



67 Old Market Street,
Blackley

Noise Impact Assessment

For FBJ Construction Ltd.

Date: 20 July 2022

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DOCUMENT CONTROL SHEET

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1. INTRODUCTION

Hydrock have been appointed to provide acoustic engineering services to support the planning application for a proposed residential development at 67 Old Market Street, Blackley, Manchester.

The proposed development Site was previously occupied by a 4-storey commercial building which has been demolished leaving the current Site area as an open space. The proposed development comprises of a 4-storey residential building, including 18 self-contained apartment units and 9 car parking spaces.

The Site is located in Blackley, to the north of Manchester City Centre. The north of the Site is bordered by Old Market Street with a mixture of green space and residential buildings beyond. To the east of the Site is a mixture of commercial and residential buildings, including the Ye Golden Lion public house and beer garden bordering the site boundary. To the south of the Site is residential properties off Westgate Avenue. To the west, the site is bordered by Domett Street, with a mixture of both commercial and residential properties, including local shops, beyond. 160m to the west is Pike Fold Primary School and playing fields, off Old Market Street.

This noise impact assessment has been carried out in order to determine the noise mitigation requirements for the proposed development.

This report is technical in nature; therefore, a glossary is provided in **Appendix A**.

2. METHODOLOGY

This noise assessment considers the following potential impacts:

- Road traffic noise from Old Market Street and the remainder of the local road network, at proposed development;
- Commercial noise associated with the Co-op Food shop, to the west of the site, at the proposed development;
- Entertainment noise from the existing Public House (Ye Golden Lion), to the east of the site, at the proposed development; and,
- Atmospheric plant noise emissions from proposed items of fixed plant at nearby existing sensitive receptors.

The current Indicative Masterplan, which forms the basis of this assessments, is included in **Appendix B**.

2.1 Consultation with Manchester City Council (MCC)

The noise impact assessment methodology was sent to Manchester City Council (MCC) via email. A response was received from Rebecca Twigg-Purcell, Environmental Projection Officer, on the 27th June 2022. The methodology was agreed in principle and no specific comments were provided.

It has been noted that the MCC have published local noise and planning guidance which has been must be reviewed and considered in this the assessment.

2.2 Policy and Guidance

To assist in establishing an appropriate noise survey and assessment methodology, a detailed review of relevant current policy and guidance has been undertaken. This is summarised in **Appendix C**.

The following relevant national policy and guidance documents have been considered:

- National Planning Policy Framework, 2021 (NPPF);
- Noise Policy Statement for England, 2010 (NPSE);
- Planning Practice Guidance - Noise, 2019 (PPG);
- World Health Organisation (WHO) 1999: Guidelines for Community Noise;
- BS 8233:2014 - Guidance on sound insulation and noise reduction for buildings (BS8233);
- BS 4142:2014 + A1:2019 - Methods for rating and assessing commercial and industrial sound (BS4142); and,
- Manchester City Council - Planning & Noise: Technical Guidance, June 2022.

3. NOISE SURVEY

3.1 Survey Overview

A noise survey was undertaken at the Site, between the 30th June and 4th July 2022.

Noise measurements were made using a Class 1, integrating sound level meter. The microphone was positioned vertically on a tripod at least 1.2m above the ground and at least 3.5m from any other reflecting surfaces. The sound level meter was calibrated to a reference level of 94 dB at 1kHz both prior to, and on completion of, the noise survey. No significant drift in calibration was noted during the survey (≤ 0.5 dB).

3.2 Weather Conditions

All noise monitoring took place during conducive conditions, with wind speeds less than 5ms^{-1} and no significant precipitation. A summary of observed weather conditions during the survey is provided below.

On the 30th June, during setup of noise monitoring equipment, the weather conditions were observed and historical weather forecasts were gathered, as follows:

- A high of 19°C during the daytime and a low of 12°C during the night-time;
- Sunny spells and approximately 20% cloud cover;
- No precipitation;
- Wind speed below 5ms^{-1} ; and,
- Dry ground.

On the 4th July, upon collection of noise monitoring equipment, the weather conditions were observed and historical weather forecasts were gathered, as follows:

- A high of 17°C during the daytime and a low of 12°C during the night-time;
- Sunny spells and approximately 70% cloud cover;
- Light showers that began upon arrival to Site;
- Wind speed below 5ms^{-1} ; and,
- Dry ground upon arriving to Site, wet ground upon leaving.

3.3 Monitoring Locations

Noise Monitoring was carried out over a 24-hour weekday period and a full weekend period between 30th June and 4th July 2022. Two monitoring locations were selected that are considered to be representative of the proposed development. The noise survey was carried out using unattended measurements over a 5-day period.

Monitoring Locations (MLs) are presented in **Figure 1** and summarised as follows:

- **ML1:** positioned adjacent to the northern boundary, 1.5m above ground and approximately 4m from Old Market Street. This location is representative of the north, east and western façade of the development with direct line of sight to Old Market Street. This location captured dominant road noise.
- **ML2:** positioned in the southern part of the Site adjacent to existing dwellings off Domett Street. This location was used to capture typical background noise levels in the vicinity of existing residents, together with any entertainment noise from Ye Golden Lion pub and commercial noise from the co-operative convenience store and other local amenities on Old Market Street.

Observations were carried out and existing noise sources noted during the Site survey, when setting up and dismantling the sound level meter. Measurements were also supplemented with audio recordings to allow retrospective subjective analysis of the acoustic environment.

Noise monitoring was carried out for approximately 5 days, including two 24-hour weekday periods and a full weekend. The inclusion of the weekend periods ensure that baseline levels are established whilst investigating if the local public house (Ye Golden Lion) during its likely busiest period.

3.4 Summary of Existing Noise Environment

Observations made during the survey and a review of audio recordings identified the following noise sources contributing to the noise climate at the Site:

Road Traffic: Road traffic noise from Old Market Street dominated across the whole of the site during both daytime and night-time periods. HGVs, emergency service vehicles and buses were regularly observed when attending the site.

Co-op Food Shop: No noise associated with operations at the Co-op were observed to be audible at the Site during the survey period.

Ye Golden Lion (Public House): No commercial or entertainment noise from Ye Old Lion was audible at the Site throughout the survey.

Other Sources: Bird song and distant aircraft movements were occasionally audible across the Site. Upon leaving site on the 4th July, distant noise was observed from the local school.

3.5 Summary of Existing Noise Levels

Measured noise levels at all locations have been separated in to daytime (0700 to 2300 hours) and night-time (2300 to 0700 hours) categories, in accordance with current guidance, where appropriate.

Measured average noise levels on each day of the survey are presented in Table 1..

Table 1: Average Measured Noise Levels

Monitoring Location	Date	Average Noise Level - $L_{Aeq, T}$, dB	
		Daytime 0700 - 2300	Night-time 2300 - 0700
ML1	Thursday 30th June 2022	65	59
	Friday 1st July 2022	67	62
	Saturday 2nd July 2022	65	59
	Sunday 3rd July 2022	65	59
ML2	Thursday 30th June 2022	54	49
	Friday 1st July 2022	56	50
	Saturday 2nd July 2022	54	49
	Sunday 3rd July 2022	54	48

The highest measured daytime and night-time average noise levels were measured on Friday 1st July at each ML. In order to provide a robust assessment, these levels are adopted for the assessment of mitigation requirements at the proposed development.

The typical measured night-time L_{AFmax} noise levels measured during the survey are summarised in Table 2. Measured night time maxima which are not considered representative of the typical noise environment have been eliminated from this assessment.

Table 2: Summary of Maximum Night-time Levels

Monitoring Location	Date	Maximum Noise Level - $L_{AFmax, T}$, dB
		Night-time 2300 - 0700
ML1	Thursday 30th June 2022	75
	Friday 1st July 2022	77
	Saturday 2nd July 2022	74
	Sunday 3rd July 2022	74
ML2	Thursday 30th June 2022	65
	Friday 1st July 2022	65
	Saturday 2nd July 2022	64
	Sunday 3rd July 2022	64

The highest measured typical night-time L_{AFmax} noise level was measured on Friday 1st July at each ML. In order to provide a robust assessment, these levels are adopted for the assessment of mitigation requirements at the proposed development.

A summary of measured noise levels is provided results can be found in **Appendix D**.



4. NOISE ASSESSMENT

4.1 Overview

The noise assessment is based on the Proposed Site Plans by Smashbox Architecture (dated February 2020).

The proposed site plans do not indicate the inclusion of private gardens, balconies or roof terraces, therefore outdoor noise levels require no assessment.

4.2 Daytime Noise Levels in Bedrooms

The minimum composite sound reduction required of facades, in order to achieve appropriate internal daytime noise levels, in accordance with BS8233, is summarised in Table 3 below.

Table 3: Daytime Façade Noise Levels at the Proposed Development and Require Attenuation

Proposed Receptors	Daytime Façade Level, $L_{Aeq,T}$ dB	Minimum Composite Sound Reduction of Façade, D_w , dB
North/East/West Façade (ML1)	67	32
South Façade (ML2)	56	21

Table 3 outlines that facades with direct line of sight of Old Market Street i.e. North/East/West, will be exposed to daytime levels of up to 67dB $L_{Aeq,T}$. Whereas facades screened from Old Market Street, will be exposed to a lower level of 56 dB $L_{Aeq,T}$. An appropriate scheme of glazing and ventilation will be required to allow windows to remain closed in order to maintain suitable internal noise levels in living rooms and bedrooms, while providing sufficient background ventilation.

4.3 Night-time Noise Levels in Habitable Bedrooms

The level of façade noise attenuation required to achieve appropriate internal night-time noise levels, in accordance with BS8233, is summarised in Table 4 below.

Table 4: Night-time Façade Noise Levels at the Proposed Development and Required Attenuation

Proposed Receptors	Night-time Façade Level, $L_{Aeq,T}$ dB	Maximum Night-time Façade Noise Level, $L_{Aeq,T}$ dB	Minimum Composite Sound Reduction of Façade, D_w , dB
North/East/West Façade (ML1)	62	77	32
South Façade (ML2)	50	65	20

Table 4 outlines the minimum composite sound reduction of the façade based upon maximum noise levels measured on site. Facades with direct line of sight to Old Market Street are subject to higher levels of noise and higher maximum noise levels throughout the night. An appropriate scheme of glazing and ventilation will be required to allow windows to remain closed in order to maintain suitable internal noise levels in living rooms and bedrooms, while providing sufficient background ventilation.

4.4 Ventilation Requirements

Ventilation proposed at the site should, as a minimum, comply with Building Regulations 2021 Approved Document F1 Means of Ventilation and British Standard BS5925 1991: “Code of Practice for Ventilation Principles and Designing for Natural Ventilation”.

This would ensure that windows can remain closed while maintaining sufficient background ventilation. Windows should be openable in order to allow for purge ventilation.

4.5 Noise from Proposed Fixed Plant

With reference to BS4142, the atmospheric noise emission limits have been determined for any proposed fixed building services plant, in order to achieve a rating level 5dB below existing background levels as recommended in MCC Noise & Planning Guidance, 2022 (with the exception of emergency plant i.e. back-up generators).

Noise associated with the development shall be controlled to the guideline levels outlined in Table 5 where possible, when assessed in accordance with BS4142, at the nearest noise sensitive receptor.

Background noise levels have been selected based on the lowest measured level during the monitoring period, 3rd July 2022. This ensures a robust assessment.

Existing background levels at measured at ML2 and recommended noise limits are presented in Table 5 below.

Table 5: Guideline Atmospheric Plant Noise Emission Limits

Period	Existing Backgrounds - Sound Pressure Level ($L_{A90,T}$, dB)	Atmospheric Plant Noise Emission Limit (dB, $L_{A,T}$)
Daytime (07:00 to 23:00 hrs)	42	37
Night-time (23:00 to 07:00 hrs)	34	29

Details of proposed plant are not known at this stage. It is therefore recommended that provision be made for low-noise plant, and attenuation measures (screening/enclosures/duct-mounted attenuators etc.) as appropriate.

5. MITIGATION

5.1 Living Rooms and Bedrooms

The requirements indicate that reliance upon open windows, as a form of background ventilation, would result in the guideline internal noise levels for living rooms and bedrooms, as recommended in BS8233, to be exceeded.

Proposed dwellings in these areas will require the implementation of an alternative means of ventilation, to allow windows to remain closed, while retaining sufficient background ventilation. However, openable windows should be included to facilitate purge ventilation (i.e. removal of fumes/odours).

At this stage of the project, detailed information has not yet been developed regarding façade construction, ventilation strategy etc. The guidance contained herein is therefore subject to development during technical design, and should not be used for tender purposes.

The preliminary ventilation guidance outlined below is based on the understanding that the preferred approach, would be to include trickle ventilators and constant Mechanical Extract Ventilation (MEV) (Building Regulations Approved Document F - System 3).

When carrying out internal noise level predictions, the following assumptions have been made:

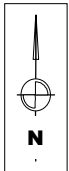
- Windows are closed, but trickle ventilators are operational i.e. open;
- A reverberation time of 0.5 seconds in habitable rooms;
- Size of windows/percentage of glazed façade area based on drawings provided;
- External walls will provide a sound reduction performance that is at least 5 dB higher than the specified glazing; and
- A single trickle ventilator (circa 2,500 mm²) per habitable room, where trickle ventilators are feasible.

Predictions indicate that guideline internal noise levels associated with transportation and commercial sources will achieve the recommended levels set out in BS8233 and WHO can be achieved with the implementation of the following glazing and ventilation configurations outlined in Table 6.

Table 6: Minimum Sound Reduction Performance

Site Area	Preliminary minimum sound reduction performance (dB)		Example configuration
	Glazing ($R_w + C_{tr}$)	Ventilator ($D_{n,e,w} + C_{tr}$)	
Glazing Spec 1	35	38	• 10mm / 16mm / 6.4mm enhanced thermal double glazing; and • Acoustic trickle ventilator
Glazing Spec 2	27	35	• 6/16/6 standard thermal double glazing; and • Acoustic trickle ventilator

A mark-up of the proposed development facades with the corresponding glazing and ventilation specification is provided in **Figure 2**.



6. CONCLUSION

Hydrock have been appointed to provide acoustic engineering services to support the planning application for the development of 67 Old Market Street, in Blackley, north-east of Manchester City Centre.

The proposed Site was a 4-storey commercial development which has been demolished leaving the current Site area as an open space. The proposed development comprises of a 4-storey residential development including 18 apartment units and 9 car parking spaces.

This noise assessment considers the following potential impacts:

- Noise from Old Market Street and the remainder of the local road network;
- Potential noise from the existing Public House (Ye Golden Lion); and,
- Atmospheric plant noise emissions from proposed items of fixed plant.

A noise survey has been carried out in order to establish the existing noise environment at the proposed development site, during the daytime and night time periods, in accordance with current guidance.

Road traffic noise from Old Market Street was dominant throughout the daytime and night-time period across the whole of Site.

The drawings provided indicate that there will be no private gardens, balconies or roof terrace area and therefore outdoor living areas have not been considered within this assessment.

Calculations indicate that a combination of standard thermal double glazing and enhanced thermal double glazing should provide sufficient attenuation of existing noise sources, during the daytime and night-time periods, to ensure that guideline internal noise levels are achieved within habitable rooms, in accordance with BS8233 and WHO guidance.

Atmospheric plant noise emission limits have been established based on the results of the noise survey. These are likely to be achieved with appropriate consideration for selection of low-noise plant and proprietary attenuation measures as appropriate during technical design.

This assessment demonstrates that there are no apparent grounds for refusal of planning permission on acoustic grounds.

Appendix A Glossary

Term	Description
dB (decibel)	The scale on which sound pressure level is expressed. Sound pressure level is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure ($2 \times 10^{-5} \text{Pa}$).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' - weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq,T}$	L_{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L_{Amax}	L_{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L_{10} and L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time, and the L_{90} is the level exceeded for 90% of the time.
R_w	R_w is the single-number quantity which characterizes the sound insulating properties of a given material over a range of frequencies. This is typically measured in a laboratory in accordance with BS EN ISO 717-1.
$D_{n,e,w}$	$D_{n,e,w}$ is the single number quantity which characterizes the airborne sound insulation performance across a given 'element' and is typically used to describe the acoustic performance of trickle ventilators etc.
C_{tr}	C_{tr} is a correction term applied to single-number sound insulation values (R_w , $D_{n,e,w}$ etc.) to afford additional weighting against low frequency performance.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and at least 3m from buildings.

Appendix B Proposed Site Masterplans

FOR PLANNING

NOTES

This drawing to be read in accordance with the specification/Bills of Quantities and related drawings.
No Dimensions to be scaled from this drawing. All stated dimensions to be verified on site and the Designer notified of any discrepancies.

Proposed Schedule of Accommodation

Ground Floor:
3 x 2 Bed units (61 sqm)
1 x 1 Bed unit (50 sqm)
Refuse & Recycling
Dual Entrance
Plant / Risers

First Floor:
3 x 2 Bed units (61 sqm)
2 x 1 Bed unit (50 sqm)

Second Floor:
3 x 2 Bed units (61 sqm)
2 x 1 Bed unit (50 sqm)

Third Floor:
3 x 2 Bed units (61 sqm)
1 x 1 Bed unit (50 sqm)

TOTAL: 18 Apartments
12 x 2 Bed Units
6 x 1 Bed Units

9nr Car Parking Spaces (50%)
18nr Cycle Spaces (100%)



PROPOSED SITE PLAN

FOR PLANNING

Project
67 OLD MARKET STREET
BLACKLEY
MANCHESTER
M9 8DX

Title
PROPOSED SITE LAYOUT PLAN

18nr APARTMENTS

Scale	Date
RTD @ A1	FEBRUARY 2020
Drawn	Checked
SB	-
Drawing Number	Revision
6489_PL02	-

SMASHBOX

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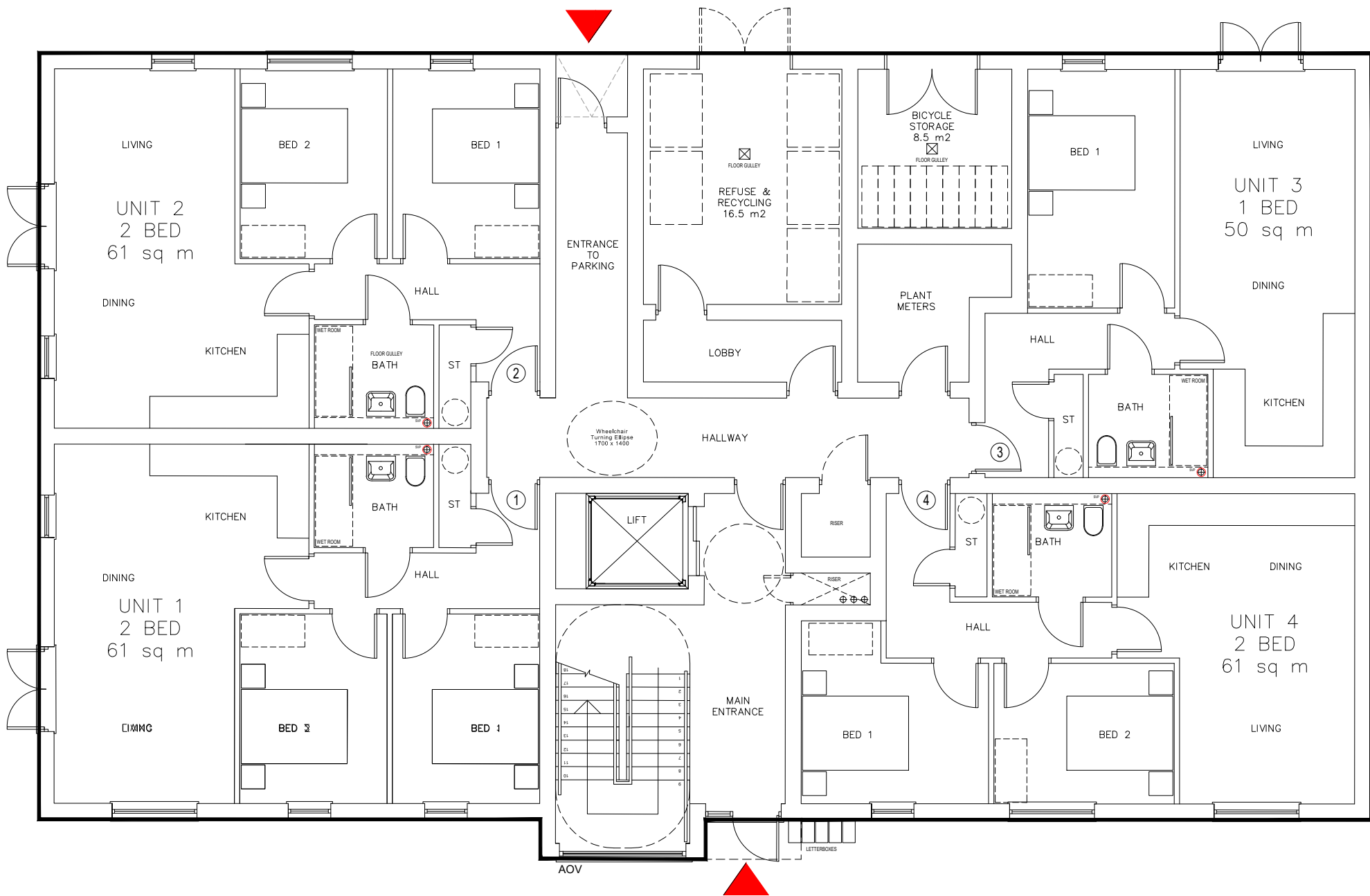
FOR PLANNING

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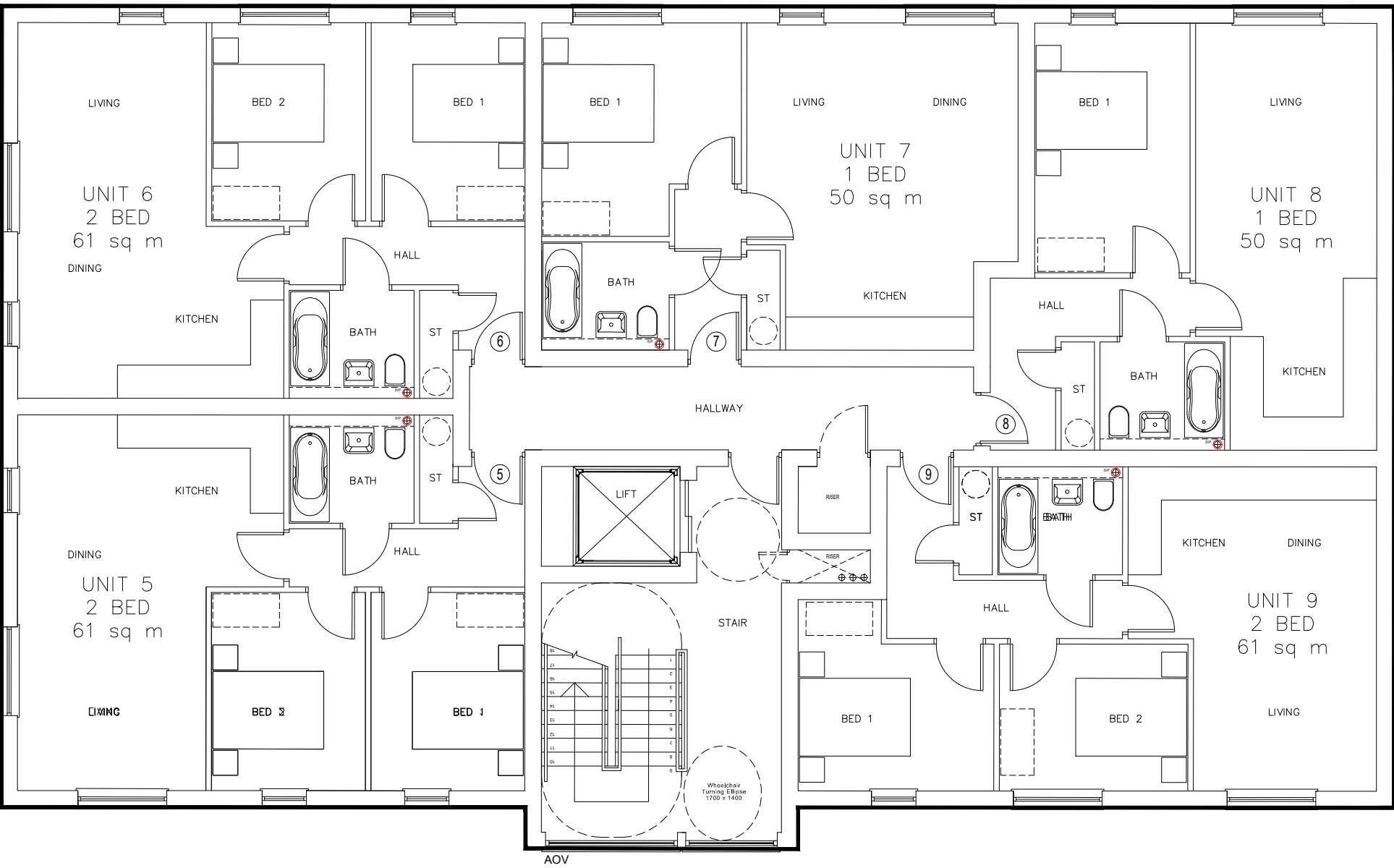
This drawing to be read in accordance with the specification/Bills of Quantities and related drawings.

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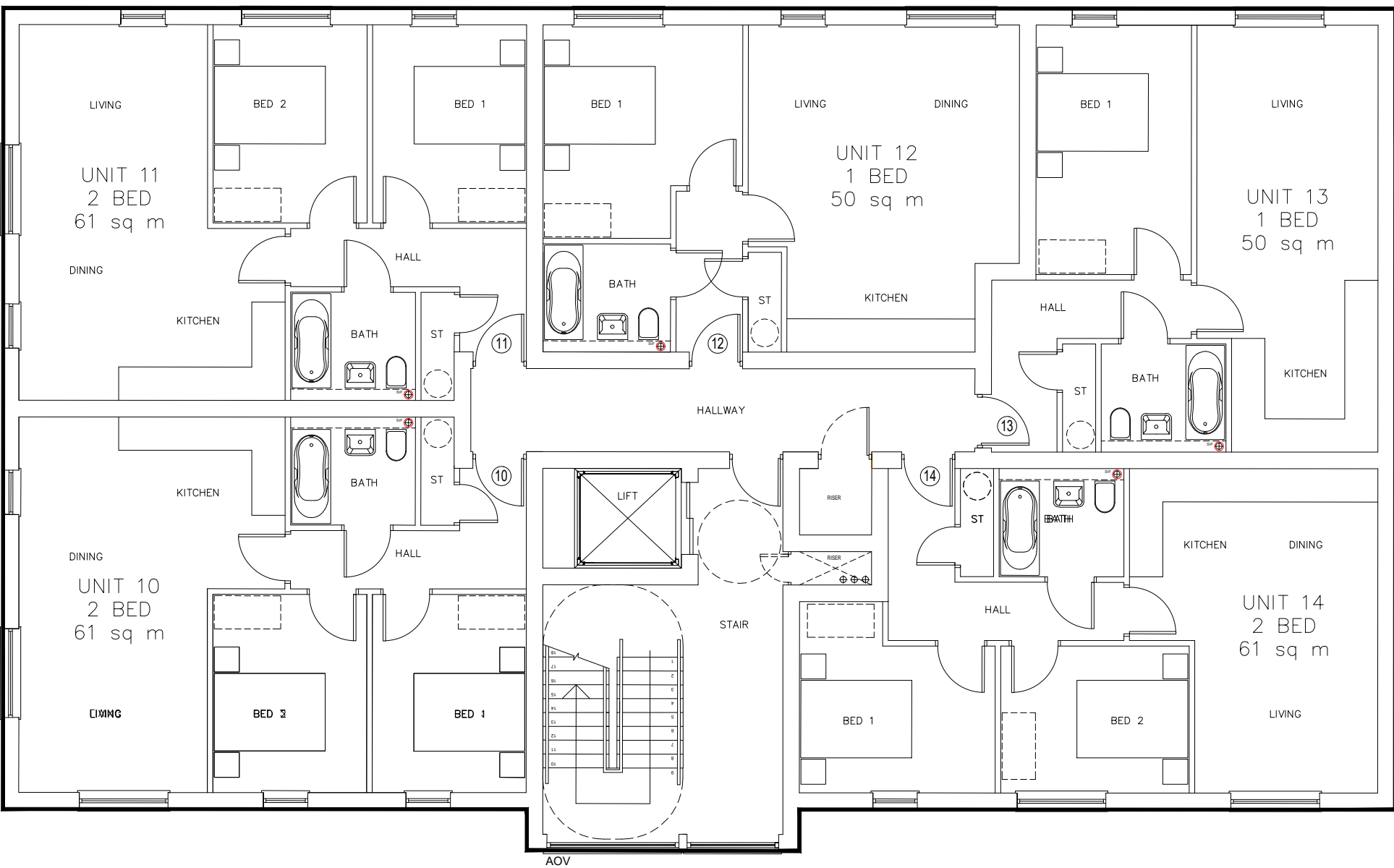
Subject to surveys.



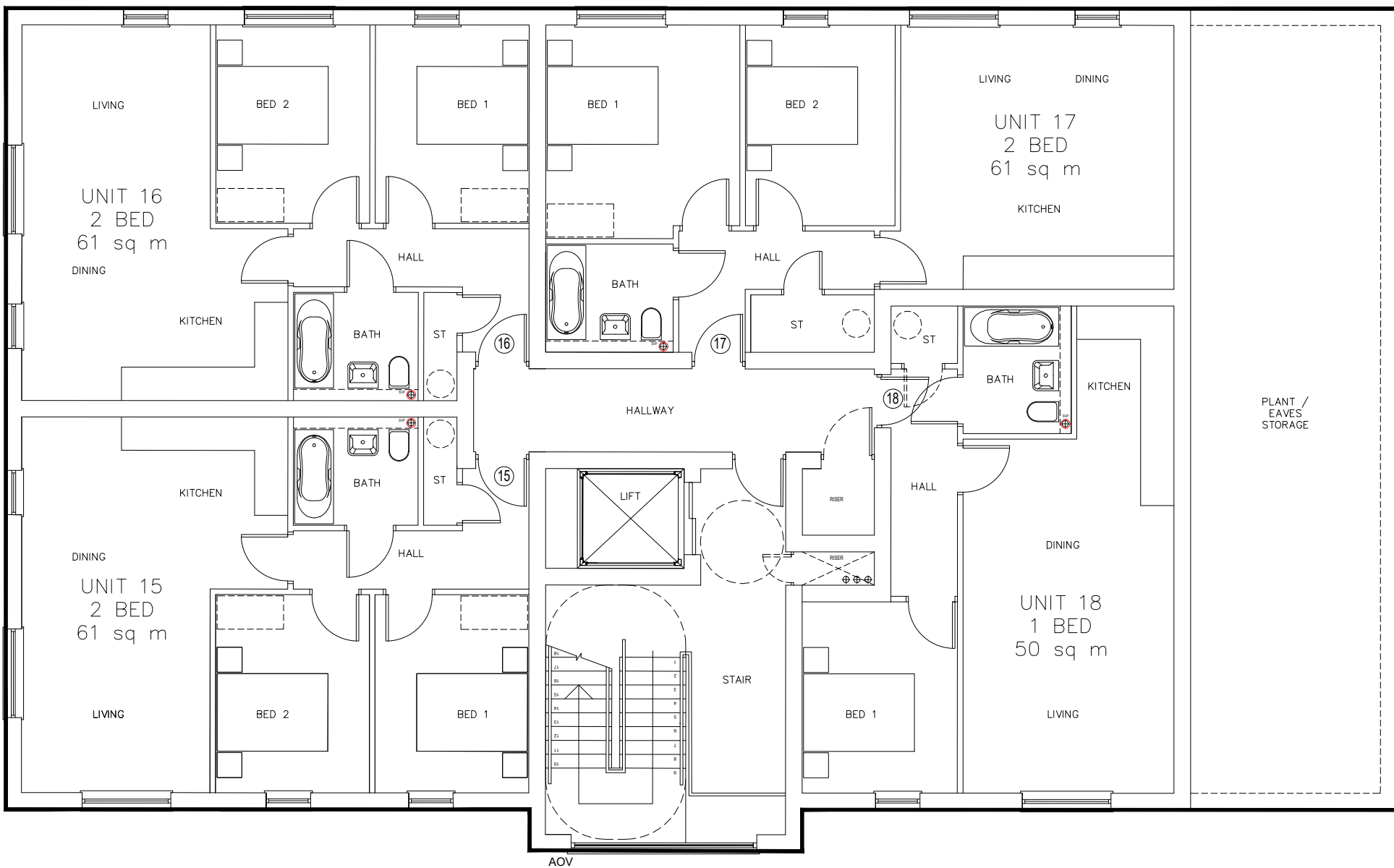
PROPOSED GROUND FLOOR PLAN
(3 X 2 BED APARTMENTS)
(1 X 1 BED APARTMENT)



PROPOSED FIRST FLOOR PLAN
(3 X 2 BED APARTMENTS)
(2 X 1 BED APARTMENT)



PROPOSED SECOND FLOOR PLAN
(3 X 2 BED APARTMENTS)
(2 X 1 BED APARTMENT)



PROPOSED THIRD FLOOR PLAN
(3 X 2 BED APARTMENTS)
(1 X 1 BED APARTMENT)

FOR PLANNING

Project

67 OLD MARKET STREET
BLACKLEY
MANCHESTER
M9 8DX

Title

PROPOSED FLOOR PLANS

Scale	Date
RTD @ A1	FEBRUARY 2020
Drawn	Checked
SB	-
Drawing Number	Revision
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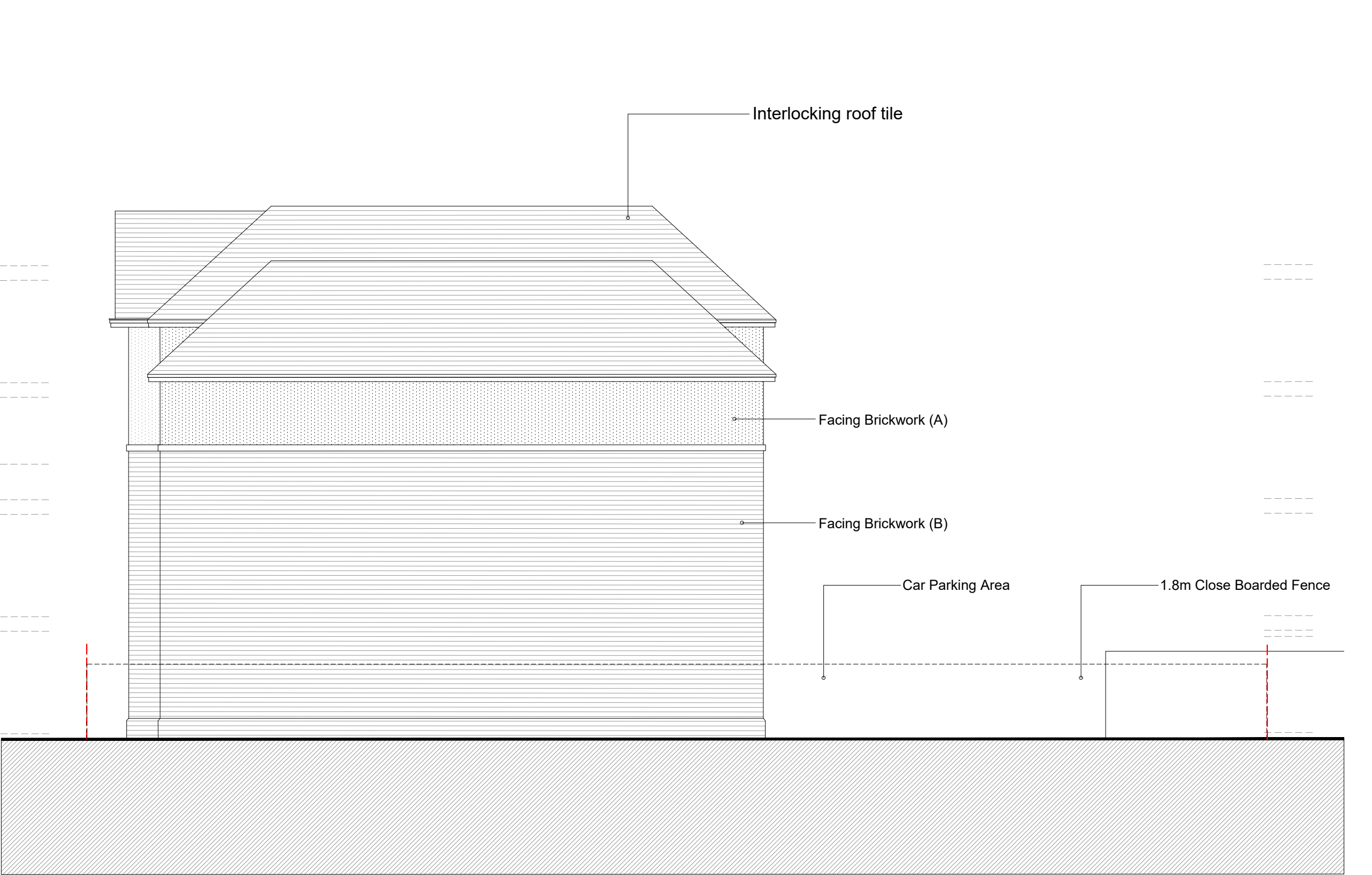
PROPOSED ELEVATION (A)
WEST - FACING DOMMETT STREET 1:100



PROPOSED ELEVATION (B)
NORTH - FACING OLD MARKET STREET 1:100



PROPOSED ELEVATION (C)
EAST - FACING PARKING AREA 1:100



PROPOSED ELEVATION (D)
SOUTH 1:100

FOR PLANNING

Project
67 OLD MARKET STREET
BLACKLEY
MANCHESTER
M9 8DX

Title
PROPOSED FRONT & REAR
ELEVATION

Scale	Date
RTD @ A1	FEBRUARY 2020
Drawn	Checked
SB	-
Drawing Number	Revision
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Appendix C Policy and Guidance

National Planning Policy Framework (NPPF)

Published in February 2021, this document sets out the Government's planning policies for England and supersedes the previous version of the NPPF published in 2019. It makes the following reference to noise in the section entitled Conserving and enhancing the natural environment:

*"170. Planning policies and decisions should contribute to and enhance the natural and local environment by:
[...]*

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans."

It also makes the following references to noise in the Section entitled Ground conditions and pollution:

"180. 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 life⁶⁰;

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.

60 See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010)."

And

"182. Planning policies and decisions should 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."

Noise Policy Statement for England (NPSE)

Published in March 2010, the Noise Policy Statement for England (NPSE) sets out the long-term vision of Government noise policy as follows:

"Promote good health and good quality of life through the effective management of noise within the context of Government policy on sustainable development."

The NPSE identifies three observed effect levels, names "No Observed Effect Level" (NOEL), "Lowest Observed Adverse Effect Level" (LOAEL) and "Significant Observed Adverse Effect Level" (SOAEL).

The NPSE contains little detail on assessment methodologies and specific parameters at which the varying observed effect levels would occur in the context of a residential development.

BS 8233:2014 - Guidance on sound insulation and noise reduction for buildings

As discussed above, there is no specific guidance contained within the Planning Condition and the NPSE. In lieu of this, the approach that is generally adopted when assessing environmental noise sources on residential developments is to undertake an assessment in accordance with BS 8233: 2014.

BS 8233 provides guidance for the control of noise in and around buildings. The guidance provided within the document is applicable to the design of new buildings, or refurbished buildings undergoing a change of use, but does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building. The guidance provided includes appropriate internal and external noise level criteria which are applicable to dwellings for steady external noise sources. It is stated that it is desirable that the internal ambient noise level does not exceed the following criteria set out in the table below:

Activity	Location	Period	
		Daytime (07:00 to 23:00 hrs)	Night-time (23:00 to 07:00 hrs)
Resting	Living room	L _{Aeq,16hrs} 35 dB	-
Dining	Dining room/area	L _{Aeq,16hrs} 40 dB	-
Sleeping (Daytime resting)	Bedroom	L _{Aeq,16hrs} 35 dB	L _{Aeq,8hrs} 30 dB

Whilst BS 8233:2014 recognises that a guideline value may be set in terms of SEL or L_{AFmax} for the assessment of regular individual noise events that can cause sleep disturbance during the night-time, a specific criterion is not stipulated. Accordingly, reference has been made in this assessment to the World Health Organisation (WHO) 1999: Guidelines for Community Noise below.

With respect to external amenity space such as gardens and patios it is stated that it is desirable that the 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. It is then confirmed that higher external noise criteria may be appropriate under certain circumstances such as within city centres urban areas, and locations adjoining the strategic transportation network, where it may be necessary to compromise between elevated noise levels and other factors such as convenience of living, and efficient use of land resource.

World Health Organisation (WHO) 1999: Guidelines for Community Noise

As with the 'good' and 'reasonable' criteria in BS 8233, the L_{AFmax} criterion in BS8233 is largely concordant with the World Health Organisation (WHO) guidance 1999: Guidelines for community noise. This document draws upon guidance from Vallet and Vernay, which states:

"For good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB L_{AFmax} more than 10-15 times per night"

BS 4142:2014 - Methods for rating and assessing commercial and industrial sound

BS 4142 describes methods for rating and assessing sound from industrial and manufacturing processes, fixed installations which comprise mechanical and electrical plant and equipment, the loading and unloading of goods and materials at industrial and/or commercial premises and mobile plant and vehicles that are an intrinsic part of the overall sound emanating from premises or processes.

The methods use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

If appropriate, the specific sound level of the source ($L_{Aeq,T}$) is corrected, by the application of one or more corrections for acoustic features to give a 'rating' level ($L_{Ar,Tr}$). The Standard effectively compares and rates the difference between the rating level of the sound and the prevailing background sound level ($L_{A90,T}$). Comparing the rating level with the background sound level, BS 4142 states:

"Typically, the greater this difference, the greater the magnitude of impact. A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

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

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

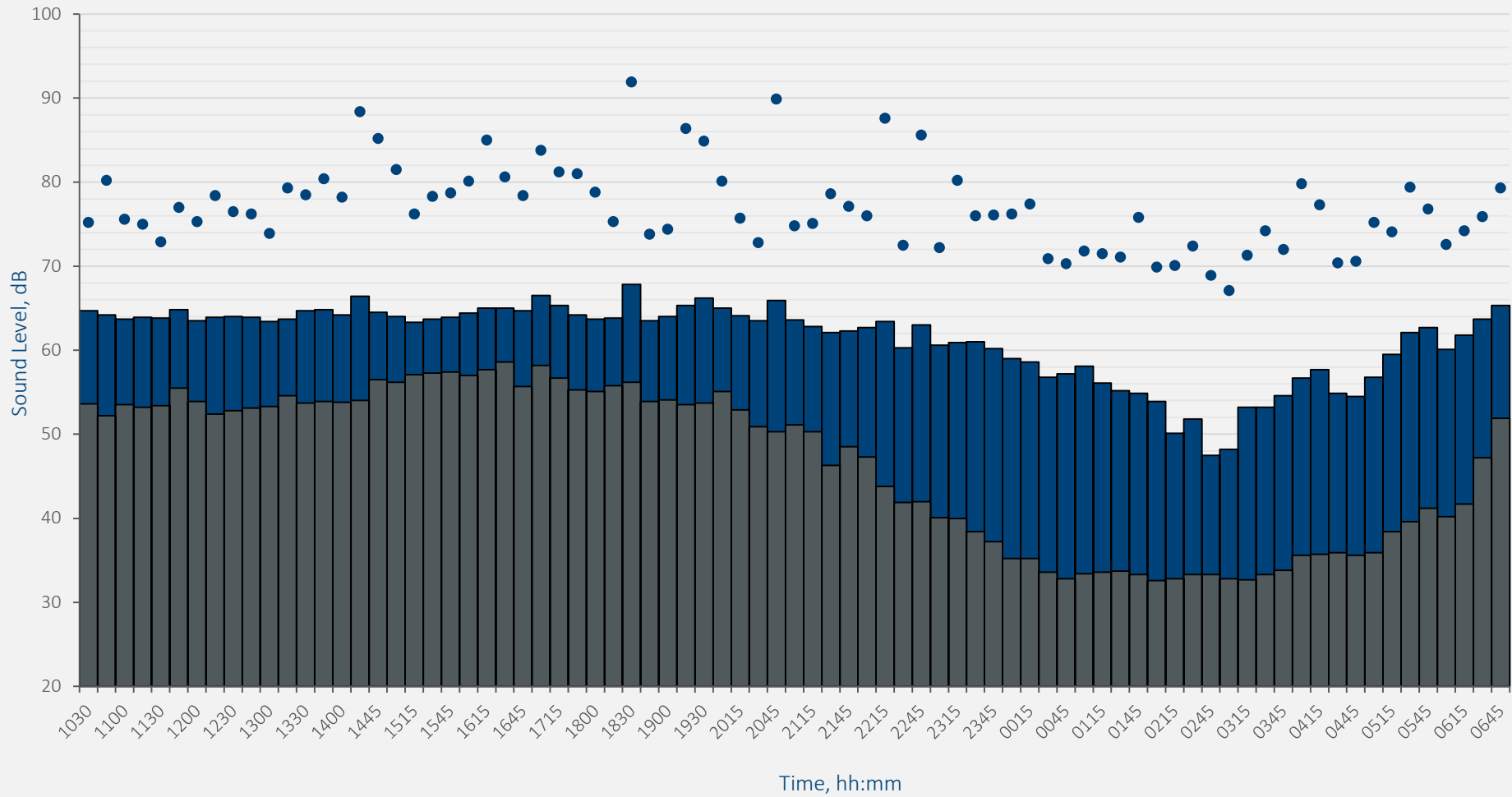
Appendix D Graphical Survey Summary

Monitoring Location 1

Thursday 30th June 2022

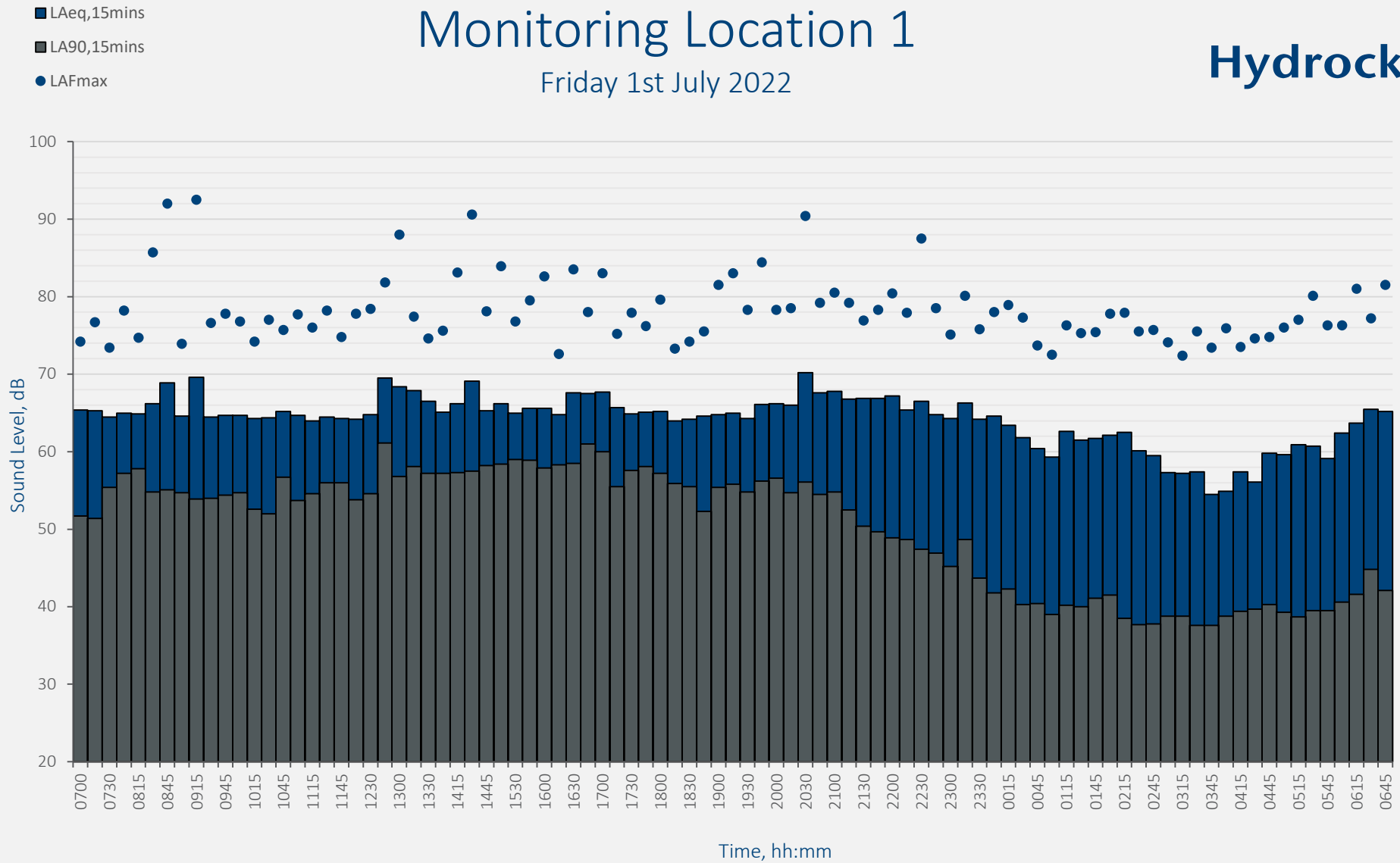


- LAeq,15mins
- LA90,15mins
- LAFmax



Monitoring Location 1

Friday 1st July 2022

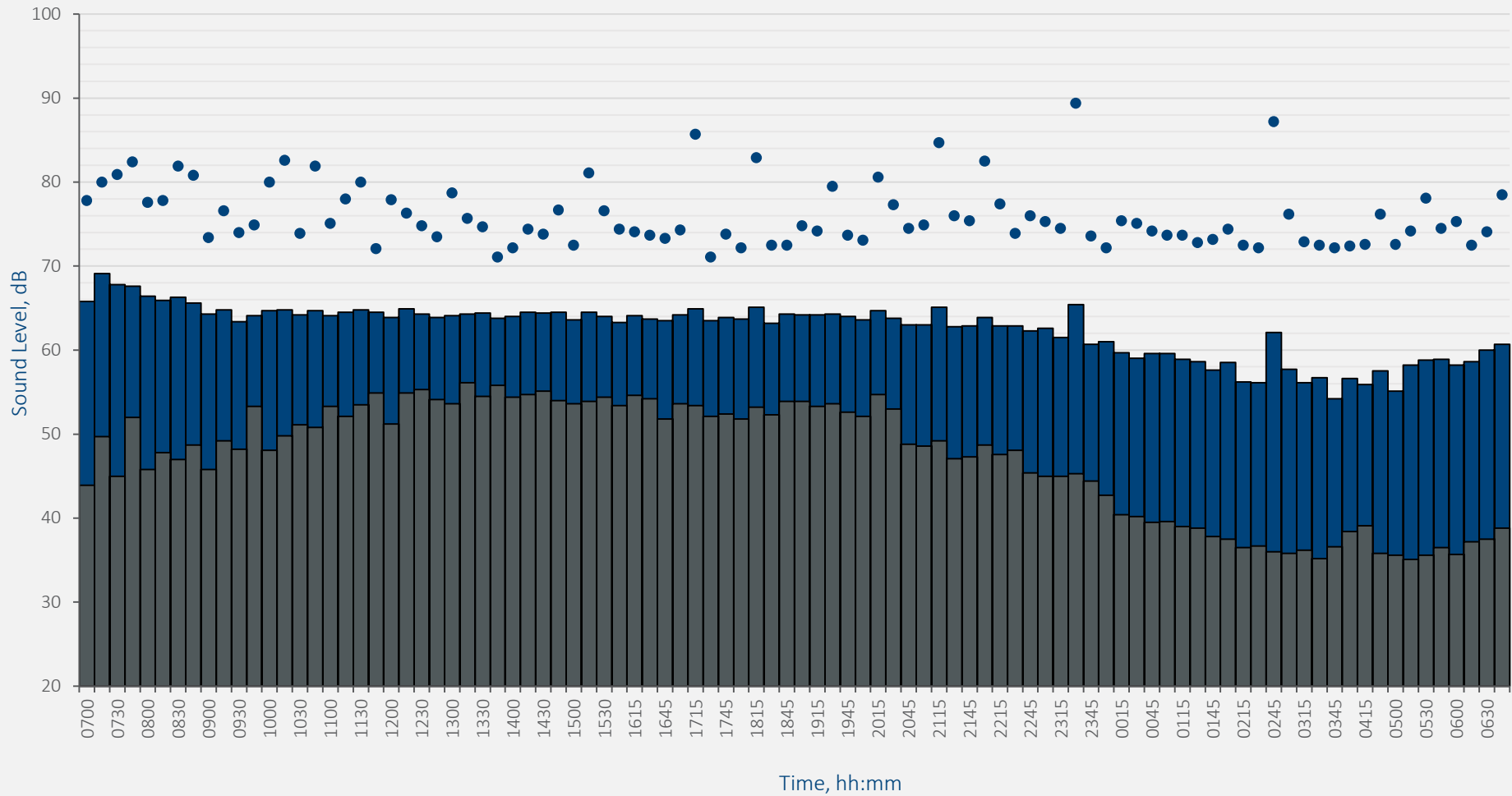


Monitoring Location 1

Saturday 2nd July 2022



- LAeq,15mins
- LA90,15mins
- LAFmax

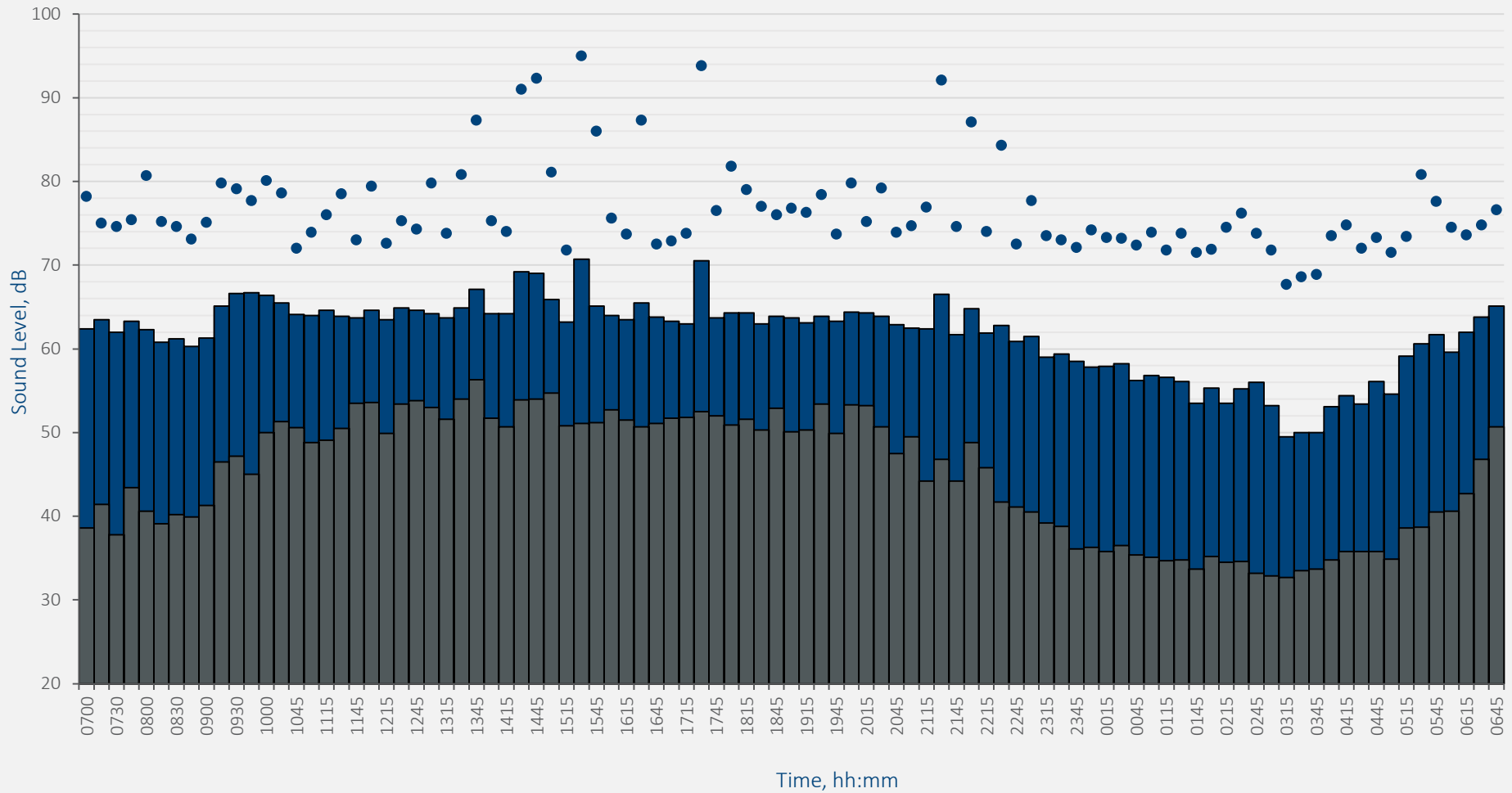


Monitoring Location 1

Sunday 3rd July 2022



- LAeq,15mins
- LA90,15mins
- LAFmax

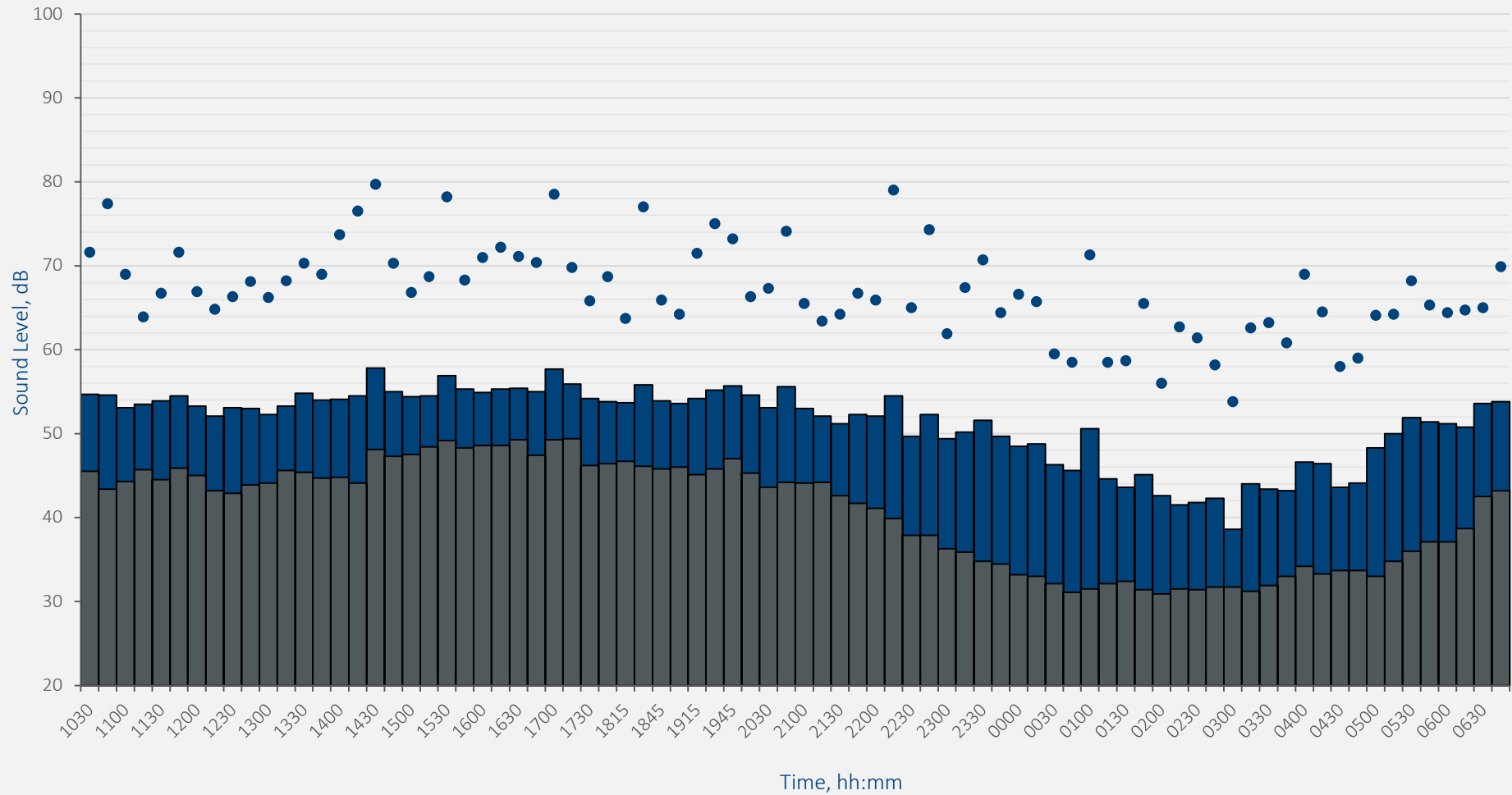


Monitoring Location 2

Thursday 30th June 2022



- LAeq,15mins
- LA90,15mins
- LAFmax

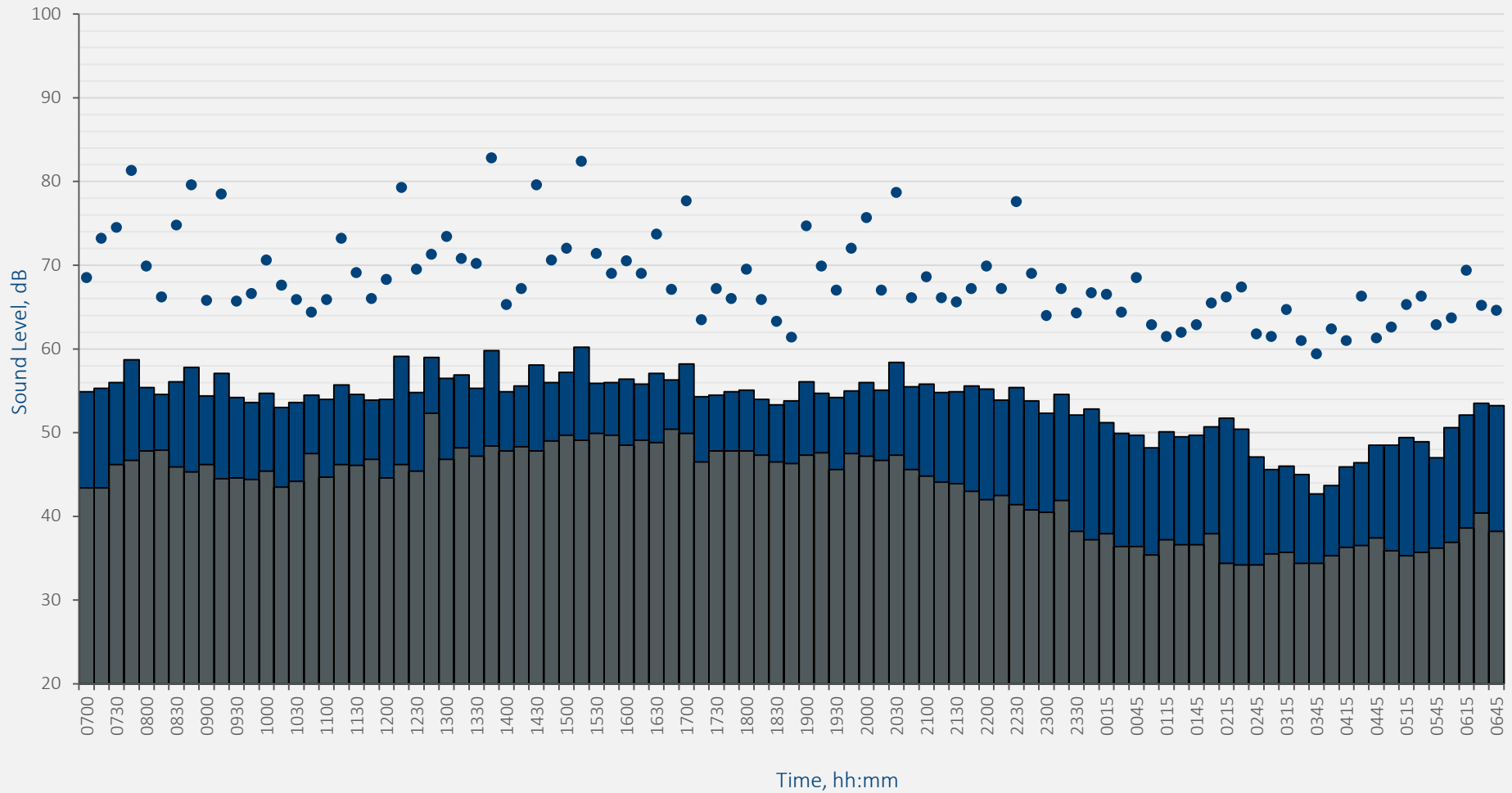


Monitoring Location 2

Friday 1st July 2022



- LAeq,15mins
- LA90,15mins
- LAFmax

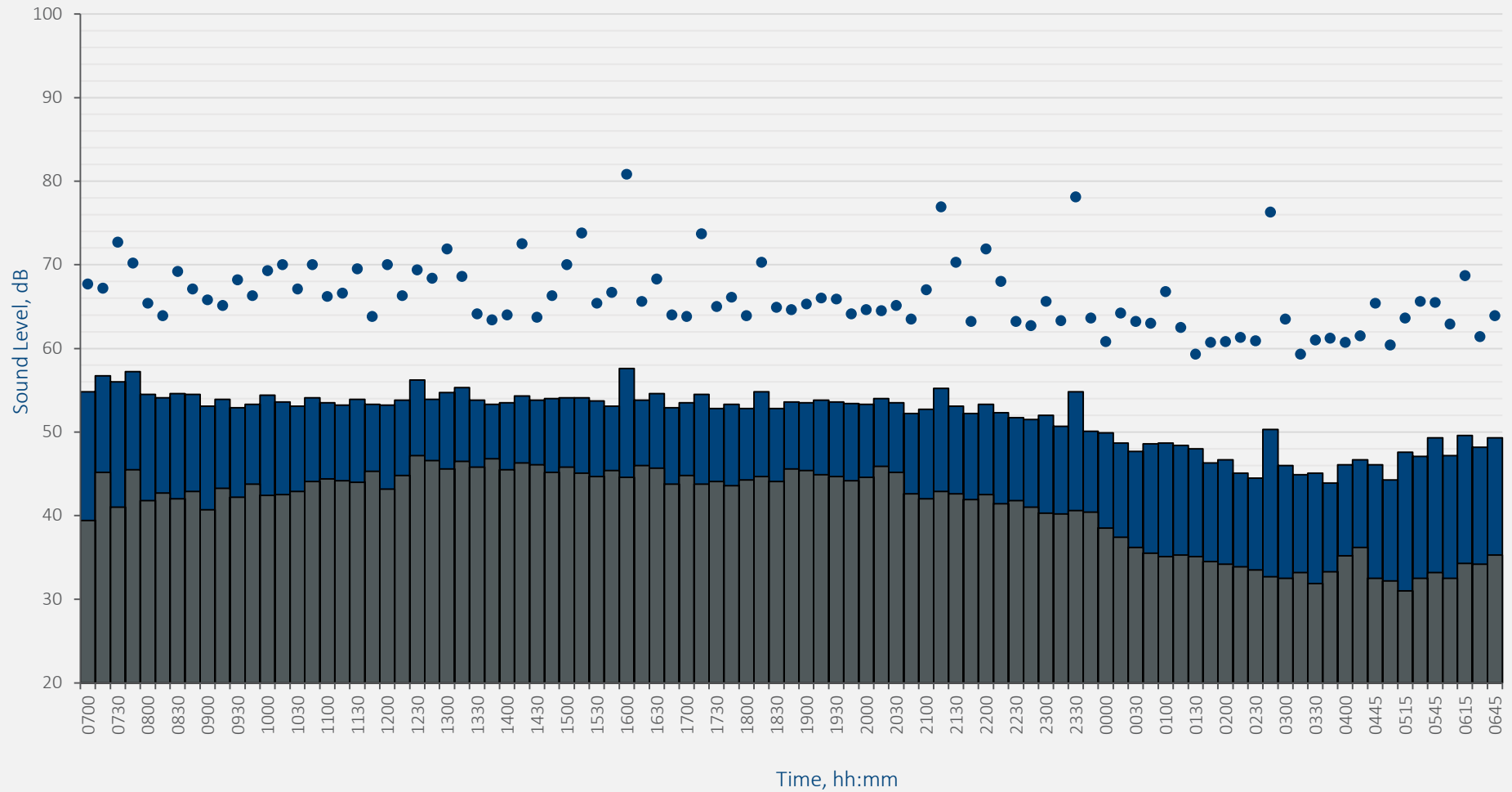


Monitoring Location 2

Saturday 2nd July 2022



- LAeq,15mins
- LA90,15mins
- LAFmax



Monitoring Location 2

Sunday 3rd July 2022



- LAeq,15mins
- LA90,15mins
- LAFmax

