Avondale Drive, Hayes
Phases 1B and 2

Outline Noise Assessment in Relation to s.73 Application Amendments

Report ref.
PJB9902/22288/Rev 2

Issued to
Higgins Partnerships

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Version	Authorised by	Remarks	Date
Rev 0	PJB	-	21/10/2025
Rev 1	PJB	Client comments	23/10/2025
Rev 2	AP	Minor amendments	27/10/2025

1. INTRODUCTION

Higgins Partnerships, on behalf of the London Borough of Hillingdon, are seeking to vary a consented residential scheme which is located on land adjacent to Avondale Drive, Hayes. The scheme is to be constructed in several phases.

Phase 1A was granted full planning permission and has now been completed. Outline planning permission was granted for Phases 1B and 2 with all matters reserved.

Spectrum has been instructed by Higgins Partnerships to carry out a noise assessment to accompany the s.73 application for amendments to Phases 1B and 2 of the scheme.

The assessment included within this report focusses on Phases 1B and 2 only. However, the assessment also considers the presence of Phase 1A within the analysis, based on the 'as-built' information.

2. SITE DESCRIPTION

The development is located on land to the north of Avondale Drive, Hayes and is bounded to the east by Avondale Drive with the A312 beyond. To the north is open space with residential uses beyond. To the south are further residential uses. To the west is Minet School.

The subject site is currently occupied by exiting residential uses, which are to be demolished and replaced with new residential apartments.

Phase 1A comprises 30 apartments over five storeys within a single block and is at the western end of the site, furthest from the A312. Phase 1B is to comprise 173 units across four blocks ranging from seven to ten storeys and is at the eastern end of the site, closest to the A312. Phase 2 is to comprise 93 units across three blocks of six storeys height and is located between Phases 1A and 1B.

Drawings of the proposed scheme are presented in Appendix A.

3. RELEVANT POLICY AND GUIDANCE

3.1 NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

The National Planning Policy Framework (NPPF)[1] sets out the Government's planning policies for England and how these should be applied by establishing a framework within which locally prepared plans for development can be produced.

The NPPF requires (187) that '*Planning policies and decisions should contribute to and enhance the natural and local environment by:* […] *preventing new and existing development from contribution to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of* […] *noise pollution* […]*.'*

[1] *National Planning Policy Framework, MHCLG, July 2021*

In relation to noise (198) '*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

> *'a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life[2];*
>
> *'b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason'*

Planning policies and decisions should also (200) *'ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed'.*

Throughout the NPPF reference is made to other policies, such as the Noise Policy Statement for England (NPSE), which should also be applied as appropriate.

3.2 NOISE POLICY STATEMENT FOR ENGLAND (NPSE)

The Noise Policy Statement for England (NPSE)[3] sets out the long-term vision of government noise policy which is 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.'*

The aims of the NPSE are to (2.23-2.25):

- 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

These aims are developed by reference (2.20-2.21) to the concepts of:

- NOEL (No Observed Effect Level). This is the level below which no effect can be detected.
- 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] *See Explanatory Note to the Noise Policy Statement for England, paragraphs 2.23 and 2.24 , DEFRA,15 March 2010.*
[3] *Noise Policy Statement for England (NPSE), DEFRA, 15 March 2010*

It recognises that there is no universally applicable objective threshold for these concepts. Consequently, the NOEL, LOAEL and SOAEL are likely to be different for different noise sources and receptors and at different times (2.22).

Situations of significant adverse effect (SOAEL) should be avoided (2.23). Where the impact is between LOAEL and SOAEL reasonable steps should be taken to minimise and mitigate adverse effects on health and quality of life, but does not mean that such adverse effects cannot occur (2.24). It is also implied that situations of NOEL would be acceptable in noise terms.

3.3 PLANNING PRACTICE GUIDANCE (PPG)

Planning Practice Guidance on Noise[4] (PPG-N) sets out government guidance on '*how planning can manage potential noise impacts in new development*'.

Whilst it does advise that noise can override other planning concerns, *'where justified'*, it states that *'it is important to look at noise in the context of the wider characteristics of a development proposal, its likely users and its surroundings, as these can have an important effect on whether noise is likely to pose a concern.' (002)*

It also details the hierarchy of noise exposure, including the thresholds LOAEL and SOAEL, based on the likely average response, referred to within NPSE[5]. The noise exposure categories are summarised below.

- No Observed Adverse Effect: Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response.
- Observed Adverse Effect: Noise can be heard and causes small changes in behaviour, attitude or other physiological response.
- Significant Observed Adverse Effect: The noise causes a material change in behaviour, attitude or other physiological response.
- Unacceptable Adverse Effect: Extensive and regular changes in behaviour, attitude or other physiological response, and/or an inability to mitigate effect of noise leading to psychological stress.

The guidance advises, in accordance with the first and second aims of the NPSE, that where there is no observed effect or no observed adverse effect, no specific measures are required to manage the acoustic environment; where there is an observed adverse effect, consideration needs to be given to mitigating and minimising those effects; where there is significant adverse effects, the planning process should be used to avoid these effects occurring; where there are unacceptable adverse effects, the situation should be prevented.

In establishing values for LOAELs and SOAELs, which represent the onset levels of adverse effects and significant adverse effects, respectively, the guidance advises because of the subjective nature of noise, there is no simple relationship between noise level and its impact. It will instead depend on a number of factors in a particular situation. These will include:

[4] *PPG - Noise, MHCLG, 22 July 2019*

[5] *Explanatory Note to the Noise Policy Statement for England*, *paragraphs 2.19 and 2.20, DEFRA,15 March 2010)*

- The source, its absolute level and the time of day.
- For intermittent sources, the number and duration of events;
- The spectral frequency content of the noise

And also other factors will need to be considered in many cases, which are more fully described and detailed within the full PPG guidance, but include matters such as:

- The cumulative impacts with other sources
- Whether internal effects can be completely removed for example by closing windows (relevant with new residential development subject to ventilation being developed)
- Whether existing noise sensitive locations already experience high noise levels,
- Where Noise Action Plans, and, in particular Important Areas are identified nearby.
- The effect on wildlife especially on nationally designated sites.
- The use of external amenity spaces intrinsic to an overall design and including private gardens.
- The potential effect of a new residential or other sensitive development being located close to an existing noisy business or site, and for noise mitigation to be considered.
- Whether there are nearby areas of tranquility relatively undisturbed by noise from human caused sources that undermine the intrinsic character of the area and likely already valued for their tranquillity.

It should be observed that the PPG guidance does not provide any detail on the how such assessment including these factors, should be carried out. However, reference is made to documents published by other organisations, such as:

- *BS 8233:2014 – Guidance on sound insulation and noise reduction for buildings (British Standards Institute 2014);*
- *Guidelines for Environmental Noise Impact Assessment (Institute of Environmental Management and Assessment, 2014);*
- *ProPG: Planning & Noise – Professional Practice Guidance on Planning & Noise – New Residential Development (Association of Noise Consultants, Institute of Acoustics and Chartered Institute of Environmental Health, May 2017).*

This should not be considered an exhaustive list, however, as reference may also be made to other existing British Standards, where relevant, and to scientific exposure-response studies or reviews relating to noise and its effects on human and, where appropriate, animal populations.

3.4 GUIDELINES FOR COMMUNITY NOISE - WORLD HEALTH ORGANIZATION (WHO), 1999

Guidelines for Community Noise (GCN) was published in 1999 with the aim of informing legislation and guidance produced at the national and regional levels for the purposes of minimising any potential adverse health effects resulting from noise in the community. It presents guideline noise level criteria for the avoidance of adverse effects such as sleep disturbance and annoyance in a range of specific environments. The preface to WHO states that community noise includes road, rail and air traffic, industries, construction and public work, and the neighbourhood.

New guidance from WHO titled Environmental Noise Guidelines for the European Region (ENG) was published in 2018. The document takes a very different approach to guidance set out in the previous document (GCN) by identifying separate thresholds for specific sources rather than for community noise as a whole. Consequently, much of the earlier guidance set out in GCN is now absent from ENG. While ENG was intended to supersede GCN, it recognises this absence and states that *'indoor guideline values and any values not covered by the current guidelines (such as industrial noise and shopping areas) should remain valid.'*

It is recommended that all WHO guidance should be noted but that it should not be relied upon in assessments without reference to other relevant detailed guidance, especially that in British Standards. These may align better with Planning Practice Guidance[6] in England.

3.5 BS 8233:2014 GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

BS 8233:2014[7] '*provides guidance for the control of noise in and around buildings. It is applicable to the design of new buildings, or refurbished buildings undergoing a change of use*'. '*The Standard is not*[8] *intended to be used routinely where noise sources are brought to existing noise sensitive buildings'*.

For residential use dwellings (7.7.1), *'the main considerations, for bedrooms, are the acoustic effect on sleep; and for other rooms, the acoustic effect on resting, listening and communicating*' *(7.7.1).*

Internal noise criteria are advised relating to sources of external noise *'"without a specific character", previously termed "anonymous noise". (…). For simplicity, only noise without character is considered. Noise has a specific character if it contains features such as a distinguishable, discrete and continuous tone, is irregular enough to attract attention, or has strong low-frequency content, in which case lower noise limits might be appropriate'.(7.7.1)*

'For steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values', which are set out in Table 1.

Activity	Location	07:00-23:00	23:00-07:00
Resting	Living room	35 dB $L_{Aeq,16\ hour}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16\ hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16\ hour}$	30 dB $L_{Aeq,8\ hour}$

Table 1: Indoor ambient noise levels for dwellings

There are a number of notes to the table. These include:

Note 4: Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values.

[6] *PPG - Noise, MHCLG, 6 March 2014*

[7] *BS 8233:2014 Guidance on sound insulation and noise reduction for buildings*

[8] *The word 'not' is omitted from the text in the Standard. The Institute of Acoustics advised 'not' to be added following a meeting of their London Branch in March 2015.*

BS 8233 does not give guidance on what might constitute a guideline value. However, as the standard does cross reference WHO, we suggest that the guideline value of L_{AFmax} 45dB, inside bedrooms, should not be exceeded during the night more than 10-15 times, which reflects the WHO position.

'Note 5: If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the facade insulation or the resulting noise level. If applicable, any room should have adequate ventilation (e.g. trickle ventilators should be open) during assessment'.

'Note 7: 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'.

'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 $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized 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'. (7.7.3.2)

Although small balconies in flats or apartments used only for drying washing or growing pot plants should not have noise limits*, 'the general guidance on noise in amenity space is still appropriate for larger balconies, roof gardens and terraces, which might be intended to be used for relaxation. In high-noise areas, consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels. Achieving levels of 55 dB $L_{Aeq,T}$ or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space' (7.7.3.2).*

3.6 PROFESSIONAL PRACTICE GUIDANCE ON PLANNING & NOISE (PROPG)

ProPG was published in May 2017 and was produced jointly by the Association of Noise Consultants, the Institute of Acoustics, and the Chartered Institute of Environmental Health, with the aim of providing *'guidance on a recommended approach to the management of noise within the planning system in England.'*

'The approach encourages early consideration of noise issues, facilitates straightforward accelerated decision making for lower risk sites, and assists proper consideration of noise issues where the acoustic environment is challenging.' (2.2)

ProPG recommends a two-stage approach (2.3):

- *'Stage 1 – an initial noise risk assessment of the proposed development site; and*
- *Stage 2 – a systematic consideration of four key elements.'*

The Stage 1 assessment aims to provide and early indication of the risk of adverse effects from noise where no subsequent mitigation is included in the development proposal. The approach is *'considered to support wider Government planning and noise policy and guidance.' (2.11)*

The Stage 2 assessment comprises four key elements, to be undertaken in parallel, which are based on existing National Policy, Guidelines and Standards, and are summarised as follows (2.4):

- *'Element 1 – demonstrating a "Good Acoustic Design Process";*
- *Element 2 – observing internal "Noise Level Guidelines";*
- *Element 3 – undertaking an "External Amenity Area Noise Assessment"; and*
- *Element 4 – consideration of "Other Relevant Issues".'*

It should be noted that 'good acoustic design' is not limited to Element 1 but is instead an overarching principle that extends across ProPG's recommended 2-stage approach to the management of noise within the planning system. The approach set out within Elements 2 and 3, is based on existing guidance set out within BS 8233:2014 and WHO. The approach within element 4 considers compliance with relevant national and local policy and considers the acoustic design in relation to any unintended adverse impacts the design may have caused, as well as any wider planning objectives, among other potential considerations. It is noted, however, that *'Not all of the issues listed above will arise in every planning application and some may already have been addressed as an inherent part of good acoustic design.' (2.57)*

4. AMBIENT NOISE SURVEY

4.1 METHODOLOGY

Unattended ambient noise measurements were carried out during a site survey between Monday 31 October and Friday 4 November 2022.

Sound level meters were installed at four locations as indicated on the Noise Monitoring Location (NML) plan in Appendix B. The NMLs are summarised as follows:

NML 1: Roof of Glenister House (2.5m above roof level)
NML 2: Rear of Fitzgerald House (2.5m above ground)
NML 3: Edge of roof of carpark between Glenister and Fitzgerald House overlooking Avondale Drive (4m above ground)
NML 4: East façade of Wellings House at first floor level (4m above ground)

Noise measurement parameters consisted of equivalent continuous (L_{Aeq}) noise levels and maximum (L_{Amax}) noise levels as well as statistical noise levels (termed Ln, where n is the percentage of time the level is exceeded during the measurement period). Both overall and 1/1 octave band measurements were stored for later analysis.

The following equipment was used:

NML 1

- Bruel & Kjaer Type 2250 Sound Level Meter s/n 3024396
- Bruel & Kjaer Type 4189 Microphone s/n 3147701
- Bruel & Kjaer Type 4231 Acoustic Calibrator s/n 3021281

NML 2

- Bruel & Kjaer Type 2250 Sound Level Meter s/n 3024398
- Bruel & Kjaer Type 4189 Microphone s/n 3147720
- Bruel & Kjaer Type 4231 Acoustic Calibrator s/n 3021283

NML 3

- Bruel & Kjaer Type 2250 Sound Level Meter s/n 3024525
- Bruel & Kjaer Type 4189 Microphone s/n 3147699
- Bruel & Kjaer Type 4231 Acoustic Calibrator s/n 3021285

NML 4

- Bruel & Kjaer Type 2250 Sound Level Meter s/n 3027942
- Bruel & Kjaer Type 4189 Microphone s/n 3196081
- Bruel & Kjaer Type 4231 Acoustic Calibrator s/n 2229957

Before and after the survey, the sound level meters were field-calibrated in accordance with the manufacturer's guidelines, and no significant drift was observed. The meters, microphones and field calibrators are laboratory calibrated biennially in accordance with UKAS procedures or to traceable National Standards.

Weather was monitored remotely based on information available online of weather stations around Heathrow Airport. During the survey there were periods of elevated wind and rain. These periods were therefore excluded from the dataset before further analysis was undertaken to determine the representative daytime and night time noise environment affecting the site.

4.2 RESULTS

The results of the ambient noise measurements are presented in Appendix B and summarised in Table 3.

Noise Measurement Location (NML)	Ambient noise level L_{Aeq} (dB)		Night typical L_{Amax} (dB)
	Day	Night	
NML 1: Roof of Glenister House	60	57	69
NML 2: Rear of Fitzgerald House	52	51	65
NML 3: Carpark overlooking Avondale Drive	56	54	70
NML 4: East façade of Wellings House	61	59	70

Table 3: Summary of results of ambient noise survey results

The L_{Aeq} levels are the log average of all the measured 5-minute values, which is considered to be representative of the long-term typical levels at the NMLs. The L_{Amax} levels are the 10th highest measured values taken from the full 8-hour night time periods. These levels are considered to be representative of the levels that would not typically be exceeded (more that 10-15 times) over the full night time period, as per WHO and ProPG guidance.

Noise levels affecting the site are controlled by road traffic movements on the A312 and Avondale Drive during both the day and night time periods.

5. PREDICTION OF NOISE PROPAGATION ACROSS THE SITE

The particular prediction model that has been used for this analysis is DGMR Consulting Engineers BV's 'iNoise' software. This acoustic model implements the procedures set out in ISO 9613-2:1996 "Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation to determine noise levels", and is Quality Assured to all parts of ISO 17534:2015 "Acoustics – Software for the calculation of sound outdoors". The model takes account of the following features in its calculation procedure:

- Source sound power level (for point, line and area sources)
- Reflection from nearby structures and source directivity
- Distance from noise source (geometric spreading)
- Atmospheric absorption
- Acoustic screening of intervening structures and topography
- Ground absorption
- Ground effects (which includes the height of ground relative to the noise source)

Detailed noise calculations are then computed of the contribution of each individual noise source to combined noise levels at the receptor location.

In order to calculate the day and night time L_{Aeq} and L_{AFmax} levels across the site, road traffic sources have been included within the model of the existing site and attributed sound power levels based on the results of the noise measurement survey. The model has been validated by comparing the results of an initial model simulation with the measured survey results. Where necessary, small adjustments are made to the model such that the modelled results are within 1dB of the measured results within each octave band. The model is then considered validated and suitable for accurately predicting noise propagation across the site.

Once validated, the model is updated to include the proposed development such that noise can be calculated at each dwelling façade and within external amenity spaces.

The results of the model are presented in Appendix C.

6. ASSESSMENT

6.1 NOISE INGRESS TO HABITABLE ROOMS

As this is an outline application, detailed floor plans and elevations have not yet been developed. Accordingly, calculations of the noise intrusion have been carried out for representative plots using the simple calculation method set out in Annex G.1 of *BS 8233:2014 Guidance on sound insulation and noise reduction for buildings*. Once further details are known, these calculations will need to be revised using the more rigorous calculation method set out in Annex G.2.1 of the same Standard.

The apartments are proposed to have brick and block external walls. It is understood that the development will benefit from mechanical ventilation and so no trickle vents are required. Therefore, internal noise levels will be determined by the performance of the glazing.

Incident noise levels have been taken from the results of the noise model.

Table 4 summarises the results of the noise ingress calculations for each phase.

Location	Highest external noise levels			Glazing R_w (dB)	Internal noise levels		
	L_{Aeq} (day)	L_{Aeq} (night)	L_{AFmax} (night)		L_{Aeq} (day)	L_{Aeq} (night)	L_{AFmax} (night)
Ph. 1B	68	65	81	37	31	28	44
Ph. 2	60	60	76	35	25	25	41

Table 4: Estimated indoor ambient noise levels

The results indicate that at the most noise exposed facade of Phase 1B, glazing with a weighted sound reduction index of R_w 37dB will likely be required to achieve desirable internal ambient noise levels, in accordance with BS 8233 guidelines. As an example, this level of performance would be expected to be achieved by Pilkington Optiphon 6/16 argon/6.8mm (glass/gap/glass).

At the most noise exposed facade of Phase 2, glazing with a weighted sound reduction index of R_w 35dB will likely be required to achieve desirable internal ambient noise levels, in accordance with BS 8233 guidelines. As an example, this level of performance would be expected to be achieved by Pilkington 10/6-16/6mm (glass/gap/glass).

At other facades, exposed to lower incident noise levels, a lower specification of glazing will likely be sufficient. The particular window acoustic specifications for each façade, however, will be the subject of detailed design.

The results of the calculations indicate that the desirable noise criteria set out in BS 8233 can be achieved at this site with the proposed scheme of mitigation installed.

Once the site layout and design are sufficiently developed, the acoustic requirements for glazing should be reviewed in detail to ensure acceptable internal noise levels are achieved, as the final requirements will depend on various factors such as glazing areas, room volumes, internal layout, and façade construction type.

6.2 NOISE IN EXTERNAL AMENITY AREAS

At this site external amenity spaces comprise small private balconies for individual apartments, communal space at first floor level within semi enclosed courtyards of Phases 1B and 2, screened from road traffic noise, as well as ground floor level, public realm, play space fronting onto Avondale Road.

As advised in BS 8233, specific noise limits would not be appropriate for the smaller balconies as these provide beneficial private external space, which is inherently limited for apartments. However, the guideline limits should be achieved in larger external amenity spaces such as the first-floor level communal spaces.

The results of the noise model indicate that noise levels during the day will not exceed $L_{Aeq,T}$ 50dB in the Phase 2 first floor level external communal space. In the Phase 1B first floor communal space, noise levels will typically be in the range L_{Aeq} 51-55dB with a small area in the north west corner reaching L_{Aeq} 56dB. This is considered acceptable according to the guidelines set out in BS 8233.

6.3 ACOUSTICS AND OVERHEATING

The proposed scheme will incorporate a mechanical solution to mitigate the potential for overheating while maintaining acceptable internal ambient noise levels for residents.

As per Planning Condition 21, internal noise generated by such plant should be designed to achieve the noise limits set out in *Acoustics, Ventilation and Overheating Residential Design Guide*. V1.1, ANC and IOA, January 2020 (AVO), as duplicated in Table 5, below.

Condition	Desirable internal ambient noise levels from mechanical services			
	Bedrooms	Living Rooms	Dining Rooms	Bathroom / WC / Kitchen
ADF Whole Dwelling Ventilation	≤ L_{Aeq} 30 dB	≤ L_{Aeq} 30 dB	-	-
ADF Extract Ventilation	≤ L_{Aeq} 30 dB	≤ L_{Aeq} 35 dB	≤ L_{Aeq} 35 dB	≤ L_{Aeq} 45 dB
Ventilative Cooling or Comfort Cooling	L_{Aeq} 30 (± 5) dB	L_{Aeq} 35 (± 5) dB	L_{Aeq} 35 (± 5) dB	-

Table 5: AVO guideline internal noise levels for mechanical services

7. CONCLUSIONS

Higgins Partnerships, on behalf of the London Borough of Hillingdon, are planning further phases of residential development at Avondale Drive, Hayes. Full planning permission was granted for Phase 1A which has now been completed. Outline permission was granted for the rest of the site with all matters reserved. This report has considered the acoustic issues affecting these later phases.

The outline assessment for Phases 1B and 2, carried out to accompany the s.73 application, indicates that acceptable noise levels can be achieved at the site both internally and in external amenity spaces.

The mitigation scheme set out within this report should be confirmed once further details of the scheme are available.

APPENDIX A

Proposed development drawings

0m 10m 20m 30m 40m

Designed with reference to the surveys, information and reports listed: Xxxxxxxxxxxxx Xxxxxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx.

Rev	Date	Description
P1	06-04-23	Post Pre-App 3
P2	01-08-25	Design updated for Coordination
P3	20-08-25	Pre-App 6
P4	12-09-25	S73 Design Freeze Issue

Dwn	Ckd
JR	YW
ED	YW
ed	YW
YW	YW

Drawn JR
Checked YW
Date 11/24/22
Scale @ A1 1 : 500

Avondale Drive

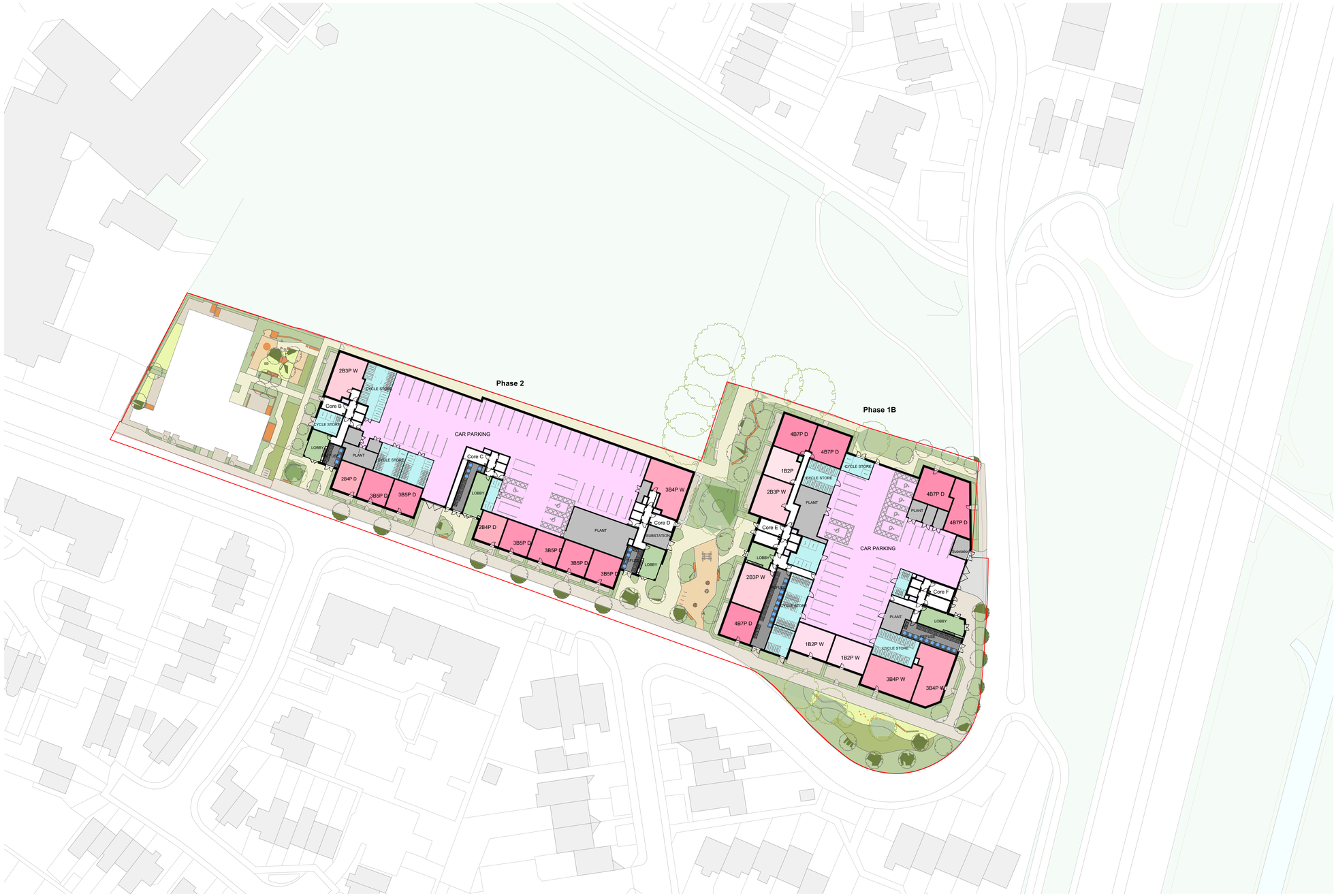
Site Plan Level 10

Project	Origin	Zone	Level	Type	Role	Number
AVD -	PRP -	ZZ -	10 -	DR -	A -	10060

Revision **P4 - PRELIMINARY**

Status **S2 - Suitable for Information**

PRP



Legend

- RESIDENTIAL COMMUNAL
- CYCLE STORE
- REFUSE
- SERVICING AND PLANT
- CAR PARKING
- SR 1B2P FL
- SR 1B2P FL W
- SR 2B3P FL W
- SR 2B4P H
- SR 3B4P FL W
- SR 3B5P H
- SR 4B7P H
- SMOKE EXTRACT NATURAL
- Smoke Vent Natural

0m 10m 20m 30m 40m

Designed with reference to the surveys, information and reports listed: Xxxxxxxxxxxxx Xxxxxxxxxxxxx, Xxxxxxxxxxxx Xxxxxxxxxxx, Xxxxxxxxxxxx Xxxxxxxxxxx, Xxxxxxxxxxxx Xxxxxxxxxxx, Xxxxxxxxxxxx Xxxxxxxxxxx.

Rev	Date	Description
P6	20-08-25	Pre-App 6
P7	03-09-25	Issued for coordination
P8	09-09-25	Issued for coordination
P9	09-09-25	Issued for coordination - redline update
P10	12-09-25	S73 Design Freeze Issue

Dwn	Ckd
ed	YW
BC	YW
YW	YW
YW	YW
YW	YW

Drawn JR
Checked YW
Date 24/11/22
Scale @ A1 1 : 500

Avondale Drive

Site Plan Ground Level GA

Project	Origin	Zone	Level	Type	Role	Number
AVD -	PRP -	ZZ -	00 -	DR -	A -	10050

Revision **P10 - PRELIMINARY**
Status **S2 - For Comments**

PRP

0m 10m 20m 30m 40m

Designed with reference to the surveys, information and reports listed: Xxxxxxxxxxxxx Xxxxxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx.

Rev	Date	Description
P4	20-06-25	Design Update shared with consultants
P5	01-08-25	Design updated for Coordination
P6	20-08-25	Pre-App 6
P7	09-09-25	Issued for coordination - redline update
P8	12-09-25	S73 Design Freeze Issue

Dwn	Ckd
BC	YW
ED	YW
ed	YW
YW	YW
YW	YW

Drawn JR
Checked YW
Date 24/11/22
Scale @ A1 1 : 500

Avondale Drive

Site Plan Level 01

Project	Origin	Zone	Level	Type	Role	Number
AVD -	PRP -	ZZ -	01 -	DR -	A -	10051

Revision **P8 - PRELIMINARY**

Status **S2 - Suitable for Information**

PRP

Legend

- SERVICING AND PLANT
- PRIV 1B2P FL
- PRIV 2B4P FL
- PRIV 2B4P FL W
- SR 1B2P FL
- SR 1B2P FL W
- SR 2B3P FL
- SR 2B4P FL
- SR 3B5P FL
- SMOKE EXTRACT NATURAL
- Smoke Vent Natural

0m 10m 20m 30m 40m

Designed with reference to the surveys, information and reports listed: Xxxxxxxxxxxxx Xxxxxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx, Xxxxxxxxxxx Xxxxxxxxxx.

Rev	Date	Description
P3	13-06-25	Non-HRB in phase 2 Design Option
P4	20-06-25	Design Update shared with consultants
P5	01-08-25	Design updated for Coordination
P6	20-08-25	Pre-App 6
P7	12-09-25	S73 Design Freeze Issue

Dwn	Ckd
BC	CS
BC	YW
ED	YW
ed	YW
YW	YW

Drawn JR
Checked YW
Date 11/24/22
Scale @ A1 1 : 500

Avondale Drive

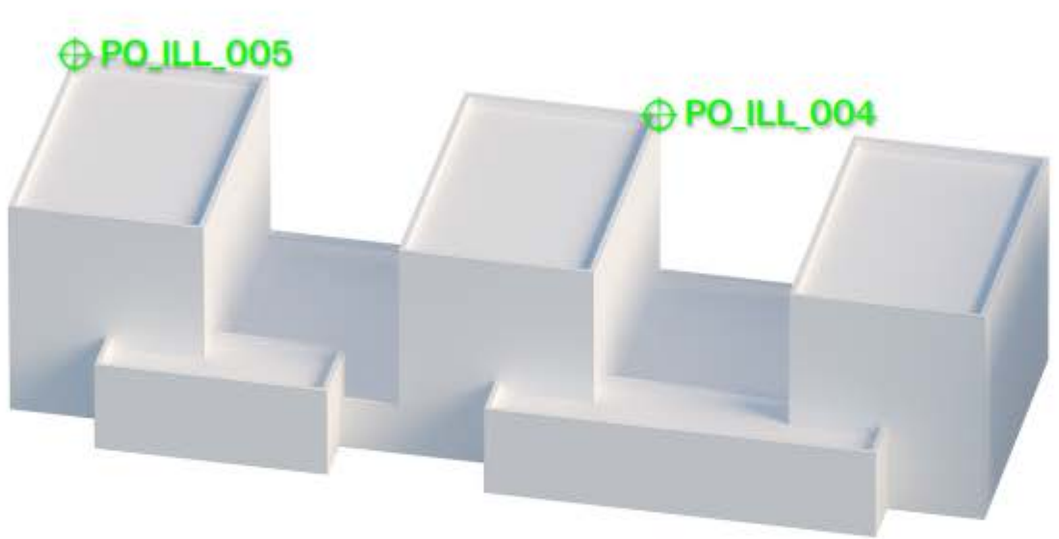
Site Plan Level 02

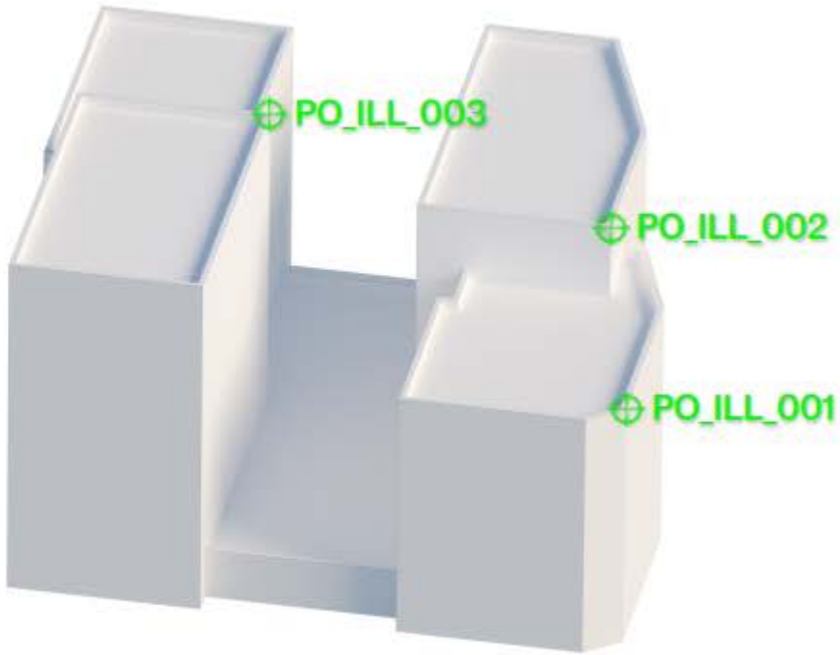
Project	Origin	Zone	Level	Type	Role	Number
AVD -	PRP -	ZZ -	02 -	DR -	A -	10052

Revision **P7 - PRELIMINARY**

Status **S2 - Suitable for Information**

PRP



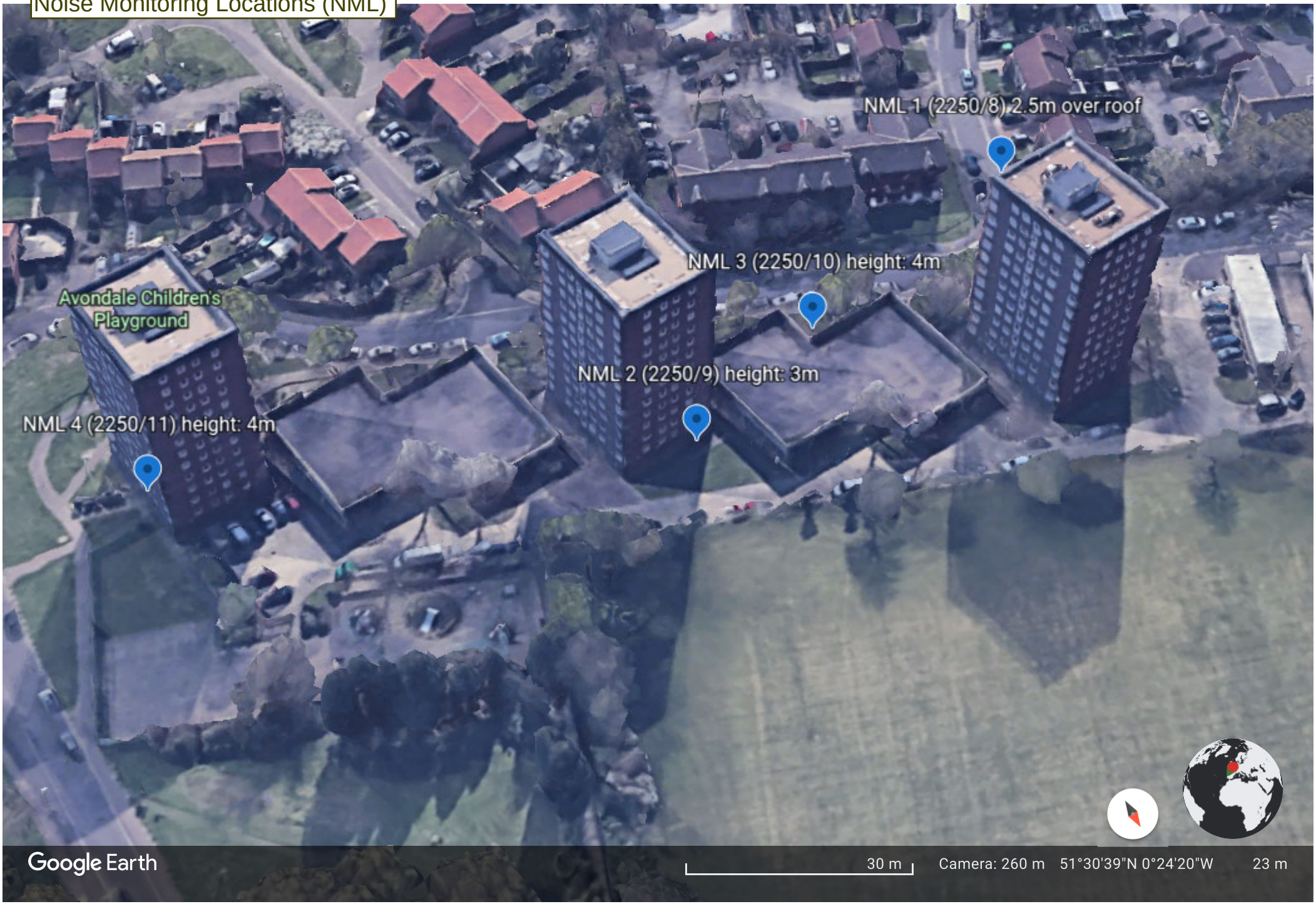


Point	Easting (m)	Northing (m)	Elevation (mAOD)
PO_ILL_001	510,789.057	180,237.713	55.000
PO_ILL_002	510,790.707	180,258.552	61.300
PO_ILL_003	510,762.328	180,276.825	64.450
PO_ILL_004	510,696.076	180,305.089	52.450
PO_ILL_005	510,644.672	180,322.339	52.450

APPENDIX B

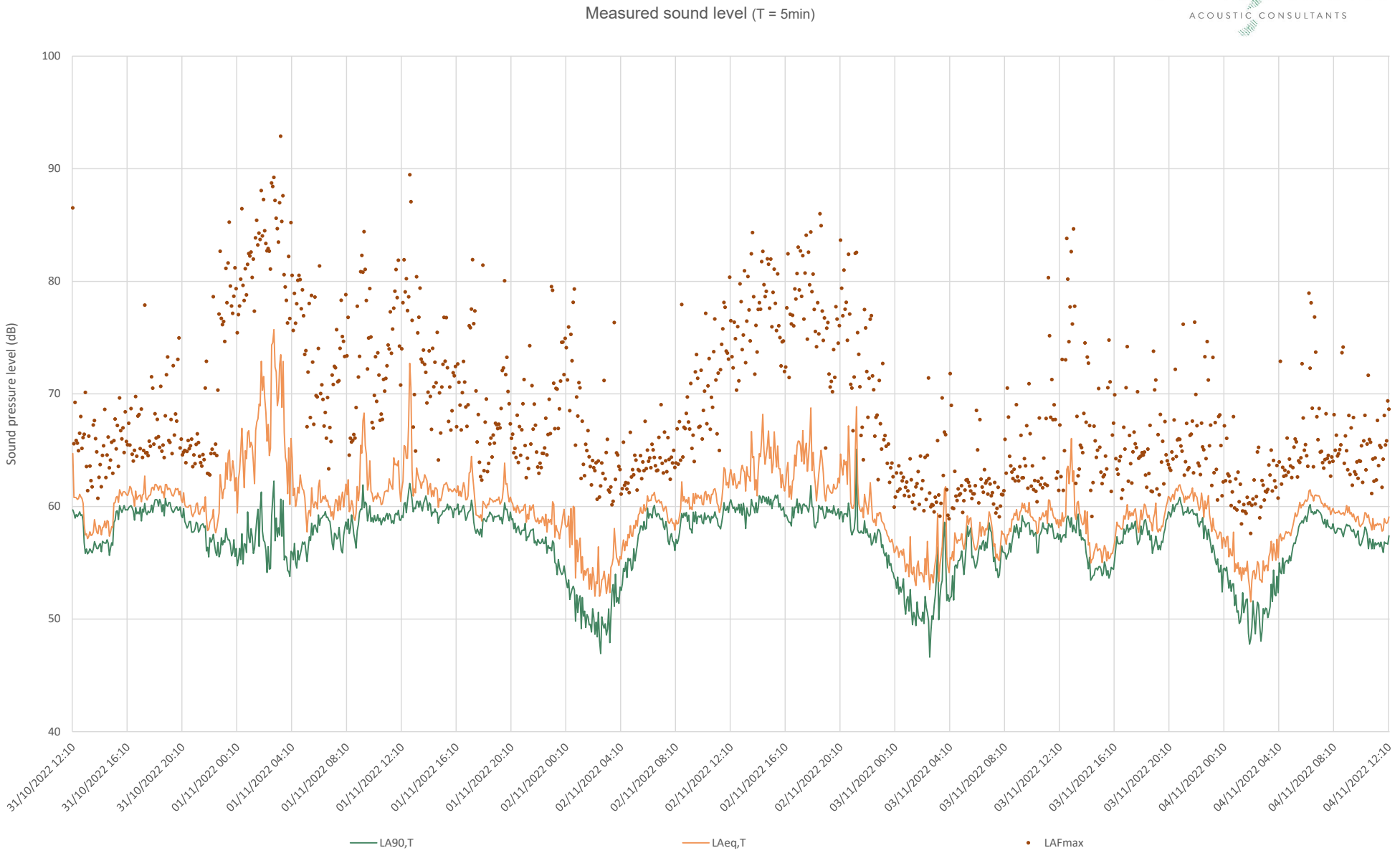
Noise monitoring locations and results

Noise Monitoring Locations (NML)

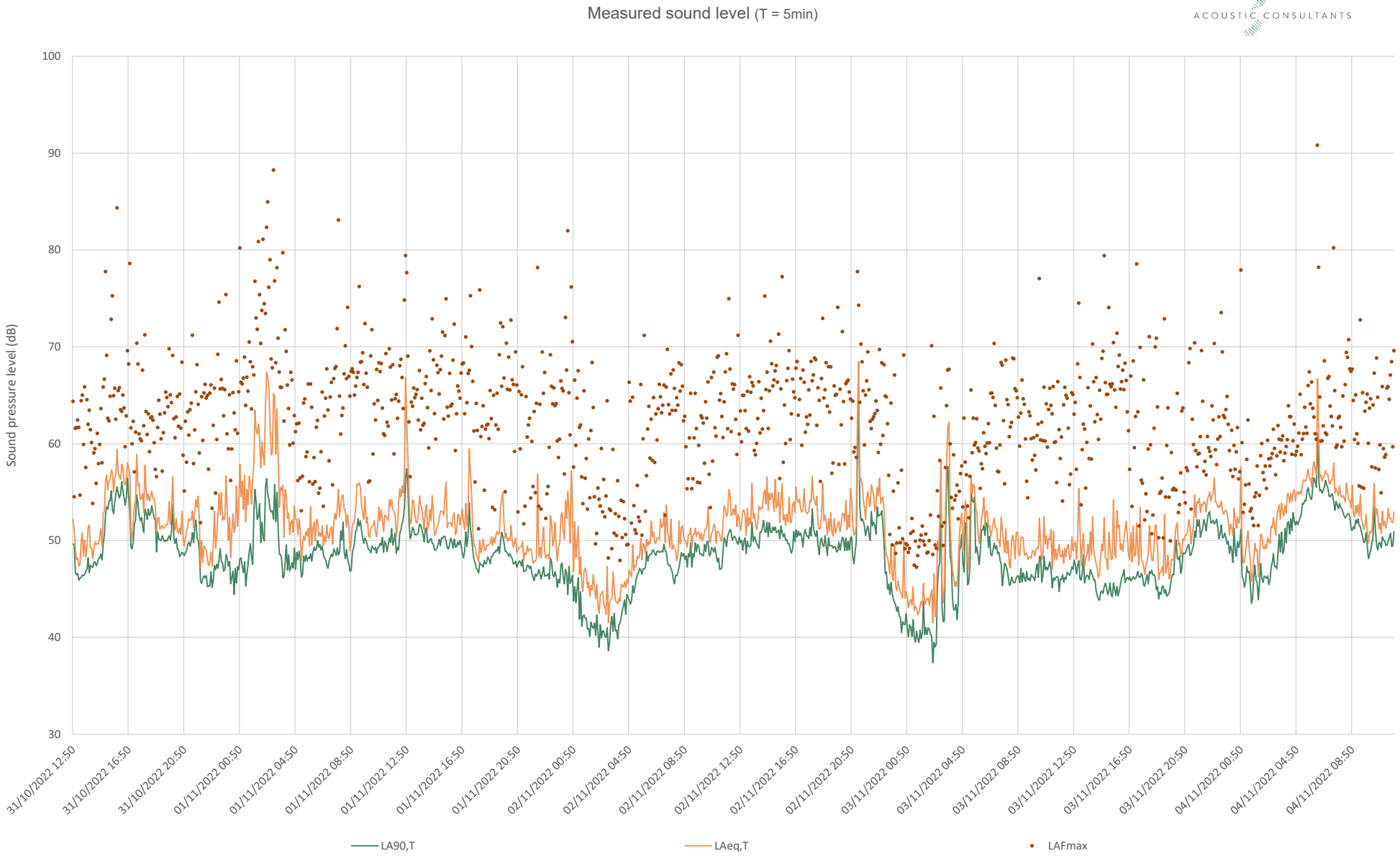


NML 1: Roof of Glenister House

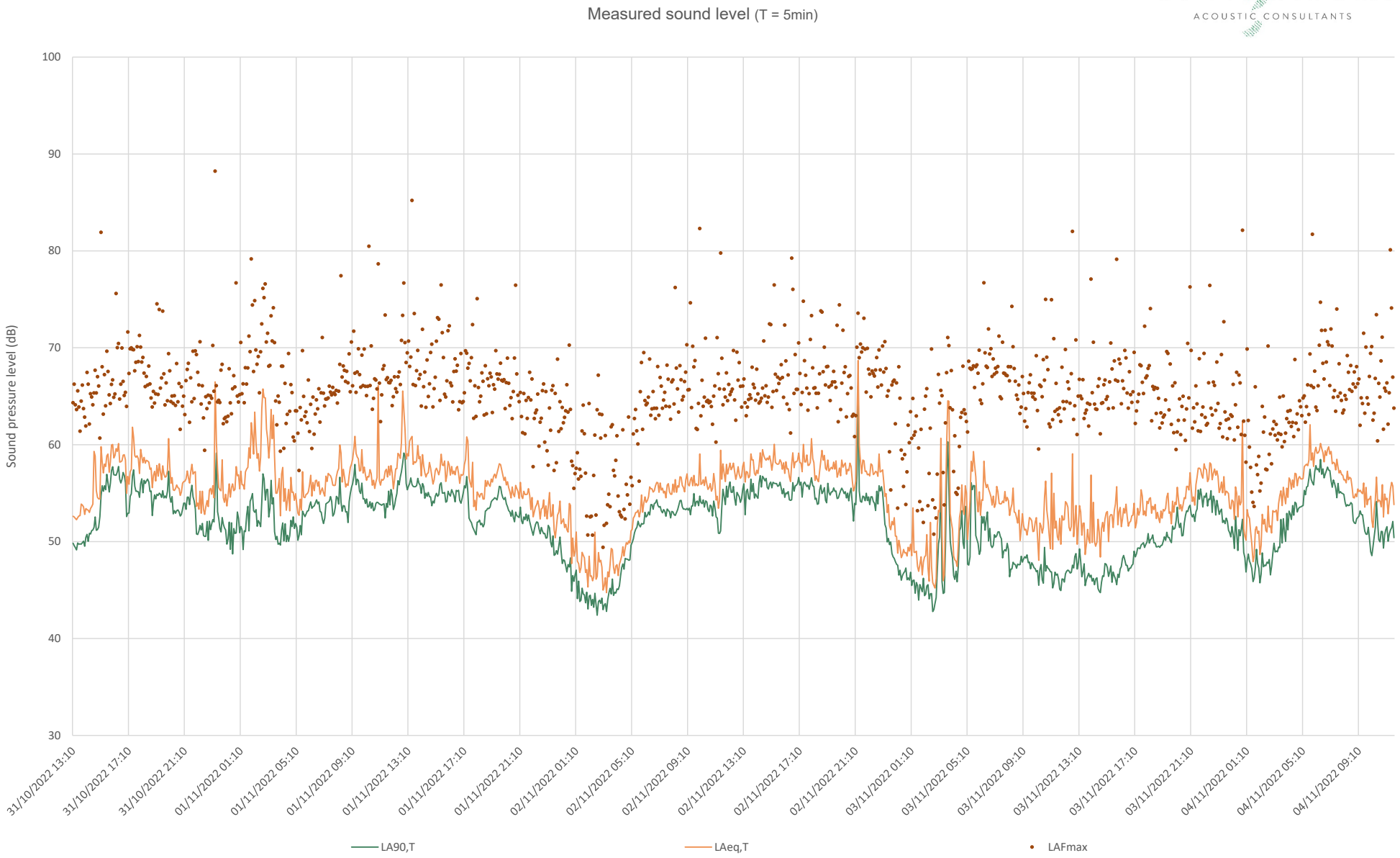
SPECTRUM
ACOUSTIC CONSULTANTS



NML 2: Rear of Fitzgerald House

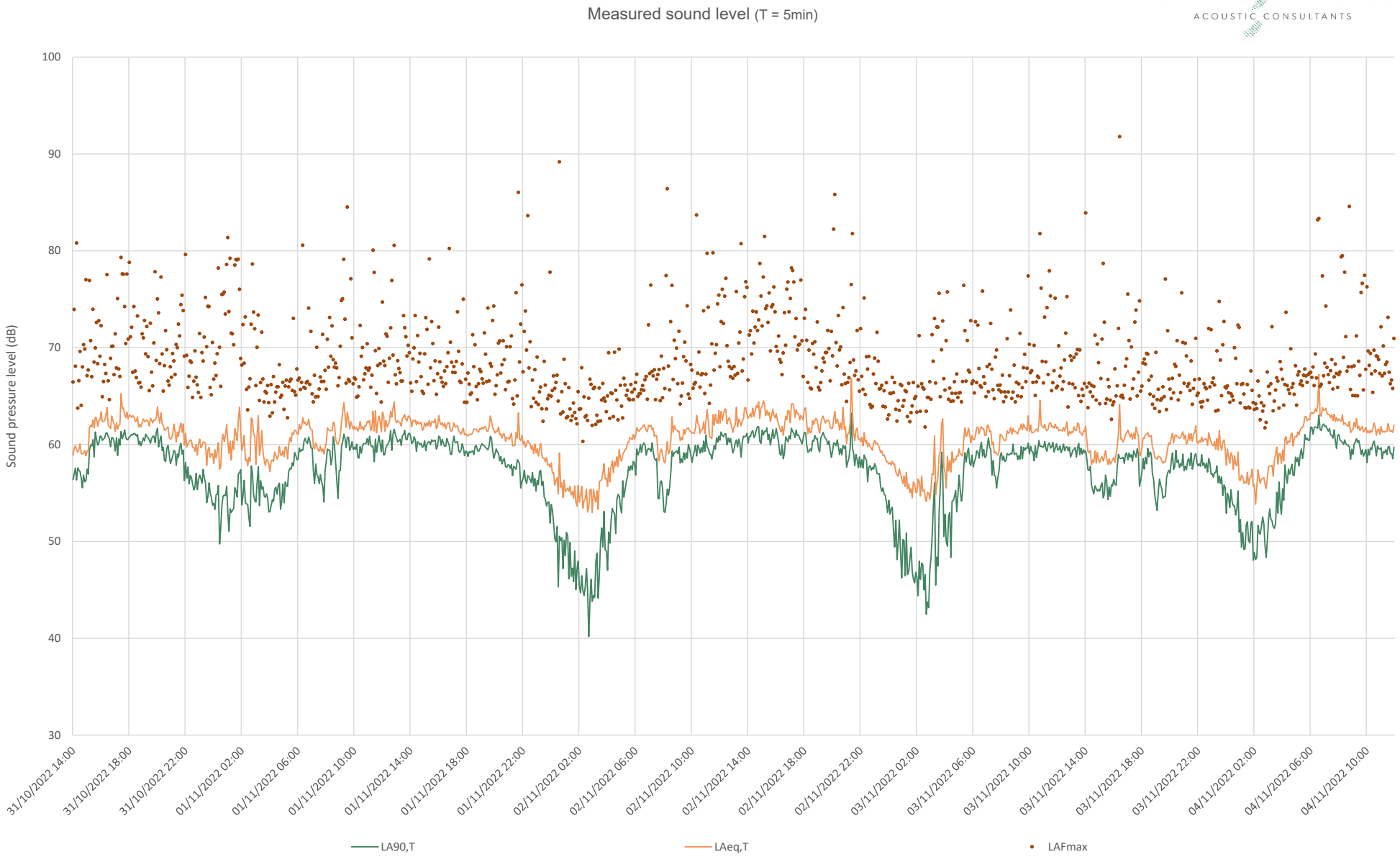


NML 3: Overlooking Avondale Drive



NML 4: 1F window of Wellings House (east facing)

SPECTRUM
ACOUSTIC CONSULTANTS



APPENDIX C

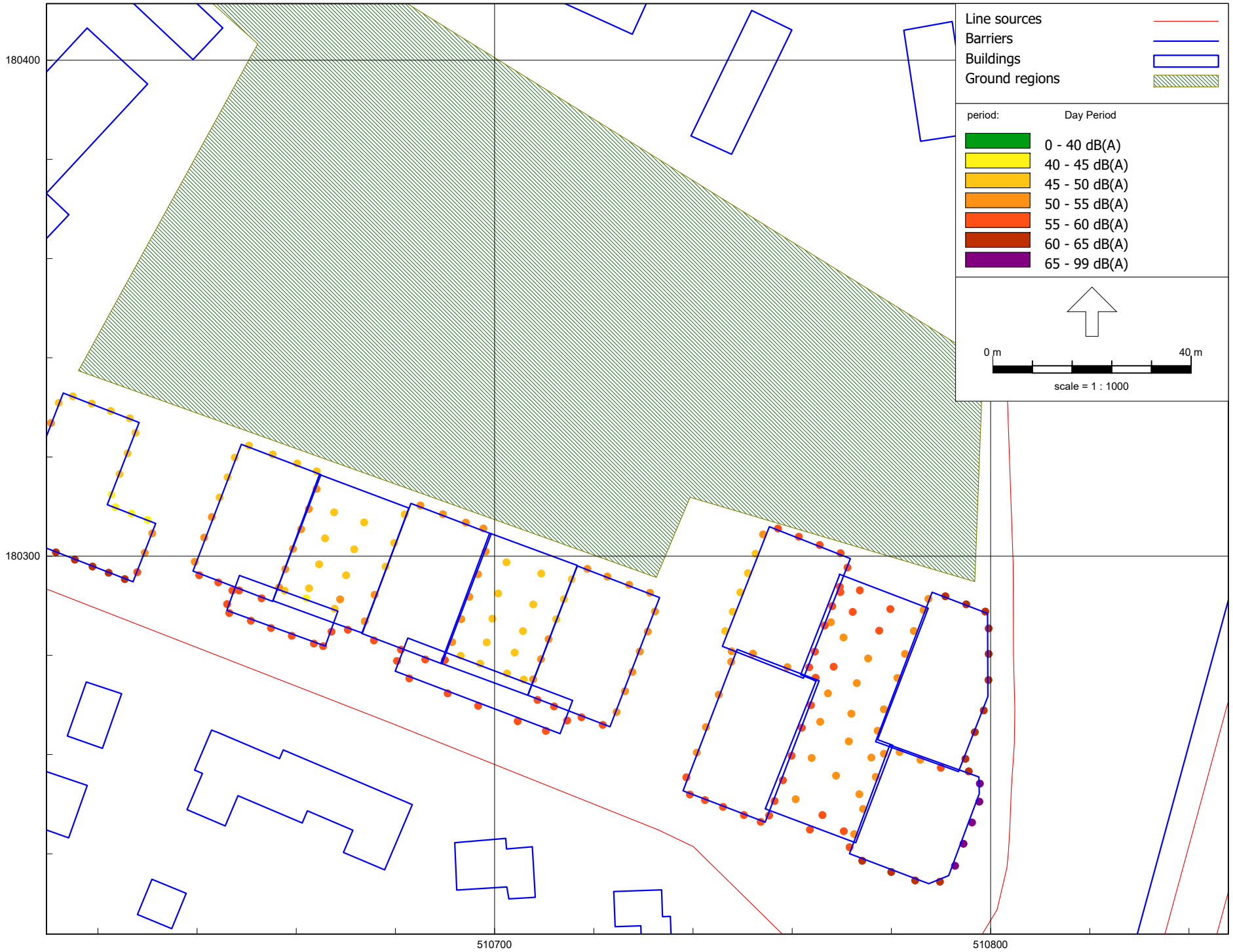
Noise model results

Axonometric view of noise model of proposed development including existing buildings and phases

Day

Incident noise levels at facades and in outdoor amenity areas

Spectrum Acoustic Consultants Ltd, United Kingdom



Night

Incident LAeq levels at facades

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