GLADMAN DEVELOPMENTS LTD

Land off Rampton Road, Cottenham

Noise Impact Assessment

May 2016
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JOB NUMBER: LE12688
REPORT NUMBER: 001

GLADM AN DEVELOPMENTS LTD

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Noise Impact Assessment

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1 INTRODUCTION

1.1.1 By instruction dated 5th May 2015 from Mr Neil Lewis of Gladman Developments Limited, Wardell Armstrong LLP have been commissioned to undertake a noise assessment for a proposed residential development at land off Rampton Road, Cottenham, Cambridgeshire.

1.1.2 The proposed development site is approximately 14.16ha in area and located in the village of Cottenham. The site currently comprises agricultural land. To the north, the site is bordered by Rampton Road with open land beyond. To the east, the site is bordered by the existing residential properties along Rampton Road. To the south and west, the site is bordered by open land.

1.1.3 The proposed development comprises up to 200 residential dwellings and up to 70 apartments with care (C2), and associated infrastructure.

1.1.4 The noise assessment report has been prepared in support of the outline planning application for the proposed residential development. This application is a resubmission of application S/1818/15/OL which was refused by the Planning Committee on the 11th May 2016.

1.1.5 The noise report assesses the results of noise survey carried out in accordance with current guidance and includes recommendations for noise mitigation as appropriate.
2 ASSESSMENT METHODOLOGY

2.1 Scope of Works

2.1.1 The noise assessment takes into account current guidance including the following:

- National Planning Policy Framework, 2012;
- Planning Practice Guidance - Noise, 2014;
- The World Health Organisation Guidelines for Community Noise 1999 (WHO);
- British Standard 8233: 2014 Guidance on sound insulation and noise reduction for buildings (BS8233); and
- Department of Transport’s technical memorandum Calculation of Road Traffic Noise 1998 CRTN).

2.1.2 The potential noise issues that are addressed in this assessment are as follows:

- Noise from existing road traffic on Rampton Road, and the surrounding road network, at proposed sensitive receptors.
- Noise from road traffic associated with the proposed development, at existing sensitive receptors on Rampton Road.

2.2 Noise Survey

2.2.1 As part of this assessment, Wardell Armstrong LLP has carried out an attended noise survey to assess the current ambient noise levels at existing residential dwellings on Rampton Road, and across the proposed development site. The noise survey is discussed in Chapter 3 of this report.

2.3 NATIONAL POLICY AND GUIDANCE

National Planning Policy Framework

2.3.1 In March 2012 the ‘National Planning Policy Framework’ (NPPF) was introduced as the current planning policy guidance within England. Paragraph 123 of the NPPF states:

‘Planning policies and decisions should aim to:

- avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
• mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;

• recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and

• identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.’

2.3.2 With regard to ‘adverse impacts’ the NPPF refers to the ‘Noise Policy Statement for England’ (NPSE), which defines three categories, as follows:

‘NOEL – No Observed Effect Level

• This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

• This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level

• This is the level above which significant adverse effects on health and quality of life occur’.

2.3.3 The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided. The second aim refers to the situation where the impact lies somewhere between LOAEL and SOAEL, and it requires that all reasonable steps are taken to mitigate and minimise the adverse effects of noise. However, this does not mean that such adverse effects cannot occur.
2.3.4 The Planning Practice Guidance (PPG) provides further detail about how the effect levels can be recognised. Above the NOEL noise becomes noticeable, however it has no adverse effect as it does not cause any change in behaviour or attitude. Once noise crosses the LOAEL threshold it begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. Increasing noise exposure further might cause the SOAEL threshold to be crossed. If the exposure is above this level the planning process should be used to avoid the effect occurring by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused. At the highest extreme the situation should be prevented from occurring regardless of the benefits which might arise. Table 1 summarises the noise exposure hierarchy.
<table>
<thead>
<tr>
<th>Perception</th>
<th>Examples of Outcomes</th>
<th>Increasing Effect Level</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not noticeable</td>
<td>No Effect</td>
<td>No Observed Effect</td>
<td>No specific measures required</td>
</tr>
<tr>
<td>Noticeable and not intrusive</td>
<td>Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.</td>
<td>No Observed adverse Effect</td>
<td>No specific measures required</td>
</tr>
<tr>
<td>Noticeable and intrusive</td>
<td>Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows for some of the time because of the noise. Potential for non-awakening sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.</td>
<td>Observed Adverse Effect</td>
<td>Mitigate and reduce to a minimum</td>
</tr>
<tr>
<td>Noticeable and disruptive</td>
<td>The noise causes a material change in behaviour and/or attitude, e.g. having to keep windows closed most of the time, avoiding certain activities during periods of intrusion. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.</td>
<td>Significant Observed Adverse Effect Level</td>
<td>Avoid</td>
</tr>
<tr>
<td>Noticeable and very disruptive</td>
<td>Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.</td>
<td>Unacceptable Adverse Effect</td>
<td>Prevent</td>
</tr>
</tbody>
</table>
2.3.5 The Noise Policy Statement for England refers to the World Health Organisation (WHO) when discussing noise impacts. The WHO Guidelines for Community Noise 1999 suggest guideline values for internal noise exposure which take into consideration the identified health effects and are set, based on the lowest effect levels for general populations. Guideline values for annoyance which relate to external noise exposure are set at 50 or 55 dB(A), representing day time levels below which a majority of the adult population will be protected from becoming moderately or seriously annoyed respectively.

The following guideline values are suggested by WHO:

- 35dB $L_{Aeq(16\text{ hour})}$ during the day time in noise sensitive rooms
- 30dB $L_{Aeq(8\text{ hour})}$ during the night time in bedrooms
- 45dB $L_{A_{max}}$ during the night time in bedrooms
- 50dB $L_{Aeq(16\text{ hour})}$ to protect majority of population from becoming moderately annoyed
- 55dB$L_{A_{eq(16\text{ hour})}}$ to protect majority of population from becoming seriously annoyed

2.3.6 British Standard 8233 “Guidance on sound insulation and noise reduction for buildings” 2014 bases its advice on the WHO Guidelines. In addition, for internal noise levels it states;

“Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.”

Furthermore, with regard to external noise, the Standard states;

“For traditional external areas that are used for amenity space such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{A_{eq \cdot T}}$ with an upper guidance value of 55 dB $L_{A_{eq \cdot T}}$ which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation,
development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited”.

2.3.7 The PPG summarises the approach to be taken when assessing noise. It accepts that noise can override other planning concerns, but states:

“Neither the Noise Policy Statement for England nor the National Planning Policy Framework (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separate from the economic, social and other environmental dimensions of proposed development”.

2.4 Existing Sensitive Receptor Locations

2.4.1 The following existing sensitive receptors have been considered as the most likely to be affected by noise from the proposed development, they are shown in Table 2, and on drawing LE12688-001.

<table>
<thead>
<tr>
<th>Table 2: Existing Sensitive Receptor Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptor</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>ESR 1</td>
</tr>
<tr>
<td>ESR 2</td>
</tr>
</tbody>
</table>

2.5 Road Traffic Noise and Existing Sensitive Receptors

2.5.1 The operational phase of development will generate additional traffic movements on the existing road network and the site access road. Additional vehicle movements have the potential to increase road traffic noise levels at existing receptors located adjacent to the main routes to and from the development.

2.5.2 The future road traffic noise levels at the sensitive receptor most likely to be affected with the development in place, has been predicted using the calculation procedures set out in CRTN.

2.5.3 The CRTN memorandum was prepared to enable entitlement under the Noise Insulation Regulations 1975 to be determined; but it is stated in the document, that the guidance is equally appropriate for the calculation of traffic noise for land use planning purposes.
2.5.4 For this noise assessment, CRTN has been used to determine the future noise level at the existing sensitive receptors detailed in Table 2.

2.5.5 The traffic information for the development has been derived from the work undertaken by Ashley Helme Associates and has been provided as 18 hour AAWT flows. The traffic data is considered by the transport consultant to present the worst case scenario.

2.5.6 Impacts will also be felt at receptors adjacent to and beyond those listed above. However impacts at these receptors will be less than at the receptors in Table 2.

2.5.7 The changes in road traffic noise levels have been assessed against a set of significance criteria. The criteria shown in Table 3 are based upon guidance contained within the Design Manual for Roads and Bridges, Volume 11, Section 3, Part 7, 2011 (DMRB) for the assessment of changes in road traffic noise. The criteria do not relate to the actual existing noise levels (i.e. traffic noise due to current residential development) but only the predicted changes.

Table 3: Road Traffic Noise Assessment Significance Criteria

<table>
<thead>
<tr>
<th>Magnitude of Impact</th>
<th>Criteria for Assessing Road Traffic Noise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Adverse</td>
<td>&gt; 10.0 dB increase in traffic noise (equating to a clearly perceptible increase in the loudness of noise).</td>
</tr>
<tr>
<td>Moderate Adverse</td>
<td>5.0 – 9.9 dB increase in traffic noise (equating to an increase in the loudness of the noise which is at or about the threshold of perception)</td>
</tr>
<tr>
<td>Minor Adverse</td>
<td>3.0 – 4.9 dB increase in traffic noise</td>
</tr>
<tr>
<td>Negligible</td>
<td>0.1 – 2.9 dB increase in traffic noise.</td>
</tr>
</tbody>
</table>
3 NOISE SURVEY

3.1.1 On Wednesday 13th May 2015, Wardell Armstrong LLP carried out a survey to assess the ambient noise level at the development site, and at the existing sensitive receptors.

3.1.2 Noise measurements were taken at one monitoring location; considered to be representative of the proposed sensitive receptors. The monitoring location is as follows; and is shown on drawing LE12688-001:

- Monitoring Location 1: On the northern site boundary, approximately 9m from Rampton Road.

3.1.3 Attended noise monitoring was carried out during the following periods:

- Between 1300 and 1600 hours, at Monitoring Locations 1. This included 3 hours of consecutive measurements between 1000 and 1700 hours, in accordance with the shortened measurement procedure in the Department of Transport’s technical memorandum ‘Calculation of Road Traffic Noise’ 1988 (CRTN); and
- Between 1600 and 1830 hours.

3.1.4 Noise monitoring has been carried out at monitoring location 1 during what is regarded to be the peak period for road traffic during the daytime period (1600 to 1830 hours). The measured noise level at this location has also been used within the night time noise assessment.

3.1.5 The noise measurements were made using a Class 1, integrating sound level meter. The sound level meter was mounted vertically on a tripod 1.2m above the ground. The sound level meter was calibrated to a reference level of 94dB at 1kHz both before, and on completion of, the noise survey. No drift in the calibration during the survey was noted.

3.1.6 On the 13th May, the weather conditions during the survey were as follows:

- South westerly winds up to 2m/s;
- Dry ground;
- Temperature approximately +20 °C; and
- 40% cloud cover.
3.1.7 For the purpose of this assessment daytime hours are taken to be 0700 to 2300 hours and night-time hours to be 2300 to 0700 hours.

3.1.8 A-weighted\(^2\) \(L_{eq}^2\) were measured in accordance with the requirements of BS8233 and WHO guidance. The maximum and minimum sound pressure levels, A-weighted \(L_{90}^3\) and A-weighted \(L_{10}^4\) were also measured to provide additional information. The measured noise levels are set out in full in Appendix A.

3.1.9 Attended noise monitoring allows observations and detailed notes to be made of the significant noise sources which contribute to each of the measured levels. The observations identified the significant noise sources at the site to be as follows:

**Road Traffic:** Noise from road traffic on Rampton Road, and the remainder of the surrounding road network was audible the monitoring location throughout the survey.

**Other sources:** Birdsong, high level aircraft, and a helicopter, were other audible noise sources observed during the noise survey.

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1. **A’ Weighting** An electronic filter in a sound level meter which mimics the human ear’s response to sounds at different frequencies under defined conditions.

2. **\(L_{eq}^2\)** Equivalent continuous noise level; the steady sound pressure which contains an equivalent quantity of sound energy as the time-varying sound pressure levels.

3. **\(L_{90}^3\)** The noise level which is exceeded for 90% of the measurement period.

4. **\(L_{10}^4\)** The noise level which is exceeded for 10% of the measurement period.
4 NOISE IMPACT ASSESSMENT

4.1 Existing Noise Levels and Proposed Sensitive Receptors

4.1.1 The development framework plan shows that residential properties will be situated at least 70m from Rampton Road, therefore the measured noise level has been distance attenuated to the 70m build line.

4.1.2 The measured and predicted noise levels for monitoring location 1 have been divided into daytime (0700-2300 hours) and night-time (2300-0700 hours) categories.

4.1.3 The individual level has been arithmetically averaged to give a single daytime and night-time level for each location. The results for the monitoring location is presented in Table 4.

<table>
<thead>
<tr>
<th>Table 4: Average Daytime and Night-time Noise Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
</tr>
<tr>
<td>0700-2300</td>
</tr>
<tr>
<td>2300-0700</td>
</tr>
</tbody>
</table>

* A daytime noise level of 60.8 dB L_{Aeq} was calculated from the 3 consecutive one hour measurements at monitoring location 1 using the CRTN shortened measurement procedure, and the TRL L_{A10} to L_{day} adjustment method. The average measured daytime noise level, including peak hour traffic, was however higher at 61 dB L_{Aeq}. The higher level has been used in this assessment to be robust. This level has then been distance attenuated to 70m.

** A night time noise level of 52.5 dB L_{Aeq} was calculated from the 3 consecutive one hour daytime measurements at monitoring location 1 using the CRTN shortened measurement procedure, and the TRL L_{A10} to L_{night} adjustment method. This figure has then been rounded up to give a single level. This level has then been distance attenuated to 70m.

4.1.4 Based on the results obtained, a robust assessment can be made of the noise levels at the site and of the mitigation necessary to achieve the required noise levels at the development.

4.1.5 The maximum noise levels, measured the survey, is summarised in Table 3.

<table>
<thead>
<tr>
<th>Table 5: Summary of the Maximum Night-time Noise Levels (Figures in dB L_{Amax})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring Location</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

* The measured daytime maximum noise level at monitoring location 1, has been used within the night time noise assessment. This level has then been distance attenuated to 70m.
**WHO Assessment of Daytime Noise Levels in Outdoor Living Areas**

4.1.6 Table 4 shows that during the daytime, the noise level affecting northern parts of the development site closest to Rampton Road is 52dB $L_{Aeq}$. The WHO 55dB $L_{Aeq}$ limit will not be exceeded, in outdoor living areas across the development site, therefore, mitigation measures are not required to be incorporated into the proposed site design.

**WHO and BS8233 Assessment of Daytime Noise Levels in Living Rooms and Bedrooms**

4.1.7 Before the internal noise level can be calculated 3dB(A) must be added to the freefield measured level to allow for the reflection of noise from the proposed housing façades when the buildings are in place.

4.1.8 The measured daytime noise level, as detailed in Table 4, has been used to determine the noise levels likely at the façades of properties in the vicinity of the monitoring location during the daytime period.

4.1.9 The calculated noise level at the façades of the properties, together with the level of attenuation required to achieve 35dB $L_{Aeq}$ in the living room and bedroom areas, are summarised in Table 6.

<table>
<thead>
<tr>
<th>Residential Properties in northern parts of the site closest to Rampton Road, i.e. Monitoring Location 1.</th>
<th>Noise Level at the Façade of the Property</th>
<th>Level of Attenuation Needed To Achieve Noise Limit in Living Room and Bedroom Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

4.1.10 The facades of the properties further into the site will be protected by the buildings themselves and/or screened by other buildings. It is considered that the noise levels at these facades, and therefore the level of attenuation the facades would need to provide to achieve 35dB $L_{Aeq}$ in the living room and bedroom areas, will be less than those detailed in Table 6.
Assessment of Night-time Noise Levels in Bedrooms

4.1.11 The measured night-time noise level, as detailed in Tables 4 and 5, has been used to determine the noise levels likely at the façades of properties in the vicinity of the monitoring location during the night time period.

4.1.12 Before internal noise levels can be calculated 3dB(A) must be added to the freefield measured levels to allow for the reflection of noise from the proposed housing facades when the buildings are in place.

4.1.13 The calculated noise level at the façades of properties, together with the level of attenuation required to achieve 30dB $L_{Aeq}$ and 45dB $L_{A_{max}}$ in the bedrooms, are summarised in Table 7.

<table>
<thead>
<tr>
<th>Residential Properties</th>
<th>Noise Level at the Façade of the Property ($L_{Aeq}$)</th>
<th>Maximum Noise Level at the Façade of the Property ($L_{A_{max}}$)</th>
<th>Level of Attenuation Needed To Achieve the Noise Limits in Bedrooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential properties in northern parts of the site closest to Rampton Road, i.e. Monitoring Location 1.</td>
<td>47</td>
<td>68</td>
<td>26</td>
</tr>
</tbody>
</table>

4.1.14 The facades of the properties further into the site will be protected by the buildings themselves and/or screened by other buildings. It is considered that the noise levels at these facades, and therefore the level of attenuation the facades would need to provide to achieve the 30dB $L_{Aeq}$ and 45dB $L_{A_{max}}$ in the bedrooms, will be less than those detailed in Table 7.

4.2 Road Traffic Noise and Existing Sensitive Receptors

4.2.1 CRTN predictions have been carried out to assess any potential changes in road traffic noise at existing receptor locations due to the operation of the development. Traffic data provided by Ashley Helme Associates has been used in this assessment, and is shown in Appendix B.
4.2.2 The changes in noise levels at each of the receptors considered have been assessed by comparing the noise levels predicted for the “Without development” scenario with the “With Development” scenario. The site access roads will have the potential to increase noise levels at the existing dwellings on Rampton Road, in particular 159, 119 and 113 Rampton Road. Therefore, in order to protect the amenity of these dwellings, particularly in outdoor living areas, it is recommended that a 2m high close boarded fence is constructed alongside the proposed access roads in the vicinity of these existing dwellings. The results (which assume erection of the proposed 2m fence) are shown in Table 8.

<table>
<thead>
<tr>
<th>CRTN Receptor Number</th>
<th>Predicted $L_{Aeq}$ at the façade of the Receptor Figures in dB(A)</th>
<th>Change in Predicted Road Traffic Noise Levels 2014 Base-2019 With</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESR 1 (North eastern façade)</td>
<td>69.2 69.7 70.1 +0.9</td>
<td></td>
</tr>
<tr>
<td>ESR 1 (South eastern façade)</td>
<td>61.4 61.9 62.3 +1.0</td>
<td></td>
</tr>
<tr>
<td>ESR 2 (North eastern façade)</td>
<td>67.2 67.7 68.4 +1.2</td>
<td></td>
</tr>
<tr>
<td>ESR 2 (South western façade)</td>
<td>52.9 53.4 54.8 +1.9</td>
<td></td>
</tr>
</tbody>
</table>

4.2.3 The changes in noise levels have been assessed against the significance criteria contained in Table 3. The results show that at all the existing sensitive receptor locations, the noise impact due to changes in road traffic is negligible.

4.2.4 Noise from changes in road traffic levels on the local road network due to development generated traffic need not be a consideration during the planning process.

4.2.5 The prediction calculations in CRTN can be found in Appendix C.
5 NOISE ATTENUATION SCHEME

5.1 Proposed Sensitive Receptors

5.1.1 The results of the noise assessment, for the proposed residential areas of the development, indicate that noise mitigation measures would need to be incorporated into the proposed site design to ensure that the required noise levels are achieved within outdoor living areas, internal living rooms and bedrooms.

5.2 Daytime Noise Levels in Outdoor Living Areas

5.2.1 The measured noise levels, as detailed in Table 4 and section 4.1 of this report, indicate that no mitigation is required to achieve the WHO noise limit in outdoor living areas.

5.3 Glazing Requirements for Daytime in Bedrooms and Living Room Areas

5.3.1 When assessing daytime noise levels in living rooms and bedrooms, the noise attenuation provided by the overall building facade should be considered. To mitigate noise levels the composition of the building facade can be designed to provide the level of attenuation required. Glazing is generally the building element which attenuates noise the least, so the proportion of glazing in a building facade is an important consideration when assessing overall noise attenuation.

5.3.2 In the absence of design details for the building facades, it has been assumed that the glazing to noise sensitive rooms would comprise about 25% of the facade area. To calculate the overall attenuation provided by this percentage of glazing in a brick or block facade, a non-uniform partition calculation can be used.

5.3.3 The calculation combines the different degrees of attenuation of the wall element and the window element. A facade element comprising solid brick or blockwork, will attenuate by 45-50dB (British Standard 8233: “Sound insulation and noise reduction for buildings – Code of practice” 1999) whereas standard double glazing will attenuate road traffic noise by 26-29dB(A) (BRE Digest 379 “Double glazing for heat and sound insulation”). The overall noise attenuation provided by this combination is, therefore, between 31.9dB(A) and 34.9dB(A).
5.3.4 The noise attenuation requirements for living rooms and bedrooms during the
daytime in properties, in different areas of the site are summarised in Table 6. The
requirements indicate that standard thermal double glazing should ensure that
internal noise levels are met with the windows closed. However, with windows open,
the attenuation provided by the façade will be approximately 15dB(A). This would
potentially allow the recommended internal noise limit to be exceeded in some living
rooms in northern parts of the site, located nearest to and facing Rampton Road.

5.3.5 On occasions, this may be acceptable to a resident, but when quiet conditions are
required, the resident should be able to close the windows whilst maintaining
adequate ventilation. Some form of acoustic ventilation would therefore need to be
installed in some of the living rooms in northern parts of the site. Alternatively, to
meet the required noise levels, living rooms could be located on the screened side of
the proposed buildings, away from the main source of noise.

5.3.6 Proposed dwellings further into the site, will be protected by the buildings themselves
and/or screened by other buildings, from the main sources of noise. These façades
are likely to achieve 35dB $L_{Aeq}$ in living rooms which can be provided by standard
thermal double glazing, even with windows open.

5.3.7 Glazing and ventilation requirements can be confirmed, on a plot by plot basis, at the
reserved matters stage.

5.4 Glazing Requirements for Night-time in Bedroom Areas

5.4.1 The noise attenuation requirements for bedrooms at the site area are summarised in
Table 7. The requirements indicate that standard thermal double glazing should
ensure that internal noise levels are met with the windows closed.

5.4.2 However, with windows open, the attenuation provided by the façade will be
approximately 15dB(A). This would allow the recommended internal noise limit to be
exceeded in some bedrooms.

5.4.3 Some form of acoustic ventilation would therefore need to be installed in some of the
bedrooms. Alternatively, to meet the required noise levels, bedrooms could be
located on the screened side of the proposed buildings, away from the major sources
of noise.

5.4.4 Proposed dwellings further into the site will be protected by the buildings themselves
and/or screened by other buildings, from the main source of noise. These façades are
likely to achieve 30dB $L_{Aeq}$ and 45dB$L_{A_{fmax}}$ in bedrooms which can be provided by standard thermal double glazing, even with windows open.

5.4.5 Glazing requirements can be confirmed, on a plot by plot basis, at the reserved matters stage.

5.5 Acoustic Ventilation Requirements

5.5.1 It is recommended that the acoustic ventilation proposed at the site should, as a minimum, comply with Building Regulations 2000 Approved Document F1 Means of Ventilation and British Standard BS5925 1991: “Code of Practice for Ventilation Principles and Designing for Natural Ventilation”. Acoustic ventilation is only recommended for noise sensitive rooms, which are bedrooms and living/dining rooms.

5.5.2 The implementation of the recommended glazing together with appropriate acoustic ventilation should ensure that the required internal daytime and night-time noise limits are achieved.

5.5.3 The façades of some of the properties further into the site will be protected by the buildings themselves and/or screened by other buildings. Therefore, acoustic ventilation may not be required for these plots. The requirement for acoustic ventilation can be confirmed on a plot by plot basis at the reserved matters stage.
6 CONCLUSIONS

6.1 Planning Policy

6.1.1 The resultant noise levels can be assessed against the guideline values suggested by the World Health Organisation (WHO). It should be remembered that the internal guideline values are health-based and are relatively inflexible therefore; however adequate noise mitigation is relatively straightforward to engineer. The external guideline values are based on amenity and allow noise to be balanced against any benefits which flow from the location of the proposed scheme.

6.2 Proposed Sensitive Receptors and Noise

6.2.1 Mitigation measures, are not required to meet WHO noise limits, in outdoor living areas across the development site.

6.2.2 The noise assessment indicates that standard thermal double glazing would ensure that internal noise limits are met in living rooms and bedrooms across the development site, with the windows closed.

6.2.3 However, with the windows open the attenuation provided by the façade would allow the internal noise limits to be exceeded in living rooms and bedrooms located nearest to Rampton Road in the north.

6.2.4 Acoustic ventilation would therefore need to be installed in some of the living rooms and bedrooms located nearest to Rampton Road. Alternatively, to meet the required noise levels, living rooms and bedrooms could be located on the screened side of the proposed buildings, away from the main sources of noise.

6.2.5 At this stage, a detailed site layout has not yet been confirmed. Glazing and ventilation requirements will need to be confirmed once a detailed design layout is available.

6.3 Existing Sensitive Receptors

6.3.1 Changes in road traffic noise at existing sensitive receptors as a result of development generated road traffic will not be significant and therefore noise mitigation measures will not be required.
Appendix A

Noise Monitoring Results
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### Appendix A

Noise Monitoring Results

| Monitoring Location 1 – 9m from Northern boundary adjacent to Rampton Road |
|---|---|---|---|---|---|
| **Time** | $L_{Aeq}$ (dB) | $L_{A_{min}}$ (dB) | $L_{A_{max}}$ (dB) | $L_{A_{90}}$ (dB) | $L_{A_{10}}$ (dB) | **Comments** |
| 07/05/2015 - Daytime |
| 1300-1400 | 57.1 | 28.5 | 75.9 | 36.5 | 61.6 | Noise from frequent road traffic on Rampton Road. High level aircraft. Birdsong. |
| 1400-1500 | 57.9 | 31.4 | 74.7 | 42.2 | 62.4 |
| 1500-1600 | 60.4 | 30.7 | 85.2 | 44.6 | 63.6 |
| 1600-1830 | 61.0 | 31.0 | 85.8 | 45.4 | 64.5 | Noise from frequent road traffic on Rampton Road. High level aircraft. Birdsong. |
Appendix B

Traffic Data Used in the Assessment
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FIGURE A7
WITH DEVELOPMENT: 2020
24 HOUR AADT & 18 HOUR AAWT
= A5 + A6
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Appendix C

CRTN Prediction Calculations
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# Appendix C

CRTN Prediction Calculations

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## Table: CRTN Prediction Calculations

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Drawings

Noise Monitoring Locations
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