

FOR THE
ATTENTION OF

The same request for noise information was recently made by Wigan MBC who were also advised by Lancashire CC in this matter. The information supplied to Wigan MBC satisfied both the LPA and the County council with regard to noise levels (Details of the Wigan application are included). In that particular case it was conceded that fans would not be left on for most of the time.

The Wigan approval relates to a poultry unit measuring 85.47m by 15.54m, giving a floor area of 1328m². There are residences in the immediate vicinity.

The application at Oakfield is for a building measuring 76.3mm by 8.2m plus a small packing unit of 18m by 6m. The overall floor area is thus 734m²

In addition the Wigan approval is for a free range egg unit where the sides of the building open to allow the birds out (and where noise can escape). The unit at Oakfield is for an "enriched cage" unit where the birds remain inside the building which is thus self - contained.

Noise report

Please find attached a report regarding noise levels relating to fans, the feeding hoppers and other matters. The report is based on data collected at the offices of the provider of the equipment (New Quip) in Northallerton and which has then been verified at 2 sites – one at Leens in the Lake District and one at Grange Farm in Northallerton

The building surveyed in the Lake District is somewhat larger than that at Oakfield being 94.5m by 18m with a ridge height of 6.7m. The attached report measured very low level background noise at Higher Sampool in the Lake District. The highest recorded night time noise level was 30dBA and the highest daytime recording was 42.8dBA. It is unlikely that the background noise levels at the Oakfield site will be any lower because of the presence of the A59.

In particular the following were recorded:-

1. Noise from 9 no fans at a 50m distance
2. Noise from 1 fan at a 20m distance
3. Noise from the feed auger (Operated for 5 mins, 4 times per day)

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The report concludes that at night only 1 fan will need to be operated and the noise level, at 20m, will be less than the background noise level

Feed blowers may exceed the background noise level but they will operate for very short periods and during the day

In the case of the Oakfield application vents are only proposed in the gable end of the building facing Shorley Road (None facing the A59 and residences)

Even so, the applicant will be content with a condition that noise from the ventilation fans shall not exceed background noise levels when measured at the nearest noise sensitive property (being the nearest dwelling)

Other machinery

Plant and machinery will comprise the silos and the conveyor belt for the collection of eggs

- The silos will be filled 2 times per month. They will be used to provide feed each day
- The conveyor belt is contained entirely within the building

The feed augurs_run for 5 to 10 minutes per day, 4 times per day only and when the birds are fed.

Each has a tiny 0.75kw or 1.1kw motor

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Hartley Planning & Development
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Our reference: A/10/74858
Your reference: A/10/74858
Please ask for: Mike Jones
Direct line: 01942 489138
Date: 15th November 2012

Dear Sir

Town and Country Planning Act 1990
Town and Country Planning (Development Management Procedure) (England)
Order 2010

Application Number: A/10/74858

Location: Maypole Equestrian Centre Park Lane Abram Wigan

Approved Outline Application: Outline application for the erection of free range egg production unit and 2no. feed bins (seeking approval of access, appearance, layout and scale).

I refer to the approved outline permission and the information submitted to the Council for the formal discharge of pre-commencement conditions. This letter details the discharge of planning conditions included on planning application A/10/74858.

Condition 1 specifies the time scale for compliance with the development. The condition cannot be discharged at this stage.

Condition 2 states prior to the commencement of development, approval shall be obtained from the LPA with respect to the reserved matter Landscape. The reserved matter application was submitted to the LPA dated the 6th April 2012 and was approved 23rd July 2012 (reference A/12/76889).

Condition 3 specifies the approved plans. The development must be carried out in full accordance with the approved plans.

Condition 4 states that all plant and machinery shall be enclosed with insulating material. The Council has received a scheme providing details of the insulation. Based upon the submitted information and additional monitoring undertaken by Mr P. Bentley, Senior Scientific Officer – Wigan Council, the Council would recommend discharge of the

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condition. The insulation should be maintained at all times, and replaced in time to avoid any potential noise issues.

Condition 5 requests a scheme demonstrating the extraction of fumes and odours from the development. The Council are satisfied with the information submitted to the LPA which details the operation use of the fans, in order to discharge the scheme.

Condition 6 requests additional details for the disposal of manure and washing down facilities. The Council are satisfied with the information submitted and can discharge the condition. The scheme for the disposal shall be carried out in full accordance with the approved scheme.

Condition 7 and 8 refer to drainage on the site. Confirmation of how the site is being drained following the completion of works should be provided to the Local Planning Authority.

Condition 9 refers to the treatment of hardstanding. The works shall be carried out in accordance with the details indicated on the approved plans.

Condition 10 should be carried out through the operational use of the site.

Condition 11 refers to the improvement works to the right of way. The works shall be implemented in full accordance with the approved details prior to the building being brought into first use.

Condition 12. Details of the fencing, enclosures and gates have been submitted as part of the reserved matters application A/12/76889.

The Council reminds the applicant that the submitted schemes must be completed in full accordance with the approved details only, in line with each condition.

If you wish to discuss the matter please contact me on 01942 489138.

Yours faithfully



Mike Jones
Planning Officer

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ACOUSTIC REPORT



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CLIENT ADDRESS	Lawrence House, Levens, Cumbria. LA8 8EG
SITE ADDRESS	High Sampool, High Sampool Lane, Levens, Cumbria.
Planning Consultant	Planning Branch Ltd
REPORT	Poultry Unit Noise Impact Assessment
AUTHOR	C E Armstrong
Company	Scenic Acoustic & Vibration Engineering Ltd
Address	41 Clarence Rd, Barrow In Furness, Cumbria. LA14 5LS
Third Party Certification	Institute of Acoustics – Membership No. 44037 British Institute of Non Destructive Testing – PCN No. 300054
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1.0 INTRODUCTION

Scenic Acoustic and Vibration Engineering Ltd have been commissioned by Anthea Jones from Planning Branch Ltd, on behalf of their client Jonathon Mason, to carry out an assessment of the potential noise impact upon existing ambient noise levels at residential dwellings adjacent to the site of a proposed Poultry Unit at High Sampool in the Levens Valley, Cumbria.

A Planning Application has been submitted to South Lakeland District Council (Ref No: SL/2011/0647),

This noise assessment is based generally on BS4142: 1997 'Method Of Rating Industrial Noise affecting mixed residential and industrial areas', and other noise criteria, as agreed with Graham Metcalf of SLDC.

The purpose of this assessment is to establish the likely noise levels generated at the boundary of the *nearest noise sensitive property* (NNSP) from the proposed 39,000 bird poultry unit adjacent to the existing farm complex at High Sampool, Levens, and then to predict the impact on the local amenities in order to ascertain the *likelihood of complaints* from the residents of the NNSP.

The assessment procedure generally followed to guidance provided in Planning Policy Guidance 24 (PPG24), BS4142: 1997; BS8233: 1999; and World Health Organisation guidance notes (WHO). Assessment has been made of both daytime (07:00 – 23:00 Hrs) and night time (23:00 – 07:00 Hrs) noise climates.

All predictions are based on the A weighted, equivalent continuous sound pressure Level ($L_{Aeq,T}$), and the residual background (L_{A90}) noise levels measured at Position P1 (see Appendix C and D respectively for logged night time and day time graphical results).

Representative machinery A weighted, equivalent continuous sound pressure Levels ($L_{Aeq,T}$) were measured at an existing Poultry Unit, at Grange Farm, Hornby, Gt Smeaton, (See Appendix F for 1/1 octave band graphical results) and also at New Quip's premises in Northallerton (See Appendix E for 1/1 octave band graphical results). The proposed Poultry Unit at High Sampool is thought to be similar in both size and nature to the Unit at Northallerton therefore measurements were considered to be representative of a modern 39,850 bird Poultry Unit.

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2. ASSESSMENT CRITERIA

2.1 LOCAL AUTHORITY CRITERIA

Graham Metcalfe (EHO) of South Lakeland District Council (SLDC) issued an internal Memorandum to Eleanor Huddleston (Planning Officer) detailing his concerns regarding the likely noise impact on the Nearest Noise Sensitive Property (NNSP) from a number of ventilation fans proposed for the Poultry Unit which will be required for the welfare of the birds.

Other concerns raised by SLDC Local Authority included the likely noise impact from forklift trucks reversing beepers and also the noise nuisance caused by the blowing of feed into the hoppers. SLDC have stated that the practice of blowing of feed in to hoppers must only be performed during the daytime hours.

The Local Authority have subsequently stipulated that the assessment be carried out in accordance with BS4142:1997-'Method of rating industrial noise affecting mixed residential and industrial areas'

2.2 BS4142:1997 - RATING INDUSTRIAL NOISE AFFECTING MIXED RESIDENTIAL AND INDUSTRIAL AREAS.

The effect of industrial noise on the nearest noise sensitive residential property was assessed in accordance with BS4142:1997 - Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas.

This standard describes a method of determining the level of a noise of an industrial nature, together with procedures for assessing whether the industrial noise source is likely to give rise to complaints from persons living in the nearby area.

BS4142 allows for the contribution of the residual noise to be logarithmically subtracted from the measured ambient noise level (with specific noise present) before the Rated noise level is calculated.

$$\text{Specific Noise Level} = 10 \log(10^{\frac{\text{ambient}}{10}} - 10^{\frac{\text{Residual}}{10}}) = \text{dB(A)}$$

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The standard may be thought of as a procedure for comparing the equivalent continuous, A weighted sound pressure level ($L_{Aeq,T}$) from industrial noise sources with the existing background (L_{A90}) noise level in the absence of the industrial noise, for determining the likelihood of complaints.

In accordance with BS4142:1997 the background noise level (L_{A90}) is the A weighted sound pressure level which is exceeded for 90% of the given time interval. The Specific noise level is the equivalent continuous A weighted sound pressure level ($L_{Aeq,T}$) produced by the noise source at the assessment position over a given time period. The residual noise is the $L_{Aeq,T}$ of the ambient noise with the absence of the specific noise.

The standard states that where a noise source is considered to have a distinctive tonal or impulsive nature a +5dB correction factor should be added to the specific noise level. This +5dB correction should be applied if one or more of the following acoustic features occur, or are expected to be present.

- The noise contains a distinguishable, discrete, continuous tone (whine, hiss, screech, hum, etc).
- The noise contains distinct impulses (bangs, clicks, clatters, or thumps).
- The noise is irregular enough to attract attention.

This corrected level is known as the Rating Level or Corrected Noise Level (CNL).

The $L_{A90,T}$ background noise level is then subtracted from the rating level to establish the likelihood of complaints.

According to BS4142:1997, a rating level of

- 10dB(A) or more above the background noise level is an indication that complaints, attributable to the operation of the noise source are likely.
- 5dB(A) above the background noise level is of marginal significance.
- 10dB(A) below the background noise level is a positive indication that complaints, attributable to the operation of the noise source are unlikely.

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3. SITE

3.1 HIGH SAMPOOL

High Sampool is located on Sampool Lane on the Levens Mosses. This is approximately 625m south of the A590 carriageway between the M6 motorway and Barrow in Furness. The site is currently bounded by open agricultural land and woodland in all directions; with a mix of agricultural properties, and residential properties to the north east, east and to the southeast. There is also a residential caravan park located to the southwest and a further residential property (High Sampool) to the west. Only High Sampool was the only property considered to be near enough to the site to be influenced by noise.

The predominant day time noise sources affecting the existing site are attributable to traffic noise activities from the A590 carriageway to the north. Other noise sources noted were from the occasional passing of light vehicles and tractors travelling along Sampool Lane. All other noise sources noted were from natural sources such as bird song and stag calls (at night).

There were no other significant noise sources noted during the assessment periods.

The proposed layout of the site is for the Poultry Building to be located to the north of the site adjacent to the orchard, and at a distance of 52m from the nearest boundary of High Sampool. The building has a footprint area of 1701m² (94.5 x 18m) with a ridge height of 6.7m. There are to be 2x feed silos (hoppers), emptied via a single feed Auger, located at the north side of the building at a distance of 138m from the nearest boundary of High Sampool (NNSP).

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3. SITE WEATHER CONDITIONS AND TOPOGRAPHY

3.1 WEATHER CONDITIONS – HIGH SAMPOOL

Measurement positions P1 - Weather conditions on each day were dry but overcast, with a light westerly wind ($<5\text{ms}^{-1}$). During the night time assessments, ambient air temperatures for each assessment were 4°C on the 7th March, 5°C on the 16th April, and 4°C on the 22nd April 2011.

Weather conditions during the daytime assessments were dry with low cloud cover, with a very light south westerly wind ($<5\text{ms}^{-1}$). ambient air temperatures for each assessment were 16°C on the 18th August 2011.

During each survey, the wind velocity was $<5\text{m/s}^{-1}$ and relative humidity was approximately 75%.

3.2 WEATHER CONDITIONS – NEW QUIP

Prevailing weather conditions at during the fan noise assessment at New Quips premises in Northallerton on the 2nd June 2011 were clear, and sunny. Ambient air temperature was 15°C. There was a very light breeze wind during measurement periods.

3.3 WEATHER CONDITIONS – MORRISONS FARM

Prevailing weather conditions at during the fan noise assessment at New Quips premises in Northallerton on the 2nd June 2011 were clear, and sunny. Ambient air temperature was 15°C. There was a very light easterly breeze during measurement periods.

3.4 TOPOGRAPHY

The development site is located off Sampool Lane on the Levens Mosses in the Levens Valley. The site is situated on flat land approximately 620m south of the A590 carriageway.

The area is mainly soft ground covering provided by the agricultural land for crops, and livestock grazing.

There is a small cops running to the north of the site with a scattering of light trees, and shrubbery.

There are no natural barriers between the proposed site and the NNSP. Although a planting area is proposed. This would help to reduce visibility to the poultry unit from the NNSP. However, the planting area will make little or no difference to the predicted noise levels.

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4. MEASUREMENT EQUIPMENT

All measurements were made using a Bruel and Kjaer Type 2250 Sound Level Analyser (SN:2645004) fitted with Bruel and Kjaer Type 4189 pre polarised condenser microphone (SN:2638766). Meeting the requirements of IEC:651 1979 Type 1 and IEC:804 1985 Type 1. The microphone was covered with an 80mm windshield for the duration of the assessment.

The measurement procedure commenced with a battery condition check on the sound level meter and acoustic callibrator. The meter was set to a fast and slow time weighting for all measurements.

The dynamic range of the sound level analyser was set to automatic so that the noise climate at the measurement location did not over range.

Calibration of the meter was checked before and after each survey. No significant drift was noted.

- A measurement period of 1 hour was set for all daytime noise measurements.
- A measurement period of 5 minutes was set for all night time noise measurements.
- Measurement instrumentation used at High Sampool site were set to log the A-Weighted, free field 1/1 octave band sound pressure levels Fast Time Averaging was selected.
- Measurements performed at New Qulp of fan noise were set to record linear weighted, free field 1/1 octave band sound pressure levels with a measurement period of 2 minutes. Fast time averaging was selected.
- Measurements made at Grange Farm were set to record linear weighted, free field 1/1 octave band sound pressure levels with a measurement periods were varied depending on the characteristics of the noise. Fast time averaging was selected.

All laboratory calibration certification was valid at the time of assessment. All equipment has been calibrated to DANAK, and UKAS standards by an independent calibration company.

At each location the microphone was placed at a height of approximately 1.5 metres above the ground using a tripod stand. The microphone diaphragm position was set to horizontal for all measurements.

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4.1 MEASUREMENT PROCEDURE AND LOCATION

A total of four attended noise surveys were carried out to monitor existing ambient background noise levels at High Sampool site. These were performed at 1No. locations P1, during the daytime and night time.

Further noise level data was gathered during 2 separate site visits at New Quip and Grange Farm in Northallerton. Details of these assessments are detailed in

All measurements recorded at High Sampool, New Quip and Grange Farm were made in open space, and were therefore considered to be free-field.

4.1.1 High Sampool

Measurement Position P1 was used to assess existing background noise levels at 50m from the boundary of the NNSP. It was not possible to measure at the boundary because of a resident Red Deer Stag. The lowest day time and night time LA90 background noise levels have been used for all predictions made. A site plan showing Position P1 is provided in Appendix A, and a Satellite view is also provided in Appendix B, detailing measurements position P1, and the positions of the NNSP and proposed poultry building.

Measurements were made between 05:49 and 06:53 hours on 7th March 2011. P1 was located on soft agricultural ground, approximately 50m from the NNSP.

A further 3 surveys were performed at the same location between 15:41 and 18:38 hours on 18th March 2011, and between 23:30 and 00:35 hours on the 22nd and 23rd March 2011. A survey was attempted at 00:00 hours on 16th March but had to be aborted due adverse weather conditions (rain).

Five noise descriptors were used to establish ambient noise levels, as follows: $L_{Aeq,T}$, the average A-weighted noise level over each measurement period; $L_{A10,T}$, the A-weighted noise level exceeded for 10% of the measurement period; $L_{A90,T}$, the A-weighted noise level exceeded for 90% of the measurement period; $L_{Amin,T}$, the minimum A-weighted noise level in each measurement period; $L_{Amax,T}$, the maximum A-weighted noise level in each measurement period. The time period, T, was set to 1 hour for daytime measurement periods and to 5 minutes for night time measurements.

The predominant day time noise sources affecting the existing site are attributable to traffic noise activities from the A590 carriageway to the north. Other noise sources noted were from the occasional passing of light vehicles and tractors

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travelling along Sampool Lane. All other noise sources noted were from natural sources such as bird song and stag calls (at night).

There were no other significant noise sources noted during the assessment periods.

Single figure Daytime $L_{Aeq,1hour}$ and night time $L_{Aeq,5minute}$ ambient noise results gathered at Position 1 are shown in Table 5.1 and 5.2 below. The lowest L_{A90} background noise levels for each period have been highlighted in yellow.

4.1.2 New Quip

Fan noise measurements were performed on 2nd June 2011 at New Quips premises in Northallerton.

A single 'Big Dutchman' Air Master EM50/V130 fan was strapped on to a packing crate for stability. Fan noise levels were noted as being generally broadband although there was a tonal nature.

Linear 1/1 octave band noise levels were recorded at 6 discrete measurement positions equally spaced at 60 degree interval around the fan unit, all at a distance of 2m from the fan's acoustic centre and at 1.5m above the ground. Measurement time period (T) was set to 2 minutes. The analyser was set to fast averaging.

Ambient noise levels were also recorded before the fan was started up. This was then logarithmically subtracted from the measured fan sound pressure level to provide the true sound pressure level of the source (fan).

The 3 sets of $L_{Aeq,2minute}$ measurement results recorded from the fan outlet side were logarithmically summed together to provide the cumulative sound pressure level.

Five noise descriptors were used to establish ambient noise levels, as follows: $L_{Zeq,T}$, the average Z-weighted (Linear) noise level over each measurement period; $L_{Zmin,T}$, the minimum A-weighted noise level in each measurement period; $L_{Zmax,T}$, the maximum A-weighted noise level in each measurement period. The time period, T, was set to 1 hour for daytime measurement periods and to 5 minutes for night time measurements.

The predominant day time noise sources affecting the existing site are attributable to light traffic noise from vehicles 50m away. These were arriving and leaving the

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industrial estate where New Quip was located. All other noise sources noted were from natural sources such as bird song.

There were no other significant noise sources noted during the assessment periods.

The linear 1/1 octave band noise levels were then A weighted and corrected to eliminate the residual noise level measured prior to the fan starting. These calculated results have been used during the calculation of fan noise impact at the NNSP.

Measured $L_{Aeq,T}$ and $L_{Z,MAX}$ fan noise level results are shown in Table 5.3 below. The predicted daytime and night time noise impacts from ventilation fans on the NNSP have been provided in Tables 5.4, 5.5, and 5.6 below.

4.1.3 Measurement Positions – Grange Farm

In order to record representative noise levels of various pieces of equipment to be installed at the proposed poultry unit, a site visit to an existing poultry unit in Northallerton was arranged by New Quip. During this visit noise sources likely to be present at High Sampool were identified, and representative measurements were recorded.

Five noise descriptors were used to establish ambient noise levels, as follows: $L_{Zeq,T}$, the average Z-weighted (Linear) noise level over each measurement period; L_{Zmin} , the minimum A-weighted noise level in each measurement period; L_{Zmax} , the maximum A-weighted noise level in each measurement period. The time period, T, was set to 2 minutes for all measurements except those made of fan noise. Time period were set to 10 minutes for fans as other sporadic noise sources were present during measurements.

The predominant day time noise sources affecting the existing site are attributable to distant traffic noise. Other noise sources noted were from the occasional passing of light vehicles and along the track to Grange Farm. All other noise sources noted were from natural sources such as bird song.

The sporadic noise sources were from some light construction work in a distant building and from a digger being driven through the yard. These noise events were very short in duration and were also of relatively low amplitude. Hence the 10 minute measurement period used for the fan measurement setup.

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There were no other significant noise sources noted during the assessment periods.

The equipment identified as being potentially noisy or being housed outside are detailed below.

- Fan Noise – 9x Fans running at 50m and 1x fan running at 20m. Results were comparable to those measured at New Quip. Measurements included start up and steady state operation. Measurements were interrupted by other farm activities, but were considered to be similar to those previously measured at New Quip.
- Feed Auger – 1x Feed Auger which is considered to be similar to that proposed for High Sampool. It is estimated that the feed auger will operate for period of 5 minutes, and will run approximately 4 times per day. This information has been used to calculate the Sound Exposure Level (LA_{eq}) of each event and from this the L_{Aeq,16hour} noise level has been derived from this.
- Muck Conveyer - Muck conveyor noise levels. It is proposed that High Sampool's Muck conveyor will be located internally and therefore noise should not be of significance.
- Poultry building internal noise levels – general noise levels were recorded inside the poultry building. Measurements were taken between the internal wall and the first rack of birds. There was distance of approximately 0.25m between measurement position and the bird rack and the internal wall.
- Poultry building external noise levels – residual noise levels were recorded just outside the poultry building at a distance of 2m from the façade. The building type is the same design and construction as that proposed for High Sampool. The egg conveyer inside the building was operating for some of the measurement period. This is an automatic system and could not be operated manually.
- Forklift truck operations - Measurement were made of a fork lift truck unloading a trailer. Measurements were made approximately 2m from the fork lift truck. The

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forklift truck used was diesel powered. 2 pallets were lifted of the trailer and were placed on the floor near the building. Although it is not proposed that a forklift truck is required at High Sampool. Calculations have been performed in any case so that any future requirements for a forklift will not require further planning approval.

4.1.4 Delivery Vehicle Noise.

It is proposed that all egg deliveries will be collected and distributed from the end of the site farthest away from the NNSP. Delivery lorries being loaded/unloaded by the forklift truck may be shielded to some degree by the building itself.

It is expected that arrival of the lorries would take approximately 2 minutes to arrive and be positioned in the loading area. It is predicted that there will be 2 egg deliveries/collections per week. The broadband $L_{Aeq,T}$ noise level of the delivery lorries has been approximated to be 85dB(A).

The predicted noise impact on the NNSP are provided in Table 5.9 below.

Feed delivery lorries are expected to arrive once every week. It is predicted that it would take 30 minutes to fill the feed silo using the blower on the delivery lorry. It has not been possible to assess the noise levels of a delivery lorry or the feed blower. The broadband $L_{Aeq,T}$ noise level of the feed blower has been approximated to be 90.0dB(A).

Feed wagons will be positioned behind the north facing gable end of the building during blowing operations. The feed is dry crushed product and therefore does not make a significant noise when falling into the silo. The feed blower itself will still be the dominant noise source.

The predicted noise impact on the NNSP are provided in Table 5.10 below.

Forklift Truck operations are expected to be performed once per day for a period of approximately 30 minutes. Forklift truck noise was measured to be $L_{Aeq,10hours}$ of 40.5dB(A). This task will be performed twice per day when deliveries are to be loaded / unloaded. This will make a 3dB difference to the level difference between the Rated Noise and the background noise levels. This will be of marginal significance in this case.

The predicted noise impact on the NNSP are provided in Table 5.8 below. These are based on measurement results obtained during the visit to Grange Farm.

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5. DISCUSSION & RESULTS

5.1 HIGH SAMPOOL NOISE MONITORING

The Table 5.1 and 5.2 respectively show night time daytime and measurement results gathered at P1 during the assessment of background noise levels at High Sampool. The lowest LA90 background noise level for both periods are highlighted in yellow.

Results show that the highest $L_{A90,5min}$ and $L_{A90,1hour}$ noise levels for night time and daytime were 30.0 and 42.8 dB(A) respectively. These results are considered to be representative of a typical week day and typical week night.

Date	Start Time	Elapsed Time	LAeq [dB]	LAFmax [dB]	LAFmin [dB]	LAF90 [dB]	LAF10 [dB]	Signal Overload %
07/03/2011	05:49:33	00:05:00	45.6	57.2	40.0	42.5	47.4	0
	05:54:33	00:05:00	46.6	54.2	38.4	43.2	49.1	0
	05:59:33	00:05:00	53.5	68.9	39.7	43.0	55.8	0
	06:04:33	00:05:00	48.1	61.2	39.7	43.8	50.8	0
	06:09:33	00:05:00	50.3	58.2	42.0	45.9	53.6	0
	06:14:33	00:05:00	50.1	62.7	41.9	45.8	52.3	0
	06:19:33	00:05:00	55.1	71.2	43.2	46.0	54.5	0
	06:24:33	00:05:00	50.4	56.5	44.3	47.1	52.8	0
	06:29:33	00:05:00	49.6	56.6	43.9	47.0	51.4	0
	06:34:33	00:05:00	51.1	56.7	44.5	47.3	53.3	0
	06:39:33	00:05:00	51.4	67.3	45.1	47.1	53.1	0
	06:44:33	00:05:00	51.4	67.2	43.7	47.9	52.9	0
22/03/2011	06:49:33	00:05:00	50.1	61.8	45.8	48.3	51.4	0
	23:30:43	00:05:00	52.4	33.0	43.8	36.5	47.7	0
	23:35:43	00:05:00	55.9	32.9	45.5	35.5	50.1	0
	23:40:43	00:05:00	50.9	33.7	43.3	37.4	46.4	0
	23:45:43	00:05:00	50.0	33.4	41.0	36.3	43.6	0
	23:50:43	00:05:00	50.7	29.5	36.7	30.9	40.5	0
23/03/2011	23:55:43	00:05:00	51.6	27.7	39.1	30.0	42.7	0
	00:00:43	00:05:00	51.4	28.1	39.5	30.3	43.1	0
	00:05:43	00:05:00	58.5	32.4	44.2	36.4	47.0	0
	00:10:43	00:05:00	52.1	30.5	43.8	35.1	47.4	0
	00:15:43	00:05:00	52.3	31.3	41.8	35.6	45.3	0
	00:20:43	00:05:00	48.1	31.0	37.8	32.6	41.3	0
	00:25:43	00:05:00	52.4	27.9	42.0	31.0	45.4	0
	00:30:43	00:05:00	48.9	29.5	37.4	31.2	41.4	0

Table 5.1 – Measured night time noise levels at High Sampool.

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Date	Start Time	Elapsed Time	LAeq [dB]	LAFmax [dB]	LAFmin [dB]	LAF90 [dB]	LAF10 [dB]	Signal Overload %
18/03/2011	15:41:57	01:00:00	46.5	60.2	37.9	42.8	48.8	0
	16:41:57	01:00:00	48.2	57.7	39.3	44.7	50.4	0
	17:41:57	01:00:00	49.8	69.5	40.3	46.6	51.7	0

Table 5.2 – Measured daytime noise levels at High Sampool.

5.2 FAN NOISE ASSESSMENT AT NEW QUIP

The Table 5.3 below shows the measured sound pressure levels recorded during the assessment of a Big Dutchman Fan at New Quips Premises in Northallerton. The EC50/V130 Fan is a 6 bladed fan driven via V belt pulley from a 50Hz electric motor. The motor is located within the fan casing. The fan tested did not have a cone but did have shutters which open/closed by means of centrifugal force provided by the fan. The fan was sat on a packing pallet and was securely strapped down. The fan was located approximately 10m from any reflective surfaces.

The microphone was horizontally mounted and positioned at a height of 1.5m above the ground. The analyser was set to measure linear 1/1 octave band sound pressure levels, with fast time averaging selected.

All measurements made were linear, and have then been A Weighted.

All measurements were made at a distance of 2m from the fans centre.

The measured values from position P4, P5, and P6 have been logarithmically added to provide the cumulative sound pressure level at 2m from the outlet side of the fan.

$$L_{Aeq,(cumulative)15min} = 10 \log_{10} (10^{P4/10} + 10^{P5/10} + 10^{P6/10})$$

Background noise levels were also measured at the same location so that any extraneous noise could be excluded.

Table 5.3 shows the measured sound pressure level results recorded at P4, P5 and P6. These were all measured on the fan outlet side. Results were then logarithmically added together to provide the linear (L_{Zeq}) sound pressure level at

2m from the fan. The octave band sound pressure levels were then A weighted to provide the L_{Aeq} sound pressure level. This result has then been corrected to remove the background noise level. Based on measurements recorded, the broadband sound pressure level at a distance of 2m from the fan was found to be 66.8dB(A).

These results highlighted in yellow have been used later to calculate the likely impact on existing background noise levels at the NNSP to the proposed poultry unit at High Sampool.

Frequency 1/1 Octave (Hz)	31.5	63	125	250	500	1000	2000	4000	8000	16000	Broadband dB(A)
P4 - L_{Zeq} @ 2m dB(A)	78.4	79.3	75.3	73.8	70.7	67.3	63.2	58.1	51.3	43.0	73.7
P5 - L_{Zeq} @ 2m dB(A)	77.2	77.9	74.4	73.0	70.7	65.8	61.0	56.5	49.6	42.0	72.5
P6 - L_{Zeq} @ 2m dB(A)	75.3	78.9	74.7	71.7	69.3	65.4	62.0	57.0	49.6	42.2	72.3
Cumulative L_{Zeq}	81.9	83.5	79.6	77.7	75.1	71.0	66.9	62.0	55.0	47.2	77.6
A Weighting	-39.4	-6.2	-6.1	-8.6	-3.2	0.0	1.2	1.0	-1.1	-6.6	
L_{Aeq} 1X Fan	42.5	57.3	63.5	69.1	71.9	71.0	68.1	63.0	53.9	40.6	66.8
New Quip LZ90 Background	60.2	59	50.3	36.1	31.2	29.3	24.3	18.4	12.5	12.1	52.9
A Weighting network filter	-39.4	-6.2	-6.1	-8.6	-3.2	0.0	1.2	1.0	-1.1	-6.6	
LA90 Background	20.8	32.8	34.2	27.5	28.0	29.3	25.5	19.4	11.4	5.5	28.5
1X Fan L_{Aeq} @ 2m - BGNL LA90	42.5	57.3	63.5	69.1	71.9	71.0	68.1	63.0	53.9	40.6	66.8

Table 5.3 – Measured linear fan sound pressure levels corrected for background noise and then corrected for A weighting.

The noise levels for a single fan at a distance of 2m has been used to predict the likely noise impact on the NNSP from 10 fans located in the furthest gable end of the poultry building.

A correction of +3dB has been made for façade reflections, and a tonal penalty of +5dB has also been used.

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As the fans are to be located in the north east gable end of the building, the building itself will act as a barrier from the direct noise of the fans. Barrier calculations have been performed to calculate the attenuation affordable by the buildings gable end façade. Due to the shape of the gable end the attenuation has only been calculated for the barrier effect provided by the western side of the façade. The Maekawa Method has been used to calculate the effective barrier attenuation.

The predicted Rating noise level of the 10 fans has been calculated for the NNSP (145m). Distance correction, and barrier calculations have been used in this process. The following calculations have been used.

$$\text{Distance Corrected } L_{AE} = \text{Measured dB(A) at 1m} - 10\log_{10} (R/r)$$

Where;

R = the horizontal distance between each parking row and the nearest residential facade.

r = the horizontal distance between the source line position and measurement position P2.

The barrier calculations are based on the Maekawa Method of barrier attenuation calculation.

$$E_b = 10\log_{10}(3 + 40\delta/\lambda)$$

Where;

E_b = Barrier Attenuation

δ = Path Difference

λ = Wavelength of each octave band centre frequency.

The Rated Noise Level have been rated against the existing daytime and night time background noise levels made at High Sampool. The difference between the calculated Rating Noise Level (L_{Aeq,T}) and the L_{A90} background noise level have been compared.

The result of this process for daytime and night time assessments are shown in Table 5.4, 5.5, and 5.6 below. Table 5.4 and 5.5 respectively show the predicted noise impact for all 10 fans for daytime and night time periods. Table 5.6 shows the impact of a single fan operating at night. The highlighted cells in the tables show the broadband A weighted level difference between the Rating Noise Level of the fans and the existing background noise level at the NNSP.

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Frequency 1/1 Octave (Hz)	31.5	63	125	250	500	1000	2000	4000	8000	16000	Broadband dB(A)
LAeq @ 2m dB(A)	42.5	57.3	63.5	69.1	71.9	71.0	68.1	63.0	53.9	40.6	66.8
New Quip LA90 dB	20.8	32.8	34.2	27.5	28.0	29.3	25.5	19.4	11.4	5.5	33.9
LAeq @ 2m - New Quip LA90 dB(A)	42.5	57.3	63.5	69.1	71.9	71.0	68.1	63.0	53.9	40.6	66.8
LAeq (10 Fans) = $L_{Aeq,1min} + 10\log_{10}(n)$ dB(A)	52.5	67.3	73.5	79.1	81.9	81.0	78.1	73.0	63.9	50.6	76.8
Facade Correction (+3dB(A))	3	3	3	3	3	3	3	3	3	3	3.0
Tonality (+5dB(A))	5	5	5	5	5	5	5	5	5	5	5.0
Distance Corr = $-20\log_{10}$ (R/r) dB(A)	23.3	38.1	44.3	49.9	52.6	51.8	48.9	43.8	34.7	21.4	47.6
$\delta = a + b + c$	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
$a = \sqrt{D_{SB}^2 + (H_B - H_S)^2}$	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	
$b = \sqrt{D_{LB}^2 + (H_B - H_L)^2}$	146.1	146.1	146.1	146.1	146.1	146.1	146.1	146.1	146.1	146.1	
$c = \sqrt{D_{SL}^2 + (H_L - H_S)^2}$	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	
$(3 + 40\delta/\lambda)$	3.5	4.0	5.0	7.0	11.0	18.92	34.8	66.7	130.4	257.7	
$\lambda = c/f$	10.89	5.44	2.74	1.37	0.69	0.34	0.17	0.09	0.04	0.02	
Attenuation - $E_b = 10\log_{10}(3 + 40\delta/\lambda)$	5	6	7	8	10	13	15	18	21	24	17.3
Lp @ Boundary	17.8	32.1	37.3	41.4	42.2	39.0	33.5	25.6	13.6	-2.7	36.8
Background LA90 (Lowest 15:41 - 16:41 Hrs)	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8
Fan LAeq - High Sampool LA90	-25.0	-0.7	-5.5	-1.4	-0.6	-3.8	-9.3	-17.2	-29.2	-45.5	-6.0

Table 5.4 – Predicted daytime noise impact of 10x fans at the NNSP.

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Results below in Table 5.4 show that 10x Fans running during the day time would be 6dB below the existing background noise level at High Sampool. This indicates that the chance of complaint about all 10x fans operating during the day time will be of marginal significance.

Frequency 1/1 Octave (Hz)	31.5	63	125	250	500	1000	2000	4000	8000	16000	Broadband dB(A)
L _{Aeq} @ 2m dB(A)	42.5	57.3	63.5	69.1	71.9	71.0	68.1	63.0	53.9	40.6	66.8
New Quip LA90 dB	20.8	32.8	34.2	27.5	28.0	29.3	25.5	19.4	11.4	5.5	28.5
L _{Aeq} @ 2m (1x Fan) - New Quip LA90 dB(A)	42.5	57.3	63.5	69.1	71.9	71.0	68.1	63.0	53.9	40.6	66.8
L _{Aeq} (10 Fans) = L _{Aeq,1min} + 10log ₁₀ (n) dB(A)	52.5	67.3	73.5	79.1	81.9	81.0	78.1	73.0	63.9	50.6	76.8
Facade Correction (+3dB(A))	3	3	3	3	3	3	3	3	3	3	3.0
Tonality (+5dB(A))	5	5	5	5	5	5	5	5	5	5	5.0
Distance Corr = -20log ₁₀ (R/r) dB(A)	23.3	38.1	44.3	49.9	52.6	51.8	48.9	43.8	34.7	21.4	47.6
$\Delta = a + b + c$	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
$a = \sqrt{D_{sb}^2 + (H_b - H_s)^2}$	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	
$b = \sqrt{D_{lb}^2 + (H_b - H_l)^2}$	146.11	146.11	146.11	146.11	146.11	146.11	146.11	146.11	146.11	146.11	
$c = \sqrt{D_{sl}^2 + (H_l - H_s)^2}$	148.04	148.04	148.04	148.04	148.04	148.04	148.04	148.04	148.04	148.04	
$(3 + 40\delta/\lambda)$	3.50	4.00	4.99	6.98	10.96	18.92	34.84	66.68	130.37	257.73	
$\lambda = c/f$	10.89	5.44	2.74	1.37	0.69	0.34	0.17	0.09	0.04	0.02	
Attenuation - E _b = 10log ₁₀ (3 + 40δ/λ)	5	6	7	8	10	13	15	18	21	24	17.3
L _p @ Boundary	17.8	32.1	37.3	41.4	42.2	39.0	33.5	25.6	13.6	-2.7	36.8
Background L _{A90} (Lowest 00:11 - 00:16 Hrs)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Fan L _{Aeq} - High Sampool LA90	-12.2	2.1	7.3	11.4	12.2	9.0	3.5	-4.4	-16.4	-32.7	6.8

Table 5.5 – Predicted night time noise impact of 10x fans at the NNSP.

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Results below in Table 5.5 shows that 10x Fans running during the night time would be 6.8dB above the existing background noise level at High Sampool. This indicates that complaint will be likely during the night time if all 10 fans are running.

Frequency 1/1 Octave (Hz)	31.5	63	125	250	500	1000	2000	4000	8000	16000	Broadband dB(A)
L _{Aeq} @ 2m dB(A)	42.5	57.3	63.5	69.1	71.9	71.0	68.1	63.0	53.9	40.6	66.8
New Quip LA90 dB	20.8	32.8	34.2	27.5	28.0	29.3	25.5	19.4	11.4	5.5	28.5
L _{Aeq} @ 2m (1x Fan) - New Quip LA90 dB(A)	42.5	57.3	63.5	69.1	71.9	71.0	68.1	63.0	53.9	40.6	66.8
L _{Aeq} (1 Fan) = L _{Aeq,1min} + 10log ₁₀ (n) dB(A)	42.5	57.3	63.5	69.1	71.9	71.0	68.1	63.0	53.9	40.6	66.8
Facade Correction (+3dB(A))	3	3	3	3	3	3	3	3	3	3	3.0
Tonality (+5dB(A))	5	5	5	5	5	5	5	5	5	5	5.0
Distance Corr = -20log ₁₀ (R/r) dB(A)	13.3	28.1	34.3	39.9	42.6	41.8	38.9	33.8	24.7	11.4	37.6
$\Delta = a + b + c$	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
$a = \sqrt{D_{SB}^2 + (H_B - H_S)^2}$	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	
$b = \sqrt{D_{LB}^2 + (H_B - H_L)^2}$	146.11	146.11	146.11	146.11	146.11	146.11	146.11	146.11	146.11	146.11	
$c = \sqrt{D_{SL}^2 + (H_L - H_S)^2}$	148.04	148.04	148.04	148.04	148.04	148.04	148.04	148.04	148.04	148.04	
$3 + 40\Delta/\lambda$	3.50	4.00	4.99	6.98	10.96	18.92	34.84	66.68	130.37	257.73	
$= c/f$	10.89	5.44	2.74	1.37	0.69	0.34	0.17	0.09	0.04	0.02	
Attenuation - $b = 10\log_{10}(3 + 40\Delta/\lambda)$	5	6	7	8	10	13	15	18	21	24	17.3
L _p @ Boundary	7.8	22.1	27.3	31.4	32.2	29.0	23.5	15.6	3.6	-12.7	26.8
Background (Lowest 0:11 - 00:16 hrs)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Min LAeq - High Sampool LA90	-22.2	-7.9	-2.7	1.4	2.2	-1.0	-6.5	-14.4	-26.4	-42.7	-3.2

Table 5.6 - Predicted night time noise impact of 1x fan at the NNSP.

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Results below in Table 5.6 show that 1x Fan running during the night time would be 3.2dB below the existing background noise level at High Sampool. This indicates that the chance of complaints about a single fan operating will be of marginal significance.

5.3 EQUIPMENT NOISE ASSESSMENT AT MORISSONS FARM

An assessment of the emitted sound pressure levels from various pieces of equipment were assessed during a visit to Grange Farm. The equipment identified during the visit as being potentially noisy or being housed outside are detailed below. Only equipment likely to be required at the proposed Poultry Unit have been assessed.

5.3.1 Fan Noise

Measurements were made of 9x Fans running at 50m and 1x fan running at 20m. Results were comparable to those measured at New Quip. Measurements included start up and steady state operation. Measurements were interrupted by other farm activities, but were considered to be similar to those measured at New Quip. $L_{Aeq,T}$ noise level for all 9x fans running were found to be 44.8dB(A) at a distance of 50m. No barriers or screening was present.

5.3.2 Feed Auger

1x Feed Auger which is considered to be similar to that proposed for High Sampool. It is proposed that the feed auger will operate for period of 5 minutes, and will run approximately 4 times per day. $L_{Aeq,5minute}$ noise levels were found to be 74.5dB(A). This information has been used to calculate the Sound Exposure Level (LAe) of each event and from this the $L_{Aeq,16hour}$ A weighted sound pressure level has been derived using the following equation using the following equations.

$$LAe = L_{Aeq,1min} + 10 \log_{10}(t) \text{ dB(A)}$$

$$L_{Aeq,16hour} = LAe - 10 \log_{10}(T) + 10 \log_{10}(n) \text{ dB(A)}$$

Where:-

LAe = Sound Exposure Level or Single Event Level (SEL).

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$LA_{eq,16hour}$ = Continuous A weighted sound pressure level averaged over a 16 hour period.

T = the 16 hour time period in seconds.

t = duration of each event

η = number of events.

All measured and calculated results are displayed in Table 5.4 below.

Frequency 1/1 Octave (Hz)	31.5	63	125	250	500	1000	2000	4000	8000	16000	Broadband dB(A)
$LA_{eq,1min} @$ 2m dB(A)	39	53.1	59.2	65.2	67.5	67.3	64.4	59.1	50.1	36.4	62.8
New Quip LA_{90} dB	39.0	37.7	38.2	29.9	30.0	31.3	28.3	23.6	16.8	6.7	33.9
$LA_{eq,1min} @$ 2m - Grange Fm LA_{90} dB(A)	38.5	53.1	59.2	65.2	67.5	67.3	64.4	59.1	50.1	36.4	62.8
$LA_e = LA_{eq,1min}$ $+10 \cdot \log_{10}(t)$ dB(A)	45.5	60.1	66.2	72.2	74.5	74.3	71.4	66.1	57.1	43.4	69.8
$LA_{eq,16hour} =$ SEL - $10 \log_{10}(T)$ $+10 \log_{10}(\eta)$ dB(A). 4 Events per Day	21.7	36.3	42.4	48.4	50.7	50.5	47.6	42.3	33.3	19.6	68.8
Tonality (+5dB(A))	5	5	5	5	5	5	5	5	5	5	5.0
Distance Corr $= -20 \log_{10}$ (R/r) dB(A)	8.3	22.9	29.0	35.0	37.3	37.1	34.2	28.9	19.9	6.2	37.0
Background LA_{90} (Lowest 15:41 - 16:41 Hrs)	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8
Feed Auger $LA_{eq,16hour}$ - High Sampool LA_{90}	-4.5	-9.9	-3.8	-7.8	-5.5	-5.7	-8.6	-13.9	-22.9	-36.6	-10.2

Table 5.7 – Measured and calculated noise impact of the feed auger operations.

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Results below in Table 5.7 above show that results for operating the feed auger during the day time. The Sound Exposure Level has been used for a single event and the calculated $L_{Aeq,16hour}$ noise level attributable to the feed auger has been calculated.

Results indicate that feed auger noise level would be $L_{Aeq,16hour}$ 10.2dB below the existing background noise level at High Sampool. This indicates that the chance of complaint about the feed auger will not be likely providing that this operation is performed during the daytime only.

5.3.3 Muck Conveyor

Muck conveyor noise levels were measured at Grange Farm were found to be $L_{Aeq,T}$ 63.9dB(A) at a distance of 2m. It is proposed that High Sampool's Muck conveyor will be located internally. Noise levels should not be of significance at the NNSP, therefore complaints will be unlikely about the muck conveyor.

5.3.4 Poultry building internal noise levels

General noise levels were recorded inside the poultry building. Measurements were taken between the internal wall and the first rack of birds. There was distance of approximately 0.25m between measurement position and the bird rack and the internal wall. Noise levels were found to be $L_{Aeq,T}$ 68.5dB(A) at a distance of 2m.

Residual noise levels were also recorded just outside the poultry building at a distance of 2m from the façade. The building type is the same design and construction as that proposed for High Sampool. The egg conveyor inside the building was operating for some of the measurement period. This is an automatic system and could not be operated manually. Noise levels were found to be $L_{Aeq,T}$ 45.4dB(A) at 2m from the outside façade. Noise levels attributable to activities within the building should not be of significance at the NNSP, therefore complaints will be unlikely.

5.3.5 Forklift truck operations

Measurements were made of a forklift truck unloading a trailer. Measurements were made approximately 2m from the fork lift truck. The forklift truck used was diesel powered. 2 pallets were lifted of the trailer and were placed on the floor near the building. Noise levels were found to be $L_{Aeq,T}$ 76.2 dB(A). It is proposed that the forklift will operate for period of 30 minutes, and will run approximately once per day. This measured $L_{Aeq,T}$ has been used to calculate the Sound Exposure Level (L_{Ae}) of each event and from this the Rating Level ($L_{Aeq,16hour}$), A weighted sound pressure level has been

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derived using the equations in 5.3.2 above. This difference between the Rating Level and the background noise level are highlighted in yellow in Table 5.8 below.

A tonal correction factor of +5dB was also used for this assessment.

The Rated Noise Level of the lorry deliveries has been calculated in accordance to BS4142:1997.

Results below in Table 5.8 below show that results for operating the fork lift truck during the day time. The Sound Exposure Level has been used for a single event and the calculated $L_{Aeq,16hour}$ noise level attributable to the forklift truck has been calculated.

Results indicate that forklift truck noise level would be $L_{Aeq,16hour}$ 5.3dB below the existing background noise level at High Sampool. This indicates that the chance of complaint about the forklift truck operations in the loading area will be not be likely providing that this operation is performed during the daytime only.

Frequency 1/1 Octave (Hz)	31.5	63	125	250	500	1000	2000	4000	8000	16000	Broadband dB(A)
$L_{Aeq,1min}$ @ 2m dB(A)	44.6	55.6	61.5	65.5	70	72	68.9	63.6	52.9	38.6	66.2
Background LA90 (Lowest 15:41 - 16:41 Hrs)	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8
$L_{Aeq,1min}$ @ 2m - Grange Fm LA90 dB(A)	44.3	55.6	61.5	65.5	70.0	72.0	68.9	63.6	52.9	37.3	66.2
$L_{Ae} = L_{Aeq,1min} + 10 \cdot \log_{10}(t)$ dB(A)	76.9	88.1	94.0	98.1	102.6	104.6	101.5	96.1	85.4	69.8	98.7
$L_{Aeq,16hour} = L_{Ae} - 10 \cdot \log_{10}(t) + 10 \cdot \log_{10}(n)$ dB(A)	29.3	40.5	46.4	50.4	54.9	56.9	53.8	48.5	37.8	22.2	51.1
Tonality (+5dB(A))	5	5	5	5	5	5	5	5	5	5	5.0
Distance Corr $L_{Aeq,16hr} = 10 \log_{10} (R/r)$ dB(A)	15.6	26.9	32.8	36.8	41.3	43.3	40.2	34.9	24.2	8.6	37.5
Background LA90	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8
Rating Level	-27.2	-15.9	-20.0	-6.0	-1.5	0.5	-2.6	-7.9	-18.6	-34.2	-5.3

Table 5.8 – Measured and calculated noise impact of Forklift Truck Operations

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5.4 DELIVERY VEHICLE NOISE

The results in Table 5.9 below show the expected noise impact for arrival and egress of delivery lorries. These figures are based on an approximate broadband $L_{Aeq,T}$ noise level of 85dB(A) for a passing lorry at a distance of 2m, and a predicted arrival time of 2 minutes. The $L_{Aeq,T}$ noise level has been used to calculate the Single Event Level (L_{AE}) for a single lorry over 2 minute time period. Results were then averaged to provide the daytime $L_{Aeq,16hour}$ noise level at the boundary of the NNSP.

Results indicate that delivery lorry noise level would be $L_{Aeq,16hour}$ 4.8dB above the existing background noise level at High Sampool. This indicates that the chance of complaint about the delivery lorries arriving and leaving the loading area will be of marginal significance provided that this operation is performed during the daytime only.

A tonal correction factor of +5dB was also used for this assessment.

The Rated Noise Level of the lorry deliveries has been calculated in accordance to BS4142:1997.

Frequency 1/1 Octave (Hz)	31.5	63	125	250	500	1000	2000	4000	8000	16000	Broadband dB(A)
$L_{Aeq,1min}$ @ 2m dB(A)	85	85	85	85	85	85	85	85	85	85	85.0
Background LA90 (Lowest 15:41 - 16:41 Hrs)	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8
$L_{Aeq,1min}$ @ 2m - Grange Fm LA90 dB(A)	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
$L_{Ae} = L_{Aeq,1min} + 10 \cdot \log_{10}(t)$ dB(A)	105.8	105.8	105.8	105.8	105.8	105.8	105.8	105.8	105.8	105.8	105.8
$L_{Aeq,16hour} = L_{Ae} - 10 \cdot \log_{10}(t) + 10 \cdot \log_{10}(n)$ dB(A)	61.2	61.2	61.2	61.2	61.2	61.2	61.2	61.2	61.2	61.2	61.2
Tonality (+5dB(A))	5	5	5	5	5	5	5	5	5	5	5.0
Distance Corr = $-10 \log_{10}(R/r)$ dB(A)	47.6	47.6	47.6	47.6	47.6	47.6	47.6	47.6	47.6	47.6	47.6
Background LA90 (Lowest 15:41 - 16:41 Hrs)	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8
Rating Level Single Lorry	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8

Table 5.9 – Delivery lorry noise impact.

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Results below in Table 5.10 below show that results for feed blower operations during the day time. The Sound Exposure Level has been used for a single event and the calculated $L_{Aeq,16hour}$ noise level attributable to the feed blower has been calculated.

Results indicate that feed blower noise level would be $L_{Aeq,16hour}$ 18.5dB above the existing background noise level at High Sampool. This indicates that there would be chance of complaint about the feed blower operating in the loading area. As this operation is only likely to be performed for 30 minutes every 5-6 days this would be much less intrusive than if used on a daily basis.

No barrier calculation has been used for the assessment of the feed blower as its final location during blowing operations has not been provided. If the feed delivery lorry is positioned behind the building then it is possible that a further 10dB attenuation could be achieved. This would bring the excess above background noise levels to approximately 8.5dB. Complaints would then be much less likely if the feed delivery lorry is positioned behind the building furthest away from the NNSP before the blowers are used.

A tonal correction factor of +5dB was also used for this assessment.

The Rated Noise Level of the lorry deliveries has been calculated in accordance to BS4142:1997.

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Frequency 1/1 Octave (Hz)	31.5	63	125	250	500	1000	2000	4000	8000	16000	Broadband dB(A)
LAeq,1min @ 2m dB(A)	90	90	90	90	90	90	90	90	90	90	90.0
Background LA90 (Lowest 15:41 - 16:41 Hrs)	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8
LAeq,1min @ 2m - Grange Fm LA90 dB(A)	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
LAe = LAeq,1min +10*log10(t) dB(A)	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6
LAeq,16hour = LAe -10*log10(t) +10log10(n) dB(A)	74.9	74.9	74.9	74.9	74.9	74.9	74.9	74.9	74.9	74.9	74.9
Tonality (+5dB(A))	5	5	5	5	5	5	5	5	5	5	5.0
Distance Corr = - 10log ₁₀ (R/r) dB(A)	61.3	61.3	61.3	61.3	61.3	61.3	61.3	61.3	61.3	61.3	61.3
Background LA90 (Lowest 15:41 - 16:41 Hrs)	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8
Rating Level - Feed Blower	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5

Table 5.10 -- Feed lorry blower noise impact.

6. CONCLUSIONS

As can be seen from the Sections 5, the lowest $L_{A90,5min}$ ambient night time noise level currently affecting the development site of the Poultry Unit and the NNSP was found to be 30.0dB(A), and the lowest daytime $L_{A90,1hour}$ was 42.8dB.

Results from calculations to assess worst case noise impact at the NNSP indicate that there would be two separate activities which would result in complaint from residents at the NNSP. These activities are operating all 10 fans during the night time, and feed blower activities.

Operating all 10 ventilation fans simultaneously at night would exceed the night time L_{A90} background noise level by 6.8dB. Operating a single fan will be <3dB below the existing background noise level and therefore complaints will be of marginal significance.

The ventilation system operates automatically. The first fan turns on once the internal ambient air temperature reaches 17°C. Additional fans switch on individually as air temperature increases. Once the internal air temperature reaches 25°C all fans will be running. It is very unlikely that internal air temperatures at night will warrant more than a single fan operating. The building also has a natural ventilation system which reduces the internal air temperature even without the fans operating. The welfare of the birds should take precedence over the noise levels.

The feed blower operations will exceed the daytime L_{A90} background noise level at the NNSP by 18.5dB. This could be reduced further by up to 10dB if the building be used as a barrier between the blower and the NNSP.

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7.0 RECOMMENDATIONS

Based on the results obtained, the following recommendations are to be considered.

- Only operate one ventilation fan during the night time.
- Appropriate mitigation measures should be implemented to reduce the impact from feed blowers. Position the feed delivery lorry behind the building or other suitable barrier to help reduce the direct noise from the blower to the NNSP.

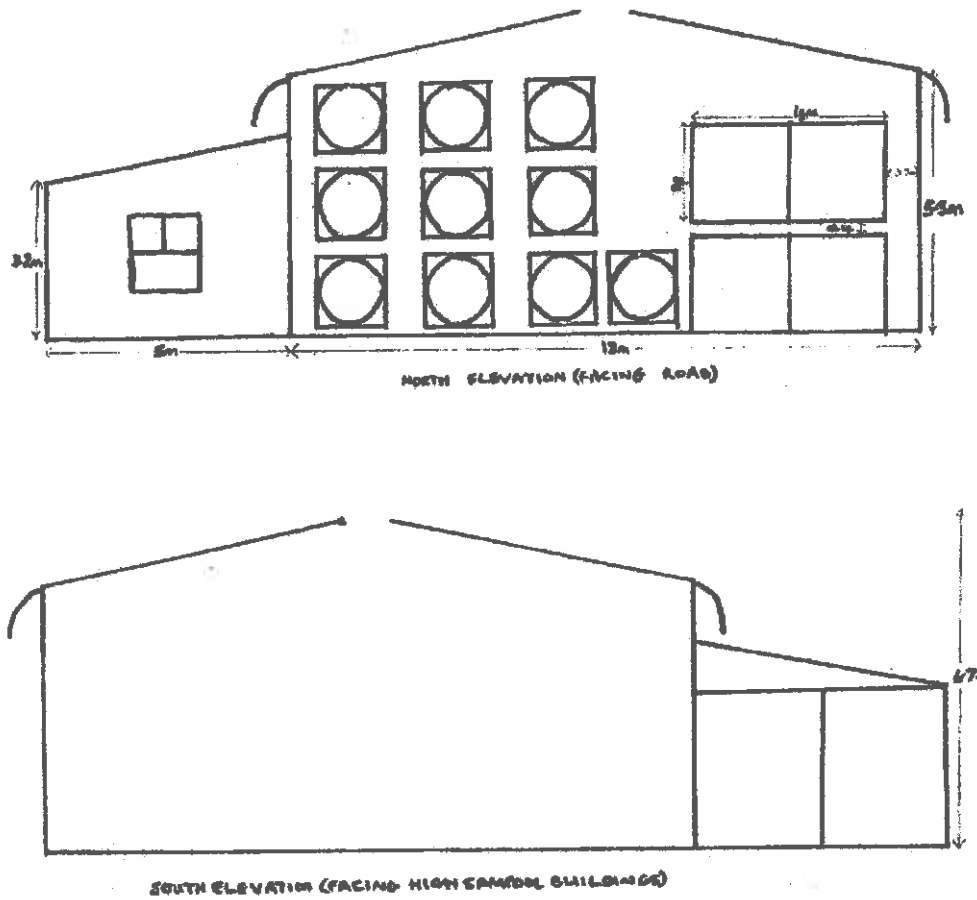
Colin Armstrong (PGDip; IOA, BINDT)
Senior Acoustic & Vibration Engineer
12th August 2011

APPENDIX A – PROPOSED SITE PLAN & LAYOUT



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APPENDIX A – PROPOSED SITE PLAN & LAYOUT



Drawing A2 – North and South Building Elevations (Not to scale)

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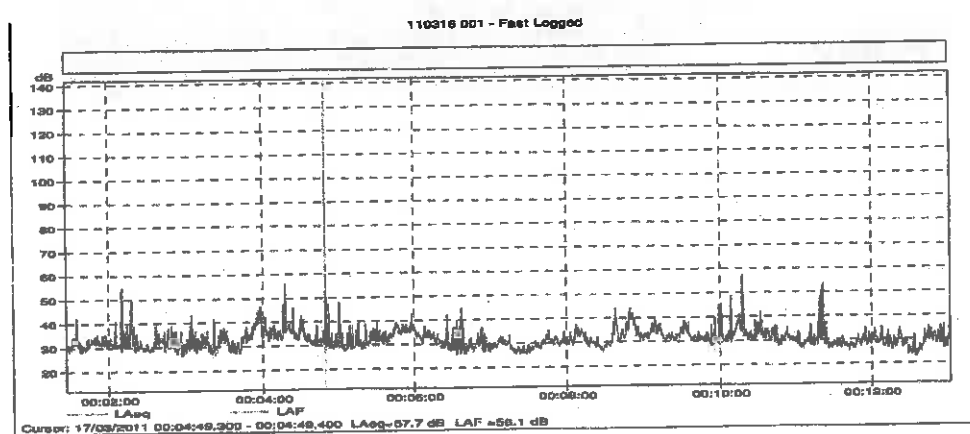
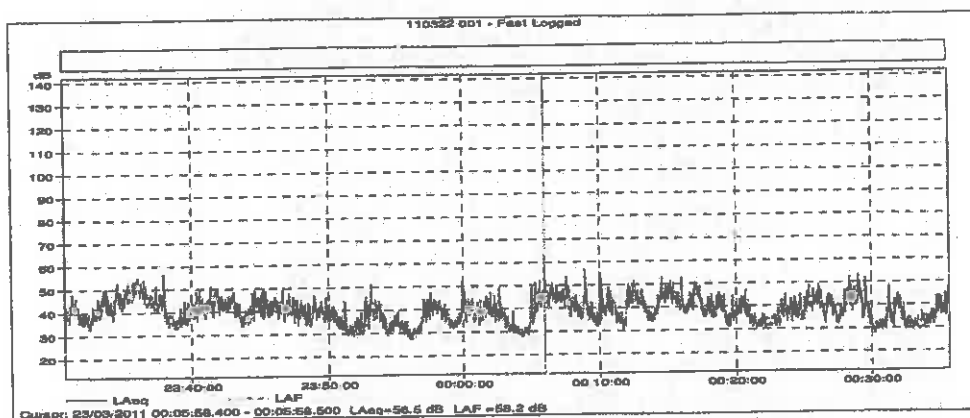
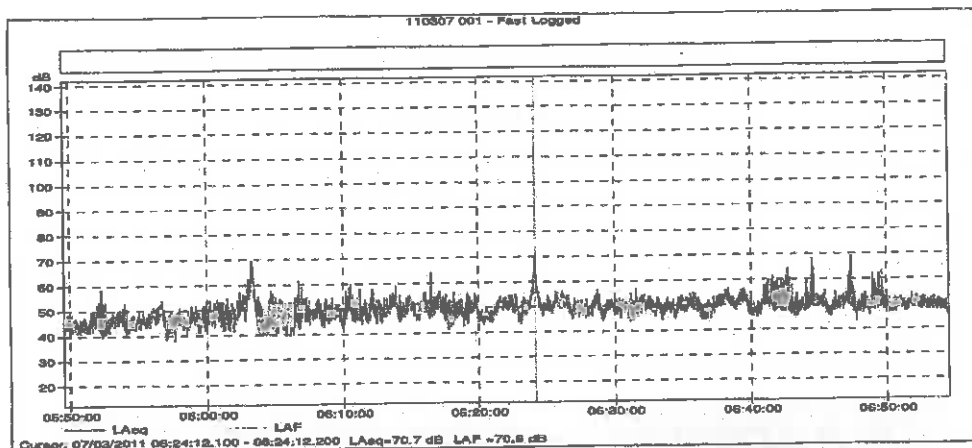
APPENDIX B – SATALLITE VIEW OF EXISTING AREA



Picture B1 – Existing Satellite View of existing site, detailing measurement Position P1 & P2 & P3, and proposed car park row positions.

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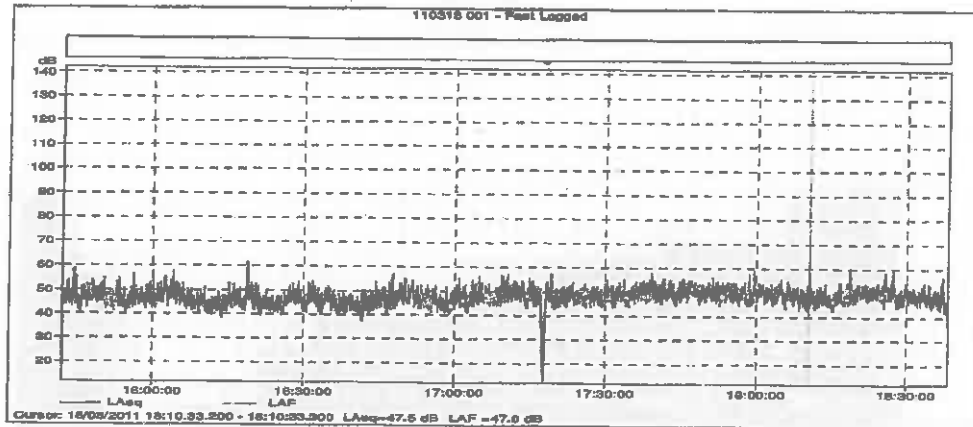
APPENDIX C – RAW NIGHT TIME MEASUREMENT DATA FROM POSITION P1



Charts C1,C2, & C3 – Graphical night time data logged at Position P1

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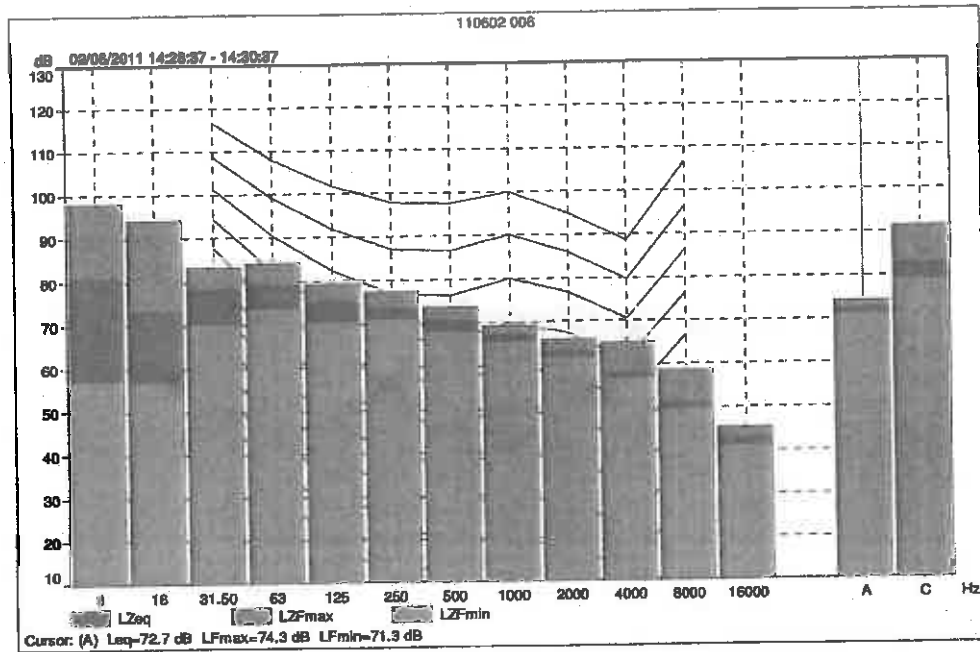
APPENDIX D – RAW DAY TIME MEASUREMENT DATA FROM POSITION P1



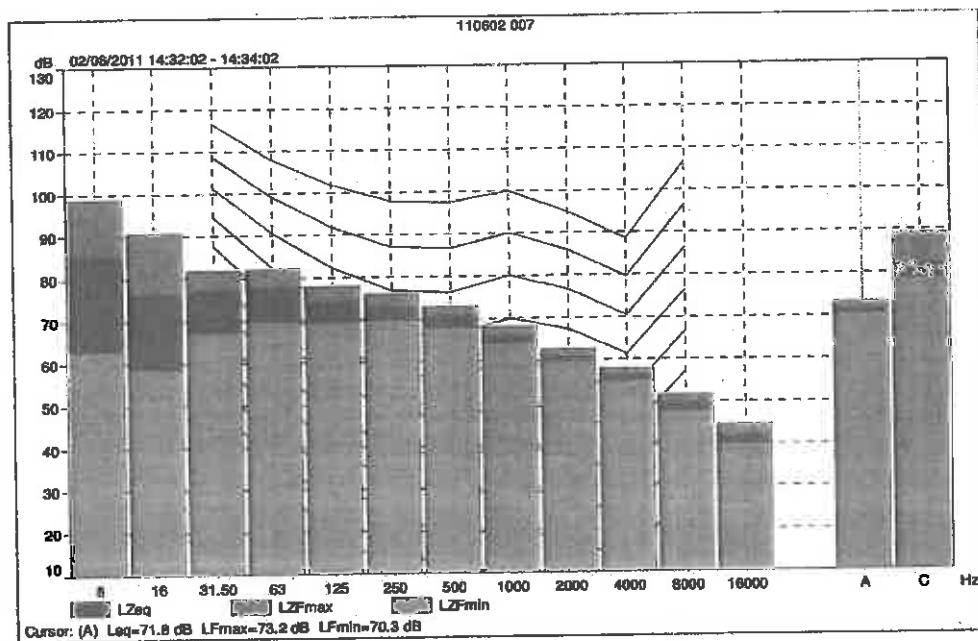
Charts D1 – Graphical Day time data logged at Position P1

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APPENDIX E -- RAW FAN OUTLET NOISE DATA



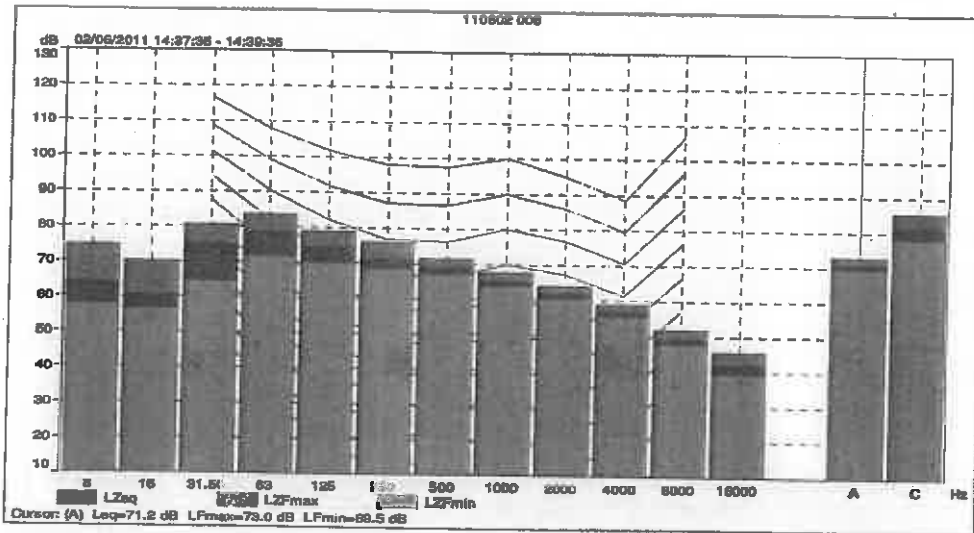
Graphical E1 -- 1/1 Octave band SPL Data of fan outlet noise at P4.



Graphical E2 -- 1/1 Octave band Data of fan outlet noise at P5.

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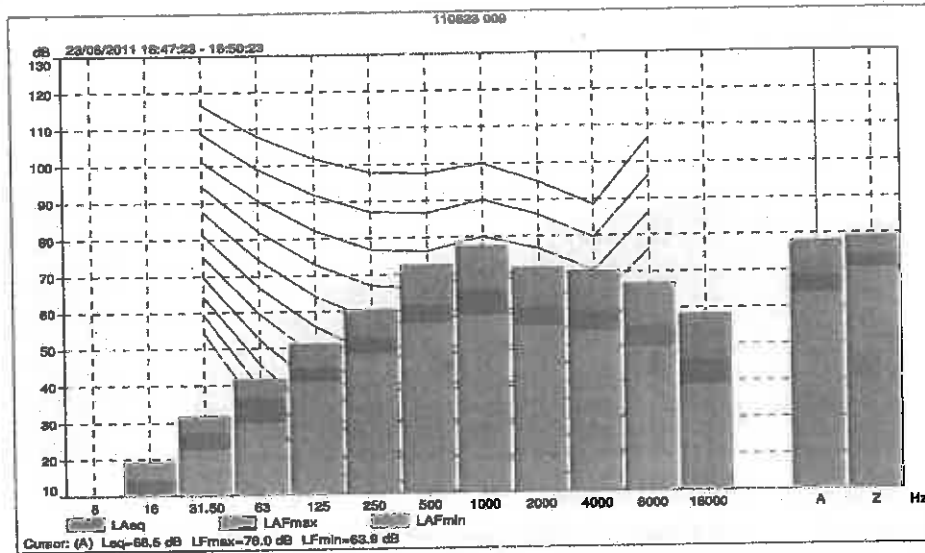
APPENDIX E – RAW FAN OUTLET NOISE DATA



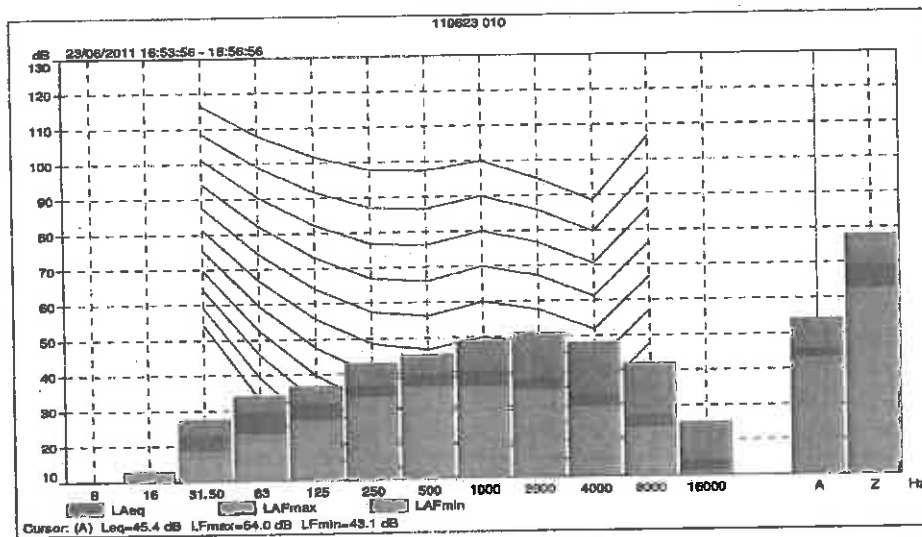
Graphical E3 – Graphical Data 1/1 Octave band SPL of fan outlet noise at P6.

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APPENDIX F CONTIUED – RAW GRAPHICAL DATA VARIOUS EQUIPMENT

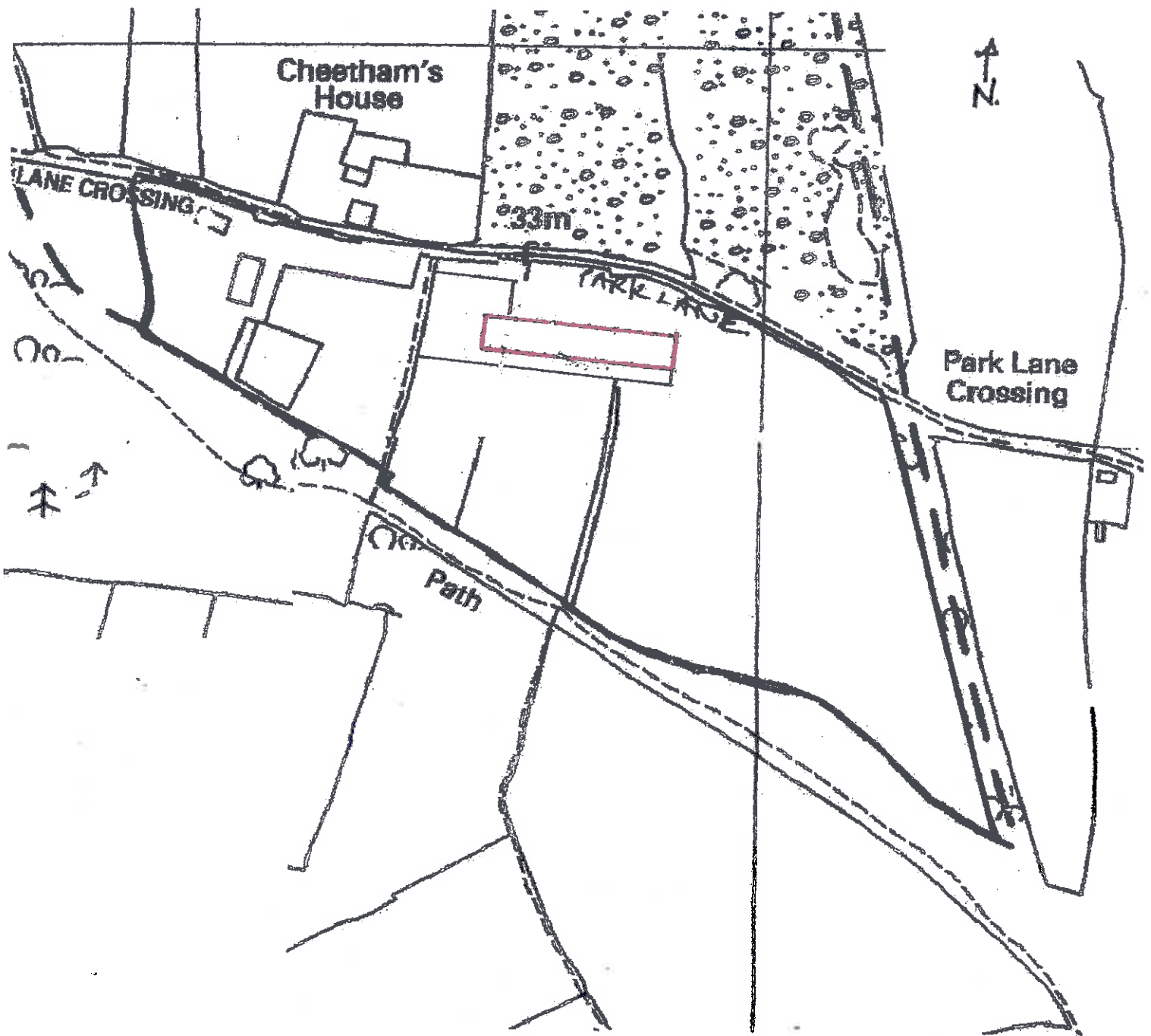


Graphic F3 – Graphical Data 1/1 Octave band SPL inside the building



Graphic F2 – Graphical Data 1/1 Octave band SPL inside the building

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1:2500

PROPOSED POULTRY UNIT, LAND OFF PARK LANE ADJ
MAYPOLE EQUESTRIAN CENTRE, ABRAM WN2 5XP.

320130448P

**Planning considerations with regard to noise for a proposed poultry unit at Oakfield, Longsight Road, Clayton le dale.
Application no 3/2013/0448**

Information has been submitted to the LPA as part of the current application. That information is reproduced here for the sake of completeness. It was submitted together with an acoustic report by Scenic Acoustic Vibration engineering Ltd, produced in 2011. The latter is not resubmitted here.

It is understood that the LPA will want to be assured that there is no unacceptable noise from fans and machinery which will adversely affect the residential amenities of residents in the vicinity

Similar considerations apply, for example, with regard to applications for wind turbines. Here it is the norm to impose noise enforceable noise conditions as follows. We are content to accept a similar condition, as below, in the knowledge that it can be complied with fully and that the LPA has powers to enforce it in the event that it was ever necessary

Finally, an example is given of how similar noise issues have been dealt with at a poultry unit at Abram, Wigan and where the poultry unit is directly opposite a private house adjacent to the poultry unit



Appendix 1. Suggested noise condition

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Noise levels at the nearest residence (excepting the residence of the applicant) shall not exceed 35dB(A),L90, 10 minutes(0700-2300) or 43dB(A), L90, 10 minutes (2300-0700) or the prevailing background plus 5dB(A).

If requested by the Local Planning authority the operator of the poultry unit shall, at their own expense, employ an independent consultant approved by the local planning authority to measure and assess the level of noise emissions at locations to be specified by the local planning authority. This report, including remedial action proposed, shall be submitted to the Local Planning authority within 8 weeks of the initial request. If the levels of noise are greater than 35dB(A),L90,10minutes (0700-2300) or 43dB(A),L90, 10 minutes (2300-0700) or the prevailing background plus 5dB(A) immediate action shall be taken as may be necessary including the ceasing of the operation so as to meet the maximum levels set out in this condition

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Appendix 2

Report on noise previously submitted to the LPA as part of the application

Noise impact report

Introduction

The LPA has requested information with regard to potential noise from the proposed poultry unit so that any effects on residential amenities can be assessed.

The LPA is advised by the Land agents at the county council *"who say that poultry houses of this size have ventilation fans which need to be on almost constantly when, in cases like this, the applicant has a limited acreage"*

This is not the case and as the proposal is for an "enriched cage" unit where the birds are always kept inside the building the acreage in the ownership of the applicant has no bearing on ventilation requirements.

The means of ventilation is via 16 apertures per side each measuring 800mm by 500mm and all controlled by just one 1.75kw motor. The inlets will open to let fresh air into the building as required. As these are controlled by just one small motor the noise from it will be imperceptible

Extraction fans will be placed on the gable end of the building facing Showley Road (None in the gable facing the A59 and residences) They will include 4 no grills each with a diameter of 12.7cm (50") plus 4 no with a diameter of 9.14cm(36"). The smaller fans are operated with a 1kw motor and the larger with a 1.1kw motor

The extractor fans are temperature controlled and it is extremely rare for these to be operation

The 4 no 9.14 diameter fans will switch on when the internal temperature reaches set levels We would expect that at 21degrees on fan would become activated. At 23 degrees two would switch on, at 25 degrees 3 would operate and at 27 degrees all 4 would switch on.

Only in extreme temperatures would the larger 12.7 diameter fans switch on and only for a few minutes (15 minutes) They are there in case of extreme temperatures. In all of this the aim is to use fresh air via the inlets to keep temperatures comfortable and not to use the extractor fans at all.

It is important that the birds are warm, though not overly hot

The same request for noise information was recently made by Wigan MBC who were also advised by Lancashire CC in this matter. The information supplied to Wigan MBC satisfied both the LPA and the County council with regard to noise levels (Details of the Wigan application are included). In that particular case it was conceded that fans would not be left on for most of the time.

The Wigan approval relates to a poultry unit measuring 85.47m by 15.54m, giving a floor area of 1328m². There are residences in the immediate vicinity.

The application at Oakfield is for a building measuring 76.3mm by 8.2m plus a small packing unit of 18m by 6m. The overall floor area is thus 734m²

In addition the Wigan approval is for a free range egg unit where the sides of the building open to allow the birds out (and where noise can escape). The unit at Oakfield is for an "enriched cage" unit where the birds remain inside the building which is thus self - contained.

Noise report

Please find attached a report regarding noise levels relating to fans, the feeding hoppers and other matters. The report is based on data collected at the offices of the provider of the equipment (New Quip) in Northallerton and which has then been verified at 2 sites – one at Leens in the Lake District and one at Grange Farm in Northallerton

The building surveyed in the Lake District is somewhat larger than that at Oakfield being 94.5m by 18m with a ridge height of 6.7m. The attached report measured very low level background noise at Higher Sampool in the Lake District. The highest recorded night time noise level was 30dBA and the highest daytime recording was 42.8dBA. It is unlikely that the background noise levels at the Oakfield site will be any lower because of the presence of the A59.

In particular the following were recorded:-

1. Noise from 9 no fans at a 50m distance
2. Noise from 1 fan at a 20m distance

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3. Noise from the feed auger (Operated for 5 mins, 4 times per day)

The report concludes that at night only 1 fan will need to be operated and the noise level, at 20m, will be less than the background noise level

Feed blowers may exceed the background noise level but they will operate for very short periods and during the day

In the case of the Oakfield application vents are only proposed in the gable end of the building facing Shorley Road (None facing the A59 and residences)

Even so, the applicant will be content with a condition that noise from the ventilation fans shall not exceed background noise levels when measured at the nearest noise sensitive property (being the nearest dwelling)

Other machinery

Plant and machinery will comprise the silos and the conveyor belt for the collection of eggs

- The silos will be filled 2 times per month. They will be used to provide feed each day
- The conveyor belt is contained entirely within the building

The feed augers run for 5 to 10 minutes per day, 4 times per day only and when the birds are fed.

Each has a tiny 0.75kw or 1.1kw motor

Appendix 3

Other similar poultry units and the way noise (and odour) concerns have been resolved

A. Abram, Wigan MBC

Application for the discharge of conditions relating to Outline approval (including approval of access, appearance, layout and scale) for free range egg unit at Land off Park Lane, Maypole Equestrian Centre, Abram, Wigan, WN2 5XP

The planning approval for the above relates to a free range egg unit at Abram for 16,000 birds, adjoining an existing dwelling on the other side of the access track

The proposed building measures 85.470m by 15.544m

Issues of potential noise and odour were factors considered by Wigan MBC and as a result an application - as below - ad to be made for the discharge of such conditions.

The conditions were discharged by the LPA

Extract from the Planning statement submitted for the discharge of conditions

Application no: A/10/74858

Approval to the above was granted on the 23 March, 2011 subject to various conditions.

This application is for the discharge of pre commencement conditions no's 4,5,6,8 and 9

4. Before the development hereby approved is brought into use all plant and machinery shall be enclosed with sound insulating material in accordance with a scheme previously agreed in writing by the Local Planning Authority.

Details

Plant and machinery will comprise the silos and the conveyor belt for the collection of eggs

- The silos will be filled 2 times per month. They will be used to provide feed each day
- The conveyor belt is contained entirely within the building

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5. Before the development hereby approved is commenced, a scheme for the extraction of fumes and odours shall be submitted to and approved in writing by the Local Planning Authority and all works which form part of the approved scheme shall be carried out and completed before the development is brought into use.

Details

The building will include an automated system for the removal of manure – twice weekly in summer and once in winter - and thus there will be no build up of manure which might otherwise give rise to odour problems. The manure will be disposed of using a tractor and trailer in accordance with Environment agency requirements. The operation of the building will conform to “The Code of Good Practice for the Protection of Air” 1998 as amended.

6. Prior to the commencement of the development hereby approved arrangements for the disposal of manure and details of washing down facilities shall be submitted to and approved in writing by the Local Planning Authority and shall be implemented in accordance with the approved scheme at all times from the commencement of use of the development.

Details

As above

320130448P



Hartley Planning & Development
Association
Mr Steven Hartley
Swallow Barn Lower Chapel Mill
Hurst Lane
Rawtenstall
Rossendale
BB4 8TB

Our reference: A/10/74858
Your reference: A/10/74858
Please ask for: Mike Jones
Direct line: 01942 489138
Date: 15th November 2012

Dear Sir

Town and Country Planning Act 1990
Town and Country Planning (Development Management Procedure) (England)
Order 2010

Application Number: A/10/74858

Location: Maypole Equestrian Centre Park Lane Abram Wigan

Approved Outline Application: Outline application for the erection of free range egg production unit and 2no. feed bins (seeking approval of access, appearance, layout and scale).

I refer to the approved outline permission and the information submitted to the Council for the formal discharge of pre-commencement conditions. This letter details the discharge of planning conditions included on planning application A/10/74858.

Condition 1 specifies the time scale for compliance with the development. The condition cannot be discharged at this stage.

Condition 2 states prior to the commencement of development, approval shall be obtained from the LPA with respect to the reserved matter Landscape. The reserved matter application was submitted to the LPA dated the 6th April 2012 and was approved 23rd July 2012 (reference A/12/76889).

Condition 3 specifies the approved plans. The development must be carried out in full accordance with the approved plans.

Condition 4 states that all plant and machinery shall be enclosed with insulating material. The Council has received a scheme providing details of the insulation. Based upon the submitted information and additional monitoring undertaken by Mr P. Bentley, Senior Scientific Officer – Wigan Council, the Council would recommend discharge of the

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condition. The insulation should be maintained at all times, and replaced in time to avoid any potential noise issues.

Condition 5 requests a scheme demonstrating the extraction of fumes and odours from the development. The Council are satisfied with the information submitted to the LPA which details the operation use of the fans, in order to discharge the scheme.

Condition 6 requests additional details for the disposal of manure and washing down facilities. The Council are satisfied with the information submitted and can discharge the condition. The scheme for the disposal shall be carried out in full accordance with the approved scheme.

Condition 7 and 8 refer to drainage on the site. Confirmation of how the site is being drained following the completion of works should be provided to the Local Planning Authority.

Condition 9 refers to the treatment of hardstanding. The works shall be carried out in accordance with the details indicated on the approved plans.

Condition 10 should be carried out through the operational use of the site.

Condition 11 refers to the improvement works to the right of way. The works shall be implemented in full accordance with the approved details prior to the building being brought into first use.

Condition 12. Details of the fencing, enclosures and gates have been submitted as part of the reserved matters application A/12/76889.

The Council reminds the applicant that the submitted schemes must be completed in full accordance with the approved details only, in line with each condition.

If you wish to discuss the matter please contact me on 01942 489138.

Yours faithfully



Mike Jones
Planning Officer

B. Information relating to a poultry unit at High Sampool, Levens, South Lakes for a poultry unit measuring 94.6m by 18m for 39,850 birds

Application SL/2011/0647

Comments from the LPA's environmental Health Officer as below

320130448P

320130448P

South Lakeland District Council

Internal Memorandum

Community Services

From: Mr Graham Metcalfe
Environmental Health Officer

To: Eleanor Huddleston
Planning Officer

My Ref:

Your Ref: SL/2011/0647

Date: 9 September 2011

Location

High Sampool, Levens
Proposed Poultry Unit, 39000 birds



Comments

Noise

The building is to be located 52 meters from the nearest boundary of High Sampool. This is a large residential garden area.

The developer engaged Scenic Acoustics to carry out a BS 4142 Noise assessment for the proposed unit which covers the impact of the poultry unit on background noise levels and the likelihood of complaints.

The new application states that 10 cooling fans will be placed within the eastern gable end wall facing Levens. Natural ventilation will be provided by a number of vents along the sides of the building under the eaves and an open vent at the apex of the roof.

The cooling fans are electronically controlled and are not engaged until the temperature rises to a preset level within the building. I am aware that the use of all fans running will be seasonal and they will not all be running at night when temperatures fall.

Background noise levels have been measured at night at the boundary of High Sampool on the western elevation. The lowest background noise level recorded by Scenic Acoustics over a 5min monitoring period was 30 dBA L90. I have carried my own noise monitoring and have established a background of 35dBA L90 over a 5 min period.

It has been calculated that with ten fans running simultaneously and with a 5dBA correction factor for tonal noise and 3 dBA reduction for the building façade reflections the fans will be 7dBA above background of 30 dBA L90 5min. (background) at the boundary.

It is unlikely that this noise level will be a nuisance at this location at night. It is unlikely that ten fans will be running at this time of night. Fan noise should not be audible within bedrooms.

The lowest daytime noise levels at the boundary of High Sampool is 42.8 dBA L90 5min, this increase is due to traffic on the A590, passing traffic and wildlife. The predicted fan noise of 10 fans at the boundary with a tonal correction of 5dBA and a 3 dBA reduction for the façade reflection will be 37 dBA Leq. The fans should not impact upon background noise levels and it is not likely that nuisance will occur to the residents of High Sampool.

