



Premier Inn Littlehampton
Whitbread PLC

Noise Impact Assessment

Revision 01
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Project Particulars

Client Name: Whitbread PLC

Project Name: Premier Inn Littlehampton

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Revision History

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1 Introduction

- 1.1 Proposals are in place to extend the existing Premier Inn Littlehampton hotel, located at Roundstone Lane, East Preston, Littlehampton BN16 1EB, in order to add additional guestrooms. The new guestrooms will be located within a new extension where the existing restaurant is (which will be demolished). 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 Arun District 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. External environmental noise intrusion into new hotel guestrooms is assessed Chapter 5. Conclusions have been provided in Chapter 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

- *Arun Local Plan 2011-2031* (adopted July 2018)
- *Planning Noise Advice Document: Sussex* (September 2021)

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 (February 2025 - Edition Rev O)

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

2.2 Arun Local Plan 2011-2031

- 2.2.1 The *Arun Local Plan 2011-2031* (adopted July 2018) contains a policy concerning noise pollution that is considered relevant to the proposed development:

"Policy QE DM1

Noise pollution

1. New noise sensitive development

Residential development likely to experience noise from road, rail or air, in particular development in close proximity to:

- *A284/A259 Wick roundabout*
- *Stretches of the A27 around Arundel and Fontwell*
- *Sections of the A29 and A259 in Bognor Regis*
- *A284 in Littlehampton and*
- *The stretch of railway line that runs through Barnham station*

Must:

- Be supported by a noise exposure category (NEC) assessment and designed to ensure that residents will not be adversely affected by noise.*
- Consider both the likely level of exposure at the time of application and any increase that might be reasonably expected in the foreseeable future.*

To safeguard the continued use of existing industrial and commercial uses and to protect amenity, noise sensitive development should not normally be permitted where:

- c. High levels of noise will continue throughout the night, especially during the hours when people are normally sleeping.*
- d. There is a likelihood of complaints about noise from industrial development.**

2. New noise generating development

Developers proposing new noise generating development must seek advice from an early stage to determine the level of noise assessment required. Proposals will need to be supported by:

- a. Evidence to demonstrate that there are no suitable alternative locations for the development.*
- b. A noise report which provides accurate information about the existing noise environment, and the likely impact of the proposed development upon the noise environment. The report must also demonstrate that the development meets appropriate national and local standards for noise, as set out in Annex 1 of the Planning Noise Advice Document: Sussex, and any mitigation measures requires to ensure noise is managed to an acceptable level.*
- c. Evidence to demonstrate that the development will not impact upon areas identified and valued for their tranquillity, including Gaps Between Settlements which are important to the enjoyment of Arun's countryside, its habitats and biodiversity."*

2.3 Planning Noise Advice Document: Sussex

- 2.3.1 The *Planning Noise Advice Document: Sussex* (September 2021) contains guidance relating to the assessment of industrial and commercial sound sources:

"The rating level of the industrial or commercial sound source should, where practicable, achieve a level no greater than the representative background sound, when measured in accordance with BS 4142:2014+A1:2019. There may be instances, for specific sites, where a rating level below background is deemed appropriate. This can be determined through discussion with the Local Planning Authority (LPA). A rating level below background may be required if there are concerns for potential noise creep, for example in a High Street setting. It is considered that meeting this criterion would avoid adverse noise impacts, in the interests of ensuring a good standard of amenity and protecting human health. Where these criteria are not attainable, the noise report should explain why, and how best practicable means will be implemented to control noise in order to satisfy the LPA that the development is acceptable. At all times the reports shall have regard to the context."

2.4 British Standard 4142

- 2.4.1 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.

- 2.4.2 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*.
- 2.4.3 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.
- 2.4.4 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 Policy QE DM1.

2.5 Premier Inn Generic Specification for a Turnkey Development

- 2.5.1 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”. 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)	$\leq 35 \text{ dB } L_{Aeq,1\text{hour}}$
Night-time (23:00-07:00)	$\leq 30 \text{ dB } L_{Aeq,1\text{hour}}$ $\leq 42 \text{ dB } L_{AFmax}^*$

*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)

- 2.5.2 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.

- 2.5.3 Complying with the PI Spec requirements can also be expected to satisfy any reasonable Planning requirements for noise intrusion into the hotel.
- 2.5.4 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 in East Preston, adjacent to the roundabout connecting the Roundstone Bypass Road (A259) with Roundstone Lane.
- 3.1.2 The main source of noise affecting the site and neighbouring properties was observed to be road traffic noise from vehicles using the A259 dual-carriageway.
- 3.1.3 Noise at the site from existing building services was generally imperceptible against the road traffic noise. Some residual building services noise was observed to become more audible during lulls in traffic flows, but this only typically occurs in the middle of the night.
- 3.1.4 The site is surrounded by mostly residential properties with some light commercial properties farther away.

3.2 Measurement methodology

- 3.2.1 Continuous, unattended noise level measurements were conducted at a single position towards the west of the site. 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 The measurement position was selected to obtain representative background sound levels (L_{A90}) as they may be incident on surrounding nearby noise-sensitive receivers. It is necessary to apply corrections to the measured ambient (L_{eq}) and maximum (L_{Fmax}) noise levels to account for difference in distances between the A259, measurement position and location of the new hotel extension facades; these have been accounted for within the external noise ingress assessment.
- 3.2.4 Statistical and spectral octave-band data were recorded in 15-minute samples between 19:15 on Tuesday 22nd and 10:30 on Wednesday 23rd October 2024. The “fast” (125ms) time constant was used.
- 3.2.5 Measurements were undertaken 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	1313605
Environmental microphone	Norsonic 1227	491212
Portable calibrator	Brüel & Kjær 4231	2291098

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 survey¹ were generally dry with average windspeeds of approximately ≤ 5 m/s. There was some occasional light rainfall overnight. 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/@2644319/historic?month=10&year=2024>

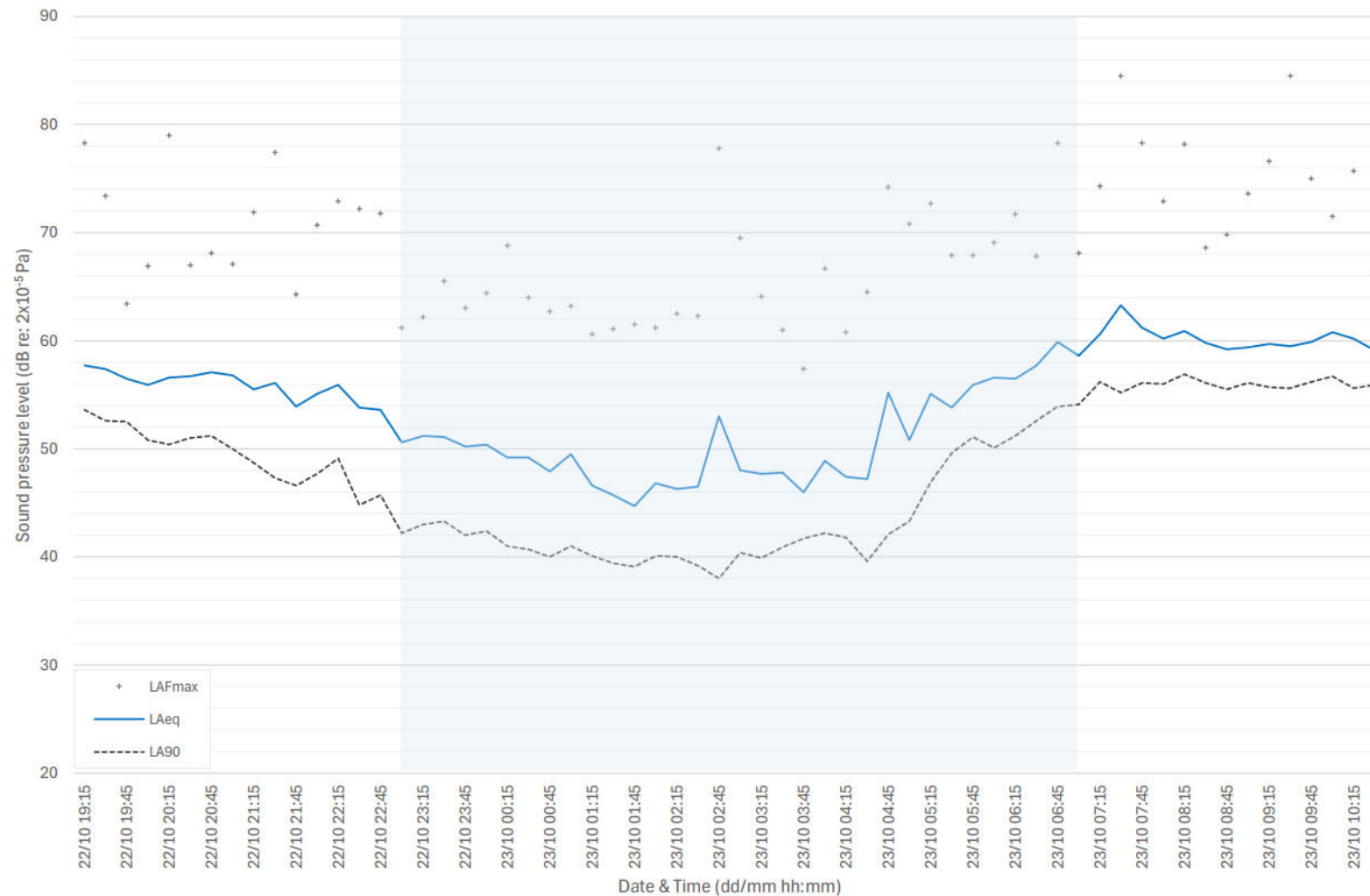


Figure 3-2: Measured noise level history

- 3.4.3 Based on the measured data, the lowest 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	Lowest background sound levels
Daytime (07:00-23:00)	42 dB $L_{A90,15min}$
Night-time (23:00-07:00)	38 dB $L_{A90,15min}$

Table 3-2: Lowest 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 have been used to define the plant noise emission limits at the nearest noise-sensitive receivers (NSRs). The following limits (presented as BS 4142 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 nearest NSRs
Daytime (07:00-23:00)	42 dB L_{Ar}
Night-time (23:00-07:00)	38 dB L_{Ar}

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

4.2 Plant proposals

4.2.1 New building services plant will be installed to service the new extension, as well as the refurbishment of parts of the existing hotel. Plant will be installed in three compounds, around the site.

4.2.2 The proposed plant is expected to comprise c. 7 No. condenser units (Mitsubishi PURY EP250YNW-A2 or equivalent) and 2 No. water heaters (Mitsubishi Q-ton ESA30EH-25 or equivalent). It has been assumed that there will be a need to provide a new ventilation fan for the refurbished kitchen, and this will be located externally with attenuators fitted.

4.2.3 It has been assumed that the kitchen fan and in-line attenuators will be selected so that noise from the atmosphere side termination and the casing breakout is controlled to not exceed 55 dB L_{pA} at a distance of 1m externally from the fan / termination. The kitchen ventilation system, and associated silencers/attenuators, can be reviewed in more depth during the detailed design stage, if necessary.

4.2.4 The location of the proposed plant is shown in Figure 4-1, and is all to be installed at ground level.

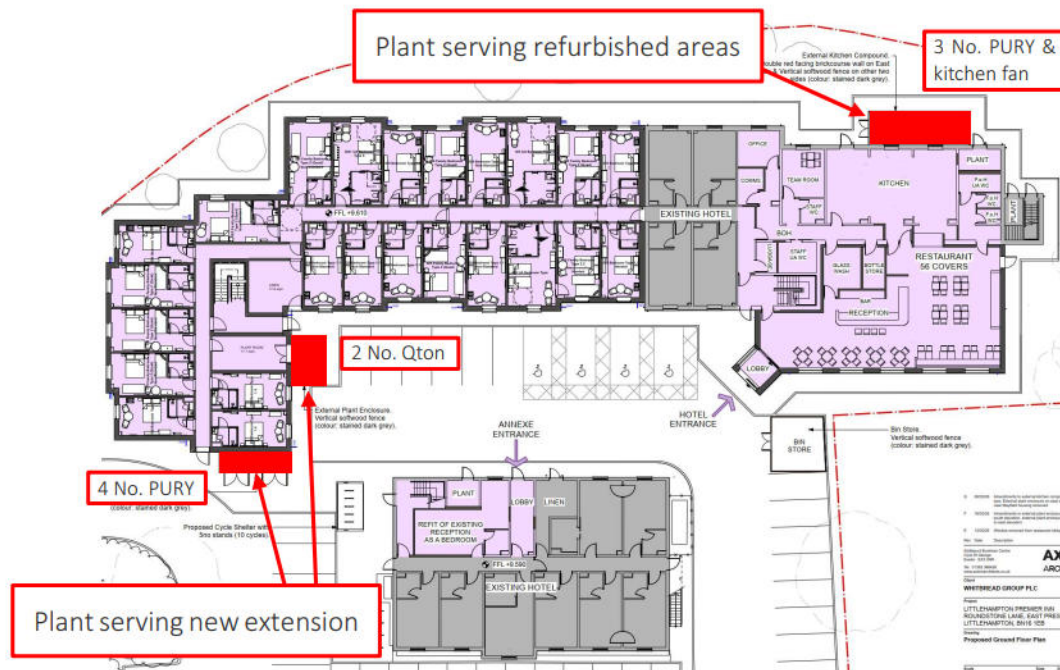


Figure 4-1: Proposed location of plant

- 4.2.5 The condenser units serving guestrooms (Mitsubishi PURY units) 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. The new kitchen vent fan will only operate during times when the kitchen is in operation, which has been assumed to include early morning.
- 4.2.6 It will be necessary to provide an element of acoustic screening to one face of one of the new external plant compounds, as shown in the following figure.

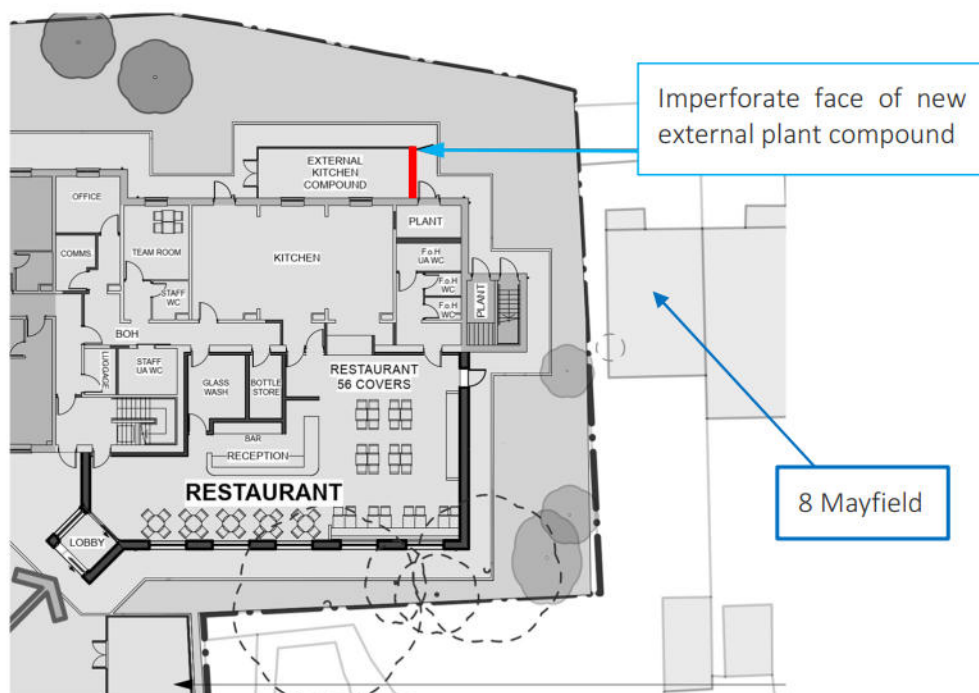


Figure 4-2 Imperforate face of new compound highlighted in red

- 4.2.7 The height of the imperforate face of the screen should be such that line-of-sight of the new equipment is obscured when viewed from an upper window of the nearest neighbouring property, 8 Mayfield. All other faces of the new compound can be acoustically open (such as a hit-and-miss timber fence).
- 4.2.8 The sound power levels for the 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.

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
EP250 at 70%	80	76	72	71	69	65	67	61	75
EP250 at 50%	76	70	64	63	61	57	61	57	67
Q-ton	68	63	57	57	60	55	51	45	63

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

4.3 Nearest noise-sensitive receivers

4.3.1 The following nearest noise-sensitive receivers have been identified:

- Residents across the A259, to the north
- 8 Mayfield, to the east
- Residential property directly to the south
- 133 Downs Way, to the west

4.3.2 The distances between plant and these receivers varies between 50m and 134m. There will be a mixture of line-of-sight between some receivers and the external plant compounds, whilst others will benefit from the effects of acoustic screening. This has all been accounted for within the assessment.

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.

4.3.4 The assessed receivers are presented in Figure 4-3.

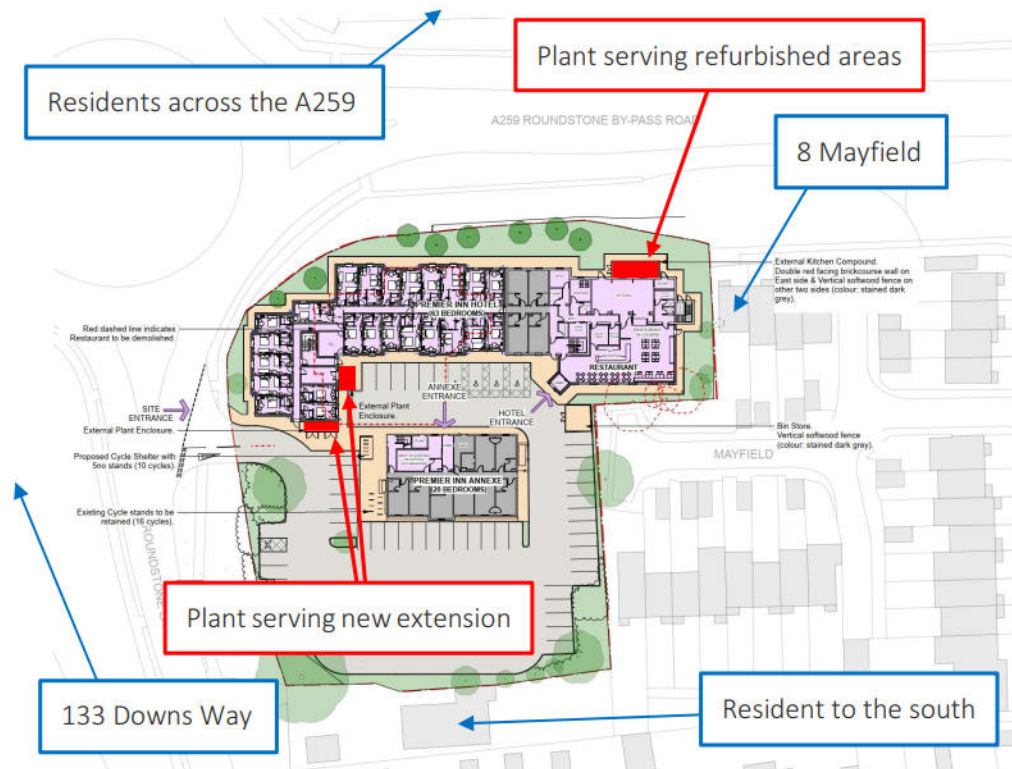


Figure 4-3: Site image showing nearest noise-sensitive receiver

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. These are shown in Table 3-2, and re-presented below for ease of reference.

Time	Typical background sound levels
Daytime (07:00-23:00)	42 dB $L_{A90,15min}$
Night-time (23:00-07:00)	38 dB $L_{A90,15min}$

Table 4-3: Lowest background sound levels obtained during the survey

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.
- Effects of acoustic screening – as a result of buildings blocking the direct noise path between some plant and some receivers
- Specific attenuation measures – such as reduced operating duties.

4.5.2 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 vent 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 equipment 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 vent 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 equipment is not expected to emit any other characteristics that would be readily distinctive against the existing acoustic environment, therefore no correction has been applied.

4.5.3 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 locations are presented in Table 4-4 below, along with the associated rating levels. The levels for daytime (07:00-23:00) and night-time (23:00-07:00) are presented for each receiver, separately.

Time	Noise limit	Receiver	Specific sound level	Rating level	BS 4142 assessment of impact
Daytime	42 dB L_{Ar}	Across A259	28 dB L_{pA}	33 dB L_{Ar}	Low
Night-time	38 dB L_{Ar}	Across A259	22 dB L_{pA}	27 dB L_{Ar}	Low
Daytime	42 dB L_{Ar}	8 Mayfield	30 dB L_{pA}	35 dB L_{Ar}	Low
Night-time	38 dB L_{Ar}	8 Mayfield	23 dB L_{pA}	28 dB L_{Ar}	Low
Daytime	42 dB L_{Ar}	To the south	36 dB L_{pA}	41 dB L_{Ar}	Low
Night-time	38 dB L_{Ar}	To the south	30 dB L_{pA}	35 dB L_{Ar}	Low
Daytime	42 dB L_{Ar}	133 Downs Way	31 dB L_{pA}	36 dB L_{Ar}	Low
Night-time	38 dB L_{Ar}	133 Downs Way	23 dB L_{pA}	28 dB L_{Ar}	Low

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

- 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 sources 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 4.5.2. 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. The background noise levels used are those when traffic flows on the A259 are at a minimum, which is the dominant source of noise affecting the assessment positions. 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 There is also some existing external plant serving the hotel currently, which is understood to be of a similar type to that which is proposed.
- 4.7.5 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 Arun District Council.

5 External noise intrusion into new hotel guestrooms

5.1 Reference noise levels

- 5.1.1 The highest noise levels obtained during the noise survey at each individual octave-band centre frequency are presented below in Table 5-1, and includes corrections for propagation differences between the measurement position, locations of new bedroom façades, and the A259. These are based on a reasonable worst-case, in terms of propagation corrections, and levels affecting rooms farther away, or shielded from the A259, can be expected to be lower.

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)	74	71	67	61	64	60	52	48	67
Night-time L_{eq} (23:00-07:00)	70	69	63	56	59	57	51	47	64
Night-time L_{Fmax} (23:00-07:00)	93	92	89	83	78	77	72	72	86

Table 5-1: Design reference façade incident noise levels

- 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 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.

5.2 Recommended façade constructions

- 5.2.1 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.
- 5.2.2 The location of the new guestrooms is presented in Figure 5-1, with the worst-case rooms highlighted in red.

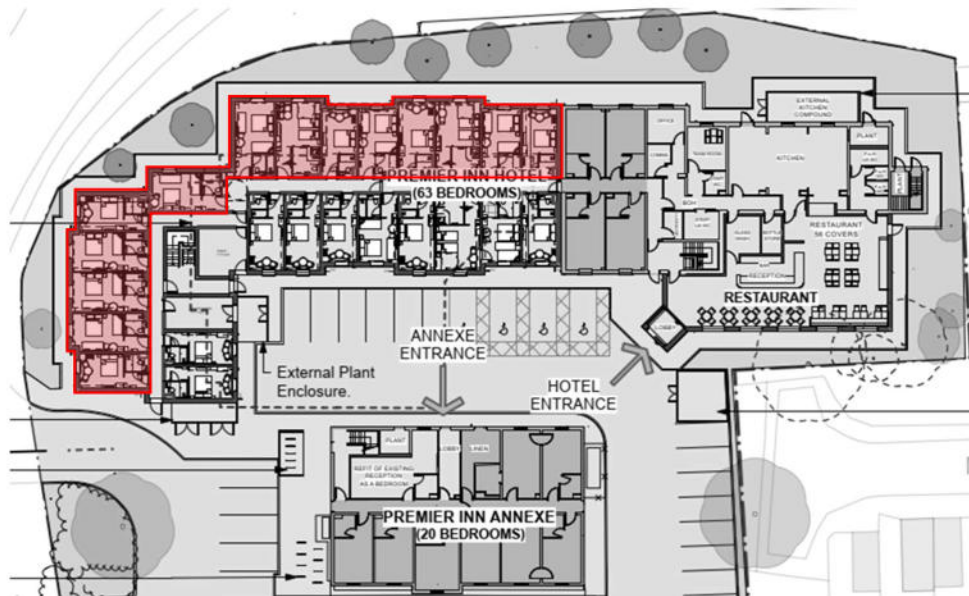


Figure 5-1: Location of new guestrooms with worst-case rooms highlighted in red

- 5.2.3 In order for the worst-case rooms to meet the requirements, 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	35	46	46	46	50	50

Table 5-2: Recommended acoustic specifications for worst-case rooms

- 5.2.4 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.
- 5.2.5 The sound insulation performance for the windows is expected to be achieved by utilising acoustically laminated external windows supplemented with internal secondary glazing.
- 5.2.6 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.
- 5.2.7 New bedrooms shielded from the A259 (those not shown highlighted in Figure 5-1) will not require secondary glazing.

6 Conclusions

- 6.1 A noise emission assessment has been undertaken of proposed new building services plant associated with the extension of the existing Premier Inn Littlehampton hotel, located at Roundstone Lane, East Preston, Littlehampton BN16 1EB.
- 6.2 An external noise survey has been conducted at the site, and the measurement data have been used in conjunction with planning guidance from Arun District Council to establish noise emission limits at nearby neighbouring properties.
- 6.3 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).
- 6.4 It will also be necessary to ensure that the face of the new plant compound closest to 8 Mayfield is imperforate. This will ensure that beneficial acoustic screening reduces noise levels emitted from plant located in that compound, when observed at the neighbouring property.
- 6.5 Provided that the proposed noise mitigation measures 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 QE DM1 of the *Arun Local Plan 2011-2031 (adopted July 2018)*, as well as the relevant guidance provided in the *Planning Noise Advice Document: Sussex (September 2021)*.
- 6.6 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 with any reasonable requirement Arun District Council may choose to stipulate, 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	<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>

