

## Environmental Noise Report

Proposed New Site  
Bretherton Coaches  
Builders Yard  
Adjacent to Fairclough House  
Loud Bridge  
Chipping

**Date of Survey:** Thursday 25<sup>th</sup> June & Friday 26<sup>th</sup> June 2015

**Date of Report:** Wednesday 8<sup>th</sup> July 2015

**Reference:** 7358E Rev 1

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## 1.0 General Information

### 1.1 Site Address

Proposed New Site  
Bretherton Coaches  
Builders Yard  
ADJ to Fairclough House  
Loud Bridge  
Chipping


### 1.2 Client Instructing Survey

Bretherton Coaches  
Chipping Garage  
Green Lane  
Chipping, Preston  
Lancs  
PR3 2QE


### 1.3 Date of Noise Survey

Thursday 25<sup>th</sup> June & Friday 26<sup>th</sup> June 2015

### 1.4 Survey Consultant

	Name	Position	Signature	Date
Prepared by	M S Hamer AMIOA	Acoustic Engineer		08/07/15
For and on behalf of: Soundtesting.co.uk Ltd				

### 1.5 Report Approval

	Name	Position	Signature	Date
Report Approval	M J M Howell MIOA	Acoustic Engineer		08/07/15
For and on behalf of: Soundtesting.co.uk Ltd				



## **2.0 Introduction**

The proposal is to re-locate a coach tour operation business from its present address to a new address at Loud Bridge.

### **2.1 An Environmental Noise Assessment**

Soundtesting.co.uk Ltd carried out an environmental sound assessment in order to determine the adverse impact on the business on a neighbouring residential property at the new site.

This report will show the noise impact of the coach tour business on the neighbouring dwelling. Reference will also be made to the guidance contained within BS4142:2014 *Methods for rating and assessing industrial and commercial sound* and the local planning authority criteria.

### **3.0 Assumptions & Limitations**

- a. The report assumes that the noise levels measured on site during the environmental noise survey are typical of the site.
- b. It is believed that drawings and information supplied by J Hadfield Engineering and Surveying are up to date and correct.



## 4.0 Criteria

The criteria listed below are taken from associated relevant guidance documents, all of which should be considered for the internal and external noise levels.

### 4.1 BS4142:2014 Method for rating and assessing industrial and commercial sound

This British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature.

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 level and the context in which it occurs.

- a) Typically, the greater this difference, the greater the magnitude of the impact.
- b) A difference of around +10dB or more is likely to be an indication of significant adverse impact, depending on context.
- c) A difference of around +5dB is likely to be an indication of an adverse impact, depending on context.
- d) 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 significant 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 context.

### 4.2 Local Authority Criteria

An email from James Russell, Head of Environmental Health Services, Ribble Valley Borough Council; 19<sup>th</sup> May 2015 states:

Further to our conversation yesterday, as requested I write to confirm the additional information essential to support this application;

- Noise assessment and Site Management Controls - worse case scenarios
- Full evaluation of measured ambient noise levels in relation to required 'hours of use' of site and comparison when vehicle movements
- Max No of vehicles - typical & worse case
- Arrival & departure of employees & controls of noise - parking of their vehicles, pre use checks etc.
- Noise levels arising from operation of depot - description of start-up & departure, warm up/idling, pressurization of vehicles braking systems etc.,
- Assessment of typical daily movements & emergencies/variations



- Control of noise on site - no maintenance in the open air, maintenance likely to cause noise undertaken within buildings with doors closed
- No noise generating equipment externally - e.g. compressors
- Vehicle cleaning & refuelling ?
- Vehicle repairs/bodywork ? - identify any emissions
- Suggest need to compare above against previous typical use - describe in detail

I confirm that any noise assessment should be undertaken by an independent competent noise consultant.

#### **4.3 Criteria Summary**

The noise levels produced from the coach tour business will be compared to the existing background sound levels at the new site in order to identify the impact on the neighbouring residential property. All calculations and background measurements will be carried out in accordance with BS4142:2014.

BS4142:2014 will demonstrate how the coach tour operation may impact on the neighbouring property by demonstrating the maximum noise levels that can be produced by certain activities at the business and noise mitigation methods to keep noise levels lower. Comparisons will be made with the measured  $L_{A90}$  background levels, whilst considering the suggestions from the Local Planning Authority.



## 5.0. Site Description

Brethertons currently operates with 8 vehicles.

- Mercedes Vito 8 seater 2
- Mercedes Sprinter 1
- Mercedes 814D 1
- Mercedes Town Coach 1
- Volvo Coaches 3 (largest coaches)

The business operates a school run which uses up to 4 coaches at any time; of varying models. The school run operates between 07:30 – 09:00 and 14:45 – 16:30. We are informed that coaches will go out and return separately.

Day out excursions is operational 7 days a week. Coaches can on occasions leave the depot around 06:00 and return at the end of the day around 24:00.

The business also operates airport runs. Depending on flight times the coaches can arrive back at any time during the night; however we are informed that coaches will arrive back after midnight only twice a month.

We are informed that the business is generally busier in the summer months and quiet at winter time.

Some minor maintenance work is carried out on the coaches when required.

The new site is located on Loud Bridge Road, which is a quiet road surrounded mainly by farms. The site is currently used as a builder's yard. It is understood that the builder's yard may still operate in a small part of the site when Brethertons operate there.

The nearest noise sensitive dwelling is next to the site and close to the entrance of the site.

At the time of the survey passing cars were audible, as was distant farm machinery and some aircraft.

At the time of the survey the owner of the site was clearing out the unit and therefore; noise of loading skips and cutting a tree down was audible which will not be typical of the sound environment when Brethertons are operating at the site.



## 6.0 Noise Measurement Procedure

### Personnel Present

Martin Hamer AMIOA

### 6.1. Survey Equipment Used

**Table 1**

Manufacturer	Model	Serial No.	Description
Rion	NL52	00211583	Real Time Analyser Sound Level Meter
Rion	NA28	00211583	Real Time Analyser Sound Level Meter
Rion	NC74	35125832	Calibrator

### Calibration

The sound level meters were calibrated to a level of 94.0dB @ 1 kHz with the field calibrator prior to the commencement and on the completion of the survey in accordance to the manufacturer's instructions. No significant drift in calibration was observed. The meters used during the survey are precision grade class 1.

Calibration certificates are available by request.

### 6.2 Weather Conditions

During the measurement period; the temperature averaged at approximately 15°C, the sky was cloudy with wind speed approximately 2.5m/s<sup>-1</sup>.

### 6.3 Noise Measurement Procedure

#### Position 1

A microphone was located on the proposed site in order to measure  $L_{A90}$  background sound pressure levels over a 24 hour period. The microphone was set on a pole 2.5m from the ground surface close to the nearest noise sensitive dwelling.





## Position 2

Due to the levels of noise on site during the day a surrogate location was chosen approximately 120m away where site noise was in-audible but representative of the acoustic environment. The Sound Level Meter was hand held and twelve  $L_{Aeq, 5 \text{ minute}}$  and  $L_{A90}$  samples were measured in order to establish a representative  $L_{Aeq, 1 \text{ hour}}$  and  $L_{A90}$  daytime background level.

## Position 3

Sample measurements were carried out with a hand held Sound Level Meter at the current site in order to determine sound pressure levels of general activities of coaches leaving and arriving, and general activities in the workshop.

Workshop sound pressure levels were measured 3m from the façade of the workshop with both doors closed and open.



## 7.0 Results & Analysis

This section shows the  $L_{A90}$  background level over 1 hour during the daytime. The 1 hour background level has been made up of samples taken when no noise events occurred at the car repair centre. It should be noted that this sample 1 hour measurement should be taken as an average indicative background level and not the lowest level or worst case.

### 7.1 Measurement Data

#### 7.1.1 $L_{A90,1\text{hour}}$ daytime measurements

Table 2 shows the  $L_{A90,1\text{hour}}$  background measurements at the measurement positions. Due to high levels of noise measured on site into the evening, the  $L_{A90}$  measurements between 20:00 and 23:00.

**Table 2:  $L_{A90,1\text{hour}}$  Measurements at the Nearest Noise Sensitive Dwelling**

Time Period	Time	$L_{A90}$ (dBA)
Daytime	Samples between 10:00 – 14:00	35.9
	20:00 – 21:00	34.6
	21:00 – 22:00	34.9
	22:00 – 23:00	30.6

The measured  $L_{A90,1\text{hour}}$  levels can be used to compare with the measurements taken of the activities at the current site.

#### 7.1.2 $L_{A90,15\text{minute}}$ night time measurements

Table 3 shows the  $L_{A90,15\text{minute}}$  measurements rounded to single values taken between 23:00 – 07:00.

**Table 3: Mode values of  $L_{A90,15\text{minute}}$**

$L_{A90,15\text{minute}}$	27	28	29	30	31	32	33	34	35	36	37	38	39
Number of Occurrences	1	3	4	1	6	4	5	1	4	0	1	0	2

28 dBA will be used as the representative  $L_{A90}$  background level during the night time period.



### 7.1.3 Data Taken of Noise Events at Bretherton's Current Site

The following table show samples of the sound events in  $L_{Aeq,T}$

**Table 4: Coaches**

Sound Event	Measurement Time	Specific Sound Level (dBA)
Mercedes Vito Arriving	33 seconds	64.6
Mercedes Vito Leaving	24 seconds	65.9
Mercedes Sprinter Arriving	39 seconds	64.8
Mercedes Sprinter Leaving	60 seconds	66.3
Mercedes 814 Arriving	18 seconds	66.1
Mercedes 814 Leaving	65 seconds	76.7
Mercedes Tourino Arriving	46 seconds	70.2
Mercedes Tourino Leaving	35 seconds	68.1
Volvo Arriving	41 seconds	66.7
Volvo Leaving	48 seconds	64.0

**Table 5: Workshop**

Sound Event	Measurement Time	Specific Sound Level (dBA)
Impact wrench, Doors closed	9 seconds	66.3
Impact wrench, Doors open	11 seconds	78.9
Tyre Gauge, Door closed	11 seconds	64.7
Tyre Gauge, Door open	20 seconds	74.2
Grinder, Door closed	23 seconds	67.8
Grinder, Door open	24 seconds	78.4
Jet Wash	69 seconds	62.7
Compressor door open	20 seconds	54.7



## 7.2 Assessment in Accordance with BS4142:2014

### 7.2.1 Assessment of School Run

The following assessment assumes that one of each coaches have left the premises in a 1 hour period.

In order to calculate the total 'on time' exposure over one hour the following formula has been used.

$$L_{Aeq,1hour} = 10\log[(t_1 \times 10^{L1/10} + t_2 \times 10^{L2/10} + t_3 \times 10^{L3/10} + \dots + t_N \times 10^{LN/10})/T]$$

All values have been rounded into single figures.

**Table 6: School Run**

	Daytime
On time Specific Sound Level at new site	60
Acoustic Feature Correction for impulsivity	0
Rating Level (dBA)	60
Background Level $L_{A90}$ (dBA)	36
Excess of Rating Level over Background.	24

### 7.2.2 Single Coaches arriving at the new Site.

The following assessment demonstrates a single Mercedes Tourino arriving back to site between 22:00 and 23:00, and after 23:00. The sound pressure level of the Tourino arriving has been rounded to 70dB and corrected to an 'on time' level applicable to day time and night time

**Table 7: Single Coach arriving at new site**

	Daytime	Night time
Sound pressure level of Tourino 46 seconds	70	70
On time Specific Sound Level at new site Day $10\log(46/3600)$ Night $10\log(46/900)$	19	13
Acoustic Feature Correction for impulsivity	0	0
Rating Level (dBA)	51	57
Background Level $L_{A90}$ (dBA)	36	28
Excess of Rating Level over Background.	15	29



### 7.2.3 Worksop

It should be considered that there will be no consistency of noise events during a one hour period, and each hour will produce a differing number of events and period lengths.

In order to assess the sound pressure level of the workshop over an hour in accordance with BS4142:2014; the following events have been assumed as an average number of events during a one hour period.

**Table 5**

Event	Assumed number of events per hour
Air Impact Wrench	4
Tyre Gauge	4
Grinder	1 x 1 minute
Jet Wash	1x 20minute wash

In order to calculate the total 'on time' exposure over one hour the following formula has been used.

$$L_{Aeq,1hour} = 10\log\left[\frac{t_1 \times 10^{L_1/10} + t_2 \times 10^{L_2/10} + t_3 \times 10^{L_3/10} + \dots + t_N \times 10^{L_N/10}}{T}\right]$$

Based on the number of events and time periods in Table 5; the Specific Sound Level is calculated to be 59.0dBA with doors closed and 64.6dBA with doors open. It should be noted that the Jet wash in both cases is assumed to be outside.

The calculation will demonstrate the excess of rating level over background 3m from the door.

	Daytime (Door closed)	Daytime (Door open)
On time Specific Sound Level at new site	59	65
Distance attenuation to receiver $20\log(12/3)$	12	12
Acoustic Feature Correction for impulsivity	6	9
Rating Level (dBA)	53	62
Background Level $L_{A90}$ (dBA)	36	36
Excess of Rating Level over Background.	17	26



#### 7.2.4 Subjective Assessment

BS4142 states that where appropriate a rating penalty should be established on a subjective assessment of its characteristics and to correct the specific sound level if a tone, impulse or other characteristics occur.

Although none of the audible sounds from the repair centre on the day of the measurement appeared to be tonal in nature; it could be said that the short audible bursts sound events were impulsive.

BS4142:2014 says of Impulsivity:

*“A correction of up to +9dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3dB for impulsivity which is just perceptible at the noise receptor, 6dB where it is clearly perceptible, and 9dB where it is highly perceptible.”*



## **8.0 Summery**

Although the results demonstrate that there may be an indication of adverse impact; there are certain considerations to take into account.

### **8.1 Context**

The events and time periods used in the assessment are an estimation based on site observations to give an indication of noise impact at the new site. It should be considered that Brethertons will have quiet times of day and busy times during the day, and therefore the impact may alter during certain daytime periods. This will also depend on the nature of jobs being carried out and amount of coach traffic during the day. For instance the school run occurs only twice during a day.

It should also be considered that times of the year may change the impact of noise on the nearest receiver. For instance the seasonal pattern of the tours will vary.

It should also be considered that the noise levels will be slightly different to those measured as the internal sound pressure levels will alter depending on the volume of the workshop and reverberation time within the workshop.

It should be noted that the above context is not exhaustive and many other factors may affect the impact of noise from the activities on site.

### **8.2 Uncertainty**

It should be noted that while every endeavour has been taken to ensure the accuracy of measurements and subsequent calculations, all acoustic measurements and assessments are subject to a degree of uncertainty. The measurements taken on the day were indicative of the noise events that occurred during the measurement period and may not be inclusive of the total activities that are carried out during a working period on the site.



## 9.0 Conclusions

An estimated work schedule of the noise events measured on Wednesday 8<sup>th</sup> July 2015 demonstrates a Rating level over the background  $L_{A90}$  level. In accordance with BS4142:2014 this may be an indication of adverse impact, depending on context.

Context is an important matter in this survey and should be considered.

## 10.0 References

BS4142: 2014 Method for rating and assessing industrial and commercial sound

BS 7445-1: 2003 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures

Acoustics & Noise Control, Third Edition; R.J. Peters, B.J. Smith & Margaret Hollins

The Little Red Book of Acoustics, Second Edition – R. Watson & O Downey

[www.google.co.uk/maps](http://www.google.co.uk/maps)

## 10.1 Drawing References

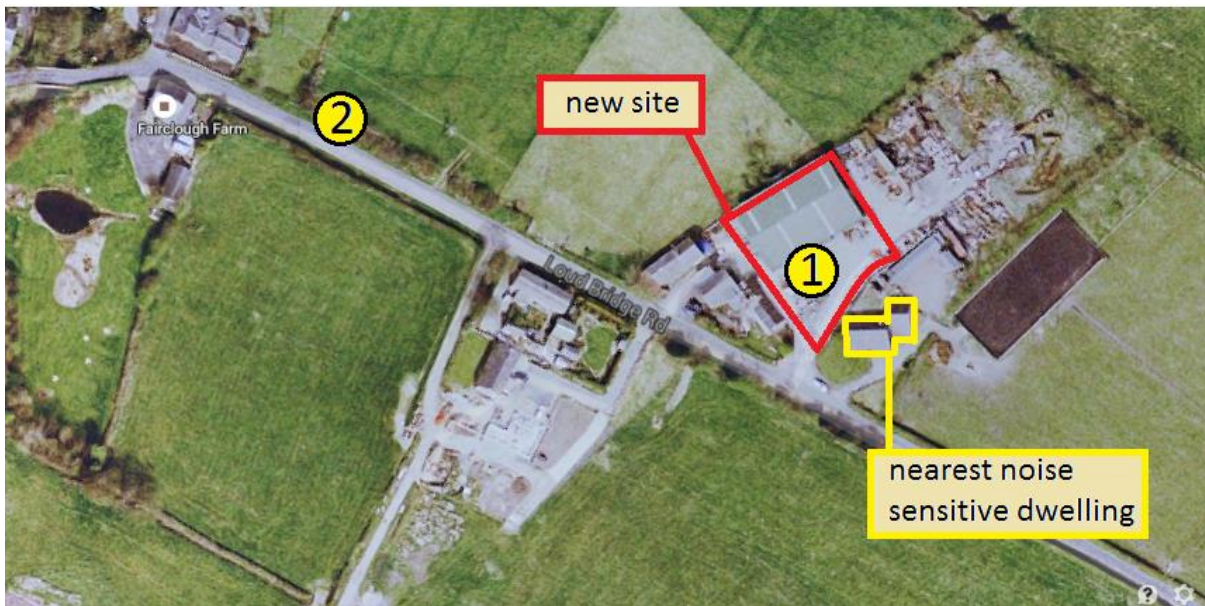
334/201 Oct 2014 J. Hadfield Engineering, Surveying





## Appendix 1

Figure 1: Aerial view showing monitoring positions



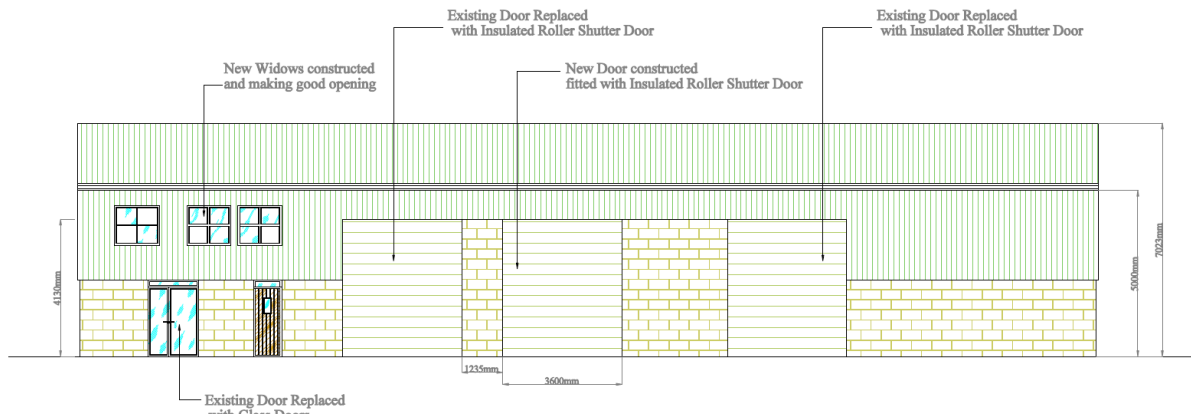


**Figure 2: Picture of monitoring position viewed from the nearest noise sensitive receptor**

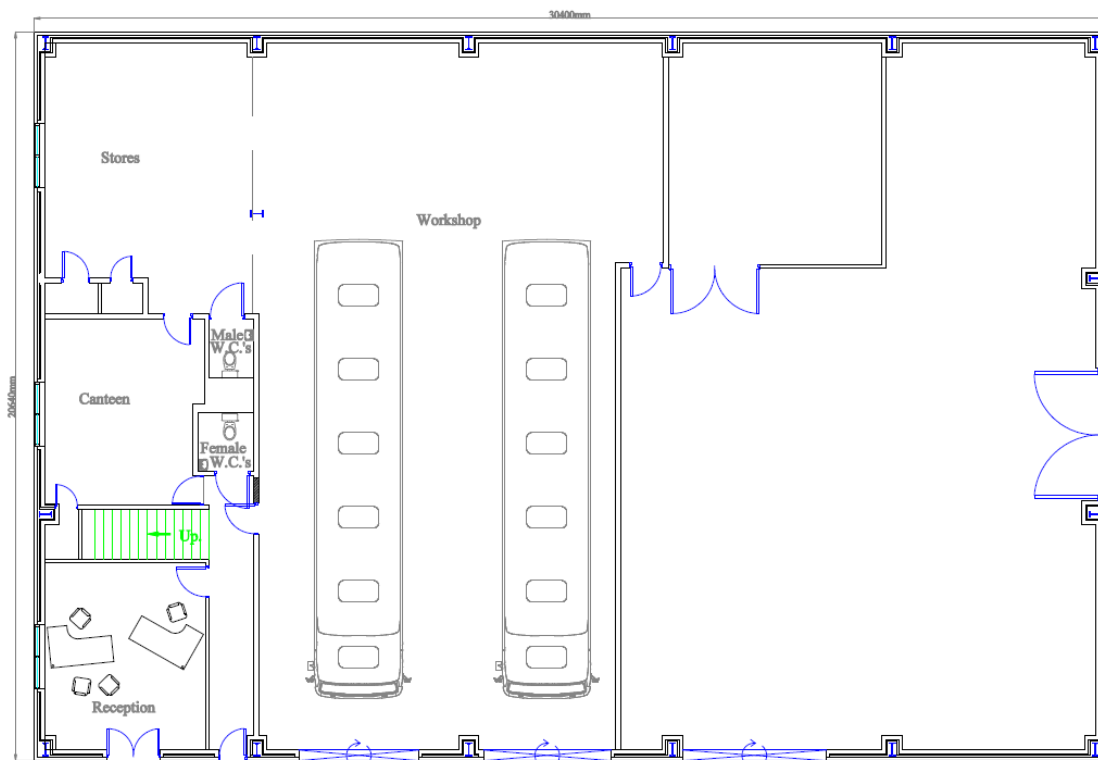




**Figure 3: Proposed elevation of Workshop**



**Figure 4: Plan of Workshop**



**GROUND FLOOR PLAN**