

**TECHNICAL NOTE: Land North West of 1-12 Twelve House
Sowbrook Lane, Stanton by Dale, Derbyshire
Reason for Refusal #6 of Application Ref: ERE/0722/0038**

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1. This Technical Note has been prepared in relation to the *“Outline Application for up to 196 dwellings with all matters reserved other than the means of access”* at the Appeal site, as per Application Ref: ERE/0722/0038, which was refused planning permission. The development layout that was submitted with the application is provided in Figure 1 appending this Technical Note.
2. Specifically, this Technical Note relates to Reason for Refusal No. 6, which reads: *“As a result of the proximity to the approved industrial development at Stanton North, the proposal would lead to unacceptable living conditions for future occupiers, contrary to the NPPF, Policy 10 of the Core Strategy and ‘Saved’ Policies H10 and H12.”*
3. Hepworth Acoustics prepared a noise assessment in relation to the residential scheme at the Appeal site, which was submitted with the application (Hepworth Acoustics report reference: P21-283-R01v2, dated April 2022). This considered all apparent existing noise sources at the site, including road traffic and commercial/industrial type sources. It is noted that the decision to refuse permission for the residential application did not include among its reasons any matters relating to the existing noise sources around the site as covered in the above referenced report. It is also notable that no objection was received from the Council's Environmental Health Officer in relation to the future living condition of future occupiers. It would be expected that, had planning consent been granted, a condition would have been included to ensure that adequate noise mitigation was incorporated into the scheme, consistent with the recommendations of the report.
4. The *“approved industrial development”* referenced in Reason for Refusal No. 6 (i.e. to the east of Ilkeston Road, which is known as Stanton Park”) was not considered at that stage, as no planning consent was in place for that scheme at the time, and it was not clear how this application was going to be considered because it represented a significant deviation from the adopted allocation for the site, which envisaged less employment land and more residential land. However, in light of the Reason for Refusal and the subsequent granting of planning consent for the Stanton Park development (as per Application Ref: ERE/0722/0038), the potential noise impacts upon the Appeal scheme have now been reviewed.
5. The Stanton Park development has planning consent as per the following:
*“Hybrid planning application for the comprehensive redevelopment of the site comprising:
Outline Application for demolition of existing buildings and structures to provide; a maximum 261,471 sqm of employment (a mix of Class E_g (iii) (Industrial Processes), B2 (General Industrial) and B8 (Storage & Distribution) with associated car, cycle and HGV parking; service yards; gatehouse(s) and security facilities; electrical substations; provision of cycle and walking infrastructure and foul and surface water infrastructure; removal of trees; retention of open*

space for biodiversity enhancements and landscaping; utilities; provision of land for safeguarding for future highway improvements; relocation and consolidation of existing railway line; provision of intermodal rail hub, and other associated works and improvements.

Full Application for provision of new access points from and alterations to Lows Lane and an internal estate road; diversion of a section of National Cycle Route 67; associated surface water infrastructure; infilling of part of the disused canal; remediation, and decontamination works and ground works."

6. It is evident from the committee report for the Stanton Park development that the majority of the 79 hectare site was proposed to come forward as B8 (Storage and Distribution), with the requirement in Condition 34 to provide at least 10 hectares of B2 (Industrial) and / or E(g)(iii) Light Industrial stemming from the Council and not something originally envisaged by the Applicant. It would therefore be more appropriate to refer to the planning permission as being for a mixed-use employment development, rather than an "industrial development", as referred to in Reason for Refusal No. 6.
7. With regard to potential noise sources generated by the Stanton Works site the Committee Report concludes:

"The findings of the assessments are that noise levels are considered to have a minor adverse impact. It is acknowledged that detailed assessment of noise generated by individual occupiers of buildings would differ, but at this outline stage, the type, location and likely noise pattern of individual buildings, and the need for any specific mitigation to address specific issues is unknown and would be assessed through Reserved Matters submissions. At this outline stage, the evidence in the Environmental Statement and associated reports is that the development could be undertaken without causing significant detriment to local amenity through noise generation."
8. An outline plan for the Stanton Park development was included with that application and we have considered that layout herein. The western section of the Stanton Park development site layout (as relevant to this review) is presented in Figure 2 appending this Technical Note.
9. The Stanton Park development layout indicates that B8 type storage and distribution units are to come forward in the area closest to the Appeal site. An assessment of potential noise generation from the Stanton Park development has been carried out based on robust, likely worst-case assumptions, as set out herein.
10. The assessment focusses on likely noise generation as a consequence of external loading/unloading type activity, i.e. HGV and fork-lift truck noise.
11. Operation of the Stanton Park development is likely to result in some additional traffic on Ilkeston Road, adjacent to the Appeal site. As this is already a busy route, including a fairly high proportion of large vehicles, this is unlikely to lead to any significant increase in noise. At this juncture, the potential increase is assumed to be acceptable, due to the presence of existing houses (e.g. at Twelve Houses, to the south), which will be exposed to at least the same level of traffic noise. Indeed, the Noise and Vibration section of the Environmental Statement submitted as part of the Stanton Park development application confirms that noise from traffic generated by the Stanton Park development, in this area, is predicted to be of negligible significance.
12. Some noise output is possible as a result of operation of items of fixed plant (e.g. air-conditioning condensers etc.). However, it is generally straightforward to control noise from fixed plant through its orientation, acoustic barriers and noise control hardware that can be applied directly to the equipment.

13. Hence, in this scenario, it is considered that noise from external loading/unloading activity is the principal issue for consideration.

Relevant Standards and Guidelines

National Planning Policy Framework 2021

14. The NPPF states at paragraph 174 that: *"Planning policies and decisions should contribute to and enhance the natural and local environment by: ... e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of ... noise pollution ..."*.
15. However, there is as yet no specific guidance on numerical acoustic assessment/design criteria for proposed new housing developments provided in the NPPF, nor the accompanying Technical Guidance, National Planning Practice Guidance 'Noise'. As such, it is usual to assess on the basis of the following British Standards and supplementary guidance.

Local Guidance (as cited within Reason for Refusal No. 6)

16. Policy 10 of the Erewash Core Strategy 2011-2028 is entitled *'Design and Enhancing Local Identity'* and covers a wide range of factors relating to design. It makes no specific mention of noise, however point 2 does state that: *"Development will be assessed in terms of its treatment of the following elements: ... f) impact on the amenity of nearby residents or occupiers"*. Residential amenity covers numerous facets, including but not exclusively in relation to noise.
17. Saved Policy H10 relates to conversion of existing buildings and hence is not relevant in this case. However, Saved Policy H12 relates to *'Quality and Design'* and states that: *"In considering applications for housing development, the borough council will require that proposals: ... 5: are allocated so as to avoid being unduly affected by noise and smells from nearby uses that would be expected to generate such effects"*

British Standard 4142: 2014 +A1:2019 Methods for rating and assessing industrial and commercial sound

18. BS 4142 is the principal point of reference for assessment of industrial type noise at residences. The Standard provides methods for rating and assessing sound of an industrial and/or commercial nature and requires the 'rating' sound level for the operation to be compared with the L_{A90} background sound level in the absence of the operational noise.
19. The 'rating' level is derived based on the 'specific' L_{Aeq} sound level attributable to the operation with an 'acoustic feature' penalty added for any sound sources which give rise to tonal, impulsive, intermittent, or other characteristics readily distinctive against the residual acoustic environment. BS 4142 stipulates that noise impacts should be assessed over a reference time interval of 1-hour during the daytime (0700-2300hrs) and 15-minutes during the night-time (2300-0700hrs).
20. An initial estimate of the impact of the operation is determined by subtracting the 'background' level from the 'rating' level. BS 4142 states that, typically, the greater this difference, the greater the magnitude of the impact. The lower the 'rating' level is relative to the measured background level, the less likely it is that the operation will have an adverse impact or a significant adverse impact. A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context; A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context; Where the 'rating' level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

21. Where the initial estimate of the impact needs to be modified due to the context, BS 4142 states that all pertinent factors should be taken into account in determining whether the initial estimate of the impact needs to be modified. Salient factors can include the absolute level of sound, the character and level of the residual sound, and the sensitivity of the receptor, e.g. whether dwellings will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as: i) façade insulation treatment, ii) ventilation and/or cooling, and iii) acoustic screening.

British Standard 8233: 2014 Guidance on sound insulation and noise reduction for buildings

22. BS 8233 is also a useful reference in this case. This document recommends guidance on design criteria for acceptable noise levels for residential accommodation.
23. The key guideline values are for internal noise levels in habitable rooms not exceeding 35dB $L_{Aeq,T}$ for the daytime and not exceeding 30 dB $L_{Aeq,T}$ for the night-time. However, BS 8233 clarifies that the above guidance relates only to noise without specific character, and that at sites where noise does exhibit distinct characteristics (such as noise with a distinguishable, discrete and continuous tone, or noise that is irregular enough to attract attention, or which has strong low-frequency content), lower design noise level values might be appropriate.
24. Further, BS 8233 states that if there is a reliance on closed windows to meet the guide values, *“there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level”*. Further, it is stated that assessments should be based on a room with *“adequate ventilation provided (e.g. trickle ventilators should be open)”*.
25. Regarding outdoor living areas, BS 8233 states at Clause 7.7.3.2 that *“it is desirable that the external noise level does not exceed 50dB $L_{Aeq,T}$, with an upper guideline value of 55dB $L_{Aeq,T}$, which would be acceptable in noisier environments.”*

ProPG: Planning & Noise, Professional Practice Guidance on Planning & Noise 2017

26. The ProPG guidelines are provided primarily for consideration of proposed new residential developments on land that is exposed to transportation noise. However, of note here is that the recommended approach to assessing and mitigating transportation noise is also stated as being suitable where some industrial or commercial noise contributes to the acoustic environment, provided that it is “not dominant”.

Noise Model

27. We have developed a 3-dimensional computerised noise model using the CadnaA software to calculate the noise levels at the nearest dwellings from the likely worst-case HGV/fork-lift activity noise, as set out below.
28. The model has been developed based on ‘OS Terrain 5’ and ‘OS Local Vector Map’ data for the area. The Appeal scheme buildings, as shown in Figure 1, and also the Stanton Park development buildings for Units 1-6, shown in Figure 2, have been incorporated into the model.
29. The model takes into account the attenuation of sound over distance to the nearest dwellings, ground absorption, and up to three orders of reflections.
30. Noise sources have been incorporated into the model using robust, likely worst-case assumptions, based on the plan in Figure 2, for Units 1-6 of the indicative Stanton Park development plan.
31. As can be seen, the indicative plan in Figure 2 includes clear markings of where delivery bays would be located, hence providing a representative number of delivery bays for each unit.

32. In each case, most delivery bays appear as 'dock-levelling' bays, whereby the HGV will reverse right up to the building, effectively forming a seal, such that contents may be transferred, usually on trolleys/wheeled cages, directly to/from the building, without any external activity. This is beneficial in terms of controlling potential noise.
33. Conversely, a smaller number (typically ~15% on average) of the delivery bays appear to be a simpler type (i.e. a roller shutter door closing level to the hardstanding). In these cases, it would be more likely that, sometimes, HGVs would be unloaded using a fork-lift truck(s) to carry loads from the HGV to inside the building.
34. For each unit, we have assumed that, in each hour, an HGV will enter and exit the site for each and every one of the loading bays indicated on Figure 2, for Units 1-6, in the locations shown. In each case, the HGV will manoeuvre from the main highway into position at a bay, and subsequently depart the site.
35. In addition, we have assumed that for every single non dock-levelling bay there will be a fork-lift truck in operation for a cumulative 20-minute period in every hour, i.e. 33% on-time per bay.
36. From our experience, the above parameters are representative of a typical worst-case daytime hour, based on the scale of units shown in Figure 2.
37. Noting that BS 4142 requires assessments to be made over a 15-minute time reference interval for the night-time (rather than 1-hour during the daytime), we have assumed for a robust assessment that essentially the same level of activity will occur at night, i.e. that an overall 1-hour night-time period will be the same as the daytime, and this will be split equally between the constituent 15-minute periods. The outcome is that the output of the noise model predicts the same noise level emissions for all times of day and night.
38. The reference source data incorporated within the model is based on averages of numerous measurements of 'real-world' HGV manoeuvres and fork-lift truck activity noise level at other sites, taken as 79dB $L_{Aeq,T}$ at 5m for HGV manoeuvres and 69dB $L_{Aeq,T}$ at 5m for fork-lift truck activity
39. Iterations of the noise model have been run to provide the predicted noise propagation across the Appeal scheme at heights of 1.5m and 4.5m above local ground height. This is to provide representative predictions at ground level and first-floor level at the Appeal scheme, respectively.
40. As would be expected, there is little difference between the two sets of noise contours, but the slightly higher noise levels are predicted at 4.5m. For simplicity, therefore, only the noise contours generated using the model at 4.5m is provided in Figure 3 appending this Technical Note. It is noted that only Units 1 and 2 are visible on the noise contour plots, however, this is only to improve the resolution visually across the Appeal site; noise sources at Units 1-6 inclusive are active in the noise model.

Noise Assessment

41. The BS 4142 initial estimate of the noise impact has been assessed by taking the predicted site activity noise levels ('specific' L_{Aeq} sound level), adding a +6dB correction for potential acoustic features (+3dB for intermittency and +3dB as a precaution for any impulsiveness) to give a 'rating' sound level, based on the predicted noise levels at the worst-case location at the Appeal scheme (hence to the east fringe, fronting Ilkeston Road and across to the Stanton Park site), and comparing these values to representative 'background' sound levels.

42. The 'background' sound levels have been based on noise levels measured towards the northern end of Ilkeston Road as part of the noise survey that informed the noise assessment report referenced in Paragraph 3 of this Technical Note. The survey was carried out in November 2021. Representative 'background' sound levels have been determined based on the modal average of daytime, split into day (0700-1900hrs) and evening (1900-2300hrs), and night-time (2300-0700hrs) periods.
43. The 'rating' and 'background' sound levels have been compared to determine an initial estimate of the likely extent of any potential noise impact, depending on the context, in the absence of any additional noise mitigation. This is shown in the table below.

Location		BS 4142 Initial Assessment of Impact		
		Day (0700-1900hrs)	Evening (1900-2300hrs)	Night-time (2300-0700hrs)
'Specific' Sound Level		41	41	41
Acoustic Feature Corrections:	Intermittency	+3	+3	+3
	Impulsiveness	+3	+3	+3
'Rating' Sound Level		47	47	47
'Background' Sound Level		55	45	39
Difference ('Rating minus 'Background')		-8	+2	+8
Likely Noise Impact, Depending on the Context		Low	Between Low and Adverse (not amounting to significant adverse)	Between Adverse and Significant Adverse

44. As the above table sets out, the initial assessment determines a likely low noise impact during the main part of the daytime, albeit rising slightly during the evening period, as background sound levels reduce. This rises closer to a potential significant impact during the night-time, again due to reduced background sound levels, albeit depending on the context and without any additional noise mitigation.
45. This is all entirely in line with what we would expect for the type of situation under consideration.
46. To note, this assumes a constant level of noise generating activity during the daytime and night-time. Our experience is that more typically there will be reduced activity overnight, although worst-case 15-minute periods may well be as modelled on occasions and so this remains a suitably cautious basis for assessment.
47. Also, BS 4142 requires that the likely noise impacts determined by the initial assessment must be considered in terms of the wider context. In this regard, several factors apply, as follows.
48. Firstly, considering the absolute level of sound generated by the activity, the worst-case specific sound level is predicted to be 41dB $L_{Aeq,T}$. This in and of itself is a modest level of noise. Even with an open window, based on a reduction of about 15dBA (as cited in BS 8233) the internal noise level attributable to the activity will be about 26dB $L_{Aeq,T}$, and well below 20dB $L_{Aeq,T}$ with windows closed.
49. As noted, the BS 8233 internal noise level guidance relates only to noise without specific character and where noise does exhibit distinct characteristics lower noise design values might be appropriate.

50. Notwithstanding the likely limited implication of the character of the noise against the residual noise in this location (as discussed further below), the HGV/fork-lift activity noise does exhibit distinct characteristics.
51. In lieu of this, it is considered that the predicted internal noise levels with windows open will be adequately within the BS 8233 internal noise level guidance during the daytime (including evening). For the night-time period, the internal noise attributable to the HGV/fork-lift activity will be 4dB within the guideline value, with windows open. Although the level will be considerably lower with windows closed, in the first instance it is appropriate to consider the noise with windows open. BS 8233 does not provide definitive guidance on how much lower internal design noise levels should be where distinct characteristics exists (ostensibly to allow for judgement to be applied in individual cases), we would advise that the design noise level should be at least 6dB below the 'standard' guideline value in this particular case. The predicted worst-case level noise with windows open, during the night-time will hence be 2dB above this criterion, implying that some further mitigation at the residences may be required for the night-time situation only.
52. The above considers the HGV/fork-lift activity noise in isolation. However, the second contextual factor to consider is the character and level of the residual sound. This is an important factor in this case, as Ilkeston Road, which separates the Stanton Park and Appeal sites, is a relatively busy road. Indeed, at night, although traffic flows are reduced compared to daytime, this introduces a greater degree of intermittency in the character of the traffic noise, including HGV pass-bys in considerably closer proximity to the Appeal site than the HGV/fork-lift activity at the Stanton Park site will be, generating noticeable peaks in noise. Albeit that there are some differences in the character of the road traffic noise and the HGV/fork-lift activity noise, there are clear similarities also, and this would dilute the potential impact of the noise from the Stanton Park development beyond Ilkeston Road.
53. The noise from Ilkeston Road was assessed through the noise survey submitted with the planning application for the Appeal Scheme and the measures proposed to provide an appropriate living standard for residents has already been accepted by the Council through their assessment of this application.
54. Again, based on the noise survey undertaken at the site in November 2021, at the locations likely to experience worst-case noise levels from Stanton Park, the prevailing overall night-time noise levels are around 10dB above the predicted 'specific' sound level. On this basis the road traffic noise will remain the dominant noise source at night, and the overall night-time noise level will not increase appreciably, if at all, as a result of activities on the Stanton Park site.
55. In this regard, following the ProPG guideline that where industrial or commercial noise contributes to the acoustic environment, provided that it is "not dominant", the overall noise levels may be assessed on the same basis as transportation noise. In this context, the transportation noise has already been assessed and the Council has agreed with the measures proposed to secure an appropriate living environment for residents.
56. Also, as a consequence of this, if windows are open overnight (which as above was identified to potentially lead to a level of HGV/fork-lift activity noise slightly above what would be desirable, considered in isolation) in reality the road traffic noise would significantly dilute the potential impact of this, and the Council has already agreed with the mitigation measures proposed through the noise survey submitted with the planning application. With these measures in place, then this would reduce the internal noise levels to within BS 8233 guidelines values.

57. Drawing together the above points, it is considered that applying contextual factors to the initial estimate of the impact, in line with BS 4142, indicates that a low noise impact will occur during the whole of the daytime, including the evening, and that there is only limited likelihood of potential noise impact during the night, and not one amounting to a significant adverse impact.
58. Nonetheless, the final key contextual factor to consider is, as set out in BS 4142, the matter of whether dwellings will incorporate design measures that secure good acoustic conditions, potentially including façade insulation treatment, and ventilation and/or cooling.
59. To ensure a cautious approach to control of noise from all current and future sources, there is hence scope to include in any planning conditions relating to noise (which would be anticipated in any case, in relation to existing noise sources) provision for suitable acoustically rated glazing and suitable alternative means of ventilation.
60. Realistically, the necessary glazing specification would be determined by the higher level of general road traffic noise rather than the lower level of any future noise from Stanton Park, even were a lower set of noise limits than those set out in BS 8233 be adopted within the condition to reflect the character of the Stanton Park sound. A modest to moderate acoustic specification would be required for the glazing.
61. Acoustically treated ventilation solutions may be required, via condition, to provide the new residents the option of keeping windows closed, and hence ensure good internal acoustic conditions, with respect to road traffic noise and any HGV/fork-lift activity noise from further afield at the Stanton Park site.
62. With these safeguards in place, enforceable by way of a standard noise condition, appropriate living environment can be created for residents, and hence the objectives of the NPPF, as well as those of Policy 10 of the Erewash Core Strategy and Saved Policy H12, will be satisfied.

Conclusion

63. In view of Reason for Refusal No. 6 relating to Application Ref: ERE/0722/0038, an assessment of potential noise impact from the approved development at the nearby Stanton Park site has been undertaken, based on a review of the planning permission for that site.
 64. This has concluded that noise levels at the Appeal Scheme, attributable to activity at Stanton Park, will be low. Any potential impact would be offset by the contextual factors of the noise environment, primarily that road traffic noise from Ilkeston Road will remain the main source of noise affecting future residences.
 65. It is already accepted that a scheme of noise mitigation measures (e.g. in the form of suitable acoustically rated glazing and suitable alternative means of ventilation) will be required to control road traffic noise, and it is demonstrated that this will also adequately control expected worst-case noise from Stanton Park, hence ensuring an appropriate living environment for future occupiers.
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FIGURE 1 – APPEAL SCHEME LAYOUT



FIGURE 2 – STANTON PARK DEVELOPMENT LAYOUT



FIGURE 3 – PREDICTED $L_{Aeq,T}$ HGV/FORK-LIFT ACTIVITY NOISE LEVELS

