www.gdslincolnshire.co.uk
gdscateringlaundry@gmail.com
Napier House, 70-76 Cleethorpes Road, Grimsby, DN31 3EF

Est. 1980
GDS GROUP
CATERING ENGINEERING

Noise Assessment Report – Centrifugal Fan

Premises Address:
232 Northumberland Avenue, Reading, RG2 7QA

Summary

We have been chosen by the proprietor of 232 Northumberland Avenue, Reading to install a fish and chip frying range in his commercial premises, which will have the following mechanical plant of a centrifugal fan installed internally of the premises with only the ducting pipe on show via the flat roof area.

We have recently visited the premises and spent an entire day from 11.30am till 7pm to assess the environmental noise at the site in order to determine, monitor and assess background noise levels. We have also put into account the nearest noise plants at the properties closest to 232 Northumberland Avenue, Reading, which are in direct line of sight.

In addition to spending the entire day at the premises, we have taken the liberty of putting the centrifugal fan internally inside the shop, where it will be positioned to the rear of the shop.

The premises above 232 Northumberland Avenue, Reading have been identified as residential premises above the site, which will be occupied by staff. The proposed centrifugal fan to sit between windows on the flat roof and 300mm spiral ducting to be connected (see appendix A).

The results of the noise assessment were considered beyond reasonable given the location of the measurement, the passing traffic, the businesses with existing mechanical plant and any other existing ambient noises within the local vicinity.

Introduction

The site premises of 232 Northumberland Avenue is proposing to internally install a centrifugal fan – this the fish frying range extraction system used on only fish frying ranges, at the rear of the premise, which will be positioned inside of the building. This report will cover the following areas:

- To determine prevailing environmental noise levels affecting surrounding properties due to nearby noise plants and sources (e.g. road traffic, birds, planes, school children, roadwork's etc.)

- Based on the above, to present noise emission limits in accordance with the requirements of Reading council's policy.

Site description

The site of 232 Northumberland Avenue, Reading, is part of a mixed commercial parade, which has a residential population on the opposite side of the road.

To the rear of the building, where the proposed centrifugal fan will be positioned, the nearest noise plant is a kitchen extraction system next door to 232 Northumberland Avenue, Reading. The nearest kitchen extraction system to that one is also another one next door. The premises where these kitchen extraction systems currently sit in position, serve as a kebab shop in one of the premises and a Chinese takeaway in the premises next door. I understand these commercial premises have been food outlets for a number of years with no complaints from residents.

Both premises mentioned have a flu terminating 1.5m above the ridge of the roofline.

It can be assumed that if there is an indication of the specific sound source having a low impact at these premises, it can be assumed it will be met at other properties of equal distance and or those further away.

Noise survey and assessment

The noise measurement was taken only at the rear of the premises on Friday 12th April 2019.

I can advise that the centrifugal fan was powered by a simple plug connection due to the fact that it operates at one speed.

The first of the noise survey was undertaken between 12pm – 13.30pm, with intervals of 20 minutes. This time is regarded as lunch time hour by the proprietor and a sensitive time to see if the use of the frying range makes a more noise generation of the frying range. The equipment used was a **Uni –T UT353 sound meter,** which was recorded from the centrifugal fan in operation at distance of 1 m, then 2 m and 3 m.

Prior to the fan operating, ambient background noises was also measured throughout the survey.

The nearest residential premises occupied by tenants is approximately 15 meters from the plant in question. It is important to highlight that existing plant belonging to the Chinese takeaway is of closer proximity to the residential premises in question – in fact 2m from the nearest window.

It needs to be noted that weather conditions throughout the measurement was slightly cold, light wind and generally clear between the hours of 11.30am to 4pm approximately. These conditions did not deter the impact of the noise being any different.

The location of the noise measured was approximately 18 meters from the main road with minimal noise related to additional plant machinery (neighbours) during the time of 12pm to 13.30pm.

Time	Ambient sound noise	Centrifugal fan in operational	Distance
12.00pm	54.1 dB	54.7 dB	1m from fan
12.30pm	53.2 dB	53.9 dB	2m from fan
12.50pm	52.7 dB	52.9 dB	3m from fan
13.10pm	54.5 dB	54.8 dB	1m from fan
13.30pm	54.6 dB	54.7 dB	2m from fan

It is important to note that between the hours highlighted above, there are catering vans and staff walking in and out of the vans, this includes moving items and stock removal/loading.

The distance measured above was from the flat roof only as well as lower ground which is further away from the fan externally.

Given that the noise survey was manned, ambient and background noise sources were noted as stated above from distant traffic noise, low level mechanical plant noise, occasional aircraft and a constant stream of residential vehicle movements.

After analysis of the data no significant abnormal noise source were identifiable. It is considered that the measured noise levels are reasonable given the location of the measurement position and the fact that makes no difference to the external noise.

Another set of measurements was also undertaken on the lower ground between the hours 4-6pm. This timing is deemed important as due to the fact that the other premises in close proximity with mechanical plants are preparing to open.

The measurements where taken 25 minutes at each interval. Its important to note that there is an increase in both footfall from in front of the parades of shops, vehicles passing and additional plant apparatus in use.

It is important to note that the measurements taken from 8m -10m is the approximate distance from the nearest residential flat (please see appendix A). The purpose of this measurement is to highlight the fact that the other 2 mechanical plants operated by the other 2 food takeaways are also in operation at the same time. Therefore any ambient measurement is judged on noises already existing. There is also additional background noises from people entering in and out of the back doors and doors left open for fresh air, which brings additional

noise factors into the ambience. The weather is also still cold, light wind and slight evening darkness.

Please see below a set of measurements made between 4pm – 6pm. It needs to be notes that the distance from the fan has been calculated from standing on the ground floor to the position of the fan at various distances:

Time	Ambient sound noise	Centrifugal fan in operational	Distance
16.00pm	55.9 dB	55.9 dB	6m from fan
16.30pm	58.8 dB	58.9 dB	6m from fan
17.00pm	55.8 dB	55.9 dB	8m from fan
17.30pm	59.5 dB	58.9dB	8m from fan
18.00pm	59.2 dB	59.6 dB	10m from fan

Conclusion

GDS group has undertaken an environmental noise survey at the site in order to determine if background noise levels are going to be any less representative of the nearest noise sensitive properties.

The operation of the centrifugal fan system, indicates to creating a low impact – in fact no difference in the sound/noise when assessed from the nearest residential property. In fact during peak times in the morning, the noise difference does not exceed above 10 dB.

All worst-case scenarios have been applied to the assessment. The predicted maximum operating noise level of the kitchen extraction system is expected to comply with Reading council.

In addition to the control of noise transfer, it is important to consider the transfer of noise as vibration. This can be transferred to adjacent properties as well as any sensitive areas of the same building. Vibration from the system is not expected, due to the fact that the fan house is of a rectangular insulated shape, however, as a precaution, the plant should wherever possible be installed with isolators incorporating rubber pads to deflect any additional airborne noise transfer.

Appendix A

The plant machinery of the extraction kitchens of the kebab shop and chinese takeaway.

The above if the proposed position of the ventilation ducting system

pipe only, sitting in between the windows with proposal of 300mm spiral ducting.