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cc:	Ian Nicholls (Reading Borough Council)	Date:	13 December 2024
		Ref:	13652.241213.TN1
Project:	56-90 Bamburgh Close		
Subject:	Amended Sound Impact Assessment for 56-90 Bamburgh Close (Low Noise Mode)		

Following on from our sound noise impact assessment for planning application 230909, we understand that the low noise mode has been activated at the ASHPs installed at 56-90 Bamburgh Close.

The additional information has been reviewed and the assessment amended as follows:

Low Noise Mode

After amending our calculations to take account of the ASHP's low noise mode being active, the BS4142:2014+A.1:2019 assessment level calculated at the nearby sensitive receptors has reduced to an assessment level of -8 dB, indicative of a "*low impact, depending on the context*".

The absolute levels from the ASHP are also very low at these receptors (L_{AR} 23dB), where we would consider no further mitigation necessary.

Relevant Guidance

The most relevant guidance we have for this assessment is BS4142:2014+A.1:2019 *Methods for rating and assessing industrial and commercial sound*. This is used throughout the UK and elsewhere for the assessment of sound from fixed mechanical plant such as ASHPs. To paraphrase this standard;

The impact of the sound source is dependent on how much the sound source exceeds the background sound level and the context in which it occurs.

The standard continues to say that "*Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.*"

In this situation both the background sound level and source sound emissions level are very low at the receptor, where the relevant guidance suggests that absolute levels may be more appropriate here.

Absolute Noise Levels

The following chart by the American Academy of Audiology is useful for providing some perspective to the absolute levels in Layman's terms.

The calculated rating level of ASHPs at the nearest sensitive receptor is L_{AR} 23 dB, which lies between "*leaves rustling*" and a "*whisper*" in the indicative scale that follows:

LEVELS OF NOISE In decibels (dB)		
PAINFUL & DANGEROUS		
Use hearing protection or avoid	140	• Fireworks • Gun shots • Custom car stereos (at full volume)
	130	• Jackhammers • Ambulances
UNCOMFORTABLE		
Dangerous over 30 seconds	120	• Jet planes (during take off)
VERY LOUD		
Dangerous over 30 minutes	110	• Concerts (any genre of music) • Car horns • Sporting events
	100	• Snowmobiles • MP3 players (at full volume)
	90	• Lawnmowers • Power tools • Blenders • Hair dryers
Over 85 dB for extended periods can cause permanent hearing loss.		
LOUD		
	80	• Alarm clocks
	70	• Traffic • Vacuums
MODERATE		
	60	• Normal conversation • Dishwashers
	50	• Moderate rainfall
SOFT		
	40	• Quiet library
	30	• Whisper
FAINT		
	20	• Leaves rustling

For further reference, the limit of measurement for most Class 1 sound level meters is around 20dB , where sound emissions from the ASHP are sufficiently low that they would be difficult to measure at the receptor against the existing soundscape.

In comparison to the desirable internal ambient noise levels for steady state sources given in Table 4 of BS8233:2014, it can be seen that the absolute noise level from the ASHP externally is likely akin to existing internal noise levels within the residential dwellings.

Table 4 Indoor ambient noise levels for dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

Table 4 from BS8233:2014 Guidance on sound insulation and noise reduction for buildings

Further Context

The assessment has found the plant to have no distinguishable acoustic features at nearby affected receptors.

The ASHPs replaced existing heating plant which also presented low sound emissions to nearby dwellings.

The ASHPs have operated for over a year without complaints. With the low noise mode now being activated, the likelihood of complaint reduces even further.

Summary

The ASHPs present very low sound emissions levels at nearby receptors, with no discernible acoustic features.

An assessment following procedures in the relevant standards has suggested that the resultant impact will be low.

A low impact has been demonstrated in-situ where the ASHPs have been operational for over a year and have not caused complaint.

The low noise mode will be activated reducing the resultant noise level further.

No further mitigation works are therefore considered necessary.

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