

Report for

John Filbee Properties Limited

750-752 Oxford Road, Reading

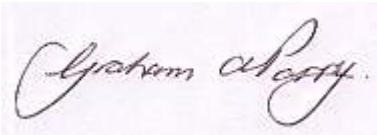
Noise Impact Assessment

Status: Final

Date: 12.04.2016

John Filbee Properties Limited

Noise Impact Assessment – 750-752 Oxford Road, Reading

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Table of Contents

1.	INTRODUCTION.....	5
2.	THE NATURE, MEASUREMENT AND EFFECT OF NOISE.....	6
3.	NOISE AND VIBRATION POLICY AND ASSESSMENT CRITERIA.....	7
3.1.	National Planning Policy Framework.....	7
3.2.	Noise Policy Statement England.....	8
3.3.	Planning Practice Guidance.....	8
3.4.	Reading Borough Council	9
3.5.	Noise	9
4.	NOISE MEASUREMENT SURVEY.....	11
4.1.	Semi-Permanent Noise Monitoring	11
4.2.	Satellite Noise Monitoring	12
5.	MITIGATION	14
5.1.	Internal Noise Levels	14
5.2.	External Noise Levels	15
6.	CONCLUSIONS.....	17

List of Appendices

Appendix 1 Glossary of Terms.....	18
Appendix 2 Baseline Monitoring Locations.....	20
Appendix 3 Summary of Noise Measurements	22
Appendix 4 Preliminary Site Layout	Error! Bookmark not defined.

List of Figures

Figure 1.1: Site Location	5
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List of Tables

Table 2.1: Typical Noise Levels	6
Table 3.1: Indoor Ambient Noise Levels for Dwellings	9
Table 3.2: WHO Community Noise Guideline Values.....	10
Table 4.1: Summary of Façade Semi-Permanent Noise Levels	12
Table 4.2: Summary of Free Field Noise Levels from Satellite Noise Monitoring.....	13
Table 4.3: Summary of Extrapolated Noise Levels to the Rear of 750-752 Oxford Road	13
Table 5.1: Predicted Average Internal Noise Levels.....	14
Table 5.2: Predicted Maximum Internal Noise Levels.....	15

1. INTRODUCTION

ACCON UK Limited (ACCON) have been commissioned by John Filbee Properties Limited to carry out a noise impact assessment at the proposed development site, 750-752 Oxford Road in Reading. The assessment is required to support a planning application for the change of use of the premises from retail units to residential flats.

The site is located at the junction of Oxford Road and Pangbourne Street. This area of Oxford Road is predominantly residential with a few small convenience stores and small businesses; and Grovelands Medical Centre is located to the south-west of the site. The site currently comprises a two storey building containing two retail units and a car park to the rear of the building which is accessed from Pangbourne Street. The proposed development site is located within the administrative boundary of Reading Borough Council (RBC).

The proposed development consists of eight residential flats over three storeys. The site location is shown in **Figure 1.1**.

Figure 1.1: Site Location



2. THE NATURE, MEASUREMENT AND EFFECT OF NOISE

Noise is often defined as sound that is undesired by the recipient. Whilst it is impossible to measure nuisance caused by noise directly, it is possible to characterise the loudness of that noise. 'Loudness' is related to both sound pressure and frequency, both of which can be measured. The human ear is sensitive to a wide range of sound levels. The sound pressure level of the threshold of pain is over a million times that of the quietest audible sound. In order to reduce the relative magnitudes of the numbers involved, a logarithmic scale of decibels (dB) is normally used, based on a reference level of the lowest audible sound.

The response of the human ear is not constant over all frequencies. It is therefore usual to weight the measured frequencies to approximate the human response. The resulting 'A' weighted decibel, dB (A), has been shown to correlate closely to the subjective human response.

When related to changes in noise, a change of ten decibels from say 60 dB (A) to 70 dB (A) would represent a doubling in 'loudness'. Similarly, a decrease in noise from 70 dB (A) to 60 dB (A) would represent a halving in 'loudness'. A change of 3 dB (A) is generally considered to be just perceptible¹. **Table 2.1** details typical noise levels. A glossary of acoustic terms is provided in **Appendix 1**.

Table 2.1: Typical Noise Levels

Approximate Noise Level (dB(A))	Example
0	Limit of hearing
30	Rural area at night
40	Library
50	Quiet office
60	Normal conversation at 1 m
70	In car noise without radio
80	Household vacuum cleaner at 1 m
100	Pneumatic drill at 1 m
120	Threshold of pain

¹ Communities & Local Government (1994). Planning Policy Guidance 24: Planning & Noise.

3. NOISE POLICY AND ASSESSMENT CRITERIA

3.1. National Planning Policy Framework

The National Planning Policy Framework (NPPF) was released in March 2012 and has replaced the Planning Policy Guidance which previously covered planning and pollution control and new development in England. The purpose of the planning system is to contribute to the achievement of sustainable development. There are three dimensions to sustainable development: economic, social and environmental. The environmental role is to contribute to protecting and enhancing our natural, built and historic environment; and as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate to adapt to climate change including moving to a low carbon economy.

One of the core planning principles is to contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should prefer land of lesser value, where consistent with other policies in the Framework. The planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

Paragraph 123 of the NPPF states that planning policies and decisions should aim to:

- Avoid noise from giving rise to significant adverse impacts (see Explanatory Note to the Noise Policy Statement for England (DEFRA)) on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum other adverse impacts (see Explanatory Note to the Noise Policy Statement for England (DEFRA)) on health and quality of life arising from noise from new development, including through the use of conditions;
- Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land use since they were established (Subject to the provisions of the Environmental Protection Act 1990 and other relevant law); and
- Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

3.2. Noise Policy Statement England

The Noise Policy Statement England (NPSE) aims to *'through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life'*

3.3. Planning Practice Guidance

The Planning Practice Guidance (PPG) was published in March 2014 and updated in December 2014. The PPG provides advice on how to determine the noise impact on development:

'Local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:

- *whether or not a significant adverse effect is occurring or likely to occur;*
- *whether or not an adverse effect is occurring or likely to occur; and*
- *whether or not a good standard of amenity can be achieved.*

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation. As noise is a complex technical issue, it may be appropriate to seek experienced specialist assistance when applying this policy.'

The document goes on to provide a definition for the levels of noise exposure at which an effect may occur:

"Significant observed adverse effect level: *this is the level of noise exposure above which significant adverse effects on health and quality of life occur.*

Lowest observed adverse effect level: *this is the level of noise exposure above which adverse effects on health and quality of life can be detected.*

No observed effect level: *this is the level of noise exposure below which no effect at all on health and quality of life can be detected."*

It is important to understand that as the PPG does not provide any advice with respect to specific noise levels/ limits for different sources of noise, it is appropriate to consider other sources of advice and guidance documents when considering whether new developments would be sensitive to the prevailing acoustic environment.

3.4. Reading Borough Council

In the pre-application enquiry, reference 151124, Stephen Vigar, Principal Planning Officer, indicates the expectations of Reading Borough Council (RBC) in respect of noise. These expectations are reproduced below:

“The noise assessment should identify the external noise levels impacting on the façade of the proposed dwellings. The external noise levels can be used to ensure that the design, particularly in terms of glazing and ventilation would control noise levels sufficiently to provide a good quality living environment. Internal noise levels should achieve the ‘good’ standard as set out in BS 8233:2014 and the WHO guidelines for community noise which provide guidance on acceptable noise levels.

Noise mitigation is likely to focus on the weak point in the structure; glazing. Given that the acoustic integrity would be compromised should the windows be opened, ventilation details must also be provided, where mitigation relies on closed windows. Ventilation measures should be selected which do not allow unacceptable noise ingress and should provide sufficient ventilation to avoid the need to open windows in hot weather, however non-openable windows are not considered an acceptable solution due to the impact on living standards.

If it is proposed to install noisy plant (air conditioning condensers/air source heat pumps etc.) at the development a BS 4142:2014 noise assessment should be carried out to ensure the impact of noise on nearby noise sensitive receptors is acceptable. To achieve this the noise rating level of the equipment will need to be at least 10dB below the existing background level as measured at the nearest noise sensitive receptor.”

3.5. Noise

3.5.1. British Standard BS 8233:2014

BS 8233 ‘Guidance on sound insulation and noise reduction for buildings’ has a number of design criteria and limits for intrusive external noise. The guidelines are designed to achieve reasonable resting/sleeping conditions in bedrooms and good listening conditions in other rooms and the most appropriate to the residential environment are reproduced in **Table 3.1**.

Table 3.1: Indoor Ambient Noise Levels for Dwellings

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

With respect to external noise levels, BS 8233 states:

“For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, 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.”

3.5.2. World Health Organisation Guidelines for Community Noise

The World Health Organisation (WHO) has developed guidelines designed to minimise the adverse effects of noise. The guidelines relevant to residential noise exposure are detailed in **Table 3.2**. For each specific environment the stated noise levels are the maximum noise levels to avoid the health effect noted.

Table 3.2: WHO Community Noise Guideline Values

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

The WHO guidelines state that with respect to the L_{Amax} threshold that, ‘For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45dB L_{Amax} more than 10 – 15 times per night (Vallet and Vernet 1991)’.

4. NOISE MEASUREMENT SURVEY

In order to determine the extent to which the site is currently affected by noise from road traffic, a detailed measurement study has been carried out at the site. Measurements have been carried out to characterise the existing noise climate over a 24-hour period.

4.1. Semi-Permanent Noise Monitoring

The semi-permanent noise measurement utilised a Norsonic 116 Type 1 Precision Sound Level Meter, which holds a current certificate of calibration. Before and after the measurement period the equipment was calibrated in order to ensure that the equipment had remained within reasonable calibration limits (+/- 0.5 dB).

Noise measurements were carried out between 1030 hrs on Tuesday 23rd February 2016 and 1030 hrs on Wednesday 24th February 2016. The weather was mostly dry and cloudy. There were light westerly winds (<2 m/s) and a temperature of approximately 6-8°C during the daytime. Various weather forecasting websites^{2,3} indicated that the temperature overnight between the 23rd and 24th of February dropped to approximately -4°C.

Noise measurements were carried out utilising a noise monitoring position (MP1) which was located on an existing canopy, the top of which was at first floor level, situated overlooking Oxford Road. The microphone was positioned 1.5m above first floor level and approximately 4.5m above ground level. The microphone was approximately 1m from the building façade. The sound level meter was set to measure over consecutive five minute periods for the duration of the 24 hour noise survey.

The measurement position was chosen in order to obtain noise levels from road traffic on Oxford Road which dominated the noise climate. Occasional air traffic was noted to be passing overhead but was inaudible at this position. The noise monitoring position is shown on a site layout plan in **Appendix 2**.

The façade noise levels from the noise monitoring position are summarised in **Table 4.1** below and the full results are shown in **Appendix 3**.

² Met Office www.metoffice.gov.uk

³ Weather Underground www.wunderground.com

Table 4.1: Summary of Façade Semi-Permanent Noise Levels

Period (hours)	$L_{Aeq,T}$ dB	L_{Amax} dB	L_{A10} dB	L_{A90} dB
0700 – 2300	73.3	99.7	73.1	62.2
2300 – 0700	66.0	89.1	66.7	46.5

Note: The average noise levels stated are logarithmic for L_{Aeq} and the arithmetic average of the highest hourly $L_{Amax,F}$ noise levels. The average noise levels for L_{A10} and L_{A90} are arithmetic.

The measured façade noise levels range between 68.5 dB $L_{Aeq,1hr}$ and 77.5 dB $L_{Aeq,1hr}$ during the daytime period and between 61.3 dB $L_{Aeq,1hr}$ and 69.9 dB $L_{Aeq,1hr}$ during the night-time period. The measured 5-minute maximum noise levels ranged between 69.0 dB L_{Amax} and 96.2 dB L_{Amax} during the night-time period.

In the subsequent noise assessments, the noise levels measured at MP1 will be corrected to free-field noise levels by subtracting 3 dB from the façade noise levels in order to remove the contribution of façade noise reflections from the results.

4.2. Satellite Noise Monitoring

Short-term attended satellite noise monitoring was also carried out on the site. The noise measurement utilised a Rion NL-52 Type 1 Sound Level Meter which has a current certificate of calibration. Before and after the measurement period the equipment was calibrated in order to ensure that the equipment had remained within reasonable calibration limits (± 0.5 dB).

Measurement position 2 (MP2) was located in the car park area to the rear of the building approximately 3m from the rear façade of the building and 3m to the east of the boundary wall. The dominant noise source was road traffic on Oxford Road. Other noise sources which contributed to the noise climate at the rear of the building included trains movements and horn blasts (the railway is approximately 350m to the north of the site) and occasional aircraft. One of the retail units is currently occupied and therefore an air conditioning unit associated with the premises was operational but was only audible during lulls in the road traffic noise from Oxford Road.

The satellite noise monitoring position is shown on a site layout in **Appendix 2**.

The measured noise levels from the free-field noise measurement position are summarised in **Table 4.2** below. The measurements were recorded on Tuesday 23rd February 2016. The noise measurements were carried out over consecutive five minute periods. The L_{Aeq} was subsequently logarithmically averaged in **Table 4.2**, the L_{A10} and L_{A90} were arithmetically averaged and the L_{Amax} is the highest measured noise level over the survey period.

Table 4.2: Summary of Free Field Noise Levels from Satellite Noise Monitoring

Monitoring Position	Time (hours)	L _{Aeq}	L _{Amax}	L _{A10}	L _{A90}
MP2	1042 – 1202	52.6	78.0	54.8	47.2

Daytime and night-time L_{Aeq} noise levels to the rear of the building have been extrapolated from the measured noise levels at MP2 through comparison with the simultaneous noise levels measured at MP1. The extrapolated daytime and night-time noise levels to the rear of the building are summarised in **Table 4.3**.

Table 4.3: Summary of Extrapolated Noise Levels to the Rear of 750-752 Oxford Road

Location	Extrapolated L _{Aeq,16hr} (Daytime, dB)	Extrapolated L _{Aeq,8hr} (Night-time, dB)
Rear of 750-752 Oxford Road	50	43

5. MITIGATION

5.1. Internal Noise Levels

It is proposed to provide a suitable standard of sound insulation to ensure that the living conditions within habitable rooms are acceptable in accordance with both BS8233 and the WHO guidelines, which will be in line with the requirements of RBC.

The drawings titled 'Proposed Ground Floor Plan' (drawing number 15037-PL-9), 'Proposed First Floor Plan' (drawing number 15037-PL-10) and 'Proposed Second Floor Plan' (drawing number 15037-PL-11 Rev A) are shown in **Appendix 4** and indicate that bedrooms are located such that they will have windows on the rear façade (facing away from Oxford Road) except for flats 2 and 5 which have windows overlooking Oxford Road.

A double glazed window system should be provided for all habitable rooms. A glazing system in a 6/20/12 configuration (or equivalent) to give a Sound Reduction Index (SRI) of 41 dB could be utilised for all habitable rooms which overlook Oxford Road. A typical glazing system in a 4/12/6 configuration (or equivalent) to give an SRI of 28 dB could be utilised for all habitable rooms which overlook the car park area to the rear of the building. To ensure the maximum sound reduction is provided by the glazing, any ventilation system should not compromise the effectiveness of the sound insulation. Carefully designed acoustic trickle vents or other acoustically treated ventilation would minimise any reduction to the sound insulation provided by the glazing system. Additionally, it is assumed that the rest of the façade build-up will achieve a SRI of 55 dB.

Table 5.1 identifies the estimated internal period L_{Aeq} noise levels utilising the construction assumptions outlined above. The SRIs as stated would achieve the criteria provided in BS 8233 and the WHO Guidelines for both the daytime and night-time period.

Table 5.1: Predicted Average Internal Noise Levels

Location	External Noise Levels (dB)		Proposed glazing R_w (dB)	Internal Noise Levels (dB)		Compliance with Criteria	
	Daytime $L_{Aeq,16hr}$	Night-time $L_{Aeq,8hr}$		Daytime $L_{Aeq,16hr}$	Night-time $L_{Aeq,8hr}$	BS 8233	WHO
Front Façade, overlooking Oxford Road	70	63	41	29	22	✓	✓
Rear Façade, overlooking the carpark area	50	43	28	22	15	✓	✓

For flats 2 and 5, which have bedrooms overlooking Oxford Road, **Table 5.2** identifies the estimated internal maximum noise levels L_{Amax} that have been determined using the construction assumptions outlined above. The SRIs as stated would achieve the criterion provided in the WHO guidelines for the night-time period.

Table 5.2: Predicted Maximum Internal Noise Levels

Location	External Noise Levels (dB)	Proposed glazing R_w (dB)	Internal Noise Levels (dB)	Compliance with Criteria
	Night-time $L_{Amax}^{(1)}$		Night-time L_{Amax}	WHO
Front Façade, overlooking Oxford Road	86	41	45	✓

Note (1): The L_{Amax} utilised in this assessment is the 10th highest 5-minute L_{Amax} measured during the night-time period in accordance with the WHO guidelines as stated in Section 3.5.2 of this report.

5.2. External Noise Levels

The floor plans propose small terrace areas at ground floor level between the building and Oxford Road which serve flats 1, 2 and 3. Additionally, at second floor level, the set back of the building extension provides space for roof terrace areas serving flats 7 and 8, again overlooking Oxford Road.

The daytime noise level measured at the front of the building along Oxford Road was 70 dB $L_{Aeq,16hr}$. This exceeds the guideline noise level for external amenity spaces of 55 dB $L_{Aeq,16hr}$.

Some noise screening (less than 2 dB) may be provided to the roof terrace areas at second floor level by the edge of the building. However, the noise levels on the roof terraces would remain significantly above the guideline noise level of 55 dB $L_{Aeq,16hr}$.

The PPG⁴ provides a list of potential measures which can be considered in order to mitigate the impact of noise on residential developments. *“The noise impact may be partially off-set if residents of those dwellings have access to:*

- *A relatively quiet façade (containing windows to habitable rooms) as part of their dwelling, and/or:*
- *A relatively quiet external amenity space for their sole use, (e.g. a garden or balcony). Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced with increasing noise exposure and could be such that significant adverse effects occur, and/or:*
- *A relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings, and/or:*
- *A relatively quiet, protected, external publically accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance).”*

⁴ Planning Practice Guidance – Noise, Paragraph: 009 Reference ID: 30-009-20140306

All of the flats, with the exception of flats 2 and 5, have a dual aspect layout which ensures that some rooms are located on the quieter façade of the building.

An external amenity area for the sole use of residents located to the rear of the building would achieve the guideline external noise criterion of 55 dB $L_{Aeq,16hr}$. However, there is not enough space for this at the rear of the building.

A number of nearby public park areas are located within approximately a 10-20 minute walk from 750-752 Oxford Road including Oxford Road Recreation Ground, Kensington Park, McIlroy Park and Prospect Park. These parks are considered to be relatively quiet, protected, external publically accessible amenity spaces in accordance with the fourth bullet point of the PPG guidance stated above. Additionally, the Thames Path can be accessed following an approximate 10 minute walk.

Therefore, whilst noise levels in the proposed terrace areas will not achieve the relevant external noise criterion and residential amenity space cannot be included to the rear of the building, the majority of residents will have access to a relatively quiet façade and relatively quiet, protected, external publically accessible amenity spaces within approximately a 10-20 minute walk of the proposed flats including Oxford Road Recreation Park, Kensington Park, McIlroy Park and Prospect Park as well as the Thames Path. This demonstrates that the high external noise levels can be off-set in line with Paragraph 009 of the Planning Practice Guidance for noise.

6. CONCLUSIONS

This assessment has considered the noise levels which would be experienced at the proposed development site at 750-752 Oxford Road.

The assessment of noise has shown that, with the provision of double glazing with an SRI of 41 dB for all habitable rooms overlooking Oxford Road and 28 dB SRI for all habitable rooms which overlook the car parking area to the rear of the building and a suitable acoustically treated ventilation provision, appropriate internal noise levels can be achieved for the development. The predicted internal noise levels are in line with the requirements of RBC and the noise criteria provided in BS8233 and the WHO guidelines.

The external noise levels in the proposed terrace areas at ground and second floor levels will not achieve the external noise level criterion of 55 dB $L_{Aeq,16hr}$. However, the majority of residents will have access to a relatively quiet façade and relatively quiet, protected, external, publically accessible amenity spaces which are located within a 10-20 minute walk from the site including Oxford Road Recreation Park, Kensington Park, McIlroy Park and Prospect Park as well as the Thames Path. This demonstrates that the high external noise levels can be off-set in line with the PPG.

Achievement of the target noise criteria will ensure compliance with the aims of the NPPF and the PPG in that it will avoid noise from giving rise to significant adverse impacts on health or quality of life for future occupiers of the proposed development.

Appendix 1

Glossary of Terms

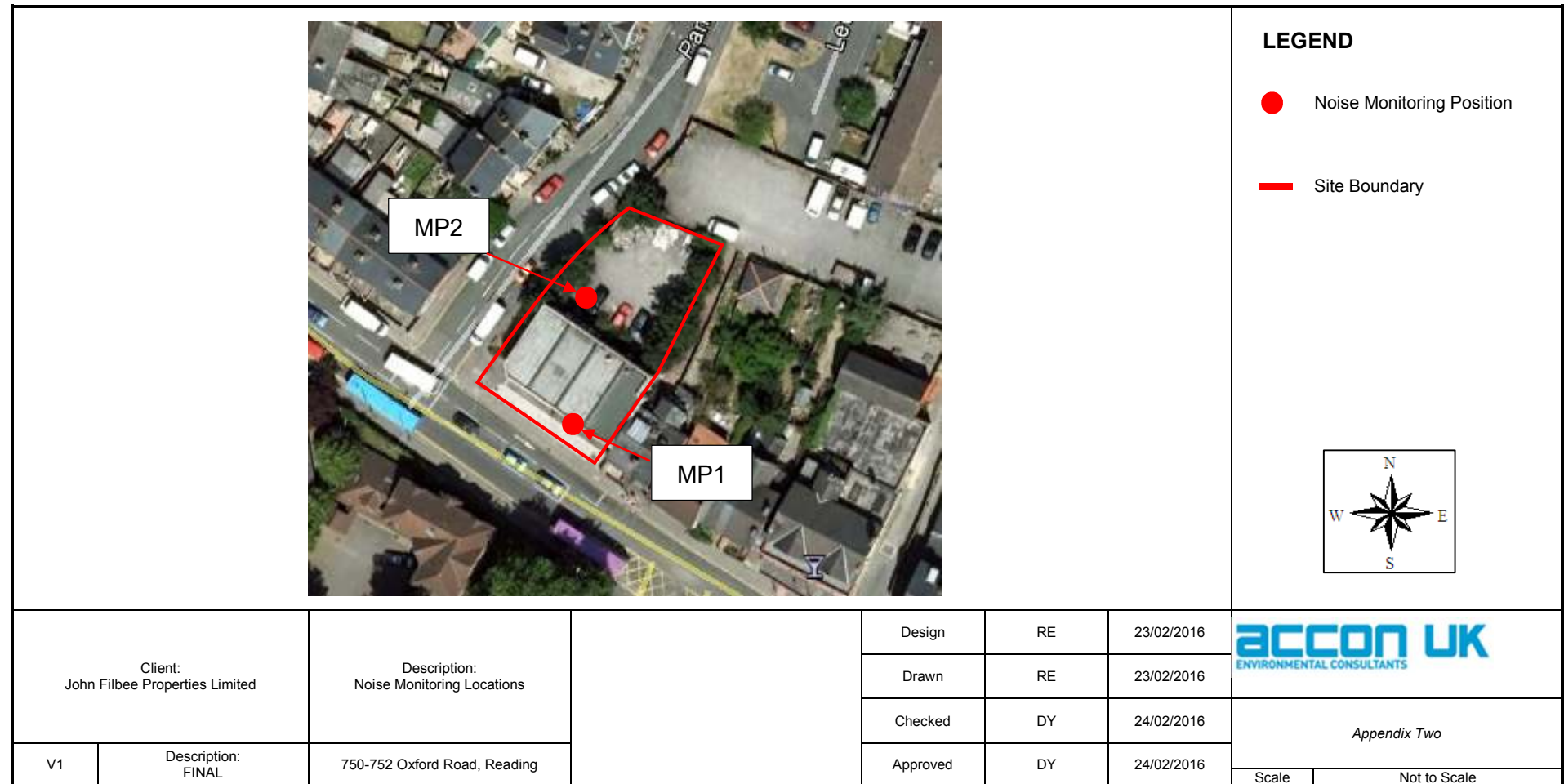
Appendix 1: Glossary of Terms

Term	Description
'A'-Weighting	<i>This is the main way of adjusting measured sound pressure levels to take into account human hearing, and our uneven frequency response.</i>
Decibel (dB)	<i>This is a tenth (deci) of a bel. The decibel can be a measure of the magnitude of sound, changes in sound level and a measure of sound insulation. Decibels are not an absolute unit of measurement but are an expression of ratio between two quantities expressed in logarithmic form.</i>
$L_{Aeq,T}$	<i>The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T. T may be as short as 1 second when used to describe a single event, or as long as 24 hours when used to describe the noise climate at a specified location. $L_{Aeq,T}$ can be measured directly with an integrating sound level meter.</i>
L_{A10}	<i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 10 per cent of a given time and is the L_{A10T}. The L_{A10} is used to describe the levels of road traffic noise at a particular location.</i>
L_{A50}	<i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 50 per cent of a given time and is the L_{A50T}.</i>
L_{A90}	<i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 90 per cent of a given time and is the L_{A90T}. The L_{A90} is used to describe the background noise levels at a particular location.</i>
L_{Amax}	<i>The 'A'-weighted maximum sound pressure level measured over a measurement period.</i>

Appendix 2

Baseline Monitoring Locations

Appendix 2: Noise and Vibration Monitoring Locations



Appendix 3

Summary of Noise Measurements

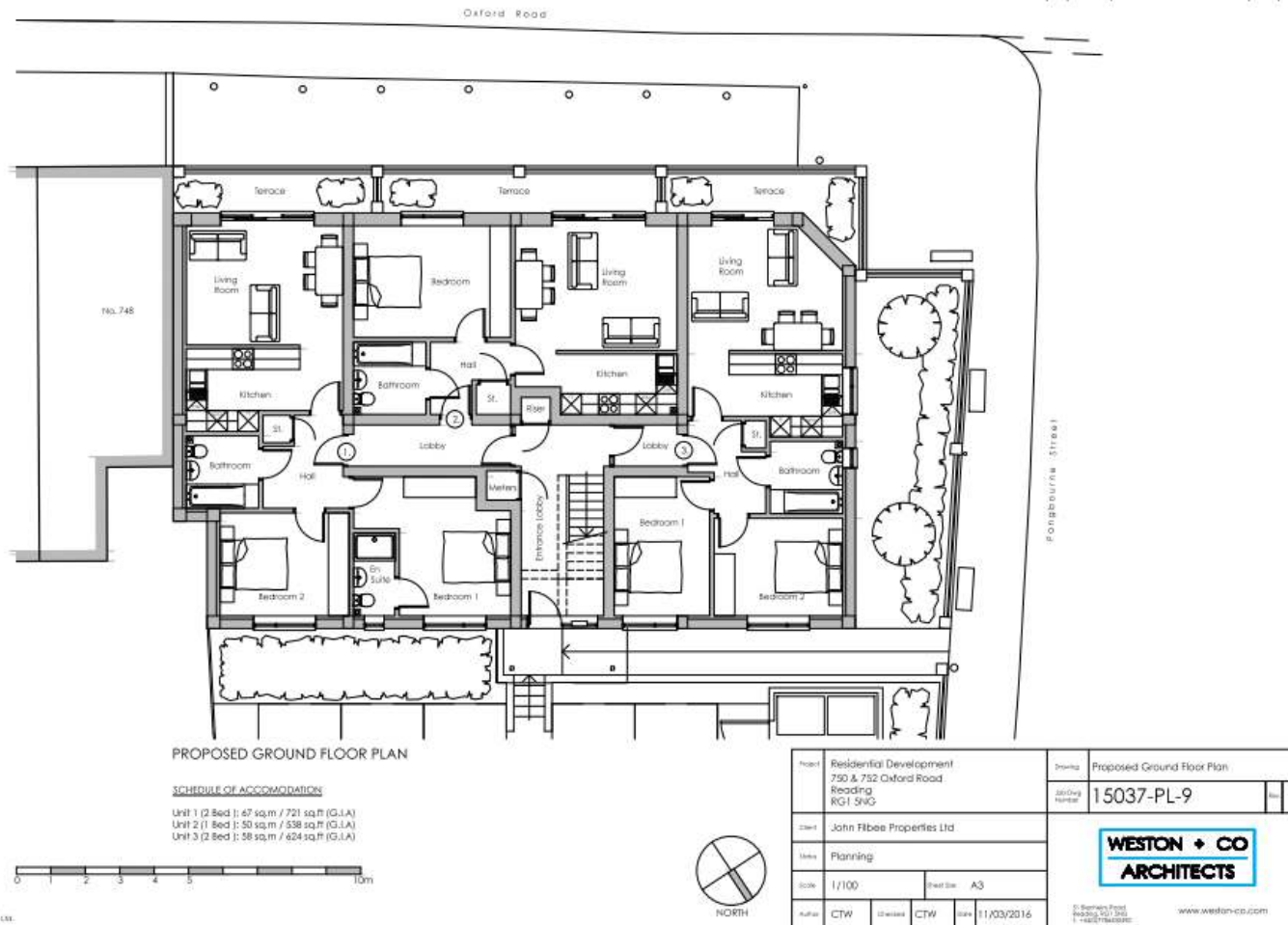
Summary of Noise Measurements

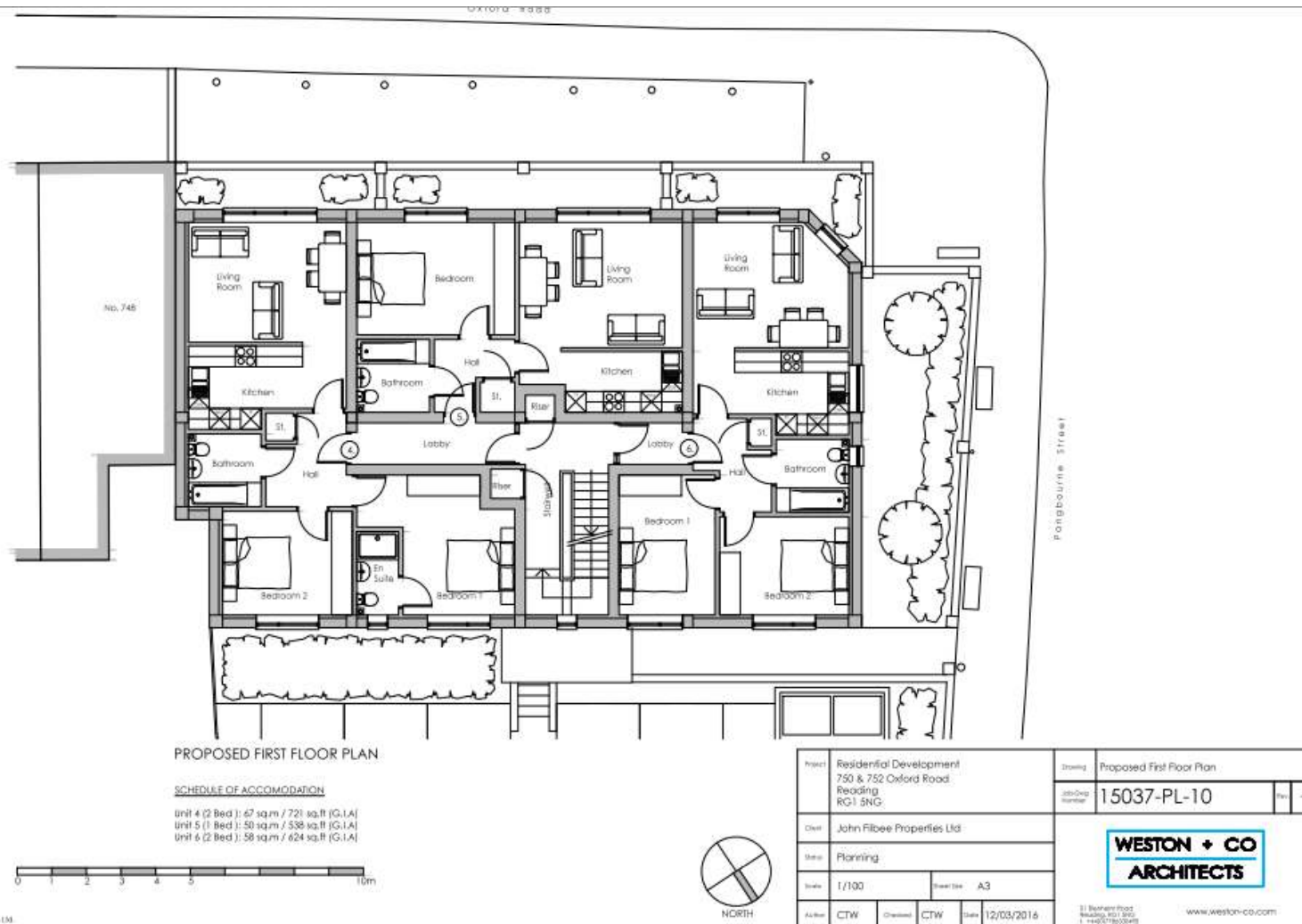
Measured Noise levels – MP1

Time	L _{Aeq,T}	L _{AF(max)} ⁽¹⁾	L _{A10}	L _{A90}
07:00-08:00	77.2	107.9	75.2	63.6
08:00-09:00	70.6	89.2	73.0	63.2
09:00-10:00	74.7	109.6	74.1	62.8
10:00-11:00	72.5	102.9	74.0	63.2
11:00-12:00	72.0	97.9	73.9	63.2
12:00-13:00	70.7	92.0	73.5	63.0
13:00-14:00	74.9	107.4	73.7	62.9
14:00-15:00	71.2	97.1	73.3	63.3
15:00-16:00	70.5	88.7	73.1	63.1
16:00-17:00	70.3	92.6	72.6	62.5
17:00-18:00	69.4	92.2	71.8	62.1
18:00-19:00	77.5	109.9	72.2	62.4
19:00-20:00	74.2	109.8	72.8	62.3
20:00-21:00	74.7	108.9	71.9	60.4
21:00-22:00	70.5	97.8	72.0	58.7
22:00-23:00	68.5	90.9	71.8	59.1
23:00-00:00	67.2	92.6	69.9	50.6
00:00-01:00	66.6	96.2	67.4	44.6
01:00-02:00	62.0	90.5	63.8	40.6
02:00-03:00	63.6	93.5	60.5	39.2
03:00-04:00	61.3	84.3	63.5	41.3
04:00-05:00	62.2	83.7	64.7	45.0
05:00-06:00	67.1	85.8	70.6	51.9
06:00-07:00	69.9	86.2	73.4	58.8
07:00-23:00	73.3	99.7	73.1	62.2
23:00-07:00	66.0	89.1	66.7	46.5

Note (1): The L_{Amax} noise level results for each hourly period is the highest L_{Amax} level measured in that hour. The daytime and night-time L_{Amax} levels stated are an average of the highest L_{Amax} levels measured in each hour within the respective daytime or night-time period.

Appendix 4 Floor Plans





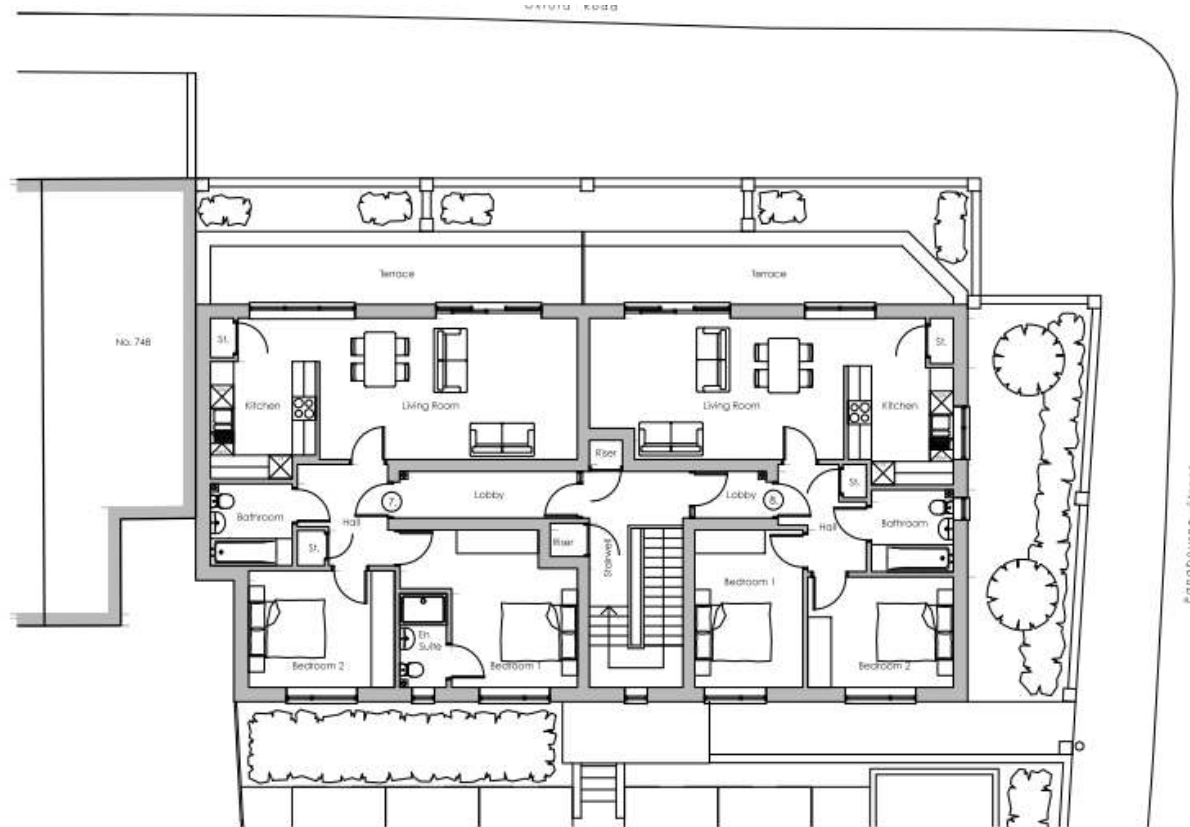
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Page | 26

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PROPOSED SECOND FLOOR PLAN

SCHEDULE OF ACCOMMODATION

Unit 7 (2 Bed): 76 sq.m / 818 sq.ft (G.I.A)
Unit 8 (2 Bed): 67 sq.m / 721 sq.ft (G.I.A)



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Project	Residential Development 750 & 752 Oxford Road, Reading RG1 5NG		Drawing	Proposed Second Floor Plan	
Client	John Filbee Properties Ltd		Job/Draw Number	15037-PL-11	Rev. A
Status	Planning				
Scale	1/100	Sheet Size			
Author	CTW	Checked	CTW	Date	12/03/2016
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Page | 27

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