

Our ref: MC/SU/NT15521/0011

Your ref:

Date: 16 June 2022

Helen Willows
Planning Officer
Regeneration and Culture Service
Place Directorate
Barnsley Council

Dear Helen,

Proposed biomass boiler building at Water Royd Care Home, Barnsley: Noise Assessment

Wardell Armstrong LLP has been instructed by The UK Development Group, on behalf of Maria Mallaband Care Home Group Limited, to prepare a Noise Report to accompany a planning application for the erection of a biomass boiler and fuel storage buildings at Water Royd Care Home, Locke Road, Barnsley, S75 3QH.

The proposed boiler building location and context with the road and Existing Sensitive Receptor (ESR) is shown in Graphic 1 and Graphic 2 below.



Graphic 1 – Proposed boiler building (red) and receptors (blue)

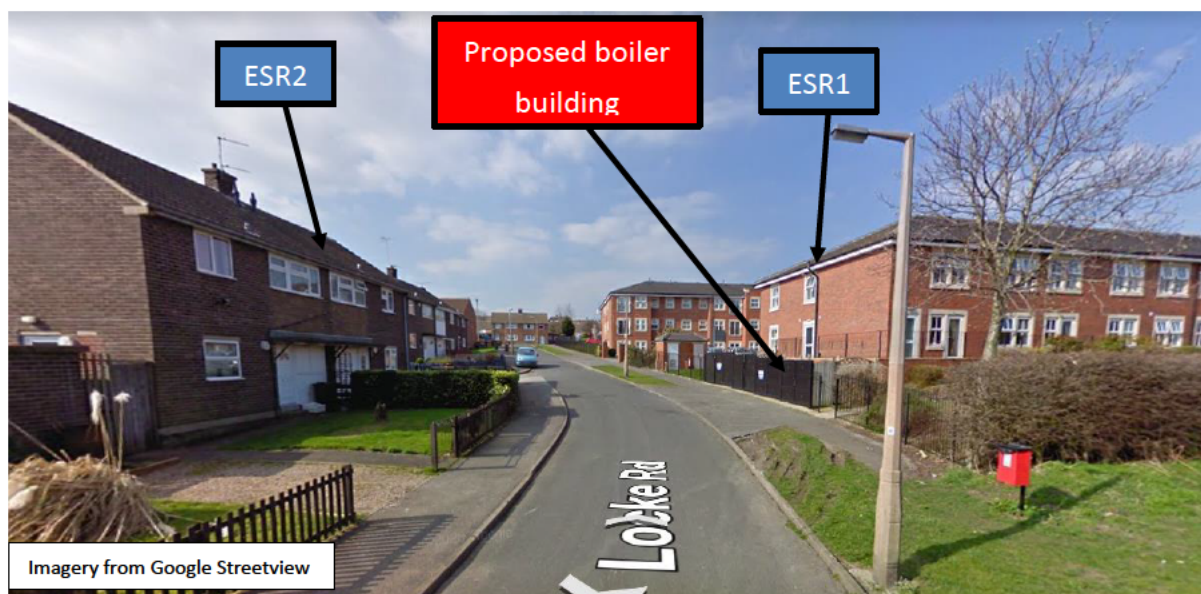


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Graphic 2 – Photograph of proposed boiler building location and nearby receptors

As can be seen, the proposed boiler building would be within the land of the Water Royd Care Home and it would be approximately 1.6m from the nearest part sensitive window of the Care Home building which is marked as ESR1. The second nearest ESR is marked as ESR2 and is located on the other side of Locke Road, approximately 17m from the proposed boiler building.

Applicable Noise Policies, Standards and Guidance

For such proposed development, potential impacts of industrial noise on the Existing Sensitive Receptors is the key consideration. These are assessed with reference to the National Planning Policy Framework (2021), Planning Practice Guidance – Noise, together with relevant British Standards and noise guidance. A summary of relevant noise policies, standards and guidance is provided below.

National Planning Policy Framework

The National Planning Policy Framework (NPPF) within England sets out Government policy. It must be taken into account in preparing development plans and is a material consideration in planning decisions. The NPPF seeks to avoid significant adverse impacts on health and on quality of life as a result of noise from a new development, including mitigation where appropriate, whilst recognising that existing businesses wanting to develop should not have unreasonable restrictions put on them because of changes in nearby land uses. In addition, areas of tranquillity which have remained relatively undisturbed by noise in the past should be protected from significant noise in the future.

Planning Practice Guidance – Noise 2019

Planning Practice Guidance (PPG) states that noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.



British Standard 4142 Methods for rating and assessing industrial and commercial sound (BS4142).

BS 4142 is applicable to the determination of the following levels at outdoor locations:

- Rating levels for sources of sound of an industrial and/or commercial nature; and
- Ambient, background and residual sound levels, for the purposes of:
 - Investigating complaints;
 - Assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and
 - Assessing sound at proposed new dwellings or premises used for residential purposes.

The purpose of the BS 4142 assessment procedure is to assess the significance of sound of an industrial and/or commercial nature. For this assessment, background sound levels have not been established as this was not judged to be required due to the low anticipated levels from the development. Only a qualitative assessment was undertaken, based on noise predictions.

British Standard 8233:2014 Guidance on Sound Insulation & Noise Reduction for Buildings (BS8233)

This document provides noise guideline values for habitable rooms and external areas, of residential dwellings to protect against noise arising from external transport noise. However, this does not preclude its use for other noise sources. All noise guideline values are in line with WHO recommendations. The criteria suggested are:

- The guideline noise value for living room and bedroom areas of the proposed dwellings, during the daytime hours (0700-2300) is 35dB_{L_{Aeq}} (16 hour).
- The guideline noise value for bedrooms of the proposed residential dwellings during the night-time hours (2300-0700), is 30dB_{L_{Aeq}} (8 hour) and for maximum instantaneous events is 45dB _{L_{Af,max}}.
- An external upper noise guideline value of 55dB _{L_{Aeq}} (16 hour) is also suggested.

Noise Levels in the Environment:

Noise in the environment is measured using the dB(A) scale, which represent the response of the human ear to noises with different frequency content. It is accepted that 'a change of 3 dB (A) is the minimum perceptible change in sound level under normal conditions, and a change of 10 dB (A) corresponds roughly to halving or doubling the loudness of sound'. Table 1 illustrates noise levels for a range of noise sources experienced in the environment.

Table 1: Indicative Noise Levels found in the environment	
Source / Activity	Indicative Noise Level dB(A)
Threshold of pain	140
Jet aircraft at 250 m	105
Pneumatic drill at 7 m	95
City traffic	90
Truck at 30 mph at 100 m	65
Busy general office	60
Car at 40 mph at 100 m	55
Wind farm at 350 m	35 – 45
Quiet bedroom	20
Rural night-time background	20 – 40
Threshold of hearing	0

Source: Planning for Renewable Energy, A Companion Guide to PPS22



Noise Impact Appraisal

A Noise Circular produced by the Austrian manufacturer ETA is included in Appendix A at the end of this letter and it provides information on acoustic emissions from pellet and woodchip boilers with a rated capacity between 20 and 200kW. The proposed development is for a total capacity of approximately 120kW, therefore, the information presented in Appendix A is considered representative and has been used for noise modelling.

A boiler in the range 20 – 200 kW can reach a sound level of 50dBA inside the building during continuous operation with occasional peaks of 75dBA during ignition (5 to 10 mins and rarely more than three times a day) and operation of the vacuum turbine (10 to 30 minutes and not more than three times a day). These noise levels are relatively low and the boiler would also be housed within a framed building, which would provide some noise attenuation for noise breaking from inside to outside.

The noise levels at the nearest receptors have been calculated in the SoundPLAN noise modelling software assuming two boilers of approximate capacity 60kw each and 51dB sound power each (which were calibrated to give 50dB sound pressure level inside the building with one boiler). A sound reduction index of 25dBA has been assumed for the walls and roof. For context, the SoundPLAN library shows 28dB sound reduction for a wooden roof with reinforcement, so a 25dB value was used as a more conservative assumption. The predicted noise levels are shown below in Graphic 3 below.



Graphic 3 - Predicted Noise Levels



The noise levels are predicted to be 21 dBA at ESR1 and 9 dBA at ESR2. These are very low noise levels, and are equivalent to those found in quiet bedrooms or rural environment at night (see Table 1). The site is located in an urban location and ambient sound levels are expected to be much higher than 25dB(A) even at night so the boiler is anticipated to be inaudible. Furthermore, the receptors would be indoor and benefit from further façade reduction. When assuming an open window and 21dB at the facade, the noise level inside would be 8dB which is significant below the 30dB(A) criteria from BS5228 and WHO. As such, no significant impact are predicted.

The assessment indicates that there is significant head room between the predicted sound levels and noise guideline values. Therefore, as a cautious measure and to provide scope for boiler selection, boilers with up to a maximum sound power of 68dB, in continuous operation, would be a suitable for this development. Therefore, this should be adopted as the maximum sound power criteria for the boiler selection.

Summary

The noise from the proposed boiler building has been assessed at the nearest Existing Sensitive Receptors which are care home residents and nearby houses residents across Locke Road. The assessment has shown that sound from the proposed boiler building is likely to be inaudible at ESRs and well within internal noise guideline values. Therefore, no significant impact is predicted, and noise should not be considered a reason for refusal.

Yours sincerely

for Wardell Armstrong LLP

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MOISE COULON
Principal Acoustic Consultant

SIMON URQUHART
Technical Director

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Enc. : Appendix A – Noise Circular from ETA

Appendix A
Noise Circular from ETA

