



NOISE ASSESSMENT - SUPPLEMENT

**AKESMORE LANE
GILLOW HEATH
BIDDULPH
ST8 6RS**



Report by
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Report by: S.B. Mellor

Signed:

A handwritten signature in blue ink, appearing to read 'S.B. Mellor'.

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1.0 INTRODUCTION

Following on from application refusal and comments from Staffordshire Moorlands District Council, reproduced below, we have formulated this supplement report to provide additional information to alleviate these initial concerns:

1. The application site is located immediately adjacent to an agricultural/skip storage yard. The submitted Noise Assessment indicates that the existing use operates at significantly high noise levels and even with the proposed mitigation measures, the noise impacts generated would have a significantly unacceptable effect on the amenity of the occupiers of the proposed dwellinghouse, making the application site unsuitable for residential use. In addition, complaints by any future residents could compromise the use of the existing yard. The proposed development is therefore considered to be contrary to policies DC1 and SD4 of the Staffordshire Moorlands Local Plan (2020) and Sections 12 and 15 (para 191) of the NPPF (2023).

*...There is mention of BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound and an investigation of representative noise from a similar skip operation but this does not appear to have progressed to an assessment of potential noise impacts or any noise penalty. **We would expect a BS4142:2014+A1:2019 to have been clearly set out so the impact the skip yard has on background noise levels is understood.***

*The assessment determines there will be loud noise impacts in the garden areas but proposed this can be mitigated in particular parts of the garden through the use of an acoustic fence and distance between noise source and receptor. Additionally it proposes internal noise can be mitigated through the shutting of windows and the use of mechanical ventilation. The assessment also advises the **skip yard operator will shortly be retiring** so intensification of the site is unlikely. As in our comments to previous applications the development of a residential house in this rural area next to a skip yard is not ideal. The skip yard as set out in the assessment will cause loud noise which will require mitigation by the occupier by **shutting windows, using mechanical ventilation and finding areas of the garden not as excessively impacted by waste operations**. It is our opinion this is not practicable, and complaint would be likely. The absence of a BS4142:2014+A1:2019 assessment means there is an unknown level difference between the rating level of noise caused by skip operations and the background sound levels when the skip yard is not operating. This would assist in understanding the likelihood of complaints and the significance of impact to amenity. It is a rural area and future occupiers would reasonably expect to open their windows to ventilate and enjoy their garden without the noise from a skip yard.*

*The proposed noise abatement measures such as the **acoustic fence and hedge planting, absence of windows on the rear elevation in favour of mechanical ventilation instead plus other measures incorporated into the design are deemed insufficient to mitigate against the noise impacts.***

*I consider the **reduction in the height of the acoustic fence from 2.5m to 2.2m** and the screening provided by way of hedging along the paddock boundary (the adjacent bungalow would screen the rest of the fence) is sufficient to overcome the harmful impact on the appearance of the area, particularly when viewed from the public footpath to the south.*

2.0 FUTURE ACTIVITY (INCREASES IN ACTIVITY)

There are concerns that there may be increases in activity at the waste recycling site which would increase noise levels which in turn may impact on the proposed residential property. The site is relatively small and so this would naturally restrict any extension for the storage of materials and use of plant. Consultation with the client suggests that expansion is not being considered. However, if activities and use of plant were to double the sound intensity propagating from the site then this would increase noise levels by +3dBA. As we will demonstrate below, the suggested barrier, internal layout and ventilation would mitigate for this albeit unlikely event and the doubling of activities.

3.0 WINDOWS, VENTILATION AND INTERNAL LAYOUT

The Council suggest that it is not practicable to use sealed windows etc. as mitigation against noise impact. Where we have been involved with housing adjacent to busy roads or industrial noise in the past, e.g. in town centre locations, where noise levels have exceeded 70dBA during the daytime period LAeq,16hrs and 60dBA at night LAeq, 8hrs this has been the only practicable approach, indeed the desired approach. It would not be possible to open windows without being impacted upon. This, linked with mechanical ventilation or PIV has provided a practical solution in these circumstances.

Internal layout can also assist and when it is possible to site habitable rooms away from the source of noise then windows can often be opened with adverse impact. Where practicable this is also something that we recommend and has been considered here.

A joint statement on ProPG and the AVO Guide by the Association of Noise Consultants (2020) states that, *“An aspiration of good acoustic design is that where practicable residents may open windows without any adverse acoustic impact (ProPG para. 2.33); and that use of the building envelope*

with windows closed, in conjunction with alternative means of ventilation and control of overheating, is only used after good acoustic design measures have been exhausted. The ProPG indicates that, where it is not feasible to achieve reasonable internal noise conditions by means of open window designs, the design approach should consider the interaction between provisions for acoustic, ventilation and thermal comfort”.

Further, “ProPG [Note 4 to Figure 2] states that “designing the site layout and the dwellings so that the internal target levels can be achieved with open windows in as many properties as possible demonstrates good acoustic design. Where it is not possible to meet target internal levels with windows open, internal noise levels can be assessed with windows closed...”.

Therefore, although opening windows for ventilation should be the preference, using alternative means for ventilation should also be permissible.

4.0 BS4142 ASSESSMENT

BS4142 is not used to assess whether sound amounts to a noise nuisance. *"That is not within the scope of BS 4142"*¹.

Also, as noted in the previous report, BS4142:2014 recognises that at night residents will be inside their properties [BS4142 A.6.1 and A.6.3] and that consequently *"Other guidance, such as BS 8233, might be applicable in this instance."*

This is the approach we have taken many, many times previously with proposed new builds where the source of noise and potential impact is known; and approval has generally been given after specifying appropriate mitigation.

Also, BS4142 is directed primarily to the circumstances of a proposed or existing noise source affecting an existing property, i.e. circumstances where insulating the property is impracticable. Therefore, BS4142 can't take into account circumstances where the properties have not yet been

¹ Guidance Method implementation document (MID) for BS 4142 Updated 22 December 2023

built and where noise control, such as acoustic glazing and ventilation, can be incorporated such to alleviate "*...the primary concern is the potential for disturbance of residents who could be sleeping with open bedroom windows.*"

The provision of acoustic glazing, ventilation and screening can all change the impact of external noise. Consequently, where noise control can be incorporated into the properties [as here] we have referred to BS 8233:2014 (original report).

The recommended glazing and ventilation will account for sounds associated with the skip hire business.

However, as suggested by Staffordshire Moorlands District Council **we have also produced an assessment to BS4142** after revisiting the barrier specification and calculation (below).

The estimated noise levels for site activities from the original report are reproduced below (worst case) assuming that the JCB might operate for a full hour at any time and skip loading and unloading at least once in any hour. One hour being the reference period from BS4142.

Table 1 – BS4142 1 Hour Ref dBA

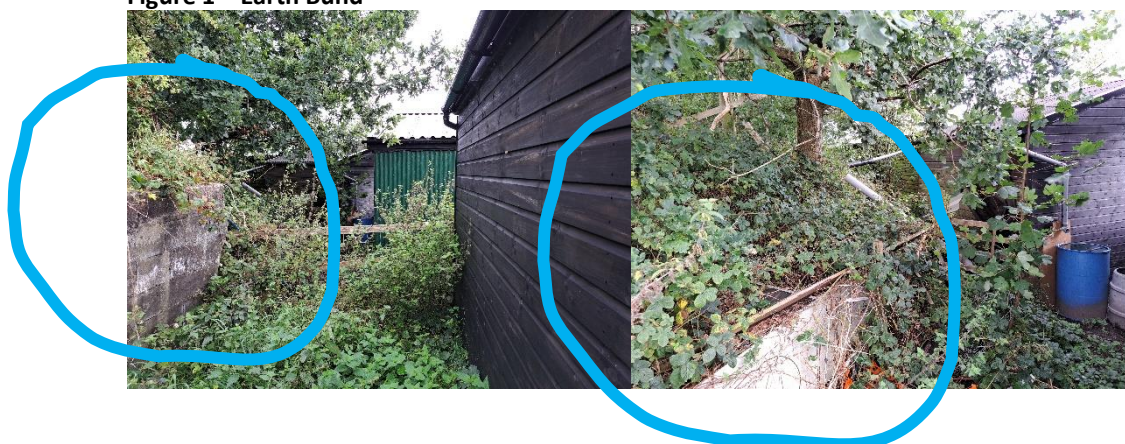
Description	Duration 1 hour	LAeq
Skip Vehicle Movements. Speed 5mph (safety)	5 minutes	59
Skip loading /unloading (empty skips)	5 minutes	55
Skip unloading (full skips)	5 minutes	64
JCB T4i	Constant	58

Total LAeq, 1 hour = **60dBA**

Since the original report we have re-consulted with the client and architect and it has been decided that an earth bund is to be retained, extended (where necessary) and built up (again where necessary) at the garden boundary (see photos below). The retaining wall will be removed and the bund landscaped to give a natural appearance.

We understand that the earth bund is approximately 3m in height. This will be combined with a 2m high fence giving a **combined screening height of 5m**.

Figure 1 – Earth Bund



If we then consider the bund combined with an additional acoustic type of fence and an increased height of 5m then we can achieve up to **19.8dBA** of attenuation to the centre of the garden at 10m and 19.1dBA at the rear.

Table 2 – Barrier Attenuation

Metric	Garden 10m	Garden 20m
Ht of Source AoD	1.5	1.5
Ht of Ground at Barrier AoD	3	3
Ht of Barrier Abv local grnd	2	2
Ht of Barrier AoD	5	5
Dist of Barrier top from Source	5	5
Ht of Ground at Receiver AoD	0	0
Ht of Receiver Abv local grnd	1.4	1.4
Ht of Receiver AoD	1.4	1.4
Dist of Receiver from Barrier	10	20
Proportion of Soft Ground	1	1
Barrier Attenuation	-19.8	-19.1

A “Jakoustic acoustic fence” is a substantial barrier with a suggested attenuation level of 28dBA. In practice this is not likely to be more than 20dBA – this level of attenuation generally considered to be the limit for a single barrier².

*“*Jakoustic® barrier certified laboratory results: Rating according to BS EN 1793-2:1998 Category = B3 Laboratory sound reduction 28 dB Superficial mass 25kg/m²”.*

² ISO9613-2:1996 Attenuation of sound during propagation outdoors

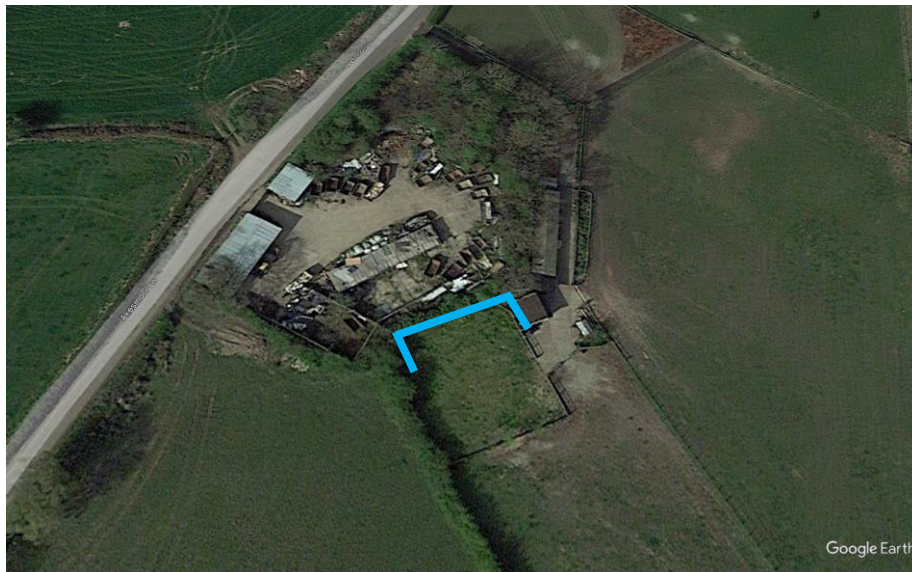
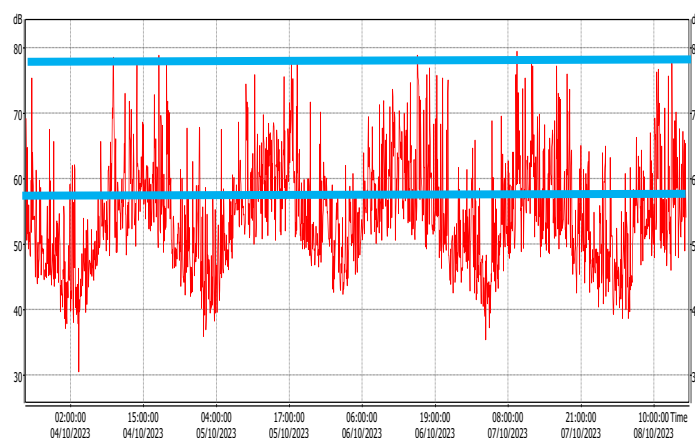
[Reflective Acoustic Barrier | Jacksons Security Fencing \(jacksons-security.co.uk\)](https://www.jacksons-security.co.uk)

Figure 2 – Jakoustic Fence



This will help to achieve the desirable level for a garden space where the barrier is located at the boundary as illustrated below [$60 - 20 = 40\text{dBA}$]. L_{Amax} (e.g. from impact sounds in the skip yard) will also be reduced, e.g. as shown in the trace below, higher levels are around 78dBA which will result in levels in the centre of the garden of 58dBA which is around where typical L_{Amax} levels sit (without skip hire activities).

Figure 3 – suggested barrier location

Figure 4 – L_{Amax} (Highest and Anticipated with Barrier)

As stated in the original report, BS 8233:2014 adopts guideline external noise values provided in WHO for external amenity areas such as gardens and patios.

The Standard states that it is “desirable” that the external noise does not exceed 50 dB LAeq,T with an upper guideline value of 55 dB LAeq,T. Therefore recognising that elevated noise levels may be permissible if the development is considered “necessary or desirable”. Given the back-log in numbers of houses being built it would be hard to argue that any new build is not “necessary or desirable”. In such circumstances, the development should be designed to achieve the lowest practicable noise levels in external amenity areas by providing acoustic barriers etc.

For the BS4142 assessment we have calculated the “typical” background levels by analysing the measured taken from 6.00am until 8.00am and again from 6.00pm until 7.00pm when the site was not operational (it should be noted that BS4142 does not require the lowest background levels to be used in the assessment:

Table 3 – Ambient / Background without site operations

Start date & time	LAeq	LAmx	LAmn	L01	L10	L50	L90	L95
03/10/2023 18:00:00	44.3	69.2	34.1	54.1	44.7	41.3	38.4	37.6
04/10/2023 06:00:00	40.1	57.8	30.1	47.2	42.6	38.5	35.0	34.0
04/10/2023 07:00:00	45.8	65.7	35.8	55.1	47.3	43.7	40.7	39.7
04/10/2023 18:00:00	47.6	69.7	38.2	55.2	50.1	44.9	41.9	41.2
05/10/2023 06:00:00	42.5	60.7	32.1	50.3	45.0	40.8	37.4	36.3
05/10/2023 07:00:00	45.8	68.7	37.2	52.2	47.7	44.8	42.0	41.3
05/10/2023 18:00:00	46.9	78.1	40.0	51.1	47.0	44.4	42.3	41.8
06/10/2023 06:00:00	45.3	65.2	35.0	52.7	47.8	43.7	39.9	38.8
06/10/2023 07:00:00	46.3	69.5	37.8	52.5	47.6	44.7	42.5	41.9
06/10/2023 18:00:00	45.2	68.4	38.4	51.4	47.4	43.9	41.4	40.8
07/10/2023 06:00:00	42.2	69.6	27.2	48.8	42.2	37.0	32.6	31.3
07/10/2023 07:00:00	42.5	63.2	31.1	53.2	43.6	39.3	36.3	35.3
07/10/2023 18:00:00	48.3	76.0	32.5	53.6	45.4	41.2	38.2	37.5
08/10/2023 06:00:00	43.1	66.3	25.0	53.8	45.8	37.8	33.1	31.4
08/10/2023 07:00:00	43.1	64.4	31.0	51.7	45.2	40.7	37.0	35.8
09/10/2023 18:00:00	53.2	77.7	37.4	63.6	47.0	42.4	40.4	39.9
10/10/2023 06:00:00	44.2	66.7	34.3	50.9	46.6	42.8	39.1	38.3
10/10/2023 07:00:00	47.4	72.2	40.2	52.6	49.2	46.5	43.9	43.2

The graph below shows the typical LA90 levels to be 41-42dB.

Figure 5

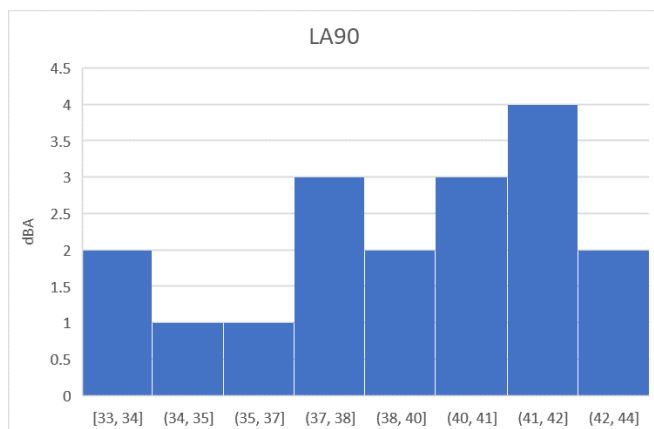


Table 4 - BS4142 Assessment

Specific Noise Level	40dB
Tonal/Impulsive/Intermittent Character Correction (distinctive sound)	3 dB
Rating Level [Specific + Character Correction]	43 dB
Background Noise Level (L90) – typical range	41-42 dB
Excess over Background	+1 to +2dB
Conclusion – <5dBA above the background “The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.”	

5.0 CONCLUSION

Our subjective observations, sound recording and filming of site activities suggest that there are long periods of inactivity on the recycling site and activities are only occasionally audible. We have erred on the side of caution for our BS4142 assessment above which may overestimate the likelihood of adverse impact.

We would summarise with the following points:

- Internal levels for habitable rooms can be met with the specified glazing and ventilation from the original report.
- There will be openable windows located on the façade facing away from the recycling centre.
- Although there is the potential for adverse impact from BS4142 in the external amenity area this can be mitigated with the 5m screening with a combination of earth bund and acoustic fencing which can be designed to blend in with the surrounding area with hedging combination and appropriate planting. Nevertheless, the desirable range from WHO / BS8233 for outdoor spaces will be met.