ScotchPartners
Building Services Engineering | Sustainability | Acoustics

Premier Inn Uxbridge (Riverside Way)

Whitbread PLC

Noise Impact Assessment

Revision 00

25/09/2024

Scotch Partners LLP

Building Services Engineering | Sustainability | Acoustics

16 St John's Lane
London
EC1M 4BS

+44 (0) 203 544 5400
www.scotchpartners.com

Project Particulars

Client Name: Whitbread PLC

Project Name: Premier Inn Uxbridge (Riverside Way)

Disclaimer

Revision History

Revision	Description	Date	Prepared By	Checked By
00	Initial issue	25/09/2024	Nick Brown BEng MSc MIOA Sarah Allen MEng AMIOA	Jason Clouston BEng MSc MIOA

Contents

1 Introduction

1.1 Proposals are in place to extend the existing Premier Inn Uxbridge (Riverside Way) hotel, located at 500 Riverside Way, Uxbridge UB8 2YF, in order to add additional guestrooms. The new guestrooms will be located off of the south façade of the hotel, where the existing car park is situated. This report presents an assessment of the noise emission from new building services plant associated with the extension. Noise intrusion into the new hotel guestrooms has also been assessed within this report.

1.2 An external noise survey has been conducted at the site, and the measurement data have been used to establish the prevailing ambient and background noise levels affecting the site and neighbouring noise-sensitive properties. This data has then been used to assess the noise impact in accordance with the London Borough of Hillingdon Council's anticipated requirements.

1.3 Chapter 2 of this report presents the acoustic requirements, Chapter 3 describes the external noise survey, and the assessment of plant noise emission to neighbouring properties is presented in Chapter 4. Plant noise intrusion into existing hotel guestrooms is assessed in Chapter 5, and external environmental noise intrusion into new hotel guestrooms is assessed Chapter 6. Conclusions have been provided in Chapter 7.

1.4 The full measurement data are available on request. Definitions of some of the terminology used throughout the report have been included in Appendix A.

2 Criteria

2.1 Overview

2.1.1 When assessing the impact of noise emission from new building services plant associated with the proposed development, and noise intrusion into the proposed development, consideration has been given to local planning policy, available good practice guidance, and the hotel operator's brand standards. A list of the documents that have been consulted is provided below:

Local Policy

- London Borough of Hillingdon, *Hillingdon Local Plan: Part 1 - Strategic Policies* (adopted November 2012)

Good Practice Guidance

- British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*

Hotel Operator's Brand Standards

- Premier Inn Generic Specification for a Turnkey Development (January 2024 - Edition Rev N)

2.1.2 Summaries of the guidance considered relevant to the proposals are presented within this Chapter.

2.2 London Borough of Hillingdon Local Plan

2.2.1 Noise is addressed in Strategic Objective SO10 and Policy EM8 of the *Hillingdon Local Plan: Part 1 - Strategic Policies*, with explanatory text.

2.2.2 Strategic Objective SO10 (Under *Land, Water, Air, and Noise*) is as follows:

"Improve and protect air and water quality, reduce adverse impacts from ***noise*** *including the safeguarding of quiet areas and reduce the impacts of contaminated land."*

2.2.3 Policy EM8 of the Local Plan is as follows:

"Noise

The Council will investigate Hillingdon's target areas identified in the Defra Noise Action Plans, promote the maximum possible reduction in noise levels and will minimise the number of people potentially affected.
The Council will seek to identify and protect Quiet Areas in accordance with Government Policy on sustainable development and other Local Plan policies.
The Council will seek to ensure that noise sensitive development and noise generating development are only permitted if noise impacts can be adequately controlled and mitigated."

2.2.4 It is believed that the London Borough of Hillingdon does not specify any objective criteria, therefore the assessment of plant noise emission will be undertaken in accordance with good practice guidance.

2.3 British Standard 4142

2.3.1 British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* presents a methodology for comparing the noise level of the new source (the *specific sound level*) with that of the existing background noise level in the area in the absence of the new source (the *background sound level*), and establishing the likely impact of the noise.

2.3.2 The methodology requires consideration to be given to all aspects of the assessment process, and accounts for unusual acoustic features such as tonal, impulsive, or intermittent characteristics of the noise by the addition of various corrections to the specific sound level. The corrected *specific sound level* is the *rating level*.

2.3.3 The *background sound level* is then arithmetically subtracted from the *rating level*. The greater the positive difference between the *rating level* and the *background sound level*, the greater the magnitude of the impact.

- A difference of around +10 dB or more is likely to be an indication of a "significant adverse" impact, depending upon the context.
- A difference of around +5 dB or more is likely to be an indication of an "adverse impact", depending upon the context.
- Where the *rating level* does not exceed the *background sound level*, this is an indication of a "low impact", depending upon the context.

2.3.4 It is proposed to target a BS 4142 *rating level* that is at or below the prevailing *background sound level,* at all times the new plant is to be operating, in order to achieve a "low impact" at the neighbouring noise-sensitive receivers. It is considered that by doing this, noise would be sufficiently controlled such that it is in line with the requirements of Strategic Objective SO10 and Policy EM8.

2.4 Premier Inn Generic Specification for a Turnkey Development

2.4.1 All new Premier Inn developments and extensions are to be constructed so as to control noise intrusion in line with the requirements of the Premier Inn Generic Specification for a Turnkey Development, hereinafter referred to as the "PI Spec". Revision N (January 2024) of the PI Spec contains internal background noise limits for hotel guestrooms owing to external sources, as presented in Table 2-1.

Period	Noise level
Daytime (07:00-23:00)	≤ 35 dB $L_{Aeq,1hour}$
Night-time (23:00-07:00)	≤ 30 dB $L_{Aeq,1hour}$ ≤ 42 dB L_{AFmax}*

**The maximum criterion applies to all vehicle and railway train passbys and all aircraft flyovers. It also applies to the noise from all street activities including those associated with patrons attending and leaving adjacent, neighbouring or connected entertainment venues; noise associated with commercial and industrial neighbouring premises including delivery activities and process equipment; seagulls and church bells. Genuinely infrequent and unpredictable sources of noise such as car alarms occurring no more than twice a night are excluded.*

Table 2-1: Internal background noise level requirements (Premier Inn brand standards)

2.4.2 The standards have been chosen to complement the Good Night Guarantee offered by Premier Inn, which refunds guests if they have been disturbed by noise while trying to sleep. These standards are more onerous than those recommended in British Standard 8233, the usual guidance adopted for controlling noise intrusion into residential accommodation. It is therefore intended to control noise intrusion into the hotel in line with the requirements of the PI Spec. Complying with these requirements can also be expected to satisfy any reasonable Planning requirements for noise intrusion into the hotel.

2.4.3 The PI Spec also requires that noise emission from all plant associated with the hotel be designed to be at least 5 dB below the lowest measured background sound level at night with all plant operating simultaneously, when assessed at the boundary (assumed to be any normally occupied position) of the nearest noise-sensitive property.

2.4.4 Furthermore, the PI spec requires the following regarding background noise levels in guestrooms:

> *"The background noise level in any hotel bedroom as a result of any other building services systems serving the bedroom, neighbouring bedrooms or any other parts of the hotel or development, shall not exceed NR20 L_{eq} within the bedroom. Particular attention is drawn to noise intrusion from roof top plant above or adjacent to bedrooms."*

3 External noise survey

3.1 Site description

3.1.1 The site is located in Uxbridge, UB8 2YF, and is situated on Riverside Way. To the east of the site is St. John's Road (A23), which runs both parallel and perpendicular to Riverside Way.

3.1.2 The main source of noise affecting the site and neighbouring properties was observed to be road traffic noise from St. John's Road (A23). Noise owing to activities associated with the surrounding commercial developments was not observed whilst on site, though these may be audible during other periods.

3.1.3 Noise at the site from existing building services was generally imperceptible against the road traffic noise, although may become more audible during lulls in traffic flows.

3.1.4 The immediate neighbours to the south and east of the site are understood to be mainly residential properties.

3.2 Measurement methodology

3.2.1 Continuous, unattended noise level measurements were conducted at a single position towards the south-east corner of the site (facing St Johns Road). The microphone was positioned c. 2m above the local ground level, and is considered to have been placed in a reasonable approximation of free-field conditions.

3.2.2 The measurement position is shown on the satellite image in Figure 3-1.

Figure 3-1: Satellite image showing noise measurement location (source: Google Earth)

3.2.3 Statistical and spectral octave-band data were recorded in 15-minute samples between 12:30 on Tuesday 27th August and 12:30 on Wednesday 28th August 2024. The "fast" (125ms) time constant was used.

3.2.4 The data measured at this location are considered representative of the typical and lowest background sound levels experienced at nearby neighbouring properties.

3.2.5 Measurements were undertaken generally in accordance with the procedures advised within British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* and British Standard 7445-1:2003 *Description and measurement of environmental noise.*

3.2.6 The following equipment was used to carry out the measurements:

Type	Model	Serial no.
Class 1 sound level meter	Norsonic 131	1312766
Environmental microphone	Norsonic 1227	170606
Portable calibrator	Norsonic 1251	34926

Table 3-1: Noise level measurement equipment

3.2.7 The calibration of the sound level meter and associated microphone was checked prior to and on completion of the survey in accordance with recommended practice. No significant drift in calibration occurred during the survey. The accuracy of the calibrator can be traced to National Physical Laboratory Standards.

3.3 Weather

3.3.1 Weather conditions throughout the survey[1] are believed to have been dry with average windspeeds of approximately ≤ 5 m/s. The weather conditions are considered to have had minimal impact on the measurements.

3.4 Results

3.4.1 Full measurement data are available in digital format on request. A summary of the key data is presented in this report.

3.4.2 A graph showing the noise level history is presented in Figure 3-2.

[1] https://www.timeanddate.com/weather/uk/uxbridge/historic?month=8&year=2024

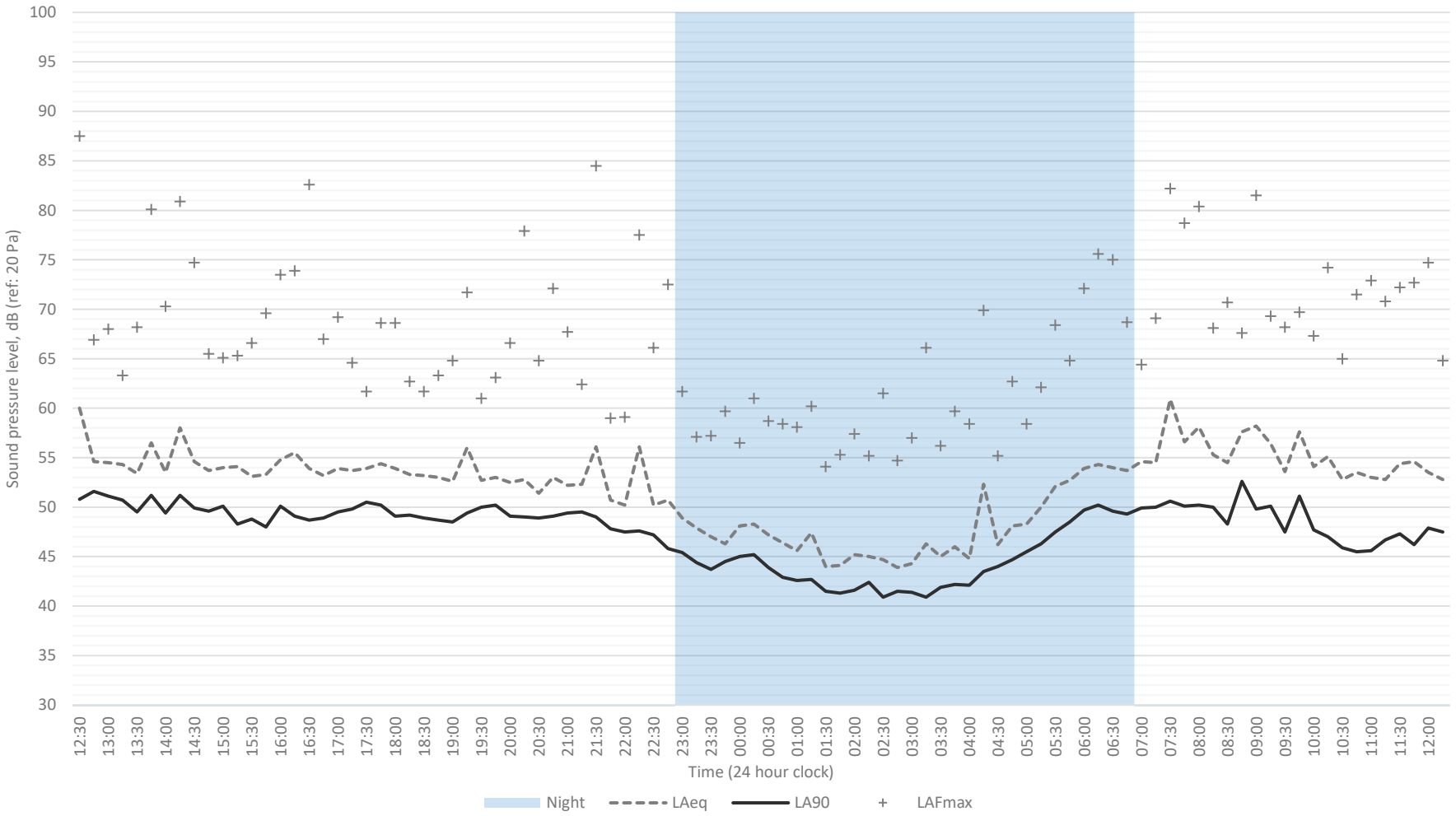

Figure 3-2: Measured noise level history between 27th and 28th August 2024

3.4.3 Based on the measured data, the typical background sound levels expected to occur during the daytime and night-time at the nearest noise-sensitive properties are presented in Table 3-2.

Time	Typical background sound levels
Daytime (07:00-23:00)	46 - 53 dB $L_{A90,15min}$
Night-time (23:00-07:00)	41 - 50 dB $L_{A90,15min}$

Table 3-2: Typical background sound levels obtained during the survey

3.4.4 Noise levels can be seen to have generally followed a diurnal pattern, falling to the lowest levels overnight and rising to the highest levels in the morning. This is typical for sites that are exposed to road traffic noise.

3.4.5 There is no obvious flattening out of the noise levels, as may be expected if dominated by constant building services noise, or similar. The noise level history accords with the subjective impressions of the various sources of noise observed during the periods of attendance.

4 Plant noise emission to neighbouring properties

4.1 Plant noise emission limits

4.1.1 In order to achieve a "low impact" according to a BS 4142 assessment, the rating level of the proposed building services plant needs to be no greater than the background sound level at the existing neighbouring properties. The background sound level used should reflect the level that is typically expected to occur at different times during the day.

4.1.2 In order to represent a worst-case scenario, the lowest background sound levels obtained during the survey will be used to define the plant noise emission limits at the nearest noise-sensitive receivers (NSRs). The following limits are based on the results of the noise survey, and are expected to satisfy the requirements of the Local Authority:

Time	Plant noise emission limits at nearest NSRs
Daytime (07:00-23:00)	46 dB L_{Ar}
Night-time (23:00-07:00)	41 dB L_{Ar}

Table 4-1: Plant noise emission limits at nearest NSRs, based on measurement data

4.2 Plant proposals

4.2.1 The proposed plant is understood to comprise 7 No. condenser units serving the new guestrooms (Mitsubishi PURY EP250YNW-A2), 2 No. water heaters (Mitsubishi Q-ton ESA30EH-25), and a supply and extract fan serving the new kitchen. It has also been assumed that 2 No. condenser units serving the new breakfast room (Mitsubishi PUMY-SP) will be included within the proposals; this is based on guidance from the mechanical engineer and Scotch Partners' experience with similar developments.

4.2.2 It is understood that these units will be located on the roof of the proposed extension. As the units will be located externally, they have been included within the noise emission assessment.

4.2.3 The exact size of the condenser units serving the breakfast room is not known, so to represent a worst-case scenario, the noisiest unit has been assumed (2 No. Mitsubishi PUMY-SP140YKM).

4.2.4 Noise from the atmosphere terminations of the kitchen supply and extract fan is expected to be readily controlled by the use of in-duct silencers/attenuators, so noise from the terminations has not been included within the noise emission assessment.

4.2.5 It has been assumed that the ventilation equipment and associated silencers/attenuators will be selected so that noise from any atmosphere side termination is controlled to not exceed 50 dB L_{pA} at a distance of 1m externally from the termination. The kitchen ventilation system, and associated silencer/attenuators, can be reviewed in more depth during the detailed design stage, if necessary.

4.2.6 The location of the proposed plant is shown in Figure 4-1.

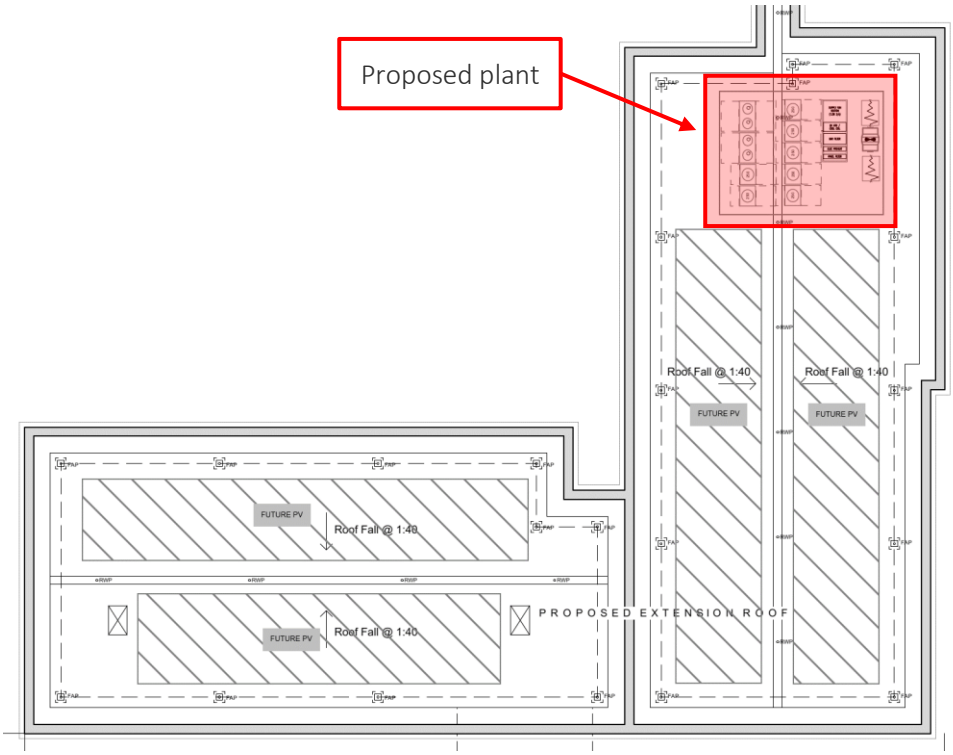

Figure 4-1: Proposed location of plant (roof level)

4.2.7 The condenser units serving the new guestrooms (Mitsubishi PURY-EP250) are able to be controlled to 70% duty during the daytime (07:00-23:00) and to 50% duty overnight (23:00-07:00). The water heaters (Mitsubishi Q-ton ESA30EH) are expected to be required to operate at normal duty during both daytime and night-time hours, along with the new kitchen supply and extract fan.

4.2.8 The sound power levels for the guestroom condenser units and water heaters have been provided by the manufacturer, and are presented in Table 4-2. The equipment is noisier when operating in heating mode, rather than other modes, so only the data for heating mode has been used in the assessment.

4.2.9 It is believed that selections have not yet been made for the kitchen supply and extract fan, so the noise levels for the supply/extract fan presented within this section are based on assumed selections; these selections have been informed by Scotch Partners' experience with similar developments, and are also presented in Table 4-2.

Unit	Linear sound power levels in octave-band centre frequencies (dB)								
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
PURY-EP250 70% duty	80	76	72	71	69	65	67	61	75
PURY-EP250 50% duty	76	70	64	63	61	57	61	57	67
Q-ton ESA30EH-25	68	63	57	57	60	55	51	45	63
Kitchen supply breakout	62	68	53	47	44	44	51	31	56
Kitchen extract breakout	91	81	75	59	54	50	45	40	70

Table 4-2: Manufacturer provided sound power levels (per unit), (dB ref: 10^{-12} W)

4.2.10 Additionally, the noise levels for the Mitsubishi PUMY units have been provided as sound pressure levels per unit (measured 1m away from the units), and are presented in Table 4-3. As with the other condenser units, these units are noisier when operating in heating mode, so only the data for heating mode has been used in the assessment.

Unit	Sound pressure levels in octave-band centre frequencies (dB)								
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
PUMY-SP140	59	60	51	52	47	42	37	31	53

Table 4-3: Manufacturer provided sound pressure levels, measured 1m away (dB ref: $2x10^{-5}$ Pa)

4.3 Nearest noise-sensitive receivers

4.3.1 The nearest noise-sensitive receiver to the proposed plant is considered to be the residential property located at 32 St John's Close, UB8 2UX. This is highlighted in Figure 4-2.

Figure 4-2: Satellite image showing nearest noise-sensitive receiver (source: Google Earth)

4.3.2 The distance between the plant and the assessment location is approximately 75m; this equates to about 38 dB of distance attenuation, based on point-source propagation, and relative to a distance of 1m from the source.

4.3.3 The noise impact to other neighbouring properties not identified in this report is expected to be less than that presented, because of increased propagation distances. The assessment is therefore considered to be representative of a reasonable worst-case scenario.

4.4 Background sound levels

4.4.1 The noise levels at the measurement position are considered to be representative of the background sound levels experienced at the assessment location.

4.5 Calculation methodology

4.5.1 The calculation of the specific sound level for the nearest noise-sensitive receiver has been carried out in accordance with the general calculation methodology outlined in ISO 9613-2:2024, as per typical industry practice. Calculations have been made for each of the following means of attenuation, where considered to be relevant:

- Geometric divergence – which describes the reduction in sound pressure level as the distance from the source increases.
- Specific attenuation measures – such as reduced operating duties.

4.5.2 The proposed reduction in operating duties for the guestroom condenser units (to 70% during the day, and to 50% overnight) has been included in the calculations.

4.5.3 The guidance in BS 4142 requires that decibel corrections be added to the specific sound level if the noise contains unusual acoustic characteristics. The corrected sound level is known as the rating level. The following characteristics have been considered:

- Tonality – Noise from the proposed condenser units and water heaters will typically be airflow noise at maximum duty, which is broadband in character (i.e. distributed over a wide frequency range), and therefore not expected to contain tonal qualities. Noise from the proposed kitchen supply and extract system is, however, expected to contain "just perceptible" tonal qualities, therefore a +2 dB correction has been applied to the specific sound level.
- Impulsivity – When properly maintained, noise from the proposed unit is not expected to exhibit impulsive characteristics, therefore this correction has not been applied.
- Intermittency – The duty of each individual condenser unit and water heater will adjust depending on the cooling/heating duty requested by the occupants, and the duty of the kitchen supply and extract system will adjust depending on the kitchen's operation. The equipment is, however, expected to operate with gradual stop/starts, so it is unlikely that an intermittent characteristic would be experienced at the neighbouring properties. However, a precautionary +3 dB correction has been included.
- Other – The unit is not expected to emit any other characteristics that would be readily distinctive against the existing acoustic environment, therefore no correction has been applied.

4.5.4 The BS 4142 rating level will therefore be 5 dB higher than the specific sound level at the nearest noise-sensitive receiver.

4.6 Predicted noise levels

4.6.1 The specific sound levels of the proposed plant at the assessment location are presented in Table 4-4 below, along with the associated rating levels. The levels are inclusive of the proposed reductions in operating duty for the guestroom condenser units.

Time	Noise limit	Receiver	Specific sound level	Rating level	BS 4142 assessment of impact
Daytime (07:00-23:00)	46 dB L_{Ar}	32 St John's Close	35 dB L_{pA}	40 dB L_{Ar}	Low
Night-time (23:00-07:00)	41 dB L_{Ar}	32 St John's Close	29 dB L_{pA}	34 dB L_{Ar}	Low

Table 4-4: Predicted plant noise levels at the assessment location

4.6.2 Provided that the proposed reductions in operating duty are implemented correctly, noise emission from the proposed plant is expected to have a "low impact" on the neighbouring properties, based on the guidance presented in BS 4142, and depending on the context of the assessment.

4.7 Context and uncertainty

4.7.1 BS 4142 requires the context and uncertainty of the assessment to be considered. With regard to the context, the new noise source may be considered to have a differing character to the dominant noise source in the area. Character corrections have therefore been added to the assessment to account for any distinguishable character the noise emitted by the plant may have, when considered against the prevailing ambient noise climate; these are outlined in 4.5.34.5.3. The corrections applied are considered precautionary, as any unusual acoustic features are unlikely to be perceptible at the assessment locations. The inclusion of such corrections is therefore considered representative of a worst-case scenario.

4.7.2 With regard to the uncertainty of the assessment, there is some uncertainty in using a simplified model to predict noise emission, due to the complexity of noise propagation. In addition, it is not certain that the noise measurements captured during the survey will reflect the typical noise levels experienced in the surrounding area throughout the year. To account for this, the lowest measured background sound levels have been used. This conservative approach to the assessment is therefore considered to sufficiently account for any inherent uncertainty.

4.7.3 It should be noted that the background sound levels used in the assessment are the lowest levels measured during the noise survey, and only occur for short periods during the quietest times of the day and night. At all other times, the background sound levels are significantly higher than assumed for the assessment. The impact can therefore be expected to reduce further at other times.

4.7.4 Taking the above into account, no adjustment for context is considered to be necessary. It is therefore concluded that noise from the new plant will have a "low impact" on the neighbouring properties, based on the guidance presented in BS 4142. This is consequently expected to be acceptable to the London Borough of Hillingdon.

5 Plant noise intrusion into existing hotel guestrooms

5.1 The proposed plant associated with the extension will be installed in close proximity to existing hotel guestrooms, which will have direct line-of-sight to the rooftop plant. The existing guestrooms are believed to be provided with mechanical ventilation and fitted with standard double-glazed windows, which are not openable. The location of the nearest guestrooms is highlighted in Figure 5-1 below.

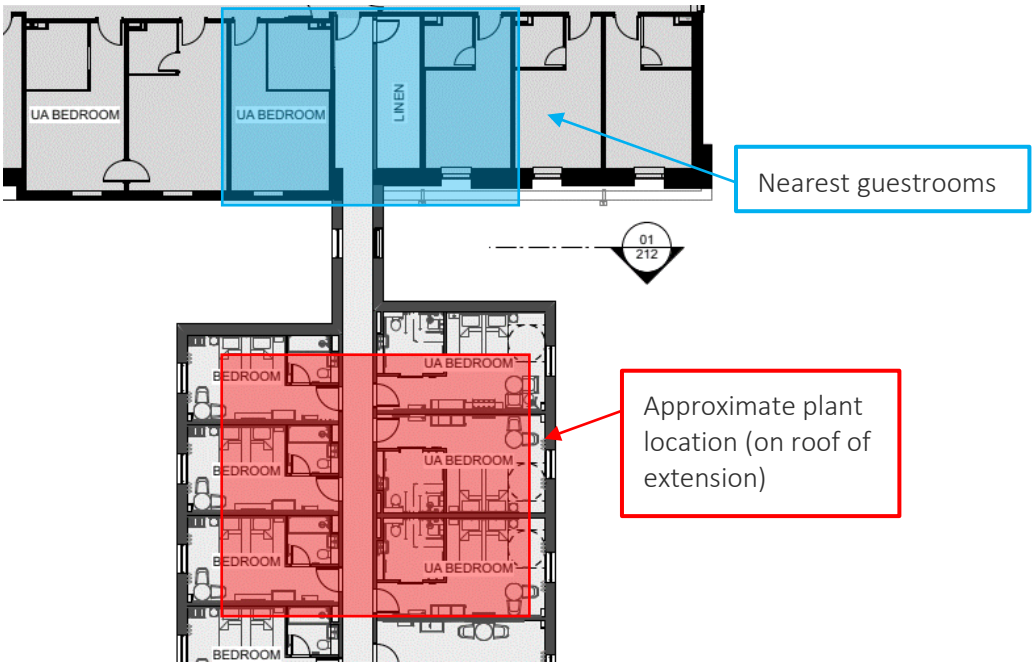

Figure 5-1: Location of existing guestrooms in relation to proposed plant

5.2 The distance between the nearest item of plant and the façade of the nearest guestroom is approximately 8m; this equates to about 18 dB of distance attenuation, based on point-source propagation, and relative to a 1m propagation distance.

5.3 The combined level of plant noise during the daytime is expected to be 53 dB $L_{Aeq,T}$ just outside the window of the nearest guestroom (in a theoretical free-field).

5.4 The façade of the nearest guestroom is expected to provide a sound insulation performance of c. 40 dB R'_w; this has been calculated based on the ratio of glazing to solid façade and room sizes shown in the architectural drawings, and the expected performance of the individual opaque and glazed façade elements.

5.5 The background noise level inside the nearest guestroom (owing to the new building services plant) is expected to achieve NR11 L_{eq}, which is consequently expected to satisfy the Premier Inn criterion of NR20 L_{eq}. Mitigation measures are therefore not considered to be necessary for the proposed items of plant.

6 Environmental noise intrusion into new guestrooms

6.1 Reference noise levels

6.1.1 The highest noise levels obtained during the unattended survey at each individual octave-band centre frequency are presented below in Table 6-1, alongside the highest A-weighted values obtained during the survey. Note that the A-weighted values have not been calculated from the octave-band values in Table 6-1. These are considered to represent a reasonable worst-case.

Time	Highest noise levels in octave-band centre frequencies (dB)								
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Daytime L_{eq} (07:00-23:00)	70	66	58	57	55	58	49	43	61
Night-time L_{eq} (23:00-07:00)	63	55	51	51	51	45	47	44	54
Night-time L_{Fmax} (23:00-07:00)	84	75	65	67	68	65	74	77	76

Table 6-1: Highest noise levels obtained during the survey

6.1.2 Noise intrusion into the new guestrooms has been assessed using all of the measured data obtained during the external noise survey.

6.1.3 The level of external noise intrusion into a space is a function of the volume and surface finishes of the space, and the sound insulation performance provided by the façade. The space with the largest façade area, smallest volume, and highest number of windows is considered to represent the worst-case scenario.

6.2 Recommended façade constructions

6.2.1 The recommended sound insulation performance of façade elements to achieve the criteria presented in Table 2-1 have been determined based on the ratio of glazing to solid façade, and the room sizes shown in the architectural drawings. The following sound insulation performances are recommended for the façade (as a minimum):

Façade element	Laboratory-rated sound reduction index in octave-band centre frequencies (dB)					
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz
External walls	40	46	51	53	50	50
Windows	15	22	30	41	41	36

Table 6-2: Recommended acoustic specifications for new guestrooms

6.2.2 The sound insulation performance for external walls is expected to be achieved by typical masonry constructions, supplemented with internal plasterboard linings and insulation in the cavity. Alternatively, lightweight façade wall systems are considered viable, but may need some form of cementitious board within the build-up.

6.2.3 The sound insulation performance for the windows is expected to be readily achieved by Abbey Glass' "Rural" product.

6.2.4 Alternative façade constructions and glazing configurations may also be suitable, so long as they achieve the internal noise level criteria presented in Table 2-1. It is also worth noting that glazing selections should account for framing losses.

7 Conclusions

7.1 A noise emission assessment has been undertaken of proposed new building services plant associated with the extension of the existing Premier Inn Uxbridge hotel, located on Riverside Way in Uxbridge, UB8 2YF.

7.2 An external noise survey has been conducted at the site, and the measurement data have been used in conjunction with planning guidance from the London Borough of Hillingdon to establish noise emission limits at nearby neighbouring properties.

7.3 In order for the proposed plant to achieve the required noise emission limits, it is recommended that reductions in operating duty are implemented for the condenser units serving the new guestrooms (to 70% during the daytime, and to 50% overnight).

7.4 Provided that the proposed reductions are implemented correctly, noise emission from the proposed plant is expected to have a "low impact" on neighbouring properties, according to British Standard 4142. Noise from the proposals is therefore expected to satisfy Policy EM8 of the *Hillingdon Local Plan: Part 1 - Strategic Policies* (adopted November 2012)

7.5 Plant noise intrusion into existing hotel guestrooms has been assessed, and is expected to meet the Premier Inn requirements (without installing any specific attenuation measures).

7.6 External noise intrusion into new hotel guestrooms has also been assessed, and indicative façade specifications expected to meet the Premier Inn requirements have been provided. These specifications are also expected to comply the London Borough of Hillingdon's requirements, as the Premier Inn requirements are more onerous than those found within British Standard 8233, which is the standard usually adopted for residential properties.

Appendix A - Terminology

This appendix provides an explanation of some of the terms used in this report.

A-weighting **L_A or L_{pA}, L_{WA},**	Within its operating limits a precision measurement microphone measures all frequencies the same so the output it produces does not reflect what we would actually hear. The A-weighting is an electronic filter that matches the response of a sound level meter to that of the human ear. When A-weighted the Sound Pressure Level L_p becomes L_{pA} (or L_A) and the Sound Power Level L_W becomes L_{WA}.
L_p	*The instantaneous sound pressure level* (L_p)
L_{pA} (or L_A)	*The A-weighted instantaneous sound pressure level* (L_{pA} or L_A). This is the root mean square size of the pressure fluctuations in the air. This level can fluctuate wildly even for seemingly steady sounds. To make sound level meters easier to read the values on the display are smoothed or damped out. This is effectively done by taking a rolling average of the previous 0.125s (FAST time constant) or the previous 1s (SLOW time constant).
L_{AF}, L_{AS}	The letters F or S are added to the subscripts in the notation to indicate when the FAST or SLOW time constant has been used. These are often omitted but it is good practice to include them.
L_{max}	*The maximum instantaneous sound pressure level* (L_{max}),
L_{Amax}	*The A-weighted maximum instantaneous sound pressure level* (L_{Amax})
L_{AFmax}	*The A-weighted maximum instantaneous sound pressure level with a FAST time constant* (L_{AFmax}).
$L_{N,T}$	*The percentage exceedance sound pressure level* ($L_{N,T}$),
$L_{AN,T}$ $L_{AFN,T}$ **N = %age value, 0-100** **T = measurement time** **eg. L_{A90}, L_{A10}, $L_{AF90,\ 5\ min}$**	*The A-weighted percentage exceedance sound pressure level* ($L_{AN,T}$), *the A-weighted percentage exceedance sound pressure level with a FAST time constant* ($L_{AFN,T}$). This is the sound pressure level exceeded for *N*% of time period *T*. e.g. If an A-weighted level of x dB is exceeded for a total of 6 minutes within one hour, the level will have been above x dB for 10% of the measurement period. This is written as $L_{A10,1hr}$ = x dB. L_{A0} (the level exceeded for 0 % of the time) is equivalent to the L_{Amax} and L_{A100} (the level exceeded for 100 % of the time) is equivalent to the L_{Amin}. It is good practice to include the letter which identifies the time constant used as this can make a significant difference to the value.
$L_{eq,T}$	The *equivalent continuous sound pressure level over period T* ($L_{eq,T}$),
$L_{Aeq,T}$ **T = measurement time** **eg. $L_{Aeq,5min}$**	*The A-weighted equivalent continuous sound pressure level over period T* ($L_{Aeq,T}$). This is effectively the average sound pressure level over a given period. As the decibel is a logarithmic quantity the L_{eq} is not a simple arithmetic mean value. The L_{eq} is calculated from the raw sound pressure data. It is not appropriate to include a reference to the FAST and SLOW time constants in the notation.

ScotchPartners

16 St John's Lane
London
EC1M 4BS

T: +44 (0)20 3544 5400

scotchpartners.com