Chartered Building Consultancy

Acoustic South East

Noise Impact Assessment
Change of Use

Site: **24-25 East Street, Shoreham by Sea**
Client: **Empire Land and Homes**

Report by:	Simon Barrett BSc(Hons) MSc MIOA MInstSCVE
Checked by:	Scott Castle BSc(Hons) CEnvH MCIEH MIOA
Date:	21/10/2025
Project:	J4078
Issue:	2

Constructionline Part of Capita plc

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Contents

Tables and Figures

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Issue No.	Date	Comment(s)
1	28/08/2025	Initial Issue
2	21/10/2025	This issue considers additional measurements more representative to where the proposed houses will be located at 1 – 1a New Road and assesses whether the glazing requirements can be relaxed. See sections: 3.2, 3.4, 3.5 and 4.2 for the majority of information relating to this additional survey.

1 Introduction

Acoustic South East have been appointed to undertake an acoustic assessment of noise incident upon the proposed re-development of the first floor at St. Mary's House, 24-25 East Street, Shoreham-by-Sea.

This report will be used as a supporting document for the planning application.

Standards and guidance referenced for this assessment include:

- National Planning Policy Framework (NPPF) 2024
- BS8233 (Guidance on sound insulation and noise reduction for buildings 2014
- ProPG:2017 (Professional Practice Guidance on Planning and Noise)
- Planning Noise Advice Document Sussex (November 2023)
- Approved Document O: Overheating

Two class 1 sound level meters (SLM) were installed at the site to simultaneously record the sound pressure levels incident upon the site at the front and rear over a period of 6 days and 7 nights both at the front and the rear of the property.

The Initial ProPG Risk Assessment has been carried out and shows that the site lies comfortably in the "Low Risk" category.

Despite this, assessment against BS8233:2014 criteria for internal ambient noise levels for the daytime and night-time periods and ProPG:2017 criterion for Lmax events in bedrooms during the night-time period has been carried out/made

Assessment shows that the front façade of the flats and Plot 5 (house) on East Street will need enhanced acoustic glazing and acoustically enhanced ventilation in order to mitigate the noise levels to satisfy the Lmax criterion at night.

For the rear façade, mitigation is not required – standard thermal double glazing with a typical slot-based trickle vent will be sufficient.

Following additional measurements, this second issue of the report can confirm that the 4 houses at 1 – 1a New Road do not need enhanced acoustic glazing or enhanced acoustic ventilation, as standard thermal double glazing with standard [open] trickle-vents provide sufficient attenuation to satisfy both the daytime and night-time LAeq and the night-time LAmax at this position.

All mitigation measures are provided in Section 4 of this report and if adopted, it is recommended that planning consent is not withheld on noise grounds.

2 Context, Noise Criteria & Noise Assessment Methodology

2.1 Context and Location

It is proposed that the existing site of St. Mary's House, 24-25 East Street & 1 New Road, Shoreham-by-Sea is to be re-developed into residential dwellings, with part of the ground floor remaining as commercial. A second-floor extension is also planned to be built. It is proposed that above the remaining ground commercial element will **be** a pair of duplex flats and to the side of this will be a total of 5 town-houses spanning from ground to 2nd floors. The proposed plans are included in the appendices of this report.

The site is located on the corner of East Street and New Road in Shoreham-by-Sea and situated opposite St. Mary's Church and close to restaurants, cafes and shops in a pedestrianised section of the town. A slow-speed access road passes between the proposed site and the aforementioned pedestrianised section. Much of the site on the New Road portion is directly opposite existing residential dwellings.

A location plan is included below for contextual purposes.

Figure 1. Location Plan showing the site as existing

2.2 National Planning Policy Framework 2024

The National Planning Policy Framework (2024) defines the Government's planning policies for England and how these are expected to be applied. It sets out the Government's requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so.

The following paragraphs are relevant within NPPF Section 15 (Conserving and enhancing the natural environment) states the following:

Paragraph 187(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, and

Paragraph 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 impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
>
> 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; and

Paragraph 200– 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.

2.3 BS8233 Guidance on Sound Insulation and Noise Reduction for Buildings 2014

Table 4 of BS8233:2014 provides the following guideline values but with enhanced daytime requirements.:

Activity	Location	Time period of day	
		07:00-23:00	23:00-07:00
Resting	Living Rooms	35dB $L_{Aeq,16hour}$	-
Dining	Dining Room/Area	35dB $L_{Aeq,16hour}$	-
Sleeping (daytime resting)	Bedroom	30dB $L_{Aeq,16hour}$	30dB $L_{Aeq,8hour}$

Table 1. BS8233:2014 Criteria

2.4 ProPG Planning and Noise 2017

Planning guidance (ProPG2017) relates to new residential development and airborne transportation noise, which includes exposure to road traffic, railway and aviation noise. Whilst ProPG, 2017 generally mirrors the requirements of BS8233:2014 and the World Health Organisation Guidelines, 1999, it goes further in setting a limit for inside bedrooms for L_{Amax} events and specifically, no more than 10 L_{Amax} events per night time period above 45dB(A).

The internal bedroom L_{AMax} values will be used in accordance with ProPG2017.

2.5 Building Regulations – Approved Document O

Recently introduced Part O of the building regulation requires an assessment of whether bedroom windows can be opened at night. It is assumed that bedroom windows will be closed if either of the conditions below are met:

- Internal noise level exceeds 40dB $L_{Aeq, 8hour}$
- L_{Amax} events exceed 55dB L_{Amax} more than 10 times a night.

Whilst this is strictly a Building Regulations function, it is relevant to be able to convey to the client whether bedroom windows are likely to be openable during the night time period.

2.6 Methodology and Approach

To ensure that sufficient information is presented to accompany the assessment, the following approach is taken:

1. Measure the existing LAeq Ambient and background Sound Pressure Levels on site for the period of approximately 6-7 days and nights, to include weekdays and a weekend at both the front and rear of the site.
2. Assess the daytime and night-time average ambient sound pressure levels measured on site against the criteria of BS8233:2014 and the night-time Lmax criteria of ProPG:2017.
3. Report the results and discuss mitigation measures if required.
4. Conclude.

3 Noise Survey Details

Two Class 1 sound level meters were set up to run, unattended, from Thursday 21st August – Thursday 28th August 2025.

The sound level meter and microphone at the front of the site was positioned at out of a 1st floor window, 1 metre from the façade (thus in façade conditions). These were converted to free-field by subtracting 3dB.

The sound level meter and microphone at the rear of the site was placed on a heavy-duty tripod at 2.5m height and in free-field conditions.

Survey included a weekend and used a 1-minute resolution, consistent with the approach required in the Planning Noise Advice Document Sussex 2023

The weather conditions were still and dry, thus suitable for environmental monitoring.

3.1 Sound Survey Details – Initial Survey

Survey(s) carried out by	Simon Barrett BSc(Hons) MSc MIOA
Equipment Used	2x Svantek SV971 Class 1 Sound Level Meter
Duration	Thursday 21st August – Thursday 28th August 2025
Survey Location – Front	What3Words: ///splinters.flux.disengage
Survey Location – Rear	What3Words: ///rates.motivate.overlooks

Table 2. Survey Equipment - Sound

N.B. Raw measurement data is available in tabulated form upon request, but graphical format is shown in the appendices.

The figure below shows the survey positions in relation to the site.

Figure 2: Image showing survey locations

3.2 Additional Survey

Following the Initial Survey and Assessment and the queries from the client regarding glazing requirements for the proposed houses at 1 – 1a New Road, a further survey was conducted of the sound pressure levels incident up on the building at this location. The survey was conducted using a Class 1 logging sound level meter and microphone fixed to the front façade between No. 1 and No. 1a, New Road. The microphone was fixed at 3m from the ground and was in façade conditions: These were converted to free-field by subtracting 3dB.

The survey was conducted between 16:00hrs on16th October 2025 – 09:00hrs on 21st October 2025. Therefore, the survey included a weekend and used a 1-minute resolution, consistent with the approach required in the Planning Noise Advice Document Sussex 2023

The weather conditions were still and dry, thus suitable for environmental monitoring, with the exception of Sunday night (excess wind) and Monday daytime (excess wind and high wind-speeds).

The table and the figures overleaf show the survey information and location for this extra survey.

Survey(s) carried out by	Simon Barrett BSc(Hons) MSc MIOA
Equipment Used	1x Svantek SV971 Class 1 Sound Level Meter
Duration	Thursday 16th October 2025 – Tuesday 21st October 2025
Survey Location – Front	What3Words: ///adopting.broad.riskiest

Table 3. Survey Equipment – Additional Sound Survey

N.B. Raw measurement data is available in tabulated form upon request, but graphical format is shown in the appendices.

Figure 3: Additional Survey Location in Context

Figure 4: Additional Survey Location showing microphone in situ

3.3 Survey Results – Initial Survey – Daytime and Night-time Average Noise Levels

3.3.1 External Ambient Sound Pressure Levels

The data has been processed into Daytime LAeq,16hr and Night-time LAeq,8hr data for each day and an arithmetic-average has been provided.

Additionally, columns have been added to show the BS8233:2014 criteria for daytime and night-time and the Sound Reduction Index (SRI) of the building envelope required to achieve this.

The table below shows the results for both the front of the site and the rear of the site:

Survey Day	Daytime 07:00 – 23:00hrs $L_{eq,16hr}$ (dBA)	Night-time 23:00 – 07:00hrs $L_{eq,8hr}$ (dBA)	BS8233:2014 Criteria $L_{Aeq,(16hr\ /\ 8hr)}$ dB		SRI Required (dB)	
			Day	Night	Day	Night
Front of Site						
Thurs		48.8	35	30		18.8
Fri	58.2	54.2	35	30	23.2	24.2
Sat	55.3	43.0	35	30	20.3	13.0
Sun	55.9	44.5	35	30	20.9	14.5
Mon	53.0	42.4	35	30	18.0	12.4
Tue	57.6	44.8	35	30	22.6	14.8
Wed	54.0	43.2	35	30	19.0	13.2
Arithmetic Mean (rounded)	**55.7**	**45.8**	**35**	**30**	**20.7**	**15.8**
Rear of Site						
Thurs		41.8	35	30		11.8
Fri	45.5	39.4	35	30	10.5	9.4
Sat	45.0	40.7	35	30	10.0	10.7
Sun	47.0	41.0	35	30	12.0	11.0
Mon	46.3	37.5	35	30	11.3	7.5
Tue	50.7	38.2	35	30	15.7	8.2
Wed	44.6	38.3	35	30	9.6	8.3
Arithmetic Mean (rounded)	**46.5**	**39.6**	**35**	**30**	**11.5**	**9.6**

Table 4: Survey Results – External Ambient Sound Pressure Levels (Front and Rear of Site)

As can be seen in the final two columns, the average SRI required to enable the daytime LAeq criterion to be achieved is 21dB at the front façade and 12dB at the rear façade respectively (values are rounded to the nearest 1dB).

The average SRI required to enable the night-time LAeq criterion to be achieved is 16dB for the front façade and 10dB at the rear façade respectively (values are rounded to the nearest 1dB).

3.3.2 Night-time Lmax Levels

As well as the daytime and night-time period continuous equivalent average noise levels the other metric to consider for this site's front and rear façade is the A-Weighted Maximum sound pressure levels (LAmax) experienced in a bedroom over the night-time period.

The measurements have been carried out and an assessment has shown that with a typical closed window in-situ and open typical trickle-vents (for background ventilation), which is typically accepted to provide 21dB attenuation, there would be an average of 24 occurrences of the Lmax value exceeding 45dBA internally at the front of the site but at the rear, there would be an average of just 4.

This is shown in the table below:

LAmax over 45dBA (21dB façade attenuation)	Average	Night 1	Night 2	Night 3	Night 4	Night 5	Night 6	Night 7
Front of Site	24	25	98	7	11	6	11	7
Rear of Site	4	10	2	5	5	1	3	2

Table 5: LAmax exceeding 45dB internally with 21dB (standard) facade attenuation

What is noted, however, is that on Night 2 (which is a Friday night) there is a very large increase in the number of Lmax events which would exceed 45dBA internally (98 occurrences).

This has been investigated further to see if this occurs universally throughout the night or if it's concentrated in a small time period and it has been found that a significant portion occurred up until 02:00hrs and then ramped back up again at 06:00hrs on Saturday morning.

Graphs to show this are found in the appendices of this report.

3.4 Additional Survey Results – Daytime and Night-time Average Noise Levels

3.4.1 External Ambient Sound Pressure Levels – Additional Survey

Having been converted to free-field values, the data from the additional survey has been processed into Daytime LAeq,16hr and Night-time LAeq,8hr data for each day and an arithmetic-average has been provided.

Additionally, columns have been added to show the BS8233:2014 criteria for daytime and night-time and the Sound Reduction Index (SRI) of the building envelope required to achieve this.

The table below shows the results for both the front of the site and the rear of the site:

Survey Day	Daytime 07:00 – 23:00hrs $L_{eq,16hr}$ (dBA)	Night-time 23:00 – 07:00hrs $L_{eq,8hr}$ (dBA)	BS8233:2014 Criteria $L_{Aeq,(16hr\ /\ 8hr)}$ dB		SRI Required (dB)	
			Day	Night	Day	Night
Front of Site						
Thurs		38.8	35	30		8.8
Fri	54.4	38.7	35	30	19.4	8.7
Sat	52.1	40.5	35	30	17.1	10.5
Sun	54.2	45.4	35	30	19.2	15.4
Mon	53.0	42.0	35	30	18.0	12.0
Arithmetic Mean (rounded)	**53.2**	**40**	**35**	**30**	**18.2**	**10**

Table 6: Additional Survey Results - Daytime and Night-time LAeq

Please note that in the table above, the highlighted cells have been removed from the arithmetic mean averaging calculation due to weather conditions during these survey periods.

3.4.2 Night-time Lmax Levels

The table below shows the A-Weighted Maximum sound pressure levels (LAmax) experienced in a bedroom over the night-time period. The measurements have been carried out and an assessment has shown that with a typical closed window in-situ and open typical trickle-vents (for background ventilation), which is typically accepted to provide 21dB attenuation, there would be an average of 24 occurrences of the Lmax value exceeding 45dBA internally at the front of the site but at the rear, there would be an average of just 4.

This is shown in the table below:

LAmax over 45dBA (21dB façade attenuation)	Average	Thurs	Fri	Sat	Sun	Mon
Additional Survey	5 (rounded)	3	5	8	10	3

Table 7: Additional Survey - LAmax exceeding 45dB internally with 21dB facade attenuation

In table 7, above, the red highlighted cell is the night-time period with wind speeds too high for valid noise monitoring and so has been removed from the average calculation, but it has been shown for completeness of information.

3.5 Discussion

In order for the front of the site for the flats and House Plot 5 at East Street to be compliant with ALL nights having no more than 10 occurrences exceeding Lmax 45dBA internally, a sound insulation of 33dB would be required through the front façade. In order for the front of the site to be compliant with the Lmax criterion for all nights EXCEPT the Friday night, the sound insulation requirement would reduce to 28dB.

In order for the rear of the site to be compliant with all nights having no more than 10 occurrences exceeding Lmax 45dBA internally, a sound insulation of 21dB would be required through the façade (which equates to closed double-glazed windows but with a typical trickle vent in the open position).

For the houses at 1 – 1a New Road, it can be seen that during the daytime, a façade sound insulation of 18dB is all that is required for the habitable rooms (bedrooms and lounges) to be compliant in terms of LAeq. During night-time period, this reduces to 10dB façade sound insulation for compliance with LAeq. In terms of the Night-time Lmax compliance, 21dB façade sound insulation is all that is required. In ALL of these cases for the 4 houses on New Road, this can be satisfied by the use of standard thermal double-glazed windows with a typical trickle vent in the open position.

For the front façade of the Flats and the House Plot 5 at East Street, therefore, additional mitigation measures would be required for Lmax criterion to be met and these are the over-ruling requirement as they are more onerous than those required to comply with the criteria of BS8233, set out in Section 2.4 of this report.

For the rear façade, the BS8233 requirement is, again, the most onerous but only a sound reduction of 21dB is required.

For the houses along New Road, no acoustic enhancement is required in terms of compliance, other than the use of standard thermal double-glazing and typical trickle vents.

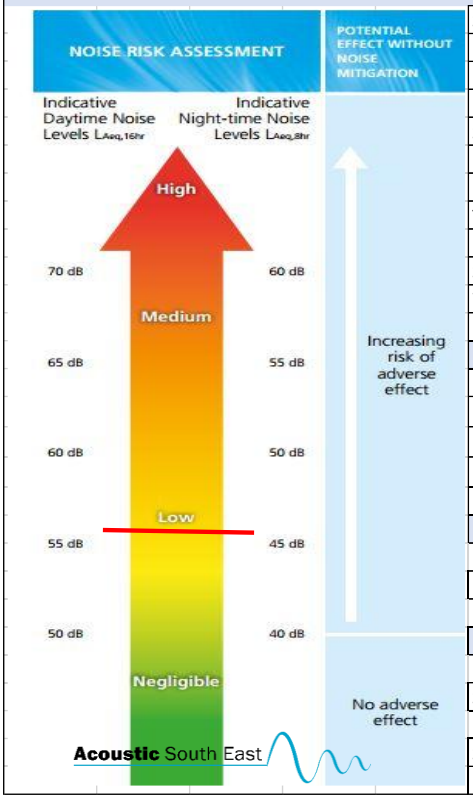
It is important to state that the LAmax SRI requirements relate to bedrooms only.

3.6 ProPG Initial Risk Assessment

The figure below shows an initial noise risk assessment for the proposed site's front façade (which is the worst-case).

As can be seen, the sound levels sit comfortably in the "Low Risk" area.

Despite this outcome, assessment against BS8233:2014 has still been carried out and mitigation measures exist in the section which follows this.



Stage 1. Initial Site Risk Assessment	
Site:	24-25 East St. and 1-1a New Road, Shoreham
Date:	29-Aug-25
Individual	Simon Barrett
Proposal	Residential with some commercial
Survey or Prediction	Survey
Freefield Survey	Yes (corrected)
Instrumentation used	Svantek 971A
Typical/Worst case 24 hour period	Typical
Location Assessed(Grid Ref)	What3Words ///splinters.flux.disengage
Subjective Noise sources at site	Town Centre & Street Noise
Weather conditions	Dry/Warm/Low Wind
Result	
No Mitigation Measures- Predicted Freefield Noise Modelling Data	
Daytime ($L_{Aeq,\ 16\ hour}$)	55.7
Night ($L_{Aeq,\ 8\ hour}$)	45.8
Night L_{AMax} Events above 45dB(A)	24 (average)
Outcome	
Level of Risk Posed	Low
Next Steps	
Stage 2 Full Assessment	No
Signed Off by	Simon Barrett
Date	29/08/2025

Figure 5: ProPG Initial Risk Assessment - Front Façade of Flats and House No. 5

4 Mitigation

As discussed in Section 3, above, the sound insulation of the building envelope at the front of the building will need to be upgraded to provide a sound insulation of at least 33dB in order for the Night-time Lmax to be controlled to the requirements of ProPG:2017. This will automatically satisfy the daytime and night-time requirements of BS8233 which require sound reductions of at least 21dB and 16dB respectively.

A BS8233 “Rigorous Calculation” has been carried out to show what glazing & ventilation arrangements would provide at least 33dB sound reduction and this has been calculated for bedrooms 1 and 2 of Flat A, which would be worst-affected.

In terms of the rear façade for where there are both lounges and bedrooms, it has been found that a sound reduction of 12dB is required during the day and 21dB during the night (the latter of which is required to mitigate the LAmax criterion).

In terms of the front façade of the 4 houses on New Road, it has been found that a sound reduction of 18dB is required during the day and 21dB during the night (the latter of which is required to mitigate the LAmax criterion).

4.1 Front Façade of Flats and House 5 ONLY

The Rigorous Calculation has shown that to satisfy the BS8233 requirements, the following specification would be required:

Glazing: Acoustically enhanced double-glazing with a performance specification of RTra = 29dB or higher when set in its frame (if the performance is provided for the glass alone, then a 2-3dB tolerance is usually needed as glass performs worse when in frame). An example of Pilkington glass that would achieve this is 10\12\4 for example.

Ventilation: Acoustically enhanced natural ventilator such as the Rytons AAC125HP or other equivalent which can provide at an performance of Dn,e,w 43dB or higher when in the open position. An alternative ventilation approach would be to utilise mechanical ventilation with heat recovery (MVHR). If MVHR is employed for any of the properties, it is necessary to note that the operating internal noise levels need to be between 24-26dBA otherwise there is a high risk that the occupant would switch them off, causing major ventilation issues for the property.

With the L_{Amax} being the driving force, applying this to protect the future occupants would provide internal daytime SPL of circa 23dBA. This is comfortably below the requirements of BS8233:2014 table 4 values. Additionally, it could well be argued that the internal criterion should be reduced to account for non-continuous/anonymous sounds. However, even if that was the case, by using a sound reduction of 33dB the residents remain protected and uncertainty has been minimised.

4.2 Rear Façade and Front Façade of Houses at New Road

It is given, according to Table B-2 of the Acoustics, Ventilation and Overheating Guide that a typical window (closed) and slot vent (open) can provide 21dB of attenuation.

This is all that is required for the rear façade to be fully compliant with the BS8233:2014 and ProPG:2017 requirements.

4.3 Outdoor Amenity Areas

Up to this point, all assessment has been with regard to internal ambient noise levels. BS8233:2014 (and WHO Guidelines) state that in order to avoid "moderate annoyance" in outdoor amenity areas, the Daytime $L_{eq,16hr}$ should be no higher than 50dBA and in order to avoid "serious annoyance", the Daytime $L_{eq,16hr}$ should be no higher than 55dBA.

Whilst there are no outdoor amenity areas associated with the flats, there are gardens to the rear of all 5 of the town houses.

It has been measured on site where the proposed gardens are to be located that a daytime Leq,16hr averages at 46.5dBA. This is below the "moderate annoyance" threshold and as such no mitigation is required.

4.4 Other notes

4.4.1 Sound Insulation between commercial and residential

Whilst not part of this assessment, it is wise to note that the Local Authority may require an enhanced level of airborne sound insulation between the ground floor commercial space and the first-floor residential dwellings as well as the party walls between the commercial and residential on the ground floor. It is typical that a performance criterion is to achieve DnTw + Ctr = 48dB (rather than the standard requirement of 43dB which is the minimum criterion for between dwellings). This would be an improvement of 5dB.

4.5 Approved Document O

The newly introduced Building Regulations Document (ADO) creates two very specific criteria to determine if windows are likely to be closed during the night time period as follows with both parameters relating to sound pressure levels inside the bedroom environment.

Noise

3.2 In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).

3.3 Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

a. 40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).

b. 55dB L_{AFmax}, more than 10 times a night (between 11pm and 7am).

3.4 Where in-situ noise measurements are used as evidence that these limits are not exceeded, measurements should be taken in accordance with the Association of Noise Consultants' *Measurement of Sound Levels in Buildings* with the overheating mitigation strategy in use.

Figure 6. Extract from Approved Document O

It is relevant to note that the ADO assessment is a simplified assessment only and relates simply to new build properties and not to conversion properties (which these are).

With regard to the Acoustics, Ventilation and Overheating Guidance (AVOG) (Jan 2020), as well as the newly implemented Building Regulations Approved Document O (ADO), attention is drawn to the fact that these relate to new build developments and not conversions. For the AVOG, 2020, this is found in paras 1.4 and 1.13 and for the ADO, see para 0.3.

The ADO Frequently Asked Questions (FAQ) also referenced that an overheating assessment for a change of use is not applicable- Approved Document O: Overheating, frequently asked questions - GOV.UK (www.gov.uk)

5 Conclusion

An Acoustic Assessment has been carried out at 24-25 East Street and 1-1a New Road, Shoreham-by-Sea.

The Initial ProPG Risk Assessment has been carried out and shows that the site lies comfortably in the “Low Risk” category.

Despite this, assessment against BS8233:2014 criteria for internal ambient noise levels for the daytime and night-time periods and ProPG:2017 criterion for Lmax events in bedrooms during the night-time period.

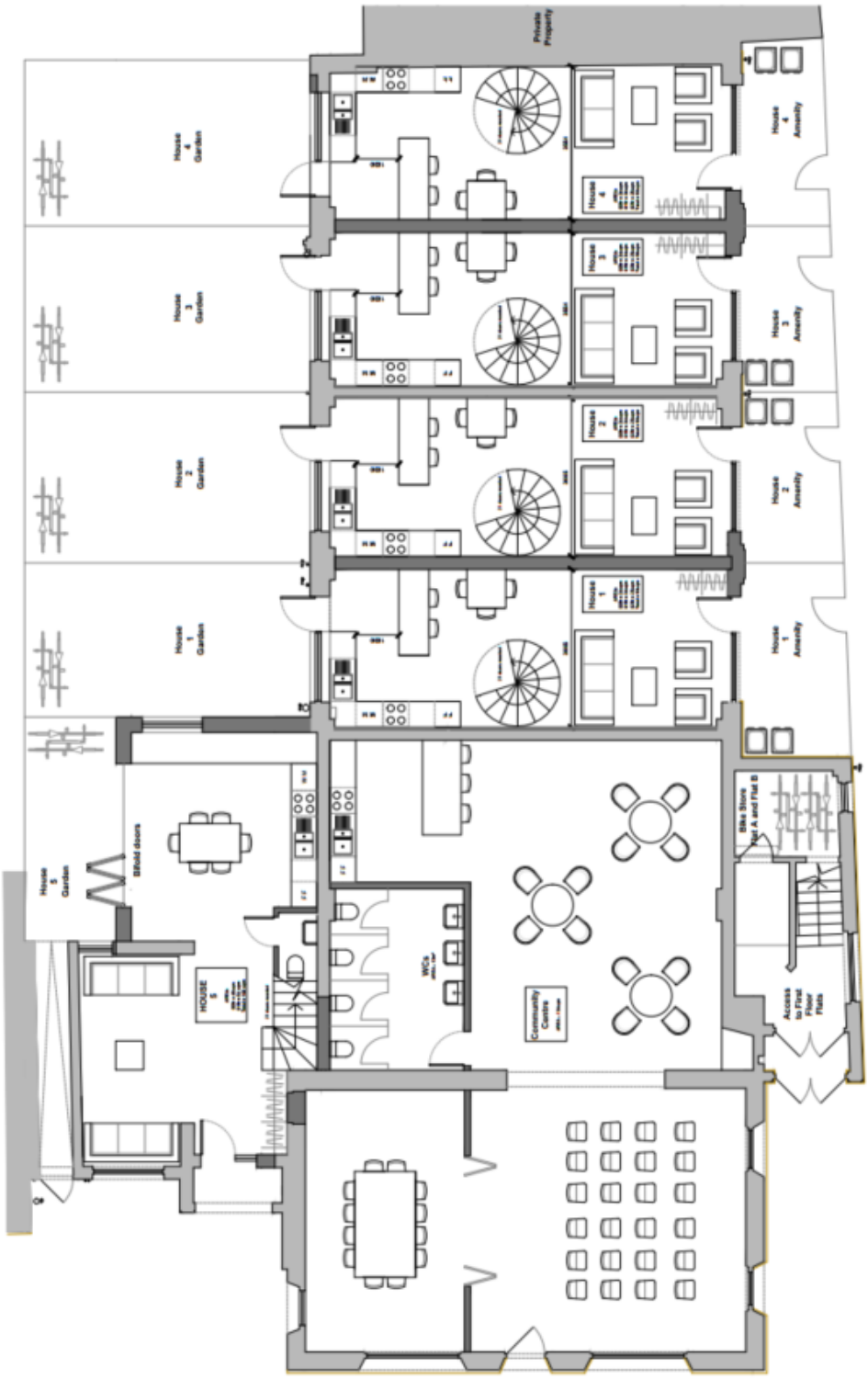
Assessment shows that the front façade of the flats and House 5 will need enhanced acoustic glazing and acoustically enhanced ventilation in order to mitigate the noise levels to satisfy the Lmax criterion at night.

For the rear façade and the 4 houses at 1 – 1a New Road mitigation is not required – standard thermal double glazing with a typical slot-based trickle vent will be sufficient.

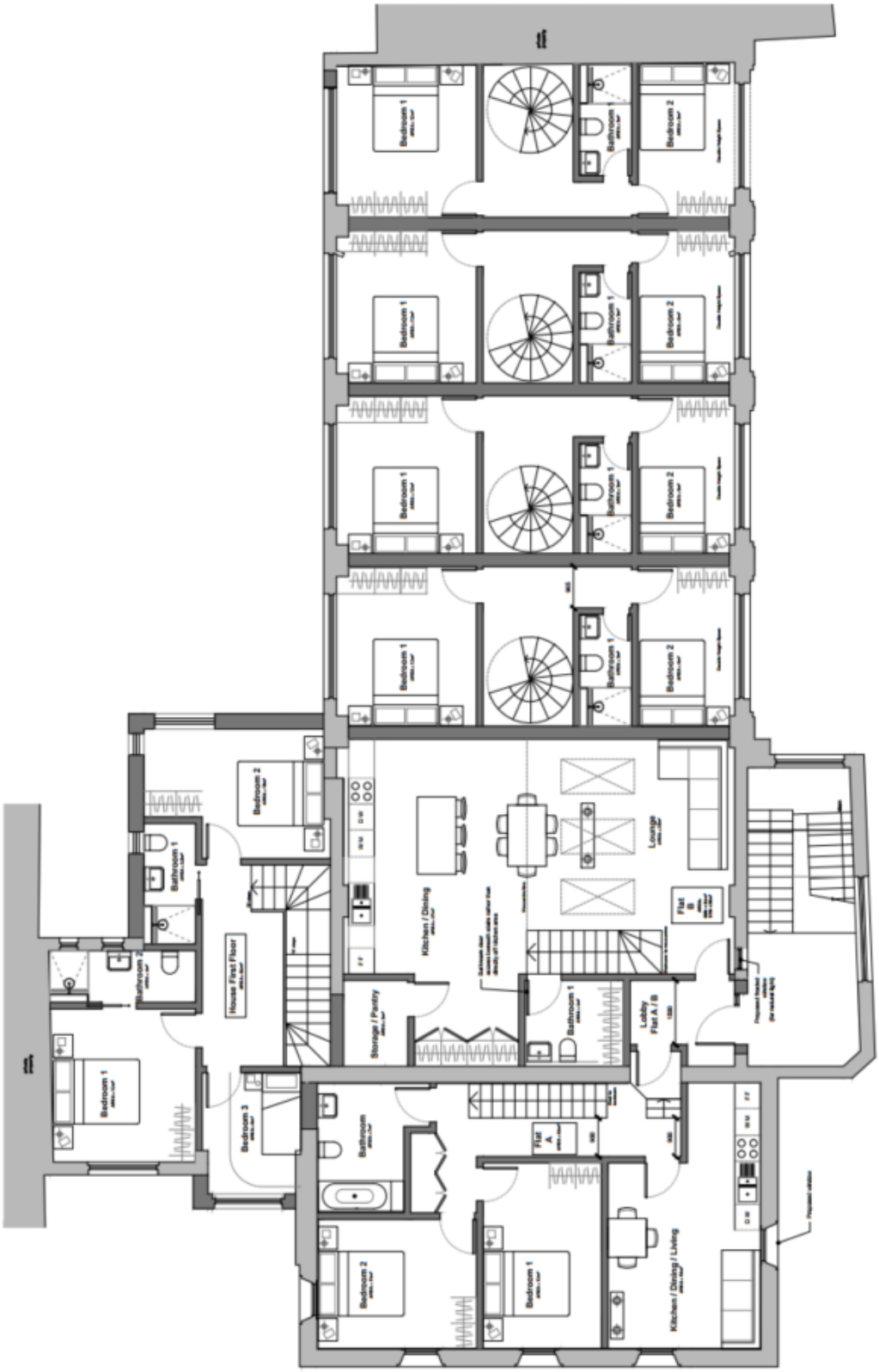
All mitigation measures are provided in Section 4 of this report and if adopted, it is recommended that planning consent is not withheld on noise grounds.

Appendix A – Proposed Layout Plans

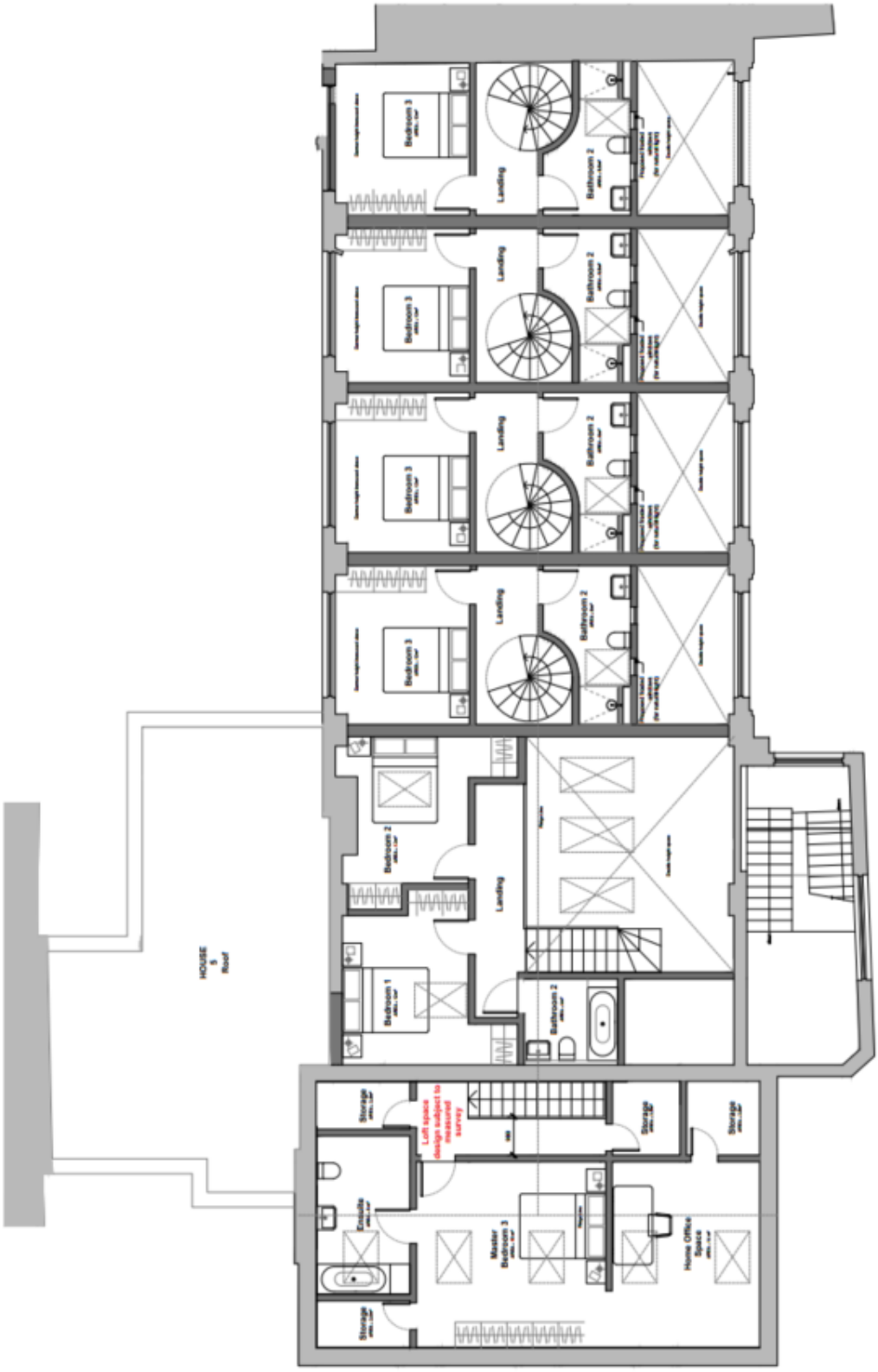
Ground Floor



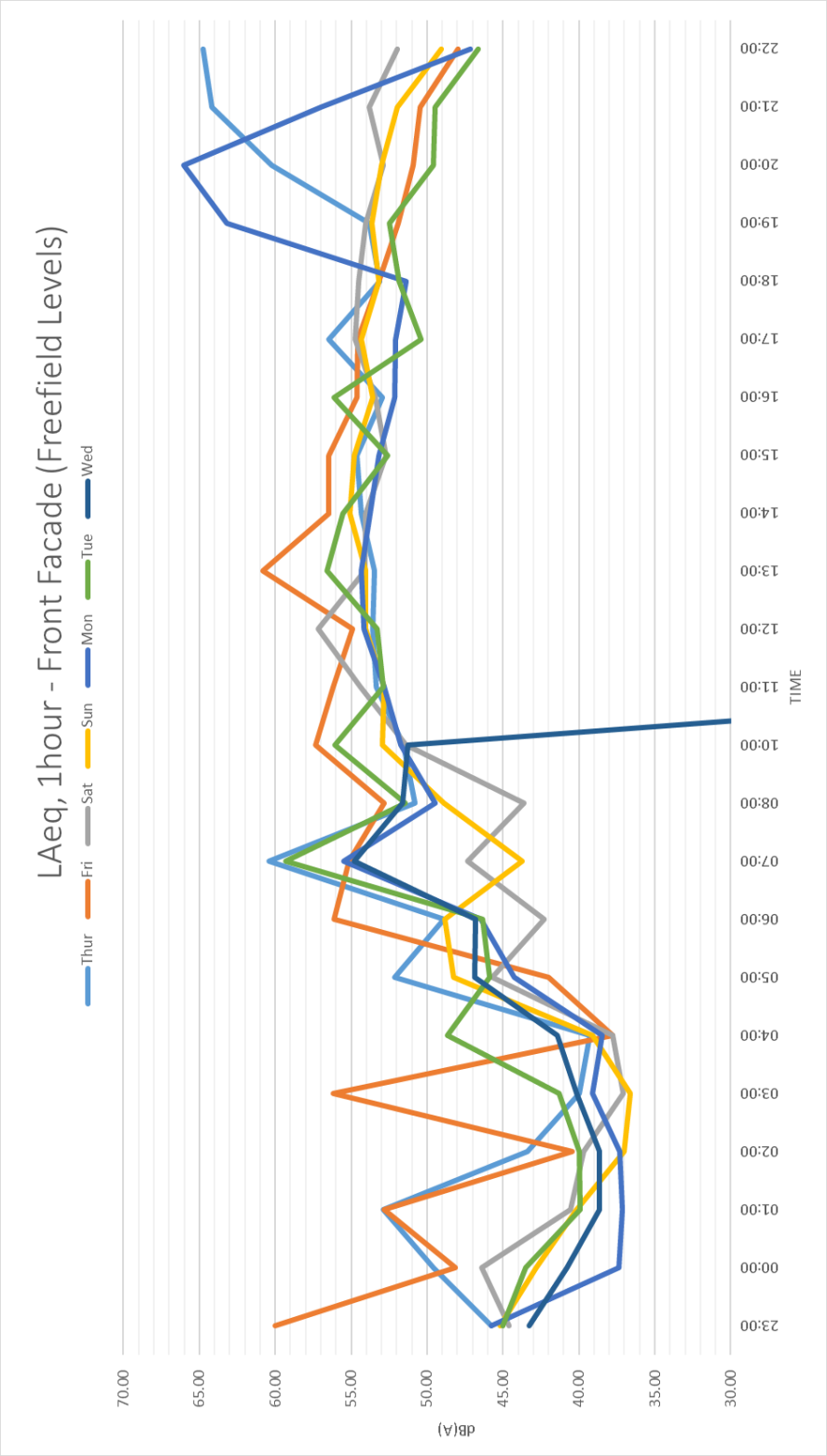
1st Floor

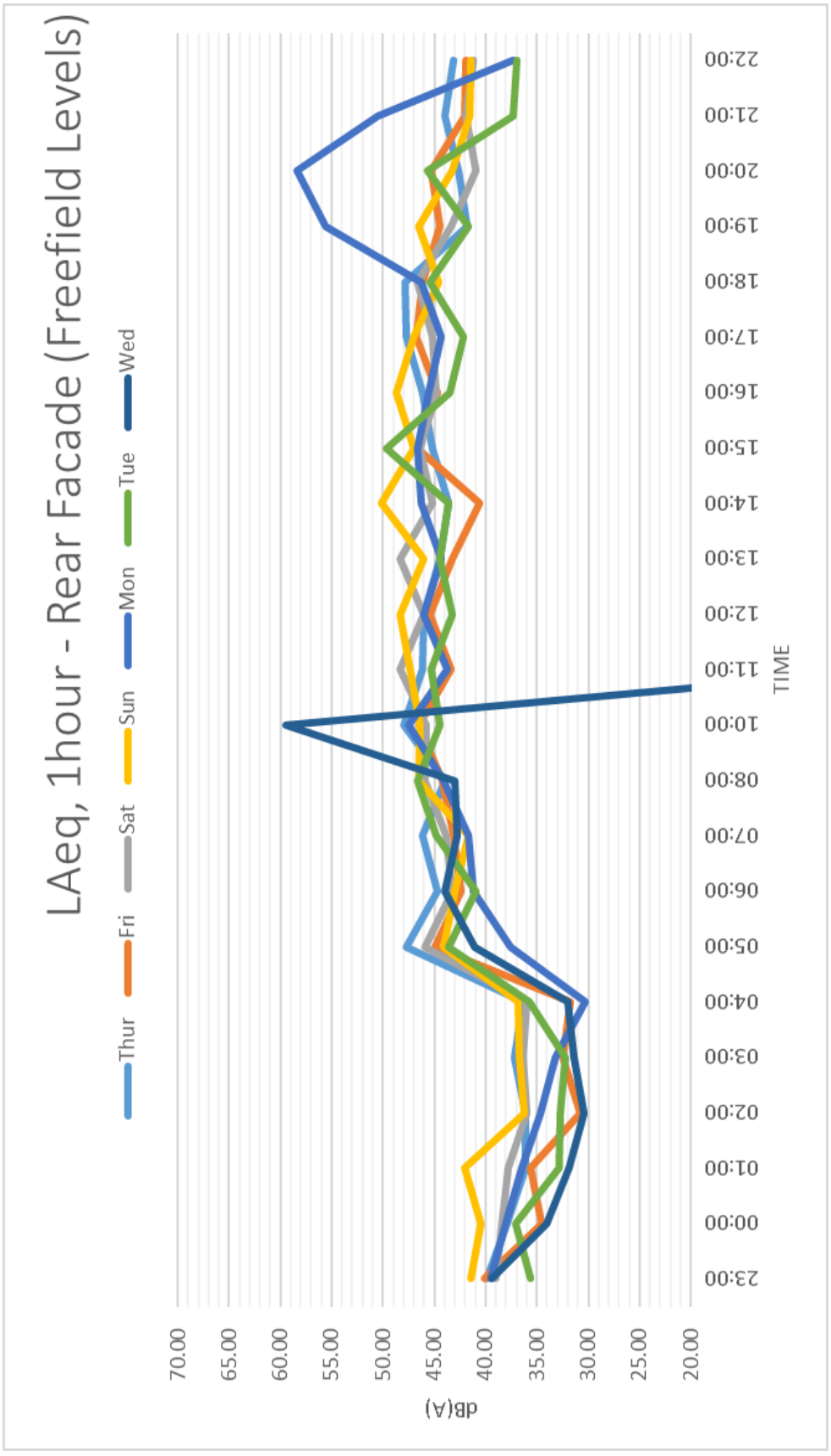

Bedroom 1
Bedroom 2
Bathroom 1
Bathroom 2
Bathroom
Lounge
Kitchen / Dining
Storage / Pantry
House First Floor
Bedroom 3
Flat A
Flat B
Lobby Flat A / B
Kitchen / Dining / Living

2nd Floor



Appendix B – Noise Survey Time History Graphs




LAeq, 1hour - Rear Facade (Freefield Levels)
Thur
Fri
Sat
Sun
Mon
Tue
Wed
dB(A)
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
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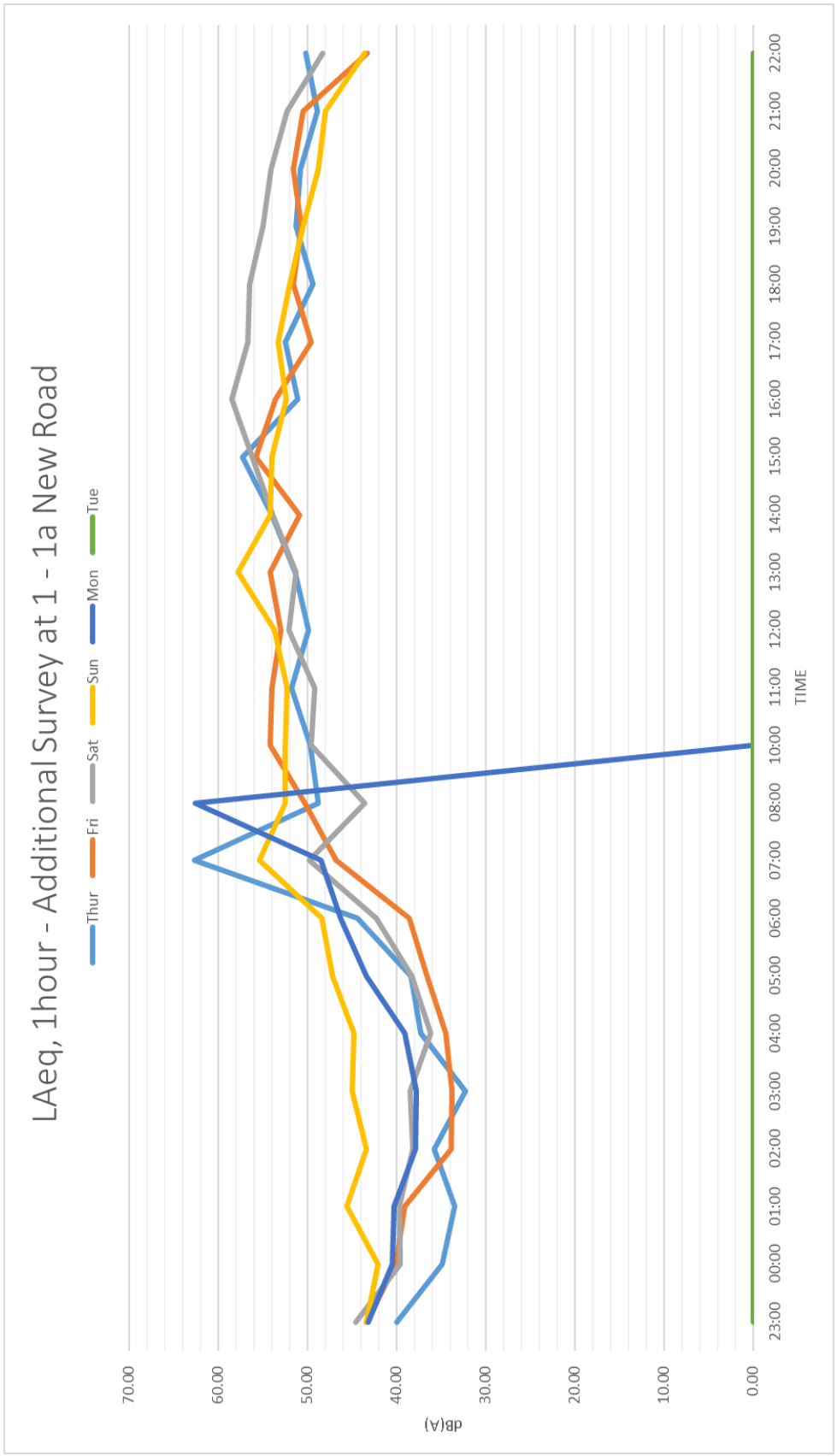
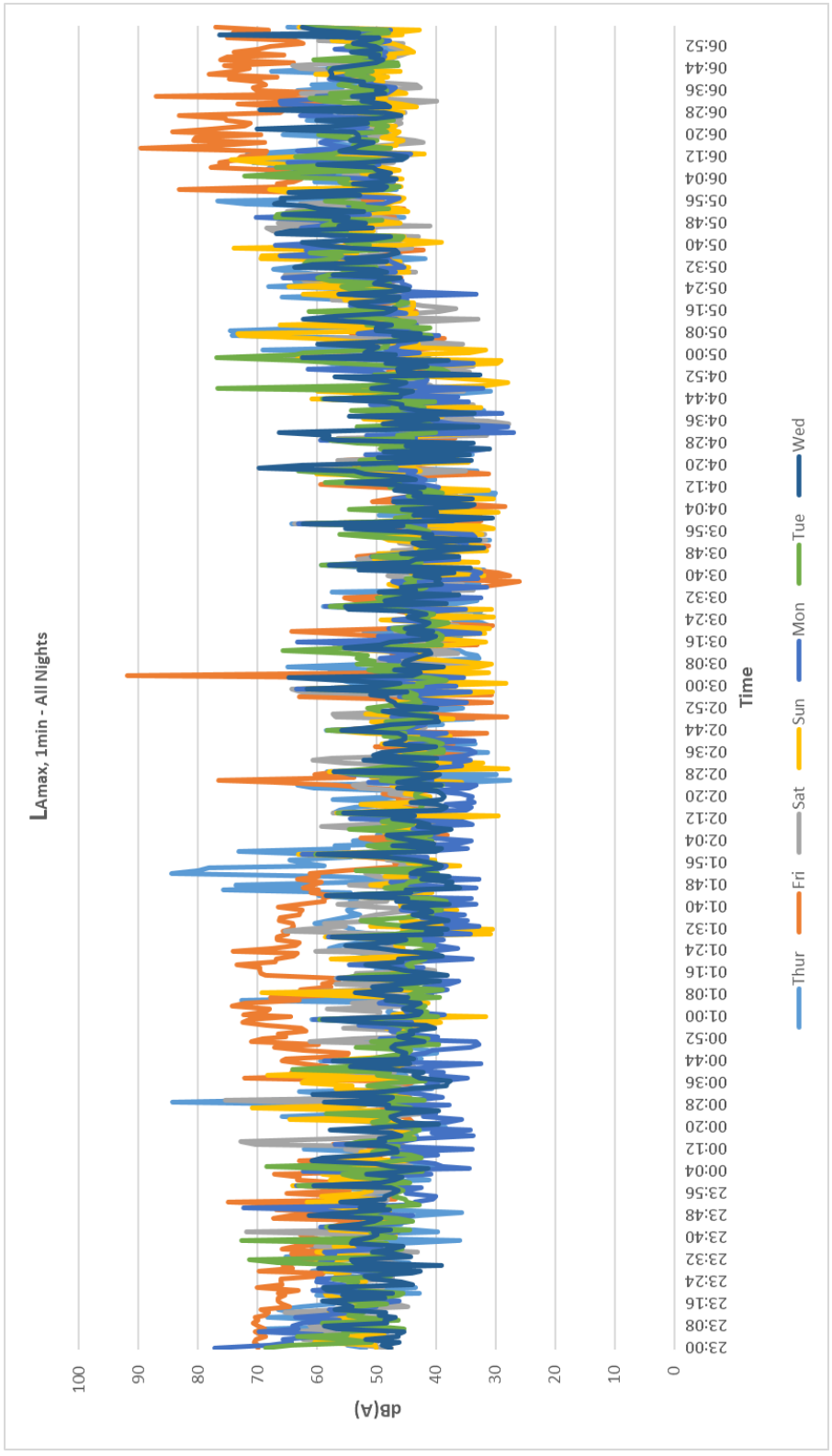
19:00
20:00
21:00
22:00

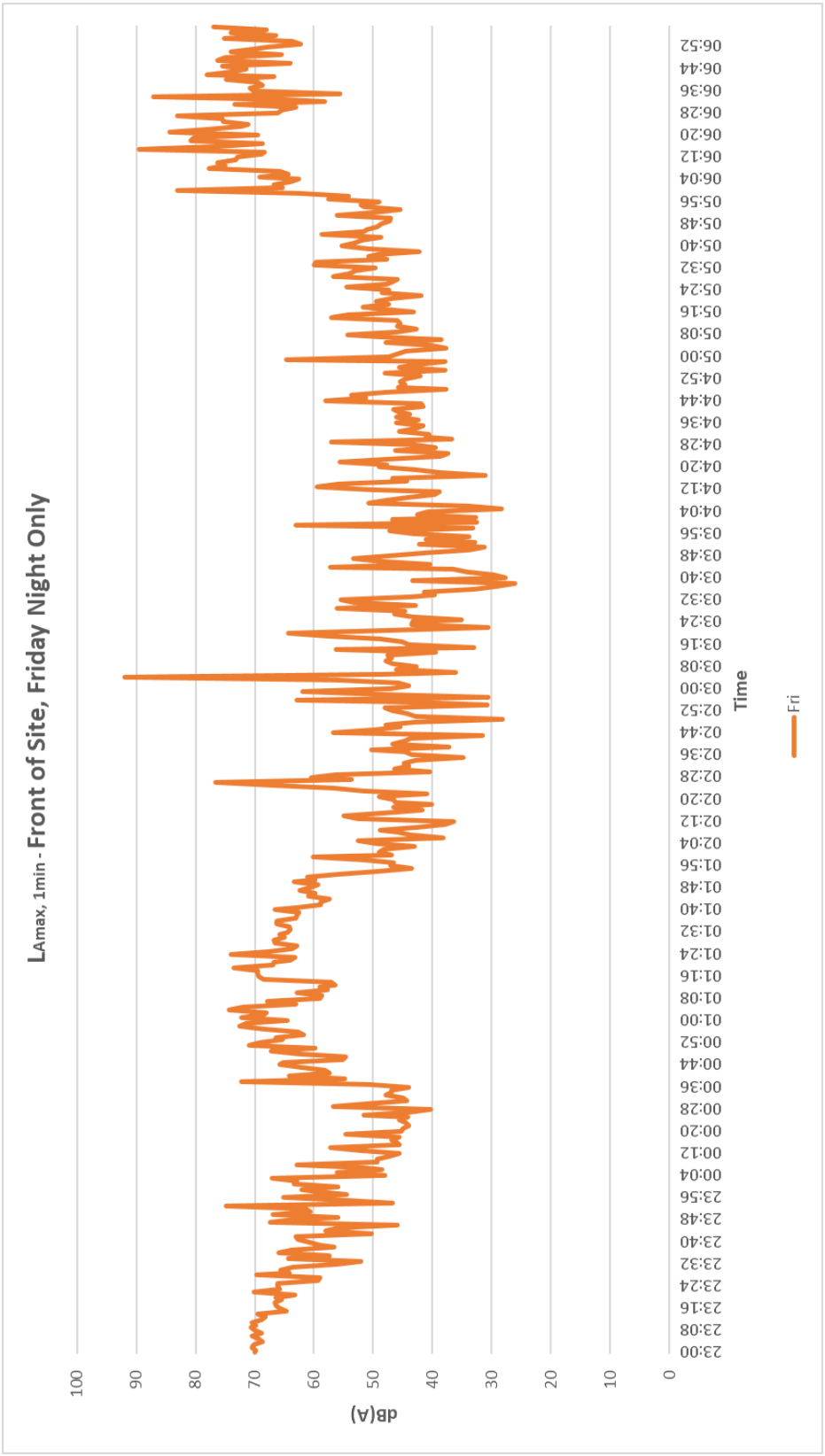

LAeq, 1hour - Additional Survey at 1 - 1a New Road
Thur
Fri
Sat
Sun
Mon
Tue
dB(A)
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
TIME
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00

Appendix C – Lmax Graphs for the Front Façade

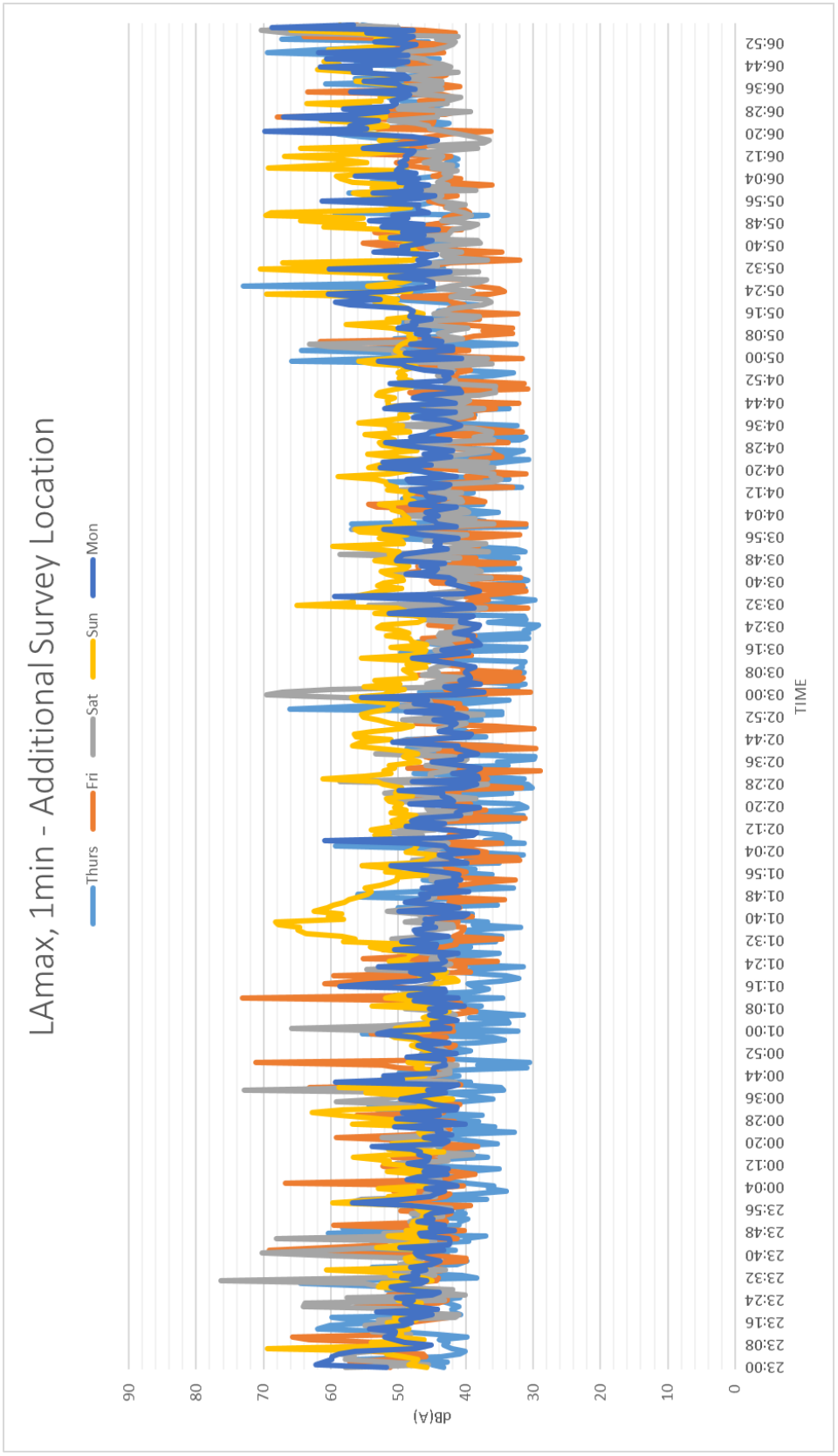
All Night-time Periods



Friday Night Only



Appendix D – Lmax Graph for Additional Survey Location



Appendix E – BS8233 Rigorous Calculation – Front Façade of Flats

The importance of this Rigorous Calculation is not the internal level displayed, but the Sound Reduction Index (SRI) created.

Non Frequency Dependent Variables		
Term	Derivation	Value
A_o	Given in BS EN 20140-10 = 10 (m^2)	10
S_f	Total Facade Area (m^2)	12
S_{wi}	Window Area (m^2)	4
S_{ew}	External Wall Area (m^2)	8
S_{rr}	Ceiling Area (m^2)	0.001
S	Total Area sound enters the room (m^2)	12

Key for Table Below	
R_{wi}	Sound Reduction of Window (Octave)
R_{ew}	Sound Reduction Index of External Wall (Octave)
R_{rr}	Sound Reduction Index of Roof/Ceiling (Octave)
A	Equivalent Absorbtion Area of Rx Room
$D_{n,e}$	Insulation of Trickle Vent (BS EN 20140-10)

Frequency Dependent Variables							
		Octave Band Centre Frequency					
Term	Description	125	250	500	1000	2000	4000
$L_{eq,ff}$	Free-Field External Noise Level	57.6	53.6	51.6	51.6	48.6	41.6
$D_{n,e}$	Rytons AAC125HP	48	45.8	49.9	64.2	66	73.4
R_{wi}	10_12_4	25	22	33	40	43	44
R_{ew}	Double leaf brickwork plastered on both sides 13/214/13	41	45	48	56	58	60
R_{rr}	No Roof	100	100	100	100	100	100
A	Equivalent Absorbtion Area of Room (Copied from BS8233)	11.00	14.00	16.00	16.00	15.00	15.00

BS8233 Calculation Details						
	Octave Band Centre Frequency					
Term From Equation Below	125	250	500	1000	2000	4000
$L_{eq,ff}$	57.6	53.6	51.6	51.6	48.6	41.6
Ao/S . 10^(-Dn,e/10)	1.321E-05	2.19E-05	8.53E-06	3.16824E-07	2.09324E-07	3.80907E-08
Swi/S . 10^(-Rwi/10)	0.0010541	0.002103	0.000167	3.33333E-05	1.67062E-05	1.32702E-05
Sew/S . 10^(-Rew/10)	5.296E-05	2.11E-05	1.06E-05	1.67459E-06	1.0566E-06	6.66667E-07
Srr/S . 10^(-Rrr/10)	8.333E-15	8.33E-15	8.33E-15	8.33333E-15	8.33333E-15	8.33333E-15
10log10(S/A)+3	3.3778856	2.330532	1.750613	1.750612634	2.03089987	2.03089987
Leq,2	31.471055	29.24722	16.04938	8.831403455	3.176902744	-4.91558309
A-Weighting	-16.1	-8.6	-3.2	0	1.2	1
A-Weighted Leq	**15.371055**	**20.64722**	**12.84938**	**8.831403455**	**4.376902744**	**-3.91558309**

A-Weigted Level Outside	**56**
BS8233 Predicted Internal A-Weigted Level	**23**
Prediced Building Envelope SRI	**33**

BS8233 Calculation can be seen below:

$$L_{eq,2} \approx L_{eq,ff} + 10\log_{10}\left(\frac{A_0}{S}10^{\frac{-D_{n,e}}{10}} + \frac{S_{wi}}{S}10^{\frac{-R_{wi}}{10}} + \frac{S_{ew}}{S}10^{\frac{-R_{ew}}{10}} + \frac{S_{rr}}{S}10^{\frac{-R_{rr}}{10}}\right) + 10\log_{10}\left(\frac{S}{A}\right) + 3$$