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CHARLIE RATCHFORD EXTRA CARE FACILITY

NOISE IMPACT ASSESSMENT

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Revision History

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1. EXECUTIVE SUMMARY

Ramboll Acoustics have carried out a noise survey at the site and based on the results of this have carried out a noise impact assessment.

The predominant noise sources are road traffic on the eastern façade and activity noise from a sports pitch on the western façade.

The proposed building envelope will provide sufficient sound insulation to control the ingress of noise to satisfy the appropriate standards for residential noise. This is providing the ventilation of the building is either mechanical or comprises of acoustically attenuating air inlets and outlets.

Plant in located in a ground floor plant room which will attenuate noise egress to neighbours to an acceptable standard. Vents in the plant room façade will be acoustically attenuating where required.

2. INTRODUCTION

2.1. General

2.1.1. Ramboll UK Limited (Ramboll) has been commissioned by EC Harris to undertake a noise impact assessment for the planning application at Charlie Ratchford Extra Care Scheme, Camden.

2.1.2. This report has been prepared by Ramboll solely for the benefit of EC Harris. It shall not be relied upon or transferred to any third party, without the prior written authorisation of Ramboll, with the exception of its use in connection with the planning application which this report supports. Any liability arising out of the use by EC Harris or any third party of this report for purposes not wholly connected with the above shall be the responsibility of EC Harris and such third party shall indemnify Ramboll against all claims, costs, damages and losses arising out of such use.

2.1.3. Ramboll has endeavoured to assess all information provided to them during this assessment. The report summarises information from a number of external sources and cannot offer any guarantees or warranties for the completeness of accuracy of information relied upon. Information from third parties has not been verified by Ramboll unless otherwise stated in this report.

2.1.5. Refer to Appendix A for noise terminology related to this assessment.

2.2. Site Description and Location

2.2.1. The proposed site is located on Crogsland Road, opposite the existing Charlie Ratchford Resource Centre. The rear of the site is adjacent to the Haverstock School Astro-turf pitch. The location of the site and adjacent land uses are presented in Figure 1 below.

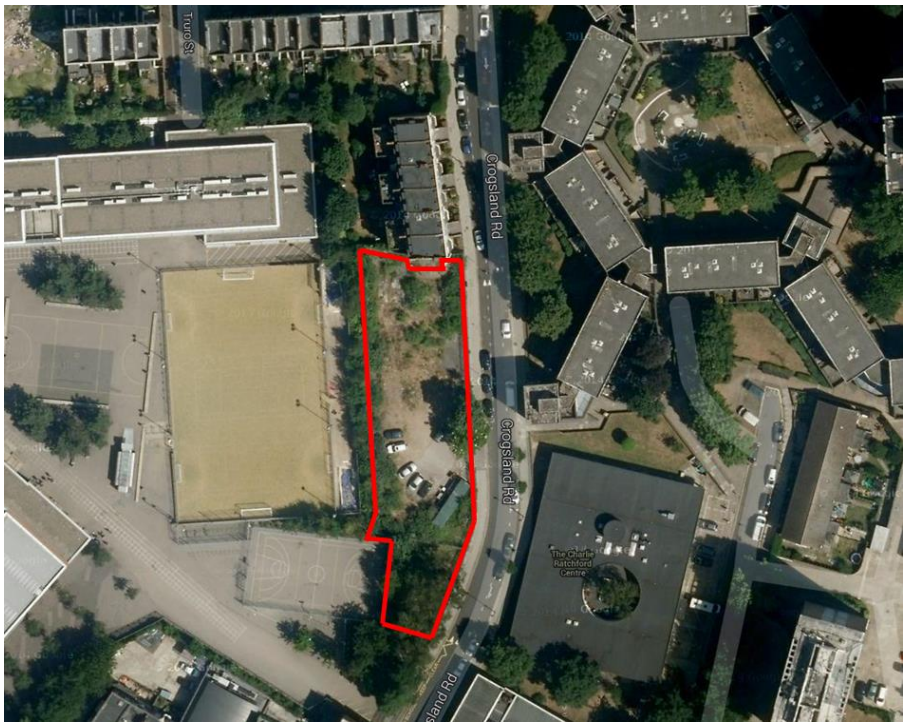

Figure 1 Proposed Site Location

2.3. Proposed Development

2.3.1. The proposed development comprises the construction of an extra care housing and day centre.

2.3.2. The care facility will be 6 storeys high providing 1 bed flats, 2 bed flats and a lounge, foyer, café/restaurant and staff areas on the ground floor.

2.3.3. The proposed development plan is presented in Figure 2 below.

Figure 2 Proposed Development Plan

2.4. Scope of Assessment

2.4.1. The scope of the assessment undertaken within this report is as follows:

- Collection of baseline noise data to establish the existing background noise against which the assessment of noise impact on and from the proposed development can be assessed;
- Review of relevant national and regional noise and vibration policy and legislation;
- Assessment of construction noise issues and an outline strategy for control and mitigation of construction noise;
- Assessment of traffic noise impacts and an outline strategy for the control and mitigation of traffic noise;
- Recommendations will be made for suitable mitigation measure to achieve standards for noise in accordance with "good" design criteria (BS8233:2014 for internal levels);
- Cadna noise modelling to determine the noise impacts on the development and also on the nearest noise sensitive receivers
- Recommendations for typical acoustical treatments to the building envelopes in order to control environmental noise ingress and to meet appropriate internal noise criteria;
- Conclusions

3. LEGISLATON, RELEVANT POLICY AND GUIDANCE

3.1. London Borough of Camden Core Strategy 2010 Policy DP28 – Noise and Vibration

3.1.1. LB Camden's Core Strategy (2010) recognises the effects that noise and vibration can have on amenity and health and therefore quality of life.

3.1.2. Policy DP28 seeks to ensure that noise and vibration is controlled and managed, preventing planning permission being obtained for:

- Developments which are likely to generate noise pollutions; or
- Developments which are sensitive to noise in locations with noise pollution, unless attenuation measures are provided.

3.1.3. Where developments sensitive to noise are proposed close to an existing noise source, the Council requires an acoustics report to ensure compliance with Planning Policy Guidance (PPG) 24: Planning and noise, although this guidance is now superseded.

3.1.4. Where developments are proposed close to an existing source of vibration the Council sets out limits for vibration levels which refer to guidance in BS6472-1:2008 'Guide to evaluation of human exposure to vibration in buildings – Vibration sources other than blasting'.

3.1.5. DP28 sets out Noise and Vibration Thresholds which include an evening period in addition to the day and night standards contained in PPG24, and these thresholds are presented in Table 1 to 4 below. It is not stated within guidance whether the guideline noise levels are free-field or façade noise levels.

Noise description and location of measurement	Period	Time	Site adjoining railways	Site adjoining roads
Noise at 1m external to a sensitive facade	Day	0700-1900	74 dB $L_{Aeq,12hr}$	72 dB $L_{Aeq,12hr}$
Noise at 1m external to a sensitive facade	Evening	1900-2300	74 dB $L_{Aeq,4hr}$	72 dB $L_{Aeq,4hr}$
Noise at 1m external to a sensitive facade	Night	2300-0700	66 dB $L_{Aeq,8hr}$	66 dB $L_{Aeq,8hr}$

Table 1 Noise levels on residential sites adjoining railways and roads at which planning permission will not be granted (Table A of DP28)

Noise description and location of measurement	Period	Time	Site adjoining railways	Site adjoining roads
Noise at 1m external to a sensitive facade	Day	0700-1900	65 dB $L_{Aeq,12hr}$	62 dB $L_{Aeq,12hr}$
Noise at 1m external to a sensitive facade	Evening	1900-2300	60 dB $L_{Aeq,4hr}$	57 dB $L_{Aeq,4hr}$
Noise at 1m external to a	Night	2300-0700	55 dB $L_{Aeq,8hr}$	52 dB $L_{Aeq,8hr}$

sensitive façade				
Individual noise events several times an hour	Night	2300-0700	>82 dB L_{Amax} (S time weighting)	>82 dB L_{Amax} (S time weighting)

Table 2 Noise levels on residential streets adjoining railways and roads at which attenuation measures will be required (Table B of DP28)

Vibration description and location of measurement	Period	Time	Vibration Levels
Vibration inside critical areas such as a hospital operating theatre	Day, evening and night	0000-2400	0.1 VDV $ms^{-1.75}$
Vibration inside dwellings	Day and evening	0700-2300	0.2 to 0.4 VDV $ms^{-1.75}$
Vibration inside dwellings	Night	2300-0700	0.13 VDV $ms^{-1.75}$

Table 3 Vibration levels on residential streets adjoining railways and roads at which planning permission will not be granted (Table C of DP28)

Noise description and location of measurement	Period	Time	Noise Level
Noise at 1m external to a sensitive facade	Day, evening and night	0000-2400	5 dB(A) <L_{A90}
Noise that has a distinguishable discrete continuous note (whine, hiss, screech, hum) at 1m external to a sensitive facade	Day, evening and night	0000-2400	10 dB(A) <L_{A90}
Noise that has a distinct impulses (bangs, clicks, clatters, thumps) at 1m external to a sensitive facade	Day, evening and night	0000-2400	10 dB(A) <L_{A90}
Noise at 1m external to sensitive façade where L_{A90}>60dB	Day, evening and night	0000-2400	55 dB(A) <L_{Aeq}

Table 4 Noise levels from plant and machinery at which planning permission will not be granted (Table E of DP28)

3.2. The London Plan (2011) and Revised Early Minor Alterations to the London Plan (2013)

3.2.1. The London Plan (Mayor of London, 2011) and Revised Early Minor Alterations to the London Plan (2013), is the spatial development strategy for Greater London. The main purpose of the London Plan is to ensure that all of the individual plans produced by the London Boroughs work together to meet the priorities that are agreed for the whole of the London region.

3.2.2. Policy 7.15 "Reducing noise and enhancing soundscapes" states that "development proposals should seek to reduce noise by:

- Minimising the existing and potential adverse impacts of noise on, from, within, or in the vicinity of, development proposals;
- Separating new noise sensitive development from major noise sources wherever practicable through the use of distance, screening, or internal layout in preference to sole reliance on sound insulation; and
- Promoting new technologies and improved practices to reduce noise at source".

3.3. The London Plan: Housing Supplementary Planning Guidance (2012)

3.3.1. The London Plan: Housing Supplementary Planning Guidance (Mayor of London, 2012) was published in November 2012.

3.3.2. Section 2.3.26 of the guidance states that "in exceptional circumstances, where site constraints make it impossible to provide private open space for all dwellings, a proportion of dwellings may instead be provided with additional internal living space equivalent to the area of the private open space requirement. This area must be added to the minimum GIA and minimum living area of the dwelling, and may be added to living rooms or may form a separate living room. Enclosing balconies as glazed, ventilated winter gardens will be considered acceptable to open balconies for all flats and this solution is recommended for all dwellings exposed to NEC noise category C or D" of PPG24.

3.3.3. Section 2.3.28 refers to policy 3.5 of The London Plan and states that the design of new housing developments is required to consider elements that enable the home to become a comfortable place of retreat. Noise is thus considered in this policy.

3.3.4. Standard 5.2.1 states that "developments should avoid single aspect dwellings that are north facing, exposed to noise levels above which significant adverse effects on health and quality of life occur, or contain three of more bedrooms".

3.3.5. Standard 5.3 refers to policy 7.15 of The London Plan and states that "the layout of adjacent dwellings and the location of lifts and circulation spaces should seek to limit the transmission of noise to sound sensitive rooms within dwellings". Noise from activities in the street and adjoining properties can cause stress, sleep disturbance and friction between neighbours. "All dwellings should be built with acoustic insulation and tested to current Building Regulations standards. However, acoustic insulation should not be relied upon as the only means of limiting noise and the layout and placement of rooms within the building should be considered at an early stage in the design process to limit the impact of external noise on bedrooms and living rooms. The impact of noise should also be considered in the placement of external private spaces.

3.4. The National Planning Policy Framework

3.4.1. The National Planning Policy Framework (NPPF) adopted in 2012 in England outlines the Government's planning policies and requirements for the planning system. The NPPF forms a material consideration in planning decisions and hence must be complied with for planning permission to be granted.

3.4.2. Regarding noise, the NPPF states that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of noise pollution.

3.4.3. Hence the planning system should seek 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 planning 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.

3.4.4. To achieve these aims the NPPF refers to the Noise Policy Statement for England 2010.

3.5. Noise Policy Statement for England 2010

3.5.1. The Noise Policy Statement for England (NPSE) sets out the long term vision of Government noise policy: to promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

3.5.2. The NPSE outlines three aims for the effective management and control of environmental, neighbour and neighbourhood noise:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life; and
- Where possible, contribute to the improvement of health and quality of life.

3.6. British Standard BS 4142:2014 – 'Method for rating and assessing industrial and commercial sound'

3.6.1. *BS 4142* can be used to assess whether noise sources of an industrial nature are likely to give rise to complaints from people residing in nearby dwellings.

3.6.2. The standard describes a method for assessing whether the noise levels from commercial premises are likely to give rise to complaints from people residing in the nearest residential premises.

3.6.3. The procedure in *BS 4142* for assessing the likelihood of complaints is to compare the predicted noise level from the source in question, the 'rating noise level', with the background noise level. The likelihood of complaints is assessed by subtracting the background noise level from the rating noise level. *BS 4142* states:

'a) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

b) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.'

The standard also notes that *'the greater the difference, the greater the magnitude of the impact.'*

BS 4142 also makes reference to further penalties to the noise rating level, based on the tonality, impulsivity and other characteristics of the sound. However, since the plant equipment has not yet been selected, any additional penalties are as yet unknown.

3.7. Control of Pollution Act 1974 and Environmental Protection Act 1990

3.7.1. The Control of Pollution Act 1974 and Environmental Protection Act 1990 give Local Authorities the power to tackle noise and vibration nuisance arising from construction and demolition works.

3.7.2. Under section 60 of the Control of Pollution Act 1974 the Local Authority has the power to impose restrictions on or stop construction activities which are deemed to be causing a noise or vibration nuisance.

3.7.3. Large developments are advised to apply for prior approval under section 61 of the 1974 Act. This enables agreement in advance between contractors and Local Authorities around hours of work and noise and vibration mitigation measures, to avoid the risk of the Council serving a section 60 notice.

3.8. BS 5228:2009 – Code of practice for noise and vibration control on construction and open sites

3.8.1. *BS 5228* gives recommendations for basic methods of noise and vibration control relating to construction work. It also provides guidance on methods of predicting and measuring noise and vibration and assessing its impact on those exposed to it. The prediction method considers the noise emission and vibration levels of the plant, the separation distance between the source and the receiver and the effect of the intervening topography and structures.

Part 1: Noise

3.8.2. The *DoE Advisory Leaflet (AL) 72 – Noise control on building sites* is referenced within *BS 5228 Part 1*. It provides guidance on acceptable levels of construction noise:

"*Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut. Noise levels, between 07.00 and 19.00hours, outside the nearest window of the occupied room closest to the site boundary should not exceed:*

- *70 decibels (dBA) in rural, suburban and urban areas away from main road traffic and industrial noise;*
- *75 decibels (dBA) in urban areas near main roads in heavy industrial areas.*

These limits are for daytime working outside living rooms and offices. In noise-sensitive situations, for example near hospitals and educational establishments - and when working outside the normal hours, say between 19.00 and 22.00 – the allowable noise levels from building *sites will be less: such as the reduced values given in the contract specification or as advised by the Environmental Health Officer (a reduction of 10 dB(A) may often be appropriate).*

Noisy work likely to cause annoyance locally should not be permitted between 22.00 hours and 07.00 hours."

Part 2: Vibration

Certain construction activities can produce a significant amount of ground-borne vibration, which has the potential to impact nearby sensitive receptors. There is no exact method for predicting the resulting vibration at a sensitive receptor due to construction plant; the impact depends on the type of construction activity and on the duration of operation.

BS 5228 Part 2 gives an indication of vibration levels likely to be generated during the construction period, based on historical field measurement data, and refers to British Standards *BS 6472* and *BS 7385* (detailed below) to assess these impacts.

3.9. BS 6472:2008 – *Guide to evaluation of human exposure to vibration in buildings*

3.9.1. *BS 6472* outlines typical human response to structural vibration. This information is presented in Table 5.

Vibration level (Peak Particle Velocity)	Effect
0.14 mm.s-1	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3 mm.s-1	Vibration might be just perceptible in residential environments.
1.0 mm.s-1	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.
10 mm.s-1	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

Table 5 Guidance on perceptible vibration levels

3.10. BS 7385:1993 – Evaluation and measurement for vibration in buildings, Part 2: Guide to damage levels from ground-borne vibration

BS 7385 Part 2 provides guidance on the levels of ground-borne vibration which could cause structural damage to buildings. Damage is classified as cosmetic (formation of hairline cracks), minor (formation of large cracks) or major (damage to structural elements).

Guide values given in the standard are associated with the threshold of cosmetic damage only, usually in wall and/or ceiling lining materials. It should be noted that cracking commonly occurs in buildings whether they are exposed to vibration or not.

Levels of vibration which are perceptible to people are below those which would cause damage to buildings, except at lower frequencies. Therefore, vibration which is just perceptible within a building is unlikely to have an impact on the building structure.

3.11. BS8233:2014 Guidance on sound insulation and noise reduction for buildings

3.11.1. Guidance on the acceptable noise levels for living rooms and bedrooms within residential buildings is given in BS8233:2014 *'Guidance on sound insulation and noise reduction for buildings'.* Advice is given on the design range of internal noise levels, depending on the use of each room and the sensitivity to noise of the operations expected to be conducted in the rooms. An extract of the indoor ambient noise levels for dwellings is reproduced in Table 6.

Activity	Location	Time Period	
		07:00 to 23:00	23:00 to 07:00
Resting	Living room	35dB $L_{Aeq,T}$	-
Dining	Dining room/area	40dB $L_{Aeq,T}$	-
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,T}$	30dB $L_{Aeq,T}$

Table 6 Indoor ambient noise levels for dwellings

3.12. Calculation of Road Traffic Noise, 1988

3.12.1. The Calculation of Road Traffic Noise (CRTN) sets out standard procedures of calculating noise levels from road traffic. The calculation method uses a number of input variables, including traffic flow volume, average vehicle speed and percentage of heavy goods vehicles (HGV), to predict the $L_{A10,18hour}$ or $L_{A10,1hour}$ noise level for any receptor point at a given distance from the road.

3.13. World Health Organisation Community Noise Guidelines

3.13.1. The World Health Organisation (WHO) published their 'Guidelines for Community Noise' in 1999. The guidance sets out appropriate noise levels for different scenarios to ensure that communities are not subjected to unacceptable levels of noise. It should be noted that the WHO guidelines, although widely referenced in the UK, have no legal status. The guidelines are presented in Table 7 below.

Specific Environment	Critical Health Effect(s)	L_{Aeq} [dB(A)]	Time Base (hours)	L_{Amax} fast (dB)
Outdoor living area	Serious annoyance, daytime and evening	55	16	-
	Moderate annoyance, daytime and evening	50	16	-
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	-
Inside bedrooms	Sleep disturbance, night-time	30	8	45
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60

Table 7 Guideline values for community noise in specific environments

3.14. World Health Organisation Night Noise Guidelines for Europe 2009

3.14.1. The WHO Regional Office for Europe set up a working group of experts to provide scientific advice to the Member States for the development of future legislation and policy action in the area of assessment and control of night noise exposure. The working group reviewed available scientific evidence on the health effects of night noise, and derived health-based guideline values. In December 2006, the working group and stakeholders from industry, government and nongovernmental organisations reviewed and reached general agreement on the guideline values and key texts for the final document of the Night noise guidelines for Europe.

3.14.2. Considering the scientific evidence on the thresholds of night noise exposure indicated by $L_{night,outside}$ as defined in the Environmental Noise Directive (2002/49/EC), an $L_{night,outside}$ value of 40 dB should be the target of the night noise guideline (NNG) to protect the public, including the 55 dB is recommended as an interim target for the countries where the NNG cannot be achieved in the short term for various reasons, and where policy-makers choose to adopt a stepwise approach. These guidelines are applicable to the Member States of the European Region, and may be considered as an extension to, as well as an update of, the previous WHO guidelines for community noise (1999).

3.14.3. Although these guidelines are neither standards nor legally binding criteria, they are designed to offer guidance in reducing the health impacts of night noise based on expert evaluation of scientific evidence in Europe.

4. METHODOLOGY

4.1. Baseline Noise Survey

4.1.1. A noise survey was undertaken to establish the existing ambient noise levels in the vicinity of the proposed development site, against which the assessment of operation noise effects has been determined.

4.1.2. Noise monitoring was undertaken between Thursday 5 June 2014 and Wednesday 11 June 2014 at the two locations (MP1 and MP2 respectively) as indicated in Figure 3 below. The noise meters logged continuously with an averaging period of 15 minutes during the daytime and night-time periods.

Figure 3 Location of noise monitors

4.1.3. The surveys were carried out using Type 1 Sound Level Meters (SLM). The following equipment was used on site:

i. 2 No. Norsonic NOR140 Sound Level Meters, Type 1, serial numbers 1403396 & 1404236;
ii. 1 No. Norsonic Type 1251 Acoustic Calibrator, serial number 32190;
iii. 1 No. Heavy duty tripod;
iv. 1 No. A-frame; and
v. 2 No. outdoor weather protection kit (peli case) containing batteries.

4.1.4. Measurements at MP1 were undertaken on a tripod at height of 1.5m above the ground.

4.1.5. Measurements at MP2 were façade measurements taken 1m from the window using an 'A' frame deployed from the upper storey.

4.1.6. The SLMs had been calibrated to traceable standards within the preceding two years and the calibrator within the previous 12 months; calibration certificates are available upon request. The SLMs were field calibrated once they were set up in the measurement positions and on completion of the survey. No significant drift in the calibration was recorded at any time during the survey.

4.1.7. At each measurement location, a comprehensive suite of noise level metrics were recorded. The following noise level indices are relevant to this assessment:

i. $L_{Aeq,15min}$ The A-weighted equivalent continuous noise level over the 15 minute measurement period;
ii. L_{A90} The A-weighted noise level exceeded for 90% of the measurement period;
iii. L_{AFmax} The maximum A-weighted noise level during the period, measured on a fast time weighting; and
iv. L_{ASmax} The maximum A-weighting noise level during the period, measured on a slow time weighting

4.1.8. Other metrics were measured and are available for further analysis if required.

4.1.9. The weather conditions during the surveys were variable.

4.2. Demolition/Construction Assessment

4.2.1. Noise and vibration levels at the nearest sensitive receptors generated by demolition/construction work are likely to vary significantly over time, depending on the type of construction activity and the location of the noise source.

4.2.2. The specific plant and exact working methodology to be employed on site have not yet been established. These specifications will be made available once specialist demolition and civil engineering contractors have been appointed.

4.3. Operational Noise Assessment – Noise from Deliveries and Refuse Vehicles

4.3.1. The details of the deliveries and refuse collections for the proposed development are not known at this stage in the design, and hence it is intended that these activities are controlled via an Operational Servicing Management Plan. The plan shall set out the measures to minimise disturbance to occupants of the surrounding noise sensitive properties both new and existing).

4.4. Operational Noise Assessment – Plant Noise Assessment

4.4.1. The type, quantity and location of fixed mechanical and electrical (M&E) plant associated with the proposed development has not been finalised at this stage in the design and hence it is not possible to fully quantify the building services plant noise impact at the nearest noise sensitive receptors.

4.4.2. The noise levels from M&E plant will be considered once details of the plant are known; This report therefore specifies a rating level at the nearest residential receptors, which the M&E engineer can use for selection of equipment and attenuation measures to control the noise emissions.

4.4.3. The methodology contained within BS4142:2014 has been used to define the rating noise levels ($L_{A,r}$ dB) at the surrounding noise sensitive premises and have been provided based upon the lowest measured daytime and night-time noise levels from the baseline survey.

5. NOISE SURVEY RESULTS

5.1. Monitoring Location MP1

5.1.1. A summary of the noise levels measured at monitoring position MP1 are presented in Table 8.

Date	Period	$L_{Aeq,15min}$ dB	$L_{A90,\ Average}$ dB	$L_{A90,\ min}$ dB
Thursday 05/06/2014	Day	53	49	46
	Night	47	44	42
Friday 06/06/2014	Day	53	49	45
	Night	49	46	45
Saturday 07/06/2014	Day	52	47	46
	Night	48	44	43
Sunday 08/06/2014	Day	50	46	44
	Night	46	43	42
Monday 09/06/2014	Day	53	49	44
	Night	49	44	43
Tuesday 10/06/2014	Day	54	50	46
	Night	47	43	43
Wednesday 11/06/2014	Day	55	51	46
	Night	-	-	-

Table 8 MP1 Noise Survey Results

5.1.2. The noise climate during the day was typically dominated by traffic noise and pedestrian movement, however when the Astroturf pitch was in use this became the dominant noise source.

5.2. Monitoring Location MP2

5.2.1. A summary of the noise levels measured at monitoring position MP2 are presented in Table 9.

Date	Period	$L_{Aeq,15min}$ dB	$L_{A90,\ Average}$ dB	$L_{A90,\ min}$ dB
Thursday 05/06/2014	Day	53	47	43
	Night	46	40	37
Friday 06/06/2014	Day	56	48	44
	Night	49	45	41
Saturday 07/06/2014	Day	51	45	43
	Night	47	41	37
Sunday 08/06/2014	Day	49	43	40
	Night	46	39	35
Monday 09/06/2014	Day	56	48	39
	Night	48	40	36
Tuesday 10/06/2014	Day	56	49	42
	Night	45	40	37
Wednesday 11/06/2014	Day	57	49	44
	Night	-	-	-

Table 9 MP2 Noise Survey Results

5.2.2. The noise climate at the front of the building was dominated by road traffic noise and pedestrian movements.

6. ASSESSMENT OF IMPACTS

6.1. Operational Noise Assessment – Site Suitability for Residential Development

6.1.1. The noise prediction model has been used to derive the predicted daytime façade noise levels that will be experienced by the proposed development. The model has been used to indicate the noise climate based on road traffic noise, the dominant noise source, for the predicted 2033 traffic flows.

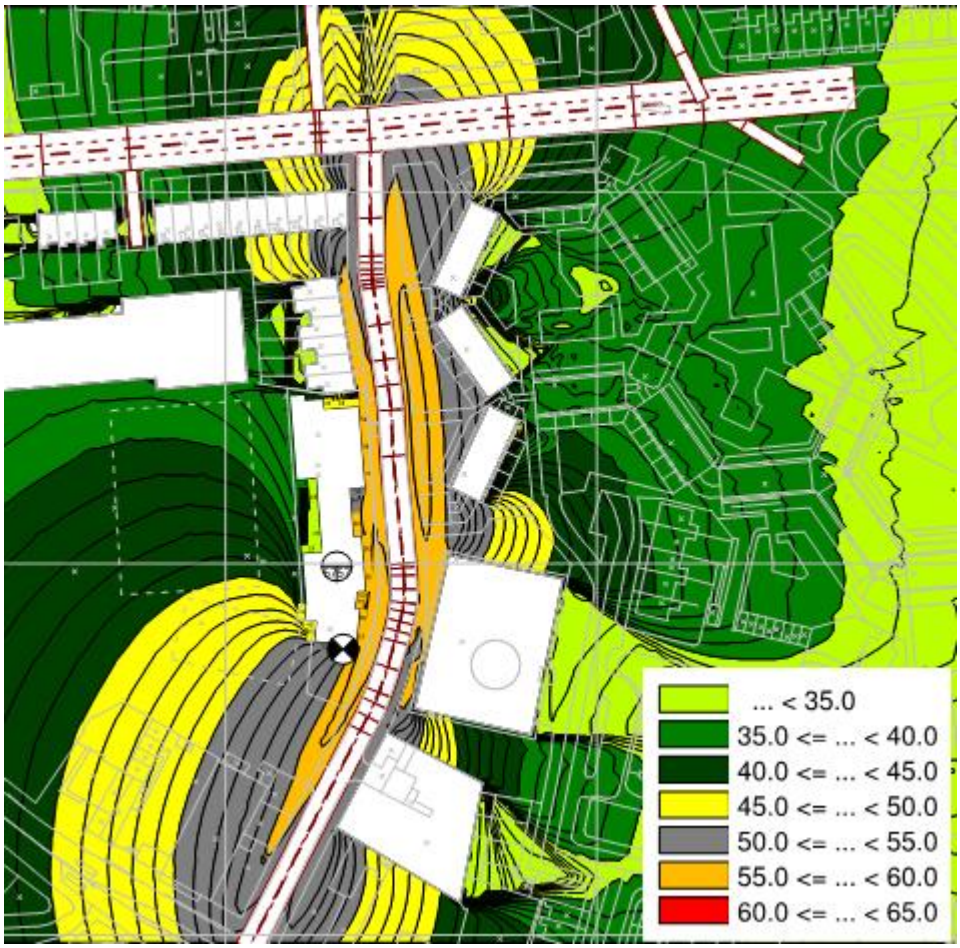

Figure 4 Model to show predicted noise climate

6.1.2. The model shows that the predicted noise levels on the Eastern façade of the proposed development adjacent to Crogsland Road are generally between 55 – 60dB. The model shows that the noise levels due to traffic noise are between 35-45 dB on the Western façade of the building. However, noise from activities on the sports pitch is not included and appropriate mitigation will be required to prevent disturbance from activities on the pitch. It is recommended that the Western façade is designed with noise levels of L_{Aeq} 65dB and peaks between L_{Amax} 80-85 dB to account for this.

6.1.3. The noise levels at the upper storeys may not reduce significantly since the distance to the road does not significantly increase with building height.

6.1.4. To account for the predicted external noise levels experienced by the proposed development buildings, it is recommended that all residential spaces will incorporate either mechanical ventilation, or natural ventilation via acoustic inlets and outlets.

6.1.5. The predicted internal noise levels have been calculated inside typical rooms of the proposed development in line with the calculation method set out in BS8233. From this, the glazing specification has been determined in order to ensure the noise levels achieve the BS8233 criteria (Table 1). The glazing should achieve R_w 33dB on all façades. The proposed façade system (excluding glazing) for the building should provide at least R_w 50 dB, which has also been factored into the calculations.

6.1.6. The above specification will need to be refined further through the detailed design stage.

6.2. Operation Noise Assessment – Road Traffic

6.2.1. There is no staff or resident parking, only a drop of bay at the development and so there will be no significant impact on the road traffic noise in the surrounding area due to the development.

6.3. Operation Noise Assessment – Plant Noise Assessment

6.3.1. BS4142:2014 considers the background noise to be measured using the L_{A90} metric. Based on the survey results in the vicinity of the application site, the relevant background noise levels are as follows:

- Lowest $L_{A90,15min}$ background noise level during the daytime period = 39 dB
- Lowest $L_{A90,\ 15min}$ background noise level during the night-time period = 35 dB

6.3.2. The levels presented are deemed to be representative of the noise levels experienced at the nearest sensitive receptors.

6.3.3. Based upon the lowest background noise levels ($L_{A90,15min}$) measured during the baseline noise survey for the daytime and night-time periods, the rating level (L_{AR} dB) can be calculated. The rating noise levels will be designed to be 3 dB(A) below the background noise level, in accordance with BS4142. This consists of a correction of 3 dB *"where the specific sound features characteristics are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment".*

6.3.4. If one or more of the following features occur, or are expected to be present for new or modified noise sources, the correction factor given above must be increased in accordance with BS4142:2014.

- Tonality
- Impulsivity
- Intermittency

The addition of the above features will mean achieving the targets will be significantly harder.

6.4. Operation Noise Assessment – Ventilation

Due to the periods of high level noise (particularly between 8-10pm from the neighbouring football pitch) mechanical ventilation is the preferred option. The proposed design consists of mechanical ventilation with heat recovery (MVHR) in the apartments and the ground floor areas where comfort cooling is required. In areas on the ground floor where heating only is required, a trickle ventilation system is proposed. A trickle vent system in conjunction with the R_w 33dB glazing and R_w 50dB façade should be appropriate in terms of noise ingress and egress, when fitted to a high standard. However, the specification and manufacture's data for the chosen trickle vents, as with the MVHR units, would need to be reviewed in the later design stages.

An alternative option would be to naturally ventilate the building via acoustically attenuating inlets and outlets. These are typically airways lined with acoustically absorbing material which attenuate noise. They have the potential to provide sufficient noise reduction from the road traffic and sports pitch.

7. MITIGATION

7.1. Operation Noise Assessment – Residential Amenity

7.1.1. In order to protect the residential amenity the glazing should achieve at least R_w 33dB and the external façade excluding the glazing R_w 50 dB. This is to ensure that the background noise levels, which range from 49-57dB L_{Aeq} in the day and 45-49dB L_{Aeq} in the night, are not disturbing to the residents.

7.1.2. The noise levels from both road traffic on the eastern façade and from the sports pitch on the western façade mean that the ventilation strategy should be either: fully mechanically ventilated, or naturally ventilated via acoustically attenuating inlets and outlets.

7.2. Operation Noise Assessment – Plant Noise Assessment

7.2.1. The following mitigation measures should be taken into account by the design team at the detailed design stage:

- Where possible, installing the fixed plant internally;
- Selection of low noise emission plant;
- Use of enclosures, acoustic louvres and acoustic barriers;
- Selection of appropriately sized attenuators; and
- Operating plant installations at reduced duty during night-time periods.

7.2.2. It is recommended that the noise levels from fixed plant installations should be considered once details of the building services plant are known and it is therefore suggested that noise emissions from plant associated with the proposed development are controlled to protect residential amenity.

8. CONCLUSIONS

8.1.1. Ramboll has been commissioned by EC Harris to undertake a noise impact assessment to accompany the planning application for a proposed care home facility development in Camden, London.

8.1.2. The baseline noise survey was undertaken in the vicinity of the application site to establish the current noise climate and the dataset obtained from the survey was subsequently used to inform the assessment.

8.1.3. Suitable façade sound insulation performances have been specified for the proposed development buildings in order to achieve the indoor ambient noise conditions set out within BS8233:2014 and the WHO Guidelines.

8.1.4. The type, quantity and location of mechanical and electrical plant associated with the proposed development have only been defined in outline at this stage in the design and hence it is not possible to fully quantify the noise impact at the nearest noise sensitive receptors. However, it is anticipated that the plant will not have a significant impact and suitable noise control measures will be implemented during detailed design.

8.1.5. Mitigation measures have been provided to minimise noise impacts associated with the proposed development to inform the design.