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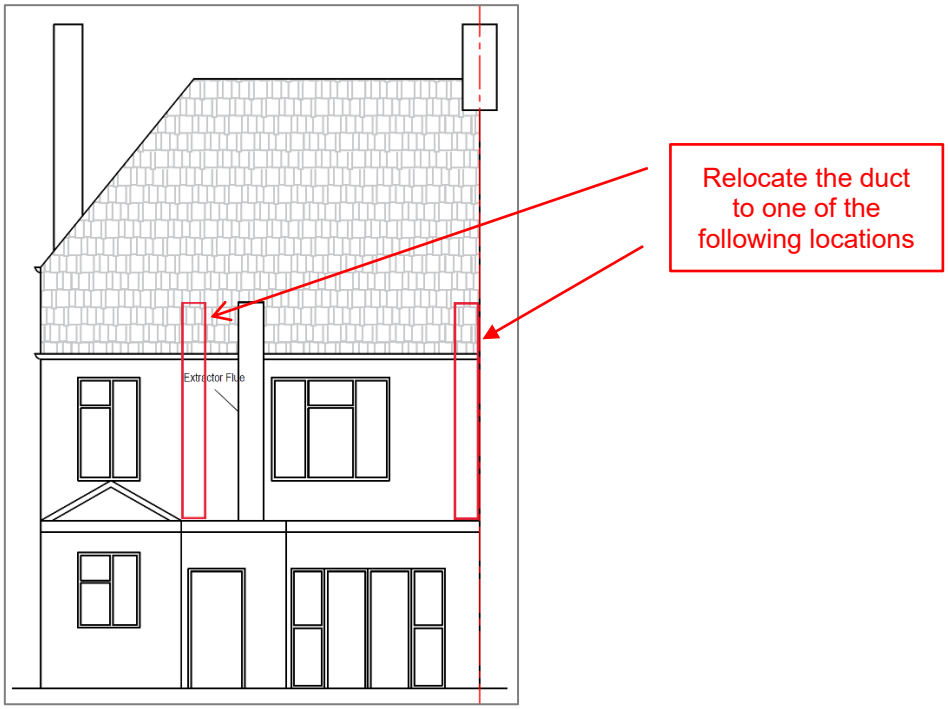
**Acoustic Note ph-104267-01** **28th January 2022**
AWDM/2012/21 268 Upper Shoreham Road, BN43 6BF
**Ref Docs**
[1] 104267.ph.Issue1 Noise Impact Assessment

Acoustics Plus (APL) understands that concern has been raised by Ms Hannah Powell (EHO at Adur & Worthing Councils) with regard to the proximity of the nearest noise sensitive façade to the proposed location of the kitchen extract discharge. The EHO stated:

*"I do have one query concerning the assessment of noise of the kitchen extraction system. The report assumes the nearest noise sensitive dwelling is No.270A (flat above the neighbouring unit). However, the report should be assessing the impact of noise at No.268A (flat above application site) as this is the nearest noise sensitive dwelling. Please could the rating level at 268A be calculated?"*

The noise impact assessment did not originally consider this dwelling as it is understood that this flat will be the managers flat belonging to the ground floor unit.
Notwithstanding the above and based on the EHO comments, consideration was given to the flat at No.268A.

Given the windows belonging to this flat are signifcantly nearer to the extract discharge than the neighbouring property, the calculation exercise was repeated and is attached. In order to meet the Local Authority noise requirements, the following would need to be implemented.



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The duct relocation would ensure the duct extract discharge is a minimum of 2.5m from the window openings of the habitable room at No. 268A.

The length of the proposed silencer should also be increased from 900mm to 1200mm to maximise the attenuation efficiency of the silencer. For the purposes of this calculation exercise, a Lindab SLU 315 1200mm (50mm insulation) has been utilised.

Finally, the 90º bend within the duct work should be an attenuating bend. An example product is shown below.




The attenuating bend is made of two duct bends inside one another. The inner bend is made of perforated steel sheet. The clearance between the outer cladding and the inner perforated cladding is filled with sound insulating material. This material is lined with a cloth to prevent entrainment.

Noise egress from duct termination

The methodology utilised to calculate the noise egress from the duct termination is outlined in APL Doc Ref: 104267.ph.Issue1. The calculation has been re-evaluated in light of the information provided above.

Noise leaving the ductwork system at the duct outlet was propagated to the nearest noise sensitive façade using point source propagation.

| Source of noise egress | $L_p$ dBA @ noise sensitive façade |
|---|---|
| Kitchen extract duct discharge | 40dB |

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The following corrections were accounted for to determine a rating level:

| Results | Correction | Relevant clause | Commentary |
|---|---|---|---|
| Acoustic feature corrections | +2dB | 9.2 | Tonality - 2dB<br>Impulsivity – 0dB<br>Intermittency – 0dB<br>Other – 0dB |

In order to comply with the requirements of the LPA, any noise from the proposed installation of mechanical plant should not exceed a rating level of 42dBA at 1m from the nearest noise sensitive façade.

The calculated noise impact rating level is 42dBA. The calculated rating level is at such a level that there is an indication that the specific sound source will have a low impact.

To conclude, the repositioning of the duct combined with additional measures means that the Local Authority noise requirements can be met at the nearest noise sensitive dwelling, now considered to be No.268A.

Your Sincerely,

Phil Huffer B.SC (Hons) MIOA
Principal Consultant

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| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CONTRACT TITLE:** | | 268 Upper Shoreham Road | | | | | | | | | | | | |
| **SOUND SOURCE:** | | Kitchen extract fan | | | | | | | | | | | | |
| **MAKE & MODEL:** | | Ruck MPS 450 E4 20 | | | | | | | | | | | | |
| **From:** | | Exhaust air | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | OCTAVE BAND CENTRE FREQUENCY (Hz) | | | | | | | | |
| OVERALL Lw | | | | | | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | dBA |
| 1 | | | Fan sound power | | | 75 | 80 | 73 | 65 | 65 | 64 | 60 | 51 | 72 |
| 2 | | | Grille area | 1.000 | | | | | | | | | | |
| 3 | | | Lw at grille | | | 75 | 80 | 73 | 65 | 65 | 64 | 60 | 51 | 72 |
| 4 | | | | | | | | | | | | | | |
| 5 | LENGTH (m) | C or R | x (mm) | x (mm) | | | | | | | | | | |
| 6 | 4.00 | C | 400-800 | | | 0.28 | 0.28 | 0.28 | 0.40 | 0.64 | 0.64 | 0.64 | 0.64 | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | |
| 16 | Bends (Lined) | | | | | | | | | | | | | |
| 17 | NUMBER | TYPE | SIZE (mm) | | | | | | | | | | | |
| 18 | 1 | 90 | 0400-0500 | | | 0.00 | 1.00 | 5.00 | 16.00 | 18.00 | 16.00 | 17.00 | 17.00 | |
| 19 | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | |
| 25 | BRANCHES | | | | | | | | | | | | | |
| 26 | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 27 | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | |
| 29 | DUCT X-SECTIONAL AREAS | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | |
| 32 | OTHER ATTENUATION | | | | | | | | | | | | | |
| 33 | Lindab SLU 315-1200 (50mm insulation) | | | | | 2 | 3 | 8 | 20 | 39 | 16 | 9 | 10 | |
| 34 | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | |
| 37 | END REFLECTION SIZE (m) | | | | | | | | | | | | | |
| 38 | 0.101 – 0.150 | | | | | 10 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | |
| 39 | | | | | | | | | | | | | | |
| 40 | | | | | **Lw LEAVING SYSTEM** | 63 | 70 | 57 | 29 | 7 | 31 | 33 | 23 | 55 |
| 41 | Room Volume ($m^3$) | | | 100000 | | -36 | -36 | -36 | -36 | -36 | -36 | -36 | -36 | |
| 42 | Mid-Frequency RT (s) | | | 0.05 | | -13 | -13 | -13 | -13 | -13 | -13 | -13 | -13 | |
| 43 | | | | | **REVERBERANT SPL** | 14 | 21 | 8 | -20 | -42 | -18 | -16 | -26 | 6 |
| 44 | Distance to Listener | | | 2.5 | | -19 | -19 | -19 | -19 | -19 | -19 | -19 | -19 | |
| 45 | Q=1 in free space | | | 0.086 – 0.220 | | 1 | 3 | 5 | 7 | 8 | 8 | 9 | 9 | |
| 46 | Q=2 flush with surface | | | n/a | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 47 | Q=4 junction with 2 surfaces | | | n/a | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 48 | | | | | **DIRECT SPL** | 45 | 54 | 43 | 17 | -4 | 20 | 23 | 14 | 40 |
| 49 | | | | | **RESULTANT TOTAL SPL** | 45 | 54 | 43 | 17 | 0 | 20 | 23 | 14 | 40 |