

50 CROWN STREET, READING

NOISE IMPACT ASSESSMENT

Report 15263.NIA.01

Prepared on 13 December 2016

For:

Platinumsa Limited

Red Cow

50 Crown street

Reading

RG1 2SE

Site Address	Report Date	Revision History
50 Crown street, Reading, RG1 2SE	13/12/2016	

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15263.SP1	Indicative Site Plan
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Appendix A	Glossary of Acoustics Terminology

1.0 INTRODUCTION

KP Acoustics has been commissioned by Platinumsa Limited, Red Cow, 50 Crown Street, Reading, RG1 2SE, to assess the suitability of the building at the aforementioned address for residential purposes in accordance with the provisions of the National Planning Policy Framework and the Noise Policy Statement for England (NPSE).

This report presents the results of the environmental noise survey undertaken in order to measure prevailing background noise levels and outlines any necessary mitigation measures.

Additionally, construction details will be provided as to the required sound insulation of the shared floors between the Public House at Ground Floor Level and the proposed residential above.

2.0 ENVIRONMENTAL NOISE SURVEY

2.1 Procedure

A noise survey was undertaken at the proposed site as shown in Figure 15263.SP1. The locations were chosen in order to collect data representative of the worst-case levels expected on the site due to all nearby sources.

It was not possible to gain suitable access for an unattended, automated noise survey at the site due to there being no secure location to install the monitoring equipment. Therefore, a manual measurement procedure was undertaken, in compliance with 'Calculation of Road Traffic Noise' (CRTN): 1988 [DoT – Welsh Office HMSO].

Weather conditions were generally dry with light winds and therefore suitable for the measurement of environmental noise.

The measurement procedure complied with ISO 1996-2:2007 *Acoustics "Description, measurement and assessment of environmental noise - Part 2: Determination of environmental noise levels"*.

2.2 Equipment

The equipment calibration was verified before and after use and no abnormalities were observed.

The equipment used was as follows.

- 1 No. NTi XL2 Class 1 Sound Level Meter
- B&K Type 4231 Class 1 Calibrator

3.0 RESULTS

3.1 Noise Survey

The L_{Aeq} : 5min, L_{Amax} : 5min, L_{A10} : 5min and L_{A90} : 5min acoustic parameters were measured throughout the duration of the survey. Calculated noise levels recorded based on the 'Calculation of Road Traffic Noise' (CRTN): 1988 [DoT – Welsh Office HMSO] are shown in Table 4.1. Please note that the night-time result shown has been calculated by reducing the recorded daytime levels by 3dB. This will ensure that the report is rendered as robust as possible based on the collected data.

4.0 DISCUSSION

The site is bounded by Crown Street to the South, Southampton Street to the West and existing commercial and residential units to the North and East.

Measured noise levels are representative of noise exposure levels expected to be experienced by all façades of the proposed development. At the time of the survey, the background noise climate was dominated by road traffic noise from the Crown Street and Southampton Street.

	Location 1 (Crown Street)	Location 2 (Southampton Street)	Location 3 (Rear of 50 Crown St.)
Daytime $L_{Aeq,16hour}$	71	73	71
Night-time $L_{Aeq,8hour}$	68	70	68

Table 4.1 Site average noise levels for daytime and night time

5.0 NOISE IMPACT ASSESSMENT

5.1 Noise Assessment

BS8233:2014 "Sound insulation and noise reduction for buildings" describes recommended internal noise levels for residential spaces during daytime and night-time. These levels are shown in Table 5.1.

Criterion	Typical Situations	Design range $L_{Aeq,T}$ dB	
		07:00-23:00	23:00-07:00
Recommended resting/sleeping conditions	Living Rooms	35	--
	Bedrooms	35	30

Table 5.1 BS8233 recommended internal background noise levels

The external building fabric would need to be carefully designed to achieve these recommended internal levels. It is understood that the non-glazed external building fabric elements of the proposed development would be comprised of brickwork. This would contribute towards a significant reduction of ambient noise levels in combination with a good quality double-glazed window configuration, as shown in Section 6.

6.0 EXTERNAL BUILDING FABRIC SPECIFICATION

Sound reduction performance calculations have been undertaken in order to specify the minimum performance required from glazed and non-glazed elements in order to achieve recommended internal noise levels shown in Table 5.1, taking into account average and maximum noise levels monitored during the manual noise survey.

Available dimensions of bedrooms have been used for all glazing calculations.

As a more robust assessment, L_{Amax} spectrum values have also been considered and incorporated into the glazing calculation in order to cater for the interior limit of 45 dB L_{Amax} for individual events.

6.1 Non-Glazed Elements

All non-glazed elements of the building façade have been assumed to provide a sound reduction performance of at least the figures shown in Table 6.1 when tested in accordance with BS EN ISO, 140-3:1995.

Element	Octave band centre frequency SRI, dB					
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
Non glazed element SRI	41	43	48	50	55	55

Table 6.1 Non-glazed elements assumed sound reduction performance

6.2 Glazed Elements

Minimum octave band sound reduction index (SRI) values required for all glazed elements to be installed are shown in Table 6.2. The performance is specified for the whole window unit, including the frame and other design features such as the inclusion of trickle vents. Sole glass performance data would not demonstrate compliance with this specification.

Glazing performance calculations have been based both on average measured night-time noise levels as well as verified against the L_{Amax} spectrum of individual events in order to comply with a maximum internal noise level of 45dB(A) in bedrooms as recommended by BS8233:1999. The combined most robust results of these calculations are shown in Table 6.2.

Glazing Type	Octave band centre frequency SRI, dB					
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
South and west Elevation	27	37	44	51	50	53
Rear Elevation	32	30	35	41	43	50

Table 6.2 Required glazing performance

Should the existing single glazed windows be retained, in order to meet the required spectral attenuation figures shown in Table 6.2, we would recommend the installation of a secondary glazing system (5mm-7mm) at a distance of 100mm from the original window panes, incorporating padded absorptive reveals.

With regards to the introduction of natural ventilation system, we would recommend fresh acoustic wall vents due to trickle vents being inappropriate for secondary glazing systems. Any acoustic wall vent with a rated acoustic performance range of 45-50 dB, $D_{n,e,w}$, would be suitable should natural ventilation be required. Acoustic wall vents meeting the above requirements can be provided by Passivent or any similar ventilation systems provider.

All major building elements should be tested in accordance with BS EN ISO 140-3:1995.

Independent testing at a UKAS accredited laboratory will be required in order to confirm the performance of the chosen system for an “actual” configuration.

No further mitigation measures would be required to achieve recommended internal noise levels.

7.0 SEPARATING FLOOR CONSTRUCTION DETAILS

Due to there being a Public House located on the Ground Floor of the site, the floor separating the Ground and First Floors should be upgraded to ensure that noise generated within the Public House does not have any negative effect on the amenity of the flats to be located over the First and Second Floor.

It is understood that the existing floor is comprised of the following elements:

- Timber joists
- Lath and plaster ceiling
- Timber floor boards

It is also understood that the property is a listed building. It should be noted that, as per Approved Document E, in the case of some historic buildings undergoing a material change

of use, it may not be practical to improve to the standards set out in Table 1.a and 1.b of Approved Document E. The need to conserve the special characteristics of such historic buildings needs to be recognised, and in such work, the aim should be to improve sound insulation to the extent that it is practically possible, always provided that the work does not prejudice the character of the historic building, or increase the risk of long-term deterioration to the building fabric or fitting.

We would therefore recommend that all the floors of the building are upgraded as follows:

If the original floorboards are to be retained

- Remove the existing floor boards.
- Clear the void between joists from any debris.
- Install Quietslab mineral fibre (with 7.5mm polymeric mass barrier) between joists.
- Install 18mm Verspanel as an intermediate layer between joists. Timber noggins or steel angles fixed to the side of the joists can be used to accommodate the Versapanel boards. Any gap between boards and the perimeter of the intermediate layer should be sealed with non-setting mastic.
- Fix again the original boards on top of the joists, making sure that any damaged board is replaced and gaps between boards are sealed suitably.
- In case an end walking surface is installed on the second-floor rooms, a previous installation of Regupol 3912 (6mm) on top of the floor boards is recommended. This resilient layer would reduce the impact noise experienced at first floor from people walking on the second floor.

If the original floorboards are to be removed

- Remove the existing floor boards.
- Clean the void between joists from any debris.
- Install 50mm Quietslab mineral fibre (with 7.5mm polymeric mass barrier) between joists.
- Install strips of Regupol 7210c (5mm) cut to fit the width of the joist and glued on top of the existing joists.
- Adhesively Install 18mm T&G Verspanel as the main flooring deck
- Install the end walking surface

General Advice

For airborne sound insulation, special attention should be given to workmanship regarding the proper sealing of junctions and penetration details. Where any gaps between external (flanking) walls and floors exist, they should be caulked with sealant or similar type material. It should be also noted that flanking strips (Yelofon ES5/100) should be installed around the perimeter of the floor to isolate the floor from walls and skirtings. The strip should be turned up so that the skirting boards rest on them and any excess cut away.

8.0 CONCLUSION

An environmental noise survey has been undertaken at 50 Crown Street, Reading. A robust glazing specification has been proposed which would provide recommended internal noise levels for all residential environments of the development commensurate to the design ranges of BS8233:2014.

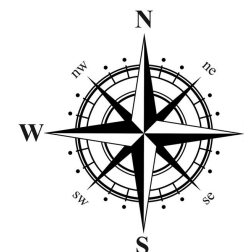
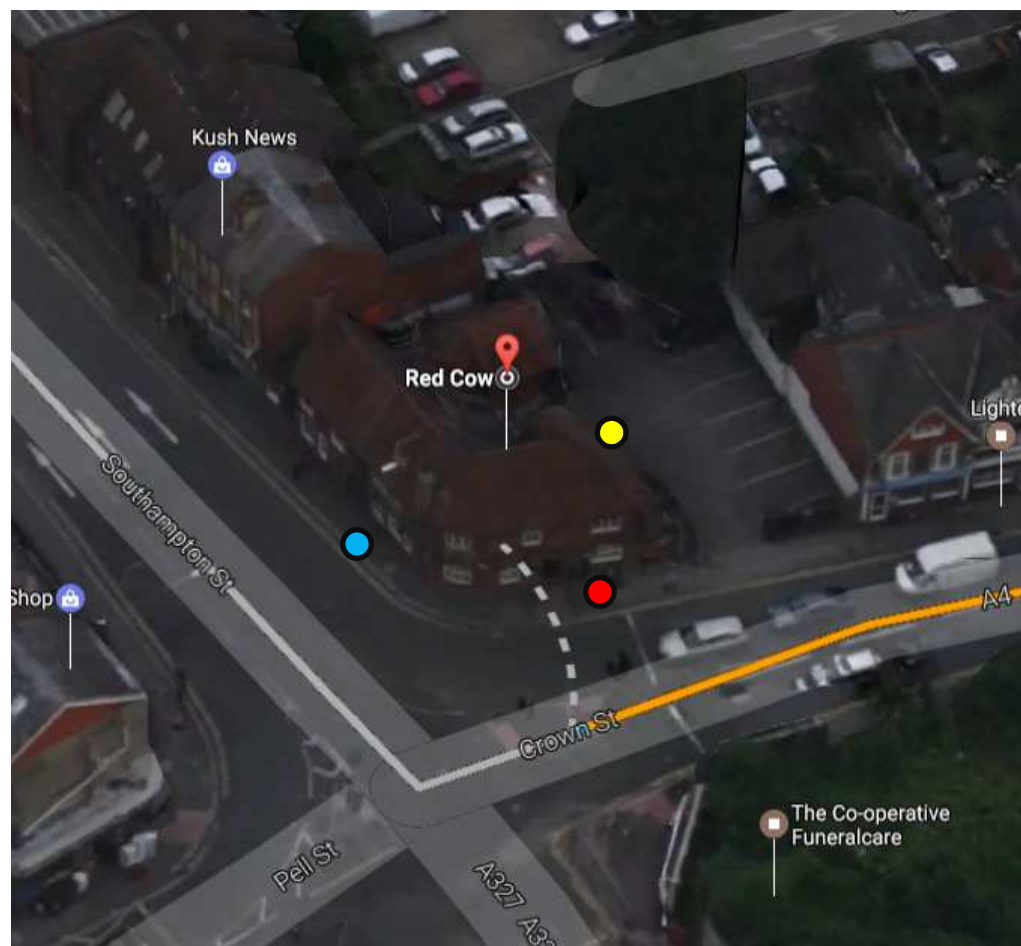
The mitigation measures described would be sufficient to protect the proposed residential properties from external noise intrusion, and to achieve internal noise conditions for the residents which would be commensurate to all current Standards.

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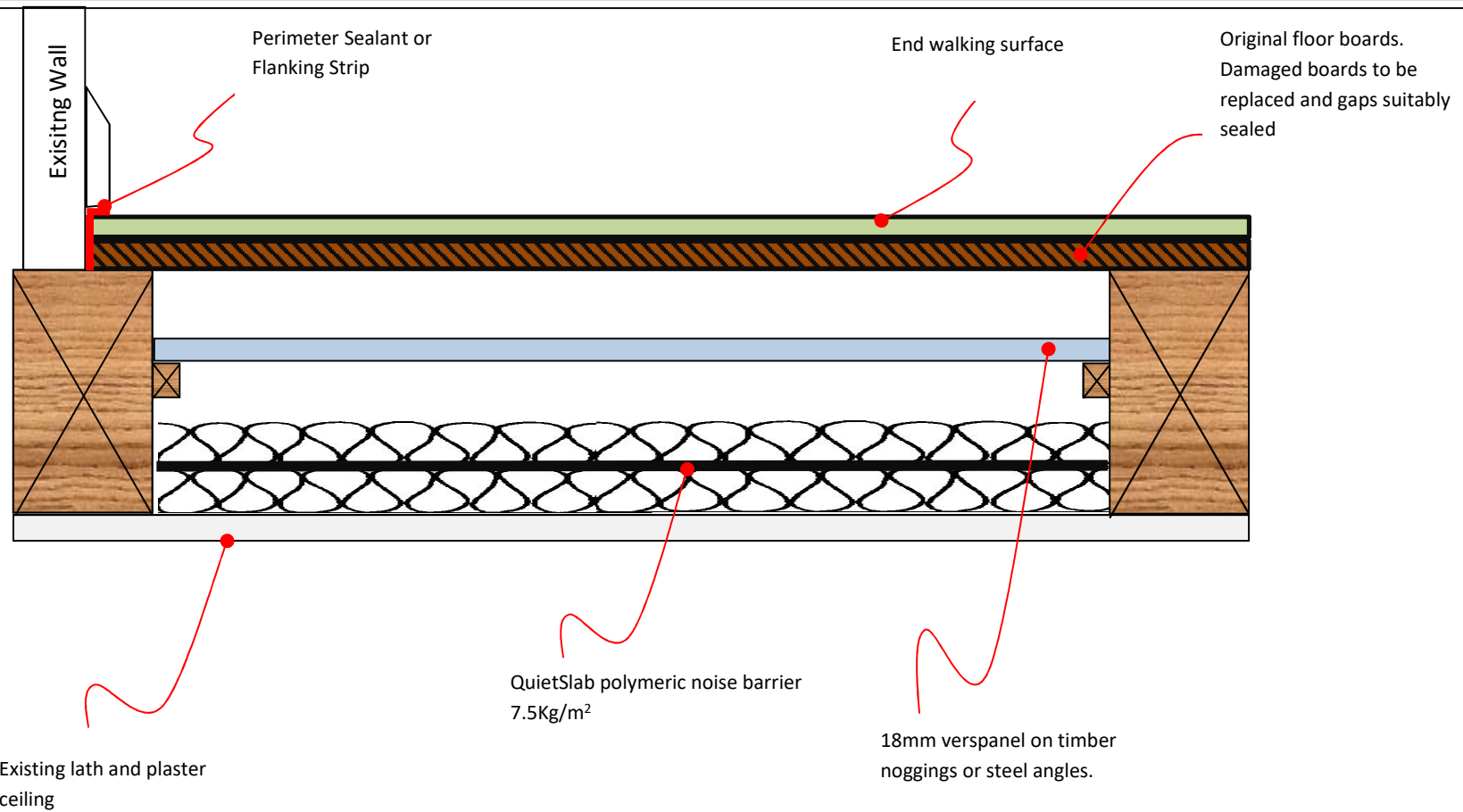
- Location 1
- Location 2
- Location 3

Title: Environmental noise survey measurement locations

Date: 13 December 2016

FIGURE 15263.SP1



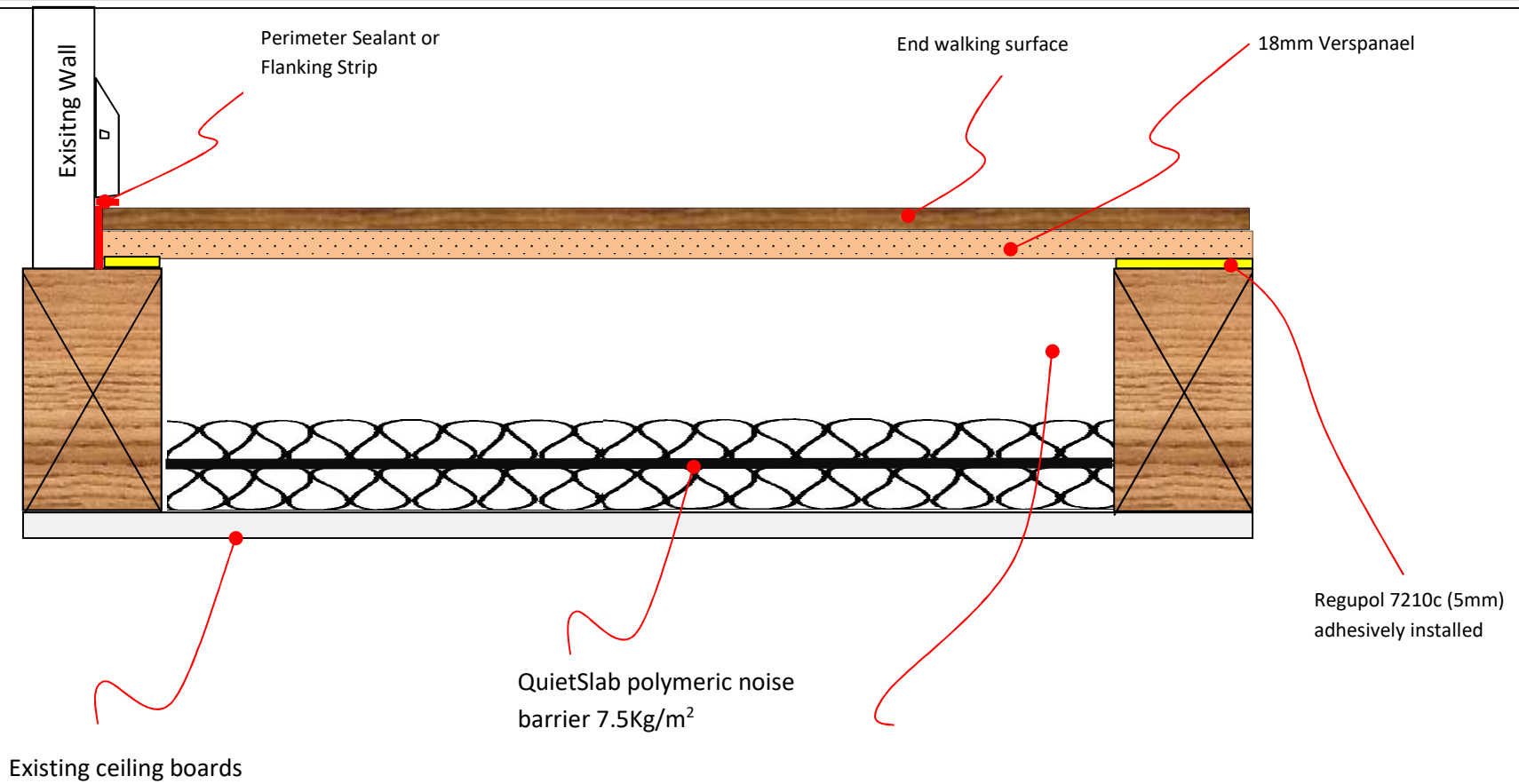


Title: Proposed party floor if the original floor board are to be retained

Date: 13 December 2015

FIGURE 15263.DWG1





Title: Proposed party floor if original timber floors are to be removed.

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FIGURE 15263.DWG2

