



Premier Inn Portsmouth (Havant)

Whitbread plc

Noise Impact Assessment

Revision 00

25/10/2024

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Project Particulars

Client Name: Whitbread plc

Project Name: Premier Inn Portsmouth (Havant)

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Revision History

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1 Introduction

- 1.1 Proposals are in place for a change-of-use of the restaurant at the Premier Inn Portsmouth (Havant) hotel, on 65 Bedhampton Hill, Havant PO9 3JN, into additional hotel space. The existing restaurant (Rusty Cutter Beefeater) is to be demolished and rebuilt as an extension to the existing hotel. A number of bedrooms in the existing hotel are also proposed to be converted into a new breakfast room. This report presents an assessment of noise emission from new building services plant associated with the extension. Noise intrusion into the newly formed hotel bedrooms has also been assessed within this report.
- 1.2 An external noise survey has been conducted at site, and the measurement data have been used to establish the prevailing ambient and background sound levels affecting the site and neighbouring noise-sensitive properties. This data has then been used to assess the noise impact in accordance with Havant Borough Council's anticipated requirements.
- 1.3 Section 2 of this report presents the acoustic requirements, Section 3 describes the external noise survey, and the assessment of plant noise emission to neighbouring properties is presented in Section 4. External noise intrusion into hotel guestrooms is assessed in Section 5. Conclusions have been provided in Section 6.
- 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

- Havant Borough Core Strategy (2011)

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 Local Policy

- 2.2.1 The *Havant Borough Core Strategy*, adopted March 2011, forms part of Havant Borough Council's Local Plan. The following policies are considered relevant to this report:

"Policy CS16 High Quality Design

Planning permission will be granted for development that is designed to a high standard, which helps to create places where people want to live, work and relax. All development should demonstrate that its design:

- 1. Responds to, draws inspiration from and respects local context and:
[...]
(e) The development does not cause unacceptable harm to the amenity of neighbours through smell, the loss of privacy, outlook, **noise** and overlooking.*

..."

“DM10 Pollution

*Development that may cause pollution of water, air or soil or pollution through **noise**, smell, smoke, fumes, gases, steam, dust, **vibration**, light, heat, electromagnetic radiation and other pollutants will only be permitted where all of the following relevant criteria can be met:*

- 1. The health and safety of existing and future users of the site, or nearby occupiers and residents is not put at risk.*

...”

2.2.2 As Havant Borough Council does not specify any objective criteria regarding noise, the assessment of plant noise emission will be undertaken in accordance with good practice guidance.

2.2.3 The hotel operator’s brand standards have also been consulted. It is expected that satisfying the hotel operator’s brand standards will also satisfy the Council’s requirements.

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 method for predicting noise impact on noise-sensitive neighbours. This is done by comparing the noise level of a source (the *specific* sound level) with the existing background noise level in the area, in the absence of the source (the *background* sound level).

2.3.2 The methodology requires consideration be given to all aspects of the assessment process and it must also account for any unusual acoustic features, such as tonal, impulsive, and intermittency characteristics. These are accounted for by the addition of various decibel corrections to the specific sound level. This corrected level is the *rating* level.

2.3.3 The greater the positive difference between the rating level and the background level, the greater the magnitude of the impact. BS 4142:2014 gives the following descriptions with regards to the potential impact:

- A difference of around +10dB or more is likely to be an indication of a “significant adverse impact”, depending upon the context.
- A difference of around +5dB 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.

2.4 Landlord requirements

- 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 bedrooms owing to external sources, as presented in Table 2-1 below:

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

Table 2-1: Premier Inn internal background noise level requirements

(*) The maximum criterion applies to all vehicles 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 such as sirens or car alarms occurring no more than twice a night are excluded.

- 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.

3 External noise survey

3.1 Site description

- 3.1.1 The site is located on Bedhampton Hill, Havant PO9 3JN, accessible off Bedhampton Roundabout which is located immediately south of the site. Immediately west of the site is the A3(M) which runs as a flyover above Bedhampton Roundabout. The surrounding area consists primarily of residences with some industrial developments.
- 3.1.2 The main sources of noise affecting the site and neighbouring properties were observed to be road traffic noise from Bedhampton Roundabout and the A3(M). The roundabout is a large roundabout with vehicles traveling at high speeds on the connected roads, which including the A3(M), A27 and Havant Road (A2030); these are all subject to high volumes of traffic. Road traffic on the surrounding roads comprise of cars, light vehicles and heavy goods vehicles (HGVs). Building services noise emitted from a ground level external plant compound associated with the existing hotel was also audible towards the east of the site. Noise from roadworks on Bedhampton Hill (B2177) east of the site was also observed at times.
- 3.1.3 The nearest residential properties are understood to be immediately east of the site on Bedhampton Hill and immediately north of the site on Brunel Way and Nelson Road. The site and surroundings are shown in Figure 3-1 (overleaf).

3.2 Measurement methodology

- 3.2.1 Continuous, unattended noise level measurements were conducted at a single position, in the southern area of the site. A secure location was selected that was exposed to the road traffic noise propagating from the surrounding roads. The microphone is considered to have been placed in a reasonable approximation of free-field conditions; extended around 2m above ground.
- 3.2.2 The measurement position is shown on a satellite image in Figure 3-1 (overleaf).
- 3.2.3 The following equipment were used for the survey:

Type	Model	Serial no.
Class 1 sound level meter	Norsonic 131	1312766
Environmental microphone	Norsonic 1218	12182517
Portable calibrator	Norsonic 1251	34926

Table 3-1: Noise survey equipment

- 3.2.4 The calibration of the sound level meter was checked prior to and on completion of the measurement period in accordance with recommended practice. No significant drift in calibration occurred during the measurement period. The accuracy of the calibrator can be traced to National Physical Laboratory Standards.
- 3.2.5 Statistical and spectral data were recorded in 15-minute samples between 15:45 on Friday 11th and 11:15 on Monday 14th October 2024.

- 3.2.6 Measurements were undertaken in accordance with the procedures advised within British Standard 4142: 2014: *Methods for rating and assessing industrial and commercial sound* and British Standard 7445-1: 2003 *Description and measurement of environmental noise*.
- 3.2.7 The sound level meter recorded statistical and octave-band spectral data in 15-minute samples. The “fast” (125ms) time-weighting was used.



Figure 3-1 Satellite image of site (blue outline) showing the measurement position

3.3 Weather

- 3.3.1 Weather conditions throughout the survey were observed to be mostly dry with little wind (based on data sourced from a local weather station in Southampton¹). The measurement data are not believed to have been adversely affected by the weather in the context of this assessment.

¹ <https://www.timeanddate.com/weather/@2647317/historic?month=10&year=2024>

3.4 Measurement results

- 3.4.1 Full measurement data are available in digital format upon request.
- 3.4.2 Figure 3-2 (overleaf) presents a graph showing the measurement noise level history.
- 3.4.3 The noise climate is dominated by road traffic on Bedhampton Roundabout and the A3(M) as well as the roadworks on Bedhampton Hill. Noise levels are notably higher during the daytime and begin to decrease in the evening with a drop-off overnight, likely due to traffic flow decreasing as well as nearby roadworks stopping for the day. The noise level history accords with the subjective impressions of the various sources of noise observed during the periods of attendance.
- 3.4.4 The lowest background sound levels measured during the survey are presented below:

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

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



Figure 3-2 Measured noise level history between 15:45 on Friday 11th and 11:15 on Monday 14th October 2024

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 levels used should reflect the level that is typically expected to occur at different times during the day.
- 4.1.2 To represent a worst-case scenario, the lowest background sound levels obtained during the survey have been used to define the plant noise emission limits at the nearest noise-sensitive receivers (NNSRs). The following limits (presented as BS4142 rating levels) 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 NNSR
Day (07:00-23:00)	50 dB $L_{A,T,r}$
Night (23:00-07:00)	41 dB $L_{A,T,r}$

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

4.2 Plant proposals

- 4.2.1 Three outdoor condenser units serving new hotel bedrooms (Mitsubishi PURY-EP200YNW-A2) and one heat pump unit serving hot water (Mitsubishi Q-ton ESA30EH-25) will be installed at ground level within a small external compound in proximity to the new hotel extension. As these units will be located externally, they have been included within the noise emission assessment.
- 4.2.2 It has also been assumed that 2 No. condenser units serving the new breakfast room (Mitsubishi PUMY-SP140) will be included within the proposals; this is based on guidance from the mechanical engineer and Scotch Partners’ experience with similar developments. The location of these condenser units has been assumed to be in close proximity to the breakfast room. As these units will be located externally, they have been included within the noise emission assessment.
- 4.2.3 It has been assumed that the kitchen 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.
- 4.2.4 A drawing showing the locations of the proposed external plant are shown in Figure 4-1 overleaf.

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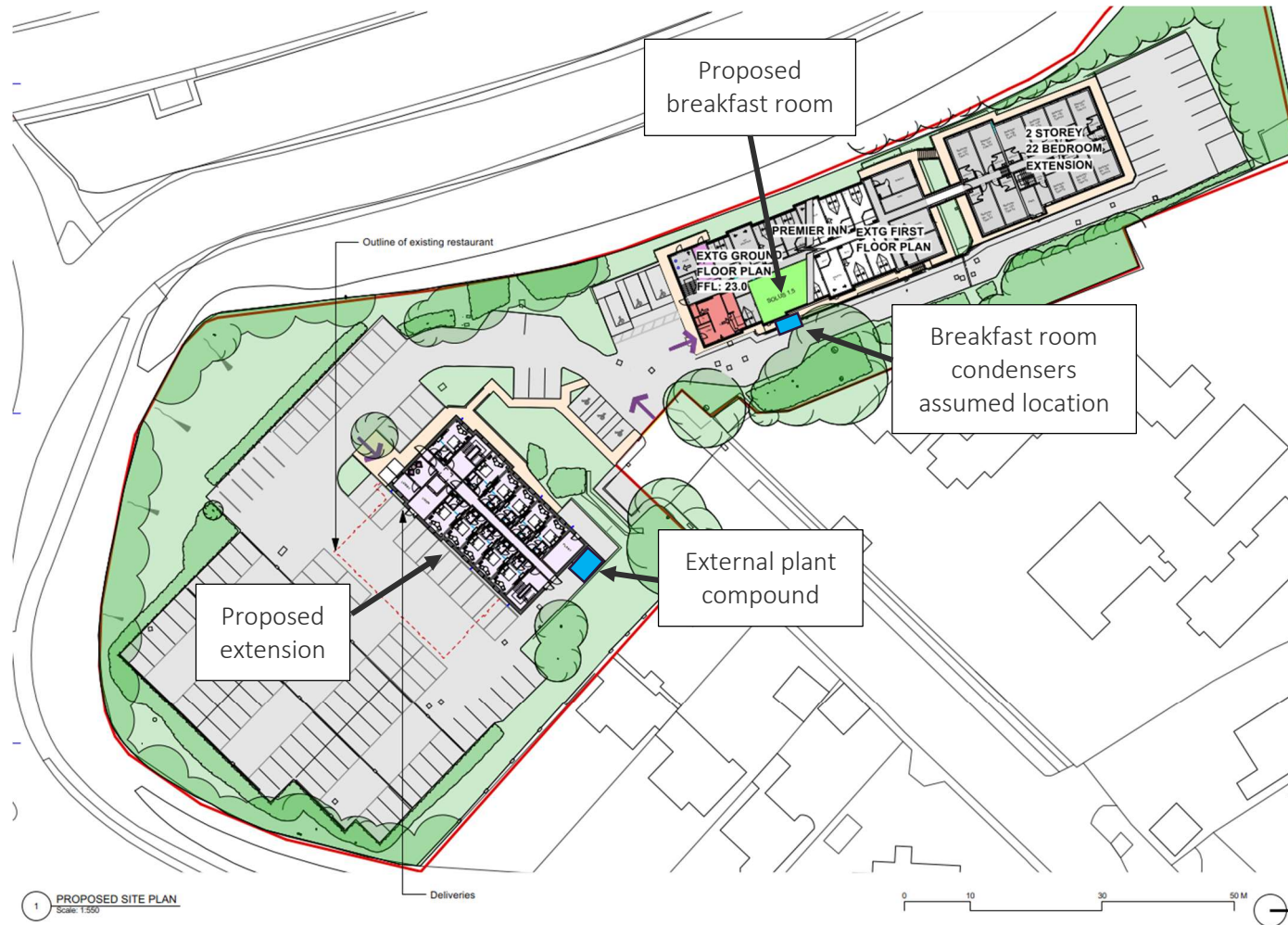


Figure 4-1 Site plan showing location of proposed external plant

- 4.2.5 The air-conditioning equipment (2 No. Mitsubishi PURY-EP200 units) will be controlled to 70% duty during the daytime (07:00 - 23:00) and to 50% duty overnight (23:00 - 07:00). The water heater (Mitsubishi Q-ton ESA30EH) is expected to operate normally, at any time during a 24-hour period with peak demand typically early in the morning; therefore, it has been assumed this will operate at normal duty overnight.
- 4.2.6 The sound power levels for the air-conditioning equipment and water heater have been provided by the manufacturer and are presented in Table 4-2 (per unit). 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.

Unit	Highest noise levels in octave-band centre frequencies (Hz)								
	63	125	250	500	1k	2k	4k	8k	dB(A)
PURY-EP200 70% duty	79	74	69	67	65	62	64	60	71
PURY-EP200 50% duty	75	68	60	59	56	53	57	55	63
Q-ton ESA30EH-25	68	63	57	57	60	55	51	45	63

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

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

Unit	Highest noise levels in octave-band centre frequencies (Hz)								
	63	125	250	500	1k	2k	4k	8k	dB(A)
PUMY-SP140	59	60	51	52	47	42	37	31	53

Table 4-3 Manufacturer provided sound pressure levels measured 1m away (dB ref: 2×10^{-5} Pa)

4.3 Nearest noise-sensitive receivers

- 4.3.1 The nearest noise-sensitive receiver (NNSR) to the external plant area is considered to be the residential property on 63 Bedhampton Hill (highlighted below).



Figure 4-2 Satellite image showing NNSR in relation with proposed plant locations

- 4.3.1 An assessment location of 1m in front of the nearest window of the residence has been chosen.
- 4.3.2 The distance between the assessment location and the external plant compound (containing the PURY condensers and Q-ton heat pumps) is c. 14m. Attenuation owing to point-source distance propagation will therefore be 23 dB.
- 4.3.3 The distance between the assessment location and the assumed location of the breakfast room condensers is c. 49m. Attenuation owing to point-source distance propagation will therefore be 34 dB.
- 4.3.4 There is a clear line of sight between the assessment location and proposed plant locations. Hence no corrections owing to screening have been applied.
- 4.3.5 Controlling noise emission to suitable levels at the assessment location can be expected to result in suitable levels at other NNSRs not discussed in this report. This is due to the larger propagation distances and screening due to buildings, resulting in lower noise emission levels at other NNSRs.

4.4 Calculation methodology

4.4.1 The calculation of the specific sound level for each 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.
- **Screening** – which describes the attenuation provided when the line-of-sight between source and receiver is obscured by an impermeable object with a surface mass of at least 10 kg/m².

4.4.2 The levels of propagation attenuation to the NNSR are summarised below:

- | | |
|---|---------|
| • Distance attenuation (PURY and Q-ton units) | 23 dB |
| • Distance attenuation (PUMY units) | 34 dB |
| • Screening attenuation | 0 dB(A) |

4.4.3 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 air-conditioning units and water heater 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. However, a precautionary +2 dB correction has been included to allow for a “just” perceptible tonality.
- **Impulsivity** – When properly maintained, noise from the proposed new equipment is not expected to exhibit impulsive characteristics, therefore this correction has not been applied.
- **Intermittency** – The duty of each individual air-conditioning unit and water heater will adjust depending on the cooling/heating duty requested by the occupants. 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 units are not expected to emit any other characteristics that would be readily distinctive against the existing acoustic environment, therefore no correction has been applied.

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

4.5 Predicted sound levels

- 4.5.1 The level of noise emission predicted at the nearest neighbour from the new external equipment, as the specific sound levels and the rating levels at daytime and night-time, are presented below:

Time	Noise limit	Receiver	Specific sound level	Rating level	BS 4142 assessment of impact
Daytime (07:00-23:00)	50 dB L_{Ar}	63 Bedhampton Hill	42 dB L_{Aeq}	47 dB L_{Ar}	Low
Night-time (23:00-07:00)	41 dB L_{Ar}	63 Bedhampton Hill	35 dB L_{Aeq}	40 dB L_{Ar}	Low

Table 4-4 Predicted sound levels at the NNSR

- 4.5.2 Comparing to the noise emission limits given in Table 4-1, it can be seen that the BS 4142 rating levels are lower than the background sound levels. This is an indication of a “low impact”, according to BS 4142, depending on the context.

4.6 British Standard 4142 assessment

- 4.6.1 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. A +5 dB penalty has 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. The corrections applied are considered precautionary, as any unusual acoustic features are unlikely to be perceptible at the assessment locations.
- 4.6.2 In 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 typical lowest measured background sound levels have been used in the assessment. This conservative approach to the assessment is therefore expected to account for any inherent uncertainty.
- 4.6.3 Equipment has been assumed to operate normally at the duties stated earlier in this report. As the equipment is demand driven, it is expected to operate at these duties only occasionally, and so noise levels can be expected to be lower than presented here during times when hotel guests demand less from the units.
- 4.6.4 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.

5 Noise intrusion assessment

5.1 Reference noise levels

- 5.1.1 A representative set of design reference noise levels have been derived from the measurement data. These can be used to calculate external noise ingress into the new hotel bedrooms. The design reference noise levels are provided in Table 5-1, and are based on a typical worst-case.

Time	Highest noise levels in octave-band centre frequencies (Hz)								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Daytime $L_{eq,1hr}$ (07:00-23:00)	70	65	61	60	65	59	50	46	67
Night-time $L_{eq,1hr}$ (23:00-07:00)	70	65	60	60	64	59	50	44	67
Night-time L_{Fmax} (23:00-07:00)	78	81	78	80	79	76	63	52	83

Table 5-1: Design reference noise levels (dB ref: 2×10^{-5} Pa)

- 5.1.2 Noise intrusion into the new guestrooms has been assessed using all of the measured data obtained during the external noise survey.
- 5.1.3 The level of 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.

5.2 Recommended façade constructions

- 5.2.1 The recommended sound insulation performance of façade elements to achieve the criteria set out in Table 2-1 have been determined based on the ratio of glazing to solid façade and room sizes shown in the architectural drawings. The minimum recommended performance figures are set down in Table 5-2.

Façade element	Frequency (Hz)					
	125	250	500	1k	2k	4k
External walls	40	46	51	53	50	50
Bedroom windows	21	28	38	43	41	49

All values are sound reduction indices in dB, measured in accordance with BS EN ISO 10140-2

Table 5-2: Recommended acoustic specification for the proposed façade

- 5.2.2 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.

- 5.2.3 A suitable glazing configuration for the bedroom windows would be a double-glazed unit, such as Abbey Glass' "LITE" product, which comprises: 8.8mm acoustically laminated outer pane, 20mm airgap, 6mm inner pane.
- 5.2.4 Alternative constructions and glazing configurations may also be suitable, so long as they allow the criteria set out in Table 2-1 to be satisfied.
- 5.2.5 Noise ingress via the ventilation openings to bedrooms is expected to be adequately controlled using the standard Premier Inn detail incorporating a 1m length of acoustically treated duct, located internally on the atmosphere-side terminations.

6 Conclusion

- 6.1 An external noise survey has been conducted at the site, and the measurement data have been used in conjunction with planning guidance from Havant Borough Council to establish noise emission limits at nearby neighbouring properties.
- 6.2 A noise emission assessment has been undertaken of proposed new building services plant associated with the proposed extension, based on the manufacturer's data and the findings of the noise survey.
- 6.3 The operating duties of the proposed air-conditioning equipment will be restricted to assist with satisfying the noise emission limits.
- 6.4 The noise emission assessment concludes that noise from the proposed plant is expected to have a "low impact" on neighbouring properties, according to British Standard 4142. Furthermore, noise emission from the proposed plant is expected to satisfy Havant Borough Council's anticipated requirements.
- 6.5 Noise intrusion into the hotel extension has been assessed, based on the findings of the external noise survey. Specifications for the new façade elements has been provided that can be expected to result in compliance with the hotel operator's brand standards.

Appendix – Terminology

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	<i>The instantaneous sound pressure level (L_p)</i>
L_{pA} (or L_A)	<i>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).</i>
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}	<i>The maximum instantaneous sound pressure level (L_{max}),</i>
L_{Amax}	<i>The A-weighted maximum instantaneous sound pressure level (L_{Amax})</i>
L_{AFmax}	<i>The A-weighted maximum instantaneous sound pressure level with a FAST time constant (L_{AFmax}).</i>
$L_{N,T}$	<i>The percentage exceedance sound pressure level ($L_{N,T}$),</i>
$L_{AN,T}$ $L_{AFN,T}$ N = %age value, 0-100 T = measurement time eg. L_{A90} , L_{A10} , L_{AF90} , 5 min	<i>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.</i>
$L_{eq,T}$	<i>The equivalent continuous sound pressure level over period T ($L_{eq,T}$),</i>
$L_{Aeq,T}$ T = measurement time eg. $L_{Aeq,5min}$	<i>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.</i>

