TECHNICAL NOTE

Job Name: Former Royal Mail Sorting Office, Twickenham

Job No: 26503

Note No: 02

Date: 28 May 2013

Prepared By: Mubassir Malik

Subject: **Supplementary Noise Modelling – Skating Park and Sport Pitches – 3m Barrier**

Item	Subject
1.	**Introduction** Peter Brett Associates LLP (PBA) prepared the Environmental Statement (ES) accompanying the full planning application for a residential-led mixed use development at the Former Royal Mail Sorting Office, Twickenham, in 2012. Further to the planning application, queries were received on Chapter 11 Noise & Vibration from the London Borough of Richmond Upon Thames (LBRuT) (Memo from Chris Hurst, Principal Environmental Health Officer on 16th November 2012). Specific queries related to the noise arising from recreational noise sources (i.e. skate park and sport courts) were received. Subsequently, a meeting was held on site between LBRuT, PBA and St James on 29th November 2012 to discuss the queries. It was agreed that further noise modelling should be undertaken to investigate the potential acoustic benefit from a noise barrier at the site. A technical note was prepared dated 18th January 2013 to determine the noise impact with mitigation measures based on a 4m and 5m barrier. It is now proposed that a 3m barrier will be installed and therefore this note has been prepared to determine the impact and advise of further mitigation measures.

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
26503	-	30.05.13	MM	BB	BB	

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2. **Methodology**

Methodologies used in the technical note from 18th January 2013 have been used to inform this assessment.

Within Section 3 of this note the noise levels due to the use of the skating and sport facilities have been predicted at the façade of the proposed dwellings.

The noise model incorporates a 3m noise barrier at the site boundary adjacent to the sports facilities.

The modelling calculations include rail and road noise sources. Furthermore, a noise source of 55 dB(A) has been added to account for aircraft noise. As described in the ES chapter, the modelling results have been validated against the baseline noise survey.

Using the results of the noise model, calculations have been undertaken to determine the acoustic performance of the glazing and ventilation units required to meet the 'good' design target of internal noise levels in proposed habitable rooms, in accordance with BS8233.

Within Section 4 noise levels at first floor balconies have been assessed. A noise contour has been produced to assess the noise from the skating and sports facilities only.

3. **Results**

Mitigation and Analysis – 3m Barrier

Table 3 presents the highest predicted noise level at each façade of the proposed dwellings, for a 3m barrier. The table shows the variation per floor.

Table 3: Highest Noise Levels per Façade per Floor – 3m Barrier

Block (see label in Figure 1)	Façade	Floor	$L_{Aeq,16hr}$ dB
1	East	Ground	58
		First	64
		Second	64
	West	Ground	59
		First	65
		Second	66
	South	Ground	57
		First	57
		Second	58
2	East	Ground	58
		First	64
		Second	65
	West	Ground	61
		First	64
		Second	65
	South	Ground	60
		First	61
		Second	61
3	East	Ground	60
		First	64
		Second	64
	West	Ground	61
		First	61
		Second	61
	South	Ground	62

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		First	63
		Second	63
4	East	Ground	59
		First	61
		Second	61
	West	Ground	59
		First	61
		Second	61
	South	Ground	60
		First	63
		Second	63
5	East	Ground	58
		First	59
		Second	59
	West	Ground	58
		First	59
		Second	60
	South	Ground	59
		First	61
		Second	62

The noise levels vary per façade, dwelling and floor level. Figures 1 – 3 show the façade noise levels at each dwelling. In addition, the figures indicate the acoustic performance that is required for glazing (R_w Weighted Sound Reduction Index) and ventilation units (D_{new} Element Normalized Level Difference) to meet the internal noise levels recommended in BS8233. From the second floor and above, the mitigation required remains similar to that for the second floor.

4. **Balconies**

To determine the noise impact at the balconies due to the skate and sports pitches a noise contour has been produced at first floor level.

Figure 4 presents the noise contour and shows noise levels above and below 55dB(A).

Balconies are proposed at the first floor of blocks 1 – 4 and at the apartment block. It can be seen from Figure 4 that the noise levels at first floor would exceed 55dB(A)[1] on some facades of the proposed dwellings. On facades where balconies are proposed and the noise levels exceed 55 dB, then a glazed screening treatment of 1.5m height on the balcony (i.e. with a single glazed unit of 4mm) could be considered.

5. **Conclusions**

Further modelling has been undertaken to determine the mitigation required to minimise the noise impact arising from the existing skating park and sport courts.

The required acoustic performance of additional mitigation measures (i.e. glazing and ventilation units) has been provided to meet the 'good' design target internal noise levels at habitable rooms of the proposed dwellings, for the mitigation scenario with a 3m barrier. Recommendations are also given to mitigate the noise levels at the balconies.

The 3m barrier together with their corresponding façade measures would meet the internal noise level aspirations described in BS8233.

[1] BS8233:1999 states "In garden and balconies, etc. it is desirable that the steady noise level does not exceed 50 $L_{Aeq,T}$ dB and 55 $L_{Aeq,T}$ dB should be regarded as the upper limit.

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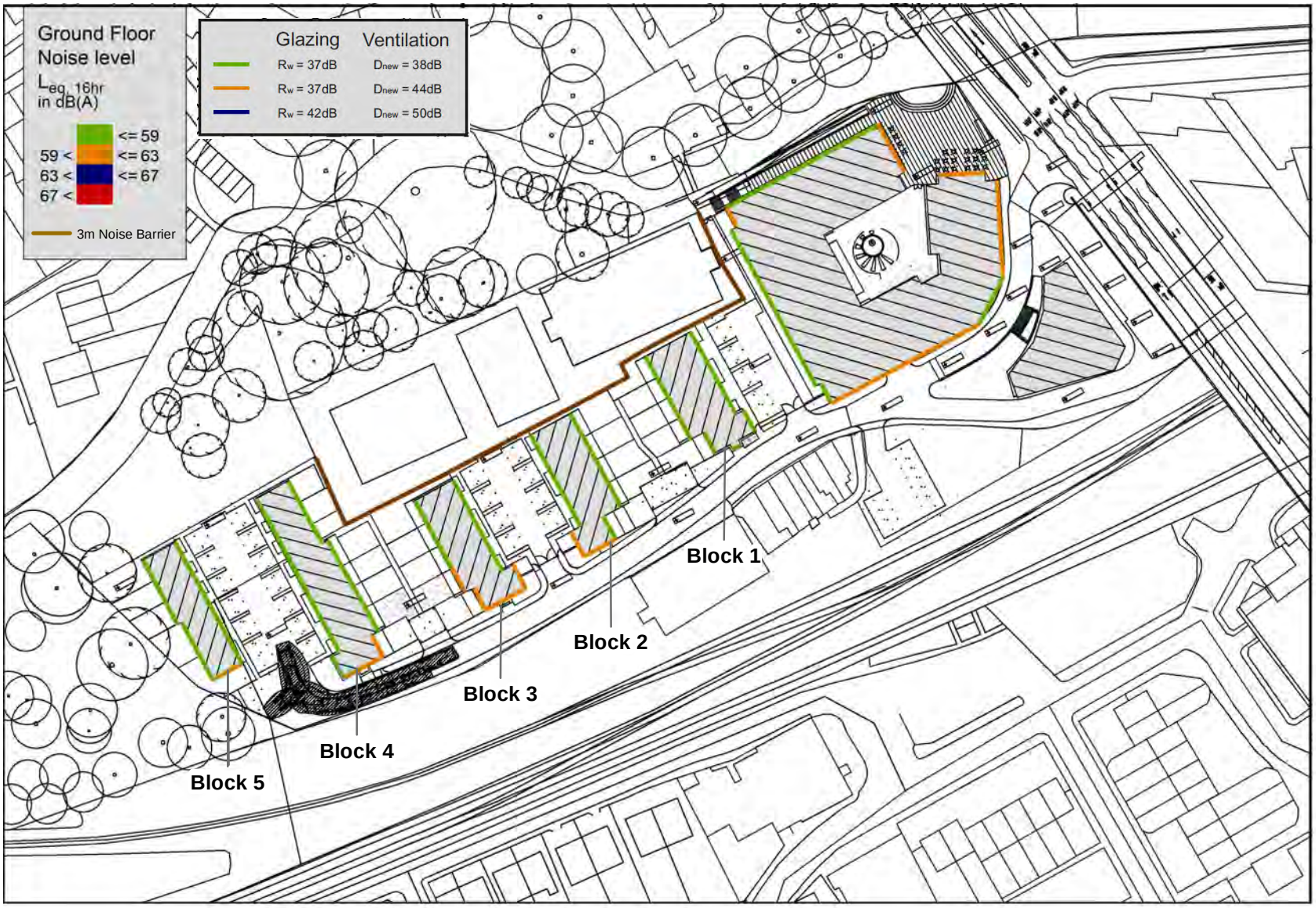
	A revised noise mitigation scheme has been outlined. However, the conclusions presented in the ES chapter remain valid with operational noise effects remaining not significant.



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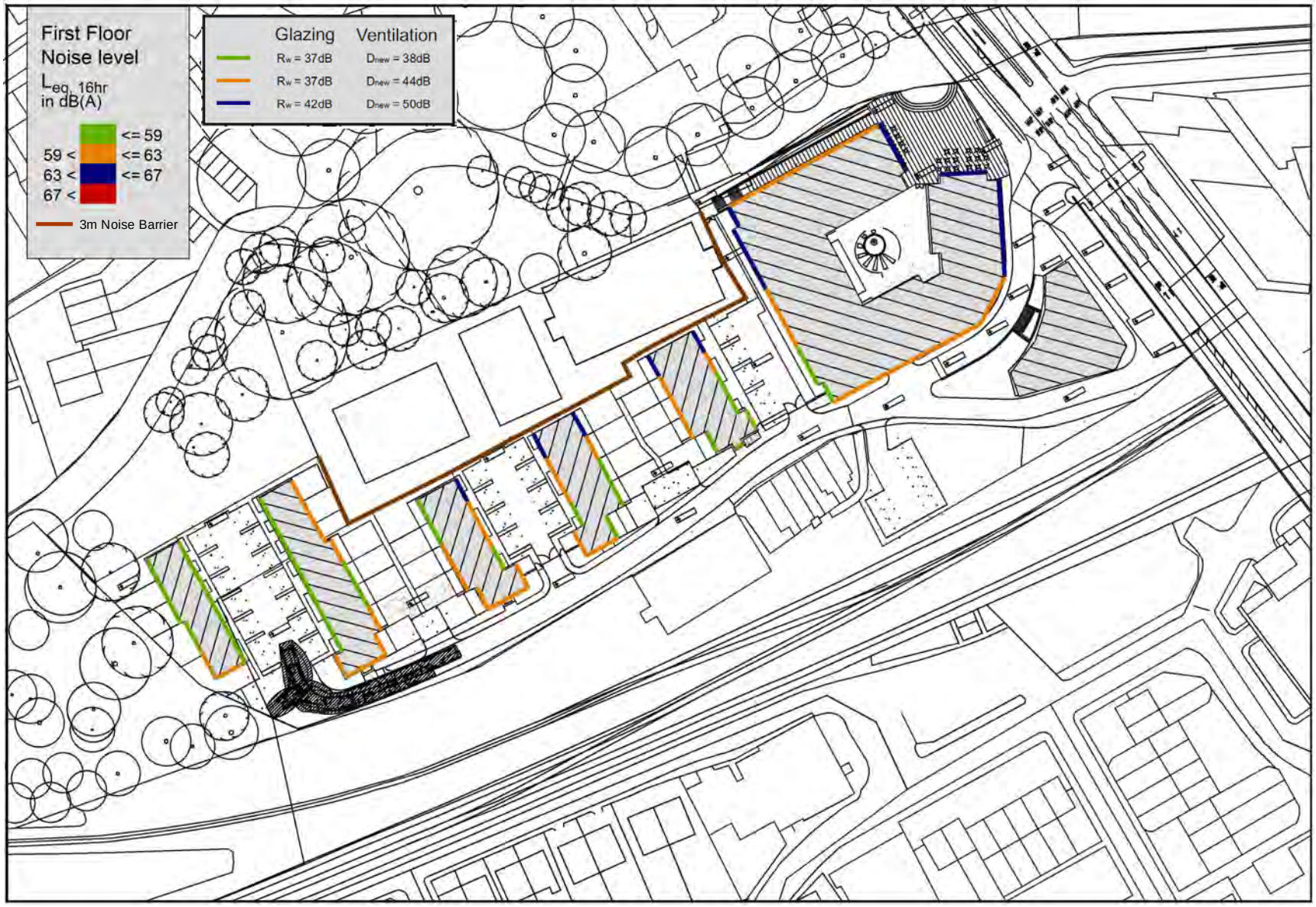
Noise Facade Mitigation - Ground Floor with 3m Noise Barrier

Date	May 2013
Scale	N.T.S.
Drawn By	AR
Checked By	MM
Figure Number	**Figure 1**



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Noise Facade Mitigation - First Floor with 3m Noise Barrier

Date	May 2013
Scale	N.T.S.
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Figure Number	**Figure 2**

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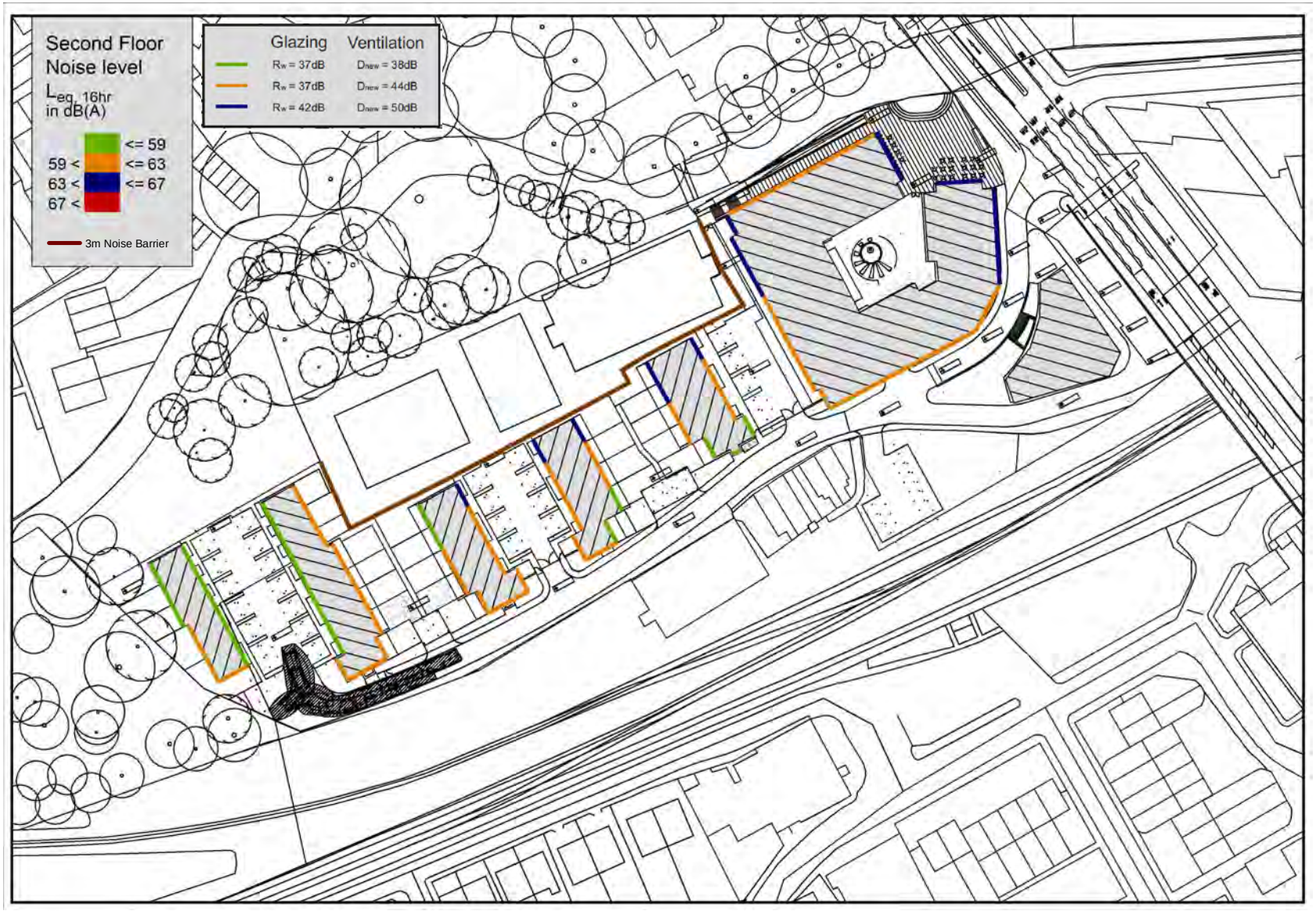

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Noise Facade Mitigation - Second Floor with 3m Noise Barrier

Date	May 2013
Scale	N.T.S.
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Figure Number	**Figure 3**

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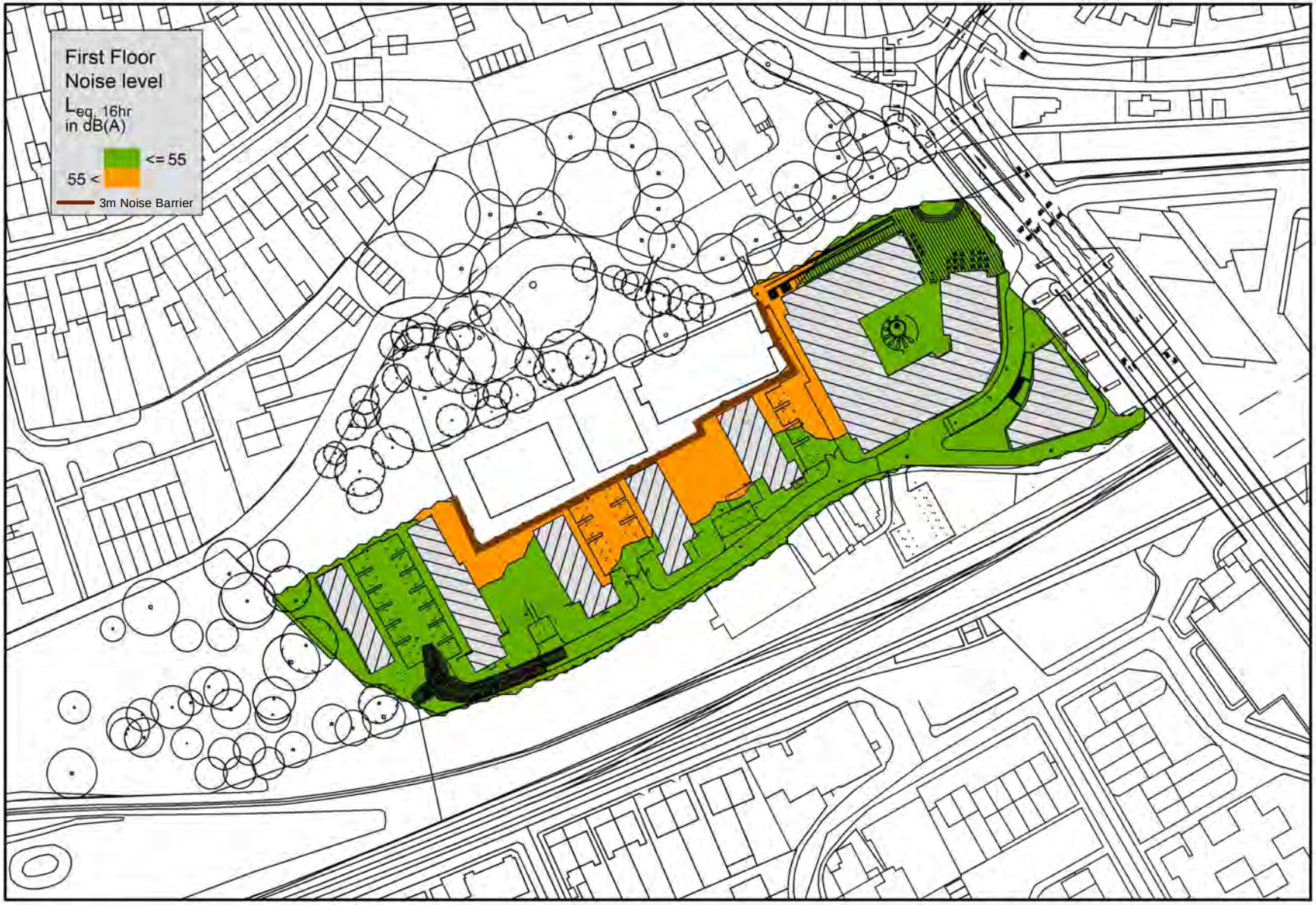

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First Floor Noise Contours Due to Recreational Noise Sources with 3m Noise Barrier

Date	May 2013
Scale	N.T.S.
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Figure Number	**Figure 4**

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