Able Acoustics

FORSTAL PROPERTIES LTD

PHOENIX HOUSE, AYLESFORD

ACOUSTIC ASSESSMENT

JANUARY 2017

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1. INTRODUCTION

1.1 Introduction

1.1.1 Forstal Properties Ltd proposes to redevelop the existing site at Phoenix House, Forstal Road, Aylesford, Kent, ME20 7AU for residential purposes.

1.1.2 The site is located on the southern side of Forstal Road in Aylesford and is potentially affected by road traffic noise and industrial/commercial sound sources. The local planning authority: Tonbridge & Malling Borough Council (TMBC) has previously refused permission for development at the site for six separate reasons one of which relates to noise.

1.1.3 GBA Designs acting on behalf of Forstal Properties Ltd has commissioned Able Acoustics Ltd to assess noise at the site.

1.1.4 A combination of attended measurements and unattended monitoring has been undertaken at and around the site and the resulting levels have been used to undertake the assessment. This report presents the monitoring undertaken, the results of the assessment and suitable suggestions for mitigation where applicable.

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2. NOISE UNITS AND STANDARDS

2.1 General

2.1.1 Noise is defined as unwanted sound. The range of audible sound is from 0 dB to 140 dB and a range of typical noise levels is presented in Table 2.1 below.

Table 2.1 Typical Sound Levels

Sound Pressure Level dB(A)	Source	Subjective Level
130 - 140	Jet (at 10m)	Threshold of pain
120 – 130	Pneumatic Drill (at 1m)	Extremely Loud
110 – 120	Loud Car Horn (at 1m)	Very Loud
100 – 110	Alarm Bell (at 1m)	Very Loud
80 – 90	Inside General Factory	Loud
70 – 80	Average Traffic (on street corner)	Loud
60 – 70	Conversational Speech	Moderate
50 – 60	Typical Business Offices	Moderate
40 – 50	Living-room Urban Area	Quiet
30 – 40	Library	Quiet
20 – 30	Bedroom (at night)	Very Quiet
10 - 20	Broadcasting Studio	Very Quiet

2.1.2 For variable noise sources, a difference of 3 dB(A) is just distinguishable. For road traffic or railway noise, a doubling of traffic flow will increase the overall noise by 3 dB(A). The "loudness" of a noise is a purely subjective parameter, but it is generally accepted that an increase/decrease of 10 dB(A) corresponds to a doubling/halving in perceived loudness.

2.1.3 The frequency response of the ear is usually taken to be about 20 Hz (number of oscillations per second) to 20 kHz. The 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, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dB(A) weighting. This is an internationally accepted standard for noise measurements.

2.1.4 External sound levels are rarely steady, but rise and fall according to activities within an area at any given time. In an attempt to produce a figure that relates this variable noise level to subjective response, a number of indices have been developed. These include:

i) *$L_{Aeq,T}$ sound level*

This is the "equivalent continuous A-weighted sound pressure level, in decibels", and is defined in British Standard BS 7445 [1] 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 a unit commonly used to describe construction noise and noise from

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industrial premises and is the most suitable unit for the description of other forms of environmental noise. In simpler terms, it is a measure of energy within the varying noise.

ii) *The L_{Amax} sound level*

This is the maximum noise level recorded over the measurement period.

iii) The *L_{A10} sound level*

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The *L_{A90} sound level*

This is the level that is exceeded for 90% of the measurement period and gives an indication of the level during quieter periods. It is often referred to as the background sound level and is used assessing the impact from industrial and commercial sound.

2.2 Planning and Noise

2.2.1 The National Planning Policy Framework (NPPF) [2] provides guidance on noise and planning issues. The purpose of this document is to help achieve sustainable development, and replaces the previous appropriate guidance given in DoE Planning Policy Guidance: 24 - Planning and Noise PPG24 [3].

2.2.2 In Section 123, The NPPF states that:

"123. Planning policies and decisions should aim to:

- *avoid noise from giving rise to significant adverse impacts[27] on health and quality of life as a result of new development;*

- *mitigate and reduce to a minimum other adverse impacts[27] on health and quality of life arising from noise from new development, including through the use of conditions;*

- *recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established;[28] and*

- *identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."*

2.2.3 Footnote 27 makes reference to The Noise Policy Statement for England (NPSE) [4]. Since March 2010 NPSE applies to all forms of noise including environmental noise, neighbour noise and neighbourhood noise.

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2.2.4 For the purposes of clarity, Footnote 28 states that this is: "subject to the provisions of the Environmental Protection Act 1990 and other relevant law."

2.2.5 The NPSE sets out the long term vision for government noise policy which is to:

"Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."

This is supported by the following aims:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life."*

2.2.6 The first aim of the NPSE should be read in the context of Government policy on sustainable development indicating that significant adverse effects on health and quality of life should be avoided while accommodating the principles of sustainable development.

2.2.7 The second aim of the NPSE is applicable where the impact falls between LOAEL and SOAEL (see 2.2.9 below) requiring that all reasonable measures to mitigate and minimise adverse impacts on health and quality of life be implemented while accommodating the principles of sustainable development. This does not imply that any adverse effects cannot occur.

2.2.8 The third aim of the NPSE is to actively improve health and quality of life through effective management of noise within the context of Government policy on sustainable development where ever it is possible and reasonable to do so.

2.2.9 The NPSE applies the following concepts adapted from toxicology:

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

2.2.10 It should be noted that there are no numerical values for these concepts defined in

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the NPSE. There is also no single objective noise-based measure that defines Observed Effect Levels that is applicable to all sources of noise in all situations and, consequently, the levels are likely to be different for different noise sources, for different receptors and at different times.

2.3 Standards and Guidance

2.3.1 Guidance on internal sound levels is provided in Table 4 of British Standard (BS) 8233 [5]. With regard to residential accommodation, the following guidance is given:

TABLE 2.2: Indoor Ambient Noise Levels In Spaces When They Are Unoccupied

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,\ 16hour}$	-
Dining	Dining room/area	40 dB $L_{Aeq,\ 16hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,\ 16hour}$	30 dB $L_{Aeq,\ 8hour}$

2.3.2 The levels shown in Table 4 of BS 8233 are based on the existing guidelines issued by the World Health Organisation (WHO) and assume normal diurnal fluctuations in external noise.

2.3.3 The World Health Organisation has produced guidance on noise limits which should prevent the onset of sleep disturbance [6]. The WHO guidelines state:

"When noise is continuous, the equivalent sound pressure level should not exceed 30 dB(A) indoors, if negative effects on sleep are to be avoided…..Indoor guideline values for bedrooms are 30 dB LAeq for continuous noise and 45 dB LAmax for single sound events."

2.3.4 The guidance given by the WHO therefore is consistent with internal noise levels as specified by BS 8233 at night and it is recommended, that internal noise levels within the proposed residential accommodation should not exceed 30 dB $L_{Aeq,\ 8hr}$ and 45 dB $L_{Amax,\ F}$ at night. During the daytime, noise levels within living rooms and bedrooms should not exceed 35 dB $L_{Aeq,\ 16hr.}$ However it should be noted that BS 8233:2014 also provides the following informative note:

"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."

2.3.5 The internal noise level within a dwelling is dependent on the noise level arriving at the external facade of the dwelling, the sound insulation properties of the dwelling (wall and window construction) and the size and furnishings in the rooms. The prediction of internal levels is therefore a complex process, dependent upon many factors. Typical noise reductions from typical dwelling facades are summarised in Table 2.3 below.

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TABLE 2.3: Typical Noise Reduction of a Dwelling Façade with Windows Set in a Block/Brick Wall[1]

NOISE SOURCE	DIFFERENCE BETWEEN dB(A) LEVELS OUTSIDE AND INSIDE		
	Single Glazing	Thermal Double Glazing	Secondary Glazing
Road Traffic	28	33	34
Civil Aircraft	27	32	35
Military Aircraft	29	35	39
Diesel Train	28	32	35
Electric Train	30	36	41

2.3.6 The sound insulation offered by brick is significantly higher than window units. It is therefore only considered necessary to assess noise levels external to facades containing windows, except where a very high level of sound insulation is required.

2.3.7 When assessing noise in external amenity areas such as gardens BS 8233:2014 continues to state the following:

"Design criteria for external noise

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, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. 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."

2.4 Assessment of Industrial and Commercial Sound

BS 4142 Method

2.4.1 BS 4142:2014 [7] provides methods for rating and assessing industrial and commercial sound. The Standard is used by local authorities and consultants to rate sound from fixed installations. The Standard was considerably revised in 1990, clarified in 1997 and further revised in 2014. The current edition of the Standard was made public on 31st October 2014 and it should be noted that the Foreword of the Standard (2014) states:

[1] This table was originally published in PPG24 which has been rescinded. Although the document is no longer in force it has been recognised for the purposes of this assessment that these values are still typical of dwelling facades with windows set in a block/brick wall.

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"This British Standard supersedes BS 4142:1997, which is withdrawn."

Subsequently all assessment references including measurements have been made to the most recent version of the Standard.

2.4.2 The Standard advocates the use of L_{Aeq}, a level which is directly measurable. The L_{Aeq} is either measured or calculated at a receptor location and this is termed the "Specific Sound Level". The Specific Sound Level may then be corrected for the character of the sound and is then termed the "Rating Level".

2.4.3 When presenting values to be used in an assessment BS 4142:2014 requires that levels should be expressed as whole numbers on the grounds that expressing to one or more decimal places implies an improper degree of precision.[2]

2.4.4 BS 4142 states that the assessment position should be in the free field (at least 3.5m away from any reflecting façades) and at a preferred height of between 1.2 and 1.5 m above ground level. Where it is necessary to take measurements above ground floor level, choose a location which is approximately 1m from the façade on the relevant floor of the building if it is not practical to make the measurements at least 3.5m from the façade at this elevation.

2.4.5 When used to assess the impacts, the Rating Level is determined and the L_{A90} background sound level is subtracted from it, the result is then considered alongside a range of pertinent factors to determine the context. The Standard states:

"a) Typically, the greater this difference, the greater the magnitude of the impact.

b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."[3]

The Standard notes that more than one assessment may be necessary[4] and continues to further qualify the assessment protocol by outlining conditions to the comparative assessment and stating 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 (for the purposes of the standard) to be used in the assessment and these are shown in Table 2.4 below:

[2] This convention has also been applied in the presentation of the measured levels in the Appendices for consistency.
[3] The Standard contains no other descriptors for the assessment of the impacts.
[4] Note 1 to Clause 11 Assessment of the impacts

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Table 2.4 Reference Periods

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

2.4.6 The Standard notes that sound with prominent impulses has been shown to be more annoying than continuous types of sound (without impulses or tones) with the same equivalent sound pressure level. The Standard outlines a number of methods for defining appropriate "character corrections" within the Rating Sound Level to account for tonal qualities, impulsive qualities, other sound characteristics and/or intermittency. These are a) the Subjective Method, b) the Reference Method for tonality and c) the Objective Methods for assessing both tonality and impulsivity. It is noted by the Standard that where multiple features are present the corrections should be added in a linear fashion to the Specific Sound Level. The Subjective Method is based on the following corrections shown in Table 2.5 below:

Table 2.5 Subjective Method Rating Corrections

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

2.4.7 The Objective Methods are based around the actual quantification of frequency data and the impulsive prominence of the sound under investigation where possible.

2.4.8 It should be noted that the Standard states that the assessment methodology provided is not intended for the derivation of internal levels arising from sound levels outside or for the assessment of low frequency sound. Care is also necessary in circumstances where background sound levels are low to ensure that self-generated and electrical noise within the measurement system does not unduly influence reported values, which might be the case if the measured background sound levels are less than 10dB above the noise floor of the measuring system.[5]

2.4.9 The Standard requires that when assessing the impacts the initial estimate of the impact may need to be modified due to context in which case pertinent factors need to be taken into consideration which include:

- The absolute level of sound in comparison to the residual sound level
- The character and level of the residual sound compared with the character[6] and

[5] Accuracy is limited where measurements of Sound pressure levels below 25dB(A) are recorded due to the addition of the noise floor of the instrumentation contributing to the measured value, indicating a measurement value greater than that present at the microphone.
[6] The use of the word "character" in association with terms residual sound and specific sound indicates consideration be given to acoustic features which may increase the significance of impact of a sound.

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level of the specific sound, e.g. does the residual sound contain already existing sources of impulsive or tonal sound and do these operate at similar times to a proposed new source and to what degree this would represent an incongruous sound by comparison with the acoustic environment in the absence of the specific sound.

- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:

  i) Façade insulation treatment

  ii) Ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation

  iii) Acoustic screening

2.5 Local Authority Requirements

2.5.1 The local planning authority (TMBC) has previously refused planning permission for development at the site for six separate reasons [8] one of which (reason 6) relates to noise stating:

"Insufficient information has been provided with regard to an assessment of the current noise climate, given the close proximity to Forstal Road with regard to the high proportion of HGVs using this road. The Noise Report should detail any mitigation /attenuation measures to meet relevant levels including specific data. Specific details of any necessary noise insulation/alternative requirements e.g. acoustic glazing, acoustically screened mechanical ventilation etc will also need to be submitted. As such the Local Planning Authority is not convinced that a suitable noise climate can be achieved, contrary to paragraph 123 of the NPPF (2012), Noise Policy Statement for England and policy CP1 of the Tonbridge and Malling Borough Council Core Strategy."

2.5.2 Following telephone conversations with Peter Thomason (Environmental Health Officer) at Tonbridge and Malling Borough Council, during the site survey on 15th December 2016 at 14:55 it was agreed that due to the subjectively high level of traffic in particular HGVs on Forstal Road it would be necessary to measure the plant levels individually at source and determine their contribution to the noise climate at the assessment location through a combination of measurement and calculation. It was further noted that the CEH and GAP Plant Hire sites will be relocated but no confirmation has been provided for the date of any such relocation.

2.5.3 It is considered that if the development can be designed to meet the acoustic design requirements of TMBC, BS 8233, the WHO guidelines and BS 4142 then the first and second aims of the NPSE can be achieved.

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3. SITE LAYOUT AND ENVIRONMENT

3.1 Site Layout

3.1.1 The site is located at Phoenix House, Forstal Road, Aylesford, Kent, ME20 7AU.

3.1.2 The site is situated at the edge of a mixed residential-commercial/industrial area and is shown in Figure 01.

3.1.3 The site is bounded by Forstal Road to the north, residential properties at Waterside Quay to the east, a footpath and the River Medway to the south, the Gulf Petrol Filling Station (PFS) and Leigh & Vic's café to the west.

3.1.4 Further from the site to the north were the CEH Plant Hire and Gap Plant Hire premises located approximately 10.5m from the site boundary at its closest point and subjectively noted to be audible from the application site.

3.1.5 Further from the site to the west was the Cottage Industrial Estate subjectively noted to be inaudible from the application site.

3.1.6 The site is currently unoccupied and comprises an uneven area of hard standing, with a steel palisade fence running around the perimeter. The site is occasionally used for staff car parking for CEH members of staff.

3.2 Environment

3.2.1 The site is situated in a mixed residential-commercial/industrial area.

3.2.2 The acoustic environment was subjectively noted to be primarily attributable to road traffic sound from Forstal Road, in particular Heavy Goods Vehicle movements, the Plant hire operations on the north side of Forstal Road, car door slams and engine sound from the PFS and birdsong.

3.2.3 At the time of the site visit it was reported that the GAP and CEH plant hire units to the north of Forstal Road are to be relocated and that planning permission has been granted for a change of use to the land. At the time of writing Able Acoustics Ltd have not had sight of any written material to support this assertion.

3.3 Façade Insulation Treatment

3.3.1 At the time of writing the glazing strategy has not been finalised.

3.4 Alternative Ventilation Measures

3.4.1 At the time of writing the ventilation strategy has not been finalised.

3.5 Acoustic Screening

3.5.1 There are currently no proposals for walls or barriers around the proposed development other than rear garden fences. At the time of writing details of any acoustic screening have not been finalised.

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3.6 Sensitivity of the Receptor

3.6.1 The nearest and potentially most noise sensitive premises are proposed to be located on the southern side of Forstal Road. These premises are intended to be used for residential purposes.

3.6.2 Based on the above and for the purposes of this assessment the proposed development is considered to be sensitive.

3.7 Operations

CEH Plant Hire

3.7.1 The CEH Plant Hire station is understood to be operational during the daytime period only.

3.7.2 The hours of operation are understood to typically be:

- 07:00 – 17:30 Mondays to Fridays
- 08:00 – 12:00 Saturdays

3.7.3 The CEH Plant Hire is understood to be closed on Sundays.

3.7.4 Operations at the CEH Plant Hire station consist of vehicle movements and testing of equipment in the yard to the front (southern side) of the premises. Items of plant that may be tested in the yard include Compressors, Mini-excavators, Dumpers, Cherry Pickers, Scissor lifts, Rollers, Forklifts, and vehicle movements. Other sound sources include reversing beepers and the use of a washer unit.

3.7.5 The testing of sound sources typically involves, activating the plant, moving the vehicle forwards and backwards and operating the arms/buckets/lifts of any units as well as washing the units when they are returned using the jet washer unit. Other tests include the use of audible alarms. It is understood that no more than 3 sources including the jet washer would be likely to be in use at any one time.

GAP Plant Hire

3.7.6 The GAP Plant Hire station is understood to be operational during the daytime period only.

3.7.7 The hours of operation are understood to typically be:

- 07:30 – 17:00 Mondays to Fridays

3.7.8 Operations at the GAP Plant Hire station were similar to those at CEH Plant Hire and were observed to consist of vehicle movements and testing of equipment in the yard to the rear (northern side) of the premises. Items of plant that may be tested in the yard also include Compressors, Mini-excavators, Dumpers, Cherry Pickers, Scissor lifts, Rollers, Forklifts, and vehicle movements. Other sound sources include testing of stihl saws, hydraulic hammers and the use of a partially enclosed washer unit.

3.7.9 The testing of sound sources typically involves, activating the plant, moving the vehicle forwards and backwards and operating the arms/buckets/lifts of any units as well as washing the units when they are returned using the jet washer unit. Other tests include the use of audible alarms. It is understood that no more than 3 sources including the jet washer would be likely to be in use at any one time in a manner

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similar to the CEH Plant Hire premises described above.

Petrol Filling Station

3.7.10 The Gulf Petrol filling Station (PFS) is understood to be operational during the daytime period only.

3.7.11 The hours of operation are understood to typically be:

- 06:00 – 20:00 Mondays to Fridays
- 07:00 – 17:00 Saturdays
- 08:00 – 13:00 Sundays

3.7.12 The PFS features 8 pumps and a car wash facility which was not operational at the time of the survey.

3.7.13 The primary sources of sound from the PFS were noted to be primarily attributable to the use of petrol pumps, door slams, and engine sound. Subjectively it was considered that only the sound of door slams were audible over the residual sound when heard from the application site and that vehicle sound associated with the PFS could not be readily distinguished from the road traffic on Forstal Road.

3.7.14 Staff at the PFS stated that they could not estimate the precise number of vehicles that attend each day but provided a maximum estimate of circa 30 visits per hour.

Cottage Industrial Estate

3.7.15 Access was not obtained to undertake measurements at the Cottage Industrial Estate. However, site notes record that sound from Cottage Industrial Estate was subjectively inaudible from ground level at the edge of the application site over the residual sound environment.

Leigh & Vic's Cafe

3.7.16 Site notes record that sound from Leigh & Vic's Café was subjectively inaudible at ground level at the edge of the application site over the residual sound environment with the exception of two air handling units located at ground floor level at the rear of the café that were subjectively considered to be barely perceptible at the perimeter of the site. It has been agreed with the local authority that no additional assessment of these air handling units shall be necessary.

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4. NOISE MEASUREMENTS

4.1 General

4.1.2 In order to establish the likely noise levels at site it has been agreed with the local Planning Authority that a survey of at least 48 hours would be sufficient.

4.2 Unattended Monitoring

4.2.1 An unattended measurement survey was undertaken at the site from 15:30 hours on Thursday 15th December 2016 until 10:45 hours on Monday 19th December 2016. Measurements were undertaken at a position representative of the closest building footprint to Forstal Road.

4.2.2 The microphone was attached to a telescopic pole and extended to a height of 4m to be representative of a first floor window and is indicated in Figure 01 and Figure 02.

4.2.3 The following instrumentation was used for the unattended noise survey:

- Rion type NL-52 Sound Level Meter (Serial No. 00843175)
- Rion type NH-25 Pre-amplifier (Serial No. 31989)
- Rion Type UC-59 Microphone (Serial No. 06717)
- Rion Type NC-74 Sound Level Calibrator (Serial No. 34936366)

All equipment was within current periods of calibration and calibration certificates are provided in Appendix A.

4.2.4 The meter was set to record the following metrics automatically over 15 minute periods:

- L_{Aeq}
- L_{Amax}
- L_{A90}

The meter was additionally set to record the above metrics in 1/3 Octave centre frequency bands.

4.2.5 The frequency response of the meter was set to "A" and the time response was set to "Fast".

4.2.6 At the start of the unattended measurement survey the meteorological conditions were noted to be dry, 9.5°Celsius with approximately 25% broken cloud cover. Wind speeds were recorded as being up to 1.3m/s^{-1} from the south west.

4.2.7 It is understood that during the unattended survey meteorological conditions were not unsettled and the site was not subject to wind speeds above 1.5m/s^{-1} or rain.

4.2.8 Upon retrieval of the equipment the meteorological conditions were noted to be dry, with temperatures of 7.1°Celsius, approximately 100% cloud cover and a light changeable breeze of 0.1m/s^{-1}.

4.2.9 At the start of the unattended measurement survey the acoustic environment was subjectively considered to be primarily attributable to road traffic sound from Forstal Road. Other sound sources included activity from the CEH and Gap premises on the

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north side of Forstal Road, infrequent car door slams from the PFS and birdsong.

4.2.10 At the end of the unattended measurement survey the acoustic environment was subjectively noted to be remain primarily attributable to road traffic sound from Forstal Road. Other sound sources audible at the end of the unattended measurement survey included activity from the CEH and Gap premises on the north side of Forstal Road, and birdsong. The PFS was observed as being operational but was not subjectively noted to be audible when observed from below the measurement location.

4.2.11 Before the measurement survey was started the instrumentation was field calibrated using a reference sound calibrator to a level of 94.0dB. The instrumentation was then checked using the same reference sound calibrator when the measurement survey was stopped and a value of 93.9dB was recorded. This is within acceptable tolerance for calibration drift.

4.2.12 The measured $L_{Aeq,\ 15min}$ levels have been combined to give the $L_{Aeq,\ 16hr\ daytime}$ & $L_{Aeq,\ 8hr\ night\ time}$ levels and also the maximum noise level measured during these periods. Full measurement results are provided in tabular form in Appendix B as hourly values. The period L_{Aeq} values are summarised in Table 4.1 below.

TABLE 4.1: Summary of Measurement Results

Period Commencing	$L_{Aeq,\ T}$	L_{AMax}
15/12/2016 15:30[7]	67.6	87.9
15/12/2016 23:00	64.6	86.8*
16/12/2016 07:00	67.7	90.4
16/12/2016 23:00	62.9	83.8
17/12/2016 07:00	67.4	94.2
17/12/2016 23:00	61.0	84.1
18/12/2016 07:00	66.2	90.5
18/12/2016 23:00	63.0	85.1**
19/12/2016 07:00[8]	67.6	87.4

*The highest measured value during this period was 99.6dB(A) at the period commencing 06:00hrs. From a review of the waveform recordings this was noted to be attributable to a single motorbike engine type sound and considered anomalous and the second highest value of 86.8dB(A) has been used.
**The highest measured value during this particular period was 93.9dB(A) also at the period commencing 06:00hrs. From a review of the waveform recordings this was noted to be attributable to a single motorbike engine type sound and also considered anomalous and the second highest value of 86.8dB(A) has been used for this period.

[7] Not a complete 16 hour period
[8] Not a complete 16 hour period

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4.3 Background Sound Levels

4.3.1 Able Acoustics Ltd' staff undertook sound level measurements at the site from 15:30 hours on Thursday 15th December 2016 until 10:45 hours on Monday 19th December 2016 and this analysis presents a summary of the measurement results. Full measurement results have been presented in Appendix B in tabular format.

4.3.2 It was not possible to cease operations for the purpose of taking measurements and measurement data from before and after activity was understood to be present has been used to form the basis of this assessment.

4.4 Analysis – Background Sound Levels

4.4.1 Separate analyses of the measurement results have been undertaken to account for the operations from the CEH and GAP Plant hire on the different days over which these operate. These are as follows:

- Weekdays 17:30-19:00
- Saturday 13:00-14:00

4.4.2 Separate analyses of the measurement results have been undertaken to account for the operation of the PFS on the different days over which it is reported to operate. These are as follows:

- Weekdays 20:00-21:00
- Weeknights 05:00-06:00
- Saturdays 17:00-18:00
- Sundays 07:00-08:00 and 13:00-14:00 hours

4.4.3 The analyses have considered the range of values as well as a modal, median and mean average analysis of the measured daytime background sound level values. The measured level ranges (for each one hour period) for the weekday and weekend time periods are presented in Tables 4.2 to 4.10 below, while full measurement results are presented in Appendix B.

TABLE 4.2:
Summary of Background Measurement Results CEH & GAP Plant Hire (Weekdays)

Daytime	L_{Aeq} range	L_{Amax} range	L_{A90} range
Highest	69	89	63
Lowest	67	77	58
Mode	-	-	61
Median	-	-	61
Mean	-	-	60

*Values presented as whole numbers as is the convention within BS 4142

4.4.4 The weekday daytime measurement results indicate a range of values from 58dB $L_{A90,T}$ to 63dB $L_{A90,T}$. An analysis of the measurement results indicates the modal and median average values are consistent while the mean average value is 1dB lower.

4.4.5 For the purpose of this assessment the representative background sound level is considered to be 61dB $L_{A90,T}$ for the weekday daytime period.

4.4.6 The weekday daytime measurement results indicate a range of values from 67dB $L_{Aeq,T}$ to 69dB $L_{Aeq,T}$.

4.4.7 For the purpose of this assessment the representative (weekday) residual sound

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level is considered to be the logarithmic average value of the measurement results and a value of 68dB $L_{Aeq,1hour}$ has been determined as the representative residual sound level value for the weekday daytime period.

TABLE 4.3:
Summary of Background Measurement Results CEH & GAP Plant Hire (Saturdays)

Daytime	L_{Aeq} range	L_{Amax} range	L_{A90} range
Highest	69	85	59
Lowest	68	81	58
Mode	-	-	58
Median	-	-	59
Mean	-	-	59

*Values presented as whole numbers as is the convention within BS 4142

4.4.8 The Saturday daytime measurement results indicate a range of values from 58dB $L_{A90,T}$ to 59dB $L_{A90,T}$. An analysis of the measurement results indicates the mean average and median values are within 1dB while the modal value is 1dB lower.

4.4.9 For the purpose of this assessment the representative background sound level is considered to be 59dB $L_{A90,T}$ for the Saturday daytime period.

4.4.10 The Saturday daytime measurement results indicate a range of values from 68dB $L_{Aeq,T}$ to 69dB $L_{Aeq,T}$.

4.4.11 For the purpose of this assessment the representative (Saturday) residual sound level is considered to be the logarithmic average value of the measurement results and a value of 69dB $L_{Aeq,1hour}$ has been determined as the representative residual sound level value for the Saturday daytime period.

TABLE 4.4: Summary of Background Measurement Results PFS (Weekdays)

Daytime	L_{Aeq} range	L_{Amax} range	L_{A90} range
Highest	67	83	60
Lowest	65	77	54
Mode	-	-	60
Median	-	-	58
Mean	-	-	58

*Values presented as whole numbers as is the convention within BS 4142

4.4.12 The weekday daytime measurement results indicate a range of values from 54dB $L_{A90,T}$ to 60dB $L_{A90,T}$. An analysis of the measurement results indicates the mean and median average values are consistent while the modal average value is 2dB higher.

4.4.13 For the purpose of this assessment the representative background sound level is considered to be 58dB $L_{A90,T}$ for the weekday daytime period.

4.4.14 The weekday daytime measurement results indicate a range of values from 65dB $L_{Aeq,T}$ to 67dB $L_{Aeq,T}$.

4.4.15 For the purpose of this assessment the representative (weekday) residual sound level is considered to be the logarithmic average value of the measurement results and a value of 66dB $L_{Aeq,1hour}$ has been determined as the representative residual sound level value for the weekday daytime period.

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TABLE 4.5: Summary of Background Measurement Results PFS (Saturdays)

Daytime	L_{Aeq} range	L_{Amax} range	L_{A90} range
Highest	67	81	54
Lowest	67	80	52
Mode	-	-	53
Median	-	-	53
Mean	-	-	53

*Values presented as whole numbers as is the convention within BS 4142

4.4.16 The Saturday daytime measurement results indicate a range of values from 52dB $L_{A90,T}$ to 54dB $L_{A90,T}$. An analysis of the measurement results indicates the modal, median and mean average values are consistent.

4.4.17 For the purpose of this assessment the representative background sound level is considered to be 53dB $L_{A90,T}$ for the Saturday daytime period.

4.4.18 The Saturday daytime measurement results indicate the range of values remain constant between 67dB $L_{Aeq,T}$ to 67dB $L_{Aeq,T}$.

4.4.19 For the purpose of this assessment the representative (Saturday) residual sound level is considered to be the logarithmic average value of the measurement results and a value of 67dB $L_{Aeq,1hour}$ has been determined as the representative residual sound level value for the Saturday daytime period.

TABLE 4.6: Summary of Background Measurement Results PFS (Sundays)

Daytime	L_{Aeq} range	L_{Amax} range	L_{A90} range
Highest	69	83	58
Lowest	62	79	48
Mode	-	-	57
Median	-	-	55
Mean	-	-	54

*Values presented as whole numbers as is the convention within BS 4142

4.4.20 The Sunday daytime measurement results indicate a range of values from 48dB $L_{A90,T}$ to 58dB $L_{A90,T}$. An analysis of the measurement results indicates the modal, median and mean average values are within 3dB but that the median and mean average values are within 1dB of each other.

4.4.21 For the purpose of this assessment the representative background sound level is considered to be 55dB $L_{A90,T}$ for the Sunday daytime period.

4.4.22 The Sunday daytime measurement results indicate the range of values remain constant between 62dB $L_{Aeq,T}$ to 69dB $L_{Aeq,T}$.

4.4.23 For the purpose of this assessment the representative (Sunday) residual sound level is considered to be the logarithmic average value of the measurement results and a value of 67dB $L_{Aeq,1hour}$ has been determined as the representative residual sound level value for the Sunday daytime period.

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TABLE 4.7: Summary of Background Measurement Results PFS (Weeknights)

Daytime	L_{Aeq} range	L_{Amax} range	L_{A90} range
Highest	66	79	57
Lowest	63	77	49
Mode	-	-	57
Median	-	-	54
Mean	-	-	54

*Values presented as whole numbers as is the convention within BS 4142

4.4.24 The weekday night time measurement results indicate a range of values from 49dB $L_{A90,T}$ to 57dB $L_{A90,T}$. An analysis of the measurement results indicates the mean and median average values are consistent while the modal average value is 3dB higher.

4.4.25 For the purpose of this assessment the representative background sound level is considered to be 54dB $L_{A90,T}$ for the weekday night time period.

4.4.26 The weekday night time measurement results indicate a range of values from 63dB $L_{Aeq,T}$ to 66dB $L_{Aeq,T}$.

4.4.27 For the purpose of this assessment the representative (weekday) residual sound level is considered to be the logarithmic average value of the measurement results and a value of 65dB $L_{Aeq,1hour}$ has been determined as the representative residual sound level value for the weekday night time period.

TABLE 4.8: Summary of Background Measurement Results PFS (Saturday nights)

Daytime	L_{Aeq} range	L_{Amax} range	L_{A90} range
Highest	64	80	55
Lowest	62	77	54
Mode	-	-	55
Median	-	-	55
Mean	-	-	55

*Values presented as whole numbers as is the convention within BS 4142

4.4.28 The Saturday night time measurement results indicate a range of values from 54dB $L_{A90,T}$ to 55dB $L_{A90,T}$. An analysis of the measurement results indicates the modal, median and mean average values are consistent.

4.4.29 For the purpose of this assessment the representative background sound level is considered to be 55dB $L_{A90,T}$ for the Saturday night time period.

4.4.30 The Saturday night time measurement results indicate a range of values from 62dB $L_{Aeq,T}$ to 64dB $L_{Aeq,T}$.

4.4.31 For the purpose of this assessment the representative (Saturday) residual sound level is considered to be the logarithmic average value of the measurement results and a value of 63dB $L_{Aeq,1hour}$ has been determined as the representative residual sound level value for the Saturday night time period.

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Table 4.9:
Summary of Residual and Background Sound Levels GAP and CEH Plant Hire Operations

Value	Weekdays	Saturdays
Representative Background Sound Level	61dB $L_{A90,T}$	59dB $L_{A90,T}$
Residual Sound Level	68dB $L_{Aeq,1hour}$	69dB $L_{Aeq,1hour}$

*Values presented as whole numbers as is the convention within BS 4142

Table 4.10:
Summary of Residual and Background Sound Levels PFS Operations

Value	Weekdays	Saturdays	Sundays	Week Nights	Saturday Nights
Representative Background Sound Level	58dB $L_{A90,T}$	53dB $L_{A90,T}$	55dB $L_{A90,T}$	54dB $L_{A90,T}$	55dB $L_{A90,T}$
Residual Sound Level	66dB $L_{Aeq,1hour}$	67dB $L_{Aeq,1hour}$	67dB $L_{Aeq,1hour}$	65dB $L_{Aeq,1hour}$	63dB $L_{Aeq,1hour}$

*Values presented as whole numbers as is the convention within BS 4142

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4.5 Attended Source Measurements

4.5.1 Attended measurements were undertaken of the sound sources subjectively considered to be most prominent in the vicinity of the site.

4.5.2 The following instrumentation was used for the attended measurement survey:

- Rion type NA-28 Sound Level Meter (Serial No. 30431903)
- Rion type NH-23 Pre-amplifier (Serial No. 21966)
- Rion Type UC-59 Microphone (Serial No. 04966)
- Rion Type NC-74 Sound Level Calibrator (Serial No. 34936366)

4.5.3 Measurements were taken at distances of 1m and 3m from the relevant sound sources and measurements were also taken at the same locations in the absence of the source operating to measure the residual sound which was primarily influenced by road traffic from Forstal Road. During the measurements Forstal Road was noted to be free-flowing in both directions, road surfaces were dry with a light changeable breeze of up to 0.2m/s^{-1} was recorded.

4.5.4 Before the survey commenced, the calibration of the instrumentation was checked using the acoustic calibrator to a reference level of 94.0dB and a meter reading of 94.0dB was recorded. At the end of the survey the meter was checked again using the acoustic calibrator to a reference level of 94.0dB and a meter reading of 94.0dB was also recorded.

4.5.5 The sound pressure levels were logarithmically averaged for each set of source measurements. The residual sound level was then subtracted to obtain the level of the source.

4.5.6 The measured Sound Pressure Level data has been converted to Sound Power Level data to be used in the assessment calculations. The Sound Power Level values were obtained using the formula:

$$L_w = L_p + 10_{log}(S).$$

Where L_w is the Sound Power Level, L_p is the Sound Pressure Level and S is the surface area of the total measurement area.

4.5.7 A summary of the sound power levels used in the calculations is presented in Appendix C.

4.5.8 Additional measurements were also undertaken at the PFS and a summary of the levels used in the calculations is presented in Table 4.11 and Table 4.12 below. The levels reflect the use of the PFS filling pumps and vehicle movements arriving and leaving the forecourt.

Table 4.11 Summary of Source Measurement Data (Pumps)

Frequency (Hz)	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500
Level	65.9	69.1	68.6	71.5	59.6	64.6	66.1	53.5	59.5	58.5	56.9	51.1	55.1	62.0
Frequency (Hz)	**630**	**800**	**1 k**	**1.25 k**	**1.6 k**	**2 k**	**2.5 k**	**3.15 k**	**4 k**	**5 k**	**6.3 k**	**8 k**	**10 k**	**12.5 k**
Level	59.7	57.5	53.3	61.2	57.7	57.5	58.3	54.0	56.7	57.1	53.1	52.1	50.7	45.3

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Table 4.12 Summary of Source Measurement Data (Vehicle Movements)

Frequency (Hz)	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500
Level	76.4	68.6	65.1	69.7	66.7	62.6	45.9	60.9	62.2	60.5	58.8	59.0	57.4	57.6
Frequency (Hz)	630	800	1 k	1.25 k	1.6 k	2 k	2.5 k	3.15 k	4 k	5 k	6.3 k	8 k	10 k	12.5 k
Level	57.4	58.2	59.1	58.7	56.8	54.5	53.0	50.7	49.2	39.0	34.0	36.7	39.2	42.0

4.5.9 The average time for a vehicle movement sound level measurement was 6.25 seconds and vehicle movements on the forecourt have been normalised and an A-weighted single exposure value of 75.0dB L_{AE}[9] has been determined.

4.5.10 The filling station staff estimated that the forecourt received up to 30 visits per hour and on this basis a total level attributable to vehicle movements of 57.2dB $L_{Aeq,1hr}$ has been determined using the following formula:

$$L_{Aeq,1hr} = L_{AE} + 10_{log}\,N - 10_{log}\,T$$

Where N = 60 movements (one entrance and one exit) and T = 3600 (seconds).

4.5.11 Additional consideration has been given to the possibility of sound from door slams from vehicles at the PFS and sound level measurements of vehicle door slams were undertaken at the PFS. A summary of the vehicle door slams has been presented in Table 4.13.

Table 4.13 Summary of Source Measurement Data (Door Slams)

Number	Measurement Time	Source	L_{AMax}	Distance (m)	Calculated to 1m
1	19/12/2016 13:15	Car Door	72.6	4	84.6
2	19/12/2016 13:16	Car Boot	75.6	2	81.6
3	19/12/2016 13:18	Car Door	74.4	4	86.4
4	19/12/2016 13:19	Car Door	73.9	4	85.9
5	19/12/2016 13:20	Lorry Door	74.2	4	86.2
6	19/12/2016 13:22	Car Door	74.7	4	86.7
7	19/12/2016 13:23	Car Door	76.1	2	82.1
8	19/12/2016 13:24	Car Door	76.9	1	76.9
9	19/12/2016 13:24	Car Door	70.9	2	76.9
10	19/12/2016 13:26	Car Door	75.2	2	81.2

4.5.12 The measurements have also been corrected to a reference distance of 1m using the formula:

$$L_2 = L_1 + 20_{log}\,(D_1/D_2)$$

Where L_1 is the measured level of the sound source.

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[9] The single exposure level may be referred to as either SEL or L_{AE}.

5. ASSESSMENT

5.1 Environmental Noise Assessment

5.1.1 BS 8233 indicates that the good design range level for sleeping conditions in bedrooms should not exceed 30dB $L_{Aeq,\ 8Hour}$. It continues to suggest that the reasonable design range level for sleeping conditions in bedrooms should not exceed 35dB $L_{Aeq,\ 16Hour}$. The standard continues to state that for a reasonable standard in bedrooms at night, individual noise events (measured with F time-weighting) should not normally exceed 45 dB L_{Amax}.

5.1.2 The guidance presented in the WHO guidelines on community noise also indicate that if negative effects on sleep are to be avoided individual noise levels within bedrooms at night should not normally exceed 45dB $L_{Amax.}$

5.1.3 The maximum external L_{Amax} (F) level measured at the edge of the proposed building during the night was 86.8 dB L_{Amax} (F) free-field measured at 03:59 on Friday 16th December 2016.

5.1.4 BS8233 also recommends 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.

5.2 Software Predictions

5.2.1 The main source of sound has been identified as road traffic from Forstal Road and software predictions have been undertaken using the computer software package SoundPlan 7.4 to determine the extent of any mitigation required.

5.2.2 The software model was calibrated by checking the predicted levels with a receiver located at the same location of the microphone. The input values were adjusted to check the predicted levels matched the measured levels at the monitoring location.

5.2.3 The calculations have been undertaken using a software implementation of ISO 9613-2 [9] and the software model was constructed utilising the following information:

- Google Earth scaled aerial photography import;
- OS based maps from the Planning Portal (Shown in Figure 01)
- Proposed site layout information (Shown in Figure 02)

5.2.4 The output values were also calculated for receivers placed in the centre of the external amenity areas as well as at the closest and potentially worst affected facades.

5.2.5 The calculations are presented in tabular form in Table 5.2 below for the external amenity areas and for the worst affected facades[10] (closest to Forstal Road) and the resultant levels have been used to form the basis of the noise break-in calculations presented in Appendix D.[11]

[10] Facades were not screened by the other proposed premises.

[11] The calculations have assumed the following values for walls and roofs: Walls 52dB R_w, (From BRE BB93 Building Envelope Calculator Version 2.02) Roofs 43dB R_w (from Table 8 of BS 8233:2014) The calculations assume the buildings to be identical and the worst case values have been used to form the basis of these calculations.

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Table 5.1 Highest Predicted Predicted Noise Levels

Floor	Façade	Location	Daytime $L_{Aeq,T}$	Night-time $L_{Aeq,T}$	Night-time L_{AMax}
First	N	Block C	69.0	65.9	86.8
Second	S	Block A	53.5	50.4	86.8

Note 1 Due to the nature of L_{AMax} levels it is not always possible to determine their point of origin and the highest predicted level has not been calculated but is assumed to be the same as the highest measured level.

5.2.6 The calculations indicate levels in the proposed external amenity areas will all be below 50dB(A) with the exception of Block A Plot 1 where only part of the garden will be below 50dB(A) while the rest shall be below 55dB(A).

5.3 Glazing and Ventilation Requirements

5.3.1 During both the day and the night it is the L_{Amax} level that needs to be considered most, for the purposes of a worst case scenario as any glazing that will sufficiently attenuate the night time maximum external noise levels in order to meet the required internal noise criteria will also be sufficient to attenuate the external day time and night time period noise levels for the L_{Aeq} value.

5.3.2 The noise break-in calculations provided in Appendix D indicate a minimum glazing performance requirement of R_w 45dB shall be required for the windows of habitable rooms.

5.3.3 To achieve such a level of acoustic performance requires a substantial level of attenuation and would require either specialist double glazing units, or secondary glazing such as double windows (secondary sash windows).

5.3.4 Based on the glazing specification provided in Tables 2 & 3 of the Pilkington Glass and Noise Control Technical Bulletin [10], an example glazing specification that can achieve ≥R_w 45dB is a Pilkington Insulight specification of 13mm pane/12mm airgap/13mm pane. Alternatively a double window specification that can achieve the required attenuation is a double window with 6mm pane/100mm airgap/4mm pane and this achieves R_w 46dB.

5.3.5 The indicative glazing specifications are been based on windows being closed in order to maintain the required internal noise levels. This then introduces the issue of ventilation, which must be assessed separately to comply with Building Regulations.

5.3.6 An open window is expected to provide approximately 13dB of façade attenuation, and an external level of 86.8dB(A)[12] would correspond to an internal level of 73.8dB(A).

5.3.7 In order to retain the acoustic performance of any bedroom windows any ventilation method to be installed must not increase the internal level of noise above the ambient noise level guideline values provided in Section 2.3 as such it is recommended that either a specialist system be installed.

5.3.8 It is advised to install alternative ventilation in the form of acoustically screened

[12] This value has been taken from the predictions for the highest level outside any of the bedrooms.

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mechanical ventilation to retain the acoustic performance of the windows of any habitable rooms. One option for mechanical ventilation could be to install a whole house system that corresponds to either System 3[13] or System 4[14] of Approved Document F of the Building Regulations [11] or to provide individual acoustic ventilators to the individual rooms.

5.3.9 Any ventilation method to be installed must not increase the internal level of noise above the ambient noise level guideline values provided in Table 4 at paragraph 7.7.2 of BS 8233:2014. Companies which supply alternative ventilation solutions include Titon and Xpelair[15] and example product brochures of such mechanical ventilation and heat recovery systems are presented in Appendix E.

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[13] Continuous mechanical extract (MEV)
[14] Continuous mechanical supply and extract with heat recovery (MVHR)
[15] Able Acoustics Ltd makes no representations or guarantees in respect of 3rd party products or workmanship.

5.4 Commercial/Industrial Noise Assessment

5.4.1 The calculations assume that the operations operate constantly throughout the assessment period with an on-time of 100%.

5.4.2 The predicted specific sound level (for sound from the GAP & CEH Plant Hire premises at the receiver location was calculated to be 40.4dB $L_{Aeq,1\ hour}$. This was based on the 3 highest measured sources operating simultaneously at both the CEH and GAP Plant Hire Premises and as such represents a worst case scenario.

5.4.3 BS 4142 is not applicable to determining rating levels inside buildings and the rating level has only been considered for external amenity areas. While the overall specific level has been considered at the building façade.

5.4.4 The specific sound level is understood to be intermittent and does not operate continuously and a +3dB correction has been applied for intermittency.

5.4.5 The specific sound level was not considered to be impulsive and no correction has been applied for impulsivity.

5.4.6 The reversing alarms were subjectively considered to be clearly perceptible at the monitoring location. Further investigation using the 1/3 octave reference method from BS 4142 indicated that the source was tonal and an acoustic character correction has also been applied for tonality. However, it is recognised that the character corrections should be applied at the assessment location and not at the source location. Consideration has been given to the proposed layout of the site and a comparison of the overall level (i.e. predicted values) with the residual sound climate indicates that an acoustic character correction of +4dB for clearly perceptible tonal components may be applied.

5.4.7 A summary of the assessments has been presented in Section 5.5 below.

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5.5 Assessment of Industrial and Commercial Sound

Table 5.2 Assessment No 01, Weekday Daytime (GAP and CEH Premises)

Results	Value	Relevant Clause	Commentary
Residual sound level	68 dB $L_{Aeq,T}$	**7.3.2**	Specific sound off to determine the correction to be made to the measured ambient sound level
Assessment made during the daytime so reference time interval is 1 h		**7.2**	
Predicted specific sound level	40 dB $L_{Aeq,1hr}$	**7.3.5**	Specific sound level determined by software prediction
Acoustic feature correction	+7 dB	**9.2**	The sound source is considered to be tonal and an acoustic character correction of +4dB for clearly perceptible tonal components has been applied. The sound source is not considered to be impulsive and no correction has been applied for impulsivity. The source is considered to be intermittent and a +3dB correction has been applied for intermittency.
Rating level	47 dB $L_{Ar,1hr}$	**9.1** **9.2**	Specific sound level plus the Acoustic feature correction value
Background sound level	61 dB $L_{A90,T}$	**8**	The $L_{A90,T}$ value was taken when the source was not present over a range of days.
Excess of rating level over background sound level	-14 dB	**11**	Background sound level subtracted from the Rating sound level
Assessment indication	Low Impact	**11**	See Section 5.8 below
Uncertainty		**10**	The excess of the rating level over the background sound level is -14dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment. Measurements of the background sound level and residual sound level were taken under repeatable conditions and were not subject to adverse weather conditions. The calculations have used a validated calculation method.

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Table 5.3 Assessment No 02, Saturday Daytime (GAP and CEH Premises)

Results	Value	Relevant Clause	Commentary
Residual sound level	69 dB $L_{Aeq,T}$	**7.3.2**	Specific sound off to determine the correction to be made to the measured ambient sound level
Assessment made during the daytime so reference time interval is 1 h		**7.2**	
Predicted specific sound level	40 dB $L_{Aeq,1hr}$	**7.3.5**	Specific sound level determined by software prediction
Acoustic feature correction	+7 dB	**9.2**	The sound source is considered to be tonal and an acoustic character correction of +4dB for clearly perceptible tonal components has been applied. The sound source is not considered to be impulsive and no correction has been applied for impulsivity. The source is considered to be intermittent and a +3dB correction has been applied for intermittency.
Rating level	47 dB $L_{Ar,1hr}$	**9.1** **9.2**	Specific sound level plus the Acoustic feature correction value
Background sound level	59 dB $L_{A90,T}$	**8**	The $L_{A90,T}$ value was taken when the source was not present over a range of days.
Excess of rating level over background sound level	-12 dB	**11**	Background sound level subtracted from the Rating sound level
Assessment indication	Low Impact	**11**	See Section 5.8 below
Uncertainty		**10**	The excess of the rating level over the background sound level is -12dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment. Measurements of the background sound level and residual sound level were taken under repeatable conditions and were not subject to adverse weather conditions. The calculations have used a validated calculation method.

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Table 5.4 Assessment No 03, Weekday Daytime (PFS Operations)

Results	Value	Relevant Clause	Commentary
Residual sound level	66 dB $L_{Aeq,T}$	**7.3.2**	Specific sound off to determine the correction to be made to the measured ambient sound level
Assessment made during the daytime so reference time interval is 1 h		**7.2**	
Predicted specific sound level	21 dB $L_{Aeq,1hr}$	**7.3.5**	Specific sound level determined by software prediction
Acoustic feature correction	+3 dB	**9.2**	The specific sound source was considered neither tonal nor impulsive using both subjective and objective methods from BS 4142. The specific sound level from the use of the pumps is likely to be inaudible sound source and a correction for other sound characteristics that would be readily audible over the residual sound has not been applied. The source is considered to be intermittent and a +3dB correction has been applied for intermittency.
Rating level	24 dB $L_{Ar,1hr}$	**9.1** **9.2**	Specific sound level plus the Acoustic feature correction value
Background sound level	58 dB $L_{A90,T}$	**8**	The $L_{A90,T}$ value was taken when the source was not present over a range of days.
Excess of rating level over background sound level	-34 dB	**11**	Background sound level subtracted from the Rating sound level
Assessment indication	Low Impact	**11**	See Section 5.8 below
Uncertainty		**10**	The excess of the rating level over the background sound level is -34dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment. Measurements of the background sound level and residual sound level were taken under repeatable conditions and were not subject to adverse weather conditions. The calculations have used a validated calculation method.

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Table 5.5 Assessment No 04, Saturday Daytime (PFS Operations)

Results	Value	Relevant Clause	Commentary
Residual sound level	67 dB $L_{Aeq,T}$	**7.3.2**	Specific sound off to determine the correction to be made to the measured ambient sound level
Assessment made during the daytime so reference time interval is 1 h		**7.2**	
Predicted specific sound level	21 dB $L_{Aeq,1hr}$	**7.3.5**	Specific sound level determined by software prediction
Acoustic feature correction	+3 dB	**9.2**	The specific sound source was considered neither tonal nor impulsive using both subjective and objective methods from BS 4142. The specific sound level from the use of the pumps is likely to be inaudible sound source and a correction for other sound characteristics that would be readily audible over the residual sound has not been applied. The source is considered to be intermittent and a +3dB correction has been applied for intermittency.
Rating level	24 dB $L_{Ar,1hr}$	**9.1** **9.2**	Specific sound level plus the Acoustic feature correction value
Background sound level	53 dB $L_{A90,T}$	**8**	The $L_{A90,T}$ value was taken when the source was not present over a range of days.
Excess of rating level over background sound level	-29 dB	**11**	Background sound level subtracted from the Rating sound level
Assessment indication	Low Impact	**11**	See Section 5.8 below
Uncertainty		**10**	The excess of the rating level over the background sound level is -29dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment. Measurements of the background sound level and residual sound level were taken under repeatable conditions and were not subject to adverse weather conditions. The calculations have used a validated calculation method.

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Table 5.6 Assessment No 05, Sunday Daytime (PFS Operations)

Results	Value	Relevant Clause	Commentary
Residual sound level	67 dB $L_{Aeq,T}$	**7.3.2**	Specific sound off to determine the correction to be made to the measured ambient sound level
Assessment made during the daytime so reference time interval is 1 h		**7.2**	
Predicted specific sound level	21 dB $L_{Aeq,1hr}$	**7.3.5**	Specific sound level determined by software prediction
Acoustic feature correction	+3 dB	**9.2**	The specific sound source was considered neither tonal nor impulsive using both subjective and objective methods from BS 4142. The specific sound level from the use of the pumps is likely to be inaudible sound source and a correction for other sound characteristics that would be readily audible over the residual sound has not been applied. The source is considered to be intermittent and a +3dB correction has been applied for intermittency.
Rating level	24 dB $L_{Ar,1hr}$	**9.1** **9.2**	Specific sound level plus the Acoustic feature correction value
Background sound level	55 dB $L_{A90,T}$	**8**	The $L_{A90,T}$ value was taken when the source was not present over a range of days.
Excess of rating level over background sound level	-31 dB	**11**	Background sound level subtracted from the Rating sound level
Assessment indication	Low Impact	**11**	See Section 5.8 below
Uncertainty		**10**	The excess of the rating level over the background sound level is -31dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment. Measurements of the background sound level and residual sound level were taken under repeatable conditions and were not subject to adverse weather conditions. The calculations have used a validated calculation method.

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Table 5.7 Assessment No 06, Weekday Night time (PFS Operations)

Results	Value	Relevant Clause	Commentary
Residual sound level	65 dB $L_{Aeq,T}$	**7.3.2**	Specific sound off to determine the correction to be made to the measured ambient sound level
Assessment made during the daytime so reference time interval is 1 h		**7.2**	
Predicted specific sound level	21 dB $L_{Aeq,1hr}$	**7.3.5**	Specific sound level determined by software prediction
Acoustic feature correction	+3 dB	**9.2**	The specific sound source was considered neither tonal nor impulsive using both subjective and objective methods from BS 4142. The specific sound level from the use of the pumps is likely to be inaudible sound source and a correction for other sound characteristics that would be readily audible over the residual sound has not been applied. The source is considered to be intermittent and a +3dB correction has been applied for intermittency.
Rating level	24 dB $L_{Ar,1hr}$	**9.1** **9.2**	Specific sound level plus the Acoustic feature correction value
Background sound level	54 dB $L_{A90,T}$	**8**	The $L_{A90,T}$ value was taken when the source was not present over a range of days.
Excess of rating level over background sound level	-30 dB	**11**	Background sound level subtracted from the Rating sound level
Assessment indication	Low Impact	**11**	See Section 5.8 below
Uncertainty		**10**	The excess of the rating level over the background sound level is -30dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment. Measurements of the background sound level and residual sound level were taken under repeatable conditions and were not subject to adverse weather conditions. The calculations have used a validated calculation method.

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Table 5.8 Assessment No 07, Saturday Night time (PFS Operations)

Results	Value	Relevant Clause	Commentary
Residual sound level	63 dB $L_{Aeq,T}$	**7.3.2**	Specific sound off to determine the correction to be made to the measured ambient sound level
Assessment made during the daytime so reference time interval is 1 h		**7.2**	
Predicted specific sound level	21 dB $L_{Aeq,1hr}$	**7.3.5**	Specific sound level determined by software prediction
Acoustic feature correction	+3 dB	**9.2**	The specific sound source was considered neither tonal nor impulsive using both subjective and objective methods from BS 4142. The specific sound level from the use of the pumps is likely to be inaudible sound source and a correction for other sound characteristics that would be readily audible over the residual sound has not been applied. The source is considered to be intermittent and a +3dB correction has been applied for intermittency.
Rating level	24 dB $L_{Ar,1hr}$	**9.1** **9.2**	Specific sound level plus the Acoustic feature correction value
Background sound level	55 dB $L_{A90,T}$	**8**	The $L_{A90,T}$ value was taken when the source was not present over a range of days.
Excess of rating level over background sound level	-31 dB	**11**	Background sound level subtracted from the Rating sound level
Assessment indication	Low Impact	**11**	See Section 5.8 below
Uncertainty		**10**	The excess of the rating level over the background sound level is -31dB and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment. Measurements of the background sound level and residual sound level were taken under repeatable conditions and were not subject to adverse weather conditions. The calculations have used a validated calculation method.

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5.6 Assessment of Sound from Vehicle Door Slams

5.6.1 The highest measured vehicle door slam corrected to 1m was 86.7dB L_{AMax}. The closest window to the PFS forecourt is understood to be approximately 17.6m from the closest pump and located at a height of 4.8m[16] and when corrected for a total source to receiver distance of 18.2m returns a value of 61.5dB L_{AMax}.

5.6.2 No additional consideration has been given to any possible screening provided the orientation of the buildings.

5.6.3 It was noted that the highest L_{AMax} was 86.8dB L_{AMax} this is 25.3dB higher than the predicted L_{AMax} value from door slams and any glazing that will sufficiently attenuate the night time L_{AMax} levels internally will also be sufficient to attenuate the individual L_{AMax} levels from vehicle door slams from the PFS forecourt. No further consideration has been given to the door slams from the PFS.

5.7 Assessment of Sound Attributable to PFS Related Vehicle Movements

5.7.1 The filling station staff estimated that the forecourt received up to 30 visits per hour and on this basis a total level attributable to vehicle movements of 57.2dB $L_{Aeq,T}$ has been determined. This has been corrected to 46.0dB $L_{Aeq,T}$ to account for an increase in distance from the edge of the proposed development to the closest pump at the PFS using the following formula:

$$L_2 = L_1 + 20log\ (D_1/D_2)$$

Where L_2 is the measured level of the source, D_1 is the averaged measurement distance of 5m and D_2 is 18.2m.

5.7.2 The total hourly contribution of 46.0dB $L_{Aeq,T}$ is below the average daytime and night time period $L_{Aeq,T}$ values by at least 15 dB and no further consideration is given to vehicle movements attributable to PFS operations.

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[16] Distance from the ground to the centre of the window.

5.8 Context

5.8.1 The initial assessment indicates a low impact. BS 4142:2014 requires that the conclusions of the assessment should take the context in which the sound occurs into account. BS 4142 contains multiple instances of the term context which include: an understanding of the situation to be rated and assessed, the level of acceptable drift over the entire measurement period, whether it is necessary to assess weekends and weekdays separately, the margin by which a sound exceeds the background sound level, its absolute level, time of day, and change in the acoustic environment, as well as local attitudes to the source of sound and the character of the neighbourhood. The main contextual considerations are considered to be as follows:

- Increased glazing has been recommended to be installed at each of the closest and potentially most sensitive facades.
- Alternative ventilation has been recommended to be installed at each of the nearest and potentially most noise sensitive premises.
- Acoustic screening in the form of 1.8m garden/barrier fences at the rear of the nearest and potentially most noise sensitive premises has already been recommended and has been included in the calculations.
- A 2.5m boundary wall (with a solid gate) has been included in the calculations to run along the western edge of the river access way as show in Figures 03 to Figure 06.
- The presence of a subjectively high residual sound level (road traffic sound from the A20) compared with the specific sound level is likely to reduce the level of impact from the specific sound at the assessment location.

5.8.2 The initial assessment of the impact of the specific sound level has been obtained by subtracting the background sound level from the residual sound level. It has not been considered necessary to modify the initial assessment on the following grounds:

- The initial assessment indicates a low impact.
- The highest predicted specific sound level of 40dB $L_{Aeq,1\ hour}$ is 23dB below the lowest residual level of 63dB $L_{Aeq,T}$ and masking is expected to occur.

5.8.3 It is concluded that the initial estimates of the impact do not need to be modified due to context and all pertinent factors have been taken into consideration.

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5.9 Assessment Outcomes

5.9.1 The initial assessment outcomes indicate that the operation of the sound sources will result in a result in a low impact. It has not been considered necessary to modify the assessment outcomes due to context.

5.10 Recommendations

5.10.1 While the assessment indicates the use of the site will result in a low impact it is recommended this level of impact must not be increased and that garden/barrier fences are provided around the external amenity areas to a height of 1.8m minimum as well as a 2.5m wall (with a solid gate) to the western side of the River Access Way.

5.11 Potential Impact of Uncertainty

5.11.1 BS 4142 requires that the potential impact of uncertainty upon the assessment be reported. The following steps have been taken to minimise uncertainty affecting the measurement values:

- Measurements were taken of all the relevant sources operating at capacity to determine a worst case level.
- Consideration has been given to the residual sound level as part of each assessment.
- Source term measurements have considered the residual sound level in the presence of the specific sound.
- Source term measurements were taken at positions around the relevant sound sources that would provide representative measurement data.
- The unattended surveys were undertaken during times that were representative of when nearby operation would normally be taking place and also when these were inactive in order to determine the representative background sound level.
- Details of the range of weather conditions during which measurements have been taken were made using a logging meteorological station at the measurement location.
- Class 1 Instrumentation has been used for all measurements and a field calibration check was performed both before and after each measurement survey using a Reference Sound Calibrator that has been calibrated to UKAS standards within the last year.
- An outdoor microphone protection system was used to reduce sound attributable to wind at the microphone. Site measurements were also scheduled for a period when wind speeds were not expected to be unacceptably high and this was confirmed by on site measurements at the start and end of the survey.
- Observations and statements regarding the application site and the sound source

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were based on measurement data as well as photographic and documented evidence.

- Measurements were undertaken under repeatable conditions.
- Best practice as indicated in the ANC Guidelines [12] has been followed when undertaking the measurements.
- The field work for this assessment was undertaken by the author of this report who holds acoustic qualifications relevant to the application of the Standard and is experienced in undertaking work of this nature.
- The measurements from which the representative background sound level has been derived were based on 15 minute samples. BS 4142 notes that the mean average of a series of measured background sound levels is not numerically equal to the overall period background sound level that would otherwise be obtained by a single measurement spanning individual measurement periods. This report recognises this limitation and presents a representative value based on a the range of values that have been provided and also notes that there is no international standard or guidance that universally provides a method for determining the $L_{A90,T}$ and further that the method for measuring the $L_{A90,T}$ varies between equipment manufacturers.

5.11.2 The following steps have been taken to minimise uncertainty affecting the calculation values:

- The calculations are based on measurement data which was taken under repeatable conditions.
- The operation or sound emission characteristics of the specific sound sources and any assumed sound power levels have been considered and methods for rating the sound sources rely on both subjective and objective methods from BS 4142.
- The assessment calculations have adopted a simplistic approach following the prescribed method in BS 4142 and are presented in Section 5 of this report.
- The calculations for the specific sound level values rely on a software implementation of ISO 9613-2 which is recognised in BS 4142:2014 as a validated calculation method.
- Values incorporated into the assessment method have been rounded to the nearest whole number of decibels with the value of 0.5 being rounded up.

5.11.3 It is considered that all reasonable steps to reduce uncertainty have been taken and while uncertainty maybe present, the level of uncertainty in the result is low.

5.12 Suitability

5.12.1 It is considered, therefore, that development of the site would be acceptable in terms of noise, provided that the following issues are considered:

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- The glazing specification will need to ensure that the internal noise levels detailed in Section 2.3 are not exceeded.

- Alternative ventilation in the form of a whole house system or other specialist system will need to be installed to provide rapid ventilation and the installed unit/units must not give rise to an increase in internal noise levels over the desired internal noise level values.

- Garden/barrier fences around all of the external amenity areas to a height of 1.8m minimum will be required as shown in Figure 03 to Figure 06.

- A 2.5m wall will need to be erected along the western side of the river access way as shown in Figure 03 to Figure 06. It is further recommended this wall incorporate a solid door/gate at the entry point to the north.

5.12.2 It is concluded, therefore, that the site is suitable for development as residential accommodation, provided that all of the above points are taken into consideration.

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6. CONCLUSIONS

6.1 Summary of Conclusions

6.1.1 The results of the assessment indicate that the site is suitable for development as residential accommodation, subject to the proviso that suitable attention is paid to the glazing specification, ventilation strategy, barrier/fences around the garden areas and a 2.5m wall along the western edge of the river access way.

6.1.2 Should the requirements of 6.1.1 be met, it is concluded that there are no further reasons on noise grounds why the site should not be granted planning permission.

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6.2 Statement of Competence

6.2.1 BS 4142:2014 requires a statement of the relevant qualifications, competency, professional memberships and experience directly relevant to the application of the standard of all those persons contributing to the assessment to be reported.

6.2.2 The assessment and field work has been undertaken by the author of this report: Edward Crofton-Martin MSc, IEng[17], MIOA[18] the Principal Acoustic Consultant at Able Acoustics Limited, whose qualifications include The Institute of Acoustics Diploma in Acoustics and Noise Control (including all endorsements) and the Institute of Acoustics Certificate of Competence in Environmental Noise Measurement.

6.2.3 The author of this report has experience of undertaking field work and practical assessments of sound from commercial and industrial sources under both the previous version of the standard BS 4142:1997 and the current version of the standard BS 4142:2014. The author's responsible project experience including both field work and practical assessment time amounts to in excess of 20,000 hours to date.

6.2.4 The author is also an Incorporate Member of the Chartered Institute of Building (ICIOB) an Accredited Associate Member of the Chartered Institute of Environmental Health (ACIEH) as well as an accredited expert witness (Practising Associate of the Academy of Experts) in the field of Acoustics and Noise Control and has prepared reports and given oral evidence for legal proceedings including in the High Court.

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[17] Incorporated Engineer registered with the Engineering Council
[18] Corporate Member of the Institute of Acoustics

7. REFERENCES

1. British Standards Institution. British Standard 7445: Description and Measurement of Environmental Noise, Part 1. Guide to Quantities and Procedures, 1991.

2. National Planning Policy Framework. UK Department for Communities and Local Government. March, 2012.

3. Department of the Environmental. Planning Policy Guidance (PPG) 24, Planning and Noise, September 1994.

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6. World Health Organisation. Guidelines for Community Noise. 2000. British Standards Institution.

7. British Standards Institution. British Standard 4142: Methods for rating and assessing industrial and commercial sound, 2014.

8. Tonbridge & Malling Borough Council, Decision Notice, Planning Application Reference Number: TM/16/01517/FL, 29th September 2016.

9. International Organization for Standardization, ISO 9613-2 Acoustics, Attenuation of sound during propagation outdoors, Part 2: General method of calculation, 1996.

10. Pilkington Glass and Noise Control Technical Bulletin, Pilkington United Kingdom Limited, Sound Insulation: Table 2-Pilkington Insulight, Table 3-Double Windows (secondary sashes)

11. The Building Regulations 2010. Approved Document F - Ventilation 2010 edition (incorporating 2010 and 2013 amendments). October 2015.

12. The Association of Noise Consultants. ANC Guidelines, ANC Green Book: Environmental Noise Measurement Guide. 2013.

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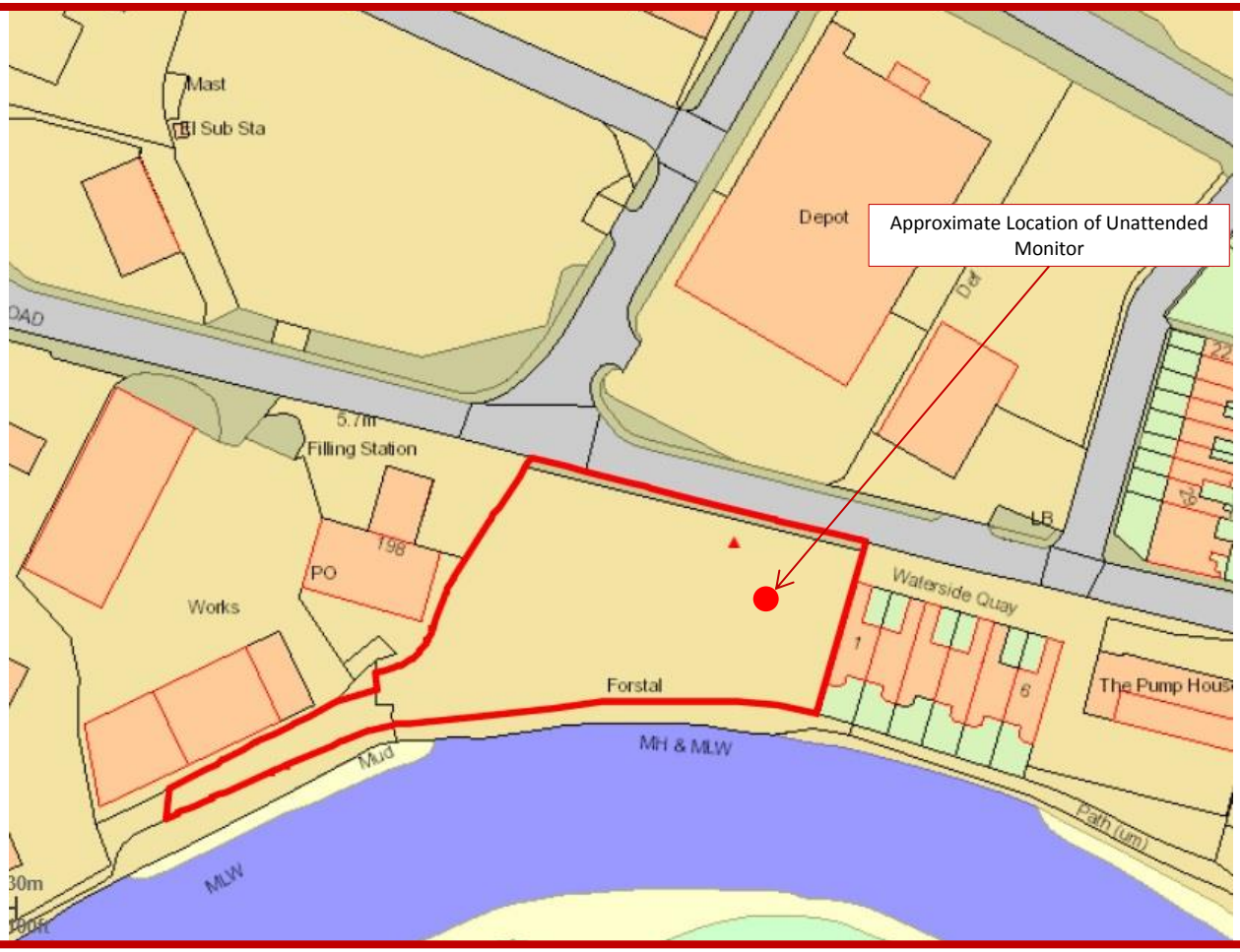
FIGURES



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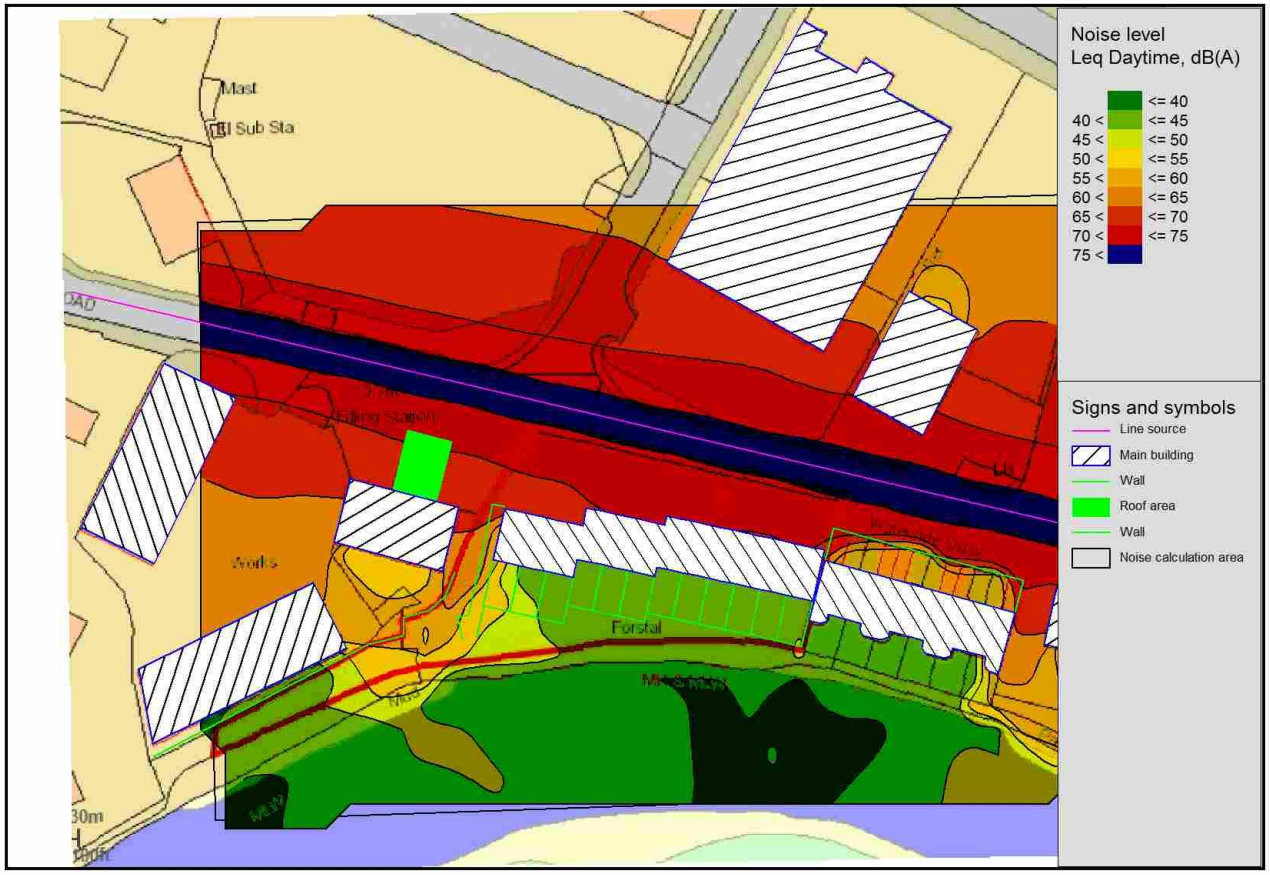
Project	No.	Drawing	No.	File	Date
Phoenix House	P1225	Site Location	Figure 01	P1225/Figures.ppt	16/01/2017

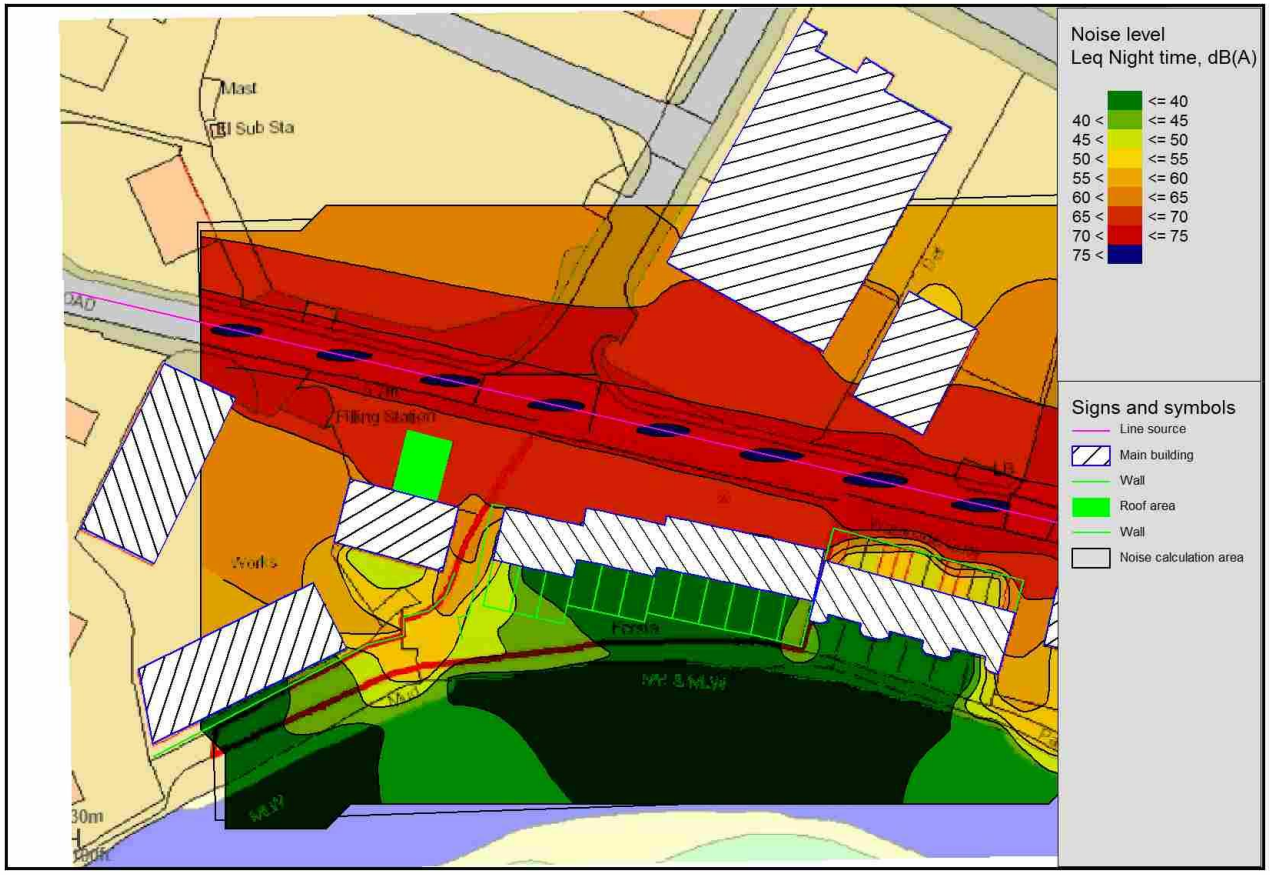
Not To Scale – Resized from Original Drawing

Project	No.	Drawing	No.	File	Date
Phoenix House	P1225	Proposed Layout	Figure 02	P1225/Figures.ppt	16/01/2017



Not To Scale – Resized from Original Drawing

Project	No.	Drawing	No.	File	Date
Phoenix House	P1225	Proposed Layout (Daytime)	Figure 03	P1225/Figures.ppt	16/01/2017



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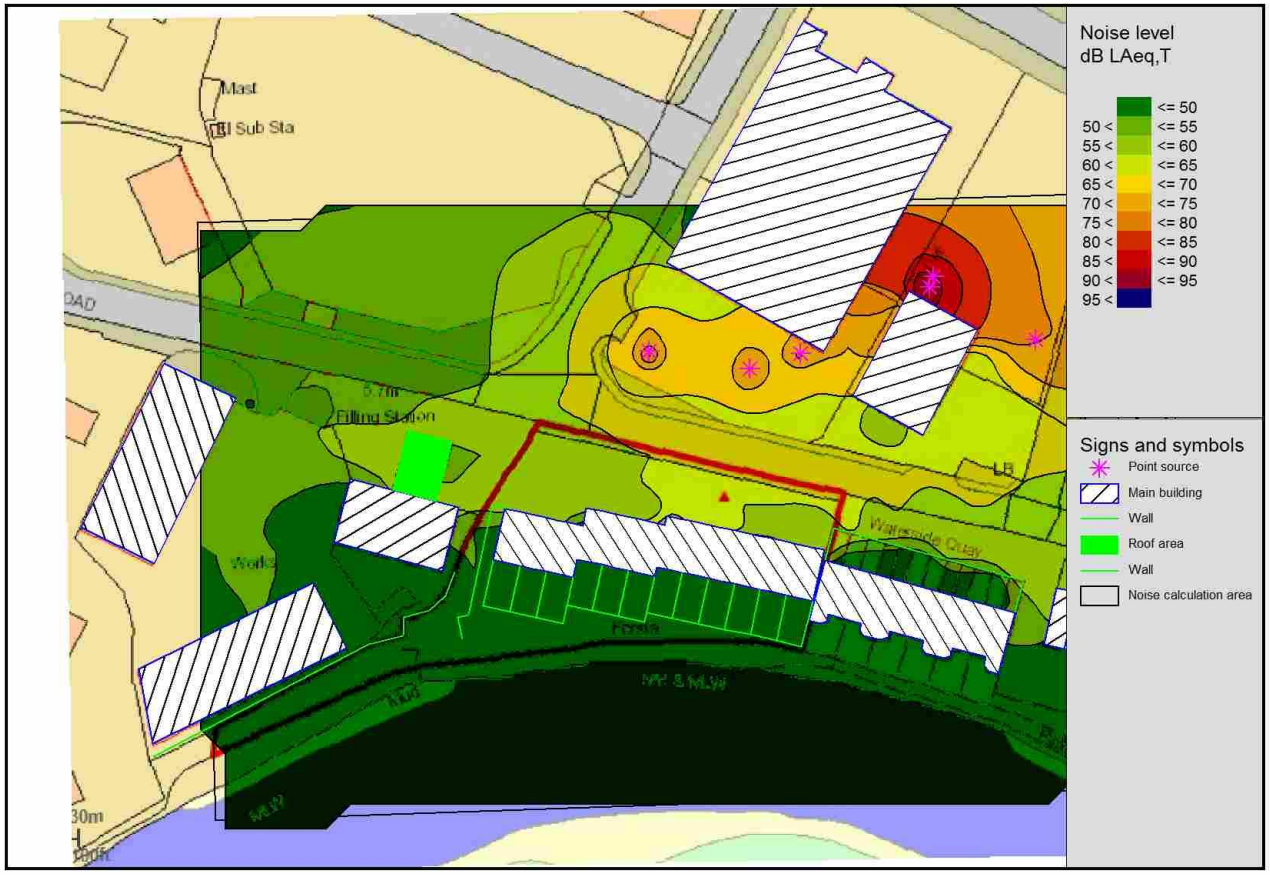
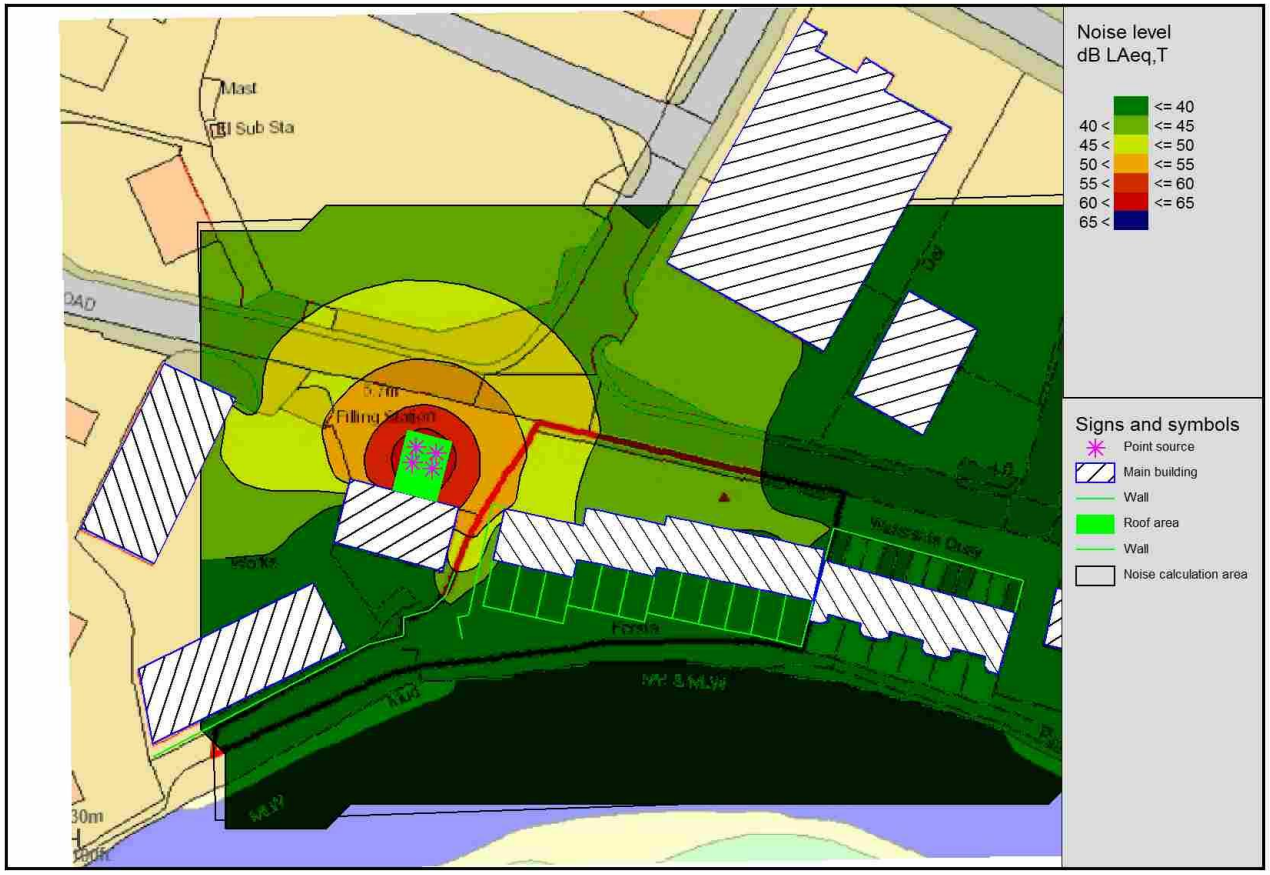
Project	No.	Drawing	No.	File	Date
Phoenix House	P1225	Proposed Layout (Night time)	Figure 04	P1225/Figures.ppt	16/01/2017



Not To Scale – Resized from Original Drawing

Project	No.	Drawing	No.	File	Date
Phoenix House	P1225	Specific Sound CEH & GAP Plant Hire Operations	Figure 05	P1225/Figures.ppt	16/01/2017



Not To Scale – Resized from Original Drawing

Project	No.	Drawing	No.	File	Date
Phoenix House	P1225	Specific Sound Petrol Filling Station	Figure 06	P1225/Figures.ppt	16/01/2017

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APPENDIX A

Calibration Certificates

CERTIFICATE OF CALIBRATION

Date of Issue: 13 April 2016 **Certificate Number: TCRT16/1092**

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory

M. Breslin [ ] K. Mistry [ ] J. Harriman [✓]

Customer	Able Acoustics Unit 20 Connect 10 Business Park Foster Road Ashford Kent TN24 0FE			
Order No.	P1000			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	00843175
	Rion	Firmware		1.5
	Rion	Pre Amplifier	NH-25	31989
	Rion	Microphone	UC-59	06717
	Rion	Calibrator	NC-74	34536109
		Calibrator adaptor type if applicable		NC-74-002
Performance Class	1			
Test Procedure	TP 2.SLM 61672-3 TPS-49 *Procedures from IEC 61672-3:2006 were used to perform the periodic tests.*			
Type Approved to IEC 61672-1:2002	YES	Approval Number	21.21 / 13.02	
	If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003			
Date Received	08 April 2016	ANV Job No.	TRAC16/04060	
Date Calibrated	13 April 2016			

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	Initial Calibration		

This certificate provides traceability of measurement to recognised national standards, and to 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

UKAS CALIBRATION 7623

Date of Issue: 12 February 2016 **Certificate Number: UCRT16/1059**

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory

M. Breslin [ ] K. Mistry [ ] J. Harriman [✓]

Customer	Able Acoustics Unit 20 Connect 10 Foster Road Ashford Business Park Kent TN24 0FE			
Order No.	P1000			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NA-28	30431903
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-23	21966
	Rion	Microphone	UC-59	04966
	Rion	Calibrator	NC-74	34536109
		Calibrator adaptor type if applicable		NC-74-002
Performance Class	1			
Test Procedure	TP 2.SLM 61672-3 TPS-49 *Procedures from IEC 61672-3:2006 were used to perform the periodic tests.*			
Type Approved to IEC 61672-1:2002	Yes	Approval Number	21.21/07.01	
	If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003			
Date Received	11 February 2016	ANV Job No.	UKAS16/02027	
Date Calibrated	12 February 2016			

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	Initial Calibration		

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

MEASUREMENT SYSTEMS

CERTIFICATE OF CALIBRATION

UKAS CALIBRATION
7623

Date of Issue: 18 February 2016

Certificate Number: UCRT16/1061

Issued by:
ANV Measurement Systems
Beaufort Court
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E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages
Approved Signatory
M. Breslin [ ] K. Mistry [ ] J. Harriman [✓]

Customer	Able Acoustics Unit 20, Connect 10 Business Park Foster Road Ashford Kent TN24 0FE
Order No.	P1000
Test Procedure	Procedure TP 1 Calibration of Sound Calibrators
Description	Acoustic Calibrator

Identification	*Manufacturer*	*Instrument*	*Model*	*Serial No.*
	Rion	Calibrator	NC-74	34936366

The calibrator has been tested as specified in Annex B of IEC 60942:2003. As public evidence was available from a testing organisation (PTB) 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.

ANV Job No.	UKAS16/02028	
Date Received	17 February 2016	
Date Calibrated	18 February 2016	
Previous Certificate	*Dated*	21 April 2015
	Certificate No.	UCRT15/1044SUP
	Laboratory	7623

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APPENDIX B

Results of Unattended Monitoring

Appendix B: Results of Unattended Monitoring

Able Acoustics
Noise and Vibration Consultants

Project Number:	**P1225 Phoenix House**
Client:	**Forstal Properties Ltd**
Site Location:	**Phoenix House, Aylesford**

Instrumentation	Serial No.
Rion NL-52 Sound Level Meter	00843175
Rion NH-25 Pre-amp	31989
Rion UC-59 Microphone	06717
Rion NC-74 Acoustic Calibrator	34936366

Address	Date	Time	L_{Aeq}	L_{Amax}	L_{A90}	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz
1	15/12/2016	15:30	68.8	79.3	63.1	65.9	67.9	66.7	66.3	65.5	66.5	69.2	70.8	65.0
2	15/12/2016	15:45	68.5	83.3	63.6	66.2	68.6	67.9	68.0	66.7	67.4	68.6	67.4	63.1
3	15/12/2016	16:00	68.7	83.5	63.9	65.0	64.5	64.7	66.4	67.2	66.8	68.4	71.5	63.7
4	15/12/2016	16:15	68.5	82.5	63.1	65.3	65.5	64.9	65.1	65.0	65.3	68.6	72.1	63.9
5	15/12/2016	16:30	68.9	81.7	63.2	65.1	65.5	65.8	65.9	65.0	65.5	68.8	73.7	66.5
6	15/12/2016	16:45	68.4	80.7	62.8	64.8	68.4	66.1	66.0	65.1	65.5	67.2	65.8	63.8
7	15/12/2016	17:00	69.2	84.1	63.9	67.3	67.9	66.6	65.0	65.7	66.7	68.0	67.1	65.8
8	15/12/2016	17:15	68.9	80.4	62.9	65.4	66.0	66.8	65.9	65.1	67.7	67.3	65.1	62.2
9	15/12/2016	17:30	68.2	78.4	62.7	65.5	68.3	66.9	65.4	64.8	66.7	68.3	66.7	64.9
10	15/12/2016	17:45	69.2	86.5	62.4	65.8	66.5	65.2	66.0	64.3	66.0	65.4	64.8	62.8
11	15/12/2016	18:00	68.9	84.6	62.4	67.8	67.6	66.0	64.7	63.6	64.5	66.0	65.8	62.6
12	15/12/2016	18:15	68.1	81.5	60.7	65.6	66.1	65.2	64.2	62.6	63.1	66.6	64.6	61.9
13	15/12/2016	18:30	68.4	78.9	61.3	66.2	68.1	67.0	65.8	64.7	66.1	67.5	64.7	61.0
14	15/12/2016	18:45	68.1	84.1	61.3	65.7	66.9	67.0	64.2	63.5	64.7	65.8	63.6	61.5
15	15/12/2016	19:00	67.3	82.5	60.5	64.7	64.9	64.5	63.9	62.2	63.7	64.9	62.9	60.9
16	15/12/2016	19:15	67.4	77.8	60.5	65.0	64.8	66.3	64.0	62.2	65.0	65.4	63.7	59.8
17	15/12/2016	19:30	68.0	87.9	59.8	64.9	65.4	64.1	63.2	61.1	62.4	64.8	65.2	62.6
18	15/12/2016	19:45	66.6	83.5	59.1	67.0	65.6	65.2	65.3	63.8	65.4	64.5	62.5	59.9
19	15/12/2016	20:00	67.2	80.3	59.7	66.4	66.4	66.0	64.5	62.5	63.8	66.9	64.8	60.4
20	15/12/2016	20:15	67.3	79.5	60.0	64.1	64.7	65.2	63.0	61.3	61.3	62.9	63.2	61.3
21	15/12/2016	20:30	66.9	79.4	59.7	65.0	66.8	65.5	64.3	62.3	61.7	63.4	62.7	59.6
22	15/12/2016	20:45	65.8	76.9	58.9	65.4	65.3	68.2	65.1	64.3	63.6	65.4	64.2	59.7
23	15/12/2016	21:00	66.2	80.2	58.4	63.5	64.1	63.6	62.7	60.3	61.3	62.9	63.5	58.6
24	15/12/2016	21:15	65.8	85.2	58.2	66.9	63.1	63.3	63.7	61.4	61.9	63.0	60.6	57.1
25	15/12/2016	21:30	66.5	86.1	57.8	62.4	64.0	63.5	63.2	61.4	62.1	63.0	62.6	58.0
26	15/12/2016	21:45	66.0	85.6	57.8	63.0	63.3	63.4	64.2	62.5	62.6	63.4	61.2	63.0
27	15/12/2016	22:00	67.0	80.6	57.8	64.2	64.8	64.2	63.5	63.6	64.0	65.0	62.5	59.4
28	15/12/2016	22:15	62.8	80.9	56.0	62.8	64.6	62.8	62.0	60.4	60.9	62.5	59.6	55.9
29	15/12/2016	22:30	64.4	79.5	55.5	63.6	68.6	65.9	64.6	63.7	65.8	65.6	62.5	57.8
30	15/12/2016	22:45	64.8	81.9	55.2	65.3	64.3	64.6	64.8	61.5	61.8	63.7	59.9	57.7
31	15/12/2016	23:00	65.0	79.0	55.5	64.6	66.3	65.9	63.6	62.5	61.8	66.7	63.2	59.9
32	15/12/2016	23:15	64.1	77.6	54.6	65.2	64.9	63.7	61.4	60.8	60.7	63.6	60.0	56.2
33	15/12/2016	23:30	62.4	81.5	54.0	65.5	68.0	63.6	62.7	60.4	61.3	62.6	59.4	56.6
34	15/12/2016	23:45	62.2	77.0	52.6	60.9	61.4	62.4	60.4	58.5	56.6	60.1	58.1	57.5
35	16/12/2016	00:00	62.5	79.9	52.0	62.5	64.2	63.8	62.4	60.7	61.6	63.1	60.7	57.2
36	16/12/2016	00:15	62.9	78.1	52.4	63.7	65.2	64.9	63.2	61.0	62.7	63.6	62.4	59.1
37	16/12/2016	00:30	60.2	78.7	50.4	59.3	59.9	61.5	62.3	60.0	61.7	62.3	59.1	54.2
38	16/12/2016	00:45	60.9	78.1	51.3	61.1	64.9	62.9	60.8	58.8	58.8	61.9	59.8	55.1
39	16/12/2016	01:00	61.5	82.2	50.5	64.0	68.4	66.0	63.4	61.3	61.5	65.0	60.6	56.2
40	16/12/2016	01:15	61.0	83.1	50.8	62.0	65.3	63.7	61.6	60.1	61.5	63.0	60.6	55.1
41	16/12/2016	01:30	63.1	80.1	51.7	64.6	65.5	66.6	65.6	64.9	65.1	66.2	63.5	57.2
42	16/12/2016	01:45	60.6	80.4	48.8	60.3	62.0	64.3	61.9	60.6	61.2	64.4	61.6	56.4
43	16/12/2016	02:00	62.2	79.3	49.4	61.7	65.7	65.3	62.5	60.1	62.1	62.5	60.6	56.0
44	16/12/2016	02:15	60.9	79.2	50.2	63.6	66.0	64.2	62.9	61.1	60.9	62.0	59.9	55.1
45	16/12/2016	02:30	61.2	79.6	50.6	62.0	62.2	62.8	62.2	60.9	61.5	62.1	60.1	56.3
46	16/12/2016	02:45	62.5	86.0	50.9	63.7	67.4	65.5	64.5	62.2	61.4	63.9	60.3	57.4
47	16/12/2016	03:00	61.6	77.3	48.9	61.9	65.7	64.3	60.9	59.1	61.2	60.8	60.4	56.3
48	16/12/2016	03:15	62.8	81.7	49.7	63.5	66.3	66.4	64.7	63.4	64.3	64.3	62.1	57.4
49	16/12/2016	03:30	62.4	79.0	50.7	64.7	65.7	64.9	64.0	62.1	65.2	64.5	63.7	58.6
50	16/12/2016	03:45	65.1	86.8	51.0	63.1	65.5	66.3	64.5	62.9	63.8	64.4	63.2	58.5
51	16/12/2016	04:00	64.3	81.0	52.1	65.6	66.4	66.2	64.0	63.1	65.1	64.9	62.8	59.0
52	16/12/2016	04:15	61.4	75.6	52.1	62.3	64.8	63.2	61.4	61.1	61.7	65.8	60.8	56.2
53	16/12/2016	04:30	62.4	76.6	52.9	63.1	67.4	64.5	62.7	62.7	62.5	66.5	61.7	56.9
54	16/12/2016	04:45	62.9	78.6	54.1	63.4	68.6	66.5	62.5	61.7	63.5	63.1	60.8	56.9
55	16/12/2016	05:00	64.5	79.0	55.0	63.9	68.6	64.8	63.1	61.7	62.4	64.1	64.3	63.0
56	16/12/2016	05:15	65.4	78.7	56.6	63.3	64.9	65.0	63.8	62.9	62.7	64.1	63.8	59.2
57	16/12/2016	05:30	66.0	78.2	56.8	63.8	65.6	67.2	64.3	62.8	63.8	65.9	64.5	60.5
58	16/12/2016	05:45	66.3	77.5	57.2	62.8	66.3	66.3	63.6	62.2	63.9	64.8	63.2	63.2
59	16/12/2016	06:00	73.1	99.6	57.5	62.0	63.5	63.0	62.2	62.2	62.4	64.0	63.6	60.1
60	16/12/2016	06:15	66.9	85.8	57.9	62.4	64.3	64.8	62.2	62.0	64.1	65.8	64.0	60.9
61	16/12/2016	06:30	67.0	83.9	58.6	66.1	66.1	63.8	62.9	63.0	64.6	66.1	66.8	62.6
62	16/12/2016	06:45	66.5	79.0	58.4	65.3	65.6	65.8	64.9	64.4	66.0	67.9	65.9	62.4
63	16/12/2016	07:00	68.7	81.8	59.8	64.8	66.8	66.1	65.8	65.1	66.6	68.2	68.0	64.0
64	16/12/2016	07:15	67.8	82.2	60.1	62.3	64.3	65.4	64.8	64.3	65.8	67.5	66.8	63.4
65	16/12/2016	07:30	67.8	84.4	60.8	65.4	65.8	65.2	65.4	65.1	66.2	68.6	68.4	64.6
66	16/12/2016	07:45	68.1	83.3	62.4	65.2	66.3	67.6	67.2	65.6	68.3	70.4	72.1	66.5
67	16/12/2016	08:00	67.8	78.9	61.8	64.1	66.3	65.4	66.7	68.0	68.7	69.0	69.1	64.9
68	16/12/2016	08:15	68.6	77.8	64.4	65.5	66.3	66.7	68.2	67.6	69.1	72.5	74.9	70.6
69	16/12/2016	08:30	68.1	81.8	61.5	65.1	67.5	65.6	66.5	66.5	67.6	70.7	75.6	66.5
70	16/12/2016	08:45	69.9	88.9	61.8	63.2	67.3	65.1	64.4	64.5	68.7	68.6	69.1	66.8
71	16/12/2016	09:00	67.8	81.2	61.6	69.1	68.0	67.1	66.6	67.5	70.5	68.0	66.3	67.6
72	16/12/2016	09:15	67.9	82.6	60.2	64.8	67.0	64.4	64.4	64.5	67.7	69.7	73.4	64.7
73	16/12/2016	09:30	67.8	78.7	60.2	65.4	67.0	67.5	67.4	67.7	67.1	67.1	67.7	62.4
74	16/12/2016	09:45	68.0	86.9	58.8	65.6	66.1	65.0	65.1	65.4	66.5	67.9	64.9	62.0
75	16/12/2016	10:00	68.0	80.2	59.9	67.6	67.4	65.5	65.0	64.3	66.1	69.7	65.8	66.3
76	16/12/2016	10:15	67.9	82.2	60.1	64.3	65.2	65.5	64.6	64.2	64.6	66.6	67.6	65.2
77	16/12/2016	10:30	69.3	90.4	60.1	65.5	66.9	65.7	66.4	64.5	66.1	67.7	66.9	63.7
78	16/12/2016	10:45	68.0	82.0	60.1	66.6	69.9	67.9	66.9	67.0	67.2	70.4	72.8	67.1
79	16/12/2016	11:00	67.6	79.5	59.5	63.0	65.3	63.9	63.9	63.6	67.2	68.6	71.1	64.5
80	16/12/2016	11:15	68.1	82.5	60.9	64.4	65.3	66.2	65.0	65.7	66.3	68.6	71.2	65.7
81	16/12/2016	11:30	68.3	83.5	60.5	66.3	68.8	66.8	65.7	66.2	65.7	70.3	73.2	74.8
82	16/12/2016	11:45	68.0	80.6	62.3	64.5	66.2	66.3	65.2	66.0	66.3	68.9	72.8	65.4
83	16/12/2016	12:00	67.7	81.6	62.0	64.9	66.5	66.6	65.3	64.9	66.9	68.7	66.5	62.5

Address	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz
1	64.2	60.5	60.0	60.3	60.6	59.4	58.8	59.8	60.5	61.7	62.4	59.9	56.5	54.0	51.2	48.9	47.6	48.5	51.0
2	61.8	60.2	60.0	60.3	59.8	59.1	58.2	59.0	59.8	61.3	62.2	59.7	56.4	53.9	51.0	48.8	47.6	48.1	52.4
3	62.2	61.0	60.2	60.3	60.0	59.2	58.9	58.8	59.6	61.0	62.0	60.0	57.0	55.2	52.8	51.1	49.2	48.7	51.3
4	62.7	59.6	59.6	59.7	60.5	59.2	57.8	58.6	59.6	61.1	62.2	59.9	56.6	53.9	50.9	48.4	46.7	48.2	50.8
5	65.1	62.7	61.9	60.5	60.6	59.6	58.3	58.9	59.8	61.5	62.5	60.2	57.2	54.7	51.6	49.3	48.0	48.6	52.3
6	61.5	60.2	58.7	59.0	59.6	59.3	57.5	58.3	59.3	61.1	62.3	59.8	56.5	54.0	50.7	48.0	46.4	46.8	50.0
7	64.8	62.3	61.1	60.4	60.7	60.0	59.0	59.1	60.0	61.7	62.9	60.6	57.5	55.0	52.0	50.1	47.5	47.9	51.3
8	61.6	63.5	60.1	61.1	62.1	59.8	59.1	59.0	59.9	61.8	62.6	60.1	56.9	54.1	50.9	48.1	46.7	47.7	50.2
9	62.4	60.9	60.0	58.9	59.4	58.7	57.5	58.2	59.4	61.1	62.1	59.8	56.4	53.8	50.6	47.8	46.9	47.5	49.3
10	61.2	61.6	64.7	60.1	60.8	62.6	59.4	59.3	59.9	61.6	63.0	60.7	57.2	54.5	51.1	48.3	46.6	47.1	50.2
11	61.7	60.2	60.2	59.2	60.6	58.9	57.8	58.5	59.6	61.6	62.9	60.5	57.3	54.6	51.4	48.8	47.0	47.1	49.1
12	61.2	58.6	57.7	58.4	59.1	58.2	57.0	58.0	59.1	60.9	62.2	59.7	56.3	53.6	50.6	48.1	46.3	46.7	48.9
13	61.9	59.4	58.9	59.0	59.6	58.6	57.5	58.5	59.6	61.4	62.4	59.8	56.5	53.8	50.2	47.3	45.9	46.1	52.0
14	60.9	57.9	57.8	58.6	59.0	58.3	57.6	58.1	59.3	61.1	62.2	59.8	56.3	53.4	49.8	46.9	45.2	45.4	47.8
15	60.2	58.3	58.2	58.9	59.1	58.7	56.2	57.1	58.3	60.2	61.4	58.8	55.3	52.5	49.3	46.3	45.3	45.6	48.1
16	58.2	59.3	57.6	57.6	58.1	57.1	56.1	57.2	58.5	60.4	61.4	58.9	55.7	53.0	49.6	46.5	44.9	45.2	47.4
17	61.8	63.2	61.2	61.8	61.1	60.4	61.4	60.7	59.7	60.0	60.7	58.5	55.1	52.6	49.9	47.2	46.6	47.5	50.1
18	58.9	57.2	56.4	56.8	56.8	56.2	55.6	56.9	57.9	59.5	60.6	58.2	54.8	52.4	49.4	47.0	45.1	45.0	47.3
19	59.2	59.8	58.5	58.7	58.5	57.8	57.0	57.7	58.7	60.0	60.7	58.4	55.1	52.9	49.9	47.4	46.4	46.7	49.1
20	59.4	58.9	58.1	58.3	57.5	57.2	57.0	57.5	58.6	60.2	61.1	58.9	55.4	53.1	49.6	46.2	45.1	45.4	47.8
21	59.0	58.1	57.4	58.2	57.5	57.0	56.6	57.5	58.6	59.7	60.6	58.3	55.0	52.4	49.2	46.5	44.8	45.3	47.7
22	60.2	57.3	56.9	58.8	56.5	56.0	55.5	56.4	57.6	58.9	59.6	57.0	53.7	51.2	48.1	45.4	43.7	43.9	46.3
23	58.8	58.4	56.9	57.4	57.6	56.4	55.7	56.5	57.9	59.3	60.0	57.5	54.2	51.7	48.3	45.8	43.7	43.9	46.5
24	57.9	55.3	55.2	55.8	55.9	55.1	54.4	55.5	57.0	58.8	59.6	57.1	54.1	51.7	49.2	46.7	45.2	45.2	47.3
25	60.2	58.4	56.8	58.7	57.7	57.3	56.9	57.8	58.3	58.6	59.1	56.9	53.4	51.1	47.7	45.2	43.7	56.4	52.1
26	66.9	57.2	59.3	60.9	58.3	59.5	55.9	56.3	57.4	58.7	59.6	57.1	53.8	50.9	47.3	44.6	42.9	43.5	45.7
27	59.2	57.9	57.8	57.9	57.6	56.9	56.1	57.3	58.5	59.5	60.6	58.6	55.6	53.1	49.6	46.9	45.5	45.9	48.5
28	56.4	53.6	53.4	54.3	53.7	53.0	52.8	53.9	55.0	55.7	56.3	54.2	50.7	48.2	45.0	42.6	41.1	41.6	43.6
29	57.3	56.6	56.1	56.0	55.7	54.8	54.2	55.1	56.1	57.0	57.8	55.8	52.5	50.3	47.2	44.2	42.5	43.2	45.5
30	57.6	57.2	56.1	56.6	56.2	55.9	55.4	55.7	56.8	57.5	58.0	56.0	52.7	50.6	47.5	44.9	43.9	44.8	48.2
31	58.9	57.9	56.3	56.0	56.3	55.8	55.1	56.1	56.6	57.4	58.3	56.3	53.3	50.9	47.9	45.1	44.0	44.6	47.2
32	55.9	55.0	56.2	56.1	55.5	54.6	53.7	54.6	56.0	57.3	58.0	55.3	51.8	49.1	45.9	43.5	42.8	43.0	44.2
33	55.7	54.9	54.1	54.9	53.3	52.6	53.0	54.0	54.9	55.4	55.5	53.3	50.0	47.6	44.8	42.3	41.2	42.0	44.3
34	56.3	54.5	53.6	53.7	54.3	53.2	52.6	52.8	53.7	55.1	55.8	53.4	50.2	47.4	44.5	42.2	40.5	41.4	43.5
35	56.7	55.9	54.8	54.8	53.9	53.4	52.8	53.8	54.7	55.4	55.8	53.4	50.0	47.8	45.0	42.3	41.0	41.5	44.0
36	57.7	57.0	56.1	56.5	55.1	54.7	54.6	55.4	56.2	55.7	54.7	52.8	49.7	48.1	45.7	43.1	42.3	43.4	46.2
37	55.2	51.6	51.5	51.8	50.9	50.3	49.7	50.8	52.0	53.1	53.8	51.2	47.8	45.6	42.7	40.8	39.5	41.0	43.8
38	56.1	53.6	52.7	53.1	52.9	52.2	51.4	52.0	52.7	53.3	53.7	51.9	48.9	46.9	44.7	42.1	40.6	40.7	43.0
39	57.0	56.0	54.1	54.8	53.1	53.3	53.2	53.8	54.7	54.2	53.7	51.5	48.4	46.8	44.5	42.1	41.3	41.8	44.1
40	55.6	53.2	53.5	54.0	52.9	52.2	51.7	53.1	54.4	54.0	53.4	51.1	47.9	46.1	44.0	42.1	41.4	42.2	44.2
41	59.0	56.8	55.5	55.4	54.9	54.9	54.0	54.5	55.4	55.4	55.6	53.5	51.1	48.8	46.4	44.6	43.2	44.1	47.1
42	56.6	55.4	53.8	53.0	52.5	52.2	51.1	51.4	52.2	52.8	53.7	51.5	48.7	46.4	43.6	41.7	40.8	41.0	44.0
43	56.1	55.4	54.0	55.0	53.4	53.6	53.4	54.3	56.0	55.5	54.1	51.6	48.6	46.8	44.2	42.3	41.1	41.6	49.4
44	54.4	53.1	52.8	53.8	53.2	52.3	52.1	53.5	54.5	53.8	52.8	50.7	47.8	45.9	43.7	42.0	40.7	41.5	43.8
45	56.6	54.8	53.2	53.8	53.2	52.4	52.1	54.0	55.1	54.3	53.6	51.0	47.6	45.4	42.8	41.1	40.3	40.4	42.8
46	61.3	60.2	55.3	56.5	55.5	53.7	53.3	53.7	54.7	54.4	54.3	52.7	50.6	49.2	46.5	44.8	44.0	45.1	47.2
47	56.4	56.8	54.9	55.1	54.9	53.5	53.1	54.5	55.1	54.3	53.4	51.4	48.4	46.4	43.9	41.6	40.8	41.5	43.9
48	57.1	56.6	55.5	55.2	54.9	54.6	53.7	54.3	55.2	55.0	54.7	52.8	50.0	48.9	47.1	45.1	43.7	45.3	48.7
49	57.2	56.7	55.4	56.1	54.8	54.4	54.5	55.2	55.8	54.7	53.9	52.6	49.6	47.8	45.4	43.1	42.6	44.1	46.0
50	56.7	57.0	56.1	56.3	54.9	54.3	53.8	54.6	55.3	55.2	55.0	53.2	50.2	48.4	46.2	44.2	44.0	60.1	53.6
51	58.5	57.5	57.4	57.8	56.8	56.7	56.0	56.6	57.3	56.4	56.0	54.2	51.1	49.6	48.9	45.7	45.5	47.4	50.1
52	56.8	55.4	54.1	55.1	53.6	53.4	52.7	53.3	54.3	54.0	53.2	50.8	48.1	45.9	44.0	42.8	44.0	44.1	48.0
53	56.7	56.4	55.4	55.0	54.1	53.9	53.6	53.9	54.6	54.9	55.2	53.2	49.9	47.9	45.2	42.8	42.5	43.3	45.5
54	55.8	56.1	54.9	55.5	55.1	54.3	54.0	54.8	55.8	56.0	55.7	53.2	49.9	47.7	44.9	42.6	41.4	42.0	44.9
55	63.5	60.0	58.0	58.7	58.2	57.3	56.1	56.2	56.6	56.3	56.3	54.7	51.3	49.7	47.4	45.6	47.4	46.9	50.3
56	58.3	58.1	57.3	57.6	56.9	56.5	55.7	56.3	57.2	58.0	58.6	56.6	53.3	51.3	48.3	45.3	45.0	46.3	48.7
57	60.7	59.8	58.5	62.3	58.2	57.5	56.8	57.2	57.6	58.2	58.8	56.9	53.7	51.7	49.2	46.8	45.8	46.4	49.6
58	59.4	60.4	58.8	58.9	57.9	57.0	57.0	57.2	57.6	58.6	59.5	57.7	54.5	52.2	49.2	46.5	45.3	45.6	48.6
59	64.4	63.4	58.2	64.6	66.2	66.7	63.5	66.6	66.2	65.2	63.6	63.0	60.6	59.3	56.3	53.5	52.9	54.3	58.1
60	62.4	61.1	58.4	59.3	59.2	58.3	56.9	57.5	58.3	59.0	59.8	57.9	55.0	52.9	50.4	48.1	47.1	48.4	51.2
61	60.6	59.2	59.0	60.0	59.3	61.1	59.1	57.5	57.6	58.4	58.9	56.8	54.0	52.4	50.0	48.2	50.3	56.0	53.4
62	60.6	59.1	58.9	58.4	59.1	58.0	56.6	57.3	57.6	58.6	59.4	57.4	54.6	52.2	50.0	47.7	47.2	50.0	52.5
63	62.3	61.7	60.7	61.3	60.7	60.4	61.2	59.2	59.5	60.5	61.3	59.7	56.5	54.9	52.8	50.2	49.5	50.5	53.5
64	61.5	61.7	61.4	60.6	60.6	60.0	58.4	58.5	58.8	59.8	60.7	59.0	55.8	53.9	51.6	49.2	48.8	49.5	52.6
65	64.1	63.0	60.9	60.8	60.7	60.1	58.7	58.8	59.2	59.9	60.5	58.6	55.8	53.7	51.3	49.0	48.1	49.2	51.3
66	64.2	61.9	62.4	61.9	60.9	60.0	59.0	58.8	59.1	60.1	60.7	58.8	55.9	53.8	51.5	49.5	49.0	50.3	53.1
67	61.7	60.7	59.9	59.4	59.7	58.8	57.8	58.4	59.1	60.1	60.9	58.9	56.2	54.1	51.6	49.3	48.3	48.8	51.2
68	64.8	61.3	60.5	60.3	60.5	59.7	58.6	59.1	59.8	60.3	61.2	59.7	56.9	55.1	52.8	50.8	50.2	50.9	53.8
69	64.5	61.2	59.8	59.9	60.0	59.0	58.1	58.9	59.0	60.0	60.9	59.2	56.3	54.4	52.0	49.6	49.0	50.1	53.4
70	62.4	63.1	61.9	60.3	60.9	61.3	60.7	59.8	59.7	61.0	62.3	60.9	58.8	57.1	55.8	54.8	52.7	53.0	55.6
71	60.8	59.3	58.8	59.2	58.8	58.4	57.7	58.0	59.0	60.3	61.1	59.3	56.1	54.1	51.4	49.1	47.8	48.5	50.9
72	62.3	59.6	58.2	58.9	59.2	58.9	58.1	58.1	58.3	59.9	61.0	59.4	56.3	54.3	51.6	49.3	48.5	49.5	52.2
73	61.4	60.1	60.0	60.0	59.8	59.8	58.6	58.5	59.1	60.1	60.9	59.0	55.9	53.9	51.3	48.9	47.7	48.9	51.3
74	61.1	61.7	59.3	59.4	60.2	59.8	59.4	58.4	58.9	60.2	60.9	59.1	56.4	54.4	51.5	49.0	48.0	49.0	51.6
75	62.2	62.8	60.4	60.2	60.1	59.7	58.5	58.5	59.5	60.4	61.1	59.0	56.0	53.6	51.0	48.9	47.6	48.2	50.9
76	65.3	63.2	61.1	60.7	60.7	59.3	58.7	58.6	58.8	59.9	60.9	59.0	55.8	53.8	51.2	49.0	48.0	49.0	52.3
77	62.7	60.9	60.0	60.9	60.9	60.9	59.3	59.0	59.6	60.5	61.3	59.5	56.4	54.3	51.7	49.2	48.5	54.5	61.7
78	64.3	61.5	60.3	60.4	60.3	59.1	58.1	58.6	59.2	60.2	61.1	59.0	55.9	53.7	51.3	49.3	47.8	48.9	51.5
79	63.1	61.0	59.9	60.3	59.6	58.7	57.5	58.0	58.5	59.9	60.9	58.8	55.9	53.6	51.1	49.3	48.2	48.8	51.0
80	65.7	62.7	61.5	61.0	60.1	59.6	58.4	58.7	59.2	60.4	61.2	59.2	56.0	53.6	51.0	49.1	48.0	49.0	53.6
81	65.8	61.6	61.4	61.2	61.2	59.6	58.3	58.5	59.4	60.6	61.4	59.3	56.0	53.8	51.4	50.0	48.2	48.6	51.1
82	64.4	60.6	60.1	60.2	60.2	59.4	58.3	58.5	59.4	60.7	61.5	59.2	55.9	53.6	50.8	48.7	47.1	47.8	50.0
83	61.8	60.7	60.3	60.2	60.1	58.9	57.9	58.5	59.2	60.3	60.9	58.7	55.5	53.2	50.8	48.4	47.0	48.0	52.4

Address	8 kHz	10 kHz	12.5 kHz	16 kHz	20 kHz	Humidity %	Temp °C	Wind m/s	Direction Deg	Rain mm	Pressure mbar
1	46.8	35.7	28.6	26.4	22.5	89.7	9.5	1.3	220	0.0	1017.9
2	47.1	35.5	26.7	22.5	21.9	90.4	9.2	1.5	215	0.0	1017.9
3	47.0	34.3	28.1	27.1	25.7	91.0	8.9	1.0	220	0.0	1017.9
4	46.8	34.3	25.7	22.0	21.5	91.4	8.7	1.0	202	0.0	1017.6
5	47.1	35.1	26.7	23.7	21.5	91.6	8.5	0.9	218	0.0	1017.6
6	45.7	34.5	25.3	22.6	21.8	92.0	8.3	1.0	238	0.0	1017.4
7	48.9	35.1	26.2	23.7	21.6	92.0	8.1	1.0	212	0.0	1017.3
8	44.7	33.2	25.0	22.6	21.8	91.7	8.0	0.9	222	0.0	1017.4
9	45.0	32.7	24.3	21.3	21.5	91.9	7.8	1.0	230	0.0	1017.4
10	45.8	34.3	25.7	26.6	21.8	91.9	7.6	0.8	222	0.0	1017.1
11	44.2	32.8	24.5	21.0	21.5	91.8	7.5	0.8	212	0.0	1017.2
12	43.8	32.4	24.2	20.9	21.4	91.8	7.4	0.5	223	0.0	1017.1
13	47.0	37.0	29.3	22.2	21.8	92.3	7.2	0.7	238	0.0	1017.0
14	42.8	31.4	26.1	22.4	21.3	92.4	7.2	0.6	235	0.0	1016.7
15	44.2	32.6	24.0	21.4	21.6	92.4	7.2	0.9	225	0.0	1017.1
16	43.2	32.5	24.6	22.9	21.5	92.1	7.3	0.9	225	0.0	1017.4
17	46.1	37.3	31.4	25.7	22.4	91.5	7.4	1.1	220	0.0	1017.2
18	42.2	32.5	23.0	19.4	21.3	91.3	7.4	0.8	232	0.0	1017.2
19	44.4	33.8	27.3	21.3	21.3	91.5	7.3	0.8	237	0.0	1017.2
20	42.9	32.7	24.2	20.8	21.3	91.6	7.4	1.1	218	0.0	1017.1
21	43.1	33.3	25.4	20.5	21.3	91.7	7.4	1.0	232	0.0	1017.1
22	41.4	29.6	24.5	19.8	21.4	91.6	7.4	1.1	240	0.0	1017.2
23	42.3	30.6	24.0	19.6	21.2	91.4	7.3	0.9	213	0.0	1017.2
24	42.1	30.3	23.2	18.9	21.2	91.7	7.2	0.9	228	0.0	1017.3
25	44.8	30.6	21.8	19.6	21.3	92.0	7.1	0.6	218	0.0	1017.2
26	40.2	28.5	22.0	22.6	21.7	92.8	6.9	0.5	202	0.0	1017.5
27	43.0	31.8	22.9	19.8	21.3	92.8	7.0	0.7	205	0.0	1017.7
28	38.7	28.8	20.8	18.8	21.2	92.5	7.2	0.7	200	0.0	1017.8
29	40.0	28.3	22.7	19.3	21.2	92.4	7.3	0.8	210	0.0	1017.9
30	42.1	31.0	23.1	20.7	21.3	92.4	7.4	0.5	227	0.0	1017.9
31	43.3	33.7	26.7	19.8	21.2	92.2	7.6	0.7	217	0.0	1018.1
32	38.9	27.0	19.8	18.6	21.2	92.1	7.6	0.9	210	0.0	1018.0
33	39.6	29.9	20.1	18.8	21.2	92.1	7.8	1.1	217	0.0	1017.8
34	38.3	27.3	20.8	19.2	21.2	91.9	7.8	0.8	183	0.0	1018.1
35	38.9	27.5	20.2	18.7	21.2	92.4	7.8	0.7	178	0.0	1018.3
36	42.9	32.2	21.9	19.2	21.2	92.5	7.8	0.5	203	0.0	1018.4
37	38.4	27.8	20.4	19.4	21.2	92.7	8.0	0.7	205	0.0	1018.4
38	38.1	27.1	21.3	18.5	21.2	92.9	8.1	0.7	202	0.0	1018.6
39	39.2	29.7	21.3	19.0	21.2	92.9	8.2	0.5	208	0.0	1018.6
40	39.5	27.0	19.6	18.5	21.2	92.7	8.3	0.5	203	0.0	1018.5
41	43.2	33.1	26.0	22.2	22.0	92.4	8.4	0.8	218	0.0	1018.6
42	38.9	28.3	22.5	19.1	21.2	92.1	8.6	0.6	217	0.0	1018.7
43	41.1	30.4	25.6	19.4	21.3	91.9	8.6	0.6	207	0.0	1019.0
44	39.1	26.8	19.1	18.4	21.2	91.6	8.7	0.7	193	0.0	1019.1
45	38.5	28.0	19.3	19.3	21.3	91.7	8.7	0.7	233	0.0	1019.1
46	42.2	31.2	23.0	19.8	21.2	91.7	8.7	0.7	208	0.0	1019.3
47	40.0	30.1	25.3	21.3	21.3	91.6	8.7	0.9	200	0.0	1019.3
48	43.8	32.6	25.9	22.3	21.9	91.4	8.8	0.5	180	0.0	1019.5
49	41.8	31.1	21.8	22.2	21.2	91.6	8.7	0.3	203	0.0	1019.7
50	49.5	36.6	26.4	20.5	21.3	91.8	8.7	0.6	208	0.0	1019.8
51	46.4	36.2	28.3	23.7	21.7	91.8	8.7	0.7	200	0.0	1019.7
52	45.5	32.0	21.7	19.5	21.3	91.8	8.7	0.8	195	0.0	1020.0
53	41.2	31.0	23.2	20.0	21.3	91.8	8.7	0.8	227	0.0	1020.0
54	40.9	28.7	27.5	24.8	21.2	91.5	8.7	0.8	225	0.0	1019.8
55	47.4	32.8	26.3	20.9	21.3	91.5	8.7	0.7	222	0.0	1020.2
56	44.4	31.8	24.6	20.8	21.3	91.1	8.7	0.7	213	0.0	1020.3
57	45.0	34.8	28.3	21.3	21.8	91.3	8.6	0.4	183	0.0	1020.3
58	44.4	34.8	26.6	21.5	21.4	91.4	8.6	0.3	193	0.0	1020.4
59	55.3	44.9	34.5	28.6	25.0	91.1	8.6	0.5	198	0.0	1020.5
60	47.7	34.8	26.4	22.5	21.5	91.1	8.5	0.3	198	0.0	1020.8
61	48.2	39.0	32.3	28.2	22.3	91.1	8.5	0.3	208	0.0	1020.9
62	47.3	36.0	27.9	23.1	21.5	91.0	8.5	0.4	202	0.0	1020.9
63	52.2	41.0	31.1	28.9	21.6	91.4	8.4	0.2	210	0.0	1021.0
64	47.8	35.8	27.2	23.0	21.6	91.3	8.3	0.2	185	0.0	1021.2
65	47.1	35.6	29.2	24.0	21.8	91.6	8.1	0.1	182	0.0	1021.3
66	49.2	38.7	32.7	24.6	22.2	92.0	7.9	0.0	200	0.0	1021.4
67	46.1	34.3	29.1	23.4	22.3	92.2	7.4	0.1	198	0.0	1021.6
68	50.7	37.9	30.3	25.9	22.3	93.2	7.3	0.1	203	0.0	1021.8
69	50.0	37.1	30.1	24.3	22.0	93.5	7.0	0.1	248	0.0	1021.9
70	50.6	38.7	31.8	27.1	22.0	94.4	7.2	0.1	238	0.0	1022.0
71	46.1	34.8	27.9	22.9	21.6	94.5	7.3	0.1	245	0.0	1022.3
72	48.2	35.8	27.5	23.0	22.0	94.7	7.3	0.1	237	0.0	1022.4
73	46.7	35.6	29.6	24.0	21.7	94.9	7.4	0.0	202	0.0	1022.6
74	46.5	35.0	28.9	26.5	21.4	95.0	7.7	0.1	217	0.0	1022.8
75	46.1	34.1	26.3	22.1	21.9	94.9	7.7	0.0	265	0.0	1022.8
76	47.6	35.7	28.3	22.7	21.5	94.7	7.9	0.1	213	0.0	1023.0
77	49.7	37.7	29.9	23.6	21.7	93.7	8.2	0.2	218	0.0	1023.3
78	47.2	36.0	29.3	23.3	21.6	90.9	8.6	0.2	215	0.0	1023.6
79	46.5	35.0	27.3	23.5	21.8	88.6	8.9	0.2	188	0.0	1023.7
80	47.9	37.3	28.8	24.1	21.9	87.5	9.0	0.3	208	0.0	1024.0
81	46.7	35.3	26.9	22.6	21.4	87.6	9.1	0.3	210	0.0	1023.9
82	45.1	33.8	27.0	22.4	21.4	87.6	9.1	0.6	217	0.0	1024.2
83	46.2	34.2	28.1	24.5	21.9	87.6	9.1	0.8	215	0.0	1024.2

Address	Date	Time	L_{Aeq}	L_{Amax}	L_{A90}	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	20 kHz	Humidity %	Temp °C	Wind m/s	Direction Deg	Rain mm	Pressure mbar
84	16/12/2016	12:15	67.9	85.7	61.0	64.4	65.7	65.5	65.3	65.4	66.8	68.0	66.5	62.3	61.3	60.8	59.0	59.6	59.8	59.0	58.2	58.6	59.2	60.4	61.2	59.2	56.0	53.8	51.0	48.6	47.3	47.8	50.1	46.0	34.0	26.4	22.0	21.7	87.2	9.2	0.5	210	0.0	1024.2
85	16/12/2016	12:30	68.6	81.8	61.3	67.2	69.0	68.1	67.8	67.4	67.9	70.1	68.4	65.2	65.5	61.4	60.6	60.8	60.6	60.0	59.3	59.6	60.2	60.9	61.5	59.6	56.7	54.5	52.2	50.0	48.7	49.5	53.6	47.6	36.9	29.3	23.3	21.7	86.6	9.3	0.5	213	0.0	1024.4
86	16/12/2016	12:45	68.9	86.4	59.4	67.2	69.3	67.2	66.1	65.5	66.3	67.8	66.9	62.9	61.3	60.5	59.4	60.0	60.0	59.5	58.3	58.8	59.4	61.1	62.2	60.4	58.9	54.6	52.0	50.3	48.9	49.3	51.4	46.6	33.8	25.2	23.3	21.4	86.4	9.3	0.4	195	0.0	1024.5
87	16/12/2016	13:00	67.6	82.3	61.3	65.2	67.2	66.5	66.2	65.6	66.9	69.2	68.2	65.8	63.0	60.7	59.6	59.8	59.8	58.9	57.9	58.2	58.6	59.7	60.6	58.8	55.7	53.7	51.3	49.2	48.5	49.6	52.6	48.4	37.0	30.8	24.4	21.9	86.2	9.5	0.3	223	0.0	1024.7
88	16/12/2016	13:15	68.0	80.4	61.0	63.8	65.9	66.0	66.3	65.8	66.7	69.9	68.8	63.2	62.4	61.7	61.0	60.1	60.1	60.3	58.9	58.4	59.0	60.4	61.2	59.1	56.1	53.9	51.2	49.1	48.0	48.5	51.7	47.3	35.3	29.0	23.4	22.3	85.7	9.6	0.1	110	0.0	1024.9
89	16/12/2016	13:30	67.5	77.0	60.5	66.9	67.7	67.7	67.7	67.1	68.9	68.7	66.5	63.2	63.5	61.1	60.0	60.3	59.7	58.8	58.1	58.2	58.7	59.8	60.4	58.5	55.5	53.5	51.0	48.9	48.4	48.8	51.4	47.0	36.3	28.1	27.4	22.1	85.4	9.7	0.1	168	0.0	1025.1
90	16/12/2016	13:45	68.5	86.0	60.5	66.0	67.8	67.1	66.8	66.9	68.1	69.0	69.5	66.2	65.0	66.6	66.2	63.1	61.6	60.3	59.6	59.6	59.7	60.5	61.0	59.0	55.9	54.0	51.3	49.0	48.0	49.4	53.2	49.9	35.5	28.0	24.4	22.9	85.7	9.7	0.4	223	0.0	1025.4
91	16/12/2016	14:00	69.0	84.5	61.5	65.4	66.9	67.1	67.3	66.8	70.1	68.1	68.9	67.8	64.8	65.2	63.0	62.5	63.5	62.8	60.6	59.5	59.7	61.0	62.0	59.9	56.8	54.4	51.6	49.2	47.9	48.5	51.5	47.1	35.9	28.9	24.4	21.6	86.0	9.8	0.1	195	0.0	1025.6
92	16/12/2016	14:15	67.9	78.4	59.7	66.5	67.1	68.0	67.1	66.9	70.2	70.2	68.1	64.1	63.8	62.1	59.2	59.2	59.7	58.7	57.8	58.3	59.0	60.3	61.3	59.2	56.2	54.0	51.2	48.9	47.8	48.0	50.4	45.7	34.5	27.1	23.2	21.7	85.7	9.8	0.2	268	0.0	1025.6
93	16/12/2016	14:30	68.5	80.7	58.4	66.9	69.4	68.6	69.4	69.3	70.2	69.9	67.2	64.0	62.9	60.6	60.0	59.9	60.3	59.4	58.4	59.0	59.6	60.5	61.7	59.9	56.9	54.8	51.8	49.6	48.6	49.8	51.7	47.4	36.7	28.1	23.6	22.3	85.6	9.8	0.1	355	0.0	1025.6
94	16/12/2016	14:45	68.6	81.6	61.2	66.0	69.2	67.3	67.5	66.7	68.7	70.7	72.9	65.0	62.4	62.2	60.2	60.6	60.7	59.7	58.9	59.2	59.9	60.9	61.5	59.8	56.6	54.6	52.2	50.1	49.1	49.6	52.5	47.7	37.1	29.9	24.2	21.8	85.1	9.9	0.4	110	0.0	1025.8
95	16/12/2016	15:00	69.1	81.9	62.9	66.4	69.0	68.2	69.0	67.2	67.8	72.2	74.7	66.1	64.5	62.3	60.8	60.0	60.4	60.0	59.0	59.4	60.3	61.2	62.2	60.1	57.2	55.2	52.6	50.8	50.0	50.8	53.6	51.2	39.4	30.3	23.7	21.7	84.7	9.9	0.3	130	0.0	1026.2
96	16/12/2016	15:15	69.1	81.6	60.7	63.9	66.5	65.5	65.5	64.4	67.1	69.3	70.8	63.4	61.5	59.6	58.7	59.3	59.3	58.8	57.9	58.4	59.7	60.9	61.6	60.0	56.9	54.9	52.4	52.4	58.7	53.2	53.2	48.9	37.8	33.5	25.3	22.5	85.5	9.8	0.2	265	0.0	1026.1
97	16/12/2016	15:30	68.2	81.0	60.0	64.5	68.3	65.7	65.5	64.6	66.4	69.7	73.7	66.9	64.2	61.2	61.1	59.8	60.2	59.3	58.1	58.4	59.0	60.4	61.6	59.6	56.3	54.1	51.4	49.0	48.3	49.2	51.7	46.6	35.8	27.1	22.0	21.9	84.7	9.9	0.5	70	0.0	1026.4
98	16/12/2016	15:45	67.9	82.0	60.2	63.6	67.3	66.2	67.3	68.4	67.1	71.3	74.5	65.6	64.6	63.3	59.7	59.8	60.7	59.7	58.0	58.8	59.2	60.3	61.1	58.9	55.7	53.5	50.8	48.4	47.2	48.2	51.6	46.8	35.8	29.3	25.1	21.7	84.7	9.9	0.3	155	0.0	1026.5
99	16/12/2016	16:00	68.4	78.7	62.3	66.5	70.2	67.3	65.8	66.0	67.7	69.4	67.9	64.6	65.8	61.4	59.8	60.9	61.0	60.0	58.3	58.4	59.2	60.8	61.9	59.9	56.9	54.2	51.4	48.7	47.5	48.2	50.6	47.9	34.7	25.9	23.2	21.9	87.0	9.5	0.1	203	0.0	1026.6
100	16/12/2016	16:15	68.0	82.5	60.8	65.4	65.6	66.2	66.2	67.0	67.8	69.5	73.9	64.4	61.6	58.9	58.0	58.8	59.9	58.8	57.2	57.4	58.2	59.9	61.4	59.2	56.3	53.9	50.5	48.2	47.2	55.6	51.1	45.6	33.1	24.7	21.5	22.0	87.9	9.1	0.1	220	0.0	1026.6
101	16/12/2016	16:30	67.9	82.5	60.4	66.4	67.6	67.1	65.6	65.0	67.6	68.1	70.0	65.0	63.7	61.6	61.3	61.0	62.6	62.1	59.4	58.7	58.7	59.6	60.6	58.7	55.7	53.4	50.8	48.9	47.7	48.9	52.3	47.3	36.8	28.7	22.3	21.8	86.2	9.3	0.3	213	0.0	1026.9
102	16/12/2016	16:45	68.0	83.1	59.6	65.8	66.0	66.3	67.5	65.6	66.8	67.6	66.4	62.5	62.1	60.2	59.0	59.4	59.4	58.4	57.4	58.1	59.1	60.4	61.5	59.4	56.4	54.2	51.3	49.3	48.2	49.5	51.3	46.7	35.8	26.3	22.5	21.6	87.8	9.0	0.3	203	0.0	1026.9
103	16/12/2016	17:00	68.4	77.9	61.5	65.2	64.7	64.4	64.9	63.5	65.0	65.9	64.2	61.0	59.9	59.1	57.5	58.1	59.1	58.2	57.0	57.8	58.8	61.1	62.7	60.2	57.2	54.6	51.0	48.0	46.1	46.6	49.1	43.6	31.8	24.5	26.4	21.6	88.0	8.5	0.1	305	0.0	1026.9
104	16/12/2016	17:15	68.3	89.4	60.9	63.8	65.3	65.2	65.8	66.0	65.5	66.2	66.6	64.8	62.6	62.7	61.0	59.9	60.7	60.1	58.9	58.0	58.6	60.5	61.8	59.5	56.3	53.9	51.5	48.5	48.2	50.4	54.0	50.2	44.3	33.5	28.5	23.2	90.4	8.0	0.1	268	0.0	1027.2
105	16/12/2016	17:30	68.5	87.2	60.4	65.3	67.9	66.8	64.7	63.6	67.1	68.3	65.7	63.7	62.6	62.1	60.3	60.6	60.1	59.8	58.7	58.7	59.2	60.7	62.1	59.9	56.8	54.6	52.0	50.0	48.2	48.3	50.6	45.6	34.1	26.1	21.9	21.4	92.0	8.0	0.2	258	0.0	1027.4
106	16/12/2016	17:45	68.0	76.9	59.1	64.6	65.4	65.8	64.0	62.8	65.0	66.0	62.9	60.1	59.4	58.4	57.6	58.7	59.0	57.7	56.8	57.5	58.8	60.9	62.1	59.8	56.6	54.0	50.4	47.5	45.6	46.0	48.4	43.1	31.8	24.1	20.5	21.3	92.3	8.4	0.3	253	0.0	1027.5
107	16/12/2016	18:00	68.2	83.8	59.0	66.9	67.9	68.0	67.8	66.0	67.0	68.5	65.3	61.2	61.3	59.3	58.8	59.0	59.2	58.3	57.4	58.2	59.4	60.8	61.8	59.6	56.5	54.3	51.5	49.0	47.1	47.4	49.6	44.9	32.7	24.9	20.9	21.3	90.4	8.6	0.1	260	0.0	1028.0
108	16/12/2016	18:15	68.1	88.5	58.1	66.5	67.4	68.5	67.7	65.4	65.1	66.9	65.4	62.7	61.1	61.9	61.1	61.6	62.0	60.0	60.6	59.9	59.7	60.3	60.8	58.9	55.9	53.5	51.2	48.7	47.6	48.3	51.3	46.7	37.1	30.4	24.6	22.2	90.4	8.6	0.2	300	0.0	1028.2
109	16/12/2016	18:30	67.2	82.3	58.7	64.0	63.2	63.8	64.3	62.8	62.2	64.1	63.5	60.1	58.9	58.7	58.4	58.5	58.4	57.6	56.5	57.4	58.1	60.0	61.2	58.8	55.4	52.7	49.0	46.1	44.6	46.0	46.6	41.7	30.7	24.8	26.7	21.3	90.5	8.6	0.6	275	0.0	1028.4
110	16/12/2016	18:45	67.2	79.8	58.1	64.3	65.1	64.3	63.3	62.5	65.7	64.9	62.4	61.1	58.4	57.0	57.1	57.8	57.8	57.4	56.2	57.0	58.1	59.9	61.2	58.9	55.6	52.9	49.5	46.6	44.7	44.7	47.1	42.5	32.8	24.7	20.6	21.5	89.4	8.8	0.5	270	0.0	1028.4
111	16/12/2016	19:00	66.5	81.3	58.5	64.7	65.8	64.9	64.5	63.1	67.5	65.9	63.6	60.8	59.2	58.0	56.9	57.4	57.7	57.0	55.8	56.4	57.4	59.2	60.5	58.1	54.7	52.2	49.1	46.4	45.0	45.3	47.8	46.7	32.3	26.5	22.9	21.5	89.3	8.8	0.3	282	0.0	1028.5
112	16/12/2016	19:15	66.5	79.3	58.4	62.5	64.0	63.9	62.9	61.4	62.1	64.8	63.2	59.1	58.3	59.0	57.3	57.6	57.5	56.7	55.9	56.5	57.7	59.2	60.4	58.1	54.7	52.0	48.6	46.0	44.6	44.8	47.1	42.5	31.4	24.8	20.2	21.3	89.7	8.7	0.1	272	0.0	1028.8
113	16/12/2016	19:30	66.2	80.2	56.8	63.8	64.7	65.4	64.3	63.9	63.8	64.1	63.9	60.3	57.5	57.5	57.1	57.3	57.7	56.5	55.8	56.4	57.3	59.0	60.0	57.9	54.4	51.8	48.7	45.9	44.5	45.1	47.6	43.2	32.0	23.3	20.1	21.3	90.0	8.6	0.3	282	0.0	1029.0
114	16/12/2016	19:45	66.5	83.9	56.7	64.4	66.8	65.4	63.8	62.0	62.6	64.6	62.6	61.1	60.9	58.6	57.7	57.4	57.7	56.9	56.5	56.9	58.0	59.3	60.3	58.0	54.6	52.1	48.7	45.7	44.4	44.8	47.1	42.5	31.4	23.8	19.3	21.2	89.9	8.6	0.3	290	0.0	1029.2
115	16/12/2016	20:00	66.5	82.8	55.9	62.2	63.1	64.7	63.7	61.8	61.9	64.0	63.3	57.8	57.5	59.1	56.2	60.4	58.4	56.9	55.8	56.9	57.6	59.1	60.4	58.0	54.6	52.0	49.2	46.6	44.8	45.8	48.3	43.2	33.7	25.2	20.6	21.3	89.6	8.6	0.3	320	0.0	1029.3
116	16/12/2016	20:15	65.2	81.7	56.1	62.6	63.2	62.8	62.7	61.1	62.6	65.1	62.9	59.2	57.8	56.1	55.8	56.4	56.4	55.8	55.3	56.1	56.7	57.8	58.7	56.7	53.3	50.8	47.7	44.8	43.3	43.5	48.6	45.6	31.2	23.1	19.8	21.3	89.0	8.7	0.3	285	0.0	1029.6
117	16/12/2016	20:30	65.8	77.5	56.0	63.6	66.9	65.8	63.4	61.6	63.5	64.0	63.0	60.6	59.9	58.2	57.4	57.3	57.2	56.9	56.1	56.5	57.3	58.1	59.1	57.1	53.9	51.9	49.0	46.2	45.1	45.6	48.3	43.4	32.6	25.8	20.3	21.3	89.2	8.7	0.1	290	0.0	1029.9
118	16/12/2016	20:45	64.7	81.8	54.4	63.3	64.8	64.7	64.8	62.9	65.6	64.0	61.6	58.3	56.9	56.7	56.0	57.0	57.9	57.1	56.0	56.2	56.7	57.3	58.0	55.4	52.1	49.8	47.1	44.7	43.0	43.4	47.5	44.1	31.3	21.8	19.7	21.4	89.1	8.7	0.3	115	0.0	1030.1
119	16/12/2016	21:00	64.6	80.3	51.1	63.3	66.0	64.3	63.1	62.1	62.8	63.3	61.3	57.3	57.1	56.4	55.2	56.1	55.7	54.8	54.3	54.9	55.8	56.9	58.3	56.3	53.0	50.7	47.6	44.8	42.9	43.0	44.9	40.1	27.9	21.1	18.8	21.2	87.8	8.9	0.5	43	0.0	1030.3
120	16/12/2016	21:15	64.3	79.0	50.8	67.6	64.5	64.7	64.2	62.5	61.5	62.1	61.2	56.0	55.6	54.5	54.7	55.1	55.1	54.5	53.6	55.0	56.2	56.9	57.8	55.9	52.6	50.1	47.0	44.2	42.3	42.6	46.8	39.9	29.1	29.5	19.2	21.3	86.8	9.0	0.6	143	0.0	1030.4
121	16/12/2016	21:30	66.4	88.8	53.7	64.2	64.0	63.2	63.8	62.0	62.3	62.9	61.9	57.7	58.3	57.3	56.3	58.3	58.5	57.4	56.8	58.8	59.5	58.8	59.2	57.3	54.1	52.2	49.4	46.7	44.9	46.0	47.9	42.5	30.7	22.1	21.0	21.4	86.8	9.0	0.2	355	0.0	1030.4
122	16/12/2016	21:45	65.2	78.7	54.8	63.6	65.6	64.2	64.5	62.6	62.6	63.8	63.2	57.5	59.3	56.6	55.6	56.7	56.9	56.0	54.9	55.4	56.6	58.0	58.8	56.5	53.4	51.0	48.1	45.5	44.5	44.3	47.4	42.0	29.7	22.6	19.3	21.3	88.0	8.8	0.4	110	0.0	1030.9
123	16/12/2016	22:00	64.9	79.5	53.8	61.4	64.4	63.6	61.9	60.9	61.7	63.4	60.9	58.1	57.6	57.1	56.3	55.1	56.2	55.4	54.4	54.7	55.7	57.1	58.7	56.8	53.7	51.0	47.5	44.7	43.0	43.2	45.7	40.8	29.2	21.5	19.1	21.2	87.7	8.8	0.7	135	0.0	1031.0
124	16/12/2016	22:15	63.4	77.5	51.2	64.1	62.8	62.9	63.6	62.4	61.6	64.5	61.2	57.6	58.1	56.2	55.4	55.3	55.2	54.5	53.7	54.1	55.3	56.1	56.7	54.6	51.3	49.0	46.2	43.9	42.3	42.6	44.6	39.7	28.0	23.1	19.0	21.2	87.6	8.9	0.7	117	0.0	1031.0
125	16/12/2016	22:30	64.4	78.9	51.0	65.4	67.7	67.4	65.8	62.9	63.8	64.4	62.3	57.9	56.9	56.0	55.4	56.3	55.9	55.0	54.5	55.3	56.4	57.1	57.5	55.4	52.4	50.3	47.7	45.3	44.2	44.7	47.1	42.2	30.4	21.9	19.4	21.2	87.4	8.9	0.4	133	0.0	1031.1
126	16/12/2016	22:45	64.6	80.6	52.0	63.3	63.7	63.7	63.1	60.8	62.2	64.9	61.1	57.3	57.1	55.0	55.3	55.6	55.7	55.0	54.3	55.2	56.2	57.2	58.2	56.0	52.8	50.5	47.6	45.0	43.7	43.8	45.9	41.0	29.6	21.2	19.0	21.2	87.8	8.9	0.7	150	0.0	1031.5
127	16/12/2016	23:00	62.1	76.6	50.3	65.2	63.4	60.5	60.1	58.5	59.6	61.2	57.0	52.6	53.0	50.9	50.8	51.9	52.1	51.5	50.5	51.5	53.1	55.2	56.2	53.8	50.6	47.8	44.4	41.2	39.3	39.6	42.7	43.1	31.1	19.6	19.2	21.4	87.6	8.9	0.6	30	0.0	1031.7
128	16/12/2016	23:15	64.2	78.4	50.4	64.0	64.3	64.1	62.9	59.6	61.5	66.2	62.3	56.6	57.3	55.7	55.5	56.2	56.0	55.2	54.3	55.1	56.1	56.8	57.6	55.5	52.3	50.0	46.9	44.3	43.1	43.9	46.0	41.1	29.9	22.5	19.3	21.3	87.6	8.9	0.4	15	0.0	1031.9
129	16/12/2016	23:30	64.4	83.8	49.3	66.0	65.3	64.8	64.0	62.8	62.7	63.8	61.3	57.6	58.1	57.0	55.8	56.4	56.1	55.4	54.4	54.9	56.0	56.5	57.5	55.6	52.5	50.8	48.4	46.0	44.8	45.2	47.1	41.9	30.1	22.8	19.6	21.3	88.0	8.8	0.0	40	0.0	1032.0
130	16/12/2016	23:45	63.1	79.1	49.5	66.8	70.5	65.9	64.0	62.7	63.1	63.0	60.5	57.8	54.9	54.4	54.2	55.4	54.5	53.4	52.6	54.3	55.7	56.3	56.4	53.9	50.5	47.8	45.0	42.8	41.5	42.5	45.6	39.3	28.9	24.0	21.1	21.3	89.7	8.3	0.0	42	0.0	1031.9
131	17/12/2016	00:00	63.0	79.5	50.6	63.6	65.7	62.5	62.5	60.9	61.0	61.6	59.3	56.8	55.6	54.8	54.5	55.2	54.2	53.3	53.2	53.6	54.3	55.6	56.7	54.5	51.3	49.1	46.0	43.2	41.4	42.0	44.3	39.8	28.6	20.9	18.7	21.2	91.5	7.9	0.1	138	0.0	1031.3
132	17/12/2016	00:15	62.9	76.8	51.4	63.1	65.2	66.0	64.4	63.2	62.8	66.4	62.6	58.7	58.5	56.4	55.8	56.5	55.3	54.9	54.3	54.4	55.2	55.1	55.7	53.7	50.5	48.4	46.2	43.5	42.7	44.2	46.2	41.4	30.3	22.7	19.0	21.2	91.9	7.4	0.1	198	0.0	1031.0
133	17/12/2016	00:30	60.8	77.5	52.6	61.3	60.4	61.5	61.5	59.5	60.0	61.8	57.2	53.7	52.5	50.7	50.8	52.0	51.5	50.7	50.1	51.8	53.2	54.4	54.3	51.8	48.4	45.4	42.4	39.8	38.0	38.2	40.6	34.8	22.5	16.9	18.7	21.2	92.0	6.6	0.1	260	0.0	1030.9
134	17/12/2016	00:45	63.4	79.5	54.7	62.9	62.3	61.1	60.5	58.7	59.9	62.8	59.2	54.0	55.5	54.8	53.9	55.0	54.5	53.8	53.1	53.6	55.0	56.5	57.2	54.7	51.2	48.6	45.7	42.8	41.4	42.1	44.5	39.5	27.4	20.0	20.1	21.2	93.4	6.2	0.1	218	0.0	1031.0
135	17/12/2016	01:00	63.0	83.3	54.4	63.4	65.3	64.8	64.0	60.5	60.7	63.5	60.4	57.2	55.1	54.0	53.8	54.7	53.9	53.7	52.7	54.4	55.5	56.3	56.3	53.5	50.1	48.4	46.0	43.6	42.6	42.7	45.1	40.3	29.3	21.4	19.1	21.2	93.0	5.6	0.0	200	0.0	1031.1
136	17/12/2016	01:15	61.6	75.9	51.6	65.2	65.5	65.0	64.2	60.7	60.9	64.3	62.9	55.5	56.6	56.3	53.5	54.1	54.3	53.2	52.6	53.0	53.6	54.2	54.7	52.5	49.2	47.0	44.3	41.6	40.4	41.2	44.1	37.8	25.9	21.2	18.2	21.2	94.2	5.3	0.1	182	0.0	1031.0
137	17/12/2016	01:30	61.0	79.9	50.1	63.9	64.0	62.0	60.6	57.4	57.8	60.0	58.7	53.0	52.5	51.1	50.7	51.4	51.7	50.7	50.0	51.3	52.7	54.1	54.7	52.5	49.7	46.6	43.7	41.2	39.5	39.6	41.8	36.2	24.0	17.7	17.9	21.2	94.5	5.2	0.1	182	0.0	1031.0
138	17/12/2016	01:45	62.4	78.5	51.4	63.5	60.6	63.0	62.0	58.6	59.2	61.5	58.5	54.9	54.9	52.9	52.1	52.6	52.2	51.8	51.3	53.2	54.1	55.3	56.4	53.9	50.6	47.8	44.5	41.6	39.7	39.6	42.2	36.5	24.8	18.8	18.4	21.2	94.4	4.7	0.1	220	0.0	1031.3
139	17/12/2016	02:00	62.7	79.2	52.7	65.9	66.9	66.5	65.3	61.9	63.0	61.7	61.1	57.5	55.4	55.7	54.9	55.5	55.1	54.5	54.1	54.9	56.0	55.8	54.9	52.8	49.6	48.0	45.5	43.3	42.0	42.4	44.4	39.3	29.1	19.6	18.6	21.2	95.0	4.4	0.0	237	0.0	1031.4
140	17/12/2016	02:15	60.4	78.9	51.8	65.4	66.8	62.4	63.8	60.5	61.7	63.1	59.6	54.8	54.4	53.2	53.0	53.8	52.1	52.0	51.8	52.8	54.1	53.6	52.4	49.9	46.9	45.0	42.8	40.8	40.2	41.2	43.0	37.8	25.6	24.6	22.9	21.2	95.2	4.2	0.1	235	0.0	1031.3
141	17/12/2016	02:30	62.0	82.3	52.3	62.5	63.5	63.5	62.4	60.2	62.3	61.8	59.9	56.4	55.0	52.9	52.5	53.2	52.8	52.4	52.3	54.2	55.3	54.9	54.7	52.1	49.2	46.9	44.1	42.2	41.5	42.3	46.7	42.4	31.7	25.2	20.1	21.3	95.5	4.1	0.0	215	0.0	1031.5
142	17/12/2016	02:45	62.6	77.5	52.3	65.6	67.4	66.7	66.0	63.9	64.1	64.3	61.7	56.5	56.6	53.9	53.7	54.4	54.0	53.3	53.0	54.3	55.6	55.4	55.1	52.8	50.2	48.3	46.3	44.4	43.6	44.1	46.5	41.2	29.4	22.2	20.7	21.3	95.5	3.8	0.0	215	0.0	1031.5
143	17/12/2016	03:00	63.2	80.7	52.7	65.5	66.5	65.9	64.2	62.9	62.5	63.8	61.6	57.3	56.8	56.0	54.8	55.8	55.0	54.4	53.8	55.1	56.1	56.0	55.9	53.3	50.2	48.3	45.8	43.4	43.1	44.0	47.0	43.2	29.8	22.0	19.4	21.2	95.7	3.6	0.1	218	0.0	1031.9
144	17/12/2016	03:15	62.1	77.9	54.5	64.8	66.4	66.2	64.4	63.0	62.7	62.2	60.2	57.5	55.8	54.8	54.7	54.5	54.1	53.7	53.2	53.8	55.2	54.8	54.2	52.3	49.4	47.7	44.7	42.6	42.5	43.4	47.1	41.7	28.8	20.6	18.7	21.2	95.9	3.6	0.1	217	0.0	1031.4
145	17/12/2016	03:30	64.9	80.4	56.4	66.3	70.0	67.4	65.8	63.7	63.5	65.6	63.2	59.1	59.2	58.5	57.6	57.6	56.8	56.4	55.8	56.8	57.8	57.6	57.5	55.7	52.4	50.5	47.7	45.1	44.3	44.9	47.6	42.1	30.7	25.3	21.6	21.2	96.0	3.6	0.1	200	0.0	1031.5
146	17/12/2016	03:45	62.0	80.0	55.2	63.7	64.5	63.0	61.5	58.4	60.3	60.4	57.5	53.6	53.8	54.3	52.5	53.9	53.0	52.6	52.3	53.5	54.7	55.8	55.4	52.5	48.9	46.4	43.4	40.9	39.8	40.5	42.6	37.4	28.4	24.2	18.7	21.2	96.2	3.8	0.1	225	0.0	1031.5
147	17/12/2016	04:00	62.9	78.6	55.3	64.3	64.7	65.3	64.2	61.7	62.8	62.0	59.5	57.2	55.3	55.0	54.5	55.0	53.9	53.9	53.4	54.7	55.5	56.0	56.0	53.4	49.8	47.4	44.4	42.2	42.2	45.8	45.1	40.4	31.5	22.7	20.3	21.3	96.2	3.6	0.2	313	0.0	1031.6
148	17/12/2016	04:15	63.2	78.3	54.8	64.3	65.0	64.4	62.8	60.6	61.7	63.5	61.4	56.0	57.3	57.4	56.2	56.2	55.3	55.0	54.6	55.0	56.0	55.8	55.6	53.5	50.0	48.2	45.7	43.3	44.4	44.5	48.6	46.4	31.7	22.4	19.6	21.2	96.1	3.3	0.1	272	0.0	1032.0
149	17/12/2016	04:30	63.8	82.2	54.2	63.9	64.3	64.4	62.2	60.3	61.4	61.8	61.0	60.2	56.4	56.5	57.4	56.8	59.9	57.3	55.6	55.7	56.1	56.0	55.9	53.8	50.4	48.7	46.0	43.7	45.7	45.5	49.4	46.3	30.2	22.3	19.4	21.2	96.0	2.7	0.0	240	0.0	1031.8
150	17/12/2016	04:45	62.6	76.3	54.3	64.1	66.2	65.1	64.5	62.7	63.3	64.6	60.5	57.4	57.0	56.8	56.3	56.7	55.6	55.1	54.6	54.5	55.5	55.0	54.3	52.2	49.1	47.5	45.2	43.0	44.6	44.7	48.5	44.7	29.9	24.0	19.9	21.3	96.5	3.2	0.4	215	0.0	1032.0
151	17/12/2016	05:00	61.3	75.7	54.7	63.9	64.8	63.8	62.0	60.0	58.8	60.1	60.7	57.5	55.4	54.9	54.1	55.3	53.8	53.5	53.2	53.0	54.1	54.0	53.5	51.6	48.2	46.8	44.3	41.2	41.8	43.4	45.6	40.9	26.5	19.9	18.7	21.2	96.5	3.3	0.4	212	0.0	1032.2
152	17/12/2016	05:15	64.9	77.4	56.0	65.6	67.5	65.1	64.2	62.9	62.7	64.9	65.8	64.6	63.3	60.2	58.8	58.8	58.1	57.5	56.3	55.9	56.7	56.7	56.8	55.0	51.9	50.1	47.6	45.2	45.5	52.5	51.1	46.5	36.1	30.9	23.7	21.6	96.5	3.4	0.4	215	0.0	1032.7
153	17/12/2016	05:30	64.1	75.9	54.6	65.0	67.3	67.7	64.1	62.3	61.9	63.8	64.2	60.6	59.8	59.3	58.0	57.7	56.9	56.3	55.8	55.9	56.4	56.2	56.4	54.8	51.6	49.8	47.2	44.2	43.8	44.6	46.8	41.8	31.5	22.0	19.3	21.2	96.6	3.5	0.4	208	0.0	1032.9
154	17/12/2016	05:45	63.7	80.2	53.8	62.1	63.3	63.5	62.5	60.1	62.4	64.6	63.3	59.4	56.9	57.2	56.4	56.4	55.6	55.4	54.6	54.7	55.4	55.8	56.4	54.7	51.7	49.8	47.0	43.9	44.5	45.3	45.8	43.6	34.3	23.5	20.4	21.3	96.5	3.5	0.4	215	0.0	1033.1
155	17/12/2016	06:00	63.1	77.2	54.8	63.1	61.4	60.5	59.7	58.4	58.9	61.1	60.2	57.0	55.4	54.1	54.6	54.7	54.3	53.3	52.4	52.9	54.1	55.9	56.8	54.6	51.6	49.1	45.4	42.1	41.0	41.3	44.3	40.8	26.5	19.6	18.5	21.1	96.7	3.5	0.3	213	0.0	1033.2
156	17/12/2016	06:15	63.8	78.1	54.0	63.3	62.9	63.8	62.4	60.7	61.2	62.7	63.5	60.6	57.4	57.3	56.7	57.5	56.0	55.1	55.0	55.6	56.0	56.5	56.0	54.4	51.8	49.5	47.0	44.6	44.3	44.8	47.1	42.0	33.2	23.1	19.8	21.2	96.8	3.5	0.4	215	0.0	1033.6
157	17/12/2016	06:30	62.2	79.5	54.0	62.3	60.8	61.5	62.0	59.2	59.4	60.7	60.0	57.1	55.9	54.6	54.1	54.8	54.1	54.0	52.7	53.0	53.7	54.5	54.7	53.0	49.7	48.2	45.9	43.5	44.2	45.2	48.4	42.5	32.6	22.7	19.4	21.2	96.8	3.4	0.4	202	0.0	1033.7
158	17/12/2016	06:45	62.5	80.4	54.8	61.0	61.1	61.3	60.1	57.9	58.0	61.0	58.5	55.4	59.1	57.5	58.2	59.2	55.9	54.8	54.4	54.2	54.6	54.5	55.3	53.2	49.7	47.4	44.0	41.4	40.6	41.5	43.6	38.0	26.9	19.8	18.9	21.2	96.7	3.4	0.2	215	0.0	1033.9
159	17/12/2016	07:00	63.5	77.9	54.9	63.2	64.4	63.7	65.5	63.9	68.2	64.3	61.2	59.3	56.4	55.4	55.6	55.9	55.5	54.9	53.7	54.6	55.7	56.2	56.6	54.3	51.3	48.9	46.0	43.7	42.8	44.6	46.7	41.0	29.0	21.5	19.7	21.5	96.7	3.3	0.1	245	0.0	1034.1
160	17/12/2016	07:15	69.3	94.2	55.1	62.9	62.2	61.6	61.4	59.5	62.8	63.6	62.3	60.6	61.9	63.5	64.0	63.0	62.9	64.1	63.4	61.2	64.8	61.3	61.2	58.0	53.7	51.6	49.3	46.6	45.2	47.5	51.2	44.5	35.0	27.1	22.4	21.7	96.7	3.2	0.1	257	0.0	1034.4
161	17/12/2016	07:30	66.0	79.2	55.6	65.9	65.9	64.7	64.1	62.7	63.0	63.8	62.9	59.3	57.7	57.3	57.4	58.3	57.8	57.1	56.3	57.0	58.1	58.9	59.0	57.0	53.9	51.8	49.0	46.9	45.6	46.1	48.6	43.0	32.7	24.1	20.6	21.2	96.7	3.0	0.1	278	0.0	1034.7
162	17/12/2016	07:45	66.3	81.1	57.6	65.1	63.8	64.0	64.6	63.6	63.1	64.8	63.4	60.9	61.2	59.7	57.9	57.0	57.1	56.3	55.5	56.1	57.2	59.0	60.1	57.9	54.8	52.4	49.3	46.6	45.0	45.2	47.3	41.9	29.3	22.8	19.9	21.3	96.7	2.9	0.2	258	0.0	1034.7
163	17/12/2016	08:00	67.4	83.6	58.0	66.3	67.8	67.0	66.1	65.3	65.4	67.4	65.6	64.2	60.2	59.2	58.6	58.6	59.3	58.2	57.3	58.2	59.1	60.2	60.8	58.5	55.4	53.1	50.1	47.5	46.3	47.0	49.4	44.7	32.1	23.9	21.0	21.5	96.8	3.0	0.3	240	0.0	1034.8
164	17/12/2016	08:15	67.4	79.5	59.8	66.6	65.5	64.9	65.2	65.3	70.6	68.4	71.9	70.6	64.0	61.8	59.1	59.3	60.1	58.4	57.8	57.7	58.4	59.9	60.7	58.6	55.5	53.2	50.0	47.6	46.5	47.3	49.9	44.7	33.6	26.3	20.8	21.4	96.8	3.3	0.3	238	0.0	1035.0
165	17/12/2016	08:30	68.4	80.6	60.8	69.6	66.3	66.1	66.3	67.4	71.5	68.7	70.7	68.2	64.8	62.3	60.1	60.2	59.6	58.6	57.9	58.4	59.5	61.1	62.0	59.9	56.8	54.2	50.9	48.3	46.7	46.8	49.2	44.2	32.8	27.6	20.8	21.4	96.8	3.4	0.3	208	0.0	1035.1
166	17/12/2016	08:45	70.2	88.6	62.3	67.4	68.0	66.4	66.1	66.9	70.6	68.9	71.3	69.2	71.0	65.4	63.7	62.2	61.8	61.5	61.0	60.1	60.6	61.8	62.5	61.3	60.0	56.7	55.0	53.6	50.0	50.1	53.0	47.2	34.8	26.6	21.8	21.5	96.9	3.6	0.1	217	0.0	1035.7
167	17/12/2016	09:00	68.5	79.7	60.3	68.7	65.6	64.8	64.7	64.0	65.1	65.8	66.8	65.3	60.3	58.5	57.6	59.0	59.3	58.6	57.9	58.5	59.8	61.5	62.2	60.1	57.0	54.4	50.9	48.0	46.2	46.6	48.7	43.6	32.0	24.1	20.4	21.3	96.9	3.9	0.2	238	0.0	1035.5
168	17/12/2016	09:15	68.0	80.1	60.1	64.7	65.2	64.8	65.9	65.4	65.8	64.5	64.3	64.9	59.4	59.4	57.5	58.6	59.0	58.2	57.3	57.7	59.0	60.9	61.8	59.5	56.4	53.7	50.4	47.7	46.3	46.8	50.7	45.1	33.6	25.0	20.8	21.4	96.9	4.1	0.6	207	0.0	1035.5
169	17/12/2016	09:30	68.9	80.5	62.5	65.5	66.6	64.7	64.1	64.1	64.5	66.8	64.8	62.4	60.4	59.5	58.6	59.0	59.3	58.9	58.0	58.6	60.2	62.2	63.0	60.4	57.0	54.2	50.7	48.0	46.3	46.7	49.0	43.9	33.5	25.8	21.8	21.3	97.0	4.2	0.2	223	0.0	1035.7
170	17/12/2016	09:45	69.1	80.3	62.0	62.6	63.6	63.5	62.9	62.9	63.2	64.6	64.8	59.5	58.3	56.5	56.7	57.7	58.8	58.0	57.2	58.2	59.7	62.4	63.6	61.0	57.6	54.7	51.0	48.0	46.0	46.1	48.0	42.7	32.0	21.6	19.4	21.2	97.0	4.5	0.3	207	0.0	1035.9
171	17/12/2016	10:00	68.4	78.7	58.9	63.2	64.5	64.7	64.1	63.0	63.5	67.2	63.3	60.0	59.7	58.4	58.4	59.0	59.7	58.2	57.6	57.9	59.0	61.1	62.3	60.1	57.0	54.4	51.0	47.9	46.3	46.7	49.7	43.5	32.1	23.8	20.4	21.3	97.0	4.9	0.2	222	0.0	1036.1
172	17/12/2016	10:15	68.3	78.1	59.6	64.4	66.0	64.5	64.7	62.5	63.5	67.7	71.2	63.8	60.4	58.0	57.6	58.4	59.0	58.0	57.2	58.0	59.0	61.1	62.3	59.9	56.7	53.9	50.5	47.8	46.3	47.0	50.0	44.9	34.5	26.3	23.0	21.7	96.9	5.2	0.4	215	0.0	1036.2
173	17/12/2016	10:30	68.6	80.8	60.2	65.3	65.5	64.3	63.5	62.4	63.2	66.7	70.4	62.8	60.8	58.7	57.1	58.3	58.6	58.0	57.5	58.1	59.3	61.3	62.8	60.4	57.4	54.8	51.3	48.3	46.4	46.7	48.7	43.8	32.3	26.5	20.0	21.4	97.0	5.5	0.4	222	0.0	1036.4
174	17/12/2016	10:45	70.0	89.7	59.0	63.7	64.0	62.7	62.8	60.8	61.7	64.3	63.9	63.8	66.0	67.5	65.2	64.2	64.0	62.2	60.3	60.1	60.3	62.0	63.3	61.2	58.1	55.3	52.1	49.9	49.9	52.2	54.6	48.8	36.4	27.9	24.1	21.6	97.1	5.7	0.3	208	0.0	1036.7
175	17/12/2016	11:00	68.9	79.4	59.1	65.3	66.4	65.2	63.7	62.6	64.4	66.3	65.3	60.3	59.6	58.3	57.9	58.8	59.3	58.5	57.7	58.6	59.9	61.8	63.0	60.7	57.5	54.7	51.3	48.2	46.6	46.7	49.1	44.4	32.3	23.8	21.2	21.6	97.1	6.0	0.1	203	0.0	1036.7
176	17/12/2016	11:15	68.4	80.9	58.6	64.8	64.6	66.9	64.7	64.6	64.8	66.3	64.8	67.8	61.7	60.7	61.4	58.8	59.5	59.1	57.9	58.3	59.1	61.0	62.2	60.0	56.9	54.2	51.2	48.0	46.7	47.1	49.6	44.8	33.1	24.7	23.5	21.4	97.0	6.3	0.4	207	0.0	1036.8
177	17/12/2016	11:30	68.5	84.1	59.2	61.9	64.6	63.3	63.9	63.9	65.9	66.2	66.1	63.6	64.2	62.9	60.1	61.0	61.2	59.7	57.7	57.9	58.7	60.8	62.4	60.3	57.1	54.6	51.2	48.3	46.8	47.2	49.5	44.5	32.3	24.4	23.1	22.0	97.0	6.2	0.4	248	0.0	1036.9
178	17/12/2016	11:45	68.2	78.0	59.1	63.7	64.7	64.8	63.9	63.5	64.1	65.9	63.9	61.8	62.3	59.3	58.7	58.7	59.2	58.6	58.0	58.3	58.9	61.0	62.1	59.8	56.8	54.3	51.2	47.8	46.3	46.8	49.5	44.7	32.5	24.5	20.6	21.3	97.1	6.1	0.5	230	0.0	1036.8
179	17/12/2016	12:00	68.6	78.7	59.6	63.6	66.4	64.6	65.7	65.0	66.2	66.4	65.1	62.9	62.8	60.6	60.2	59.8	60.4	60.4	58.2	58.3	59.3	61.3	62.5	60.2	57.0	54.2	50.8	48.0	46.2	46.5	50.2	43.1	31.4	24.1	22.4	21.9	97.0	6.0	0.6	298	0.0	1036.9
180	17/12/2016	12:15	69.1	78.2	59.6	65.7	68.5	67.4	66.8	64.9	66.3	66.8	65.9	62.4	62.1	60.6	59.3	59.7	60.4	59.5	58.7	59.3	60.1	61.9	63.0	60.7	57.5	54.9	51.5	48.7	47.2	47.8	50.2	45.7	35.0	26.5	21.3	21.5	96.9	6.0	0.6	285	0.0	1036.5

Address	Date	Time	L_{Aeq}	L_{Amax}	L_{A90}	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	20 kHz	Humidity %	Temp °C	Wind m/s	Direction Deg	Rain mm	Pressure mbar
181	17/12/2016	12:30	68.0	78.9	58.1	66.7	66.1	64.5	64.4	62.4	62.8	64.4	66.1	63.0	64.5	59.9	59.8	60.0	59.5	59.4	58.1	58.2	59.1	60.6	61.6	59.4	56.2	53.7	50.5	47.5	46.3	46.6	49.0	44.0	31.5	23.7	20.0	21.2	97.0	6.1	0.4	253	0.0	1036.7
182	17/12/2016	12:45	69.4	87.9	58.3	65.4	66.5	65.6	64.9	63.0	64.6	66.3	64.6	62.9	61.9	63.8	62.7	62.5	63.0	61.3	61.4	60.9	60.8	61.7	62.6	60.5	57.3	54.8	51.8	48.9	47.6	48.1	50.8	46.7	37.5	30.2	25.3	22.2	97.0	6.3	0.2	268	0.0	1036.8
183	17/12/2016	13:00	68.2	81.0	58.1	65.9	66.3	64.7	64.3	63.0	63.5	65.6	64.7	63.8	65.8	64.8	61.1	60.9	60.3	60.0	58.0	58.1	59.0	60.7	61.7	59.6	56.4	53.9	50.5	47.7	46.3	47.3	49.3	44.5	32.3	23.4	22.0	21.5	97.0	6.5	0.1	222	0.0	1036.8
184	17/12/2016	13:15	68.9	81.1	58.9	66.6	67.6	65.2	64.8	63.1	64.3	66.1	63.6	60.9	60.2	59.7	59.0	60.7	60.9	59.9	58.8	59.1	60.2	61.7	62.7	60.5	57.3	54.8	51.6	48.6	46.8	47.1	49.0	43.8	31.8	24.9	19.9	21.2	97.0	6.6	0.3	213	0.0	1036.7
185	17/12/2016	13:30	68.6	84.6	57.7	66.0	67.4	65.9	64.5	62.5	65.4	65.4	64.5	62.5	61.7	62.2	61.4	60.2	60.5	63.5	60.7	58.7	59.4	61.1	62.1	59.8	56.6	54.0	50.7	47.9	46.2	46.6	49.1	44.8	32.3	25.0	20.8	21.3	97.0	6.7	0.2	257	0.0	1036.9
186	17/12/2016	13:45	68.5	80.6	58.5	67.2	68.0	65.4	64.6	63.0	64.0	64.5	62.7	58.2	58.2	57.4	56.5	58.0	58.5	57.8	56.9	57.8	59.3	61.5	62.8	60.3	57.1	54.3	50.7	47.7	45.6	45.7	47.7	42.5	30.4	22.2	19.5	21.2	96.9	6.8	0.2	308	0.0	1037.1
187	17/12/2016	14:00	68.5	84.9	57.8	64.7	65.5	64.1	63.0	61.5	63.8	66.6	64.1	62.9	65.9	60.7	60.6	63.1	62.6	60.5	59.6	58.7	58.7	60.8	62.0	59.9	56.8	54.1	50.8	48.3	46.5	46.8	49.1	43.9	34.8	24.7	20.9	21.4	97.0	6.9	0.1	245	0.0	1037.0
188	17/12/2016	14:15	67.7	80.1	58.6	66.7	66.5	66.4	65.7	63.5	64.3	66.0	66.1	62.8	61.6	59.0	57.6	58.6	58.5	57.9	57.1	58.2	59.0	60.2	61.3	59.2	56.0	53.6	50.7	48.2	46.9	47.7	49.5	44.6	33.6	25.4	23.3	21.3	97.0	6.9	0.2	202	0.0	1037.1
189	17/12/2016	14:30	68.3	80.0	57.6	65.0	66.1	65.5	64.5	62.3	63.2	64.4	63.5	60.9	60.1	57.9	58.2	58.3	58.5	57.6	56.9	57.8	59.2	61.2	62.3	60.2	56.9	54.2	50.8	47.9	46.1	46.5	48.8	43.8	31.6	25.2	20.6	21.3	97.0	6.9	0.2	198	0.0	1037.0
190	17/12/2016	14:45	68.8	83.1	57.7	66.4	68.8	67.6	66.3	66.3	66.4	68.5	65.2	61.5	61.2	59.6	59.7	60.0	59.9	59.4	58.5	59.5	60.6	61.5	62.2	60.0	57.0	54.6	51.6	48.9	47.4	48.5	51.2	45.9	33.7	24.8	20.9	21.4	97.0	6.9	0.3	250	0.0	1036.9
191	17/12/2016	15:00	69.4	88.5	58.5	64.8	65.1	65.0	65.0	62.6	64.3	66.6	64.7	62.4	63.3	62.2	64.0	61.6	61.9	60.9	61.2	60.5	59.7	61.3	62.5	60.8	58.3	55.9	52.0	49.4	48.0	49.0	50.8	45.9	33.9	26.2	21.5	21.4	96.9	7.0	0.4	312	0.0	1037.3
192	17/12/2016	15:15	67.6	78.9	56.3	65.9	67.6	67.0	66.6	65.4	66.6	66.7	63.7	61.0	59.9	58.5	57.8	58.1	58.4	57.5	56.4	57.2	58.3	59.9	61.6	59.5	56.2	53.9	50.8	48.2	46.3	46.9	49.7	44.1	32.7	24.8	20.3	21.6	97.0	7.0	0.5	53	0.0	1037.8
193	17/12/2016	15:30	67.6	84.1	55.1	65.8	66.2	65.2	65.8	66.7	66.4	65.2	63.3	60.1	60.4	60.4	57.4	59.1	59.1	58.5	58.4	59.2	58.6	60.0	61.3	59.0	55.8	53.4	50.3	47.5	45.8	46.5	48.8	43.6	31.3	23.7	20.2	21.7	97.0	6.9	0.4	60	0.0	1038.0
194	17/12/2016	15:45	67.8	79.1	58.3	64.7	66.5	64.7	65.2	62.9	62.9	64.7	62.3	61.0	57.3	56.0	55.9	56.7	57.7	56.9	56.2	57.1	58.3	60.6	62.1	59.7	56.5	53.8	50.2	47.3	45.1	45.6	48.1	42.4	29.7	22.2	19.2	21.2	97.0	7.0	0.2	263	0.0	1037.8
195	17/12/2016	16:00	68.0	80.9	56.1	66.1	66.9	66.3	65.4	64.0	64.1	66.3	64.2	61.3	59.8	62.1	58.9	58.5	58.8	57.9	57.1	58.0	59.4	60.8	61.8	59.6	56.5	54.0	50.6	48.1	46.4	47.7	48.7	43.1	31.3	25.2	20.9	21.3	97.0	7.0	0.0	355	0.0	1037.7
196	17/12/2016	16:15	66.3	78.1	54.4	63.1	64.1	62.3	61.5	59.4	61.2	62.1	60.3	57.7	56.9	54.9	54.6	55.6	56.3	55.4	54.6	55.7	57.0	59.1	60.4	58.0	54.9	52.3	49.1	46.3	44.7	45.8	48.2	42.8	31.4	23.1	20.1	21.3	97.0	7.1	0.0	35	0.0	1037.9
197	17/12/2016	16:30	67.4	78.4	54.9	64.7	66.6	65.1	64.1	62.4	63.7	65.7	61.7	58.9	58.1	55.7	55.5	56.5	57.5	56.6	55.6	56.5	57.8	60.0	61.5	59.2	56.0	53.4	49.9	46.6	45.7	50.7	50.5	45.0	30.0	24.1	22.9	21.4	97.0	7.2	0.1	75	0.0	1038.1
198	17/12/2016	16:45	66.9	81.7	51.7	65.0	64.7	64.2	64.1	62.0	61.9	63.7	63.2	60.5	58.6	59.6	58.4	57.9	58.7	56.7	55.7	56.6	57.8	59.6	60.8	58.5	55.4	52.8	49.4	50.0	45.2	45.4	47.5	42.9	33.3	26.5	20.9	21.3	97.0	7.2	0.4	100	0.0	1038.1
199	17/12/2016	17:00	67.1	80.4	52.9	64.4	64.8	63.8	64.4	63.4	63.5	63.7	62.6	60.0	57.5	56.4	56.0	56.6	57.3	56.7	55.9	56.8	57.9	59.8	61.2	59.1	55.8	53.1	49.6	46.5	44.6	44.8	47.0	41.6	29.6	21.6	19.5	21.2	97.0	7.2	0.1	135	0.0	1038.3
200	17/12/2016	17:15	66.5	80.1	53.8	63.8	66.0	63.6	62.3	61.4	62.4	64.9	61.3	58.4	57.3	55.5	55.1	55.3	56.7	55.6	54.6	55.7	56.9	59.0	60.5	58.7	55.4	52.8	49.2	45.9	43.9	43.9	45.9	40.7	28.5	21.0	19.1	21.2	97.0	7.1	0.0	135	0.0	1038.5
201	17/12/2016	17:30	67.3	79.8	53.1	62.4	62.9	61.4	61.6	60.2	61.0	64.0	61.7	59.1	61.3	56.6	57.7	58.1	58.7	58.7	57.3	56.9	57.4	59.7	61.4	59.0	55.9	53.3	49.7	46.7	44.7	44.8	46.9	41.4	29.6	21.6	19.4	21.2	97.0	7.0	0.0	140	0.0	1038.6
202	17/12/2016	17:45	67.2	80.6	52.3	64.9	65.0	63.5	63.5	61.4	61.9	63.4	62.9	59.7	57.6	56.7	56.2	57.6	57.9	56.9	56.1	57.1	58.2	59.9	61.1	58.9	55.8	53.3	50.1	47.1	45.3	46.4	47.9	42.2	30.6	25.3	21.0	21.4	97.0	7.1	0.2	183	0.0	1038.5
203	17/12/2016	18:00	67.4	85.1	54.5	62.2	62.3	63.4	63.3	61.4	62.1	63.3	64.1	62.7	65.4	65.8	62.7	62.1	61.9	60.0	57.8	57.5	57.5	59.0	60.4	58.3	55.4	53.1	50.1	47.7	47.6	49.4	52.0	47.0	34.5	28.9	25.5	21.7	96.9	7.1	0.0	312	0.0	1038.1
204	17/12/2016	18:15	66.5	80.3	55.3	63.3	61.1	61.3	61.9	59.4	59.3	63.3	60.8	57.2	56.5	54.7	54.3	55.1	56.0	55.3	54.4	55.5	56.9	59.1	60.8	58.6	55.4	52.8	49.4	46.5	44.3	44.5	46.7	41.3	29.8	21.3	19.0	21.2	97.0	6.9	0.1	242	0.0	1038.1
205	17/12/2016	18:30	67.3	80.6	57.1	63.8	65.0	64.8	64.5	63.2	62.2	63.0	61.7	59.0	57.4	56.9	56.5	57.9	58.1	56.7	56.1	57.0	58.1	60.0	61.3	59.1	55.8	53.3	49.9	47.0	44.7	45.0	48.6	43.3	30.7	22.5	19.3	21.2	97.0	6.7	0.0	247	0.0	1038.0
206	17/12/2016	18:45	66.0	80.4	56.4	63.4	63.7	64.1	63.4	61.4	61.8	61.2	61.0	58.2	59.2	56.5	56.1	58.4	56.8	56.0	55.1	55.7	57.0	58.7	59.9	57.8	54.5	52.1	48.6	45.3	43.7	44.9	47.2	41.9	30.2	22.5	19.9	21.3	96.9	6.4	0.0	250	0.0	1038.1
207	17/12/2016	19:00	65.6	77.1	56.2	61.9	61.3	60.4	59.9	58.2	58.7	60.8	61.8	56.9	55.2	53.8	54.4	54.7	55.6	54.8	53.7	54.6	56.0	58.4	60.0	57.8	54.4	51.6	47.9	44.1	42.3	42.2	44.3	38.9	26.2	19.7	18.9	21.2	96.9	6.4	0.0	242	0.0	1038.0
208	17/12/2016	19:15	66.3	78.4	55.9	64.2	64.3	64.9	62.8	62.6	62.5	62.5	61.3	58.2	56.6	56.4	56.7	56.8	56.8	56.0	54.9	56.2	57.3	59.3	60.5	58.0	54.8	52.2	48.7	45.5	43.4	43.5	45.4	39.9	29.0	22.0	18.9	21.2	96.9	6.4	0.1	195	0.0	1037.8
209	17/12/2016	19:30	65.5	78.3	54.1	61.8	60.4	60.3	60.3	57.4	59.2	60.8	57.8	55.8	56.1	54.7	54.1	55.0	55.6	54.9	54.0	54.7	56.0	58.5	59.9	57.5	54.2	51.3	47.7	44.7	42.3	42.5	44.3	38.7	27.3	21.3	18.4	21.2	96.9	6.5	0.1	180	0.0	1037.9
210	17/12/2016	19:45	65.4	83.6	53.1	63.2	65.7	64.7	68.6	71.5	68.9	64.2	61.7	59.4	56.1	54.8	55.4	55.4	55.9	55.3	54.6	55.7	56.6	58.1	59.1	56.8	53.9	51.7	49.1	46.9	44.7	44.6	46.5	42.2	32.6	21.6	19.5	22.2	97.1	6.6	0.4	208	0.0	1037.9
211	17/12/2016	20:00	65.3	79.6	53.2	62.5	62.6	64.4	62.3	60.3	61.2	62.7	61.0	61.5	58.1	55.9	56.9	55.5	55.8	54.9	54.0	54.8	56.1	58.1	59.4	57.0	53.7	51.1	47.5	44.4	43.6	43.1	47.3	44.6	30.8	21.6	19.0	21.2	97.0	6.6	0.2	223	0.0	1037.8
212	17/12/2016	20:15	64.8	79.4	51.6	62.2	62.2	62.1	64.0	64.0	62.6	62.1	60.6	56.3	56.5	56.0	54.8	55.3	55.4	54.8	53.8	54.4	55.3	56.9	58.3	56.1	53.0	50.5	47.2	45.4	46.0	48.8	52.4	47.2	34.7	26.4	21.6	21.3	97.0	6.6	0.3	267	0.0	1038.1
213	17/12/2016	20:30	63.6	80.5	50.6	60.6	59.1	60.2	60.4	56.5	59.6	62.2	56.4	55.2	60.9	53.5	56.8	58.4	57.3	56.1	53.8	53.4	54.4	56.2	57.4	54.8	51.5	49.0	45.6	42.8	41.7	43.0	44.1	38.6	26.6	18.8	18.7	21.2	97.1	6.5	0.2	283	0.0	1038.1
214	17/12/2016	20:45	61.1	76.6	48.9	62.2	62.7	61.1	59.8	58.9	59.2	60.2	55.0	54.8	52.1	50.6	51.3	52.6	52.4	51.7	51.2	51.8	52.5	54.0	54.9	52.6	49.3	46.6	43.3	40.6	39.0	39.5	41.9	36.8	28.9	18.6	18.1	21.2	96.9	6.3	0.5	307	0.0	1038.0
215	17/12/2016	21:00	63.4	82.6	48.1	61.7	60.8	61.9	62.8	60.9	61.2	61.1	58.8	59.1	57.0	54.9	53.4	54.1	54.1	53.2	52.0	52.4	53.5	54.9	56.2	54.2	51.2	48.5	45.4	43.0	41.5	43.8	52.2	55.0	41.0	23.7	22.7	21.9	97.1	6.1	0.3	293	0.0	1038.2
216	17/12/2016	21:15	63.4	79.4	48.6	61.9	61.2	59.9	61.9	61.6	59.9	60.7	57.7	54.9	54.7	55.3	53.0	53.1	54.0	54.0	52.6	53.4	54.3	55.7	57.2	55.3	52.0	49.6	46.6	43.6	42.0	42.3	44.2	38.9	26.6	19.4	18.4	21.2	96.9	6.0	0.2	278	0.0	1038.1
217	17/12/2016	21:30	63.5	78.7	50.6	61.4	61.4	59.9	59.7	57.4	58.0	60.1	57.7	53.9	54.2	52.7	52.6	52.9	53.6	53.0	52.2	53.4	54.5	56.2	57.7	55.4	52.2	49.5	46.1	43.0	40.9	41.1	43.5	38.1	26.0	19.3	18.3	21.2	96.9	5.9	0.4	273	0.0	1037.6
218	17/12/2016	21:45	63.3	77.2	48.7	64.2	65.0	62.8	63.0	60.6	61.2	61.0	56.7	55.1	55.3	55.2	54.5	54.1	54.0	53.4	52.7	53.5	54.8	56.1	57.2	54.9	51.6	48.9	45.7	43.3	41.6	42.0	43.6	38.1	25.9	19.5	18.2	21.2	97.0	5.8	0.4	332	0.0	1037.6
219	17/12/2016	22:00	63.8	77.7	50.5	65.1	62.2	62.3	63.3	62.7	61.7	64.6	60.8	57.5	56.0	53.8	53.1	53.9	54.1	53.4	52.6	53.7	54.9	56.2	57.6	55.8	52.6	50.0	46.8	44.3	42.4	42.5	45.4	39.6	27.8	20.2	19.0	21.3	97.0	5.8	0.3	260	0.0	1037.4
220	17/12/2016	22:15	64.1	78.6	49.1	62.0	61.2	60.8	60.7	57.7	58.7	61.5	58.7	57.0	56.3	54.6	54.8	54.7	55.0	55.5	53.5	54.3	55.2	56.4	57.9	55.9	52.7	50.1	46.8	43.5	41.9	42.3	45.1	40.3	27.7	21.3	18.4	21.2	96.9	5.8	0.2	207	0.0	1037.7
221	17/12/2016	22:30	62.9	79.8	48.9	63.5	62.9	60.4	61.9	60.4	59.7	60.1	58.2	54.7	54.8	56.6	54.4	53.3	53.8	53.0	52.0	52.9	54.4	55.6	56.7	54.4	51.5	49.0	45.6	43.1	41.1	41.6	43.3	38.0	26.1	20.1	18.4	21.2	97.0	5.7	0.4	210	0.0	1037.4
222	17/12/2016	22:45	63.0	77.6	47.4	62.1	63.6	61.4	60.4	58.4	60.2	60.6	58.0	56.4	54.1	54.6	53.2	53.8	53.7	53.1	53.0	53.4	54.0	55.5	56.6	54.7	51.5	49.0	45.8	43.1	40.9	41.3	43.5	38.9	29.7	20.1	18.8	21.2	97.0	5.7	0.0	205	0.0	1037.5
223	17/12/2016	23:00	63.0	77.8	47.2	62.1	59.5	60.2	60.4	58.0	58.6	59.7	56.8	54.4	53.7	53.0	52.3	53.1	53.6	52.4	51.9	52.9	54.0	55.9	57.0	54.6	51.6	49.0	45.7	43.1	41.6	42.4	44.7	39.4	27.6	19.8	18.5	21.2	97.1	5.7	0.0	205	0.0	1037.4
224	17/12/2016	23:15	63.5	77.9	48.1	62.2	61.7	60.8	60.2	57.2	57.1	60.2	55.8	53.5	53.7	51.9	52.2	53.3	53.4	53.0	51.6	52.4	54.0	56.1	57.6	55.5	52.4	49.8	46.2	43.0	41.3	41.0	42.9	37.2	24.6	18.0	18.1	21.2	97.1	5.7	0.1	238	0.0	1037.2
225	17/12/2016	23:30	63.3	76.7	49.1	60.9	60.0	60.3	60.9	58.6	58.6	59.4	57.2	55.4	54.0	59.0	52.3	52.2	52.6	52.2	51.5	52.4	53.4	55.4	57.5	55.6	52.5	49.7	46.0	42.7	40.9	40.8	42.9	38.8	25.6	18.1	18.1	21.2	97.0	5.7	0.0	255	0.0	1037.1
226	17/12/2016	23:45	63.0	78.0	47.9	60.2	58.3	57.8	58.1	55.0	54.8	58.5	55.9	51.7	52.1	50.8	50.2	51.3	52.6	52.2	50.8	51.9	53.1	55.6	57.5	55.2	52.1	49.5	45.7	42.0	39.8	39.6	41.8	36.4	23.6	17.5	17.9	21.2	97.0	5.7	0.0	250	0.0	1037.1
227	18/12/2016	00:00	61.8	77.6	47.4	61.3	61.9	59.1	60.2	58.8	56.7	60.0	56.2	53.5	53.5	50.1	50.5	50.9	52.0	51.3	50.7	51.8	53.2	54.5	55.6	53.7	50.6	47.9	44.3	41.4	39.3	39.4	41.4	36.1	25.7	17.7	18.0	21.2	97.0	5.7	0.1	232	0.0	1037.0
228	18/12/2016	00:15	64.2	80.6	46.3	61.2	60.4	60.7	60.2	57.4	57.1	60.0	58.9	55.2	54.7	54.0	53.1	54.2	54.4	53.7	53.0	53.9	55.3	57.4	58.2	55.8	52.8	50.3	47.0	43.6	41.6	41.5	43.8	39.8	26.6	18.8	18.3	21.2	97.0	5.7	0.0	215	0.0	1037.1
229	18/12/2016	00:30	60.8	79.0	43.3	60.2	59.8	60.2	62.2	60.0	58.0	58.3	54.7	51.7	51.3	52.5	50.6	51.3	51.4	50.6	49.8	50.4	51.7	53.4	54.6	52.8	49.6	47.2	43.7	40.4	38.2	38.4	39.7	34.1	23.1	18.7	17.8	21.1	97.0	5.7	0.2	67	0.0	1037.1
230	18/12/2016	00:45	61.8	77.6	45.4	59.9	58.1	63.9	60.2	57.1	56.6	58.2	56.6	54.4	52.5	50.4	50.8	51.4	51.5	51.0	50.0	51.2	52.6	54.7	56.1	53.7	50.2	47.5	44.1	41.2	39.3	39.3	41.2	37.2	25.4	17.3	17.9	21.2	97.0	5.7	0.0	70	0.0	1037.0
231	18/12/2016	01:00	62.1	81.2	44.7	62.4	58.8	61.0	60.3	57.8	56.7	58.6	55.0	58.0	58.2	53.3	58.4	53.6	56.1	53.2	54.4	52.9	52.6	54.5	55.5	53.3	49.8	47.3	44.4	42.1	40.3	40.4	42.8	37.6	26.5	19.8	20.2	21.6	97.1	5.7	0.0	70	0.0	1037.1
232	18/12/2016	01:15	60.1	78.1	45.2	60.2	57.6	58.0	58.4	55.2	55.3	57.7	57.6	51.2	51.1	50.2	49.1	49.3	50.3	49.8	49.6	50.0	50.8	52.4	53.8	52.2	48.9	46.6	43.2	40.4	38.3	38.3	40.4	35.1	24.8	19.1	18.3	21.2	97.1	5.7	0.1	70	0.0	1037.1
233	18/12/2016	01:30	61.0	77.6	45.1	58.9	57.4	59.4	57.6	55.0	55.0	55.9	55.9	51.1	50.1	50.6	48.3	49.4	50.3	49.5	49.0	50.3	52.0	54.1	55.6	52.9	49.2	46.4	42.8	39.4	37.4	37.3	39.0	33.5	22.1	18.7	18.0	21.2	97.1	5.8	0.1	68	0.0	1037.2
234	18/12/2016	01:45	56.3	74.1	43.8	58.2	55.7	57.4	58.0	54.8	53.0	56.2	52.8	47.4	47.2	46.0	45.8	46.5	46.6	46.1	45.2	46.3	47.2	49.0	50.6	48.1	44.4	42.1	38.5	36.1	34.9	34.0	35.8	30.8	19.5	16.1	17.6	21.1	97.1	5.8	0.1	65	0.0	1037.2
235	18/12/2016	02:00	58.4	76.8	43.0	58.5	52.5	53.4	56.0	51.3	50.8	54.5	53.7	50.0	52.8	44.6	46.8	47.5	48.1	47.1	45.6	46.9	48.5	51.3	53.0	50.4	47.1	44.1	40.7	37.6	36.0	36.2	38.5	33.6	21.6	16.8	17.8	21.2	97.1	5.9	0.0	5	0.0	1037.2
236	18/12/2016	02:15	59.4	80.4	41.8	59.9	58.8	61.4	61.5	57.9	57.6	58.9	55.4	51.9	51.6	50.6	51.3	51.8	51.4	50.9	49.9	51.1	51.7	52.2	52.5	49.8	46.9	44.9	42.3	40.2	39.2	40.2	42.2	36.9	25.3	18.5	18.4	21.2	97.1	5.9	0.1	53	0.0	1037.4
237	18/12/2016	02:30	60.1	81.1	44.0	61.6	63.4	62.7	66.5	69.2	68.0	60.7	59.6	56.1	52.8	52.3	52.0	51.9	53.0	52.4	51.0	51.1	52.0	52.9	53.4	51.1	47.8	45.4	42.7	40.5	38.9	38.8	41.3	36.4	24.4	18.3	18.5	21.7	97.1	5.9	0.0	70	0.0	1037.2
238	18/12/2016	02:45	58.6	84.1	44.3	62.4	63.2	61.4	62.7	63.0	62.9	60.2	57.0	53.1	51.9	50.6	50.5	50.1	50.1	49.8	49.1	50.1	51.0	51.4	51.6	49.5	45.9	43.9	41.3	39.2	38.2	38.7	41.6	36.4	26.8	21.3	19.3	21.2	97.2	5.9	0.0	70	0.0	1037.3
239	18/12/2016	03:00	60.2	76.3	44.0	60.3	58.3	58.0	59.6	54.8	54.2	59.3	55.8	52.2	50.9	50.9	50.7	51.4	51.3	50.6	50.2	50.8	51.4	52.2	53.6	51.8	49.1	46.8	43.6	40.5	39.1	39.3	41.4	37.3	27.1	18.3	18.0	21.2	97.0	5.9	0.0	70	0.0	1036.9
240	18/12/2016	03:15	58.1	77.7	47.0	59.5	55.4	55.8	58.0	53.5	52.5	54.4	51.7	50.7	48.7	48.0	49.1	49.3	49.3	48.1	47.7	48.3	50.3	51.7	52.1	48.9	45.8	42.9	39.8	37.0	36.1	37.6	39.1	34.6	23.6	18.7	18.0	21.2	97.1	6.0	0.1	193	0.0	1036.6
241	18/12/2016	03:30	58.0	77.9	45.2	59.0	55.8	56.2	58.7	54.5	53.1	55.8	52.6	49.8	48.2	45.9	46.2	47.3	48.4	47.4	47.1	48.5	49.8	51.6	51.8	49.0	45.5	42.8	39.7	38.0	37.0	37.0	40.8	36.0	22.0	16.6	17.7	21.2	97.1	6.0	0.0	235	0.0	1036.5
242	18/12/2016	03:45	58.3	80.2	43.4	61.0	59.2	58.8	60.5	56.0	54.8	56.8	53.7	50.3	51.4	49.8	49.1	49.9	49.9	48.8	47.8	48.7	49.8	50.5	51.4	49.1	45.8	43.9	41.4	40.1	39.4	40.6	43.9	45.6	27.9	20.0	19.4	21.4	97.0	6.0	0.0	222	0.0	1036.4
243	18/12/2016	04:00	60.8	76.8	44.9	60.8	57.7	57.9	59.4	58.2	55.4	55.9	56.3	54.6	52.2	52.7	51.6	52.5	52.0	51.9	51.2	51.9	52.5	53.4	54.1	52.0	48.8	46.4	43.5	41.4	39.9	40.2	42.4	38.5	27.2	19.6	18.3	21.2	97.1	6.0	0.1	195	0.0	1036.3
244	18/12/2016	04:15	59.0	77.9	46.2	60.0	58.1	57.2	59.1	54.4	54.8	58.9	57.3	52.1	51.0	50.8	49.1	50.0	49.8	49.0	48.5	50.7	51.3	52.1	52.2	49.7	46.0	43.3	40.7	39.6	40.2	39.9	43.9	40.1	25.1	17.6	18.2	21.2	97.1	6.1	0.2	210	0.0	1036.1
245	18/12/2016	04:30	59.6	75.5	47.0	61.0	59.5	58.8	59.2	55.0	53.3	55.0	55.3	54.3	51.5	51.2	51.9	52.0	52.1	50.8	50.5	51.7	51.2	51.2	52.0	50.6	47.4	45.3	42.6	40.3	41.6	41.6	45.2	42.9	30.2	20.1	18.5	21.2	97.1	6.1	0.4	213	0.0	1036.0
246	18/12/2016	04:45	56.6	75.7	47.6	60.1	54.6	54.7	57.5	52.3	51.3	53.9	49.7	45.6	45.3	43.1	43.1	45.7	45.7	45.5	44.5	45.6	47.1	49.5	51.0	48.7	45.1	41.9	37.9	36.0	36.5	34.1	38.8	34.3	18.2	15.3	17.5	21.1	97.1	6.1	0.0	202	0.0	1036.2
247	18/12/2016	05:00	58.9	76.5	48.4	59.8	58.0	58.0	59.0	55.6	54.9	56.2	52.7	51.4	50.9	47.5	48.4	48.5	47.9	46.8	46.7	48.3	49.9	50.6	50.5	48.0	44.8	42.8	40.2	42.7	47.3	45.5	50.0	47.5	27.6	17.8	18.9	21.2	97.1	6.1	0.1	182	0.0	1036.2
248	18/12/2016	05:15	61.9	81.0	47.1	59.8	60.2	60.6	60.7	58.1	57.1	61.8	65.8	62.9	55.7	55.9	54.3	54.4	54.0	53.7	53.1	53.3	53.1	53.4	53.8	52.4	49.0	47.2	45.4	43.6	44.8	45.4	49.8	46.2	34.8	30.7	21.8	21.6	97.1	6.1	0.2	127	0.0	1036.2
249	18/12/2016	05:30	61.0	75.2	48.9	62.2	62.8	60.7	60.3	57.7	63.8	61.0	59.6	55.4	53.4	52.9	52.3	52.8	53.1	52.3	51.4	52.2	52.8	53.6	54.5	52.2	48.9	46.7	43.3	40.7	40.5	40.4	42.5	38.6	26.3	19.8	18.6	21.3	97.0	6.1	0.1	355	0.0	1036.2
250	18/12/2016	05:45	61.7	79.1	49.9	62.4	60.6	60.0	60.6	57.4	63.9	60.7	58.5	56.6	54.9	54.6	53.7	53.8	53.1	53.0	52.6	52.5	53.2	54.2	54.8	52.8	49.6	47.4	44.7	41.8	41.3	41.8	45.3	40.9	30.0	24.5	18.7	21.2	97.2	6.1	0.0	275	0.0	1036.2
251	18/12/2016	06:00	62.2	80.3	51.1	61.6	61.1	61.6	61.3	58.2	59.0	61.5	57.7	56.0	55.7	55.3	54.6	54.7	54.1	53.9	53.3	53.2	54.2	54.8	54.6	52.5	49.3	47.4	44.8	43.1	45.3	44.8	47.5	44.8	28.9	20.2	18.9	21.2	97.1	6.0	0.0	275	0.0	1035.9
252	18/12/2016	06:15	61.9	77.2	51.1	62.5	62.2	61.8	61.5	58.5	59.4	59.7	59.3	57.5	55.6	53.7	53.5	54.1	54.2	53.6	53.1	53.8	54.5	54.6	54.6	53.0	49.4	47.3	44.4	41.8	41.1	41.6	44.5	40.2	27.4	19.6	18.4	21.2	97.1	5.9	0.0	275	0.0	1035.7
253	18/12/2016	06:30	61.5	77.8	50.3	62.5	62.7	61.2	59.6	57.4	58.5	59.8	58.2	55.2	54.8	52.3	52.3	52.5	52.3	52.2	51.6	52.7	53.8	54.4	54.6	52.4	49.5	47.2	44.4	41.5	40.8	41.4	43.1	38.2	27.4	19.8	18.4	21.2	97.0	5.8	0.0	275	0.0	1035.7
254	18/12/2016	06:45	62.5	77.7	50.3	61.6	62.7	62.0	62.3	59.4	64.5	62.6	59.1	57.6	57.2	55.8	55.5	55.6	54.7	53.9	53.7	54.1	54.5	55.0	55.2	52.7	49.7	47.4	44.8	42.5	41.6	46.0	48.3	45.5	33.7	24.1	20.1	21.2	97.1	5.8	0.0	275	0.0	1035.7
255	18/12/2016	07:00	62.2	78.9	50.4	62.9	65.3	62.6	61.8	58.6	57.9	59.4	59.2	57.8	54.4	54.2	54.5	54.8	54.1	53.8	53.0	53.6	53.6	54.0	54.8	52.9	49.4	48.7	46.9	45.0	43.0	46.3	46.5	42.6	31.4	23.3	20.1	21.3	97.1	5.7	0.0	280	0.0	1035.7
256	18/12/2016	07:15	63.0	78.7	50.6	64.8	66.0	63.8	62.5	61.0	63.9	66.0	60.0	58.2	58.8	55.1	55.7	55.6	55.1	54.6	53.7	54.3	55.1	55.4	55.5	53.9	50.8	49.0	46.2	43.0	42.7	45.1	46.3	41.1	29.3	20.1	18.7	21.2	97.1	5.8	0.1	10	0.0	1035.8
257	18/12/2016	07:30	62.1	78.8	48.8	62.8	62.1	63.5	62.2	60.0	64.4	62.2	61.2	56.9	55.7	55.3	54.9	54.9	54.9	54.1	53.6	53.7	54.0	54.2	54.6	52.8	50.0	48.1	45.6	43.1	42.3	43.1	45.2	40.5	28.5	22.5	19.9	21.2	97.1	5.9	0.0	10	0.0	1035.6
258	18/12/2016	07:45	63.0	81.5	48.3	62.4	65.6	63.3	61.0	58.7	59.6	60.2	60.2	56.2	54.0	54.4	53.4	53.4	53.6	53.6	52.6	53.5	53.9	54.7	56.5	54.9	51.8	49.7	46.6	43.8	42.8	42.8	45.6	41.6	27.9	19.7	18.4	21.2	97.1	5.9	0.0	10	0.0	1035.7
259	18/12/2016	08:00	64.4	77.4	49.4	64.7	66.4	63.8	62.6	62.1	66.2	62.4	60.2	58.4	56.2	56.0	55.9	56.1	55.3	55.2	54.9	55.7	56.2	56.7	57.7	55.8	52.8	50.5	47.5	44.7	43.2	43.3	45.4	41.0	33.5	21.8	19.4	21.2	97.1	5.8	0.0	10	0.0	1035.8
260	18/12/2016	08:15	63.9	78.3	51.2	63.7	64.1	63.5	62.4	60.6	61.4	63.4	60.3	58.4	57.1	55.8	55.6	55.6	55.5	55.0	54.0	54.6	55.3	56.3	57.2	55.2	52.1	49.9	46.8	44.0	43.0	43.9	46.3	42.3	32.0	24.5	20.6	21.2	97.1	5.8	0.0	60	0.0	1036.0
261	18/12/2016	08:30	64.9	85.3	51.2	64.5	67.0	62.8	61.5	61.0	59.8	62.0	60.2	56.3	56.0	54.6	55.1	55.3	55.3	54.8	54.1	54.8	56.1	57.6	58.7	56.8	53.5	51.1	47.7	44.7	42.9	43.3	44.9	39.7	28.0	19.7	18.5	21.2	97.0	5.9	0.0	85	0.0	1036.0
262	18/12/2016	08:45	68.4	90.5	53.8	61.7	61.4	61.4	60.7	59.1	59.3	61.2	62.2	62.3	61.0	60.8	58.4	61.1	60.9	59.7	60.0	60.1	59.4	60.0	60.4	58.5	56.6	54.7	51.8	50.3	51.3	53.2	55.7	51.3	40.4	31.0	25.9	21.7	97.0	6.0	0.0	85	0.0	1035.8
263	18/12/2016	09:00	64.6	79.7	53.9	65.0	66.9	65.6	63.9	61.2	64.1	62.7	59.9	57.7	58.1	54.8	54.7	55.3	55.1	54.5	53.9	54.8	55.8	57.2	58.2	56.2	53.1	50.6	47.3	44.9	43.2	43.9	46.7	42.1	29.2	22.4	19.4	21.2	97.0	6.1	0.0	88	0.0	1036.0
264	18/12/2016	09:15	66.0	82.4	54.4	63.6	65.1	62.2	62.6	60.4	60.6	62.7	60.1	57.5	57.3	55.1	55.3	55.6	56.1	55.5	54.7	55.2	56.7	59.0	60.2	58.0	54.7	52.1	48.5	45.1	43.2	43.1	45.9	40.8	29.0	22.2	19.5	21.2	97.2	6.2	0.0	90	0.0	1035.8
265	18/12/2016	09:30	66.9	81.9	54.2	62.2	60.5	60.8	62.0	60.2	58.8	61.3	58.0	55.8	54.4	53.9	53.6	55.4	56.1	55.2	54.4	55.4	57.1	59.7	61.2	59.1	55.7	53.0	51.4	46.0	43.4	43.6	45.0	39.9	27.7	19.5	18.6	21.3	97.1	6.3	0.0	90	0.0	1035.9
266	18/12/2016	09:45	66.8	78.3	53.6	62.9	62.4	62.0	60.7	59.4	59.7	61.4	59.4	57.0	55.5	54.9	54.3	54.9	56.2	55.5	54.4	55.7	57.2	59.8	60.9	58.9	55.8	53.0	49.6	46.7	45.3	44.5	46.4	41.7	28.9	21.0	18.5	21.2	97.1	6.4	0.0	90	0.0	1035.7
267	18/12/2016	10:00	67.8	83.1	56.6	67.5	67.6	66.3	64.4	63.8	64.1	65.7	62.5	58.4	57.9	57.1	56.9	57.7	57.9	57.3	55.9	56.8	58.1	60.3	61.9	59.9	56.8	54.3	50.8	47.6	45.2	45.0	46.8	41.5	28.8	20.8	19.1	21.2	97.1	6.6	0.0	90	0.0	1035.6
268	18/12/2016	10:15	67.6	83.8	55.0	62.4	62.5	61.9	61.3	60.7	62.3	65.6	63.6	58.4	56.3	54.9	54.7	55.8	58.6	57.9	55.4	56.0	57.5	60.2	61.9	59.6	56.4	53.8	50.4	47.5	45.4	45.5	47.6	43.7	32.3	23.3	20.6	21.6	97.1	6.7	0.0	90	0.0	1035.7
269	18/12/2016	10:30	67.6	79.7	54.0	63.9	65.2	65.6	64.0	62.3	63.4	65.4	61.1	58.3	56.8	55.3	55.3	56.4	57.6	56.8	55.7	56.7	58.0	60.1	62.0	59.7	56.6	53.9	50.1	46.6	44.1	43.9	45.6	40.1	27.6	20.0	18.7	21.2	97.1	7.0	0.2	118	0.0	1035.5
270	18/12/2016	10:45	66.9	80.3	54.4	67.2	66.9	63.9	63.1	62.0	64.3	66.0	62.3	59.4	58.5	55.8	55.4	56.2	56.8	56.0	55.4	56.5	58.1	59.8	61.0	58.6	55.5	52.9	49.5	46.6	44.2	44.3	45.9	40.6	28.5	20.8	19.1	21.3	97.2	7.3	0.0	75	0.0	1035.7
271	18/12/2016	11:00	68.0	84.6	55.5	66.6	68.1	64.8	64.0	63.7	64.9	65.9	62.0	60.1	61.3	62.6	62.0	61.8	58.8	58.9	59.5	58.6	58.9	60.5	61.7	59.4	56.2	53.6	50.1	47.0	45.1	46.2	47.9	43.0	31.5	23.2	20.2	21.3	97.2	7.4	0.1	165	0.0	1035.7
272	18/12/2016	11:15	67.0	82.8	54.1	64.1	64.1	66.4	66.2	64.7	62.9	63.2	62.5	58.5	57.7	57.3	57.7	58.0	57.7	57.4	56.3	56.7	57.5	59.5	61.1	58.9	55.7	53.0	49.4	46.5	44.1	44.2	46.1	41.3	28.9	20.5	18.8	21.2	97.2	7.5	0.2	62	0.0	1035.6
273	18/12/2016	11:30	68.4	80.8	56.9	64.1	65.0	66.7	63.8	60.3	63.1	62.5	60.2	58.8	58.0	55.5	55.5	58.5	57.8	57.0	56.1	57.1	58.8	61.5	62.9	60.6	57.2	54.3	50.4	46.8	44.1	43.7	45.6	40.6	28.0	19.7	18.6	21.2	97.2	7.7	0.0	43	0.0	1035.4
274	18/12/2016	11:45	68.5	82.7	56.7	65.1	64.8	64.5	64.0	62.2	64.0	66.3	64.1	64.8	65.7	63.8	61.0	60.5	59.9	58.8	57.0	57.6	58.8	61.2	62.5	60.2	57.0	54.4	51.2	48.7	46.4	47.1	49.5	45.3	33.3	24.3	20.7	21.3	97.1	8.0	0.1	140	0.0	1035.4
275	18/12/2016	12:00	68.2	78.6	56.0	65.6	66.2	66.5	64.4	62.7	63.7	65.3	64.2	62.8	60.8	60.7	60.9	59.8	59.5	58.1	57.0	57.7	58.9	60.9	62.3	59.9	56.7	54.0	50.7	47.9	45.8	45.8	48.0	43.4	33.4	22.7	20.0	21.3	96.8	8.2	0.1	232	0.0	1035.3
276	18/12/2016	12:15	68.7	79.2	56.9	66.8	64.8	64.4	63.7	61.6	62.3	64.4	61.6	59.7	59.3	62.1	56.8	57.4	59.1	57.8	56.7	57.7	59.0	61.4	63.0	60.7	57.5	54.6	50.9	47.6	45.1	44.9	46.8	41.4	29.7	23.4	20.6	21.5	96.3	8.6	0.1	217	0.0	1034.9
277	18/12/2016	12:30	67.9	77.8	56.2	67.2	65.7	64.6	64.3	62.8	64.0	65.7	62.3	61.1	60.2	57.3	56.7	58.9	58.7	57.8	56.6	57.7	58.9	60.8	62.1	59.6	56.4	53.7	50.3	47.2	45.2	45.4	47.3	42.2	30.7	22.7	19.8	21.4	95.1	8.9	0.1	207	0.0	1035.1

Address	Date	Time	L_{Aeq}	L_{Amax}	L_{A90}	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	20 kHz	Humidity %	Temp °C	Wind m/s	Direction Deg	Rain mm	Pressure mbar
278	18/12/2016	12:45	69.0	86.1	54.6	64.2	64.9	64.3	62.4	61.1	64.7	63.3	63.6	64.6	63.1	67.0	68.3	62.9	63.7	63.1	59.8	60.7	59.6	60.8	61.9	59.8	56.7	54.2	51.2	48.7	47.0	47.2	49.5	44.5	32.8	24.8	21.0	21.4	91.9	9.1	0.3	137	0.0	1034.8
279	18/12/2016	13:00	68.6	81.2	54.7	64.1	63.7	63.4	63.4	62.4	63.0	64.8	62.4	59.9	59.2	65.1	61.8	58.7	60.2	59.1	57.7	58.3	59.0	61.3	62.7	60.3	57.1	54.6	50.9	48.0	46.0	46.3	48.5	43.5	31.8	23.5	20.0	21.3	90.0	9.2	0.4	72	0.0	1034.6
280	18/12/2016	13:15	68.3	83.1	56.5	67.6	69.8	68.0	66.1	65.0	65.5	68.0	65.2	61.7	62.0	65.0	59.0	60.3	60.5	59.4	57.9	58.3	59.5	61.0	62.1	59.6	56.5	53.9	50.7	48.0	46.3	46.7	48.9	44.0	32.2	23.4	20.4	21.3	89.6	9.2	0.5	75	0.0	1034.5
281	18/12/2016	13:30	67.8	78.9	58.4	65.0	65.4	65.2	64.6	62.5	65.4	67.2	66.4	64.8	62.1	62.4	60.6	60.7	59.3	58.1	57.8	58.1	58.8	60.3	61.6	59.3	56.1	53.5	50.2	47.2	45.7	46.1	48.3	43.7	32.0	26.2	21.2	21.8	89.5	9.2	0.5	295	0.0	1034.1
282	18/12/2016	13:45	67.7	80.1	57.0	63.6	64.5	66.0	62.3	61.2	64.0	65.4	63.2	62.7	61.7	60.7	59.7	59.3	59.3	58.5	57.2	57.9	58.7	60.4	61.5	59.3	56.0	53.4	50.1	47.6	45.8	45.9	48.8	44.0	32.5	24.9	20.7	21.4	89.6	9.2	0.2	202	0.0	1034.1
283	18/12/2016	14:00	68.4	81.0	56.7	63.0	64.9	64.8	64.4	61.6	67.1	64.8	63.2	61.2	61.9	63.4	59.3	60.0	60.9	60.8	58.5	57.8	58.6	60.9	62.4	60.0	56.9	54.1	50.5	47.2	45.2	45.3	47.2	42.0	29.9	21.8	19.2	21.3	88.5	9.2	0.3	305	0.0	1033.8
284	18/12/2016	14:15	67.9	78.3	55.8	62.1	65.4	63.9	65.1	63.7	63.2	66.9	61.6	58.9	57.7	55.8	57.4	57.9	58.1	57.3	56.5	57.5	58.8	60.9	62.2	59.8	56.5	53.6	50.0	46.6	44.6	44.8	47.3	41.4	29.1	21.1	18.9	21.3	87.0	9.2	0.2	213	0.0	1033.8
285	18/12/2016	14:30	67.8	84.3	55.1	64.8	65.3	65.1	63.9	61.6	62.9	64.2	62.5	58.9	58.3	61.9	56.2	57.3	58.7	57.9	56.8	57.5	58.6	60.5	61.6	59.4	56.5	54.2	51.0	48.0	46.4	46.6	48.7	43.7	32.1	23.1	19.8	21.3	86.8	9.3	0.3	30	0.0	1033.8
286	18/12/2016	14:45	68.3	80.2	53.7	66.6	65.7	64.7	63.6	62.2	63.6	65.4	61.6	59.4	58.5	56.4	56.4	58.0	58.3	57.7	56.8	58.0	59.5	61.3	62.5	60.0	56.7	54.1	50.4	47.4	45.5	45.7	47.7	42.6	30.6	23.3	19.6	21.3	87.3	9.3	0.5	57	0.0	1033.6
287	18/12/2016	15:00	67.8	80.9	54.4	67.2	67.5	65.8	65.2	63.3	64.6	65.2	62.2	58.4	58.5	56.6	55.9	57.6	57.6	57.1	56.2	57.5	58.9	60.8	61.8	59.6	56.4	53.8	50.2	46.9	45.2	45.5	48.0	42.4	30.6	22.6	19.4	21.3	87.2	9.3	0.6	58	0.0	1033.6
288	18/12/2016	15:15	66.8	81.5	52.4	63.2	66.5	64.0	63.8	62.1	64.3	66.5	65.1	60.2	57.5	55.9	55.4	56.6	57.2	56.4	55.4	56.4	57.6	59.6	60.9	58.5	55.4	52.8	49.6	47.0	45.0	45.1	47.1	41.8	29.9	21.9	19.4	21.3	88.8	9.1	0.8	62	0.0	1033.6
289	18/12/2016	15:30	67.0	78.2	53.3	64.5	63.9	65.4	64.0	61.4	63.9	63.0	60.9	58.9	59.0	57.1	57.2	56.6	57.3	57.5	55.7	56.7	57.9	59.9	61.1	58.7	55.6	52.9	49.3	46.2	44.1	44.2	46.3	40.7	29.1	22.3	18.9	21.2	89.2	9.0	0.4	80	0.0	1033.6
290	18/12/2016	15:45	67.3	78.9	53.0	65.1	66.0	64.7	63.4	62.8	64.8	62.8	62.8	58.5	57.2	56.3	56.3	57.3	57.8	56.7	55.7	56.7	58.1	59.8	61.4	59.1	56.1	53.7	50.2	47.3	45.5	45.8	48.0	42.9	30.6	22.5	19.7	21.3	89.0	8.8	1.0	58	0.0	1033.9
291	18/12/2016	16:00	67.8	86.4	51.5	59.8	62.0	61.1	61.1	60.5	61.5	62.4	61.6	57.0	57.5	61.1	58.8	58.9	60.0	62.6	58.7	57.3	57.5	59.3	60.7	58.6	56.5	54.3	52.3	51.6	49.9	49.4	51.7	46.1	33.1	24.5	20.4	21.3	89.4	8.5	1.5	60	0.0	1033.6
292	18/12/2016	16:15	66.4	77.5	52.2	61.8	64.2	63.3	61.8	59.9	61.7	65.9	60.1	57.6	56.6	54.7	54.5	55.1	56.2	55.7	54.7	55.7	56.9	59.1	60.7	58.5	55.2	52.7	48.9	45.5	43.4	43.5	45.9	41.3	28.7	20.4	18.7	21.2	89.9	8.2	0.7	158	0.0	1033.2
293	18/12/2016	16:30	65.1	81.8	50.4	64.5	67.7	64.4	64.1	61.4	64.1	62.3	60.4	57.8	56.4	55.1	54.0	55.2	55.7	55.0	54.5	55.3	56.7	57.9	58.8	56.7	53.4	51.2	48.1	45.5	44.0	43.9	45.8	40.6	29.3	21.3	19.1	21.2	90.7	7.7	1.0	53	0.0	1033.1
294	18/12/2016	16:45	64.3	79.5	51.1	61.9	66.4	63.4	61.5	60.2	61.9	64.4	61.0	57.7	56.6	57.5	57.1	55.6	54.9	53.7	52.6	53.6	55.0	57.0	58.3	56.0	52.9	50.6	47.4	44.5	42.9	43.1	44.7	39.3	27.8	20.3	18.7	21.2	90.8	7.4	0.9	32	0.0	1032.7
295	18/12/2016	17:00	66.2	81.7	52.8	67.0	64.9	64.1	64.1	61.2	61.9	63.6	61.7	56.8	56.0	57.0	55.0	56.0	56.4	55.4	54.7	55.9	57.1	58.9	60.3	58.1	54.9	52.4	49.0	45.7	43.8	43.9	45.6	40.2	27.7	20.6	18.9	21.2	91.5	7.0	0.5	2	0.0	1032.3
296	18/12/2016	17:15	66.2	78.8	54.0	62.0	62.4	62.8	62.4	61.7	63.6	66.8	63.1	57.5	57.5	56.6	56.3	56.0	56.0	55.2	54.4	55.5	57.0	59.1	60.5	58.0	54.8	52.3	48.6	45.0	42.9	43.0	44.9	39.0	26.6	19.4	18.3	21.2	92.7	6.6	0.6	237	0.0	1032.0
297	18/12/2016	17:30	67.2	81.7	54.4	63.8	64.6	64.1	63.0	60.9	61.6	63.9	62.4	58.6	58.2	56.1	56.9	60.0	58.6	57.4	57.0	58.2	58.5	60.0	60.9	58.6	55.4	52.9	49.5	46.6	45.3	45.5	47.8	42.0	30.0	21.6	19.6	21.3	93.2	6.2	0.3	150	0.0	1031.8
298	18/12/2016	17:45	65.7	81.3	57.5	61.7	61.6	64.0	62.9	60.6	60.8	61.3	58.7	55.9	54.7	53.6	53.7	54.9	55.4	54.6	54.1	55.3	57.2	59.3	60.0	57.3	53.8	50.9	47.4	44.2	42.3	42.3	44.2	38.6	27.0	19.1	18.2	21.2	93.6	5.7	0.1	203	0.0	1031.5
299	18/12/2016	18:00	65.7	80.6	57.2	63.9	66.2	61.8	60.7	57.6	62.7	60.0	58.0	56.2	55.6	54.4	53.4	54.6	55.3	54.5	54.0	54.8	56.6	58.9	60.2	57.6	54.0	51.1	47.1	43.6	41.4	41.4	43.4	37.6	25.6	18.9	18.3	21.2	94.1	5.3	0.0	190	0.0	1031.5
300	18/12/2016	18:15	65.7	80.5	55.1	62.0	62.7	63.6	63.4	62.2	62.2	63.3	62.3	56.8	55.4	54.7	54.7	55.2	55.6	55.4	54.4	55.5	56.8	58.6	59.8	57.5	54.3	51.7	48.1	45.0	43.1	43.0	45.0	39.3	27.1	19.7	18.4	21.2	94.5	5.2	0.0	190	0.0	1031.3
301	18/12/2016	18:30	63.4	77.5	53.6	60.9	62.8	63.7	61.7	58.7	63.5	61.2	58.5	55.8	54.2	51.9	52.1	53.6	53.6	52.6	51.9	53.2	54.5	56.4	57.6	55.2	51.8	49.0	45.3	42.3	40.4	40.4	42.4	36.7	25.5	21.3	18.5	21.2	94.5	4.7	0.0	190	0.0	1031.5
302	18/12/2016	18:45	65.4	78.3	53.9	60.2	62.9	62.1	61.6	58.6	58.9	61.4	57.6	54.7	54.7	52.2	52.4	53.5	54.2	53.6	52.7	54.3	56.1	58.5	59.9	57.3	54.3	51.4	47.3	43.8	41.5	41.3	43.7	37.3	24.9	17.9	17.9	21.1	95.2	4.7	0.1	200	0.0	1031.5
303	18/12/2016	19:00	65.0	77.4	54.0	62.0	61.6	63.8	63.9	60.8	60.4	60.8	58.8	56.5	55.7	54.3	53.9	55.0	55.6	54.1	53.3	54.6	55.8	57.8	59.3	57.0	53.7	50.9	47.1	43.8	41.6	41.4	43.5	37.6	25.0	18.6	18.0	21.2	95.8	5.0	0.0	205	0.0	1031.6
304	18/12/2016	19:15	63.0	76.5	53.2	59.3	58.6	59.0	59.5	58.7	59.8	64.4	57.0	53.2	57.5	51.8	52.1	51.9	52.7	52.0	50.9	52.2	53.4	55.6	57.3	54.9	51.8	49.3	45.9	42.5	40.7	40.8	43.2	38.5	26.4	20.0	19.6	21.2	96.0	5.3	0.0	205	0.0	1031.3
305	18/12/2016	19:30	64.7	78.8	52.1	61.1	61.9	63.4	62.4	60.7	62.2	64.3	62.0	58.0	58.0	56.0	54.9	55.4	55.7	55.5	54.4	54.4	55.5	57.4	58.3	56.3	53.2	51.0	48.1	45.1	43.8	44.5	46.7	41.7	30.9	23.1	20.3	21.2	96.1	5.4	0.0	202	0.0	1031.6
306	18/12/2016	19:45	64.0	80.7	50.8	61.9	63.1	62.8	62.6	59.7	65.4	62.7	58.1	58.1	56.1	54.5	53.9	53.8	54.3	53.6	52.8	53.7	54.9	56.6	58.0	55.8	52.5	49.9	46.6	43.6	42.3	42.5	44.7	39.5	28.2	21.4	18.8	21.2	96.2	5.7	0.1	207	0.0	1031.5
307	18/12/2016	20:00	63.8	79.0	51.1	62.2	63.0	60.5	58.7	57.2	62.7	59.4	56.5	55.4	52.5	51.0	50.9	52.2	53.1	52.8	51.9	53.6	55.1	56.8	58.1	55.7	52.2	49.3	45.7	42.8	40.7	41.1	44.2	39.3	24.9	18.4	18.3	21.2	96.2	5.8	0.0	220	0.0	1031.5
308	18/12/2016	20:15	64.1	78.0	51.4	61.8	62.5	62.4	61.8	59.7	61.0	60.6	57.6	55.0	54.6	53.6	53.6	54.6	54.7	54.0	52.9	53.5	54.6	56.6	58.3	56.2	53.0	50.3	46.7	43.3	41.7	41.6	43.3	38.0	25.9	19.2	18.3	21.2	96.4	5.9	0.1	293	0.0	1031.3
309	18/12/2016	20:30	64.1	78.8	48.3	60.8	61.1	62.0	60.8	58.0	60.6	59.8	56.8	57.8	58.0	56.3	57.6	55.8	56.4	55.0	54.8	54.1	55.0	56.7	57.9	55.6	52.4	49.7	46.3	43.5	41.9	42.4	44.7	39.2	28.3	23.4	18.8	21.3	96.3	6.1	0.1	270	0.0	1031.3
310	18/12/2016	20:45	63.0	78.0	48.1	60.9	62.0	61.6	59.1	57.5	59.7	59.5	60.3	56.2	53.3	52.5	52.9	52.3	53.6	52.6	51.8	53.1	54.1	55.6	56.7	55.0	51.6	49.1	45.7	42.6	41.1	41.3	43.4	39.5	27.1	18.9	18.4	21.2	96.3	6.2	0.0	240	0.0	1031.0
311	18/12/2016	21:00	63.4	77.0	48.6	60.3	60.8	60.0	61.0	58.3	58.9	61.0	57.5	54.0	54.1	51.6	51.6	52.3	53.4	52.3	51.3	52.8	54.0	56.3	57.5	55.4	52.1	49.5	45.7	42.3	40.3	40.5	42.6	37.1	26.5	18.0	18.1	21.2	96.4	6.3	0.1	243	0.0	1031.0
312	18/12/2016	21:15	62.6	80.0	47.0	60.4	59.4	60.5	59.6	58.2	58.1	60.0	58.8	53.9	52.4	51.0	50.7	51.6	52.6	51.8	50.5	52.0	53.5	55.0	56.8	54.8	51.4	49.1	45.6	42.2	39.7	39.4	41.2	35.6	24.0	25.2	19.1	21.2	96.5	6.5	0.3	65	0.0	1031.0
313	18/12/2016	21:30	64.6	89.2	48.1	64.1	63.5	62.0	58.9	57.6	59.9	58.4	57.9	55.9	56.0	54.6	53.8	56.7	56.5	55.2	55.0	57.1	58.0	57.3	57.5	55.2	52.2	50.2	46.9	43.7	42.9	43.2	45.4	39.9	28.4	20.2	18.3	21.2	96.5	6.6	0.2	55	0.0	1031.2
314	18/12/2016	21:45	60.4	80.8	46.7	59.1	60.9	61.9	62.3	63.6	63.3	60.0	54.6	51.4	51.3	49.0	50.1	50.0	50.2	49.7	49.1	50.3	51.3	52.6	54.2	52.4	49.3	46.7	43.4	40.5	38.3	38.5	40.5	38.2	23.1	17.2	17.8	21.2	96.5	6.6	0.3	117	0.0	1031.0
315	18/12/2016	22:00	63.2	76.9	49.2	59.7	61.6	60.6	61.1	57.8	64.7	70.8	60.6	60.1	63.0	54.6	55.9	53.6	53.7	52.9	52.3	52.9	54.2	55.4	56.4	54.6	51.6	49.5	46.6	44.6	43.3	44.3	48.7	44.0	33.5	26.5	23.4	21.5	96.6	6.6	0.3	117	0.0	1030.9
316	18/12/2016	22:15	61.4	77.2	47.9	62.1	61.6	61.5	61.6	58.3	59.4	61.8	57.9	55.7	55.0	55.2	53.6	54.6	53.5	53.1	52.3	52.5	53.2	53.6	54.5	52.6	49.3	47.1	44.1	41.6	40.6	40.7	44.9	38.3	27.7	23.0	18.3	21.2	96.6	6.6	0.3	350	0.0	1030.4
317	18/12/2016	22:30	62.7	78.9	46.4	63.6	60.0	60.8	61.0	58.0	58.2	59.5	57.4	56.0	55.4	51.9	52.2	52.6	53.1	52.3	51.3	52.3	53.5	55.1	56.9	54.6	51.5	49.0	45.3	41.8	39.6	39.5	41.5	36.7	26.9	17.3	17.8	21.2	96.6	6.6	0.0	350	0.0	1030.5
318	18/12/2016	22:45	61.2	80.9	45.5	61.6	64.6	62.2	63.2	59.7	59.6	60.0	57.6	56.3	53.8	52.2	52.3	52.6	52.7	52.2	51.1	51.8	52.8	53.5	54.7	52.8	49.5	47.1	44.3	41.7	40.2	40.8	43.0	37.6	25.9	19.3	18.4	21.2	96.6	6.6	0.4	40	0.0	1030.4
319	18/12/2016	23:00	59.3	79.1	44.9	61.2	59.9	59.7	59.5	60.1	56.5	59.8	55.6	52.2	52.7	50.4	50.9	51.4	51.2	50.1	49.2	50.3	50.8	51.5	52.7	50.8	47.5	45.2	42.2	39.9	38.3	38.8	42.1	36.7	24.3	17.9	18.0	21.2	96.5	6.6	0.0	145	0.0	1030.4
320	18/12/2016	23:15	62.8	85.1	45.2	61.8	63.5	63.3	60.9	58.3	61.4	61.8	64.4	60.0	61.4	56.0	52.5	54.5	52.6	55.1	61.0	58.2	53.1	53.6	54.1	52.1	48.2	46.5	44.0	41.4	40.0	40.6	43.1	37.7	25.9	19.8	18.8	21.2	96.6	6.6	0.3	7	0.0	1030.3
321	18/12/2016	23:30	60.0	78.0	46.5	61.4	62.2	58.9	58.5	57.5	60.4	61.0	57.0	53.7	54.8	52.4	50.8	50.8	51.5	50.9	48.8	49.7	51.1	53.1	53.7	51.3	47.8	45.3	42.9	40.6	40.1	40.1	42.5	38.2	26.4	20.0	18.4	21.2	96.7	6.6	0.6	127	0.0	1030.1
322	18/12/2016	23:45	58.9	77.6	47.6	62.2	61.8	62.1	61.3	58.9	58.0	62.8	58.9	55.0	58.4	55.0	52.8	52.3	51.7	50.6	50.0	50.3	51.3	51.3	51.3	49.3	46.1	44.4	42.3	40.0	38.8	39.7	42.0	36.9	26.9	21.6	18.9	21.3	96.6	6.6	0.3	120	0.0	1029.9
323	19/12/2016	00:00	61.0	80.8	46.5	65.5	65.2	62.5	63.1	59.7	59.5	60.6	59.3	56.9	55.9	53.6	53.9	54.1	52.7	52.3	52.1	53.4	54.1	54.1	53.5	51.3	48.2	46.0	43.6	41.0	39.6	40.2	42.3	37.5	29.2	20.5	19.0	21.2	96.6	6.6	0.3	120	0.0	1029.8
324	19/12/2016	00:15	61.9	79.0	46.1	63.9	64.3	64.4	64.1	61.3	64.3	65.5	62.5	57.7	55.9	54.4	53.5	54.1	53.3	53.1	52.1	53.1	54.4	54.4	54.1	52.4	49.8	48.3	45.8	43.3	42.9	43.4	46.6	41.2	28.9	21.0	19.1	21.2	96.5	6.6	0.7	12	0.0	1029.8
325	19/12/2016	00:30	58.8	75.2	45.5	62.6	62.3	60.9	60.5	59.2	59.9	61.2	58.0	53.5	54.4	51.9	52.0	52.8	51.3	50.7	49.9	50.3	51.4	51.1	50.8	49.2	46.3	44.5	42.5	39.9	39.3	40.1	43.3	37.7	25.6	20.6	18.2	21.2	96.3	6.5	0.8	120	0.0	1029.5
326	19/12/2016	00:45	60.7	79.4	47.3	61.2	67.0	63.4	62.1	60.0	60.1	62.7	61.5	54.8	54.3	55.6	52.4	53.6	52.7	52.3	51.8	52.8	54.0	53.5	53.0	51.1	47.9	45.9	43.6	40.6	39.2	39.6	42.6	37.5	24.3	18.3	18.2	21.2	96.1	6.5	0.6	115	0.0	1029.4
327	19/12/2016	01:00	59.4	84.4	45.7	63.5	67.1	64.6	62.7	60.0	61.6	62.0	58.1	54.4	52.9	50.9	50.6	51.0	50.2	50.3	49.6	51.4	52.7	52.1	52.2	49.8	46.5	45.1	42.8	40.5	39.6	39.5	41.5	35.8	24.5	17.7	17.9	21.2	95.8	6.4	0.5	122	0.0	1029.4
328	19/12/2016	01:15	60.4	79.1	45.5	63.2	62.2	66.6	63.0	59.7	60.6	62.6	58.4	56.5	54.1	54.0	52.7	53.8	53.0	52.3	51.8	52.7	53.7	53.1	52.2	50.2	47.4	45.7	43.3	41.8	41.2	41.6	44.6	39.6	29.1	20.8	19.1	21.2	95.7	6.4	0.7	25	0.0	1029.4
329	19/12/2016	01:30	59.5	79.7	44.9	62.6	63.2	62.5	61.9	57.9	58.1	62.2	56.4	52.7	54.8	53.5	52.3	51.6	50.9	51.3	50.5	50.5	51.3	51.3	52.3	51.4	47.8	45.5	42.6	40.0	38.6	39.2	42.0	36.7	24.8	18.6	18.1	21.2	95.6	6.2	0.9	7	0.0	1029.6
330	19/12/2016	01:45	61.4	83.4	43.7	63.9	66.2	64.8	63.3	60.5	61.1	61.7	58.8	55.0	55.5	54.6	53.6	54.5	54.4	53.3	53.3	54.0	54.9	53.9	53.0	51.4	48.1	47.0	44.5	42.6	41.6	42.2	46.6	40.0	29.9	23.7	20.3	21.3	95.7	6.1	0.7	237	0.0	1028.9
331	19/12/2016	02:00	60.2	77.9	46.3	61.9	63.1	64.0	61.6	60.2	62.1	64.6	62.7	63.5	55.9	52.3	53.3	53.0	52.1	51.5	50.7	52.1	52.9	52.2	51.4	49.5	46.9	44.7	43.0	42.0	41.9	47.1	49.0	42.5	32.8	23.8	18.8	21.2	95.5	6.0	0.7	5	0.0	1029.1
332	19/12/2016	02:15	60.4	80.7	45.4	62.9	67.9	63.9	61.6	60.0	61.9	65.2	60.9	55.3	54.7	53.4	53.0	53.8	52.2	52.5	52.0	52.9	54.0	53.3	52.2	50.3	47.4	45.9	43.4	41.0	40.0	40.3	42.5	36.9	25.4	19.5	18.6	21.2	95.6	5.9	0.8	50	0.0	1029.5
333	19/12/2016	02:30	59.6	77.4	45.1	62.5	65.7	64.6	61.8	60.9	60.7	60.8	58.9	55.1	54.5	52.2	52.2	52.5	52.0	51.3	50.8	51.7	52.6	52.4	52.3	50.2	47.1	44.5	41.7	39.6	38.5	38.9	41.3	36.0	24.7	18.2	18.5	21.2	95.1	5.8	0.8	77	0.0	1029.1
334	19/12/2016	02:45	60.8	77.6	44.8	64.7	64.4	64.4	63.2	61.8	65.7	63.2	59.3	57.5	57.4	55.4	55.2	55.0	53.7	53.6	52.8	53.6	54.4	53.1	52.2	50.6	47.7	46.3	44.2	41.8	41.0	41.7	43.6	38.4	27.4	20.3	18.4	21.2	94.9	5.8	0.7	42	0.0	1028.9
335	19/12/2016	03:00	62.2	83.6	44.3	61.4	62.8	62.6	62.6	60.3	61.8	61.7	61.3	56.1	53.9	53.9	53.5	53.9	52.9	52.7	51.9	52.7	53.6	53.5	53.4	52.8	51.0	49.8	48.0	47.4	45.5	47.1	48.3	41.6	30.1	21.7	22.7	21.2	94.6	5.8	0.7	118	0.0	1028.8
336	19/12/2016	03:15	60.2	83.9	43.9	63.5	66.5	64.6	62.9	60.4	65.4	62.8	59.0	55.3	55.1	54.3	53.7	53.8	52.7	53.0	51.8	52.4	53.6	52.5	52.1	50.1	47.4	45.6	42.9	41.1	40.3	40.6	42.7	37.0	25.3	20.0	18.3	21.2	94.7	5.7	0.4	233	0.0	1028.4
337	19/12/2016	03:30	60.8	77.8	45.1	63.4	65.7	63.2	61.5	59.8	60.2	62.4	60.5	54.1	54.5	53.7	53.3	53.7	53.1	52.3	51.7	52.2	52.9	53.4	53.3	52.2	48.8	46.1	43.5	41.5	40.8	41.3	43.6	38.0	26.6	21.6	29.6	21.2	94.9	5.7	0.0	345	0.0	1028.2
338	19/12/2016	03:45	59.6	77.0	45.7	62.4	63.8	62.8	61.5	59.7	59.7	62.9	61.0	56.0	54.6	53.3	52.4	52.7	51.5	51.6	50.5	51.3	52.1	51.3	51.6	50.1	46.9	45.3	42.8	40.9	40.7	41.6	46.3	43.6	28.8	21.2	20.0	21.3	94.8	5.7	0.1	237	0.0	1028.1
339	19/12/2016	04:00	61.5	75.5	47.1	62.7	65.7	64.1	62.9	61.2	61.2	64.1	59.7	58.4	58.5	55.7	55.4	54.9	54.0	54.6	53.4	53.3	53.8	53.1	53.1	52.0	49.0	47.8	45.2	42.3	42.8	43.0	46.2	42.0	28.5	23.1	18.6	21.2	95.0	5.7	0.3	23	0.0	1027.7
340	19/12/2016	04:15	63.1	83.6	47.1	63.3	65.5	65.0	62.4	60.8	61.2	61.8	61.4	57.9	57.3	56.3	55.9	57.0	55.6	55.2	54.3	54.9	55.7	55.2	55.0	53.2	50.2	48.7	46.7	45.4	46.4	46.4	48.4	43.8	33.0	25.1	19.8	21.3	95.1	5.7	0.3	118	0.0	1027.7
341	19/12/2016	04:30	63.7	78.1	49.3	64.3	66.4	66.4	64.0	62.8	62.7	64.7	62.1	58.9	58.9	57.9	56.3	56.8	55.9	55.3	55.0	55.2	55.9	55.9	56.0	54.4	51.2	49.4	47.0	45.0	46.2	46.1	48.7	44.1	30.8	24.3	19.3	21.2	95.3	5.7	0.2	5	0.0	1027.7
342	19/12/2016	04:45	61.3	75.8	46.9	61.8	67.8	63.4	62.4	60.8	60.8	62.0	60.0	55.4	56.5	56.1	54.6	54.8	54.7	53.6	53.2	53.0	53.6	53.6	53.6	51.7	49.1	47.2	44.8	42.5	41.6	41.8	44.4	39.7	28.1	27.6	26.1	21.2	95.4	5.7	0.5	62	0.0	1027.4
343	19/12/2016	05:00	63.3	77.0	48.9	64.7	65.9	65.0	64.9	62.5	63.1	63.4	60.6	57.5	57.4	57.7	55.8	56.6	56.0	55.5	54.9	55.2	55.7	55.4	55.5	53.8	50.9	49.3	47.0	44.8	43.6	44.5	47.1	41.8	30.7	31.2	23.3	21.4	95.4	5.7	0.5	48	0.0	1027.3
344	19/12/2016	05:15	65.4	78.6	51.0	65.0	67.1	65.9	64.4	62.7	62.4	65.0	64.6	63.4	63.6	60.8	59.3	59.0	58.6	57.9	56.6	57.0	57.4	57.3	57.8	56.2	53.1	51.5	48.8	45.8	45.1	45.5	48.4	44.2	32.8	25.3	21.2	21.6	95.4	5.7	0.4	22	0.0	1027.3
345	19/12/2016	05:30	65.8	78.5	51.8	64.1	66.0	65.5	65.6	63.6	66.1	66.3	67.5	63.6	60.5	60.5	58.9	59.8	58.5	57.8	56.9	56.5	56.9	57.5	58.5	56.9	53.8	52.3	49.8	46.8	46.4	46.5	49.6	44.0	34.1	26.2	22.4	21.3	95.3	5.7	0.4	50	0.0	1027.1
346	19/12/2016	05:45	64.8	77.8	51.3	63.2	64.5	62.7	62.3	61.2	62.2	63.7	63.1	61.0	58.9	56.6	55.8	55.7	56.8	55.7	54.4	54.9	55.4	56.9	58.1	56.5	53.3	51.4	48.3	45.9	45.4	45.4	48.1	43.9	33.0	25.3	22.0	21.5	95.0	5.7	0.5	37	0.0	1027.0
347	19/12/2016	06:00	69.0	93.9	53.0	63.5	63.8	65.2	64.6	62.8	62.9	64.5	63.8	60.7	61.6	62.9	58.6	64.2	65.4	61.5	62.3	61.4	61.2	60.9	60.6	58.9	56.2	54.4	52.0	49.1	49.3	50.4	53.3	49.5	36.8	26.8	22.2	22.4	94.7	5.7	0.3	117	0.0	1027.0
348	19/12/2016	06:15	65.3	79.0	53.6	62.9	64.2	62.3	63.2	62.9	62.5	65.2	63.3	59.5	57.2	56.1	55.2	55.8	56.5	56.2	54.6	55.3	56.2	57.6	58.6	56.8	53.8	51.8	49.0	46.3	45.6	46.8	48.9	43.5	32.0	26.1	26.1	21.8	94.6	5.7	0.1	122	0.0	1026.7
349	19/12/2016	06:30	67.5	83.8	55.2	65.1	67.6	64.7	65.2	63.9	67.4	68.3	67.8	64.9	62.7	60.7	60.1	60.2	61.2	60.4	58.2	58.1	57.9	58.9	59.4	57.9	55.2	53.4	51.1	49.2	50.3	56.2	53.4	47.6	38.4	32.8	25.1	21.8	94.8	5.8	0.4	123	0.0	1026.4
350	19/12/2016	06:45	66.9	81.5	58.8	65.7	65.9	65.0	66.5	66.3	66.4	67.8	66.9	63.4	61.9	59.3	58.9	59.2	59.8	58.5	57.2	57.2	57.9	58.3	59.1	57.9	55.0	53.3	52.8	49.5	49.6	50.4	52.7	48.6	36.3	30.5	26.5	22.0	94.5	5.8	0.3	80	0.0	1026.4
351	19/12/2016	07:00	67.0	81.3	58.0	64.5	64.3	63.5	64.0	64.0	65.9	67.0	66.8	64.7	62.2	60.2	59.5	58.8	59.2	58.3	57.2	57.6	58.2	59.1	59.8	58.1	55.1	53.3	51.3	48.9	48.3	49.1	51.5	46.3	35.0	27.6	23.1	21.5	94.1	5.8	0.2	215	0.0	1026.6
352	19/12/2016	07:15	66.9	85.6	58.7	63.4	65.3	64.8	66.4	65.8	68.3	67.9	67.0	65.3	64.6	61.9	61.3	58.8	58.4	58.0	56.9	56.9	57.5	58.4	59.4	57.6	54.6	52.6	50.3	49.0	47.7	48.3	53.7	55.0	40.0	27.8	24.3	21.8	94.2	5.9	0.4	122	0.0	1026.4
353	19/12/2016	07:30	67.7	83.1	61.5	66.8	67.3	66.2	67.3	68.0	69.2	69.3	68.2	67.2	65.6	64.6	62.2	62.0	60.8	59.8	58.3	58.4	58.9	59.5	60.3	58.4	55.6	53.7	51.3	49.1	48.6	49.4	51.9	51.6	36.6	29.1	29.8	22.0	94.6	5.9	0.1	153	0.0	1026.1
354	19/12/2016	07:45	67.9	82.7	61.3	64.8	66.0	65.4	65.2	64.3	67.0	68.3	71.0	65.0	63.3	62.3	60.5	60.8	60.1	59.1	58.6	58.2	58.5	59.5	60.6	58.9	56.2	54.3	52.1	51.0	49.8	50.2	53.1	47.9	37.5	28.3	24.5	22.0	94.7	5.9	0.3	125	0.0	1026.3
355	19/12/2016	08:00	67.9	85.1	60.4	65.6	68.2	65.3	65.0	64.6	67.9	68.6	69.6	64.3	63.7	61.3	61.6	60.0	60.0	59.8	58.8	59.1	59.0	59.9	60.6	59.0	56.2	54.3	51.5	49.1	48.2	49.4	52.4	47.0	35.1	28.1	23.2	21.6	94.6	6.0	0.4	110	0.0	1026.1
356	19/12/2016	08:15	67.6	85.0	60.0	67.6	65.7	65.6	65.4	65.7	66.9	68.4	70.0	64.5	64.5	62.3	60.2	59.8	60.1	59.6	58.4	58.1	58.4	59.5	60.2	58.6	55.7	53.9	51.4	49.5	48.8	49.3	52.4	47.7	36.5	27.5	22.2	21.7	94.3	6.0	0.3	97	0.0	1026.1
357	19/12/2016	08:30	68.4	87.4	60.8	65.2	68.6	66.3	66.1	65.6	68.1	68.2	68.4	63.0	64.2	62.8	60.5	60.3	61.5	60.2	58.8	59.4	59.5	60.5	61.2	59.4	56.5	54.6	52.1	49.9	48.9	49.5	52.0	47.4	35.4	31.1	23.2	21.5	93.8	6.0	0.5	73	0.0	1026.2
358	19/12/2016	08:45	68.3	84.1	60.0	68.8	66.8	67.5	66.6	65.7	67.1	68.3	69.7	64.0	62.4	61.4	60.3	60.6	60.7	59.6	58.8	59.0	59.7	60.5	61.1	59.3	56.3	54.3	51.9	49.7	48.8	50.0	52.4	47.8	37.5	31.4	26.6	22.3	93.3	6.0	0.5	60	0.0	1026.3
359	19/12/2016	09:00	68.1	80.7	59.2	66.5	65.9	64.6	64.7	63.4	65.7	66.2	64.2	61.5	60.7	61.7	58.3	59.0	59.5	58.8	57.9	58.4	59.2	60.6	61.4	59.4	56.4	54.3	51.5	48.9	47.7	48.4	51.1	46.4	35.3	27.4	21.0	21.3	93.1	6.1	0.2	43	0.0	1026.3
360	19/12/2016	09:15	68.4	83.9	59.6	65.6	66.9	66.8	66.3	65.5	66.2	67.7	66.7	62.3	61.5	60.4	60.5	60.0	59.7	59.2	58.5	58.6	59.3	60.7	61.5	59.6	56.8	54.9	52.4	50.2	49.4	49.9	52.5	47.9	37.9	29.8	22.5	21.5	92.7	6.2	0.4	55	0.0	1026.3
361	19/12/2016	09:30	68.4	79.0	59.6	67.5	68.1	67.1	66.7	65.6	67.9	67.8	69.1	64.3	62.6	62.1	60.2	60.5	60.4	59.4	58.3	59.0	59.5	60.7	61.5	59.6	56.7	54.7	52.2	49.8	48.8	49.7	51.9	46.8	35.6	26.8	24.4	22.4	92.3	6.3	0.2	187	0.0	1026.6
362	19/12/2016	09:45	67.9	79.0	60.3	64.0	64.8	65.2	65.5	64.0	65.3	68.0	68.3	63.5	63.4	61.1	58.9	59.4	59.2	58.4	57.6	58.6	59.0	60.5	61.3	59.3	56.2	54.0	51.1	48.8	47.7	48.1	51.0	45.9	36.3	33.4	22.4	21.5	92.1	6.5	0.1	168	0.0	1026.7
363	19/12/2016	10:00	67.9	79.2	57.5	65.2	67.1	66.3	65.1	64.2	66.3	67.6	66.3	61.4	60.4	58.6	58.5	59.8	59.5	58.5	57.5	58.1	58.9	60.4	61.5	59.4	56.3	53.9	50.9	48.0	46.6	47.1	49.4	44.4	33.3	28.0	26.4	21.4	91.4	6.8	0.2	198	0.0	1026.8
364	19/12/2016	10:15	68.0	83.6	58.9	64.8	66.7	65.4	65.2	66.0	65.0	68.1	66.1	61.9	60.5	59.6	58.7	58.9	59.3	58.6	57.6	58.4	59.1	60.3	61.3	59.3	56.4	54.2	51.4	49.4	48.4	49.3	52.1	47.1	34.5	26.8	25.8	21.5	89.9	7.0	0.2	122	0.0	1026.8
365	19/12/2016	10:30	67.7	78.8	59.9	66.8	66.6	66.4	66.1	66.7	66.9	68.2	65.6	62.5	60.5	59.4	58.7	59.2	59.7	58.7	57.8	58.1	58.9	60.1	61.0	58.9	56.0	53.8	51.1	48.5	47.1	48.0	51.1	45.2	38.8	27.6	21.3	21.4	89.6	7.1	0.1	13	0.0	1026.5

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APPENDIX C

Source Term Measurements

Appendix C: Source Term Measurements

Project Number: P1225
Client: Forstal Properties Ltd
Site Location: Phoenix House

Instrumentation	Serial
Rion NA-28 Sound Level Meter	30431903
Rion NH-23 Pre-amp	21966
Rion UC-59 Microphone	04966
Rion NC-74 Acoustic Calibrator	34936366

Source	t_{Avg}	Unweighted 1/3 Octave Bands																										
		25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz
Dumper, 1tn (Thwaites Mach 201)	74.0	66.5	74.3	79.0	74.7	75.1	83.7	82.0	74.8	73.0	67.6	65.0	67.7	67.3	65.1	64.5	62.8	59.1	59.9	60.1	61.8	61.1	61.6	57.4	56.8	54.3	53.5	54.7	51.8
Dumper, 1tn (Bucket Test)	72.3	77.1	77.1	73.2	84.0	81.4	77.9	78.8	72.7	70.6	69.1	61.5	63.9	70.5	64.7	63.4	60.7	57.8	58.1	57.1	57.8	58.0	57.5	54.7	53.7	51.6	51.4	53.4	53.8
Hamm HD12 Roller (With reversing beepers)	85.2	64.4	84.4	76.6	73.3	90.7	85.3	74.7	69.2	65.6	64.6	64.4	68.5	65.9	69.3	71.1	72.6	74.7	82.7	67.7	70.0	69.8	67.5	66.1	63.7	61.8	59.9	58.0	61.8
Kubota mini excavator KX015-4	77.1	74.0	70.5	69.5	68.6	76.3	64.1	74.3	81.1	67.2	66.3	69.5	68.0	70.6	70.1	70.3	67.8	66.7	64.7	63.7	64.0	63.0	62.3	61.3	61.0	56.1	53.5	52.2	48.7
Nifty HR-12 Cherry Picker Passby	63.8	63.3	63.7	67.6	73.1	63.0	62.4	59.4	61.7	59.1	58.3	46.9	43.3	33.9	47.3	56.5	58.5	56.4	54.4	42.3	48.8	50.3	59.0	44.4	38.4	43.1	42.2	44.0	44.3
Nifty HR-12 Cherry Picker (elevating)	63.9	58.4	67.1	69.1	67.9	70.2	67.1	62.5	48.0	46.0	57.1	57.3	55.5	54.3	55.1	44.9	61.0	56.3	53.6	41.9	47.6	52.7	59.7	46.5	36.4	40.9	41.4	47.4	47.7
Skyjack SJ6832RT Diesel Scissorlift Passby	77.4	64.0	69.7	69.9	90.1	66.6	62.7	79.6	73.2	72.2	74.7	72.8	67.9	71.1	69.5	66.9	66.5	65.3	64.9	66.0	66.4	65.0	64.5	62.0	60.7	58.5	58.2	55.6	51.2
Skyjack SJ6832RT Diesel Scissorlift (elevating)	78.9	66.9	69.9	68.9	91.2	75.5	60.7	79.0	74.0	74.9	74.1	71.7	71.9	72.4	69.8	67.0	68.9	66.4	65.8	66.4	65.7	66.3	69.7	63.9	62.6	60.8	60.1	58.0	54.4
Forklift CAT DP20K Passby	77.6	50.4	74.4	76.5	71.5	75.1	71.3	63.7	64.3	63.8	67.6	67.8	68.8	70.3	68.5	66.4	64.8	66.1	65.8	67.5	68.3	68.6	64.5	61.7	60.1	57.8	54.7	52.8	51.7
Forklift CAT DP20K (elevating)	78.1	76.4	77.8	78.2	73.0	77.3	69.7	64.3	63.8	64.0	69.4	62.8	68.0	72.3	68.9	67.9	65.6	65.3	67.0	69.5	67.6	66.1	66.3	63.1	62.6	59.6	55.8	55.0	54.4
Compressor Atlas Copco XAS37	80.1	64.7	67.9	76.6	92.6	99.7	70.5	70.4	78.3	77.8	75.6	76.2	71.9	70.0	68.9	67.5	67.4	68.6	68.7	66.0	65.5	65.9	66.2	65.2	63.7	62.0	60.5	58.4	56.4
Jet washer unit (no markings)	74.6	62.8	63.1	70.5	71.0	70.4	72.7	71.0	64.0	64.4	61.3	64.2	64.9	67.2	62.0	58.8	60.1	60.5	59.4	62.3	62.1	61.4	61.7	62.3	62.8	63.6	65.2	65.3	65.7
Flatbed lorry passbys	72.0	79.9	82.0	79.9	79.5	71.1	69.1	65.8	67.1	67.7	65.1	63.1	64.0	62.2	61.1	60.6	59.9	60.4	62.8	62.7	61.0	60.4	59.3	56.9	55.5	52.6	51.8	48.5	46.7
Hydraulic breaker gun test	100.4	72.9	67.3	79.1	83.2	62.5	76.2	84.6	74.5	80.1	75.1	77.7	82.8	81.7	75.7	79.0	80.9	83.1	80.4	85.4	82.9	83.4	90.2	92.7	90.0	90.6	87.6	94.9	93.8
Stihl saw (petrol disc cutter) test	99.5	65.2	66.1	79.9	68.0	70.0	69.8	72.2	75.0	86.8	77.5	72.8	77.5	80.6	92.5	89.3	86.4	90.8	88.4	87.3	86.2	87.9	87.7	87.5	87.6	86.2	85.6	83.3	81.1
Jet washer unit (no markings)	86.3	63.4	64.8	82.1	71.8	74.0	83.9	71.2	74.4	66.9	67.2	68.7	70.9	71.5	73.7	74.5	73.5	73.7	73.9	74.6	74.1	74.2	74.0	74.8	75.4	75.4	75.5	75.2	74.8
Compressor Copco XAS137	78.2	66.3	64.4	75.0	97.0	83.2	72.3	76.8	69.7	72.9	72.0	69.6	73.6	73.9	70.4	69.3	66.2	63.9	63.8	66.5	65.9	65.6	63.9	61.5	59.7	56.8	56.6	58.2	58.3

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APPENDIX D

Noise Break-in Calculations

Appendix D: Internal Noise Level Calculations

Project Number: **P1225**
Client: **Forstal Properties Ltd**
Site Location: **Phoenix House, Forstal Road**

Description	External Sound Pressure Level dB(A)	Area (m^2)	Volume (m^3)	Insulation dB(A)	*Internal Level dB(A)*
First Floor Bedroom 2					
Wall (north)	69	10.9	41.9	52	*16.1*
Window 1 (north)	69	1.44	41.9	36	*23.3*
Window 2 (north)	69	1.44	41.9	36	*23.3*
Total Target 35dB $L_{Aeq\ (Daytime)}$					*26.7*

Description	External Sound Pressure Level dB(A)	Area (m^2)	Volume (m^3)	Insulation dB(A)	*Internal Level dB(A)*
First Floor Bedroom 2					
Wall (north)	65.9	10.9	41.9	52	*13.0*
Window 1 (north)	65.9	1.44	41.9	36	*20.2*
Window 2 (north)	65.9	1.44	41.9	36	*20.2*
Total Target 30dB $L_{Aeq\ (Night\ time)}$					*23.6*

Description	External Sound Pressure Level dB(A)	Area (m^2)	Volume (m^3)	Insulation dB(A)	*Internal Level dB(A)*
First Floor Bedroom 2					
Wall (north)	86.8	10.9	41.9	52	*33.9*
Window 1 (north)	86.8	1.44	41.9	36	*41.1*
Window 2 (north)	86.8	1.44	41.9	36	*41.1*
Total Target 45dB $L_{AMax\ (Night\ time)}$					*44.5*

Description	External Sound Pressure Level dB(A)	Area (m^2)	Volume (m^3)	Insulation dB(A)	*Internal Level dB(A)*
Second Floor Bedroom 1					
Rear wall (south)	53.5	8.0	62.9	52	*-2.5*
Window 1 (south)	53.5	2.0	62.9	45	*-1.6*
Window 2 (south)	53.5	2.0	62.9	45	*-1.6*
Roof/ceiling area	53.5	24.2	62.9	43	*11.3*
Total Target 35dB $L_{Aeq\ (Daytime)}$					*11.9*

Description	External Sound Pressure Level dB(A)	Area (m^2)	Volume (m^3)	Insulation dB(A)	*Internal Level dB(A)*
Second Floor Bedroom 1					
Rear wall (south)	50.4	8.0	62.9	52	*-5.6*
Window 1 (south)	50.4	2.0	62.9	45	*-4.7*
Window 2 (south)	50.4	2.0	62.9	45	*-4.7*
Roof/ceiling area	50.4	24.2	62.9	43	*8.2*
Total Target 30dB $L_{Aeq\ (Night\ time)}$					*8.8*

Description	External Sound Pressure Level dB(A)	Area (m^2)	Volume (m^3)	Insulation dB(A)	*Internal Level dB(A)*
Second Floor Bedroom 1					
Rear wall (south)	86.8	8.0	62.9	52	*30.8*
Window 1 (south)	86.8	2.0	62.9	45	*31.7*
Window 2 (south)	86.8	2.0	62.9	45	*31.7*
Roof/ceiling area	86.8	24.2	62.9	43	*44.6*
Total Target 45dB $L_{AMax\ (night\ time)}$					*45.2*

Reverb time assumed to be 0.5 seconds

DRAFT

APPENDIX E

Product Brochures for Mechanical Ventilation and Heat Recovery Systems

Sonair

Acoustic (sound attenuating) filtered air supply units

For use fitted through walls

Sonair is for use in buildings where noise or air pollution is a major problem. The units are mechanical input ventilators that can also provide background ventilation as an alternative to trickle vents.

Sonair is a wall mounted input fan featuring touch control with an LCD display. Sonair can be individually operated or used as a part of the unique Air Comfort Control (ACC) system.

- Sonair F+ ventilates and cleans the air
- Sonair A+ ventilates, re-circulates and cleans the air
- Independently tested by the BRE
- Exceptional sound attenuation (up to 56dB*)
- Air cleaning
- Low energy

Sonair

Details

Product	Product Code
Sonair A+ including G2 Filter	S101SAUK
Sonair F+ including G2 Filter	S103SAUK
Sonair A+ including G2 Filter ACC	ACCS101UK
Sonair F+ including G2 Filter ACC	ACCS103UK
Central Exhaust	ACCCA
Central Display Controller	ACCCB
Back Box for Controller	62061
CO^2 Sensor	ACCC02
Phase Connector	ACCFK
Back Box for Phase Controller	68120
Sonair Filter G2	F211
Sonair Filter F6	F209

Performance

(Full test details available on request)
Input air flow rate (m^3/h) – 30-140
Acoustic $D_{n,e,w}$ (+/-) – 52 (Sonair A+), 55/56* (Sonair F+).
*depends on filter
Tested to the 'Noise Insulation Regulations'.

More information

www.titon.co.uk or 01206 814879

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Xcell 150QVW and 200QVW

Mechanical Ventilation with Heat Recovery Units

The Xcell 150QVW and 200QVW feature a high-efficiency counterflow heat exchanger, providing up to 90% heat recovery efficiency. These units are purpose-designed for modern, airtight apartments and houses, where less natural leakage can cause increased condensation and mould problems.

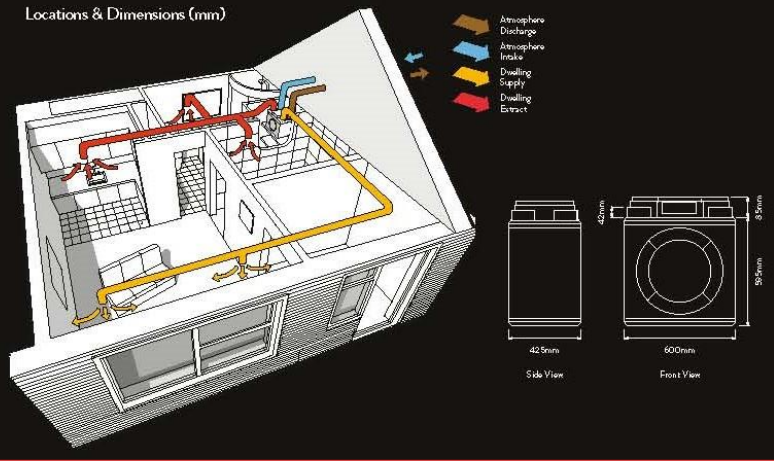
Both models have lightweight EPP construction and may be floor or wall-mounted in loft space. Low-energy EC motors ensure low annual running costs, while the long-life G4 filters can be inspected with ease – simply remove the front access panel for effortless maintenance.

The Xcell 150 with summer bypass provides the added benefit of a summer bypass facility. This stops the heat exchanger warming incoming fresh air during the summer months, for year-round comfort.

Key Features

- Highly efficient unit with EC motors and 90% efficient counterflow heat recovery cell.
- SAP Appendix Q listed and Part L and EST Best Practice compliant.
- Four 125mm Ø top entry connection spigots.
- Highly insulated, lightweight EPP construction.
- Installer-adjustable speed settings to suit dwelling size.
- G4 filters – recommended replacement every six months.
- Supplied with 1m length of 20mm Ø (O/D) plastic condensate tubing.

Locations & Dimensions (mm)

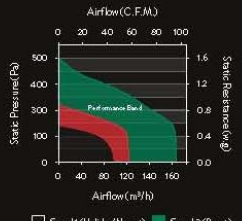


Specification

	Xcell 150QVW	Xcell 200QVW	Xcell 150QVW SB
Reference Number	92460AW	92462AW	93189AW
Motor type	EC	EC	EC
Maximum supply / extract performance (FID, m³/h)	160	240	160
Maximum supply / extract performance (m³/h @100Pa)	182	205	182
Maximum system pressure (Pa)	160	250	160
Power usage maximum (W) 220-240V AC 50-60 Hz	85	80	85
Specific fan power (W/l/s)	0.74	0.74	0.74
Efficiency (%)	90	90	90
Speeds	3	3	3
Speed control type	Remote variable DC	Remote variable DC	Remote variable DC
Noise (dB (A)@3m) Low / Medium / Max	20 / 22.5 / 29.5	20 / 24.5 / 34.5	20 / 22.5 / 29.5
Spigot diameter (mm)	125	125	125
Installation orientation	Vertical	Vertical	Vertical
Weight (kg)	17.5	17.5	17.5
UK Guarantee (years)	5*	5*	5*

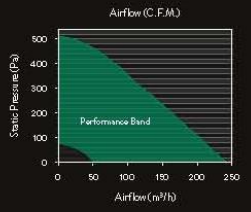
*Motor only.

Performance (150QVW)



Speed 1 (Holiday/Absent) Speed 3 (Boost)
Speed 2 (Normal)

Performance (200QVW)



Pa	Max Speed (m³/h)
0	240
50	221
100	205
150	183
200	163
250	145
300	124

KITCHEN	100% Variable	S.F.P. (W/l/s) Xcell 150QVW	S.F.P. (W/l/s) Xcell 200QVW	Heat Recovery Efficiency Xcell 150QVW	Heat Recovery Efficiency Xcell 200QVW	Xcell 200QVW
+1 Additional Wet Room		1.33	0.66	88%	91%	E.S.T. Best Performance Compliant
+2 Additional Wet Room		1.08	0.65	87%	91%	
+3 Additional Wet Room		1.17	0.68	86%	90%	
+4 Additional Wet Room		1.30	0.81	86%	89%	
+5 Additional Wet Room		1.53	0.89	85%	88%	

Controller Options

	Reference	Q8 SP Automatic 3 Speed	QC02 CO_2 Sensor	QHS Humidity Sensor
Xcell 150 QVW		96005AA	96003AA	96040AA
Xcell 200 QVW		✓	✓	✓
		✓	✓	✓

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Xcell 300QVI and 400QVI

Mechanical Ventilation with Heat Recovery Units

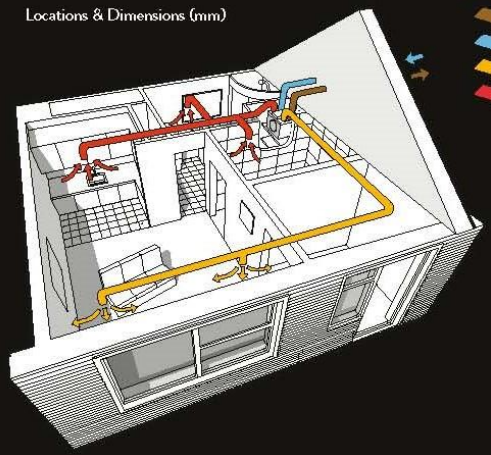
The Xcell 300QVI and 400QVI have been purpose-designed for modern, airtight houses with 3-4 bedrooms, or large apartments. With a counterflow heat exchanger capable of recovering up to 91% of the extracted heat, plus energy-efficient EC motors, they're a cost-effective solution. Both models may be wall or loft-mounted, feature long-life G4 filters, and are SAP Appendix Q listed and Passivhaus approved.

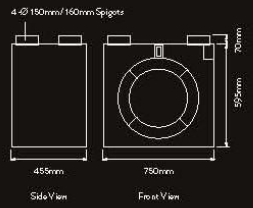
Every QVI unit benefits from a winter defrost cycle and cold home guard. Plus, a summer bypass facility ensures comfortable temperatures all year round. Filter and motor inspection alerts make maintenance simple.

Key Features

- Highly efficient unit with EC motors and 91% efficient counterflow heat recovery cell.
- SAP Appendix Q listed and Part L and EST Best Practice compliant.
- Four 150-160mm Ø top entry connection spigots.
- Highly insulated, lightweight EPP construction.
- Installer-adjustable speed settings to suit dwelling size.
- Winter defrost and summer bypass.
- G4 filters – recommended replacement every six months.
- Supplied with 1m length of 20mm Ø (O/D) plastic condensate tubing

Locations & Dimensions (mm)



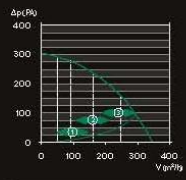


Specification

	Xcell 300 QVI	Xcell 400QVI
Reference Number	92465AW	92478AW
Maximum Extract Performance (FID, m³/h)	290	380
Extract Performance (m³/h @ 100Pa)	265	460
Maximum System Pressure (Pa)	350	410
Speeds	3	3
Speed Control Type	Remote DC	Remote DC
Noise Level (dBA @ 3m)	20.5/24.5/35.5	29/34/44
Power Usage @ 220-240V 50-60Hz (W)	136	338
Specific Fan Power (W/l/s)	0.73	
Weight (kg)	33	35
UK Guarantee (years)	5*	5*
Kg Carbon Saving (per year)	1520†	1520†

†Based on comparison with 3 standard intermittent AC fans on a 557m² detached 6 wet room house, gas heated, build 2006 using SAP 2006 software using best practice (3) tightness.
*Motor only.

Performance (300QVW)



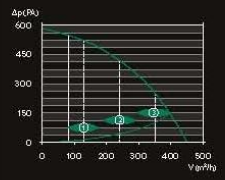
Pa	Max Speed (m³/h)
0	310
50	221
100	205
150	183
200	168
250	145
300	124

1 Speed 1 (default setting*)
2 Speed 2 (default setting*)
3 Speed 3 (default setting*)
*Freely programmable

V Volume flow rate
Δp External pressure loss
Δp ext, min Minimum pressure reserve for the air-duct system

KITCHEN		S.F.P.(W/l/s)	Heat Recovery Efficiency	
+1 Additional Wet Room	100% Variable	0.65	91%	EST Best Performance Compliant
+2 Additional Wet Room		0.60	91%	
+3 Additional Wet Room		0.61	90%	
+4 Additional Wet Room		0.68	89%	
+5 Additional Wet Room		0.76	88%	
+6 Additional Wet Room		0.84	87%	
+7 Additional Wet Room		1	87%	

Performance (400QVW)



1 Speed 1 (default setting*)
2 Speed 2 (default setting*)
3 Speed 3 (default setting*)
*Freely programmable

V Volume flow rate
Δp External pressure loss
Δp ext, min Minimum pressure reserve for the air-duct system

92951AA QVI Controller
- Wired operation from a distance of up to 10m
- 3 speeds plus auto
- Indicates when heat recovery filters need changing

Controller Options

Q3SP Automatic 3 Speed

QC02 CO_2 Sensor

QHS Humidity Sensor

Reference	96005AA	96003AA	96040AA
Xcell 300QVI	✓	✓	✓
Xcell 400QVI	✓	✓	✓