



ACOUSTIC CONSULTANTS LTD
noise and acoustic specialists since 1987

Noise Impact Assessment

**50-51 High St
Newport**

Reference: 8136/BL



Client:		Acoustic Consultant:
Collingbourne Properties Suite 12 Usk Side Business Park Church Street Newport Gwent NP20 2TX		Acoustic Consultants Ltd 194 West St Bedminster Bristol BS3 3NB

Document Control

Version	Revision Description	Date	Author:	Reviewed by:
1.0	--	31/01/20	Blake Lucas	Stephen Peliza

The report has been prepared in good faith, with all reasonable skill and care, based on information provided or available at the time of its preparation and within the scope of work agreement with the Client. We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above. The report is provided for the sole use of the named Client and is confidential to them and their professional advisors. No responsibility is accepted to other parties.

The report limits itself to addressing solely on the external noise aspects as included in this report. We provide advice only in relation to noise and acoustics. It is recommended that appropriate expert advice is sought on all the ramifications (e.g. CDM, structural, condensation, fire, legal, etc.) associated with any proposals in this report or as advised and concerning the appointment. It should be noted that noise predictions are based on the current information as we understand it and on the performances noted in this report. Any modification to these parameters can alter the predicted level. All predictions are in any event subject to a degree of tolerance of normally plus or minus three decibels. If this tolerance is not acceptable, then it would be necessary to consider further measures.



Table of Contents

1.	Introduction	4
2.	The Site and Development	5
3.	Assessment Criteria	6
4.	Noise Monitoring	12
5.	Residential Use Assessment	15
6.	Commercial Use Assessment	19
7.	Summary & Conclusions	20
8.	Appendix 1 – Glossary of Acoustic Terminology	21



1. Introduction

Collingbourne Properties appointed Acoustic Consultants Ltd to undertake a noise survey and an environmental noise assessment for the proposed residential or office development at 50-51 High St, Newport.

This report addresses the noise impact of road, and commercial noise on the development. The development type has not been determined. The client is considering developing either a residential or office scheme.

Commercial Noise Limits have been provided based on the baseline survey results. An assessment of both external and internal noise has also been considered for the residential use. The assessment is based on the guidance in Planning Policy Wales (PPW), Technical Advice Note 11 (TAN11), British Standard 4142:2014 (BS4142), British Standard 8233:2014 (BS8233) and the local authority criteria.

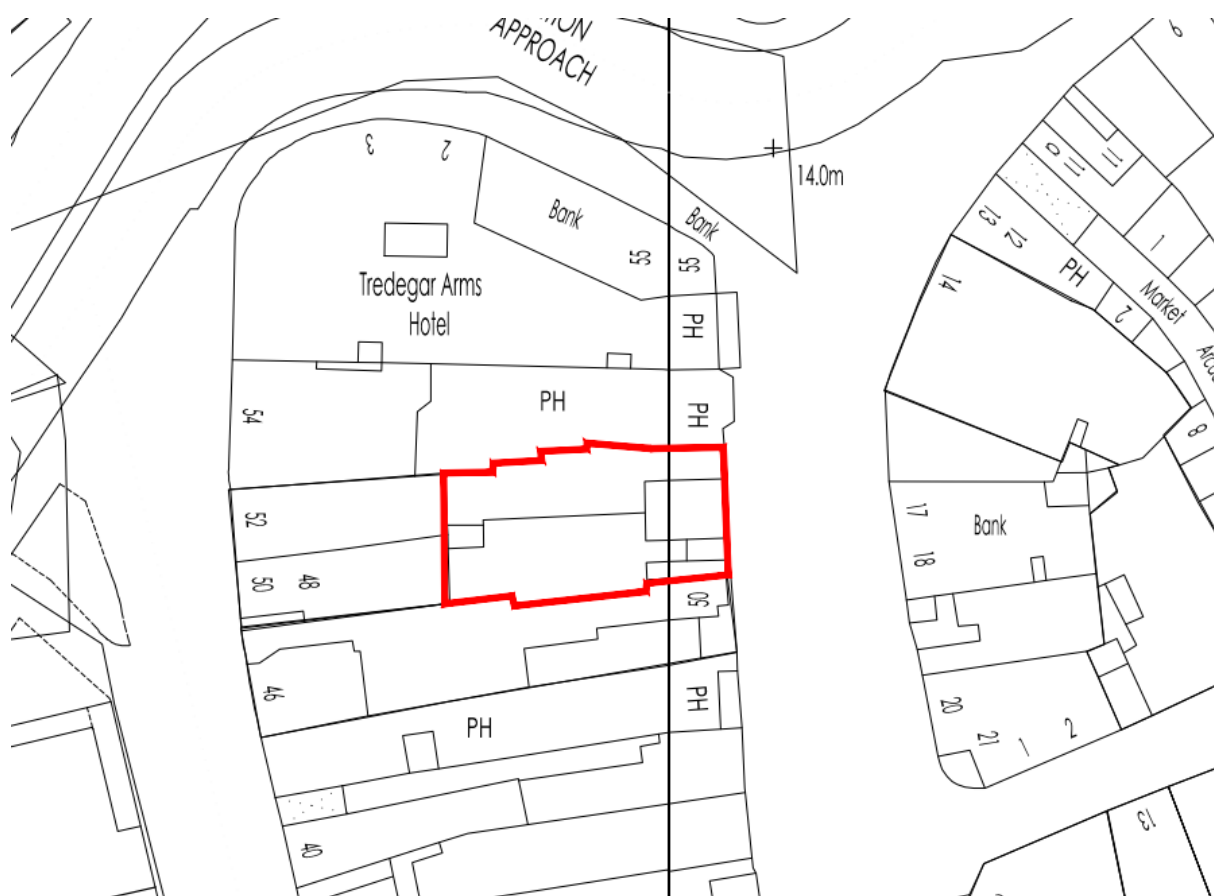
The author of this report is a Full Member of the Institute of Acoustics (MIOA) with a recognised acoustic qualification and 12 years' experience within the field of noise.

2. The Site and Development

The site is located at 50-51, High St Newport. The ground floor houses a bar (Slapping Jimmy's) which is to be retained. Surrounding the site are other bars, most notably The Courtyard which is to the side and rear. The main noise source affecting the site is both local road traffic and commercial noise (music).

The site location is provided below:

Figure 1: Site Layout





3. Assessment Criteria

3.1. Planning Policy Wales

Planning Policy Wales (PPW) Edition 10 dated December 2018 sets out the land use planning policies of the Welsh Government. Section 1 states:

"1.1 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. PPW, the TANs¹, MTANs² and policy clarification letters comprise national planning policy. "

The most relevant statements for noise affecting a residential use are provided in Section 6.7 and summarised below:

"6.7.1 Clean air and an appropriate soundscape, contribute to a positive experience of place as well as being necessary for public health, amenity and well-being. They are indicators of local environmental quality and integral qualities of place which should be protected through preventative or proactive action through the planning system. Conversely, air, noise and light pollution can have negative effects on people, biodiversity and the resilience of ecosystems and should be reduced as far as possible."

6.7.4 The planning system should maximise its contribution to achieving the well-being goals, and in particular a healthier Wales, by aiming to reduce average population exposure to air and noise pollution alongside action to tackle high pollution hotspots. In doing so, it should consider the long-term effects of current and predicted levels of air and noise pollution on individuals, society and the environment and identify and pursue any opportunities to reduce, or at least, minimise population exposure to air and noise pollution, and improve soundscapes, where it is practical and feasible to do so.

6.7.5 In taking forward these broad objectives the key planning policy principle is to consider the effects which proposed developments may have on air or soundscape quality and the effects which existing air or soundscape quality may have on proposed developments. Air Quality and soundscape influence choice of location and distribution of development and it will be important to consider the relationship of proposed development to existing development and its surrounding area and its potential to exacerbate or create poor air quality or inappropriate soundscapes. The agent of change principle says that a business or person responsible for introducing a change is responsible for managing that change.

In practice, for example, this means a developer would have to ensure that solutions to address air quality or noise from nearby pre-existing infrastructure, businesses or venues can be found and implemented as part of ensuring development is acceptable.



6.7.6 In proposing new development, planning authorities and developers must, therefore:

- address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;*
- not create areas of poor air quality or inappropriate soundscape; and*
- seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.*

6.7.7 To assist decision making it will be important that the most appropriate level of information is provided and it may be necessary for a technical air quality and noise assessment to be undertaken by a suitably qualified and competent person on behalf of the developer.

6.7.8 Good design, for example setting back buildings from roads to avoid canyon effects and using best practice in terms of acoustic design to ensure the appropriate and intended acoustic environment of completed developments should be incorporated at an early consideration in the design and planning process. Other mitigation measures must be capable of being effectively implemented for their intended purpose, and could include those related to:

- traffic management and road safety;*
- ensuring progress towards a shift to low or zero emissions means of road transport, such as electrical charging points;*
- supporting low or zero emissions public transport;*
- providing active travel infrastructure; and*
- incorporating green infrastructure, where it can improve air quality by removing air pollution and aiding its dispersal, reduce real or perceived noise levels by absorbing and scattering noise and introducing natural sounds to soften man-made noise, provide areas of relative tranquillity, and reduce exposure by putting a buffer between sources of pollution and receptors.*

6.7.14 Proposed development should be designed wherever possible to prevent adverse effects to amenity, health and the environment but as a minimum to limit or constrain any effects that do occur. In circumstances where impacts are unacceptable, for example where adequate mitigation is unlikely to be sufficient to safeguard local amenity in terms of air quality and the acoustic environment it will be appropriate to refuse permission. Location of Commercial, Industrial and other Potentially Polluting Development.

6.7.19 The health imperative of good air quality and appropriate soundscapes in contributing to the overall character and quality of places and the health and well-being of people and wildlife should be fully recognised. It will not be appropriate to locate sensitive uses, such as hospitals, schools, care homes and housing adjacent to busy roads or other transport routes, where there are no connectivity benefits to be



gained and where health and amenity impacts associated with increased exposure of people to pollution will be unacceptable. Whilst some uses may be appropriate with the aid of good design air quality and soundscape considerations can be overriding factors, especially for sensitive uses, if they cannot be adequately mitigated and impacts minimised.

6.7.20 Where sensitive developments need to be located close to existing transportation infrastructure for sustainable movement and access they should be designed, as far as practicable, to limit harmful substances and noise levels within and around those developments both now and in the future. This may include employing the principles of good acoustic design and the inclusion of active travel or travel management measures as part of development proposals. Such development, however, should preferably be located away from existing sources of significant noise, which may include aircraft noise or roads, particularly new roads or those with programmed route improvements.

6.7.21 Regard should be paid to current air quality and noise levels and the quality of the existing soundscape and account taken of any relevant local air quality action plan, noise action plan and/ or local or regional air quality strategy as part of development strategies and proposals in development plans and before determining planning applications. Soundscapes and Compatibility of Uses

6.7.24 The potential impacts of noise pollution arising from existing development, be this commercial, industrial, transport related or cultural venues (such as music venues, theatres or arts centres), must be fully considered to ensure the effects on new development can be adequately controlled to safeguard amenity and any necessary measures and controls should be incorporated as part of the proposed new development. This will help to prevent the risk of restrictions or possible closure of existing premises or adverse impacts on transport infrastructure due to noise and other complaints from occupiers of new developments. It will be important that the most appropriate level of information is provided and assessment undertaken."

PPW does not provide any quantifiable criteria and directs you to the Technical Advice Notes (TAN 11).

3.2. Technical Advice Note (Wales) - Noise

Planning Policy Wales (PPW) Edition 9 dated November 2016 sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes.

The relevant planning criteria for proposed residential development is in Technical Advice Note (Wales) 11 entitled "Noise" which was published in October 1997. The introduction states: *"This note provides advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business.*



It outlines some of the main considerations which local planning authorities should take into account in drawing-up development plan policies and when determining planning applications for development which will either generate noise or be exposed to existing noise sources”.

Table 1 provides Noise Exposure Categories, which relate to proposed residential developments near to a transportation noise source. Noise Exposure Categories, (NEC's) in relation to road traffic noise are addressed in ranges according to the free-field equivalent noise levels ($L_{Aeq, T}$) measured at the position of the proposed dwellings.

Table 1: TAN 11 Noise Exposure Categories

NOISE SOURCE	NOISE EXPOSURE CATEGORY			
	A	B	C	D
Road Traffic				
07.00 - 23.00 hrs	<55	55 – 63	63 – 72	>72
23.00 - 07.00 hrs	<45	45 – 57	57 – 66	>66

The Technical Advice Note (Wales) 11 gives advice to Local Planning Authorities on assessing proposals for residential developments near a source of noise, depending upon which of the four Noise Exposure Categories the proposed site falls into:

- NEC A. *Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as desirable.*
- NEC B. *Noise should be taken into account when determining planning applications and where appropriate, conditions imposed to ensure an adequate level of protection.*
- NEC C. *Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.*
- NEC D. *Planning permission should normally be refused.*

In addition it states: *"Night-time noise levels (23.000 - 07.00): sites where individual noise events regularly exceed 82 dB L_{Amax} (S time weighting) several times in any hour should be treated as being in NEC C, regardless of the $L_{Aeq, 8h}$ (except where the $L_{Aeq, 8h}$ already puts the site in NEC D)."*



3.3. Internal Ambient Noise Levels

The below informative section is based on British Standard 8233:2014 and WHO 1999. By meeting the below criteria the residential amenity should not be adversely affected. The below criteria would apply to all plots which fall into NEC B C or D.

3.3.1. Internal Equivalent Noise Levels

British Standard 8233:2014 entitled "Guidance on sound insulation and noise reduction for buildings" came into effect on 28th February 2014.

Section 7.7.2 Table 4 of the British Standard 8233:2014 provides internal ambient noise levels for dwellings from noise sources 'without a specific character'.

The British Standard guideline states that noise levels should not exceed those as noted in Table 2 of the British Standard. These criteria are based on the guidance provided within WHO 1999 and are summarised below:

Table 2: British Standard 8233:2014 Internal Noise Criteria

Activity	Location	Daytime (07:00 to 23:00)	Night-time (23:00 to 07:00)
Resting	Living Room	35 dB $L_{Aeq,16\text{ hour}}$	-
Dining	Dining Room/area	40 dB $L_{Aeq,16\text{ hour}}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16\text{ hour}}$	30 dB $L_{Aeq,8\text{ hour}}$

3.3.2. Maximum Noise Levels

Section 7.7.2 Note 4 of the British Standard states "Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values".

The new British Standard provides no definitive criteria for maximum noise levels from individual events ($L_{Amax,F}$). Section 3.4 of the "Guidelines for Community Noise" published by the World Health Organisation in 1999 (WHO 1999) states *"For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 L_{Amax} more than 10-15 times per night (Vallet & Verbey 1991)"*.

As such it would be considered acceptable if the maximum noise level from individual events do not exceed 45 dB $L_{Amax(F)}$ no more than 10 to 15 times during the night-time period.



3.4. Plant Noise – BS4142:2014

For fixed site operations such as plant noise the most relevant guidance is provided within British Standard 4142:2014 entitled 'Method for rating and assessing industrial and commercial sound'.

The British Standard uses outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes. The principle is that of establishing the "difference" between the "rating level" and the "background sound level".

An acoustic character correction should be added to the "specific sound level" if the noise source exhibits any tonality, impulsivity, other specific characteristics and/or intermittency at the assessment location. The value of the character correction varies dependant on the prominence of the character of the noise source at the assessment location.

In Section 11 of the Standard, under "Assessment of the Impacts", it states:

"Obtain an initial estimate of the impact of the specific sound by subtracting the measured background sound level (see Clause 8) from the rating level (see Clause 9), and consider the following.

- a) Typically, the greater this difference, the greater the magnitude of the impact.*
- b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*
- d) The lower the rating level is, relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."*

Where the assessment difference is 0 dB or less, the impact is likely to be low and therefore acceptable.

3.5. Noise from Amplified Music

There are no specific noise limits for noise from amplified music from licensed premises. However, many local authorities throughout the UK, including Bristol, Basingstoke, Sheffield and Edinburgh apply NR curve criteria for amplified music as follows **NR25** at anytime. This limit is internal to the dwellings.



4. Noise Monitoring

4.1. Monitoring Equipment

Sound Pressure Levels were measured using a sound level analyser with half-inch condenser microphone, using the 'fast' setting. The equipment is checked regularly using a Quality System meeting the requirements of British Standard EN ISO/IEC 17025:2017 entitled "General requirements for the competence of testing and calibration laboratories"; in accordance with British Standard EN 10012:2003 "Measurement management systems. Requirements for measurement processes and measuring equipment"; and traceable to the National Standards. This equipment was checked and calibrated as noted below.

Table 3: Monitoring Equipment

Equipment Description / Manufacturer / Type	Serial number	Date of calibration	Calibration Certification Number
SLM, NTI, XL2	A2A-16312-E0	13/09/2019	U32825
Pre-Amp, NTI, MA220	8599	13/09/2019	U32825
Microphone, NTI, MC230A	A17498	13/09/2019	32824
Calibrator, CAL200	16799	13/09/2019	U32823
SLM, NTI, XL2	A2A-13561-E0	11/11/2019	43780
Pre-Amp, NTI, MA220	7606	11/11/2019	43780
Microphone, NTI, MC230A	A15862	11/11/2019	43780
Nor-1251	35230	15/01/2020	33792

The measuring systems were checked for calibration before and after use with no significant drift detected.

4.2. Weather Conditions

During the monitoring, conditions were mostly dry with wind speeds of less than 5 metres per second. The average air temperature during the survey was 10 degrees centigrade. These conditions are not expected to have any adverse effect on the measured levels.

4.3. Monitoring Procedure

A long-term noise monitoring exercise was undertaken at the monitoring locations noted below between 12:45 on Friday 10th January 2020 and 11:00 on Monday 13th January 2020 2019.

Location 1 was external at first floor over looking the High St in Façade position
Location 2 was external at second floor to the rear in a façade position.

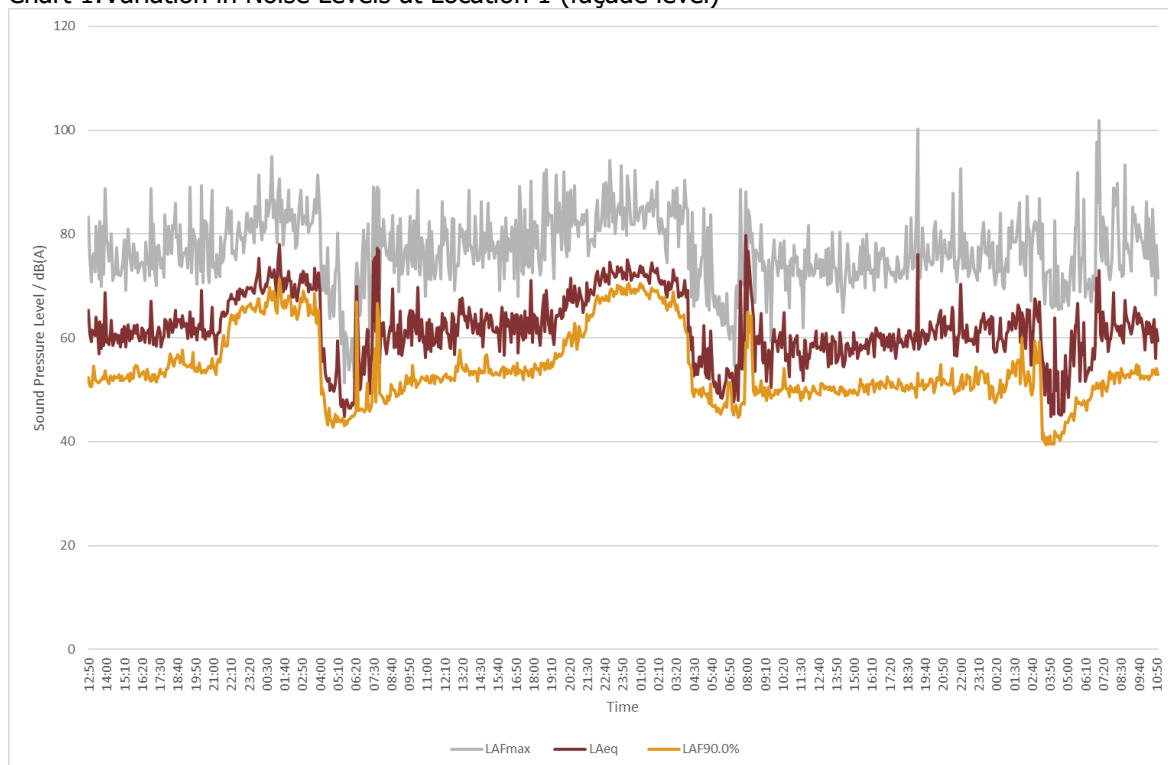
The baseline noise levels affecting the noise sensitive receivers in the area were determined primarily by road traffic along the surrounding roads, plant noise from the surrounding commercial premises and also music from the bar below and adjoining night-club.

4.4. Measured Noise Levels – Location 1

The full 5-minute A-weighted baseline background sound levels for and equivalent noise levels are provided in Chart 1 below. The tabular data is available upon request.

As can be seen from the measured data there are clear on/off periods, which are due to the amplified music from the adjoining night-clubs.

Chart 1: Variation in Noise Levels at Location 1 (façade level)



From the measured data, we have determined the following design background sound level and equivalent noise level over the day (7am-11pm) and night (11pm-7am) periods. We have selected the data over the Saturday day and night period:

Table 4: Location 1 Octave band Noise Levels at Location 1 (Façade level)

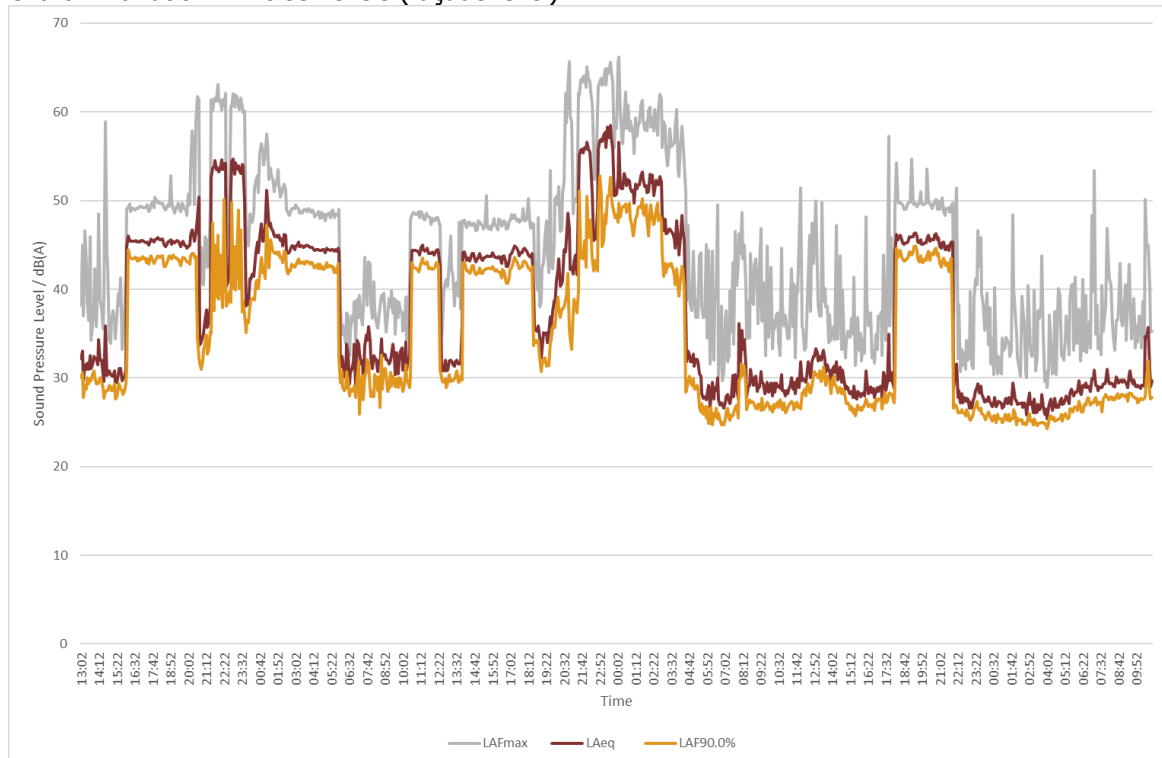
Period	Frequency (Hz)								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Daytime $L_{eq}(16hrs)$	72	68	63	64	62	58	54	51	66
Night Time $L_{eq}(8hrs)$	81	76	65	68	66	61	55	49	70
Night-time $L_{maxF}^{(1)}$	98	93	85	85	83	79	74	68	88

4.5. Measured Noise Levels – Location 2

The full 5-minute A-weighted baseline background sound levels for and equivalent noise levels are provided in Chart 1 below. The tabular data is available upon request.

As can be seen from the measured data there are clear on/off periods, which are due to the amplified music from the adjoining night-clubs.

Chart 1: Variation in Noise Levels (façade level)



From the measured data, we have determined the following design background sound level and equivalent noise level over the day (7am-11pm) and night (11pm-7am) periods. We have selected the data over the Saturday day and night period:

Table 5: Location 2 Octave band Noise Levels (Façade level)

Period	Frequency (Hz)								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Daytime $L_{eq}(16hrs)$	61	57	53	40	30	22	18	17	47
Night Time $L_{eq}(8hrs)$	68	64	56	44	35	27	23	21	52
Night-time $L_{maxF}^{(1)}$	81	74	68	56	44	36	33	29	63

The design façade level background sound level are:

Daytime – 43 dB $L_{A90}(1hr)$

Night-time – 25 dB $L_{A90}(15min)$



5. Residential Use Assessment

The main sources of noise on the site which determines the impact is Music noise. There are two main transmission paths, these are externally via the façade internally via the building structure.

5.1. External Noise Control

It will be necessary to design the building fabric of the residential properties to control the equivalent noise level and maximum noise levels internally.

The octave band free-field design equivalent noise levels and maximum noise levels used to determine the internal noise levels within the residential rooms of the development are taken from the measured noise spectra noted above.

Internal ambient noise level prediction calculations have been carried out using the measured L_{eq} , T and L_{max} sound level spectra noted above.

The façades (including walls, windows, doors and roof) of the habitable rooms are exposed to noise from road traffic and commercial noise and they will require specific noise mitigation measures.

We advise that building elements, having the sound insulation performances noted below, be incorporated into the design of the façades including the windows, doors, floor, and the building roof.

5.1.1. External Wall Construction

The external walls to the development are existing. The walls are expected to comprise as follows, these constructions should be checked. The construction comprises of 250-300mm cavity wall with brickwork façade.

The above constructions are expected to achieve the following minimum sound reduction index:

Table 6: Required Minimum Sound Reduction Indices of External Walls

Frequency (Hz)	63	125	250	500	1k	2k	4k	8k
R (dB)	37	42	45	49	54	57	57	57

Any alternative constructions should achieve the above noted performance.



5.1.2. Roof Construction

The roof is concrete is expected to be concrete, at least 150mm thick concrete (density at least 365 Kg/m²). Below this will be a ceiling on Battens or Metal Frame of 12.5mm plasterboard (density at least 8 Kg/m²).

Table 7: Required Minimum Sound Reduction Indices of Roof

Frequency (Hz)	63	125	250	500	1k	2k	4k
SRI (dB)	40	40	42	45	56	66	73

5.1.3. Windows

Along all façades the windows could be openable. However, they need to be sealed airtight to control external noise and should normally be closed. There should be no unattenuated vents or openings in the building façade.

The following table provides the required minimum sound reduction and a typical glazing type for the habitable rooms of the scheme.

Table 8: Required Minimum Sound Reduction Indices of Glazing

Frequency (Hz)	125	250	500	1000	2000	4000	R _w	Typical glazing Type
R (dB)	35	46	46	46	56	65	51	10-200-6

The above performance can be met with a secondary glazed system only.

The supplier should provide test data confirming the above octave band sound reduction performance is achievable.

5.1.4. Ventilation Provisions

There will be a need for suitable attenuated ventilation provisions in the habitable rooms where specific noise mitigation measures are required. The ventilation provisions will include the necessary sound attenuation in order that the ingress of external noise is controlled to be compatible with the building fabric.

'Sound level differences' in dB(A) broadband for the ventilation system are provided in the table below. This is the difference between the outside façade level and the level inside a room at one and a half metres from the vent inside a furnished room. The required sound level differences in 'habitable rooms' are shown below:

Table 9: Ventilation Strategy

Ventilation Type	Minimum Sound Level Difference dB(A)
Mechanical	55



The table above provides recommended ventilation strategy; however, it is the responsibility of the vent supplier to confirm that the chosen ventilation system will achieve the sound level differences stated above.

5.1.5. Effect of Mitigation Measures

With the noted building fabric construction, and suitable ventilation provisions, the predicted internal noise levels (due to external sources) within the proposed dwellings are within the criteria of British Standard 8233:2014 of 35 dB L_{Aeq} (16 hour) in the daytime rooms; and 30 dB L_{Aeq} (8 hour), within the night-time rooms.

The predicted music noise is on the limits of the criteria noted above and may occasionally exceed it.

5.2. Structure Borne Noise control

Slippin Jimmys and The Courtyard both abut and are below the development. These are a major source of structure borne noise.

It will be necessary to protect the residential properties from noise generated in the adjoining night-club. The following advice addresses the structural and airborne sound transmission paths between the night-club and flats.

This includes the separating elements (walls) and flanking elements (common walls), windows, roof and ventilation.

The advice does not guarantee compliance with the proposed criteria, loud noise specifically the low frequency bass element could still be audible within the adjoining flats.

5.2.1. Building Layout

We propose alterations to the layout of the all floors which abut the night-club party wall to control sound from the adjoining night club as far as feasible.

We would advise that only non-habitable rooms are located along this common wall, this could comprise of closed kitchens, bathrooms or corridors.

5.2.2. Separating and Flanking Wall Upgrades

We propose that this common separating wall is lined within the flats with an independent liner system. The lining should comprise of two layers of staggered and sealed 15-millimetre-thick Soundbloc plasterboard (total density 24 kilograms per metre squared) on an independent wall liner system such as the British Gypsum Gypliner IWL system forming as large a cavity as possible.



We would advise it is at least 150 millimetres and a larger cavity is preferred. Within the cavity 100-millimetre-thick mineral fibre (density 30 kilograms per metre squared) should be installed.

The independent wall lining system should be fully independent from the separating wall. A resilient layer should be installed between the system and the existing floor and ceiling. The resilient layer should be the Monarfloor Wall Cap, Instacoustic Isolation Strip or similar.

The external common flanking walls are assumed to be of solid 200-millimetre brick (density at least 500 Kilograms per metre squared).

The density should be checked to ensure this is the case. If the density is less than this please advise as upgrades may be required.

5.2.3. Floor Upgrades

We would advise that, as a minimum, a batten type floating floor is installed in **all apartments**. The floating floor should comprise of timber battens sat on the floor deck, resilient layer to the underside, rigid board on top with isolation strips around the edges of the room.

It is also advised within Slipping Jimmys a mass barrier ceiling is installed of two layers of 15mm plasterboard on a resilient metal frame with acoustic hangers, creating a cavity of at least 200mm and with 100mm of mineral wool in a cavity.

5.2.4. Effect of Mitigation Measures

It is not possible to quantify the effect of the above noise control measures. The above measures aim to reduce noise as far as feasible within limits of the design using best practical means.

5.3. Summary of Residential use

Based on the above it is expected the residential use would not be permitted via planning without substantial upgrades and further testing. We can address in further detail if requested.

6. Commercial Use Assessment

The commercial use is not known, if developed it is likely to be offices with Air con units. Plant units associated with the proposed development are expected to operate daytime only, however there is the potential to operate 24 hours a day. As such, we have provided plant noise limits over the 24-hour period based on the monitoring data obtained above and British Standard 4142:2014. The plant limits are as follows:

Table 10: Plant Noise Rating Level Limits

Time Period	Limits at Existing Noise Sensitive Receivers $L_{Ar(T)}$
Daytime (07:00 to 23:00 hrs)	43 dB $L_{Ar(1 \text{ hour})}$
Night Time (23:00 to 07:00 hrs)	25 dB $L_{Ar(15 \text{ min})}$

The Rating Level of noise from the site is to include an acoustic feature correction as applicable in accordance with Section 9 of BS4142:2014 for any tonality, impulsivity, intermittency or other sound characteristics.

With the above rating levels being met, the criteria of 0dB below the background will be met at the existing receivers in the vicinity which is considered low in terms of BS4142.

The above noise limits can be written into any planning consent with a suitably worded planning condition.



7. Summary & Conclusions

Collingbourne Properties appointed Acoustic Consultants Ltd to undertake a noise survey and an environmental noise assessment for the proposed residential or office development at 50-51 High St, Newport.

This report addresses the noise impact of road, and commercial noise on the development. The development type has not been determined. The client is considering developing either a residential or office scheme.

Commercial Noise Limits have been provided based on the baseline survey results. An assessment of both external and internal noise has also been considered for the residential use. The assessment is based on the guidance in Planning Policy Wales (PPW), Technical Advice Note 11 (TAN11), British Standard 4142:2014 (BS4142), British Standard 8233:2014 (BS8233) and the local authority criteria.

The author of this report is a Full Member of the Institute of Acoustics (MIOA) with a recognised acoustic qualification and 12 years' experience within the field of noise.

The assessment indicates substation mitigation is required for both structure and airborne noise control if the site is developed to residential use, with these measures installed further testing maybe required to determine compliance.

For the commercial use noise limits have been provided based on the baseline survey results, the limits have been based on the guidance in Planning Policy Wales (PPW), Technical Advice Note 11 (TAN11) and British Standard 4142:2014 (BS4142).



8. Appendix 1 – Glossary of Acoustic Terminology

Decibel (dB) – The decibel is the unit used to quantify sound pressure levels. The human ear has an approximately logarithmic response to acoustic pressure over a very large dynamic range (typically 20 micro-pascals to 100 pascals). Therefore, a logarithmic scale is used to describe sound pressure levels and also sound intensity and power levels. The logarithms are taken to base 10. Hence an increase of 10 dB in sound pressure level is equivalent to an increase by a factor of 10 in the sound pressure level (measured in pascals). Subjectively, this increase would correspond to a doubling of the perceived loudness of sound.

Octave and Third Octave Bands – The human ear is sensitive to sound over a range of frequencies between approximately 20 Hz to 20 kHz and is generally more sensitive to medium and high frequencies than to low frequencies within the range. There are many methods of describing the frequency content of a noise. The most common methods split the frequency range into defined bands, in which the mid-frequency is used as the band descriptor and in the case of octave bands is double that of the band lower. For example, two adjacent octave bands are 250 Hz and 500 Hz. Third octave bands provide a fine resolution by dividing each octave band into three bands. For example third octave bands would be 160 Hz, 250 Hz, 315 Hz for the same 250 Hz octave band.

ambient sound level, $L_a = L_{Aeq,T}$ - equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T.

NOTE. The ambient sound level is a measure of the residual sound and the specific sound when present.

background sound level, $L_{A90,T}$ - A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.

Sound pressure level – Sound pressure level is stated on many of the charts. It is the amplitude of the acoustic pressure fluctuations in a sound wave, fundamentally measured in pascals (pa), typically from 20 micro-pascals to 100 pascals, but commonly simplified onto the decibel scale.

equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$ - value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time, and is given by the following equation:



$$L_{Aeq,T} = 10 \lg_{10} \left\{ (1/T) \int_{t_1}^{t_2} [p_A(t)^2 / p_0^2] dt \right\} \quad (1)$$

where:

p_0 is the reference sound pressure (20 μ Pa); and

$p_A(t)$ is the instantaneous A-weighted sound pressure (Pa) at time t

NOTE The equivalent continuous A-weighted sound pressure level is quoted to the nearest whole number of decibels.

rating level, L_{Ar,T_r} - specific sound level plus any adjustment for the characteristic features of the sound.

reference time interval, T_r - specified interval over which the specific sound level is determined.

NOTE This is 1 h during the day from 07:00 h to 23:00 h and a shorter period of 15 min at night from 23:00 h to 07:00 h.

Residual sound – ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.

residual sound level, $L_r = L_{Aeq,T}$ - equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T .

specific sound level, $L_s = L_{Aeq,T_r}$ - equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r .



ACOUSTIC CONSULTANTS LTD
noise and acoustic specialists since 1987

Head Office: 194 West Street, Bedminster, Bristol, BS3 3NB

T: 0117 986 2956

www.acoustic-ltd.co.uk

Bristol I Swansea I Manchester