

Land at Maple Lodge Close, Maple Cross

# Planning Noise Assessment

Report 19/0333/R2

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Report 19/0333/R2

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Revision	Description	Date	Prepared	Approved
0	1 <sup>st</sup> Issue	26 January 2021	James Whiddett	Richard Masey
1	Minor Revisions	12 February 2021	James Whiddett	Richard Masey
2	Minor Revisions	12 April 2021	James Whiddett	Richard Masey

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## Planning Noise Assessment

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## Attachments

### **Glossary of Acoustic Terms**

#### **19/0333/SP1-1**

Proposed site plan showing scheme

#### **19/0333/SP2**

Site plan showing noise assessment positions



## Planning Noise Assessment

### **19/0333/SCH1-1**

Predicted traffic flows

### **19/0333/SCH2**

Operational activity description

### **19/0333/SCH3**

Assessment results

### **Appendix A**

Operational noise assessment basis

 End of Section



## Planning Noise Assessment

### 1 Introduction

- 1.1 This Planning Noise Assessment has been prepared by Cole Jarman Ltd to accompany an application for full planning permission being submitted by the Applicant, BCL (Maple Cross) LLP\*, to Three Rivers District Council (TRDC). Planning permission is sought for the following development:

*‘Comprehensive redevelopment to provide 2 no. warehouse Class EG(iii)/B2/B8 units comprising a total of 16,115 sqm including 1,882 sqm ancillary E(gi) officespace, access, landscaping and associated works.’*

- 1.2 This application follows the refusal of planning application ref. 19/1179/FUL ‘the ‘refused application’) in November 2019, dismissed at appeal in June 2020 for a similar development. This report comprises a revision of the report which accompanied the refused application and is submitted in support of this revised scheme. It considers the amendments in the context of the scheme as a whole and relevant clarifications provided through the determination of the refused scheme.
- 1.3 For full details of the proposed development see the Design and Access Statement prepared by C4. For details in terms of how this application relates to the refused scheme see the Planning Statement prepared by Avison Young.

### 2 Site Description

- 2.1 The site is located in Maple Cross to the east of the North Orbital Road (A412). Existing office buildings neighbour the site to the west, while an industrial site is located on the opposite side of Maple Lodge Close which bounds the site from north to east.
- 2.2 Residential properties are located to the south-west of site along Longmore Close and a further south along Maple Lodge Close. The site and surrounding area are shown on the attached figure 19/0333/SP2.
- 2.3 The proposed scheme is for two units. Both units are proposed so that the service yard for each respective warehouse is on the northern and eastern sides, allowing for the warehouse buildings to screen most noise from the service yard to the nearest residential dwellings to the south-west, as well as other surrounding properties. The scheme is shown on the attached figure 19/0333/SP1-1.



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### 3 Noise Assessment Approach

#### 3.1 Overview

- 3.1.1 Assessment of noise from the proposed development site has been carried out taking due account of the relevant guidance, policies, standards, and assessment methodologies set out in the attached Appendix A.
- 3.1.2 The adopted methodology represents a robust way of assessing the potential noise impact of developments such as this. It has been used successfully for many similar developments.

#### 3.2 General Operational Noise Assessment Criteria

- 3.2.1 As set out in detail within Appendix A, where assessment indicates noise rating levels at or below 45 dB  $L_{Ar,1hour}$  and 40 dB  $L_{Ar,15minutes}$  during the day and night respectively, no further action is necessary. These thresholds are taken to be equivalent to the Lowest Observable Adverse Effect Level (LOAEL) for the day and night periods when background sound levels are low.
- 3.2.2 Where background sound levels are higher, the LOAEL is dependent upon the existing background sound level, in accordance with BS 4142:2014.
- 3.2.3 The table below sets out when each of the above noise limits applies for the sake of clarity. The same limits apply at both AP1 and AP2, for each day of the week (weekend and weekday).

Time Period	Noise Limit, $L_{Ar,Tr}$ dB
Each hour period between 0700 and 2300 (daytime)	45
Each 15-minute period between 2300 and 0700 (night-time)	40

T1 Operational Noise Limits

- 3.2.4 Where the levels within the above table are assessed to be exceeded, the aim is then to mitigate and reduce the noise levels resulting from the proposed operation to a minimum (i.e. to meet the above limits).

#### 3.3 Consideration of “Noise Events”

- 3.3.1 Noise events are taken to be short duration activities or processes which will give rise to noise (which is something impulsive), that can be quantified through consideration of the maximum noise levels (in terms of  $L_{Amax}$ ) attributed to said activity. For example, the use of reversing sounders or pass-bys from individual vehicles are considered as noise events.



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- 3.3.2 Maximum noise levels ( $L_{Amax}$ ) from general operation shall be limited to 57 dB(A) or, where existing free field  $L_{Amax}$  levels are higher than this level, limited to within the existing typical  $L_{Amax}$  range.
- 3.3.3 Noise levels due to reversing sounders should not exceed 45 dB(A)  $L_{Amax}$  so that when the relevant penalties for this noise source are applied, as described in Appendix A, the effective noise rating level does not exceed 57 dB(A).

### 3.4 Assessment Positions

- 3.4.1 Two assessment positions have been selected. The first (AP1) is the most exposed residential dwelling near to the proposed development (i.e. that which will have the most direct line of sight to operational activity once the site is operational).
- 3.4.2 The second assessment (AP2) position is nearest dwelling at the northern end of Longmore Close however this will be screened from the majority of operational activity by the proposed buildings on the site.
- 3.4.3 All other properties in the area deemed noise sensitive by the *Three Rivers District Council Local Plan* are either more screened from the site, further away or a combination of these which would result in lower noise levels at all other noise sensitive properties.

The assessment positions are indicated on the attached figure 19/0333/SP2. Calculations have been undertaken to the nearest points on the facades of the buildings at each receptor, at a height of 4.5m above local ground level (approximately the height of a first floor window).

### 3.5 Site Traffic Flow Data

- 3.5.1 The predicted numbers of HGVs and light vehicles accessing and leaving the site on an hourly basis has been provided by *BWB Consulting* and are set out in the attached activity schedule 19/0333/SCH1-1.
- 3.5.2 To ensure a robust assessment, it has been assumed that all vehicle movements could go to both units in any given assessment period. It is understood not to be possible at this stage to predict reliable hourly vehicle movements splits between the units and therefore traffic flows were provided to *Cole Jarman* for the whole site.
- 3.5.3 Whilst this has the effect of doubling the movements accounted for in the calculations compared to the raw traffic data, assuming a 50% split between units 1 and 2 could result in an underprediction in noise levels from one of the units in a given hour. For example, if all vehicle movements were to go Unit 2 during a given hour, but a 50% split between the units had been assumed for calculation purposes, noise during that hour would have the potential to be greater the calculated.
- 3.5.4 It is important to note that the transport assessment should be referred to for confirmation of the number of movements proposed for the site.



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- 3.5.5 As previously noted, British Standard BS4142 requires that 15-minute assessment periods are adopted throughout the night time period. It has been advised by *BWB Consulting* however, that the expected vehicle movements each hour night time would not all occur with a 15-minute period during each hour.
- 3.5.6 For the purposes of this assessment therefore, it has been assumed that all of the movements in a given assessment hour could occur within a 30-minute period, during each hour. This is deemed a suitably robust approach to reflect requirement to assess 15-minute average noise levels during the night time, without being unduly pessimistic.

### 3.6 Acoustic Feature Corrections

- 3.6.1 In order to assess noise at the nearest receptors in terms of rating levels, it is necessary to quantify the effects of any acoustic characteristics present in the noise sources. BS 4142:2014 provides the following guidance for subjectively applying acoustic feature corrections when assessing noise sources:

#### *“Tonality*

*For sound ranging from not tonal to prominently tonal the Joint Nordic Method gives a correction of between 0 dB and +6 dB for tonality. Subjectively, this can be converted to a penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible.*

#### *Impulsivity*

*A correction of up to +9 dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible.*

#### *Other sound characteristics*

*Where the specific features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.*

*NOTE 2 Where tonal and impulsive characteristics are present in the specific sound within the same reference period then these two corrections can both be taken into account. If one feature is dominant then it might be appropriate to apply a single correction. Where both features are likely to affect perception and response, the corrections ought normally to be added in a linear fashion.*

#### *Intermittency*

*When the specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains*





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*the greatest total amount of on time. This can necessitate measuring the specific sound over a number of shorter sampling periods that are in combination less than the reference time interval in total, and then calculating the specific sound level for the reference time interval allowing for time when the specific sound is not present. If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied."*

- 3.6.2 As we do not know the acoustic characteristics of the environment at the site, a 3 dB penalty has been added to each noise source for each unit in the assessment. This is on the basis of the commentary above regarding "Other sound characteristics", where noise sources are readily distinctive against the residual acoustic environment.

### 3.7 Other Assessment Assumptions

- 3.7.1 The further assessment assumptions stated below are relevant to consider in the context of the operational activity that could typically be expected to occur at the site:
- We have evaluated all units as B8 distribution centre use, as the noise sources are predominantly external.
  - The activities described in schedule 19/0333/SCH2 are assumed to be evenly distributed across the service yard bay areas.
  - It has been assumed that no HGVs are to be refrigerated and that there will be no use of tug units at the site. This does not necessarily prohibit their use entirely, but further assessment work would be required to ensure noise from such sources can be adequately controlled.

### 3.8 Consideration of Noise from Fixed Plant

- 3.8.1 In order to minimise the risk of creating a community noise disturbance, it is typically recommended that operational fixed plant associated with the development be designed such that it does not exceed a noise level which is 5 dB(A) below the existing background noise climate ( $L_{A90}$ ), with a further penalty for any plant that exhibits attention attracting characteristics likely to be audible at receptors, in accordance with BS 4142:2014.
- 3.8.2 It is however also deemed reasonable to recommend plant noise limits be set in absolute terms. BS 4142 offers guidance in setting plant noise limits in absolute terms, stating 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.". The previous version of BS 4142 (1997) noted that "rating levels below 35dB are considered very low".*
- 3.8.3 In this case, therefore, due to the absence of a background noise survey having taken place, a night time plant noise limit of 30 dB  $L_{Ar,Tr}$  should be adopted (which would effectively apply to the full 24 hour period).



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- 3.8.4 Should an appropriate noise survey be undertaken at a later point by an incoming operator (or other party) wishing to install plant, it is reasonable that a new, higher limit could be established based on the prevailing noise climate around the site.

### Emergency Plant

- 3.8.5 Emergency plant items may also be installed at the site such as smoke extract equipment for example. It is expected this plant would only be operated during genuine emergencies or during infrequent, short duration testing (during the daytime).
- 3.8.6 Though the Three Rivers District Council Local Plan does not stipulate specific conditions for plant of this nature, it is commonly accepted that in other local authority regions, a noise limit be placed on emergency plant that apply when it is tested. That limit is typically 10 dB above prevailing background noise levels.
- 3.8.7 As the use of an absolute limit for fixed plant noise emissions has been adopted in this case, setting a limit for emergency plant, which would be tested infrequently and only during the daytime period, set only 10 dB above the above night-time noise limit above (in place of a background noise level) is deemed to be overly onerous. A limit for noise emission from emergency plant equipment is instead set 15dB(A) above the night time plant noise limit (**i.e. 45 dB  $L_{Ar,Tr}$** ). It is suggested that no limit should apply during a genuine emergency.
- 3.8.8 To provide some context, assuming an open window provides approximately 10-15 dB reduction of noise from outside to in, an internal rating level of between 30 and 35 dB(A) could be expected within the nearest exposed dwelling from emergency plant, during its limited operation. This is deemed acceptable when compared to the daytime (as this is when tests are expected to occur) internal noise criteria set out within BS 8233:2014.

### Controlled by Condition

- 3.8.9 It is suggested that an appropriately worded condition be applied to ensure noise from fixed mechanical services plant is adequately controlled by all future occupants of the site. Possible wording for such a condition is set out in section 4.5

## 4 Operational Noise Assessment Outcomes

### 4.1 Overview

- 4.1 Based on the approach and consideration set out in the previous section, an assessment of noise from operation on the proposed development site has been undertaken. The assessment has been based upon the layout set out in C4 projects drawings number 17019-C4P-AV-00-DR-A-0500 Revision P14 (shown in 19/0333/SP1-1).



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### 4.2 General Operational Noise

- 4.2.1 The resultant predicted noise emissions from the general operation of the scheme as previously discussed, in terms of rating levels, assessed at the relevant assessment positions are shown in schedule 19/0333/SCH3.
- 4.2.2 The schedule shows that the predicted noise rating levels are below the criteria throughout the 24-hour period and so are considered to be below the criteria as detailed in section 3 above.

### 4.3 Noise Events of Short Duration

- 4.3.1 Calculations of the night time (2300-0700)  $L_{Amax}$  noise levels at the assessment positions, due to onsite activity have been undertaken on a similar basis to that described for ambient noise in section 3 above.  $L_{Amax}$  noise levels are only relevant during these night time hours where sleep disturbance is a potential concern. It is worth noting however, that as the noise characteristics associated with the site would not change between day and night time hours, the maximum  $L_{Amax}$  levels calculated for night time hours would also be expected during the daytime.
- 4.3.2 It has been predicted that noise events of short duration may give rise of noise levels up to 48 dB  $L_{Amax}$  at both AP1 and AP2. This is below the criteria set out within section 3 above. Considering the 12-15 dB loss of a partially open window, this noise level is not likely to cause issues with sleep disturbance within the nearest residential dwelling.
- 4.3.3 The result represents the upper limit of  $L_{Amax}$  noise levels expected to be experienced at the assessment positions, being representative of the worst possible case activity, based on the understanding of expected operation at the site.
- 4.3.4 The predicted highest  $L_{Amax}$  level at the assessment position due to reversing sounders has been assessed to be 38 dB at AP1 and be 42dB at AP2. These figures are inclusive of the maximum 12 dB penalty for reversing sounders as detailed in Appendix A. It can be seen that noise from reversing sounders is expected to be below the relevant design criterion of 57 dB  $L_{Amax}$  (taking into account the relevant penalties).

### 4.4 Commentary on Noise Mitigation Measures

- 4.4.1 Unit 1 has been oriented such that screening is provided from all vehicle loading docks and parking bays to the nearest noise sensitive premises by means of the building itself.
- 4.4.2 Unit 2 has also been oriented such that screening is provided from all vehicle loadings docks and a number of parking bays to the nearest noise sensitive premises by means of the building itself.
- 4.4.3 The screening and the distance propagation to the assessment position result in notable inherent attenuation of the noise from operational activities at the units. Therefore, no additional mitigation is necessary in order to comply with the stated criteria at the nearest residential assessment position.



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### 4.5 Proposed Condition

- 4.5.1 It is recommended that a condition be included with any decision notice that may be issued for the site, which ensures noise from the site is controlled in line with the approach set out within this report. Suggested wording for such a condition is set out below:

*“An assessment of noise from the external operational activity on the site should be undertaken by any future occupier, to demonstrate that that noise emissions, in terms of rating levels ( $L_{Ar,Tr}$  dB), do not exceed 45 dB  $L_{Ar,1hour}$  during the daytime (07:00 – 23:00) and 40 dB  $L_{Ar,15minutes}$  during the night time (23:00 – 07:00) when assessed at 1m from the facades of the nearest/most exposed sensitive receptors to the development. In addition to general external operational noise (such as that related to on-site vehicle movements for example), specific consideration should also be given to reversing sounders as appropriate, due to their attention drawing nature.*

*Limits for operational noise in terms of rating levels ( $L_{Ar,Tr}$ ) may also be set at a level 5 dB below the representative background noise level ( $L_{A90,T}$ ) at a given receptor, for the appropriate assessment period, subject to the absolute criteria above being taken as lower thresholds for any limit which may set.*

*Total noise emissions from items of fixed mechanical services equipment should not exceed a limit (in terms of  $L_{Ar,Tr}$ ) set 5 dB below the representative background noise level, subject to a lower threshold limit of 30 dB  $L_{Ar,Tr}$ , when assessed at 1 m from the facades of the nearest/most exposed receptors to the proposed equipment. The lower threshold limit can be taken as an absolute criterion if no noise survey is undertaken at the site. Mitigation measures should be specified as appropriate to achieve the above criteria. The methodology set out within British Standard 4142:2014 (or more recent, current version) should be drawn from as appropriate.*

*Noise from the operation of emergency mechanical services plant, for occasional testing or maintenance purposes, should not exceed a limit (in terms of  $L_{Ar,Tr}$ ) set 10 dB above the representative background noise level when assessed as set out above (subject to a lower threshold limit of 45 dB  $L_{Ar,Tr}$ ). The lower threshold limit can be taken as an absolute criterion if no noise survey is undertaken at the site. Mitigation measures should be specified as appropriate to achieve the above criteria. No noise limits would apply during a genuine emergency.*

*A noise assessment (or number of assessments), including details of any mitigation measures which may be required to meet the above criteria, should be submitted to the local authority for approval to demonstrate that the above criteria are met, prior the commencement of any activity at the site.”*

### 4.6 Summary of Assessment Outcomes

- 4.6.1 It has been assessed that in principle, noise from the operation of the proposed development site can be controlled to meet the appropriate criteria at the nearest noise sensitive receptors to the site. It is therefore recommended that noise should therefore not be considered a reason for preventing development such as that described herein, in this location.



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### 5 Construction Noise and Vibration

- 5.1 Construction noise and vibration associated with the development of this site is not considered in detail as part of this assessment. Noise and vibration from construction activity should, however, be controlled through the adoption and implementation of an appropriately worded construction noise and vibration management plan by the developer.
- 5.2 The requirement for such construction noise and vibration management plan, which should be submitted to the local authority for approval, could be set out in a condition attached to a decision notice for the site. A suggested condition wording is set out below:

*An appropriate construction noise and vibration management plan should be submitted to the local authority for approval, prior to the commencement of any construction works at the site. The plan should set out best practice construction methodologies and approaches which aim to reduce noise and vibration emissions as far as is practicable and take due account of relevant British Standards such as BS 5228-1:2019+A1:2014 as appropriate. The plan should be prepared by an appropriately qualified acoustic consultant.*

### 6 Conclusions

- 6.1 This Planning Noise Assessment has been prepared by Cole Jarman Ltd to accompany an application for full planning permission being submitted by the Applicant, BCL (Maple Cross) LLP\*, to Three Rivers District Council (TRDC). Planning permission is sought for the following development:
- ‘Comprehensive redevelopment to provide 2 no. warehouse Class EG(iii)/B2/B8 units comprising a total of 16,115 sqm including 1,882 sqm ancillary E(gi) officespace, access, landscaping and associated works.’*
- 6.2 This report has set out noise limits at the nearest and most exposed residential dwelling to the proposed development in absolute terms based on the requirements of BS 4142:2014 and other relevant guidance.
- 6.3 An assessment has been conducted of noise levels generated by operations on the site for the scheme. The noise levels generated by the site have been predicted at the nearest residential property based on the worst case hourly traffic data provided by *BWB Consulting*.
- 6.4 The assessment has demonstrated that operational noise from the scheme with the operational assumptions made would be considered to be at or below the Lowest Observable Adverse Effect Level (LOAEL). Therefore, noise should not be considered a reason to impede the approval of the planning application. Wording for a planning condition has been suggested which could be attached to a decision notice for the site to ensure there is a requirement to control noise from it’s operation.



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- 6.5 Noise and vibration from the construction of the development on the site has not be considered in detail as part of this assessment. Suggested wording which requires for a noise and vibration management plan to be submitted to the local authority has however been provided.

■ End of Section



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# Glossary of Acoustic Terms

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### $L_{Aeq}$ :

The notional steady sound level (in dB) which over a stated period of time, would have the same A-weighted acoustic energy as the A-weighted fluctuating noise measurement over that period. Values are sometimes written using the alternative expression dB(A)  $L_{eq}$ .

### $L_{Amax}$ :

The maximum A-weighted sound pressure level recorded over the period stated.  $L_{Amax}$  is sometimes used in assessing environmental noise when occasional loud noises occur, which may have little effect on the  $L_{Aeq}$  noise level. Unless described otherwise,  $L_{Amax}$  is measured using the “fast” sound level meter response.

### $L_{A10}$ & $L_{A90}$ :

If non-steady noise is to be described, it is necessary to know both its level and degree of fluctuation. The  $L_{An}$  indices are used for this purpose. The term refers to the A-weighted level (in dB) exceeded for n% of the time specified.  $L_{A10}$  is the level exceeded for 10% of the time and as such gives an indication of the upper limit of fluctuating noise. Similarly  $L_{A90}$  gives an indication of the lower levels of fluctuating noise. It is often used to define the background noise.

$L_{A10}$  is commonly used to describe traffic noise. Values of dB  $L_{An}$  are sometimes written using the alternative expression dB(A)  $L_n$ .

### $L_{AX}$ , $L_{AE}$ or SEL

The single event noise exposure level which, when maintained for 1 second, contains the same quantity of sound energy as the actual time varying level of one noise event.  $L_{AX}$  values for contributing noise sources can be considered as individual building blocks in the construction of a calculated value of  $L_{Aeq}$  for the total noise. The  $L_{AX}$  term can sometimes be referred to as Exposure Level ( $L_{AE}$ ) or Single Event Level (SEL).

■ End of Section

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