enzygo
environmental consultants

Noise Impact Assessment

Land at Nine Mile Point Industrial Estate, Caerphilly, NP11 7HZ

for:

Hazrem Environmental Ltd

CRM.083.001.NO.R.001

'Experience and expertise working in union'

enzygo.com

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Project:	Land at Nine Mile Point Industrial Estate, Caerphilly, NP11 7HZ
For:	Hazrem Environmental Ltd
Status:	Final
Date:	September 2015
Author:	Peter Tallantyre MIOA
Reviewer:	Peter Cumberlidge, Director

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EXECUTIVE SUMMARY

Enzygo have been commissioned by Hazrem Environmental Ltd to undertake a noise assessment in support of a planning application for a Solid Recovered Fuel/ Refuse Derived Fuel production facility at the Nine Mile Point Industrial Estate in Caerphilly (NP11 7HZ).

Within the scope of this study, existing background and ambient noise levels have been quantified at locations deemed representative of the closest sensitive receptor locations to the site. Noise levels generated by activities within the site have been predicted and subsequently assessed against appropriate guidance to establish the significance of any noise related impacts. The assessments presented within this report have been undertaken to the criteria of British Standard 4142:2014 *Methods for rating and assessing industrial and commercial sound*.

The study concluded that, subject to the implementation of the inherent design measures, noise from the proposed activities would be considered by the Standard to be "*an indication of the specific sound source having a low impact*".

As such it is considered that noise associated with the operation of the proposed facility, as defined within the scope of this report, would not be significantly detrimental to the noise climate of the area and should not preclude the granting of planning permission on grounds of noise, subject to the implementation of appropriate mitigation measures.

1. INTRODUCTION

1.1. Project Introduction

Enzygo Limited (Enzygo) have been commissioned by Hazrem Environmental Ltd (Hazrem) to undertake a noise assessment in support of a planning application for a Solid Recovered Fuel (SRF)/ Refuse Derived Fuel (RDF) production facility at the Nine Mile Point Industrial Estate, Caerphilly, NP11 7HZ.

This assessment is based upon a noise measurement survey undertaken between the 8th May and 14th May 2015 in the vicinity of the site.

Details regarding the assessment methodology employed, together with the results of the survey undertaken, and the subsequent conclusions drawn are presented within this report.

1.2. Site Description

1.2.1. General Environment

The site is within the Nine Mile Point Industrial Estate off Greenmeadow Road, between the villages of Cwmfelinfach and Wattsville in Caerphilly, South Wales. The site lies within the administrative area of Caerphilly County Borough Council (CCBC) and is centre at approximate grid ref ST 19227 91298.

The industrial estate is currently occupied by a mixture of industrial uses including manufacturing and distribution, a number of which are understood to operate on a 24/7 basis.

Aside from the existing industrial uses within the immediate vicinity, the area surrounding the site is predominately open in nature being a mixture of open agricultural land and public/private open space. The site is located in a valley running broadly east to west.

Residential properties are located along the valley to both the east and west in the villages of Wattsville and Cwmfelinfach (respectively). The closest residential dwellings are approximately 460m to the west in the vicinity of Arthur Street in Cwmfelinfach.

The site location is indicated approximately by the red square on Figure 1-1 below.

Figure 1-1: Site Location Plan

(Image Source: Imagery ©2015 Bluesky, DigitalGlobe GeoEye Getmapping plc. Infoterra Ltd & Bluesky, The Geoinformation Group, Map data ©2015 Google)

1.2.2. Key Features of the Application

The proposed development is for an SRF/RDF production facility within the site area defined above.

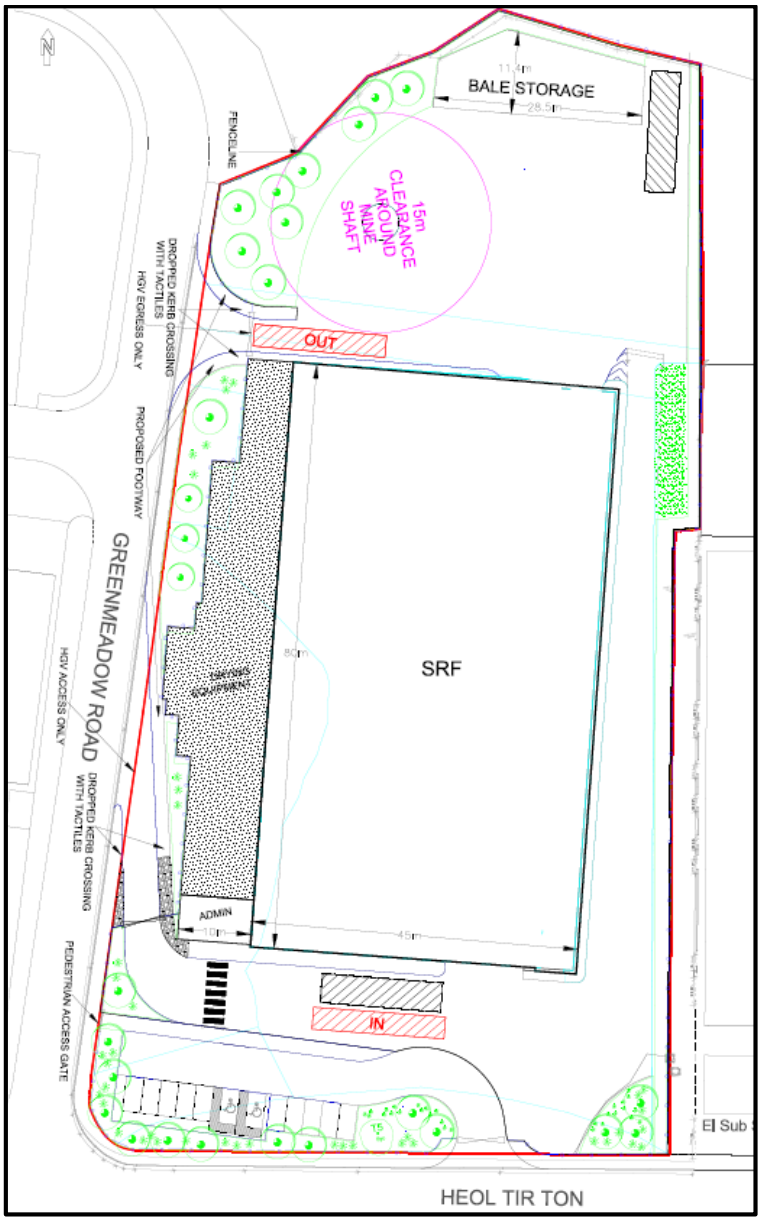
The proposed facility would process up to 100,000 tonnes of dry, non-hazardous commercial/ industrial waste materials per annum, exporting the resultant SRF/ RDF as wrapped bales off site to third parties to be used as fuel to generate energy. The site will be accessed directly off Greenmeadow Road toward the northern end of the site.

Following commissioning the proposal is for the facility to operate 24 hours a day, 7 days a week including Sundays and Bank Holidays. However HGV vehicle movements will be restricted to:

- 07.30- 18.00 Monday to Friday
- 07.30-13.00 Saturday.
- No movements on Sunday or bank holidays.

The proposed layout of the facility is detailed within Figure 1-2 below:

Figure 1-2: Site Layout Plan



The majority of the operations will be fully enclosed within an industrial building, and the delivery of waste will take place within the enclosed building. Once processed, baled and wrapped, the product would be stored within a covered bay area within the site.

The facility would include the following elements:

- The main building including a tipping bay, recycling bays and the SRF/RDF line (40M (w) x 85M (l) x 14M (h) to ridge)
- External machinery
- Bale storage area
- Admin office
- 2No. Weighbridges
- Staff/ visitor car parking (12 spaces including 2 disabled bays)

Following commissioning the facility will operate on the basis of the following:

1. The non-hazardous, commercial, industrial and household waste would be imported onto the site in a combination of 20-tonne Roll-on/Roll-off vehicles and bulkers.
2. The vehicles would enter the site off Greennmeadow Road, and drive along the western and southern boundaries, past the southern weighbridge and into the main building. The waste will then be tipped into the fully enclosed tipping bay. The vehicles would then leave the building and exit the site via the northern weighbridge.
3. The tipped material will pass through a series of shredders, screens and magnets. Inert materials, recyclable plastics and metals will be extracted leaving a mix of mainly non-recyclable paper, card, wood, textiles and plastics. For the production of SRF, the material will be heated to reduce the moisture content and increase the calorific value of the fuel.
4. The extracted recyclates will be transferred to recycling bays where they will be stored in skips.
5. The remaining material will be baled and wrapped, and then transferred to the bale storage area at the north of the site.
6. The SRF/RDF bales, recyclates and any residual waste will be exported from the site in HGV's.

1.3. Consultation

A consultation exercise was undertaken with the local planning authority (LPA) Caerphilly County Borough Council (CCBC). Contact was initiated on the 1st April 2015 via an e-mail transmission to Ceri Davis of the Environmental Health Department. During the consultation the following noise issues relating to the proposed development were discussed:

- The proposed baseline and ambient noise monitoring survey protocol was agreed; and,
- It was agreed that assessments would be undertaken in line with BS4142:2014.

Within the consultation CCBC specified that they currently had not received any complaints regarding noise from within that area.

1.4. Noise Assessment Methodology

In order to assess the potential impacts arising from the proposed operations at the site a number of elements of work have been completed. These are as detailed below:

- A noise survey to quantify the existing baseline and ambient noise climate of the area;
- Assessment of the potential noise impacts of the proposed SRF/ RDF facility on the adjacent sensitive receptor locations; and,
- Where necessary, quantification of suitable acoustic mitigation measures and strategies that could be employed within the design of the site to control noise.

2. NOISE UNITS

2.1. Noise

Before presenting the results of the noise assessment, it is considered useful to provide some background information on noise, the units of measurement and perception of changing levels by people.

Noise is defined as unwanted sound. The range of audible sound is taken to be from 0 dB to 140dB. Examples of typical noise levels relating to everyday occurrences are presented within Table 2-1 below:

Table 2-1: Typical Noise Levels

Source	Sound Pressure Level in dB(A)	Subjective Level
Traffic at kerb edge	70 – 85	Loud
Raised voice at 1 metre	80	Loud
Normal voice at 1 metre	60	Moderate
Residential area at night	40	Quiet

The frequency response of the human ear to noise is usually taken to be about 18Hz (number of oscillations per second) to 18,000Hz. However, the human ear does not respond equally to different frequencies at the same level, it is more sensitive in the mid-frequency range than the lower and higher frequencies and, because of this, when undertaking the measurement of noise the low and high frequency components of any given sound are reduced in importance by applying a filtering (weighting) circuit to the noise measuring instrument. The weighting which is widely accepted to correlate best with the subjective nature of human response to noise and is most widely used to quantify this is the A-weighted filter set. This is an internationally accepted standard for noise measurements.

For variable noise sources within an area an increase of 3dB(A) would be considered to be the minimum perceptible to the human ear under normal conditions. It is generally accepted that an increase/decrease of 10dB(A) corresponds to a doubling or halving in perceived loudness. The 'loudness' of a noise is a purely subjective parameter, dependant not only upon the sound pressure of the event but also on the dynamics of the listener's ear, the time of the day and the general mood of the person.

With regard to environmental noise levels (in the open air), these are rarely steady, but rise and fall according to the activities being undertaken within the surrounding area at any given time. In an attempt to produce a figure that relates this variable nature of noise to human subjective response, a number of statistical noise metrics have been developed. These include:

2.1.1. L_{Aeq} Noise Level

This is the 'equivalent continuous A-weighted sound pressure level, in decibels', and is defined in British Standard BS7445 as the 'value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time'.

It is the unit most suitable for the description of general environmental noise.

2.1.2. L_{A10} Noise Level

The L_{A10} is the noise level that is exceeded for 10% of the measurement period, and gives an indication of the noisier portion of the climate. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

2.1.3. L_{A90} Noise Level

The L_{A90} is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the 'background' noise level.

2.1.4. L_{Amax} Noise Level

The L_{Amax} is the maximum value of the A-weighted sound pressure level measured during the survey period. L_{Amax} can be quantified in two ways, $L_{Amax\,F}$. or Fast time response averaged over a 0.125 second time period or $L_{Amax\,S}$. or Slow time response averaged over a 1 second time period.

This typically relates to impulsive noises such as infrequent vehicle movements, emergency services sirens, shouting, bangs and impact noises etc.

3. STANDARDS AND GUIDANCE

Within the following section of the report, detail will be presented relating to the guidance documents and assessment methodologies appropriate for noise associated with a development such as that proposed at the Nine Mile Point site.

3.1. Planning Policy Wales – Edition 7 (July 2014)

The Planning Policy Wales (PPW) document sets a strategic framework to guide future development and policy in Wales and provides an overview of the Welsh planning system supplemented by a series of Technical Advice Notes.

Chapter 13, section 13.13 of the PPW addresses planning policy relating directly to the reduction of noise pollution:

> *13.13.1 - Noise can affect people's health and well-being and have a direct impact on wildlife and local amenity. Noise levels provide an indicator of local environmental quality. The objective of a policy for noise is to minimise emissions and reduce ambient noise levels to an acceptable standard. Noise Action Plans, drawn up by the Welsh Ministers in relation to Wales under the Environmental Noise Directive, and the Wales Regulations, aim to prevent and reduce environmental noise where necessary and preserve environmental noise quality where it is good. They are a planning consideration in the use and development of land.*

In addition to this, section 13.14 of chapter 13 addresses Development plans and noise:

> *13.14.1 - Development plan policies should be designed to ensure, as far as is practicable, that noise-sensitive developments, such as hospitals, schools and housing, that need to be located close to the existing transportation infrastructure to facilitate access, are designed in such a way as to limit noise levels within and around those development. Such development should be located away from existing sources of significant noise including air transport and some industrial activities or programmed development such as improved or new roads. Policies should also be designed to ensure, as far as possible, that potentially noisy developments are located in areas where noise will not be such an important consideration or where its impact can be minimised. Local planning authorities should adopt policies to prevent potentially noisy developments in areas which have remained relatively undisturbed by noise. Development plan policies should have regard to any relevant Noise Action Plan, including the need to protect urban 'quiet areas' against an increase in noise.*

3.2. Planning Guidance (Wales), Technical Advice Note (Wales) 11, Noise – October 1997

The guidance detailed within Technical Advice Note (TAN) 11 provides advice on how the planning system in Wales can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development.

Paragraph 8 of TAN 11 states, with regard to noise generating developments;

> *Local planning authorities must ensure that noise generating development does not cause an unacceptable degree of disturbance. They should also bear in mind that if subsequent intensification or change of use results in greater intrusion, consideration should be given to the use of appropriate conditions*

The TAN includes guidance on mitigating noise through a number of means including

i. Engineering solutions including reduction of noise at source;

ii. Consideration of lay-out plans and the distance between source and receiver; and,

iii. Administrative measures including limiting operational hours.

Part B17 of Annex B of TAN 11 pertains to noise from industrial and commercial developments. The guidance within the TAN indicates that, for industrial developments, assessment should be undertaken in line with BS4142:1990 and expressed as a function of the Rating level over the existing background noise level. It is noted that BS4142:1990 has subsequently been superseded by numerous versions, with the most recent iteration being dated 2014.

Further detail on these and other relevant standards and guidance documents are presented below.

3.3. British Standard (BS) 4142: Methods for rating and assessing industrial and commercial sound - 2014

This revision to the British Standard was issued in November 2014 and provides a methodology for the rating and assessing of sound associated with both industrial and commercial premises. The purpose of the Standard is clearly outlined in the opening section where it states the method to be appropriate for the consideration of:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and,
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

The Standard is based around the premise that the significance of the impact of an industrial/ commercial facility can be derived from the numerical subtraction of the background noise climate level (not necessarily the lowest background level measured, but the typical background of the receptor) from the measured/calculated rating level of the specific sound under consideration. This comparison will enable the impact of said sound to be concluded based upon the premise that typically "the greater this difference, the greater the magnitude of the impact". This difference is then considered as follows:

- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5dB is likely to be an indication of an adverse impact, depending upon context; and,
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.

BS4142 further states that "*where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact*" again depending upon the specific context of the site. The Standard further qualifies the assessment protocol by outlining that "*not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact*", thus implying that all sites should be assessed on their own merits and specifics.

The Standard quantifies the typical reference periods to be used in the assessment of noise:

Typical Daytime	07:00 – 23:00	1hr assessment period
Typical Night-time	23:00 – 07:00	15min assessment period

The Standard outlines a number of methods for defining appropriate "*character corrections*" within the Rating Levels to account for tonal qualities, Impulsive qualities, other sound characteristics and/or intermittency. These are a) the Subjective Method, b) the Objective Methods for tonality, and c) the Reference Method. It is noted by the Standard that where multiple features are present the corrections should be added in a linear fashion to the Specific level.

The Subjective Method is based on the following corrections:

Table 3-1 – BS4142 Subjective Method Rating Corrections

Level of Perceptibility	Tonal Correction	Impulsivity Correction	Correction for "Other sound characteristics"	Intermittency Correction
No Perceptibility	+0 dB	+0 dB	Where neither tonal nor Impulsive but clearly identifiable +3 dB	If intermittency is readily identifiable +3 dB
Just Perceptible	+2 dB	+3 dB		
Clearly Perceptible	+4 dB	+6 dB		
Highly Perceptible	+6 dB	+9 dB		

The Objective Methods are based around the actual quantification of 1/3 Octave data for the sound under investigation where possible.

However, the Standard states that the assessment methodology provided is not intended for the derivation of internal noise levels arising from sound levels outside or "*where background sound levels and rating levels are low*", however, with regard to the latter no definition of "*low*" is provided . Where these situations prevail it is considered appropriate to reference the absolute guidance levels provided in British Standard BS 8233: 2014 - *Guidance on Sound Insulation and Noise Reduction for Buildings* and the World Health Organisation '*Guidelines for Community Noise*' and '*Night Noise Guidance for Europe*'.

3.4. British Standard 8233: 2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'

When internal noise levels are required to be considered suitable guidance can be found within BS8233 2014.

This Standard provides guidance values within Section 7.7 relating to a range of design criteria levels for certain building types. Section 7.7.1 covers *"Dwelling Houses, flats and rooms in residential use (when unoccupied)"*. Section 7.74 covers *"spaces in non-domestic buildings when they are unoccupied"* The appropriate guideline values are presented within Table 3-2 below.

Table 3-2 - BS8233 Guidance Values

Activity	Location	Design Range dB $L_{Aeq,T}$	
		07:00 – 23:00	23:00 – 07:00
Resting	Living room	35 dB $L_{Aeq, 16hr}$	-
Dining	Dining room/area	40 dB $L_{Aeq, 16hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq, 16hr}$	30 dB $L_{Aeq, 8hr}$
Acoustic privacy in shared spaces	Open plan office	45 – 50dB $L_{Aeq, T}$	
Study and work requiring concentration	Executive office	35 – 40 $L_{Aeq, T}$	

The guidance detailed within BS8233 details that "*Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved*".

With regard to external noise levels the Standard states that "*For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments*". However the Standard recognises that these levels are not achievable in all situations and further states that "*In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited*".

The internal values detailed within the scope of BS8233: 2014 generally accord well with the recommendations of the WHO guidance.

3.5. The World Health Organisation Guidelines for Community Noise (1999)

The World Health Organisation's (WHO) 'Guidelines for Community Noise' report for external environmental noise levels states that;

> *"4.2.7 Annoyance responses*
>
> *During the daytime, few people are seriously annoyed by activities with L_{Aeq} levels below 55dB; or moderately annoyed with L_{Aeq} levels below 50dB. Sound pressure levels during the evening and night should be 5-10dB lower than during the day…."*

For night-time noise sources the WHO guidelines recommend a night-time (23:00 – 07:00) 8hour noise level of 30dB L_{Aeq} inside bedrooms (for reasonably steady noise source) to avoid sleep disturbance. However, this has been somewhat superseded by the more recent Night Noise Guidelines for Europe (2009) as detailed in Section 3.7.

For internal noise levels during the daytime and evening period it is suggested that a noise level of 35dB $L_{Aeq, 16hr}$ (07:00 – 23:00hrs) be achieved to avoid speech intelligibility and moderate annoyance.

3.6. World Health Organisation: Night Noise Guidelines for Europe (2009)

The 'Night Noise Guidelines for Europe' was published by the WHO in 2009 and works in association with the 2000 Guidelines for Community Noise. The guidance identifies that for night-time noise levels;

> *"Considering the scientific evidence on the thresholds of night noise exposure indicated by $L_{night,\ outside}$ as defined in the Environmental Noise Directive (2002/49/EC), an $L_{night,\ outside}$ of 40dB should be the target of the night noise guidelines (NNG) to protect the public, including the most vulnerable groups such as children, the chronically ill and the elderly."*

Further to this, the Night Noise Guidelines states the following:

> *"$L_{night,\ outside}$ value of 55dB is recommended as an interim target for the countries where the NNG cannot be achieved in the short term…."*

4. NOISE MONITORING SURVEY

This section of the report describes the specifics of the noise survey undertaken in the vicinity of the Nine Mile Point site, used to inform this study.

4.1. Background and Ambient Survey Details

In order to determine the existing background and ambient noise climate of the area, a noise monitoring survey was undertaken at a number of locations within close proximity to the facility. The noise survey was undertaken between the 8th May 2015 and 14th May 2015 to cover both daytime and overnight periods for a weekday and weekend.

The survey was undertaken at the following monitoring locations as a means of establishing the existing noise climate;

Table 4-1: Noise Monitoring Locations

Location Reference	Grid Ref (NGR)	Description
LT01	319739, 191245	**No 1 Morrisville** Sound Level Meter (SLM) located in the raised front garden of the residential property overlooking the B4251. Garden area elevated by approximately 3.5m relative to the carriageway. SLM located on soft ground at a height of approximately 1.2m above local ground. Microphone approx. 1m from nearest flat surface (wooden garden fence).
ST02	319029, 192420	**Ty'r-wan** Noise monitoring station located on the access track of Ty'r-wan farm to the north of the proposed site. SLM located on soft ground at a height of 1.5m above local ground. No facades within influencing distance.
LT03	318719, 191532	**3 Arthur Street** SLM located in the terraced rear garden of the residential property, approximately 4m below the B4251. SLM located on hard ground at a height of 1.5m above local ground. No facades within influencing distance.
ST04	319421, 190341	**Penllan Farm** SLM located on the access track to the north of the farm buildings. SLM located on soft ground at a height of 1.5m above local ground. No facades within influencing distance.

The above noise monitoring locations are presented graphically within Figure 4-1 below.

Figure 4-1: Noise Monitoring Location Plan (Map Ref Google Earth)

(Image Source: Imagery ©2015 Bluesky, DigitalGlobe GeoEye Getmapping plc. Infoterra Ltd & Bluesky, The Geoinformation Group, Map data ©2015 Google)

The noise monitoring survey was undertaken as detailed in Table 4-2 and Table 4-3 below.

Table 4-2: Long Term Noise Monitoring

Location	Period		Duration hh:mm:ss	Times
LT01	Weekday	Daytime	50:00:00	Continuous data logging from 14:00 on 8th May 2015 To 16:00 on 13th May 2015
		Overnight	24:00:00	
	Saturday	Daytime	16:00:00	
		Overnight	08:00:00	
	Sunday	Daytime	16:00:00	
		Overnight	08:00:00	
LT03	Weekday	Daytime	50:00:00	Continuous data logging from 14:00 on 8th May 2015 To 16:00 on 13th May 2015
		Overnight	24:00:00	
	Saturday	Daytime	16:00:00	
		Overnight	08:00:00	
	Sunday	Daytime	16:00:00	
		Overnight	08:00:00	

In addition to the long term monitoring locations, a number of short term attended monitoring surveys were also undertaken to augment the dataset. These are as listed below:

Table 4-3: Short Term Noise Monitoring Periods

Location	Period		Duration Hh:mm:ss	Times
ST02	Weekday	Daytime	01:30:00	18:02 to 19:32 on 13th May 2015
		Overnight	01:00:00	01:25 to 02:25 on 14th May 2015
ST04	Weekday	Daytime	01:30:00	20:25 to 21:55 on 13th May 2015
		Overnight	01:00:00	02:55 to 03:55 on 14th May 2015

4.1.1. Weather

It is noted that the noise monitoring survey was primarily undertaken on an unattended basis. As such, no site specific field notes were taken for the majority of the survey period. The weather notes detailed below have been summarised from field notes obtained during the attended portions of the surveys and from commercially available weather data.

Friday 8th May 2015 – Observed Conditions

The weather during the Friday period was noted to be wet with frequent drizzle throughout the attended portion of the survey. The rain was noted to be sufficiently heavy to result in wet road surfaces although no standing water was evident. Wind speeds were noted to be low, averaging approximately 1.7ms^{-1}. Ambient air temperatures were noted as approximately 10°C.

Saturday 9th May 2015 – Commercial Data

The ambient air temperature was between 9°C, during the overnight/ early morning period, and 13°C during the afternoon period.

Wind speeds were quoted as low/ moderate with a west/ south westerly directional component. Occasional showers were expected although these were expected to be sporadic and brief.

Sunday 10th May 2015 – Commercial Data

The weather was dry and mild with no precipitation recorded. The ambient air temperatures were expected to be between 9°C and 17°C, peaking in the late afternoon period. Wind speeds were noted as low with a south/ south easterly direction.

Monday 11th May 2015 – Commercial Data

The weather data for the Monday period demonstrated an ambient air temperature of between 13°C and 16°C. The data indicated that the day was expected to be dry, with no precipitation recorded within the meteorological data. Wind speeds were expected to be low with a south/ south westerly directional component.

Tuesday 12th May 2015 – Commercial Data

The ambient air temperature throughout the day was expected to be between a low of 5°C and a high 16°C. Wind speeds were expected to be low, with a north/ north westerly directional component. Scattered cloud was expected during the day although no precipitation was evident.

Wednesday 13th May 2015 – Observed Conditions

The ambient air temperature during the daytime period was noted to range between 14°C and 18°C. Wind speeds were low, recorded at between 0 and 5mph with no prevailing directional component. Ground conditions were dry with a cloud cover of approximately 10%.

Thursday 14th May 2015 – Observed Conditions

The weather during the overnight period was noted to be dry and mild, with an ambient air temperature of approximately 8°C. Winds were noted as light with some gusting elements. Cloud cover ranged from 50% to 100%.

Ground conditions were noted as dry with no precipitation falling prior to or during the monitoring survey.

4.2. Monitoring Equipment

The monitoring of noise was undertaken in line with the guidance set out within BS7445: 1991. The sound level meter was programmed to monitor over 60 minute intervals during the daytime and 15 minutes intervals during the overnight. The equipment used was set to record the following statistical parameters:

L_{Aeq} in dB

L_{A10} in dB

L_{A90} in dB

L_{Amax} in dB

The following noise monitoring equipment was used in order to undertake the survey work in the vicinity of the site.

Table 4-4: Noise Monitoring Equipment

Equipment	Manufacturer	Type	Serial Number	Calibration Date
Sound Level Meter	01dB	Black Solo	65445	28th March 2014
			65446	28th March 2014
Calibrator	Cirrus	CR:515	59522	29th December 2014

The following set-up parameters were used on the sound level meter during all of the noise measurements undertaken:

Time Weighting: Fast

Frequency Weighting: "A"

The sound level meters used within this assessment were locally calibrated using an electronic calibrator prior to commencement and upon completion of each element of the survey as well as the overall survey, no significant drift in calibration was observed as detailed below:

Table 4-5: Local Survey Calibration Record

Sound Level Meter	Overall Survey	
	Start	End
65446	94.0	94.0
65445	94.0	94.0

The instrumentation calibration documentation for the equipment used is provided in Appendix A.

5. NOISE SURVEY RESULTS

This section of the report summarises the results of the noise monitoring survey undertaken within the scope of this assessment. The full monitoring data is available in Appendix B of this report.

Presented within Table 5-1 below, is a summary of the daytime and overnight noise levels monitored during the long term monitoring survey period at locations LT01 and LT03.

- The daytime data is presented as averaged 60 minute levels ("T" = 60) over the measurement period.
- The Overnight data is presented as averaged 15 minute levels ("T" = 15) over the measurement period.

Table 5-1: Measured Noise Level Data – Long Term locations

Location	Period		Duration hh:mm:ss	Statistical Parameter			
				$L_{Aeq,T}$	$L_{Amax,T}$	$L_{A90,T}$	$L_{A10,T}$
LT01	Weekday	Daytime	50:00:00	62.0	89.7	49.8	65.7
		Overnight	24:00:00	57.2	82.6	40.7	57.0
	Saturday	Daytime	16:00:00	61.0	82.5	46.1	65.4
		Overnight	08:00:00	54.0	73.9	34.0	55.2
	Sunday	Daytime	16:00:00	60.2	89.1	39.3	64.6
		Overnight	08:00:00	56.6	76.4	30.9	61.2
LT03	Weekday	Daytime	50:00:00	46.9	75.6	40.5	48.4
		Overnight	24:00:00	45.4	78.2	36.7	43.8
	Saturday	Daytime	16:00:00	47.2	79.2	36.8	49.8
		Overnight	08:00:00	42.3	67.0	27.7	45.3
	Sunday	Daytime	16:00:00	46.9	66.5	38.0	49.7
		Overnight	08:00:00	44.5	67.8	31.6	47.8

As detailed within Section 4, the long term surveys were augmented with short term, attended surveys which were undertaken during a typical weekday period.

Table 5-2 below, is a summary of the daytime and overnight noise levels monitored during the short term attended monitoring survey period at locations ST02 and ST04.

- The daytime data is presented as averaged 15 minute levels ("T" = 15) over the measurement period.
- The overnight data is presented as the averaged 15 minute levels ("T" = 15) over the measurement period.

Table 5-2: Measured Noise Level Data – Short Term Locations

Location	Period	Duration hh:mm:ss	Statistical Parameter			
			$L_{Aeq,T}$	$L_{Amax,T}$	$L_{A90,T}$	$L_{A10,T}$
ST02	Daytime	01:30:00	47.9	79.9	33.8	47.0
	Overnight	01:00:00	44.8	76.7	26.7	33.1
ST04	Daytime	01:30:00	48.1	66.9	35.7	50.8
	Overnight	01:00:00	44.6	58.6	32.4	49.1

5.1. Subjective Field Notes

The long term stations were unattended for the majority of the survey period, however, during the initial set up and collection of the equipment, the noise climate of the area was noted in order to provide some subjective context to the numerical values. In addition discussions were held with the residents of the area as a means of ascertaining any prevalent noise events during the unattended periods which may have a bearing on the noise levels monitored.

Field notes were also taken during the short term monitoring survey for both the daytime and overnight periods.

Friday 8th May 2015

During the initial set up of the equipment it was noted that road traffic noise dominated the noise climate across all survey locations. This was generally noise associated with the B4251 though some contribution was also noted from the more minor roads in the area.

Other noise sources audible during the survey included activities within the existing industrial/commercial activities of the Nine Mile Point Industrial Estate. Vehicle movements, reversing alarms and occasional bangs/ clangs were audible, specifically at location LT03. In addition, a low level *'hum'* type noise was noted at location LT03 which was considered to originate from the industrial estate. Discussions with the resident at this location indicated that this noise was a frequent feature in the noise climate of the area.

Bird song, wind noise and occasional aircraft movements were also noted during the Friday daytime period.

Wednesday 13th May 2015

The noise climate during the Wednesday daytime period was noted to be similar to that quantified during the previous week. The climate was made up of noise associated with road traffic movements, which dominated the noise climate. In addition, noise was also audible associated with the existing industrial/ commercial facilities at the Nine Mile Point Industrial Estate.

The ambient noise climate at the short term receptor locations was governed by localised farm based noise including livestock (sheep) and occasional farm vehicles. However, the background noise climate was dominated by road traffic noise from the B4251. Subjective notes indicate that loud noise from the valley floor (sirens, loud exhausts etc.) were noted to reverberate around the valley and were audible at the short term monitoring locations (ST02 and ST04).

Thursday 14th May 2015

The noise climate during the overnight period was noted to be similar to that quantified during the preceding daytime period. The climate was dominated by traffic movements, although the flow was at a lower level. Low level wind noise was audible in the surrounding trees and undergrowth.

6. PREDICTIVE NOISE MODELLING ASSESSMENT

This section of the report will detail the calculation methodologies and assumptions used to inform the noise study.

6.1. Noise Modelling Protocols

The noise model was constructed within the commercially available Braunstein + Berndt GmbH computer noise mapping software SoundPLAN 7.4.

Within the scope of this modelling exercise, acoustic propagation has been calculated in accordance with the following standards:

- BS5228: 2009 Code of practice for noise and vibration control on construction and open sites; and,
- ISO 9613-2: Acoustics – Attenuation of sound during propagation outdoors: Part 2: General method of calculation.

6.2. Foundation of the Model

The noise model was constructed utilising the following information:

- Detailed, commercial 1:10,000 scaled OS raster mapping data;
- Detailed, commercial 10m DTM topographical data; and,
- Site layout information as detailed within Enzygo drawing suite no. CRM.083.001.

6.3. Assumptions

Within the scope of the construction of the noise model certain information was required to be assumed. All assumptions embodied within the modelling exercise are as detailed below;

6.3.1. Noise Levels

The following noise source and associated noise levels have been assumed within the modelling study as advised by Hazrem. The information details all static and mobile noise generating plant associated with the development.

Static Plant Noise Sources

The noise levels generated by the plant and equipment associated with the proposed facility have been supplied by Hazrem as detailed below:

Primary Shredder	Internal	92.2dB(A)
3D Combi Screen	Internal	90dB(A)
Metal Separation, Overband Magnet & Eddy Current Separators	Internal	91dB(A)
Heavy Light Separators	Internal	91dB(A)
NIR Optical Units	Internal	92dB(A)
Secondary Shredders	Internal	98dB(A)

Flip Flop Screen	Internal	90dB(A)
Baler & Wrapping Unit	Internal	90dB(A)

Within the noise modelling the fabric of the building structure has been assumed to be constructed as follows:

- Main Walls: R_w of -25dB;
- Roof: R_w of -25dB; and,
- Vehicular Access Doors: R_w of -15dB. The vehicle access doors have been assumed to be closed at all times when not in use.

It has also been assumed that any roof lights, windows or personnel doors accessing the main building would perform to an R_w of no less than the surrounding cladding system (as above).

Identified on the proposed layout plan are a number of plant items that are external to the building. These are located to the west of the main building at a height of approximately 3.5m in general. It has therefore been assumed within the modelling that these sources would need to be controlled to a noise level of no greater than 75dB(A) @ 1m.

6.3.2. Delivery Vehicle Frequency and Movements

The information received from the Traffic Consultant to the project indicates that HGV movements entering and leaving site would not occur on a 24hr basis and would be limited to:

- 07:30 to 18:00 – Monday to Friday;
- 07:30 to 13:00 – Saturday; and,
- No movements on Sundays or Bank Holidays.

The number of vehicle movements accessing the site has been advised to be as follows based upon the operational parameters of the facility:

Table 6-1: Estimated Vehicle Movements

Vehicle Source	Vehicle Type	Movements per hour
Inbound Vehicle Movements		
Incoming Waste Material	HGV/RCV/BULK	3 Deliveries per hour (Southern Doorway)
Outbound Vehicle Movements		
Outbound materials	HGV	3 Exports per hour (Northern Doorway)

The information presented above would indicate up to **6 HGV** movements per hour to the SRF facility. This has been used within the noise model.

Within the model, noise levels generated by the delivery vehicle movements have been calculated based on the linear 'Haul Road' methodology of BS5228 in order to derive a sound power level for this source. The following attributes have been attached to the calculated line source:

- Source height of the vehicle line source has been assumed as 0.5m to represent the approximate height of the exhaust and engine; and,
- Sound power level of a HGV under acceleration has been assumed at 105.5dB(A) as stipulated as a maximum permitted values in EC Directive 92/97/EC.

7. NOISE IMPACT ASSESSMENT

In this section of the report the results of the noise modelling assessment will be compared to the noise climate of the area to conclude the envisaged impacts of the proposed facility.

As previously stated, the impacts associated with the facility would be assessed in line with the methodology detailed within BS4142:2014 *Guidance on Sound Insulation and Noise Reduction for Buildings,* and referencing the WHO Guidelines where appropriate and necessary.

7.1. Operational Scenarios

Following commissioning it is envisaged that the facility would operate on a constant basis 24 hours a day, however, HGV activity would only occur on the site during the daytime period. As such within the assessment it has been assumed that the following operational scenarios would occur:

Daytime Period	• All Internal and External Plant and Equipment as advised; and, • HGV Activity.
Night-time Period	• All Internal and External Plant and Equipment as advised; and, • No HGV Activity.

It is therefore concluded that there would be a change in the emitted noise levels from the facility between the daytime or overnight periods. As such each is considered separately within the following sections.

7.2. Assessment Locations

In the interest of presenting a comprehensive assessment the following noise sensitive receptor locations have been considered and modelled within the study as detailed within Figure 7-2 below.

Figure 7-1: Assessment Locations

The baseline noise climate (Tables 5-1 and 5-2) relate to each of the assessment locations (Figure 7-1) as detailed within the matrix in Table 7-1 below. This has been based upon geographic location and proximity to existing sources.

Table 7-1: Assessment Location Matrix

Assessment Location	Relative Monitoring Location
AL01	LT01
AL02	ST02
AL03a	LT03
AL03b	
AL04	ST04

Where multiple assessment locations are presented (example location AL03) the highest predicted noise level from the operations on site have been used within the assessment.

7.3. Character Corrections

Within the methodology of BS4142 it is necessary to calculate a specific external noise level at each receptor location from the operations/site under consideration. This specific noise level then requires converting to a "Rating" level in order to take account of tonal or noticeable characteristics of the source noise.

It is considered that noise generated by the proposed facility would be industrial in nature and would be in keeping with the existing industrial noise climate of the area. Therefore the following has been concluded with regard to suitable character corrections for the operations. The Subjective Method from BS4142 has been used in this case:

Table 7-2: BS4142 Character Corrections

Characteristic	Subjective Perception	Justification	BS4142 Correction
Tonality	Just	Noise from the facility would be classified as industrial in nature and would not be considered to be discernible in any way from the existing noise climate of the area.	+0
Impulsivity	None	No impulsive noises would be expected from the facility as all loading and unloading activities would occur within the building structure.	+0
Other Characteristics	None	No 'other' characteristics would be expected within the noise from the facility as a result of the majority of operations occurring within the building and the current noise climate of the area.	+0
Intermittency	High	No intermittent noises would be expected from the facility as all loading and unloading activities would occur within the building structure.	+0
		Total Character Correction	**+0**

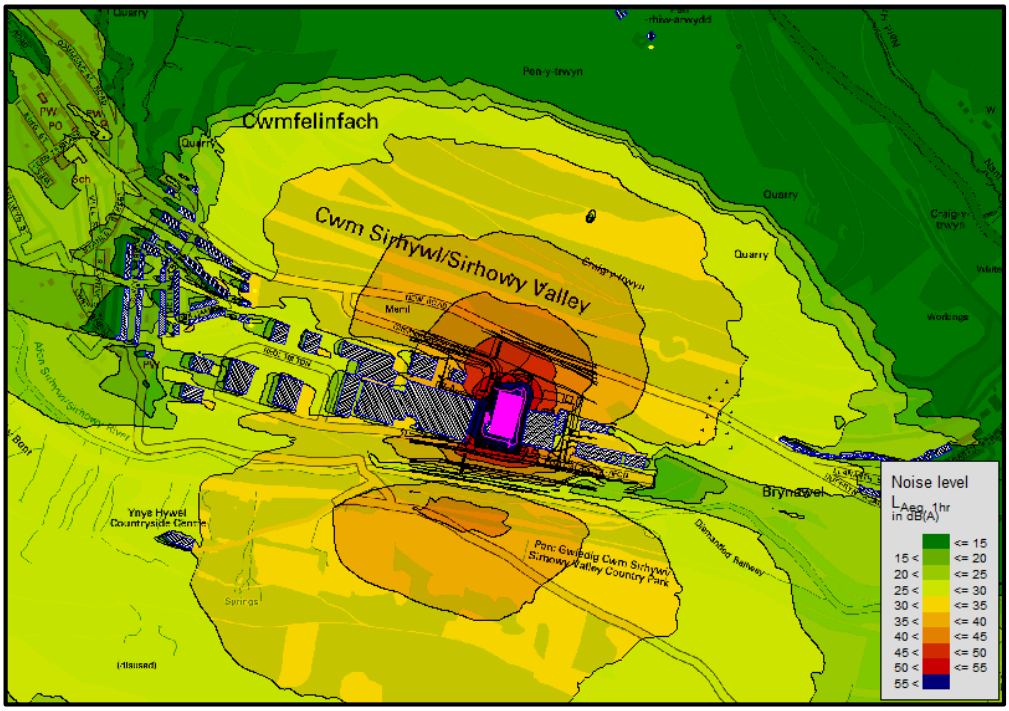
Therefore, within the scope of the assessment produced the predicted specific sound levels from the facility have not been corrected. This is concluded primarily as a result of the nature of the development proposed and that of the surrounding area meaning that the noise generated by the facility would not be out with, or specifically noticeable within the current industrialised noise climate.

7.4. Daytime Assessment

The daytime assessment period for the facility considers typical operation of the facility including all on site plant and equipment, and HGV activity as detailed within Section 6.

The output of the noise model informing this aspect of the study (predicted at 1.5m above local ground level) is presented within Table 7-2 below.

Figure 7-2: Daytime Noise Model Output



With regard to the baseline data used in the assessment the values for the daytime periods stated (weekday, Saturday and Sunday) have been taken from Tables 5-1 and 5-2.

Within the scope of the assessment presented below the noise levels predicted at each receptor represent ground floor levels, predicted at 1.5m above local ground level.

Table 7-3: Daytime Period Assessment

Assessment Location	Assessment Period	Average Measured $L_{90,\ 60mins}$ 'Background' noise level x(1), dB	Predicted BS4142 Specific Noise Level 1, dB	Corrected BS4142 Rating Level 1, dB	Difference, dB	Relevant BS4142 Impact Significance
AL01a	Weekday	50 (49.8)	28 (27.7)	28	-22	*an indication of the specific sound source having a low impact*
	Saturday	46 (46.1)			-18	
	Sunday	39 (39.3)			-11	
AL02	Weekday	34 (33.8)	7 (6.8)	7	-27	*an indication of the specific sound source having a low impact*
AL03	Weekday	41 (40.5)	31 (30.5)	31	-10	*an indication of the specific sound source having a low impact*
	Saturday	37 (36.8)			-6	
	Sunday	38 (38.0)			-7	
AL04	Weekday	36 (35.7)	28 (28.2)	28	-8	*an indication of the specific sound source having a low impact*

Notes:

*(1) **Noise levels rounded to nearest whole dB in accordance with the guidance of BS4142**

It can be seen from the table above that noise arising during the daytime operation of the facility would be rated by the BS4142 Standard as being:

Weekday Daytime - Between -8dB and -27dB below the existing background noise climate of the area, depending upon assessment location.

Saturday Daytime - Between -6dB and -18dB below the existing background noise climate of the area at the assessed locations.

Sunday Daytime - Between -7dB and -11dB below the existing background noise climate of the area at the assessed locations.

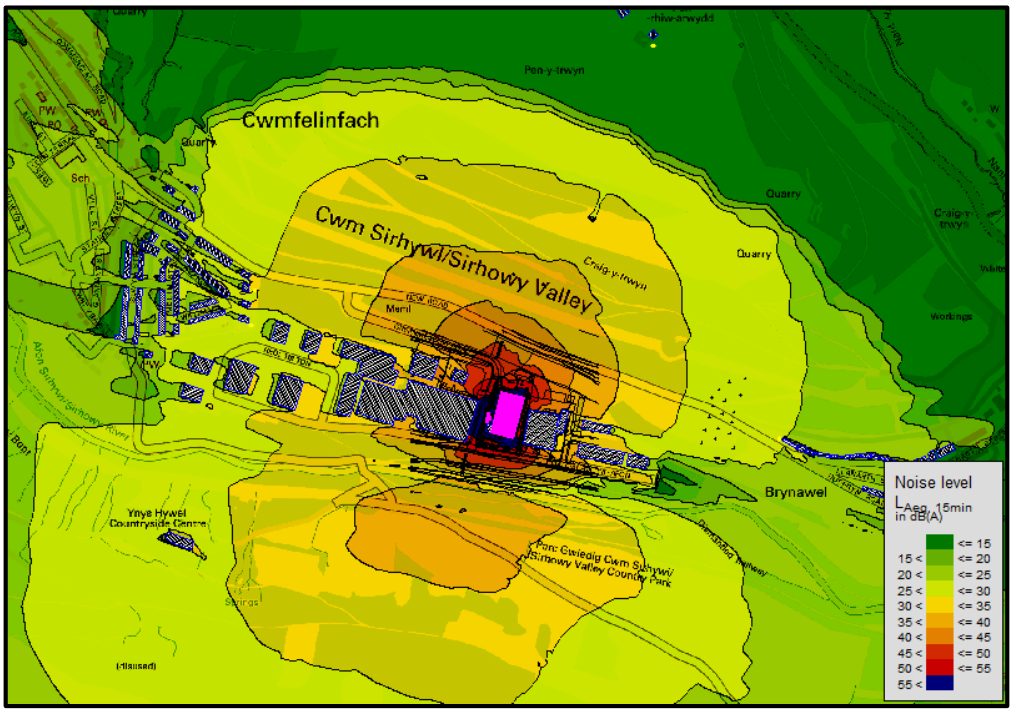
Results of these magnitudes would be considered by the BS4142 standard as being "*an indication of the specific sound source having a low impact*" and as such would be considered acceptable with regard to impacts upon amenity.

7.5. Night-time Assessment

The overnight assessment period for the facility considers typical operation of the facility including all on site plant and equipment as detailed within Section 6. However, no HGV activity would occur during the overnight period.

The output of the noise model informing this aspect of the study (predicted at 4.0m above local ground level) is presented within Table 7-3 below.

Figure 7-3: Night-time Noise Model Output



With regard to the baseline data used in the assessment the values for the overnight period (weekday and weekend) taken from Tables 5-1 and 5-2 have been used.

Within the scope of the assessment presented below the noise levels predicted at each receptor represent first floor levels (4.0m above ground) to reflect upper floor bedroom façades.

Table 7-4: Night-time Period Assessment

Assessment Location	Assessment Period	Average Measured $L_{90, 60mins}$ 'Background' noise level [x(1)], dB	Predicted BS4142 Specific Noise Level [1], dB	Corrected BS4142 Rating Level [1], dB	Difference, dB	Relevant BS4142 Impact Significance
AL01a	Weekday	41 (40.7)	25 (25.3)	25	-16	*an indication of the specific sound source having a low impact*
	Saturday	34 (34.0)			-9	
	Sunday	31 (30.9)			-6	
AL02	Weekday	27 (26.7)	5 (5.1)	5	-22	*an indication of the specific sound source having a low impact*
AL03	Weekday	37 (36.7)	30 (29.9)	30	-7	*Low likelihood of the sound source having an adverse impact to an indication of the specific sound source having a low impact*
	Saturday	28 (27.7)			+2	
	Sunday	32 (31.6)			-2	
AL04	Weekday	32 (32.4)	26 (26.4)	26	-6	*an indication of the specific sound source having a low impact*

Notes:
*(1) **Noise levels rounded to nearest whole dB in accordance with the guidance of BS4142**

It can be seen from the table above that noise arising during the overnight operation of the Energy Centre would be rated by the BS4142 Standard as being:

Weekday Overnight - Between -6dB and -22dB below the existing background noise climate of the area, depending upon assessment location.

Saturday/Sunday Overnight - Between +2dB above and -9dB below the existing background noise climate of the area at the assessed locations.

Sunday/Monday overnight - Between -2dB and -6dB below the existing background noise climate of the area at the assessed locations.

Results of these magnitudes would be considered by the BS4142 standard as describing the source(s) under consideration having a "*low likelihood of the sound source having an adverse impact*" at location AL03, toward "*an indication of the specific sound source having a low impact*" in all other cases. Impacts of these magnitudes would therefore be considered acceptable with regard to impacts upon amenity.

However, it should be further noted that with regard to the assessment of the Saturday (into Sunday) overnight period at receptor AL03, the predicted rating level and the measured background level would both be considered by BS4142 to be low, and as such outside of the assessment methodology presented. As such the assessment result of +2 is not considered entirely representative of the situation at this receptor, or indicative of any resulting adverse impact. Further consideration of the predicted external noise level of 29.9dB(A) to the internal criteria of both the WHO and BS8233 (assuming an open window) concludes that acceptable internal amenity levels would not be breached as a result of the facility at this receptor. Furthermore, the operation of the facility during the overnight period would not increase the current ambient noise climate of receptor LT03 as a result of the predicted noise level being in excess of 10dB below the existing measured ambient noise level. As such it is concluded that the facility would be considered acceptable with regard to potential impacts upon amenity.

8. CONCLUSION

An assessment has been undertaken to consider the potential noise impacts associated with the proposed development of a Solid Recovered Fuel (SRF)/ Refuse Derived Fuel (RDF) production facility at the Nine Mile Point Industrial Estate, Caerphilly, NP11 7HZ.

The proposed facility would typically operate in some capacity throughout a full 24hr period and as such has been assessed and considered accordingly within the scope of this study.

8.1. Daytime Assessment

The assessment of the typical daytime operational scenario concludes that the facility would generate noise considered to be acceptable, and rated by the BS4142 standard to be "*an indication of the specific sound source having a low impact*".

8.2. Night-time Assessment

The assessment of the typical overnight operational scenario concludes that the facility would generate noise considered by the BS4142 standard as having a "low likelihood of the sound source having an adverse impact", tending toward "an indication of the specific sound source having a low impact" depending upon assessment period and location.

Furthermore, with regard to assessment location AL03 during the Saturday night-time period where BS4142 would not be an appropriate assessment tool (due to low background and rating levels), assessment of internal and external ambient noise concludes the scheme to not be detrimental to amenity.

8.3. General Conclusion

Overall it is concluded, and demonstrated based upon the information contained within this report that the proposed facility would operate entirely in line with appropriate criteria and would not result in significant adverse impacts on amenity within the area.

Therefore, subject to the inclusion of the inherent mitigation measures outlined within this report there are no significant issues relating to noise associated with the proposed facility that would be sufficient to deny the approval of planning permission on grounds of noise.

REFERENCES

Welsh Government. Planning Policy Wales, Edition 7, July 2014

Welsh Government. Planning Guidance (Wales), Technical Advice Note (Wales) 11, Noise – October 1997

British Standards Institution. British Standard 4142: Methods for Rating and Assessing Industrial and Commercial Sound – 2014

British Standards Institute. British Standard 8233: Guidance on Sound Insulation and Noise Reduction for Buildings – 2014

World Health Organisation – The World Health Organisation Guidelines for Community Noise – 1999

World Health Organisation – Night Noise Guidelines for Europe - 2009

British Standards Institution. British Standard 7445-2: Description and measurement of environmental noise. Guide to the acquisition of data pertinent to land use', 1991.

International Organisation for Standardisation 9613 Acoustics – Attenuation of Sound during Propagation Outdoors, 1993.

APPENDICES

APPENDIX A – CALIBRATION CERTIFICATION

Certificate of Calibration

Certificate Number: **100883**

Date of Issue: **29 December 2014**

Cirrus Research plc
dedicated to noise measurement

Instrument

Manufacturer:	**Cirrus Research plc**	Type:	**Acoustic Calibrator**
Model Number:	**CR:515**	Serial Number:	**59522**

Calibration Procedure

The sound calibrator detailed above has been calibrated to the published data as described in the operating manual and in the half-inch configuration. The procedures and techniques used are as described in IEC 60942:2003 Annex B – Periodic Tests and three determinations of the sound pressure level, frequency and total distortion were made.

The sound pressure level was measured using a WS2F condenser microphone type MK:224 manufactured by Cirrus Research plc.

The results have been corrected to the reference pressure of 101.33 kPa using the manufacturer's data.

Date of Calibration: **29 December 2014**

Initial Calibration Results

Measurement	Level (dB)	Frequency (Hz)	Distortion (% THD + Noise)
1	93.88	1000.3	0.24
2	93.89	1000.3	0.27
3	93.89	1000.3	0.25
Average	**93.89**	**1000.3**	**0.25**
Uncertainty	± 0.13	± 0.1	± 0.10

The reported uncertainties of measurement are expanded by a coverage factor of k=2, providing a 95% confidence level.

Adjusted Calibration Results

Measurement	Level (dB)	Frequency (Hz)	Distortion (% THD + Noise)
1	94.01	1000.3	0.19
2	94.02	1000.3	0.12
3	94.02	1000.3	0.30
Average	**94.02**	**1000.3**	**0.20**
Uncertainty	± 0.13	± 0.1	± 0.10

The reported uncertainties of measurement are expanded by a coverage factor of k=2, providing a 95% confidence level.

Cirrus Research plc, Acoustic House, Bridlington Road
Hunmanby, North Yorkshire, YO14 0PH, United Kingdom
Telephone: 0845 230 2434 **Int**: +44 1723 891655
Email: sales@cirrusresearch.co.uk
Web: www.cirrusresearch.co.uk
UK Registration No. 987160

bsi. ISO 9001 Quality Management FM 531001
ISO 14001 Environmental Management EMS 552104

Environmental Conditions

Pressure:	**103.08 kPa**
Temperature:	**24.4 °C**
Humidity:	**27.4 %**

Evidence of Pattern Approval

The manufacturer's product information indicates that this model of sound calibrator has been formally pattern approved to IEC 60942:2003 Annex A to Class 1. This has been confirmed with the Physikalisch-Technische Bundesanstalt (PTB).

Statement of Calibration

As public evidence was available, from a testing organisation responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, the sound calibrator tested is considered to conform to all the Class 1 requirements of IEC 60942:2003.

Calibration Laboratory

Laboratory:	Cirrus Research plc Acoustic House, Bridlington Road, Hunmanby North Yorkshire, YO14 0PH, United Kingdom
Test Engineer:	David Mawtus

Certificate of Calibration

Issued by University of Salford (Acoustics Calibration Laboratory)

University of Salford MANCHESTER

APPROVED SIGNATORIES

Claire Lomax [✓] Andy Moorhouse [ ]

Gary Phillips [ ] Danny McCaul [ ]

acoustic calibration laboratory

The University of Salford, Salford, Greater Manchester, M5 4WT, UK

http://www.acoustics.salford.ac.uk

t 0161 295 3030/0161 295 3319 f 0161 295 4456 e c.lomax1@salford.ac.uk

Certificate Number: 01733/2 Date of Issue: 28 March 2014

VERIFICATION OF A SOUND LEVEL METER

FOR:	Enzygo Ltd STEP Business Centre Wortley Road Deepcar Sheffield S36 2UH
FOR THE ATTENTION OF:	Mark Harrison
CALIBRATION DATE:	28 March 2014
TEST PROCEDURE:	CTP08 (Laboratory Manual)

Sound Level Meter					
Manu:	01dB	Model:	Solo	Serial No:	65446
Microphone					
Manu:	01dB	Model:	MCE212	Serial No:	142686
Preamp					
Manu:	01dB	Model:	PRE 21 S	Serial No:	15989

Test Engineer (initial): GP Name: Gary Phillips

This certificate provides traceability of measurement to recognised national standards, and to the units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

Certificate of Calibration

Issued by University of Salford (Acoustics Calibration Laboratory)

Certificate Number: 01733/2 Date of Issue: 28 March 2014

SET-UP INFORMATION

The instrument version was Master 01 V1.404. The tests were performed with the pre-amplifier connected via the supplied microphone extension cable to the instrument's microphone input socket. The reference range, reference SPL, primary indicator range, pulse range and linearity range as specified by the manufacturer have been used. The instrument was adjusted to read 93.8 dB (A) in response to a laboratory sound calibrator. This reading was obtained from the calibration certificate of the calibrator, and information in the manufacturer's instruction manual. The instrument was calibrated without a windshield. Consult manufacturer's instructions if using a windshield.

MEASUREMENTS

The levels of self-generated noise were:

A:	**10.9 dB***
B:	**8.5 dB***
C:	**9.6 dB***
Z:	**14.3 dB***

*Under-range indicated on instrument

THE SOUND LEVEL METER WAS VERIFIED ACCORDING TO THE PROCEDURE GIVEN IN BS7580: Part 1 1997 WITH THE FOLLOWING EXCEPTIONS:

As no sound calibrator was submitted, a suitable laboratory sound calibrator was used for the initial set up.
As no sound calibrator was submitted, it was not possible to obtain a response to an associated sound calibrator.

A stricter test than that specified in 5.5.10 and 5.5.11 of BS 7580 has been used by not applying the low level signal.

STATEMENT OF RESULT:

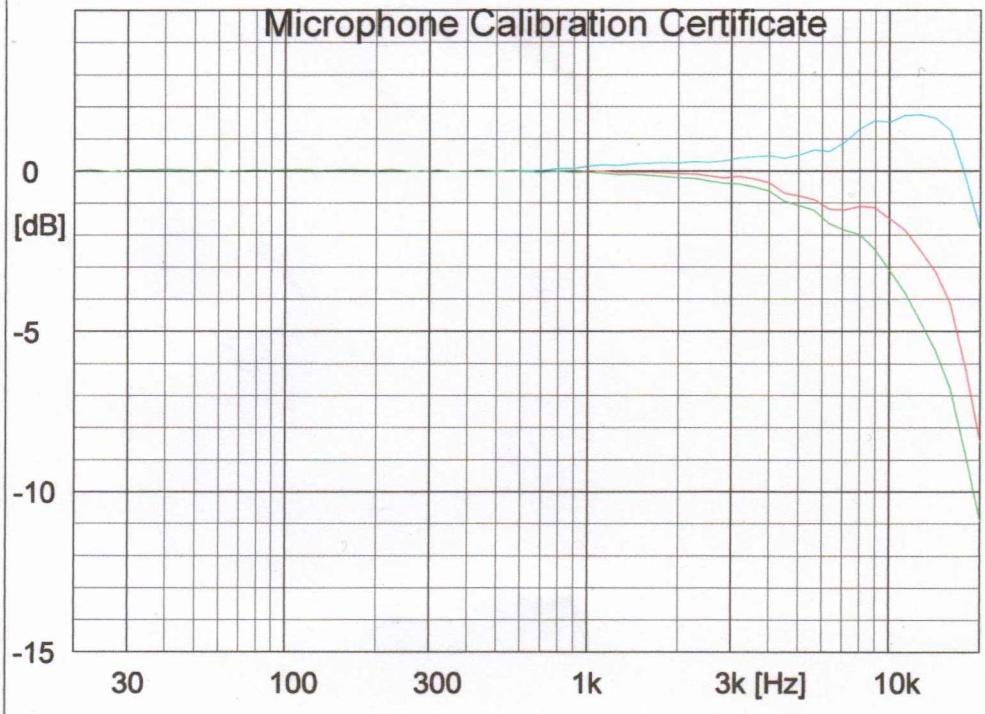
THE SOUND LEVEL METER CONFORMS TO THE TOLERANCES SPECIFIED IN BS7580: PART1 1997

Instruments used in the verification procedure were traceable to National Standards. The method of acoustic calibration employed a standard sound pressure calibrator for the 1 kHz test whilst the tests at 125 Hz and 8 kHz were performed by the electrostatic actuator method. The uncertainty of the Laboratory's 1 kHz calibrator was ±0.10 dB. The uncertainty of the standard calibrator is not included in the applied tolerances. It is assumed that the sound level meter was manufactured in accordance with BSEN60651: 1994 Type 1, and BSEN60804: 1994 Type 1.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements. All measurement results are retained at the acoustic calibration laboratory for at least four years.

This certificate provides traceability of measurement to recognised national standards, and to the units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

Microphone Calibration Certificate



25 March 2014

University of Salford MANCHESTER

01dB MCE212
Serial No: 142686

Nominal
Capacitance: 20.0 pF
Polarization Voltage: 0V

Free field response
Actuator response

acoustic calibration laboratory
The University of Salford, The Crescent,
Salford, Greater Manchester, M5 4WT
http://www.cse.salford.ac.uk/calibration/
t: 0161 295 3030/0161 295 3319
f: 0161 295 4442 e c.lomax1@salford.ac.uk

Certificate of Calibration

Issued by University of Salford (Acoustics Calibration Laboratory)

University of Salford MANCHESTER

APPROVED SIGNATORIES

Claire Lomax [✓] Andy Moorhouse [ ]

Gary Phillips [ ] Danny McCaul [ ]

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Certificate Number: 01733/1 Date of Issue: 28 March 2014

VERIFICATION OF A SOUND LEVEL METER

FOR:	Enzygo Ltd STEP Business Centre Wortley Road Deepcar Sheffield S36 2UH
FOR THE ATTENTION OF:	Mark Harrison
CALIBRATION DATE:	28 March 2014
TEST PROCEDURE:	CTP08 (Laboratory Manual)

Sound Level Meter					
Manu:	01dB	Model:	Solo	Serial No:	65445
Microphone					
Manu:	01dB	Model:	MCE212	Serial No:	103452
Preamp					
Manu:	01dB	Model:	PRE 21 S	Serial No:	14979

Test Engineer (initial): _____ Name: Gary Phillips

This certificate provides traceability of measurement to recognised national standards, and to the units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

Certificate of Calibration

Issued by University of Salford (Acoustics Calibration Laboratory)

Certificate Number: 01733/1 Date of Issue: 28 March 2014

SET-UP INFORMATION

The instrument version was Master 01 V1.404. The tests were performed with the pre-amplifier connected via the supplied microphone extension cable to the instrument's microphone input socket. The reference range, reference SPL, primary indicator range, pulse range and linearity range as specified by the manufacturer have been used. The instrument was adjusted to read 93.8 dB (A) in response to a laboratory sound calibrator. This reading was obtained from the calibration certificate of the calibrator, and information in the manufacturer's instruction manual. The instrument was calibrated without a windshield. Consult manufacturer's instructions if using a windshield.

MEASUREMENTS

The levels of self-generated noise were:

A:	**10.3 dB***
B:	**9.1 dB***
C:	**10.8 dB***
Z:	**16.6 dB***

*Under-range indicated on instrument

THE SOUND LEVEL METER WAS VERIFIED ACCORDING TO THE PROCEDURE GIVEN IN BS7580: Part 1 1997 WITH THE FOLLOWING EXCEPTIONS:

As no sound calibrator was submitted, a suitable laboratory sound calibrator was used for the initial set up.
As no sound calibrator was submitted, it was not possible to obtain a response to an associated sound calibrator.

A stricter test than that specified in 5.5.10 and 5.5.11 of BS 7580 has been used by not applying the low level signal.

STATEMENT OF RESULT:

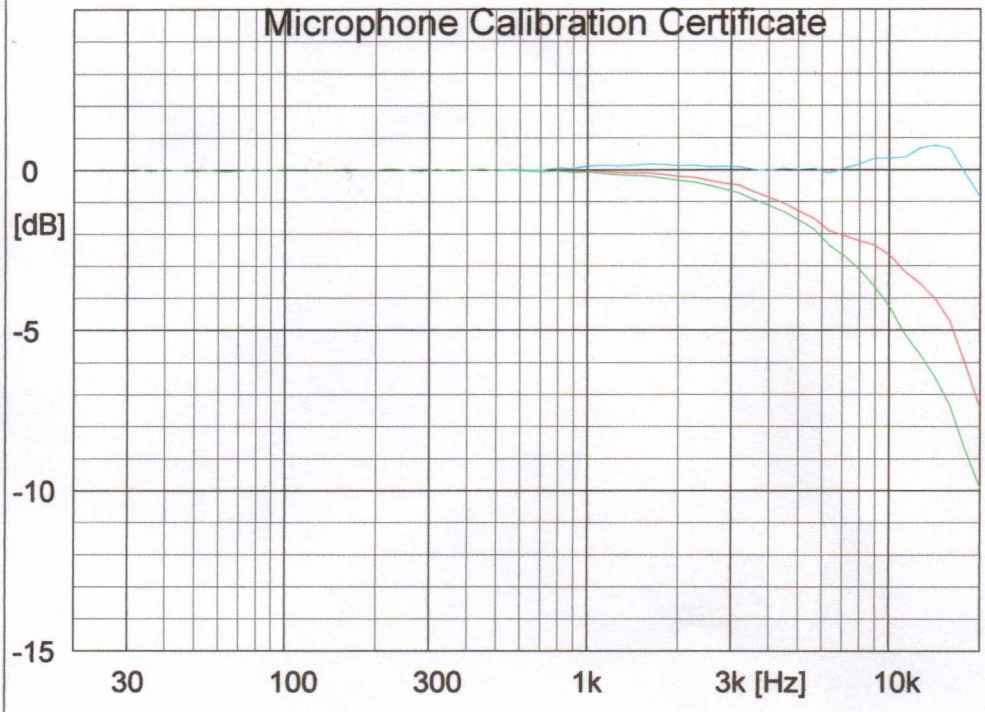
THE SOUND LEVEL METER CONFORMS TO THE TOLERANCES SPECIFIED IN BS7580: PART1 1997

Instruments used in the verification procedure were traceable to National Standards. The method of acoustic calibration employed a standard sound pressure calibrator for the 1 kHz test whilst the tests at 125 Hz and 8 kHz were performed by the electrostatic actuator method. The uncertainty of the Laboratory's 1 kHz calibrator was ±0.10 dB. The uncertainty of the standard calibrator is not included in the applied tolerances. It is assumed that the sound level meter was manufactured in accordance with BSEN60651: 1994 Type 1, and BSEN60804: 1994 Type 1.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements. All measurement results are retained at the acoustic calibration laboratory for at least four years.

This certificate provides traceability of measurement to recognised national standards, and to the units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

Microphone Calibration Certificate



25 March 2014

University of Salford MANCHESTER

01dB MCE212
Serial No: 103452

Nominal
Capacitance: 20.0 pF
Polarization Voltage: 0V

Free field response
Actuator response

acoustic calibration laboratory
The University of Salford, The Crescent,
Salford, Greater Manchester, M5 4WT
http://www.cse.salford.ac.uk/calibration/
t: 0161 295 3030/0161 295 3319
f: 0161 295 4442 e c.lomax1@salford.ac.uk

APPENDIX B – BASELINE NOISE DATA

Location	LT01 - No 1 Morrisville			
Periods	1h			
Start	08/05/2015 14:00			
End	08/05/2015 23:00			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
08/05/2015 14:00	64.0	75.7	52.0	67.7
08/05/2015 15:00	64.8	81.1	52.7	68.1
08/05/2015 16:00	65.2	78.0	53.5	68.4
08/05/2015 17:00	65.1	81.6	53.5	68.4
08/05/2015 18:00	63.6	74.2	50.2	67.7
08/05/2015 19:00	62.1	78.0	49.5	66.4
08/05/2015 20:00	60.6	73.2	45.0	65.4
08/05/2015 21:00	59.7	76.1	46.1	64.0
08/05/2015 22:00	61.2	76.4	49.8	65.3
Overall	**63.3**	**81.6**	**49.2**	**67.4**

Location	LT01 - No 1 Morrisville			
Periods	1h			
Start	09/05/2015 07:00			
End	09/05/2015 23:00			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
09/05/2015 07:00	60.9	77.1	45.8	65.5
09/05/2015 08:00	61.7	73.0	49.6	66.2
09/05/2015 09:00	61.2	73.2	48.4	65.6
09/05/2015 10:00	61.5	72.1	49.2	65.7
09/05/2015 11:00	62.0	74.0	50.8	66.1
09/05/2015 12:00	62.2	78.5	50.4	66.1
09/05/2015 13:00	62.2	73.5	51.0	66.0
09/05/2015 14:00	61.5	74.1	49.2	65.8
09/05/2015 15:00	60.9	79.2	49.8	65.0
09/05/2015 16:00	61.3	76.8	50.0	65.3
09/05/2015 17:00	61.6	71.5	50.0	66.0
09/05/2015 18:00	61.5	80.5	47.4	65.7
09/05/2015 19:00	60.5	82.5	46.8	64.7
09/05/2015 20:00	59.2	76.8	43.9	64.0
09/05/2015 21:00	57.9	78.9	38.8	62.4
09/05/2015 22:00	57.0	74.9	35.5	61.4
Overall	**61.0**	**82.5**	**46.1**	**65.4**

Location	LT01 - No 1 Morrisville			
Periods	15m			
Start	08/05/2015 23:00			
End	09/05/2015 07:00			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
08/05/2015 23:00	60.0	73.0	50.0	64.2
08/05/2015 23:15	57.3	72.9	46.8	61.2
08/05/2015 23:30	58.7	70.6	50.7	62.2
08/05/2015 23:45	58.4	71.8	49.0	61.7
09/05/2015 00:00	59.2	73.1	49.0	63.0
09/05/2015 00:15	56.3	71.5	45.4	59.6
09/05/2015 00:30	55.5	72.8	44.6	57.0
09/05/2015 00:45	56.9	74.0	45.9	60.1
09/05/2015 01:00	56.1	72.9	45.6	58.7
09/05/2015 01:15	56.4	71.8	45.4	59.7
09/05/2015 01:30	56.9	75.2	44.4	58.7
09/05/2015 01:45	57.0	71.9	44.1	59.5
09/05/2015 02:00	54.6	71.6	43.2	55.8
09/05/2015 02:15	54.8	71.5	41.9	57.1
09/05/2015 02:30	53.3	71.1	41.9	53.7
09/05/2015 02:45	53.9	70.5	42.3	57.0
09/05/2015 03:00	53.1	72.9	41.2	52.6
09/05/2015 03:15	56.6	72.8	45.4	59.3
09/05/2015 03:30	52.4	70.4	43.3	53.4
09/05/2015 03:45	52.0	67.9	44.4	54.2
09/05/2015 04:00	54.4	71.1	44.4	56.6
09/05/2015 04:15	54.9	70.1	43.6	56.5
09/05/2015 04:30	56.1	73.2	41.7	57.4
09/05/2015 04:45	54.5	75.3	44.5	54.2
09/05/2015 05:00	54.3	69.8	44.4	57.1
09/05/2015 05:15	56.5	70.4	43.4	60.9
09/05/2015 05:30	58.0	71.5	43.5	62.3
09/05/2015 05:45	58.3	72.6	42.6	62.3
09/05/2015 06:00	59.4	78.6	44.5	63.5
09/05/2015 06:15	59.4	72.0	43.9	64.4
09/05/2015 06:30	58.9	72.2	45.1	64.0
09/05/2015 06:45	59.1	72.2	42.4	64.1
Overall	**56.9**	**78.6**	**43.7**	**60.1**

Location	LT01 - No 1 Morrisville			
Periods	15m			
Start	09/05/2015 23:00			
End	10/05/2015 07:00			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
09/05/2015 23:00	58.0	71.9	36.1	63.1
09/05/2015 23:15	56.4	71.2	34.6	60.8
09/05/2015 23:30	55.5	68.9	35.5	60.3
09/05/2015 23:45	52.8	69.2	35.3	52.9
10/05/2015 00:00	54.2	72.6	35.7	55.2
10/05/2015 00:15	54.5	71.8	36.0	56.7
10/05/2015 00:30	56.2	73.8	35.7	58.7
10/05/2015 00:45	54.9	70.6	35.1	57.0
10/05/2015 01:00	52.8	72.6	34.4	50.7
10/05/2015 01:15	52.7	69.4	34.3	53.3
10/05/2015 01:30	54.4	72.7	34.0	55.8
10/05/2015 01:45	53.2	72.7	33.1	53.4
10/05/2015 02:00	52.3	71.3	32.8	52.5
10/05/2015 02:15	52.1	69.5	33.8	53.2
10/05/2015 02:30	50.1	70.5	34.1	47.2
10/05/2015 02:45	49.0	68.4	33.1	44.2
10/05/2015 03:00	51.6	70.4	33.5	50.9
10/05/2015 03:15	50.1	72.2	33.5	46.0
10/05/2015 03:30	49.5	72.6	33.6	41.7
10/05/2015 03:45	51.0	71.8	33.6	48.1
10/05/2015 04:00	51.0	70.0	33.9	50.1
10/05/2015 04:15	53.0	71.2	33.9	52.5
10/05/2015 04:30	51.6	69.2	36.2	50.1
10/05/2015 04:45	51.0	69.9	41.7	50.0
10/05/2015 05:00	50.2	66.8	42.2	50.4
10/05/2015 05:15	52.9	69.1	40.3	51.3
10/05/2015 05:30	53.7	69.2	39.5	56.2
10/05/2015 05:45	54.4	73.9	39.0	53.9
10/05/2015 06:00	56.9	71.2	39.7	59.8
10/05/2015 06:15	56.0	69.2	40.1	60.0
10/05/2015 06:30	57.9	70.2	40.7	62.3
10/05/2015 06:45	56.4	71.8	40.4	60.0
Overall	**54.0**	**73.9**	**34.0**	**55.2**

Location	LT01 - No 1 Morrisville			
Periods	1h			
Start	10/05/2015 07:00			
End	10/05/2015 23:00			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
10/05/2015 07:00	57.2	75.6	38.5	61.4
10/05/2015 08:00	56.8	72.5	37.7	61.4
10/05/2015 09:00	57.8	72.1	38.7	62.9
10/05/2015 10:00	59.8	76.5	42.8	64.2
10/05/2015 11:00	60.4	79.5	43.0	64.6
10/05/2015 12:00	61.9	86.2	45.8	65.8
10/05/2015 13:00	61.4	76.1	47.1	65.5
10/05/2015 14:00	60.9	73.5	44.7	65.3
10/05/2015 15:00	61.4	85.3	43.0	65.4
10/05/2015 16:00	63.3	89.1	45.0	65.9
10/05/2015 17:00	61.0	76.7	45.6	65.4
10/05/2015 18:00	61.1	84.4	43.4	65.3
10/05/2015 19:00	60.1	77.0	41.2	64.9
10/05/2015 20:00	58.6	74.8	38.1	63.5
10/05/2015 21:00	58.2	76.6	34.0	62.7
10/05/2015 22:00	55.6	76.5	31.6	59.0
Overall	**60.2**	**89.1**	**39.3**	**64.6**

Location	LT01 - No 1 Morrisville			
Periods	1h			
Start	11/05/2015 07:00			
End	11/05/2015 23:00			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
11/05/2015 07:00	63.0	77.6	51.6	66.4
11/05/2015 08:00	63.3	76.5	53.6	66.7
11/05/2015 09:00	62.0	74.3	48.8	66.1
11/05/2015 10:00	61.3	76.4	48.7	65.2
11/05/2015 11:00	61.5	86.1	48.6	65.0
11/05/2015 12:00	61.3	79.4	46.6	65.1
11/05/2015 13:00	61.0	74.6	48.3	65.1
11/05/2015 14:00	61.6	84.3	49.2	65.1
11/05/2015 15:00	62.0	75.8	49.8	65.8
11/05/2015 16:00	63.1	74.9	53.0	66.5
11/05/2015 17:00	64.6	87.8	54.5	67.3
11/05/2015 18:00	62.8	77.9	51.5	66.8
11/05/2015 19:00	62.2	88.3	48.2	65.4
11/05/2015 20:00	59.8	76.5	45.3	64.2
11/05/2015 21:00	60.1	84.9	43.4	64.0
11/05/2015 22:00	57.2	73.8	38.9	61.8
Overall	**62.0**	**88.3**	**47.7**	**65.9**

Location	LT01 - No 1 Morrisville			
Periods	15m			
Start	10/05/2015 23:00			
End	11/05/2015 07:00			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
10/05/2015 23:00	55.3	69.4	32.3	59.4
10/05/2015 23:15	54.7	74.6	31.6	57.1
10/05/2015 23:30	54.2	71.7	31.0	56.0
10/05/2015 23:45	54.5	72.5	31.1	54.0
11/05/2015 00:00	52.7	69.5	31.2	53.2
11/05/2015 00:15	53.4	71.7	30.8	53.5
11/05/2015 00:30	52.4	70.4	30.6	54.8
11/05/2015 00:45	53.4	73.7	30.6	52.2
11/05/2015 01:00	54.8	74.7	30.7	53.3
11/05/2015 01:15	48.4	68.3	30.7	45.2
11/05/2015 01:30	42.2	62.1	30.8	36.3
11/05/2015 01:45	54.0	74.6	30.5	49.2
11/05/2015 02:00	49.8	71.2	30.7	45.9
11/05/2015 02:15	50.9	74.5	30.7	40.8
11/05/2015 02:30	51.0	71.9	30.7	46.8
11/05/2015 02:45	50.6	68.5	30.7	47.3
11/05/2015 03:00	50.5	70.3	30.7	47.7
11/05/2015 03:15	48.8	71.5	30.5	36.1
11/05/2015 03:30	53.3	74.7	31.0	49.1
11/05/2015 03:45	53.8	72.9	30.7	53.7
11/05/2015 04:00	55.3	71.5	31.0	57.8
11/05/2015 04:15	55.6	73.7	30.9	58.3
11/05/2015 04:30	56.0	72.7	32.9	57.9
11/05/2015 04:45	56.1	69.9	42.3	60.5
11/05/2015 05:00	58.1	73.3	43.7	62.9
11/05/2015 05:15	59.5	72.5	43.9	64.2
11/05/2015 05:30	59.9	71.1	45.5	64.3
11/05/2015 05:45	60.4	75.4	43.0	64.5
11/05/2015 06:00	61.2	74.0	46.6	65.2
11/05/2015 06:15	61.2	73.9	44.1	65.4
11/05/2015 06:30	61.7	71.1	48.0	65.5
11/05/2015 06:45	62.7	76.4	49.4	66.1
Overall	**56.6**	**76.4**	**30.9**	**61.2**

Location	LT01 - No 1 Morrisville			
Periods	15m			
Start	11/05/2015 23:00			
End	12/05/2015 07:00			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
11/05/2015 23:00	56.4	70.6	38.2	60.2
11/05/2015 23:15	54.8	72.9	36.6	57.9
11/05/2015 23:30	53.6	69.6	34.8	55.6
11/05/2015 23:45	54.1	75.8	35.7	54.2
12/05/2015 00:00	54.3	71.7	37.5	56.6
12/05/2015 00:15	59.0	82.6	37.8	55.8
12/05/2015 00:30	54.7	71.0	40.2	56.5
12/05/2015 00:45	54.0	72.2	37.5	54.2
12/05/2015 01:00	52.3	71.1	37.6	51.6
12/05/2015 01:15	52.5	72.9	37.7	51.2
12/05/2015 01:30	53.1	70.7	36.8	54.2
12/05/2015 01:45	50.1	68.0	38.5	50.7
12/05/2015 02:00	52.9	72.4	37.6	51.9
12/05/2015 02:15	53.4	75.7	36.6	50.1
12/05/2015 02:30	53.1	74.1	36.5	51.2
12/05/2015 02:45	54.4	72.0	36.4	56.0
12/05/2015 03:00	52.9	70.9	36.0	52.5
12/05/2015 03:15	53.8	73.5	38.4	53.1
12/05/2015 03:30	51.5	71.7	35.0	50.9
12/05/2015 03:45	52.7	70.5	35.1	53.2
12/05/2015 04:00	54.6	74.3	34.8	55.2
12/05/2015 04:15	53.9	74.0	35.8	55.0
12/05/2015 04:30	56.7	72.6	40.1	59.2
12/05/2015 04:45	56.4	70.9	42.7	59.9
12/05/2015 05:00	57.9	71.0	44.0	62.2
12/05/2015 05:15	59.7	74.6	44.4	64.3
12/05/2015 05:30	62.1	73.4	50.2	66.5
12/05/2015 05:45	60.2	71.9	46.0	64.7
12/05/2015 06:00	62.7	73.5	52.3	66.6
12/05/2015 06:15	62.3	71.1	52.2	66.1
12/05/2015 06:30	63.0	73.2	52.1	66.8
12/05/2015 06:45	63.5	72.7	52.7	67.1
Overall	**57.6**	**82.6**	**36.8**	**62.1**

Location	LT01 - No 1 Morrisville			
Periods	1h			
Start	12/05/2015 07:00			
End	12/05/2015 23:00			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
12/05/2015 07:00	64.2	76.2	54.5	67.5
12/05/2015 08:00	63.7	89.7	52.0	66.6
12/05/2015 09:00	61.6	83.9	53.7	63.9
12/05/2015 10:00	58.3	74.8	47.8	61.0
12/05/2015 11:00	56.2	71.7	46.6	59.4
12/05/2015 12:00	61.4	78.2	49.5	65.1
12/05/2015 13:00	61.4	75.0	49.5	65.5
12/05/2015 14:00	62.8	88.5	50.4	65.6
12/05/2015 15:00	61.7	74.5	49.3	65.6
12/05/2015 16:00	63.0	77.5	51.5	66.7
12/05/2015 17:00	63.8	78.6	52.8	67.3
12/05/2015 18:00	63.7	84.4	51.1	67.2
12/05/2015 19:00	60.6	72.3	46.5	65.4
12/05/2015 20:00	59.4	78.9	42.7	63.9
12/05/2015 21:00	59.3	79.9	41.0	63.9
12/05/2015 22:00	58.4	79.5	37.3	62.4
Overall	**61.8**	**89.7**	**47.0**	**65.8**

Location	LT01 - No 1 Morrisville			
Periods	15m			
Start	12/05/2015 23:00			
End	13/05/2015 07:00			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
12/05/2015 23:00	55.6	72.8	36.5	58.9
12/05/2015 23:15	58.1	78.0	34.5	60.2
12/05/2015 23:30	54.8	71.7	33.3	58.1
12/05/2015 23:45	56.7	73.5	33.1	58.4
13/05/2015 00:00	50.7	71.9	34.0	48.7
13/05/2015 00:15	55.0	72.9	35.2	54.5
13/05/2015 00:30	54.2	71.3	34.3	54.0
13/05/2015 00:45	49.7	70.9	33.4	46.4
13/05/2015 01:00	51.7	71.0	33.8	50.5
13/05/2015 01:15	50.7	71.5	34.5	45.9
13/05/2015 01:30	50.2	69.6	34.4	48.4
13/05/2015 01:45	48.0	69.6	34.1	38.7
13/05/2015 02:00	53.5	74.6	35.1	51.1
13/05/2015 02:15	42.4	62.4	33.2	40.1
13/05/2015 02:30	54.2	76.8	33.4	51.8
13/05/2015 02:45	49.8	69.6	33.5	47.1
13/05/2015 03:00	51.3	74.0	33.6	46.8
13/05/2015 03:15	52.4	71.8	34.4	48.0
13/05/2015 03:30	50.1	68.9	34.1	45.4
13/05/2015 03:45	53.3	70.6	34.1	52.7
13/05/2015 04:00	52.6	70.2	34.7	52.6
13/05/2015 04:15	51.6	73.7	34.4	46.9
13/05/2015 04:30	56.1	70.4	40.3	58.8
13/05/2015 04:45	58.1	73.2	42.9	60.4
13/05/2015 05:00	57.7	70.7	42.4	62.6
13/05/2015 05:15	59.4	76.6	43.0	63.9
13/05/2015 05:30	60.1	73.8	41.6	65.3
13/05/2015 05:45	61.2	75.0	44.6	66.1
13/05/2015 06:00	62.1	73.9	45.4	66.6
13/05/2015 06:15	61.9	74.2	46.5	66.2
13/05/2015 06:30	63.2	76.7	49.0	66.6
13/05/2015 06:45	62.6	72.7	46.5	66.7
Overall	**57.1**	**78.0**	**34.2**	**61.2**

Location	LT01 - No 1 Morrisville			
Periods	1h			
Start	13/05/2015 07:00			
End	13/05/2015 16:00			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
13/05/2015 07:00	64.2	80.5	51.3	67.6
13/05/2015 08:00	62.9	78.0	48.7	66.8
13/05/2015 09:00	60.0	73.4	42.1	64.6
13/05/2015 10:00	58.7	77.6	40.5	63.2
13/05/2015 11:00	58.8	79.1	39.1	63.3
13/05/2015 12:00	60.0	81.4	37.6	64.4
13/05/2015 13:00	59.8	75.0	38.6	64.7
13/05/2015 14:00	60.4	80.2	41.3	64.8
13/05/2015 15:00	61.2	75.0	41.6	65.5
Overall	**61.0**	**81.4**	**40.9**	**65.3**

Location	ST02 - Ty'r-wan			
Periods	15m			
Start	13/05/2015 18:02			
End	13/05/2015 19:32			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
13/05/2015 18:02	44.2	60.4	34.1	47.2
13/05/2015 18:17	40.2	54.3	33.7	42.7
13/05/2015 18:32	54.1	79.9	36.1	48.5
13/05/2015 18:47	44.5	60.9	33.3	47.3
13/05/2015 19:02	43.8	56.1	34.3	47.2
13/05/2015 19:17	43.0	56.8	32.4	46.8
Overall	**47.9**	**79.9**	**33.8**	**47.0**

Location	ST02 - Ty'r-wan			
Periods	15m			
Start	14/05/2015 01:25			
End	14/05/2015 02:25			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
14/05/2015 01:25	50.7	76.7	28.9	40.6
14/05/2015 01:40	31.1	38.6	27.6	33.1
14/05/2015 01:55	29.3	36.6	27.0	31.1
14/05/2015 02:10	28.4	44.2	25.9	29.9
Overall	**44.8**	**76.7**	**26.7**	**33.1**

Location	LT03 - 3 Arthur Street			
Periods	1h			
Start	08/05/2015 14:00			
End	08/05/2015 23:00			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
08/05/2015 14:00	48.5	56.8	45.7	50.3
08/05/2015 15:00	50.2	67.1	46.1	52.3
08/05/2015 16:00	51.0	69.7	47.6	52.4
08/05/2015 17:00	51.0	64.2	47.0	52.7
08/05/2015 18:00	49.5	67.0	43.3	51.4
08/05/2015 19:00	47.2	59.8	41.6	49.7
08/05/2015 20:00	47.0	63.3	40.8	49.7
08/05/2015 21:00	44.8	65.3	38.1	45.5
08/05/2015 22:00	44.8	58.0	40.3	47.3
Overall	**48.8**	**69.7**	**41.2**	**51.4**

Location	LT03 - 3 Arthur Street			
Periods	1h			
Start	09/05/2015 07:00			
End	09/05/2015 23:00			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
09/05/2015 07:00	49.6	59.8	41.3	54.1
09/05/2015 08:00	49.6	60.1	43.4	53.1
09/05/2015 09:00	46.6	61.6	42.3	49.1
09/05/2015 10:00	47.7	58.7	42.1	50.2
09/05/2015 11:00	49.5	68.6	44.3	50.7
09/05/2015 12:00	48.3	69.5	41.2	52.2
09/05/2015 13:00	47.0	72.3	40.4	48.4
09/05/2015 14:00	45.7	62.8	39.4	49.0
09/05/2015 15:00	42.7	59.3	37.5	44.8
09/05/2015 16:00	51.4	79.2	38.2	49.2
09/05/2015 17:00	46.1	58.9	38.5	49.6
09/05/2015 18:00	44.4	58.5	36.9	47.4
09/05/2015 19:00	45.3	60.8	37.6	48.5
09/05/2015 20:00	44.2	61.1	35.9	46.9
09/05/2015 21:00	41.7	58.4	32.6	45.4
09/05/2015 22:00	36.3	49.0	30.7	39.5
Overall	**47.2**	**79.2**	**36.8**	**49.8**

Location	LT03 - 3 Arthur Street			
Periods	15m			
Start	08/05/2015 23:00			
End	09/05/2015 07:00			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
08/05/2015 23:00	44.1	55.8	40.3	46.5
08/05/2015 23:15	42.4	52.7	39.1	44.5
08/05/2015 23:30	44.1	53.6	41.4	46.0
08/05/2015 23:45	43.3	51.5	40.4	45.5
09/05/2015 00:00	43.1	53.9	39.0	45.5
09/05/2015 00:15	41.4	54.7	37.8	43.8
09/05/2015 00:30	44.0	60.8	38.9	44.7
09/05/2015 00:45	43.7	56.8	40.0	45.8
09/05/2015 01:00	44.9	56.8	41.0	47.4
09/05/2015 01:15	43.8	56.0	40.2	46.2
09/05/2015 01:30	51.1	78.2	38.7	46.1
09/05/2015 01:45	43.6	59.7	38.4	45.5
09/05/2015 02:00	45.3	62.5	40.0	47.5
09/05/2015 02:15	45.8	66.9	40.9	47.2
09/05/2015 02:30	42.2	56.3	37.4	44.7
09/05/2015 02:45	46.1	60.2	40.3	47.9
09/05/2015 03:00	44.9	60.4	40.1	46.7
09/05/2015 03:15	48.5	64.7	42.8	51.1
09/05/2015 03:30	48.0	64.3	41.6	49.6
09/05/2015 03:45	46.1	58.4	40.9	48.9
09/05/2015 04:00	47.4	63.5	40.6	49.7
09/05/2015 04:15	44.1	59.9	39.5	45.9
09/05/2015 04:30	43.9	52.8	38.5	46.6
09/05/2015 04:45	50.6	59.5	44.1	53.2
09/05/2015 05:00	49.8	58.5	45.6	52.2
09/05/2015 05:15	47.6	57.5	43.3	50.1
09/05/2015 05:30	45.0	52.0	40.2	47.9
09/05/2015 05:45	43.9	51.1	39.5	46.8
09/05/2015 06:00	45.4	65.8	38.9	46.8
09/05/2015 06:15	45.2	56.5	37.6	48.2
09/05/2015 06:30	44.6	51.5	39.6	47.4
09/05/2015 06:45	46.7	69.6	38.8	47.4
Overall	**46.0**	**78.2**	**39.5**	**48.3**

Location	LT03 - 3 Arthur Street			
Periods	15m			
Start	09/05/2015 23:00			
End	10/05/2015 07:00			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
09/05/2015 23:00	36.3	45.2	31.3	39.3
09/05/2015 23:15	36.0	48.1	29.8	39.9
09/05/2015 23:30	34.9	43.1	30.0	38.4
09/05/2015 23:45	35.6	51.9	29.5	37.8
10/05/2015 00:00	33.6	45.2	29.1	36.7
10/05/2015 00:15	34.2	43.3	29.1	37.6
10/05/2015 00:30	34.5	45.3	29.3	38.4
10/05/2015 00:45	34.0	45.3	28.7	37.7
10/05/2015 01:00	33.9	45.1	28.1	35.8
10/05/2015 01:15	33.6	42.7	30.9	35.9
10/05/2015 01:30	34.6	50.3	28.6	37.5
10/05/2015 01:45	35.5	53.6	28.4	36.5
10/05/2015 02:00	32.1	44.8	27.3	34.5
10/05/2015 02:15	31.7	43.9	26.5	34.5
10/05/2015 02:30	31.8	49.5	26.4	33.5
10/05/2015 02:45	31.2	44.0	26.6	31.8
10/05/2015 03:00	31.6	44.2	26.9	33.8
10/05/2015 03:15	31.5	41.8	26.8	35.4
10/05/2015 03:30	32.1	43.1	26.6	35.9
10/05/2015 03:45	34.2	46.7	26.4	38.1
10/05/2015 04:00	37.7	47.1	27.6	41.7
10/05/2015 04:15	39.5	54.3	29.9	42.6
10/05/2015 04:30	44.1	52.8	34.9	48.0
10/05/2015 04:45	50.3	60.9	44.8	53.0
10/05/2015 05:00	52.1	67.0	45.1	54.6
10/05/2015 05:15	46.9	58.8	40.6	49.7
10/05/2015 05:30	44.1	52.6	37.2	48.1
10/05/2015 05:45	41.4	52.0	35.1	44.8
10/05/2015 06:00	40.9	55.4	35.9	43.7
10/05/2015 06:15	40.8	49.9	36.4	43.4
10/05/2015 06:30	44.1	58.6	36.0	45.5
10/05/2015 06:45	46.8	66.5	36.5	48.9
Overall	**42.3**	**67.0**	**27.7**	**45.3**

Location	LT03 - 3 Arthur Street			
Periods	1h			
Start	10/05/2015 07:00			
End	10/05/2015 23:00			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
10/05/2015 07:00	42.2	58.6	34.7	44.7
10/05/2015 08:00	42.5	58.2	35.8	45.4
10/05/2015 09:00	47.5	66.5	37.8	50.8
10/05/2015 10:00	46.8	64.9	39.7	49.4
10/05/2015 11:00	49.5	61.5	41.4	53.9
10/05/2015 12:00	46.6	63.7	40.4	49.0
10/05/2015 13:00	47.0	60.7	41.4	49.4
10/05/2015 14:00	47.8	60.3	41.9	50.4
10/05/2015 15:00	46.9	60.9	42.4	49.3
10/05/2015 16:00	49.0	64.5	42.5	51.7
10/05/2015 17:00	48.8	64.1	41.6	52.2
10/05/2015 18:00	48.0	66.2	40.7	51.2
10/05/2015 19:00	47.8	60.6	41.6	50.4
10/05/2015 20:00	46.2	59.1	39.8	49.1
10/05/2015 21:00	42.4	56.0	37.0	45.1
10/05/2015 22:00	39.5	55.2	34.3	42.5
Overall	**46.9**	**66.5**	**38.0**	**49.7**

Location	LT03 - 3 Arthur Street			
Periods	1h			
Start	11/05/2015 07:00			
End	11/05/2015 23:00			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
11/05/2015 07:00	46.6	57.5	40.1	49.9
11/05/2015 08:00	47.6	61.3	42.2	50.9
11/05/2015 09:00	46.0	65.3	41.2	48.3
11/05/2015 10:00	46.2	58.5	40.8	49.3
11/05/2015 11:00	45.1	68.6	40.0	46.4
11/05/2015 12:00	46.0	60.1	38.8	48.9
11/05/2015 13:00	46.6	63.8	41.2	49.2
11/05/2015 14:00	48.9	75.2	39.9	49.5
11/05/2015 15:00	45.8	66.5	39.8	47.0
11/05/2015 16:00	45.1	60.7	41.0	47.2
11/05/2015 17:00	45.3	64.9	40.4	46.7
11/05/2015 18:00	44.8	60.3	40.6	46.7
11/05/2015 19:00	46.2	66.7	39.8	47.8
11/05/2015 20:00	47.5	75.6	39.3	49.3
11/05/2015 21:00	41.8	57.7	36.3	44.1
11/05/2015 22:00	39.7	61.3	33.6	42.2
Overall	**46.0**	**75.6**	**39.0**	**48.3**

Location	LT03 - 3 Arthur Street			
Periods	15m			
Start	10/05/2015 23:00			
End	11/05/2015 07:00			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
10/05/2015 23:00	38.3	48.9	32.7	41.2
10/05/2015 23:15	39.9	59.3	32.6	40.6
10/05/2015 23:30	36.5	54.9	31.7	39.2
10/05/2015 23:45	37.0	47.2	32.3	40.0
11/05/2015 00:00	35.9	45.9	32.6	37.5
11/05/2015 00:15	35.4	46.5	31.6	37.3
11/05/2015 00:30	34.8	42.8	31.2	37.9
11/05/2015 00:45	33.8	49.4	29.6	35.4
11/05/2015 01:00	34.9	44.2	32.3	36.6
11/05/2015 01:15	35.7	46.8	32.5	37.7
11/05/2015 01:30	34.8	40.9	32.2	36.3
11/05/2015 01:45	34.9	44.3	32.5	36.3
11/05/2015 02:00	36.5	46.7	33.1	38.7
11/05/2015 02:15	35.8	46.2	33.1	37.8
11/05/2015 02:30	34.2	44.7	31.0	35.2
11/05/2015 02:45	33.4	41.6	30.2	35.8
11/05/2015 03:00	33.1	43.7	30.1	34.0
11/05/2015 03:15	33.7	45.5	30.7	35.7
11/05/2015 03:30	35.0	50.3	29.8	36.9
11/05/2015 03:45	38.2	52.7	32.0	40.5
11/05/2015 04:00	36.8	46.9	31.5	40.1
11/05/2015 04:15	39.6	49.6	32.4	43.5
11/05/2015 04:30	44.3	52.0	34.9	48.1
11/05/2015 04:45	51.5	58.7	45.9	54.6
11/05/2015 05:00	54.7	67.8	46.7	57.6
11/05/2015 05:15	50.1	62.0	44.0	53.5
11/05/2015 05:30	47.0	57.2	41.8	50.1
11/05/2015 05:45	43.8	54.9	38.5	46.1
11/05/2015 06:00	45.2	57.7	39.3	47.5
11/05/2015 06:15	45.5	55.4	39.1	48.5
11/05/2015 06:30	44.9	57.8	38.8	46.5
11/05/2015 06:45	48.5	59.8	40.9	52.6
Overall	**44.5**	**67.8**	**31.6**	**47.8**

Location	LT03 - 3 Arthur Street			
Periods	15m			
Start	11/05/2015 23:00			
End	12/05/2015 07:00			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
11/05/2015 23:00	38.9	47.8	33.9	41.8
11/05/2015 23:15	37.6	53.0	31.1	40.5
11/05/2015 23:30	34.6	45.5	30.5	37.0
11/05/2015 23:45	35.1	44.7	31.9	37.2
12/05/2015 00:00	38.1	44.3	34.7	40.8
12/05/2015 00:15	39.5	56.2	33.9	41.4
12/05/2015 00:30	42.7	57.3	35.3	44.8
12/05/2015 00:45	37.9	51.0	33.4	40.1
12/05/2015 01:00	38.5	50.7	34.6	41.5
12/05/2015 01:15	40.7	52.2	35.4	43.8
12/05/2015 01:30	41.6	51.1	35.5	45.6
12/05/2015 01:45	41.2	51.7	37.9	43.3
12/05/2015 02:00	40.8	48.9	36.7	43.0
12/05/2015 02:15	40.1	49.6	35.4	43.1
12/05/2015 02:30	36.8	47.7	34.0	38.5
12/05/2015 02:45	39.4	54.4	34.5	41.7
12/05/2015 03:00	37.0	47.4	32.7	39.4
12/05/2015 03:15	40.3	50.6	35.1	43.7
12/05/2015 03:30	38.5	48.8	32.9	41.6
12/05/2015 03:45	36.4	47.5	31.4	39.3
12/05/2015 04:00	37.1	50.3	31.8	40.3
12/05/2015 04:15	36.9	45.4	32.2	39.8
12/05/2015 04:30	46.0	55.7	38.8	50.2
12/05/2015 04:45	52.8	66.5	43.3	55.1
12/05/2015 05:00	58.2	76.4	45.6	61.0
12/05/2015 05:15	49.3	59.6	44.3	52.0
12/05/2015 05:30	49.0	59.9	44.7	51.2
12/05/2015 05:45	46.2	54.9	41.1	49.0
12/05/2015 06:00	46.4	54.7	42.0	48.6
12/05/2015 06:15	46.2	52.0	41.9	48.7
12/05/2015 06:30	46.1	54.1	41.4	48.6
12/05/2015 06:45	46.3	53.6	42.1	48.8
Overall	**46.5**	**76.4**	**33.4**	**48.3**

Location	LT03 - 3 Arthur Street			
Periods	1h			
Start	12/05/2015 07:00			
End	12/05/2015 23:00			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
12/05/2015 07:00	48.0	69.6	43.2	49.4
12/05/2015 08:00	48.2	72.6	41.0	48.4
12/05/2015 09:00	48.1	66.6	42.2	49.6
12/05/2015 10:00	46.2	67.2	40.8	48.3
12/05/2015 11:00	47.1	65.1	42.6	49.4
12/05/2015 12:00	47.9	69.0	43.2	50.2
12/05/2015 13:00	47.8	68.2	42.1	50.0
12/05/2015 14:00	47.1	62.5	42.1	49.5
12/05/2015 15:00	46.2	65.4	41.6	48.2
12/05/2015 16:00	47.7	72.6	41.2	49.5
12/05/2015 17:00	48.5	58.0	44.1	50.4
12/05/2015 18:00	45.6	57.0	40.1	48.8
12/05/2015 19:00	47.6	72.3	38.7	46.7
12/05/2015 20:00	47.0	67.9	37.1	48.4
12/05/2015 21:00	42.6	58.6	36.4	44.7
12/05/2015 22:00	37.7	51.7	31.7	41.2
Overall	**47.0**	**72.6**	**38.9**	**49.1**

Location	LT03 - 3 Arthur Street			
Periods	15m			
Start	12/05/2015 23:00			
End	13/05/2015 07:00			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
12/05/2015 23:00	36.6	51.5	31.3	39.2
12/05/2015 23:15	37.6	53.9	32.8	41.0
12/05/2015 23:30	34.7	44.2	31.2	37.9
12/05/2015 23:45	36.1	51.5	32.9	38.3
13/05/2015 00:00	33.7	42.9	31.2	35.3
13/05/2015 00:15	34.8	45.7	31.6	36.9
13/05/2015 00:30	34.8	44.8	31.1	37.9
13/05/2015 00:45	33.7	45.9	31.3	34.0
13/05/2015 01:00	31.7	42.2	29.4	32.4
13/05/2015 01:15	32.9	44.0	28.9	35.2
13/05/2015 01:30	31.8	42.2	29.3	33.0
13/05/2015 01:45	32.0	42.1	29.2	33.7
13/05/2015 02:00	31.0	41.6	27.8	32.1
13/05/2015 02:15	30.7	42.4	27.7	32.0
13/05/2015 02:30	33.8	44.3	30.8	34.8
13/05/2015 02:45	32.3	43.7	30.3	32.7
13/05/2015 03:00	32.7	43.9	30.6	33.5
13/05/2015 03:15	32.8	46.1	29.4	33.8
13/05/2015 03:30	33.0	43.3	29.1	34.4
13/05/2015 03:45	34.6	44.3	30.8	37.5
13/05/2015 04:00	34.7	44.2	31.1	37.7
13/05/2015 04:15	35.6	48.2	30.1	39.1
13/05/2015 04:30	50.6	59.1	39.2	54.0
13/05/2015 04:45	51.5	59.3	46.3	54.2
13/05/2015 05:00	46.8	56.5	42.4	49.6
13/05/2015 05:15	47.2	59.5	40.4	50.1
13/05/2015 05:30	46.0	57.5	39.0	49.4
13/05/2015 05:45	43.3	54.9	37.7	45.6
13/05/2015 06:00	42.8	51.0	37.1	45.3
13/05/2015 06:15	43.6	51.6	36.8	46.5
13/05/2015 06:30	43.9	52.6	37.9	46.3
13/05/2015 06:45	43.6	49.8	38.5	46.0
Overall	**42.5**	**59.5**	**30.0**	**46.0**

Location	LT03 - 3 Arthur Street			
Periods	1h			
Start	13/05/2015 07:00			
End	13/05/2015 16:00			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
13/05/2015 07:00	45.4	60.2	40.4	47.7
13/05/2015 08:00	46.6	68.8	39.1	47.4
13/05/2015 09:00	44.6	58.8	37.9	47.4
13/05/2015 10:00	46.7	56.2	40.3	50.4
13/05/2015 11:00	48.8	57.2	42.3	52.7
13/05/2015 12:00	44.8	60.8	38.9	47.6
13/05/2015 13:00	44.1	59.9	37.4	46.6
13/05/2015 14:00	43.1	59.9	38.7	45.8
13/05/2015 15:00	44.9	69.2	37.5	46.7
Overall	**45.8**	**69.2**	**38.8**	**48.6**

Location	ST04 - Penllan Farm			
Periods	15m			
Start	13/05/2015 20:25			
End	13/05/2015 21:55			
Location	Solo 065446			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
13/05/2015 20:25	42.6	59.1	34.5	45.7
13/05/2015 20:40	44.0	58.5	35.1	47.5
13/05/2015 20:55	42.6	58.7	35.4	45.1
13/05/2015 21:10	45.4	62.3	36.1	47.1
13/05/2015 21:25	47.9	62.0	36.9	51.8
13/05/2015 21:40	53.6	66.9	39.0	57.8
Overall	**48.1**	**66.9**	**35.7**	**50.8**

Location	ST04 - Penllan Farm			
Periods	15m			
Start	14/05/2015 02:55			
End	14/05/2015 03:55			
Location	Solo 065445			
Weighting	A			
Data type	Leq			
Unit	dB			
Period start	**Leq**	**Lmax**	**L90**	**L10**
14/05/2015 02:55	43.0	54.5	31.6	47.6
14/05/2015 03:10	43.4	56.1	31.7	48.1
14/05/2015 03:25	44.9	55.4	32.9	49.4
14/05/2015 03:40	46.4	58.6	34.7	50.2
Overall	**44.6**	**58.6**	**32.4**	**49.1**

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