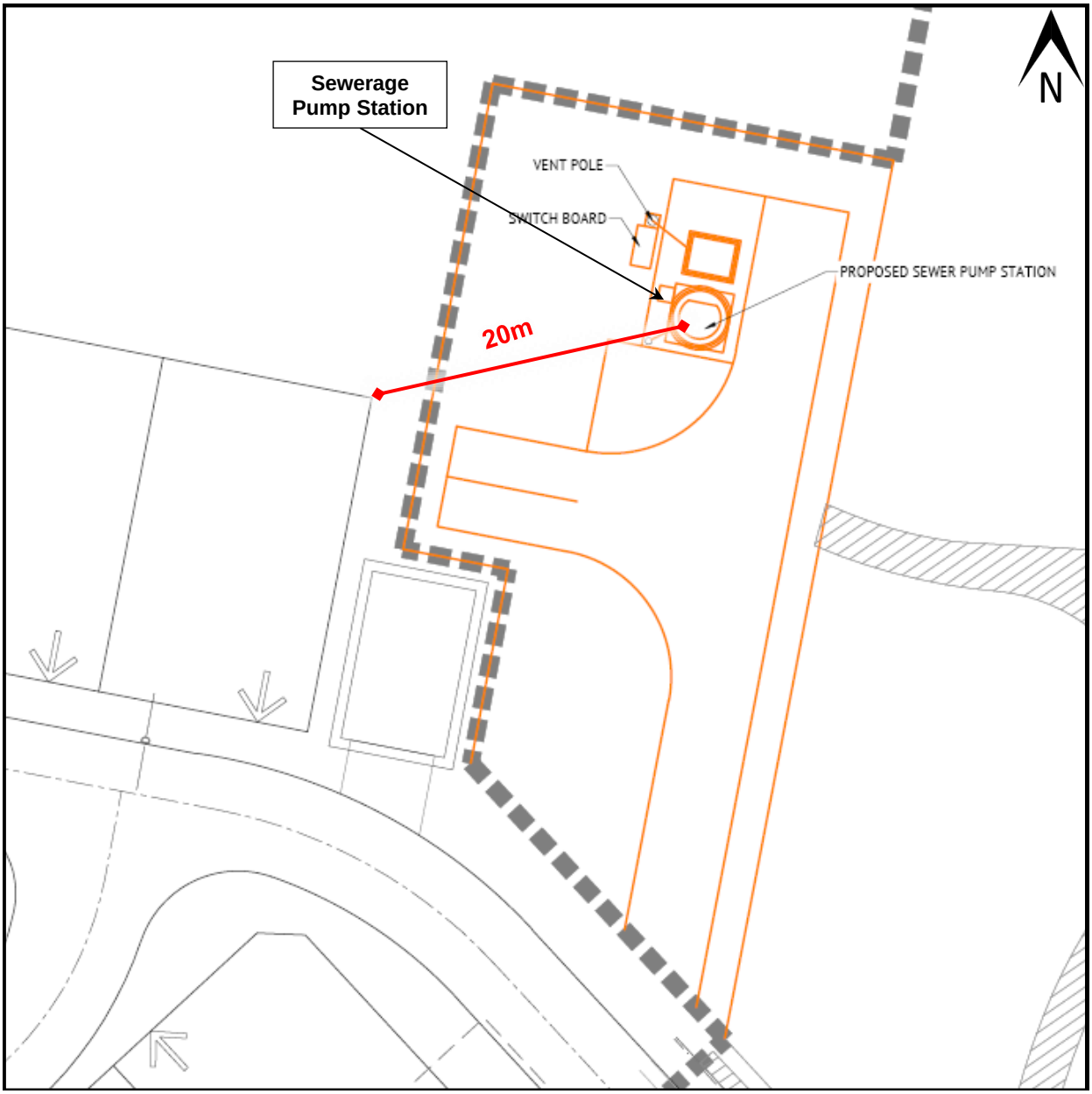

Figure 1.1 – Pump Station Location and Nearest Noise Sensitive Receivers

2. Sewerage Pump Station Operation

The sewerage pump station comprises of a reinforced concrete sump; inlet and outlet pipes; access for maintenance; and electrical control panel. It will house a 45kW Flygt N Series submersible sewerage pump. The design of the pump station is presented in the engineering sketch by Premise (April 2025).

The submersible electric pump will be installed at the bottom of the pump well which is approximately 6m deep. The top of the pump well will be sealed with heavy duty hatch covers. When installed in this way, there is no direct line of sight to the pumps.

The pump well hatch covers are assumed to be made of a solid material with minimum density of 12.5kg/m^2. Note: The SEQ Water Service Providers – Sewage Pump Station Standard Drawings[2] (SEQ-SPS-1304) specify that the hatches / cover lids are to be made of aluminium, have a maximum weight of 32kg and maximum width of 1000 to 1500mm. The hatch is considered is to be sealed air-tight.

Provided the assumptions outlined above are adhered to it is expected that the noise from the pump well will be compliant with the required noise criteria adopted for this assessment. Based on previous investigations, the pumps are considered to be inaudible at the nearest receivers when installed at the bottom of a pump well with hatch cover.

An acoustic model was developed to predict the noise levels at the nearest receivers and confirm

Pump Noise Model

1. **Breakout operational pump sound power, L_{wA}=55dB(A)**

   The SEQ Sewage Pump Station Standard Drawings call for heavy duty aluminium hatches, typically with mass of at least 12.5kg/m^2, which will meet the minimum requirements for containment of noise.

   Solid material with surface density of at least 12.5kg/m^2 will provide a transmission loss (TL) of at least 15dB.

   Typical noise level of the pump is $\leq$70dB(A) inside the pump well.[3] Allowing for 15dB transmission loss through the hatch cover, the breakout sound power is 55dB(A).

[2] SEQ Water Supply and Sewerage Design and Construction Code (SEQ Code)
[3] Proposed pump is Flygt N Series pump Noise data was sourced for a similar pump SULZER – Submersible Sewage Pump Type KSB KRTF65-217/52UEG-S: - *Installation, Operating and Maintenance Instructions (April 2016).*

2. Predicted Sound Pressure Level at 20m L_{pA} = 29dB(A)

Calculation methodology: ISO9613 (*Acoustics – Attenuation of sound during propagation outdoors*)

$$L_S = [\ L_W + K_0\ ] - [\ A_{dI} + A_{div} + A_{gr} + A_{bar} + A_{atm} + d_{Lrefl} + d_{Lw}\ ]$$

Where:

L_S	Sound pressure for a single frequency
L_W	Sound power of source
K_0	Correction for propagation in limited spacial angle
A_{DI}	Mean directivity correction
A_{div}	Mean attenuation due to geometrical spreading
A_{gr}	Mean attenuation due to ground effect
A_{bar}	Mean attenuation due to screening
A_{atm}	Mean attenuation due to air absorption
d_{Lrefl}	Level increase due to reflections
d_{Lw}	Correction due to source operation time

The attenuation by air and ground absorption is minimal considering the small separation distance between the noise source and nearest house. The calculation assumes no attenuation by fences.

No correction has been applied for source operation time, so the calculated noise level is the steady noise from the pump under continuous operation.

The distance attenuation (geometrical spreading) is the main factor which determines the noise levels at the nearest houses.

$L_S = L_W - A_{div}$

$= L_W - 20\log_{10}(d/d_0)$ *where d is the distance from source to receiver (=20m)*

d_0 is the reference distance (=1m)

$L_S = 55 - 26 = 29$ dB(A)

Allowing for +5dB tonality adjustment[4], the noise level at the receiver is 34dB(A) $L_{eq,adj,T}$.

3. Noise Criterion: 37dB(A) $L_{Aeq,adj,1hr}$ (most conservative criterion for night-time)

The predicted noise level of 34dB(A) $L_{eq,adj,T}$ complies with the most conservative noise criteria of 37dB(A) during night time.

[4] Based on previous noise measurements carried out near similar pump station, the pump noise emissions were not tonal. However, tonality adjustment of +5dB has been conservatively applied to represent worst case scenario.

3. Noise Measurements on a Similar Pump Station

ATP Consulting has extensive experience in noise monitoring and assessments for various noise sources and different types of developments. Previously, an assessment of the operational noise emissions from a booster sewerage pump station, similar to the one proposed here, was carried out in Casuarina. As part of this assessment, attended noise measurements were carried out to determine the sound pressure level at 2 m and at 4 m from the operating pump station.

The noise measurement locations are presented in Figure 3.1.

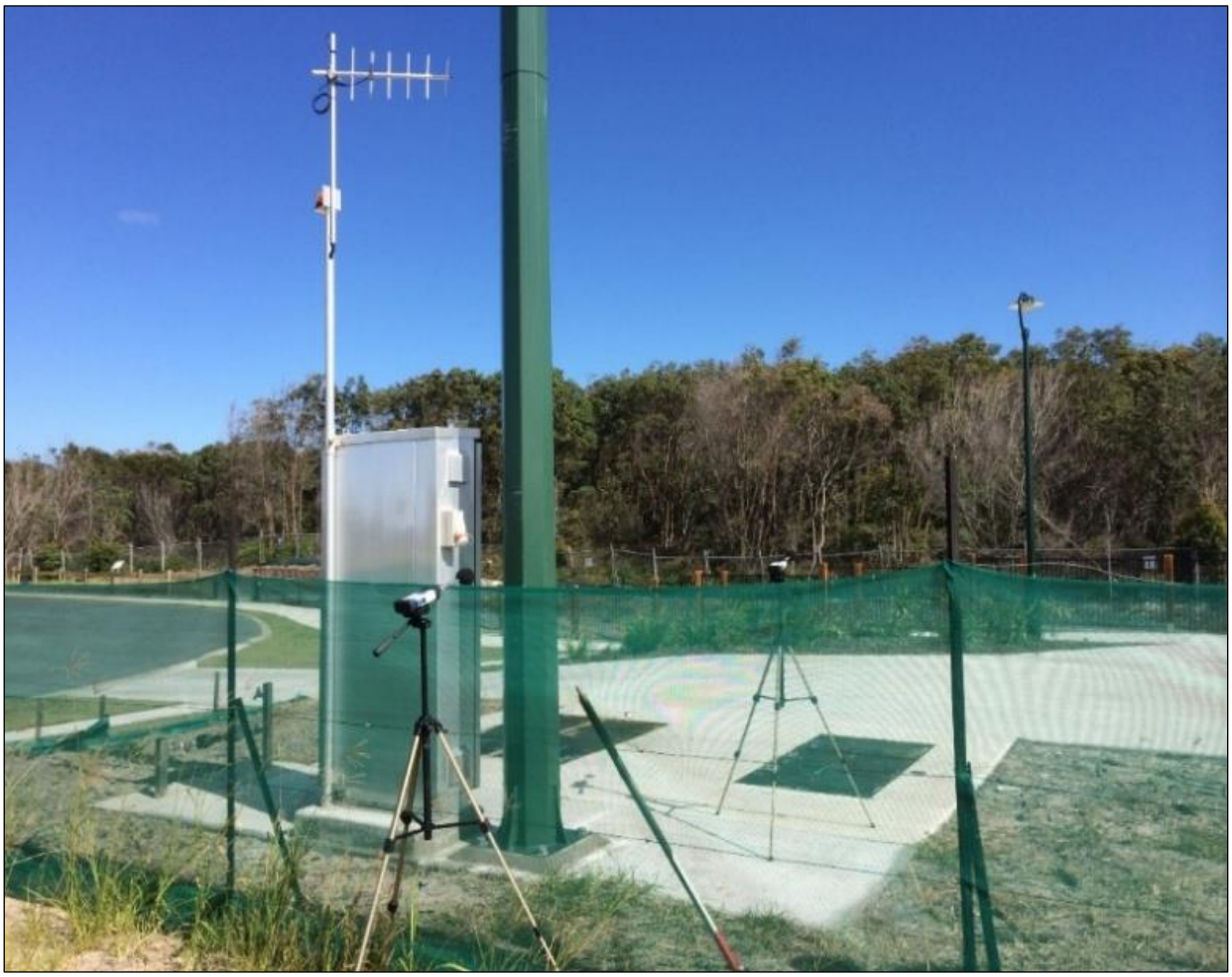

Figure 3.1 – Noise Measurements near Operational Booster Sewage Pump Station

The operational noise data was analysed in accordance with AS1055-2018 (1/3 octave band analysis) to determine if tonality is present in the operational sound levels recorded. Analysis of the operational noise data confirmed that the sound pressure levels, recorded at the boundary of the pump station, are broadband with no tonality, as none of the 1/3 octave bands exceeds the level of the adjacent bands by more than 5dB.

An output from the SVANPC++ software, showing the 1/3 octave frequency bands of the operational noise emissions as recorded at a distance of 2 m from an operational pump station, is presented in Figure 3.2.

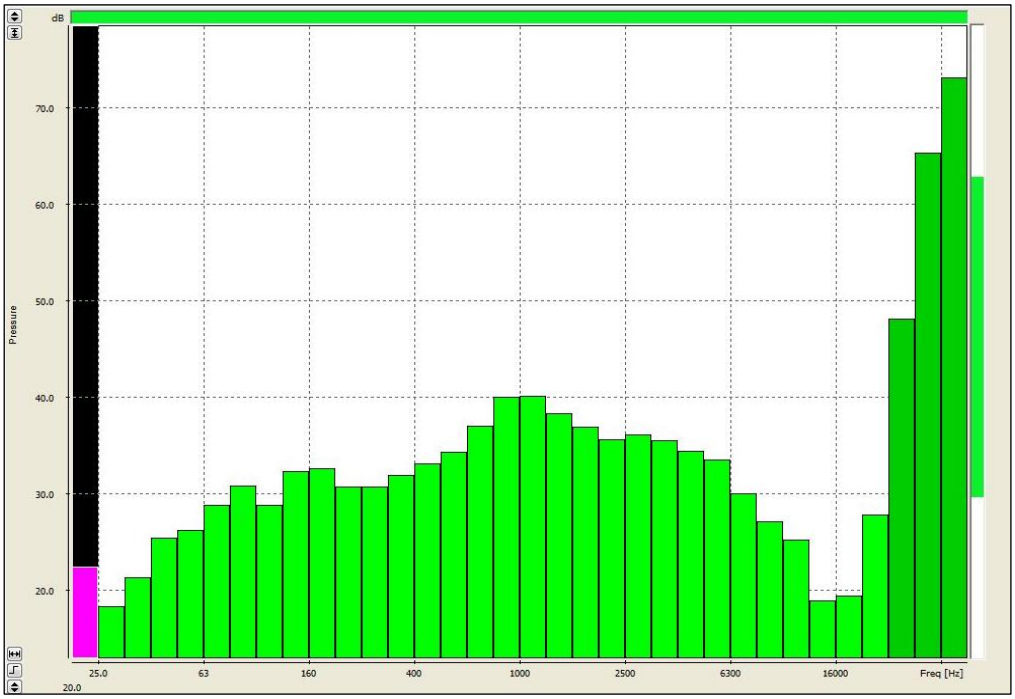

Figure 3.2 - Sound Pressure Levels at 2 m - 1/3 Octave Bands (SVANPC++ extract)

The 1/3 octave frequency bands of the operational noise emissions, as recorded at a distance of 4 m, are presented in Figure 3.3.

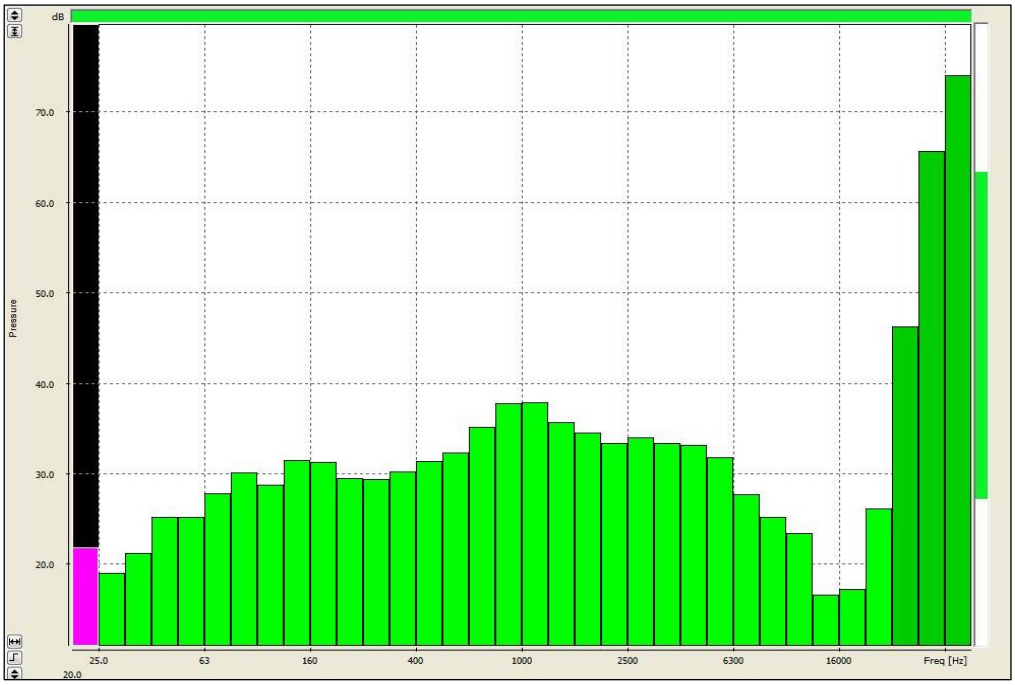

Figure 3.3 - Sound Pressure Levels at 4 m - 1/3 Octave Bands (SVANPC++ extract)

The overall conclusion from the noise monitoring near the booster sewerage pump station in Casuarina was that the operation of the submersible pumps is quiet and fully complies with the applicable intrusive noise criteria for day, evening and night-time conditions.

4. Conclusion

A submersible pump will be installed at the proposed sewerage pump station at the *Serenitas Community* of the *Everleigh Estate* in Greenbank. The electric pump will be installed at the bottom of the pump well which will be sealed with heavy duty hatches. The nearest noise sensitive places are the future residential dwellings to the south and west.

Based on calculation of the noise emissions from the pump well and past experience with a similar pump station, ATP Consulting concludes that the proposed sewerage pump station will comply with the relevant noise criteria from the *Logan Planning Scheme 2015*.

Should you have any questions about the information presented in this letter, please do not hesitate to contact our office on (07) 5593 0487.

Yours faithfully

Sasho Temelkoski MIEAust CPEng RPEQ MAAS
Managing Director and Principal Engineer
ATP Consulting Engineers

5. References

- ATP Consulting Engineers, 2014, *Miramar Residential Development, Casuarina: - Pump Station Noise Impact Assessment*
- Australian Standard AS1055.1-1997 *(Acoustics – Description and measurement of environmental noise Part 1: General Procedures)*
- Australian Standard AS1055-2018 *(Acoustics – Description and measurement of environmental noise)*
- Premise Group Services Pty Ltd, SKC10 – Engineering Service Sketch – Sewer Pump Station Location, April 2025
- Logan City Council, 2015, *Planning Scheme Policy v9.1*
- Queensland Government, 2008, 'Environmental Protection (Noise) Policy 2008