ENVIRONMENTAL REPORT FOR RESEDENTIAL DEVELOPMENT AT 29-31 NEW STREET BARNSLEY

28 MARCH, 2017

Amended with additional data
21 JUNE, 2017

AJF DESIGN & MANAGEMENT

1 Introduction

1.1 General

1.1.1 This report is prepared in support of planning application 2017/0118

1.1.2 This report describes the assessment methodology, the baseline conditions currently existing at the site, the effects of noise levels on the Proposed Development. Mitigation measures have been identified where necessary in order to achieve appropriate acoustic standards inside the dwelling and also within the associated external amenity areas

1.2 Site Description and Location

1.2.1 The Application Site is situated to the south of the Town Centre, on the junction of New Street and Albert Street and is currently used as retail premises on two floors. It is a detached property separated by a 600mm wide passage between neighbouring retail premises to the east side and Albert Street to the west. There is a restaurant located some 37m to the east on New Street and this is separated by four retail properties and a service road Hayes Croft. To the south elevation and separated by New Street, is the Alhambra Shopping Centre and rear entrance to Wilko superstore. To the north elevation of the property is a private car park, which is part of the site, and further land currently used as car parking, which is privately owned. To the west of the property is Albert Street, which is used as a service road for the restaurants and public house on Market Street.

1.2.2 The building is currently used as fabric/haberdashery retail premises and is constructed of 350mm thick solid stone walls with a slate covered pitched roof over steel trusses, with minimal thermal or acoustic insulation. Windows are inadequate poorly fitting uPVC double glazed units.

1.3 Proposed Development

1.3.1 The Proposed Development is to comprise an extension of the retail premises at basement and ground floor levels, with the conversion of the existing retail space at first floor into a single residential unit extending over the current footprint of the ground floor retail space. External amenity will be a roof terrace which will be over the new extension to the retail premises. The residential property will be accessed via a separate access off Albert Street.

1.3.2 The proposals will include new roof, new cavity wall construction to the extended parts and full upgrade of all thermal and acoustic insulation to walls and roof.

1.4 Scope of Assessment

1.4.1 The scope of the assessment summarised within this report is as follows:

- Consultation with Planning Officer and Environmental Officer
- Collection of baseline noise data across the application site to establish the pre-development noise climate
- Assessment of site suitability for residential use
- Recommendations for mitigation
- Conclusions

2. Legislation, Policy and Guidance

2.1 Noise Policy Statement for England

2.1.1 The Noise Policy for England (NPSE) sets out the long term vision of Government noise policy: to promote good health and good quality of life through the effective management of noise within the context of Government policy on sustainable development.

2.1.2 The NPSE outlines three aims for the effective management and control of environmental, neighbor and neighbourhood noise:

- Avoid significant adverse impacts on health and quality of life
- Mitigate and minimize adverse impacts on health and quality of life: and
- Where possible, contribute to the improvement of health and quality of life.

2.1.3 In its aims, the NPSE uses the key phrases "significant adverse" and "adverse". The NPSE states in its explanatory note that there are two established concepts that are currently being applied to noise impacts, which are:

- NOEL – No Observed Effect Level. This is the level below which no effect can be detected
- LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected

2.1.4 The NPSE then extends this concept to include:

- SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur

2.1.5 The NPSE notes that it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to vary for different noise sources, receptors and times. It is for the project to identify relevant SOAELs taking account of the sources of exposure and receptors

2.2 The National Planning Policy Framework

2.2.1 The National Planning Policy Framework (NPPF), which reflects the NPSE, was introduced by the Department of Communities and Local Government (DCLG) in March 2012. The document sets out the Government's planning policies for England and how these are expected to be applied.

2.2.2 The NPPF includes statements relating to noise and the requirement to take it into account in the planning process. Section 109 indicates that the planning system should contribute to and enhance the natural and local environment by:

'preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.'

2.2.3 Section 123 is specifically related to noise, requiring, planning policy decisions to:

- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including use of conditions;
- Recognize that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established.

2.3.4 The NPPF does not, therefore, provide absolute limits on noise that are acceptable or unacceptable in a given situation. It does however, set out the need to use planning decisions, including through the use of conditions, to avoid or mitigate adverse impacts on health and quality of life resulting from noise. The planning Practice Guidance issued by the DCLG advises on how planning can manage potential noise impacts. In this guidance it advises that local planning authorities' plan making and decision taking should take into account the acoustic environment and in doing so consider:

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

2.2.5 In line with the explanatory note of the NPSE, this would include identifying whether the overall effect of the noise exposure is, or would be, above or below the SOAEL and the LOAEL for the given situation.

2.3 BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

2.3.1 Guidance on the acceptable noise levels for living rooms and bedrooms within residential buildings is given in BS8233:2014 'Guidance on sound insulation and noise reduction for buildings'. Advice is given on the design range of internal noise levels, depending on the use of each room and the sensitivity to noise of the operations expected to be conducted in the rooms. An extract of the indoor ambient noise levels for dwellings is reproduced in the Table 2-1 below

Table 2-1

Activity	Location	Time Period	
		07.00 to 23.00	23.00 to 7.00
Resting	Living Room	35 dB	
Dining	Dining Room	40 dB	
Sleeping	Bedroom	35 dB	30 dB

2.3.2 The following statement is made in respect of internal noise levels presented in Table 2-1:

'where development is considered necessary or desirable, despite external noise levels above World Health Organisation (WHO) guidelines, the internal target levels may be relaxed by up to 5dB and reasonable internal conditions still achieved.'

2.3.3 BS8233:2014 states the following in relation to noise levels within external amenity areas:

'for traditional external areas that are used for amenity space, such as gardens, patios, it is desirable that the external noise level does not exceed 50dB with an upper guideline value of 55dB which would be acceptable in noisier environments. However, it is also recognized that these guideline values may not be achievable in all circumstances where development might be desirable.

3. Methodology

3.1 Consultation

3.1.1 The assessment methodology was discussed in telephone conversations with the Planning Officer (Keith Pell) and the Environmental Health Officer (Paul Denton) for establishing pre-development noise levels across the application site.

3.1.2 Any noise mitigation measures should be outlined in the report

3.2 Baseline Noise Survey

3.2.1 A baseline noise survey was undertaken to establish the pre-development noise levels across the Application Site, against which the assessment of site suitability for the proposed residential use has been undertaken Noise monitoring comprised both short term attended and long term unattended measurements.

3.2.2 The Short term attended samples were taken at three locations Albert Street Car Park (ST1), New Street adjacent Alhambra Centre opposite site (ST2), and Hayes Croft opposite restaurant (ST3), on Thursday 23rd ,Friday 24th ,Saturday 25th and Sunday 26th March, 2017 with three 15 minute sample measurements taken at each location on each day

3.2.3 The first Long Term unattended measurements were taken inside the Application Premises on Saturday 25th and Sunday 26th March, 2017 with continuous measurements taken at each location on each day. Rear of Shop Ground Floor facing Albert Street (LT 1) and First Floor Facing New Street (LT 2)

3.2.4 A further Long Term unattended sample was taken with the microphone protruding from the rear ground floor window facing the car park in Albert Street over a 48 hour period on Friday 2nd June , Saturday 3rd June, and Sunday 4th June, 2017 (LT 3)

3.2.5 Auto-logging noise measurements were taken in terms of consecutive 5 minute intervals commencing at around 09.00 on Friday and concluding at around 09.00 on Sunday. It was not possible to get the microphones away from the face of the building and were classed as 'façade' measurements.

3.2.6 The measurements were taken using precision Class 1 sound level meters as defined by IEC 60942: 2003 The following equipment was used on site:

- CEL633A Sound Level meters
- CEL-120 Acoustic Calibrator

3.2.7 The sound level meter was field calibrated prior to commencing the survey and upon completion; no significant drift in sensitivity was observed

3.2.8 External measurements were taken under field-free conditions i.e >3.5m away from acoustically reflective surfaces other than the ground. Measurements were taken with the microphone positioned at a height of 1.5m above local ground level.

3.2.9 The weather conditions were fine and dry with a site temperature of 12^0 C on 23rd and 24th and a rise to 14^0 C over the weekend of the 25th and 26th There was no significant wind, however on the 2nd 3rd and 4th of June the weather was slightly breezy with a temperature slightly higher 16^0

3.2.9 The measurement locations are summarized in Table 3-1 below

Table 3-1

Ref.	Measurement Type	Rationale for Measurement Position
LT 1	Long Term Unattended	To establish noise levels within the current premises at ground floor at rear of shop facing Albert Street
LT 2	Long Term Unattended	To establish noise levels within the current premises at first floor facing New Street
LT3	Long Term Unattended	To establish noise levels externally to the rear of The property facing Albert Street over an extended period
ST 1	Short Term Attended	To establish external noise levels at rear of premises in car park facing Albert Street
ST 2	Short Term Attended	To establish external noise levels to front of building on New Street
ST3	Short Term Attended	To establish external noise levels to surrounding area in Hayes Croft

3.2.10 At each measurement position, the following readings were taken:

$L_{Aeq,T}$ The A-weighted equivalent continuous noise level over the measurement period

L_{Amin} The A-weighted minimum noise level over the measurement period

L_{Amax} The A-weighted maximum noise level over the measurement period

4. Noise Survey Results

4.1 Monitoring Location LT1-Rear of Shop Ground Floor facing Albert Street

4.1.1 A summary of the noise levels measured at monitoring position LT1 are presented in Table 4-1.

Table 4-1

Date	Time Period	Lowest L_{Amin} dB	Highest L_{Amax} dB	Average $L_{Aeq,T}$ dB
Friday 24/03/17	*Daytime (17.30 to 23.00)*	31.6	46.8	37.2
	Night-time (23.00 to 07.00)	29.3	44.1	38.6
Saturday 25/03/17	*Daytime (07.00 to 23.00)*	38.2	56.0	40.1
	Night-time (23.00 to 07.00)	30.3	45.7	36.8
Sunday 26/03/17	*Daytime (07.00 to 14.30)*	28.4	48.3	37.3

4.2 Monitoring Location LT2-First Floor of Shop facing New Street

4.2.1 A summary of the noise levels measured at monitoring position LT2 are presented in Table 4-2

Table 4-2

Date	Time Period	Lowest L_{Amin} dB	Highest L_{Amax} dB	Average $L_{Aeq,T}$ dB
Friday 24/03/17	*Daytime (17.30 to 23.00)*	33.6	42.2	34.7
	Night-time (23.00 to 07.00)	29.0	44.1	33.5
Saturday 25/03/17	*Daytime (07.00 to 23.00)*	34.1	46.3	36.2
	Night-time (23.00 to 07.00)	29.3	43.6	35.4
Sunday 26/03/17	*Daytime (07.00 to 14.30)*	30.7	41.9	34.1

4.3 Monitoring Location LT3-Ground Floor External facing Albert Street

4.3.1 A summary of the noise levels measured at monitoring position LT3 are presented in Table 4-3

Table 4-3

Date	Time Period	Lowest L_{Amin} dB	Highest L_{Amax} dB	Average $L_{Aeq,T}$ dB
Friday 02/06/17	*Daytime (09.00 to 23.00)*	58.6	88.3	66.7
	Night-time (23.00 to 07.00)	48.6	68.2	51.7
Saturday 03/06/17	*Daytime (07.00 to 23.00)*	58.3	88.6	64.6
	Night-time (23.00 to 07.00)	46.7	67.1	46.8
Sunday 04/06/17	*Daytime (07.00 to 09.00)*	45.2	46.9	45.6

NB: a 4.00dB weighting has been added to the above readings to account for the tonality of the mechanical low frequency noise from the extract fan which is in operation during the opening times of the restaurant, and also due to the fact that the readings were 'façade' readings.

4.3.2 The noise climate during monitoring at LT3 was dominated by the exhaust from extraction fan of the kitchens to the restaurants sited in Market street during opening hours and although there are the chiller units from the public house also sited in Market Street, backing on to Albert Street, these had little to no impact as they are some distance away. There was intermittent road traffic noise from infrequent deliveries and collections to these premises and retail premises further down Albert Street. There was also noise from light pedestrian footfall, and vehicles using the car parks.

4.4 Monitoring Location ST1- Car Park facing Albert Street

4.4.1 A summary of the noise levels measured at monitoring position ST1 are presented in Table 4-4

Table 4-4

Date	Time Period	Lowest L_{Amin} dB	Highest L_{Amax} dB	Average $L_{Aeq, 15min}$ dB
Thursday 23/03/17	09.30 – 10.15[(1)]	53.5	104.3	72.3
	13.00 – 13.45	55.2	71.3	57.4
	21.00 – 21.45	43.6	63.2	48.3
Friday 24/03/17	09.30 – 10.15	52.7	67.8	56.1
	13.00 – 13.45	54.2	66.1	58.0
	21.00 – 21.45	46.4	59.2	55.9

(1) The reading was taken during glass re-cycling operations giving an exceptional high reading of 104.3dB for the duration of 1minute

4.4.2 The noise climate during monitoring at ST1 was dominated by the exhaust from the extraction fan of the kitchens to the restaurants sited in Market Street with rear entrances on Albert street during opening hours and although there are the chiller units from the public house also sited in Market Street, backing on to Albert Street, these had little to no impact as they are some distance away. There was intermittent road traffic noise from infrequent deliveries and collections to these premises and retail premises further down Albert Street. There was also noise from light pedestrian footfall, and vehicles using the car parks.

4.4 Monitoring Location ST2 – 29-31 New Street outside The Alhambra Shopping Centre

4.4.1 A summary of the noise levels measured at monitoring position ST2 are presented in Table 4-4

Table 4-4

Date	Time Period	Lowest L_{Amin} dB	Highest L_{Amax} dB	Average $L_{Aeq, 15min}$ dB
Thursday 23/03/17	10.30 – 11.15	41.4	53.5	50.3
	14.00 – 14.45	44.1	79.7	56.4
	22.00 – 22.45	31.9	56.1	42.0
Friday 24/03/17	10.30 – 11.15	42.7	58.7	49.6
	14.00 – 14.45	46.4	60.1	52.2
	22.00 – 22.45	33.6	55.2	45.3

4.4.2 The noise climate during monitoring at position ST2 was dominated by road traffic noise from light vehicle use of New Street, taxi's picking up and dropping off shoppers from the Alhambra Shopping Centre (engine idling, door slams), general noise from shoppers using the Centre and walking past into the town

4.5 Monitoring Location ST3 – Hayes Croft

4.5.1 A summary of the noise levels measured at monitoring position ST3 are presented in Table 4-5

Table 4-5

Date	Time Period	Lowest L_{Amin} dB	Highest L_{Amax} dB	Average $L_{Aeq, 15min}$ dB
Thursday 23/03/17	11.30 – 12.15	48.4	78.3	59.1
	15.00 – 15.45	52.1	94.1	66.4
	18.30 – 18.15	47.7	68.3	60.5
Friday 24/03/17	09.30 – 10.15	50.1	71.5	62.9
	15.00 – 15.45	49.6	69.3	61.3
	18.30 – 18.15	51.4	64.3	58.7

4.5.2 The noise climate during monitoring at position ST3 was dominated by the noise from the exhaust of the extract unit to the adjacent restaurant, light vehicular noise from vehicles using the car park in Hayes Croft, and the general noise from pedestrians and shoppers in this area

5. Air Pollution

5.1 Air Quality Assessment

5.1.1 After discussions with the EHO, it was decided that it was not cost effective to carry out air sampling measurements, but an observation during the Noise Assessment period would be regarded as useful information when applying mitigating measures in the design, and if necessary a site visit may be better served.

5.1.2 During the assessment period it was noted that while there was definitely a cooking odour in the area around Albert Street during the hours of opening of the restaurants, this was neither excessive nor offensive and is no different to other areas of the town centre where permission has been granted for residential use.

6. Assessment of Impacts

6.1 Application Site Noise Levels

6.1.1 The noise levels taken at monitoring position ST1 in the vicinity of Albert Street ranged from 56 to 72 dB $L_{Aeq,15min}$ during daytime and 48 to 55 dB $L_{Aeq,15min}$ during the night

6.1.2 The noise levels taken at monitoring positions LT1 and LT2 which were taken inside the current shop premises ranged from 34 to 40 dB $L_{Aeq,T}$ during daytime and 33 to 38 dB $L_{Aeq,t}$ during the night

6.1.3 The noise levels taken at monitoring position LT3 taken externally ranged from 58 to 66 dB L_{AeqT} during the daytime and 45 to 51 dB L_{AeqT} during the night time.

6.1.4 The absolute noise levels recorded at LT1,LT2 and LT3 are not considered to be prohibitive for the Proposed Residential Development, however the noise emissions from ST1 and LT3 may contain certain acoustic features which could increase the likelihood of disturbance to external amenities to the property i.e. tonality, impulsivity, intermittency. Appropriate mitigation should therefore be incorporated into the Proposed Development in order to minimize the potential for disturbance from these sources.

6.2 Site Suitability for Residential Development – Internal Noise Levels

6.2.1 On the basis that a partially open window provides up to 15dB of attenuation, should windows be incorporated into the Albert Street elevation then the internal noise levels would typically exceed the noise criteria set out in BS8233:2014 in which windows are open for ventilation purposes.

6.2.2 It is suggested therefore, that traditional casement type windows are not used for the elevation facing Albert Street, but as an alternative the use of Velux type rooflights be incorporated into the design which will use the following:

- High specification acoustic glazing (40 R_W dB) with background ventilation provided by acoustically attenuated trickle ventilators.
- High specification acoustic glazing (up to 40 R_W dB) with background ventilation provided by means of a mechanical system.

6.3.3 It is suggested that to the rear elevation facing directly onto the car-park, the tri-fold window units should also be fitted with high specification acoustic glazing (40 R_W dB) with background ventilation by means of acoustic trickle vents.

6.2.4 The proposed acoustic treatment to glazed areas outlined above will provide effective attenuation from the mechanical noise from the surrounding restaurants and general

road traffic noise from the deliveries and collections on Albert Street and typical individual L_{amax} noise events occurring throughout the day and night-time.

6.2.5 The remainder of the existing windows and rooflights to be replaced with triple glazed units with high specification acoustic glazing (40 R_W dB) with background ventilation by means of trickle vents.

6.2.6 In the scenario outlined above, windows will remain openable for ventilation at the occupants discretion as per normal residential properties.

6.2.7 The internal layout of the proposed development should be arranged so that non-habitable rooms such as bathrooms, kitchens, utility rooms and circulation spaces should be situated on the Albert Street side of the building, where the nose levels are the highest, with habitable rooms sited away from Albert Street.

6.2.8 All internal partitions should be constructed of timber with Rockwool R5 acoustic fill. The use of such partitions will also ensure maximum acoustic performance of all habitable rooms.

6.3 Site Suitability for Residential Development – External Amenity Areas

6.3.1 The proposals show a significantly raised roofline to the current rear section of the building, which will assist in deflecting noise created in the Albert Street area. The new roof to have Acoustic insulation incorporated into the structure along with thermal insulation, to achieve the BS8233:2014 noise criteria.

6.3.2 The existing external walls to the building are 350mm thick solid stone and should be treated internally with 15mm Acoustic wall boarding, the additional new external walls to be constructed of two leaves of 100mm Masterlite Pro Acoustic blockwork cavity wall construction rendered on the external face, with Rockwool R5 insulation to the cavity and acoustic plasterboard to the internal face, to achieve BS8233:2014 noise criteria.

6.3.4 To achieve the BS8233:2014 noise criteria, the external amenity area for the proposed development should be protected on the Albert Street elevation by an acoustically treated external wall built of 300mm cavity construction with two leaves of 100mm Masterlite Pro Acoustic blockwork and filled with Rockwool R5 acoustic insulation, with render to both sides, the wall should be constructed 2m high and have a returned leg of not less that 2.5m along the elevation facing the car park

6.3.2 The construction of this acoustic barrier wall will reduce the noise levels within the external amenity area closest to Albert Street by 10-15 dB which would bring the noise levels to within the criteria contained within BS8233 of 50-55 dB L_{Aeq}

6.3.3 Further treatment to the remainder of the boundary such as installation of solid walls up to a height of 1.8m and the inclusion of solid gates, will also act as barriers to the proposed development and will also act as baffles for noise in Albert Street.

7. Conclusions

7.1.1 A baseline noise survey was conducted across the Application Site to establish the pre-development noise climate. The data obtained from the survey has been used to determine the suitability of the site for residential purposes, and the mitigating measures required to meet the criteria set out in BS8233:2014

7.1.2 An air quality assessment was not carried out at this stage as site conditions in our opinion were not deemed to be detrimental to residential occupation of the building. The detailed mitigation measures to improve the noise climate would also aid the quality of the air for external residential areas.

7.1.3 The design layout and treatment to the window arrangement along the Albert Street side of the building will be crucial in meeting the ambient noise criteria set out within BS8233:2014

7.1.4 Mitigation noise barriers to be incorporated into the design to minimize the noise levels within external amenity areas sufficient to meet the criteria set out within BS8233:2014

7.1.5 The level of noise from the glass collection vehicle at 104.3 dB for a period of less than one minute, seems to be quite high when taken in isolation, but in comparison to a normal domestic refuse collection vehicle which is 95 dB usually for a sustained period, it is not that much greater, which affects all residential property throughout the borough, and is no different from operations affecting all licensed premises which have residential accommodation elsewhere in the town centre.

7.1.6 The noise mitigation measures have been fully detailed in this report, and are presented to current building regulations standards and will be sufficient measures to bring the property well within the criteria for residential use set out in BS8233:2014