

Wendy Strangeway

From: Helen Webster
Sent: 16 June 2015 09:01
To: Planning
Subject: FW: Noise impact assessment - extraction unit at Victoria Hotel
Attachments: NIA 6060-15-5286-v1 Victoria Hotel.pdf; Invoice 5701.pdf

Miss Helen Webster
 Planning Officer, Development Management

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From: Victoria Hotel
Sent: 16 June 2015 08:31
To: Helen Webster
Subject: Fw: Noise impact assessment - extraction unit at Victoria Hotel

Helen,

Report as promised, no issues as thought.

Regards

Victoria Hotel
 Station Road
 Robin Hoods Bay
 Whitby
 North Yorkshire
 YO22 4RL
 01947 880205

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From: Thomas Crabb
Sent: Friday, June 12, 2015 6:00 PM
To:
Cc: 'Jonathan Rigg'
Subject: FW: Noise impact assessment - extraction unit at Victoria Hotel

Andrew

Please find attached the noise impact assessment for the above site.

Many thanks,
 Tom

Thomas Crabb / Acoustic Consultant

Environmental Noise Solutions Ltd.
Doncaster Business Innovation Centre, Ten Pound Walk, Doncaster, DN4 5HX
<http://www.environmental-noise-solutions.co.uk>



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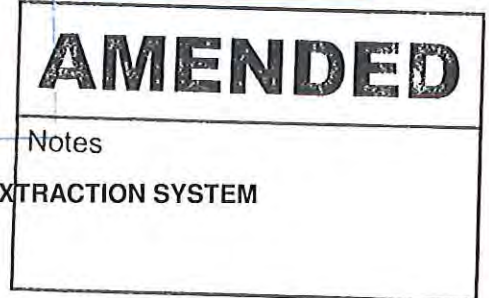
L. YAMKIPPA
16 JUN 2015

Our ref: NIA/6060/15/5826/v1/Victoria Hotel

Mr Andrew Megan
Victoria Hotel
Station Road
Robin Hood's Bay
Whitby
North Yorkshire
YO22 4RL

Sent by email only

Dear Sirs



**NOISE IMPACT ASSESSMENT FOR A REPLACEMENT KITCHEN EXTRACTION SYSTEM
VICTORIA HOTEL, STATION ROAD, ROBIN HOOD'S BAY**

1.00 INTRODUCTION

1.01 Environmental Noise Solutions Limited has been commissioned to undertake a noise impact assessment for a replacement kitchen extraction system at the Victoria Hotel, Station Road, Robin Hood's Bay.

1.02 The purpose of the noise impact assessment was to:

- Establish the ambient and background noise level at the nearest noise sensitive property(s)
- Establish the noise level at the nearest noise sensitive property(s) due to the replacement kitchen extraction system
- Assess the noise impact associated with the replacement kitchen extraction system

1.03 This report details the methodology and results of the assessment.

1.04 This report has been prepared for the Victoria Hotel for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult the Victoria Hotel and ENS as to the extent to which the findings may be appropriate for their use.

1.05 A glossary of acoustic terms used in the main body of the text is contained in Appendix 1.

2.00 APPLICATION SITE SETTING AND REPLACEMENT KITCHEN EXTRACTION SYSTEM

2.01 The nearest noise sensitive property is 'Lynn Field', which is located to the north of the Victoria Hotel.

2.02 It is understood that:

- The kitchen extraction system consists of an intake and extract fan
- The kitchen extraction system may be operated at a duty ranging from 0 (off) to 1 (full duty)
- Adequate intake and extract is achieved with the kitchen extraction system set to 0.5 intake (50 percent duty) and 0.5 extract (50 percent duty)
- The kitchen closes at circa 2100 hours and the kitchen extraction system is turned off by around circa 2130 hours

3.00 NOISE SURVEY

- 3.01 In order to establish the noise level at the nearest noise sensitive property(s) due to the replacement kitchen extraction system, a noise survey was undertaken during the evening of Wednesday 9th June 2015.
- 3.02 For the purpose of the assessment, two monitoring positions were adopted as follows (see Appendix 2):
- MP1 was located in a reflective field at circa 4 metres height outside 'Lynn Field'
 - MP2 was located in a free field on the adjacent flat roof of the hotel
- 3.03 Noise measurements were undertaken using a Bruel & Kjaer 2250 Type 1 integrating sound level meter. The measurement system calibration was verified immediately before the commencement of the measurement sessions and again at the end, using a Bruel & Kjaer Type 4231 calibrator. No drift in calibration level was noted. Measurements consisted of A-weighted broadband parameters, together with linear third octave band L_{eq} levels.
- 3.04 The following table contains a summary of the noise measurement data, rounded to the nearest decibel (note: noise measurement data at MP1 includes a – 3 dB façade correction in order to establish the free field noise level).

Table 3.1 – Noise Measurement Data

Position	Date	Time	L_{Aeq} (dB)	L_{A90} (dB)	Comment
MP1	11/06/2015	2118-2133	52.9	51.3	Extract 100 percent duty, Intake 100 percent duty
MP1	11/06/2015	2136-2146	41.4	39.7	Extract 50 percent duty, Intake 50 percent duty
MP1	11/06/2015	2148-2158	40.7	38.8	Extract 50 percent duty, Intake 25 percent duty
MP2	11/06/2015	2200-2210	40.1	37.1	Extract off, Intake off

- 3.05 For reference the extract fan is clearly dominant over the intake fan.
- 3.06 For a continuous noise source such as the kitchen extraction system, the equivalent continuous noise level ($L_{Aeq,T}$) equates closely to the background noise level ($L_{A90,T}$). As such, the noise levels associated with the kitchen extraction system should be considered in terms of L_{A90} as the use of this parameter eliminates the influence of other intermittent sources.
- 3.07 On the basis of the noise measurement data, the following conclusions are drawn:
- The noise level associated with the extract at 100 percent duty and the intake at 100 percent duty is circa 51 dB(A) at the nearest noise sensitive property (51.3 – 37.1 dB L_{A90})
 - The noise level associated with the extract at 50 percent duty and the intake at 50 percent duty is circa 36 dB(A) at the nearest noise sensitive property (39.7 – 37.1 dB L_{A90})
 - The noise level associated with the extract at 50 percent duty and the intake at 25 percent duty is circa 34 dB(A) at the nearest noise sensitive property (38.8 – 37.1 dB L_{A90})

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4.00 NOISE IMPACT ASSESSMENT CRITERIA

- 4.01 In terms of noise impact assessment criteria, Paragraph 123 of the National Planning Policy Framework states that planning policies and decisions should aim to *'avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development'*.
- 4.02 Planning Practice Guidance specifically dealing with noise was uploaded to the Government's Planning Portal in March 2014 as an accompaniment to the National Planning Policy Framework. This guidance is summarised herein.
- 4.03 The guidance states that noise needs to be considered when new developments may create additional noise. Whilst noise can override other planning concerns, neither the Noise Policy Statement for England nor the National Planning Policy Framework (which reflects the Noise Policy Statement for England) expects noise to be considered in isolation, separately from the economic, social and other environmental dimensions of proposed development.
- 4.04 In order to determine noise impact, local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:
- Whether or not a significant adverse effect is occurring or likely to occur
 - Whether or not an adverse effect is occurring or likely to occur, and
 - Whether or not a good standard of amenity can be achieved
- 4.05 In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.
- 4.06 In terms of Observed Effect Levels:
- No Observed Adverse Effect Level (NOAEL) – This is the level of noise exposure below which no effect at all on health or quality of life can be detected
 - Lowest Observed Adverse Effect Level (LOAEL) – This is the level of noise exposure above which adverse effects on health and quality of life can be detected, and
 - Significant Observed Adverse Effect Level (SOAEL) – This is the level of noise exposure above which significant adverse effects on health and quality of life occur
- 4.07 At the lowest extreme, when noise is not noticeable, there is by definition no effect. As the noise exposure increases, it will cross the no observed effect level as it becomes noticeable. However, the noise has no adverse effect so long as the exposure is such that it does not cause any change in behaviour or attitude. The noise can slightly affect the acoustic character of an area but not to the extent there is a perceived change in quality of life. If the noise exposure is at this level no specific measures are required to manage the acoustic environment.
- 4.08 As the exposure increases further, it crosses the lowest observed adverse effect level boundary above which the noise starts to cause small changes in behaviour and attitude, for example, having to turn up the volume on the television or needing to speak more loudly to be heard. The noise therefore starts to have an adverse effect and consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise).
- 4.09 Increasing noise exposure will at some point cause the significant observed adverse effect level boundary to be crossed. Above this level the noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present. If the exposure is above this level the planning process should be used to avoid this effect occurring, by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused.

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4.10 At the highest extreme, noise exposure would cause extensive and sustained changes in behaviour without an ability to mitigate the effect of noise. The impacts on health and quality of life are such that regardless of the benefits of the activity causing the noise, this situation should be prevented from occurring.

4.11 The following table summarises noise exposure hierarchy, based on likely average response.

Table 4.1 – Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not Noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
		Lowest Observed Adverse Effect Level	
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
		Significant Observed Adverse Effect Level	
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

4.12 The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation. These factors include:

- The source and absolute level of the noise together with the time of day it occurs
- For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise
- The spectral content of the noise (i.e. whether or not the noise contains particular high or low frequency content) and the general character of the noise (i.e. whether or not the noise contains particular tonal characteristics or other particular features)
- The local acoustic character of the area

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4.13 In addition to the National Planning Policy Framework Planning Practice Guidance on Noise, further useful contextual guidance is provided in British Standard 4142:2014 'Methods for Rating and Assessing Industrial and Commercial Sound' (BS 4142).

4.14 With respect to sound from fixed installations which comprise mechanical and electrical plant and equipment, guidance is provided in BS 4142 which states:

The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. Typically, the greater this difference, the greater the magnitude of the impact. For example:

- *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context*
- *A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context*
- *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context*

Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.

5.00 NOISE IMPACT ASSESSMENT

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5.01 It is evident that the extract fan should not operate on 100 percent duty. Liaison with management at the Victoria Hotel has confirmed that extract fan is only required to operate at 50 percent duty.

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is only required to operate at

5.02 The noise level associated with the extract fan operating at 50 percent duty has been measured / calculated at circa 36 dB(A) at the nearest residential properties (note: a tonal penalty is not applicable). This is comparable to the background noise level and thus indicative of a low impact, subject to context.

5.03 The noise level associated with the extract fan operating at 50 percent duty is relatively low at the nearest residential properties such that good resting and sleeping conditions would be maintained with a partially open window.

5.04 In accordance with the National Planning Policy Framework Planning Practice Guidance on Noise, such a relatively low noise level represents a No Observed Adverse Effect Level since: a) the noise can be heard, but does not cause any change in behaviour or attitude; and b) the noise can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.

5.05 The assessment is wholly consistent with subjective aural observations made during the course of the noise surveys.

5.06 It is concluded that, subject to the extract fan being operated at 50 percent duty, the potential noise impact is negligible.

I trust the foregoing is sufficient for your needs. Should you have any queries regarding the above, please do not hesitate to contact me.

Yours sincerely

Jonathan Rigg
MIOA, Diploma in Acoustics and Noise Control, MEng (Hons)
Environmental Noise Solutions Limited

cc File

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Appendix 1 Glossary of Acoustic Terms

Sound Pressure Level (L_p)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 μ Pa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where L_p = sound pressure level in dB; p = rms sound pressure in Pa; and p_0 = reference sound pressure (20 μ Pa).

A-weighting Network

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T, has the same mean-square sound pressure as a sound that varies with time. $L_{Aeq, 16h}$ (07:00 to 23:00 hours) and $L_{Aeq, 8h}$ (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

$L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T. $L_{A10, 18h}$ is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

$L_{A90, T}$

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T. L_{A90} is typically taken as representative of background noise.

$L_{AF \max}$

The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

Sound Exposure Level (SEL or L_{AE})

The energy produced by a discrete noise event averaged over one second, no matter how long the event actually took. This allows for comparison between different noise events which occur over different lengths of time.

Weighted Sound Reduction Index (R_w)

Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies (R_w is used to characterise the insulation of a material or product that has been measured in a laboratory).

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Appendix 2 Noise Monitoring Positions



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