

MEMO P21-164 -M01v1

Project	German Doner Kebab Restaurant, 311-313 Wilmslow Road, Fallowfield
Date	24 May 2022
To	Sajjad Maqsood, GB MCR Group Ltd
From	Donald Quinn BSc FIOA, Managing Director
Subject	Assessment of noise from new fixed plant/equipment

Following your recent instructions, we have carried out an assessment in relation to the discharge of condition 4b of Manchester City Council planning consent ref. 129225/FO/2021 for installation of new fixed plant/equipment at the rear of the German Doner Kebab restaurant (formerly Revolution) at 311 – 313 Wilmslow Road in Fallowfield, Manchester.

Noise Criteria

Condition 4 of planning consent 129225/FO/2021 is as follows:

a) Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location. Prior to commencement of the use hereby approved the scheme shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the site.

b) Prior to occupation of the development a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.

Discharge of condition 4a was approved on 2 July 2021. The approved acoustic report referenced in condition 4b is understood to be Sound Planning report ref. J04352R2, dated 10 May 2021, which was submitted in connection with the planning application. The Sound Planning report adopts the upper floor residential windows on the rear elevation of the building (i.e. directly above the front section of the German Doner Kebab premises) as the relevant noise sensitive premises. As such, this assessment focuses on the same location.

Planning condition 4 makes clear that the noise control criteria is to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) levels. It is however noted that the Sound Planning report adopts the lowest background values measured for daytime and night-time periods outside the upper floor residential windows

on the rear elevation of the building). As such, in order to be consistent with the requirements of the planning condition, we have analysed the results of the Sound Planning noise survey as shown in Appendix 6 of that report to determine the relevant ‘typical’ background noise levels for daytime and night-time periods

Table 1: ‘Typical’ background noise levels outside upper floor rear elevation apartment windows

Period	Background noise levels in dB L_{A90}	
	Arithmetic mean	Mode
Daytime (07:00 – 23:00)	44	42
Night-time (23:00 – 07:00)	40	39

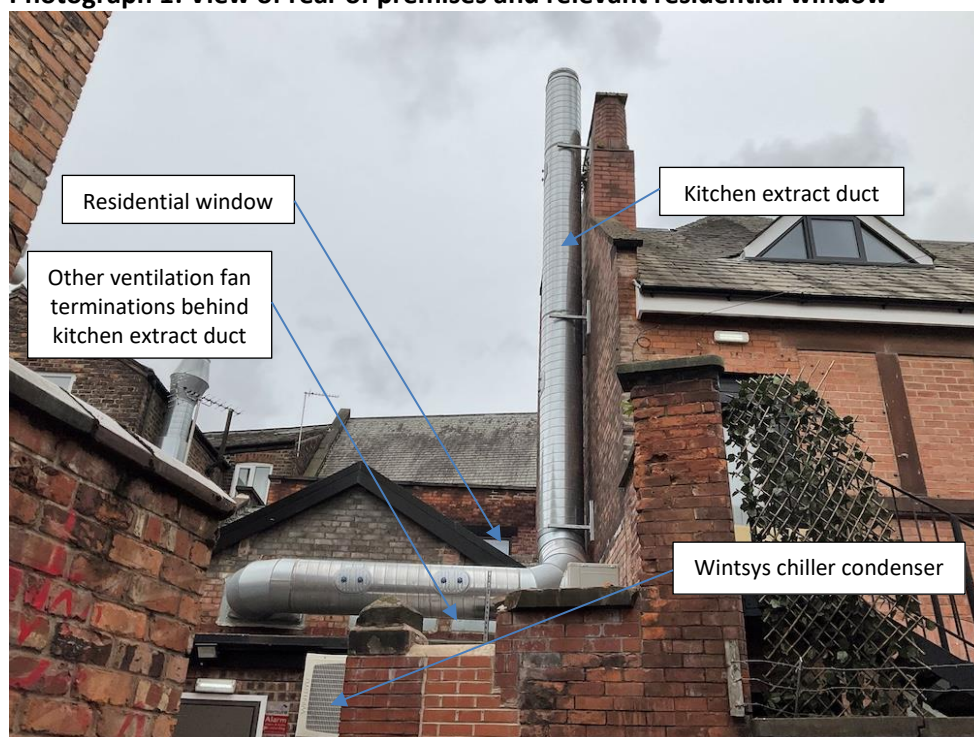
Since the German Doner Kebab restaurant trades until midnight, the night-time period is the key period. On the basis of the above, we have adopted a noise limit of 34 dB $L_{A_{r,Tr}}$ (i.e. 39 dB L_{A90} – 5 dB) outside the residential windows on the rear elevation of the upper floors of the building at 311 – 313 Wilmslow Road.

Description of New External Plant/Equipment

The Sound Planning report is understood to have been based upon plant/equipment anticipated to be required for a typical German Doner Kebab restaurant rather than being specific to the Wilmslow Road site. The new equipment that has actually been installed is understood to be slightly different and less extensive than was described and assessed in the Sound Planning report. It has not been necessary to install the heat pumps referred to in the Sound Planning report as it has been possible to retain and re-use existing equipment that was previously installed by the former Revolution bar at the site. Also, the precise location, orientation and details of some of the ventilation fan terminations vary from the proposals.

An inspection of the equipment was carried out by Hepworth Acoustics during the morning of 19 May 2022. A view of the rear of the premises and the relevant residential window is shown in Photograph 1 below:

Photograph 1: View of rear of premises and relevant residential window



It was noted that all fan units are located inside the building and above suspended ceilings such that it was not possible to inspect the fans themselves. All ventilation fans (except the kitchen extract fan) have circular louvred terminations on the rear gable end elevation of the building as indicated in Photograph 2 below:

Photograph 2: Ventilation fan terminations on rear gable end elevation



Photograph 3 shows the two identical Wintsys condensers (serving the chiller and freezer) mounted onto the rear wall of the single storey rear extension:

Photograph 3: Wintsys



Plant/Equipment Source Noise Measurements

It is not readily practicable to demonstrate compliance with the planning noise criterion by measuring noise levels outside the identified upper floor apartment window (since the noise control standard required is 5 dB below the typical background level). As such, we have instead carried out a series of source noise measurements of each item of equipment operating in isolation, and then applying corrections for distance attenuation, screening etc. in order to calculate the likely overall combined resulting noise level outside the apartment window.

The measurements were carried out during the morning of Thursday 19 May 2022 prior to the restaurant opening so that each item of equipment could be operated in isolation. The measurements were carried out using a B&K 2250 'Class 1' sound analyser (serial no. 3011706) that was field-calibrated before and after the measurements with no variance observed. The sound analyser was hand-held or tripod mounted at 1m from each item of equipment with multiple short-term measurements taken in each case. Residual noise measurements (i.e. measurements with all German Doner Kebab equipment switched off) were also taken so that any relevant corrections for extraneous noise could be applied. The weather conditions during the noise measurements were mild (approx. 14°C), generally calm, dry and overcast. Note that it was not possible to measure noise from the kitchen extract termination as this is at very high level and well above the apartment windows. In our view, due to directivity and distance corrections, it is unlikely that there will be any significant contribution to noise outside the apartment windows from this termination, although duct noise break-out could be more significant. Due to the presence of significant residual noise including transient noises such as local road traffic, voices from other commercial units etc., the measured L_{90} values have been used in all cases as they are considered to be representative of the generally steady noise from the equipment whilst helping to exclude extraneous transient noise.

The results are summarised as follows:

Table 2: Measured source equipment noise levels

Equipment	Measured source noise level in dB L_{Aeq} at 1m
Kitchen extract fan ductwork	46
Kitchen supply fan intake termination	48
Basement extract fan exhaust termination	42
Toilet extract fan exhaust termination	72*
Wintsys condenser	52

*Note – there was an obvious maintenance issue with the toilet extract fan (possibly bearing issues) resulting in significant extraneous elevated noise levels. We would expect a substantial noise reduction following appropriate remedial works.

Calculation of Corresponding Noise Levels Outside Apartment Windows

The apartment windows on the rear elevation of upper floors of the building have no view of any of the equipment except the kitchen extract fan ductwork. As such, in addition to distance attenuation, significant screening attenuation will occur. The directivity characteristics of the louvred ventilation fan terminations on the rear gable end elevation further reduces the corresponding noise levels outside the apartment windows.

For the ventilation fan louvred terminations in the rear gable end, we have accounted for point source distance attenuation, a nominal 10 dB of screening attenuation and a further 5 dB for directivity losses. For the Wintsys condensers, we have accounted for point source distance attenuation and a nominal 10 dB of screening

attenuation. For the kitchen extract ductwork, we have assumed line source distance attenuation (since the duct extends all the way up the external wall) and no screening.

Taking the above into account, we have calculated the following noise levels outside the apartment windows:

Table 3: Calculated equipment noise levels outside apartment windows

Equipment	Calculated resulting noise level in dB L_{Aeq} at 1m
Kitchen extract fan ductwork	38
Kitchen supply fan intake termination	16
Basement extract fan exhaust termination	10
Toilet extract fan exhaust termination	39
Wintsys condensers (2 no.)	25
Overall	40

Table 3 indicates that corresponding noise levels outside the upper floor apartment windows are predicted to be 40 dB L_{Aeq} . The contribution from the majority of equipment is anticipated to be low, with the toilet extract fan in its current faulty state and the kitchen extract ductwork being the only two significant contributors.

Our measurements did not indicate any significant tonal noise characteristics in any of the equipment. Whilst the condensers will operate intermittently as required, the contribution to noise levels outside the upper floor apartments windows is well below that from the steady noise contribution from the ventilation fans. Therefore, overall, we do not consider that any character corrections are warranted. As such, we conclude that the current rating level of noise from the equipment is 40 dB $L_{A,Tr}$. This means that a 6 dB reduction in noise is required, with the focus being on the kitchen extract ductwork and the toilet extract fan.

Recommendations

We recommend that the toilet extract is inspected by an appropriate mechanical services engineer and repaired or replaced in order to ensure that it operates quietly as intended. Based upon the measurements of the other fan terminations at the site, we anticipate that a correctly operating toilet extract fan would be around 15 dB quieter than was measured. As such, subject to appropriate servicing and repair or replacement, toilet extract fan noise will be adequately addressed.

For the kitchen extract external ductwork, we recommend that it is lagged along its entire length (i.e. from where it exits the building to the termination) with a proprietary acoustic duct lagging - we note this was one of the recommendations of the original Sound Planning assessment. We recommend CMS Danskin Superlag Prime 10/50 or equivalent with a thickness of 50mm and a surface mass of 10 kg/m². The duct lagging should be installed fully in line with the manufacturer's guidance to ensure that it is effective.

Subject to the above recommendations, we conclude that noise from the new external plant/equipment to the rear of the German Doner Kebab at 311-313 Wilmslow Road, Fallowfield will meet the noise control requirements of planning condition 4b.