



Netley Cottage, Lower Terrace, Hampstead

**Background Noise Survey and Plant Impact
Assessment**

17th June 2020

Document Reference: HA202041
james@holtzacoustics.uk
01225 891 133
www.holtzacoustics.uk

This report has been prepared to take into account the requirements of our client. We can accept no responsibility for its use by third parties.

Holtz Ltd trading as Holtz Acoustics - Registered Address - 71-75 Shelton Street, London WC2H 9JQ.
Registered in England and Wales, No 09099573

Table of Contents

1.0	Introduction	2
2.0	Site	2
3.0	Assessment Criteria	5
3.1	National Planning Guidance.....	5
3.2	Camden Planning Guidance	6
4.0	Background Noise Survey	7
5.0	Plant Noise Impact Assessment	7
6.0	Vibration	9
7.0	Summary	9
	Appendix A: Building Plans indicating Plant Locations	11
	Appendix B: Weather Conditions.....	14
	Appendix C: Equipment	15
	Appendix D: Statistical Analysis	16
	Appendix E: Noise Time History.....	17
	Appendix F: Table of Survey Results	18
	Appendix G: Manufacturer’s Data Sheets and Calculations	40
	Appendix H: Acoustic Feature Correction.....	45

1.0 Introduction

- 1.1 Holtz Acoustics has been commissioned to undertake a background noise survey and plant impact assessment for plant associated with the proposed swimming pool building at Netley Cottage.
- 1.2 Proposals are being submitted to erect a swimming pool building in the gardens of Netley Cottage. The pool building will require supply and extract air and items of specialist pool plant for its operation.
- 1.3 The proposed building comprises pool area at ground floor level and a plant room, shower and WC at below ground, basement, level. The building is designed with multiple full height openable windows so the pool area can be partially open to the outside.
- 1.4 A background noise survey has been undertaken at a location representative of the nearest neighbouring noise sensitive windows.
- 1.5 A plant noise impact assessment has been undertaken in accordance with BS4142:2014 and Camden Council noise policies.
- 1.6 The results of this background noise survey and corresponding plant noise assessment are presented in the following sections of this report together with supporting Appendices.
- 1.7 The author of this report, James Patterson, is a member of the Institute of Acoustics, the professional body for acoustic consultants in the UK.

2.0 Site

- 2.1 Netley Cottage is situated near the intersection of Lower and Upper Terrace in Hampstead. The surrounding area comprises residential dwellings. The site is approximately 100m west of Heath Street. The background noise environment is predominantly formed of distant road traffic noise.
- 2.2 It is proposed that the pool building is erected in the existing front garden area of the Cottage. The nearest neighbouring property is Grove End which is directly adjacent to the north. There is also a neighbouring property to south, Grove Lodge, however this is currently under the same ownership as Netley Cottage.
- 2.3 The nearest noise sensitive windows to the proposed pool building are those on the flat roof of Grove End approximately 9m from the proposed plant location.
- 2.4 Site drawings are included in Appendix A

Figure 1. Aerial view of site (image from Bing Maps)

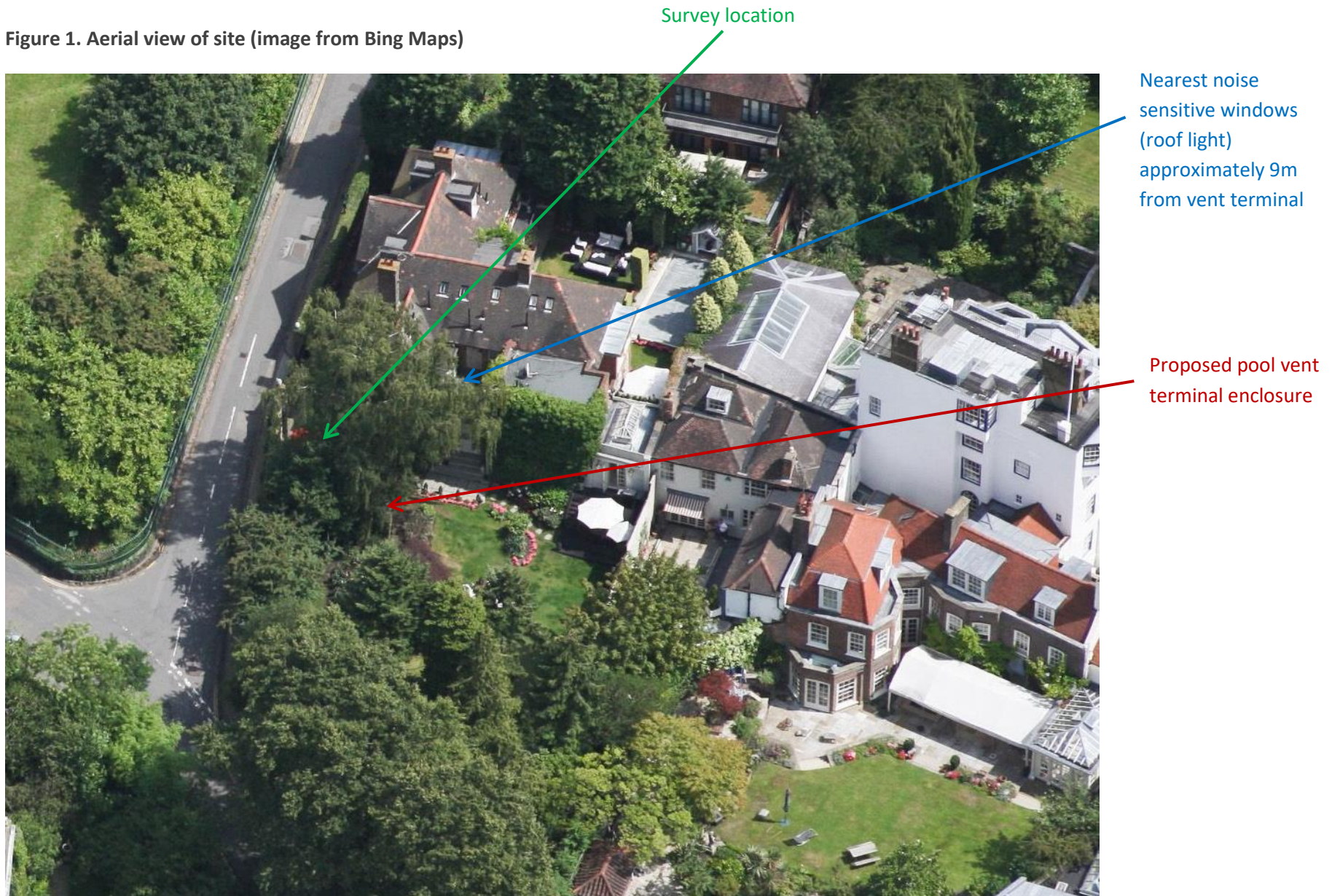


Figure 2. Site photographs

Nearest noise sensitive windows (roof light, just visible) approximately 9m from vent terminal



Survey position

Additional noise sensitive windows, screened by building side.



3.0 Assessment Criteria

3.1 National Planning Guidance

- 3.1.1 The National Planning Policy Framework¹ (NPPF) states that planning policies and decisions should aim to:
- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development.
 - Mitigate and reduce to a minimum other adverse impacts 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 use since they were established.
 - 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.
- 3.1.2 The NPPF refers to an explanatory note, the Noise Policy Statement for England² (NPSE). The NPSE sets out a Noise Policy Vision 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.
- 3.1.3 The NPSE states the long term vision is supported by the following aims.
- Avoid significant adverse impact on health and quality of life
 - Mitigate and minimise adverse impacts on health and quality of life
 - Where possible, contribute to the improvement of health and quality of life.
- 3.1.4 The NPSE does not refer to specific noise criteria but sets out concept of a 'Significant Observed Adverse Effect Level' (SOAEL). This is the level above which significant adverse effects on health and quality of life occur.
- 3.1.5 The NPSE states 'It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptor and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provide the necessary policy flexibility until further evidence and suitable guidance is available.'

¹ Department for Communities and Local Government, National Planning Policy Framework 2019

² DEFRA, Noise Policy Statement for England, March 2010

3.2 Camden Planning Guidance

- 3.2.1 Camden's Local Area Requirements for Planning Applications³ Section 4 states that applications where plant, ventilation, air extraction or conditioning equipment and flues are proposed require an acoustic report.
- 3.2.2 The policy drivers for this requirement are the NPPF and Camden Local Plan Policies A1 and A4.
- 3.2.3 The requirements also state that noise and vibration thresholds in Appendix 3 of the Camden Local Plan can provide a starting point for acoustic reports. Further detailed advice on the content of the report can be found in the Camden Planning Guidance on Amenity.
- 3.2.4 Appendix 3 of the Camden Local Plan⁴ states that a relevant standard or guidance document should be reference when determining values for LOAEL and SOAEL for non –anonymous noise. It is expected that British Standard BS4142:2014 'Methods for rating and assessing industrial and commercial sound' will be used.
- 3.2.5 It goes on to state that for dwellings a 'Rating Level' of 10dB below background (15dB if tonal components are present) should be considered as the design criterion. However this criterion is likely to refer to the methodology in the now superseded BS4142:1997.
- 3.2.6 The BS4142:2014 assessment methodology relies on comparing the existing background noise level at the existing receivers with the noise level produced by the new plant. Corrections are also used to account for the characteristic of the new noise source to arrive at the 'Rating Level'.
- 3.2.7 BS4142:2014 assesses the impact of a new plant noise source on existing noise sensitive receivers by subtracting the measured background sound level from the rating level and considering the following.
- Typically, the greater this difference, the greater the magnitude of the impact.
 - A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
 - A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
 - The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or 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 Camden's Local Area Requirements for Planning Applications

⁴ Camden Local Plan 2017

- 3.2.8 The rating level must take into account the characteristic of the new noise source including tonality, impulsivity, intermittency and other sound characteristics.
- 3.2.9 These corrections are discussed further in Appendix H.

4.0 Background Noise Survey

- 4.1 An unattended background noise survey has been undertaken at a location representative of the noise environment at the nearest noise sensitive windows. The survey position is shown in Figure 1.
- 4.2 The survey was undertaken between 1116hrs Friday the 26th June 2020 and 1126hrs Monday the 29th of June 2020.
- 4.3 There was building work being undertaken at the nearby Grove Lodge. Work should have reduced over the weekend and will not have occurred overnight when the representative night-time background noise level was calculated.
- 4.4 Details of the weather during the surveys are included in Appendix B. Measurement equipment and calibration procedures are included in Appendix C.
- 4.5 BS4142:2014 recommends using statistical analysis to determine the representative background noise level. This analysis was undertaken using noise time histograms, details of which are included in Appendix D.
- 4.6 A summary of the survey results is shown below in Table 1.

Table 1. Summary of survey results

Period	Representative background noise level, $L_{A90,5min}$ (dB)
Daytime (0700-2300)	45
Night-time (2300-0700)	37

- 4.7 A noise time history is included in Appendix E.
- 4.8 A full table of survey results is included in Appendix F.

5.0 Plant Noise Impact Assessment

- 5.1 It is proposed that all air moving equipment and pool plant is located inside the building at basement level. It is proposed that an air handling unit is installed in the basement plant room, this will be ducted to atmosphere via an underground trench which passes under the garden to a vent terminal enclosure near the terrace area. The plant location is shown in Appendix A.

- 5.2 As the pool area has numerous openable windows the room side noise breakout levels will also be assessed with the pool area in its fully open configuration. This represents a worst case scenario.
- 5.3 Items of pool plant, pumps and filters etc. will be housed in the basement plant room.
- 5.4 There will also be two small domestic extract fans for the basement WC and wet room, these will be ducted vertically up the building and discharge at roof level behind a tile vent.
- 5.5 The nearest noise sensitive windows are those of Grove End which directly abuts the garden of Netley Cottage. There are windows that overlook the garden however these are set back, there is a roof light on the flat roof overlooking the garden which is closer, this is indicated on the photograph in Figure 2.
- 5.6 This roof light is approximately 9m from the proposed vent terminal enclosure, it does not appear openable however taking a worst case approach this window will form the basis of the assessment.
- 5.7 It is proposed that 900mm long in-line attenuators are added to the room side and atmosphere side duct runs in order to provide the necessary acoustic attenuation. In addition the internal surfaces of the vent terminal enclosure will be lined with a 25mm thick acoustic foam to reduce fan and turbulent noise.
- 5.8 The proposed AHU terminal levels have been calculated using the manufacturer's supplied in-duct sound power levels and ductwork calculation in octave bands. A summary of the calculations is shown in Table 2 below. Full detailed calculations are included in Appendix G.

Table 2. Summary of plant assessment calculation results.

Item	Terminal Location	Proposed Noise Control	Calculated Level at the Nearest Noise Sensitive Residential Windows (L _{Aeq})
Outdoor Air	Vent Terminal Enclosure	900mm attenuator, lining of vent terminal enclosure with 25mm acoustic foam	8
Exhaust	Vent Terminal Enclosure	900mm attenuator, lining of vent terminal enclosure with 25mm acoustic foam	10
Pool Supply Air	Pool Side Wall	900mm attenuator	11
Pool Extract Air	Pool Staircase	900mm attenuator	14
Wet Room and WC Extract	Roof Tile Vent	None required	17
Cumulative			20
Including acoustic feature corrections + 7			27

- 5.9 The manufacturer's supplied noise levels are included in Appendix G.
- 5.10 The additional pool plant, pumps, filters etc. are yet to be selected, often manufacturer's noise data is not available for this type of equipment. Noise from this plant is deemed to have negligible impact on the surrounding on the following basis.
- The plant is in an underground basement plant room with sealed doors.
 - There is no direct air path to outside via vents.
 - Pool plant is typically does not exceed 60 dBA
 - It is anticipated that acoustic losses via the doors, stairwell and opened windows will be approximately 35dB. Allowing for propagation losses over 7m and screening losses the resultant level is 10dB(A) far below the background noise levels recorded on site.
- 5.11 Acoustic feature corrections have been added to the cumulative noise levels, these are discussed further in Appendix H.
- 5.12 The calculated level, including the feature corrections, at the worst affected residential dwelling is 27dBA. This is **10dB** below the representative night-time background level. BS4142:2014 states that where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.
- 5.13 This also achieves Camden's requirement for a rating level of 10dB below the representative background noise.
- 5.14 It has therefore been demonstrated that the installed plant will have a low impact on the surrounding area and meets Camden's noise requirements and therefore noise should not be a determining factor in the planning decision.

6.0 Vibration

- 6.1 Given the low vibration of the fans, the propagation distance across the garden and the detached nature of the proposed pool house, vibration transmission to the surrounding properties will be negligible.

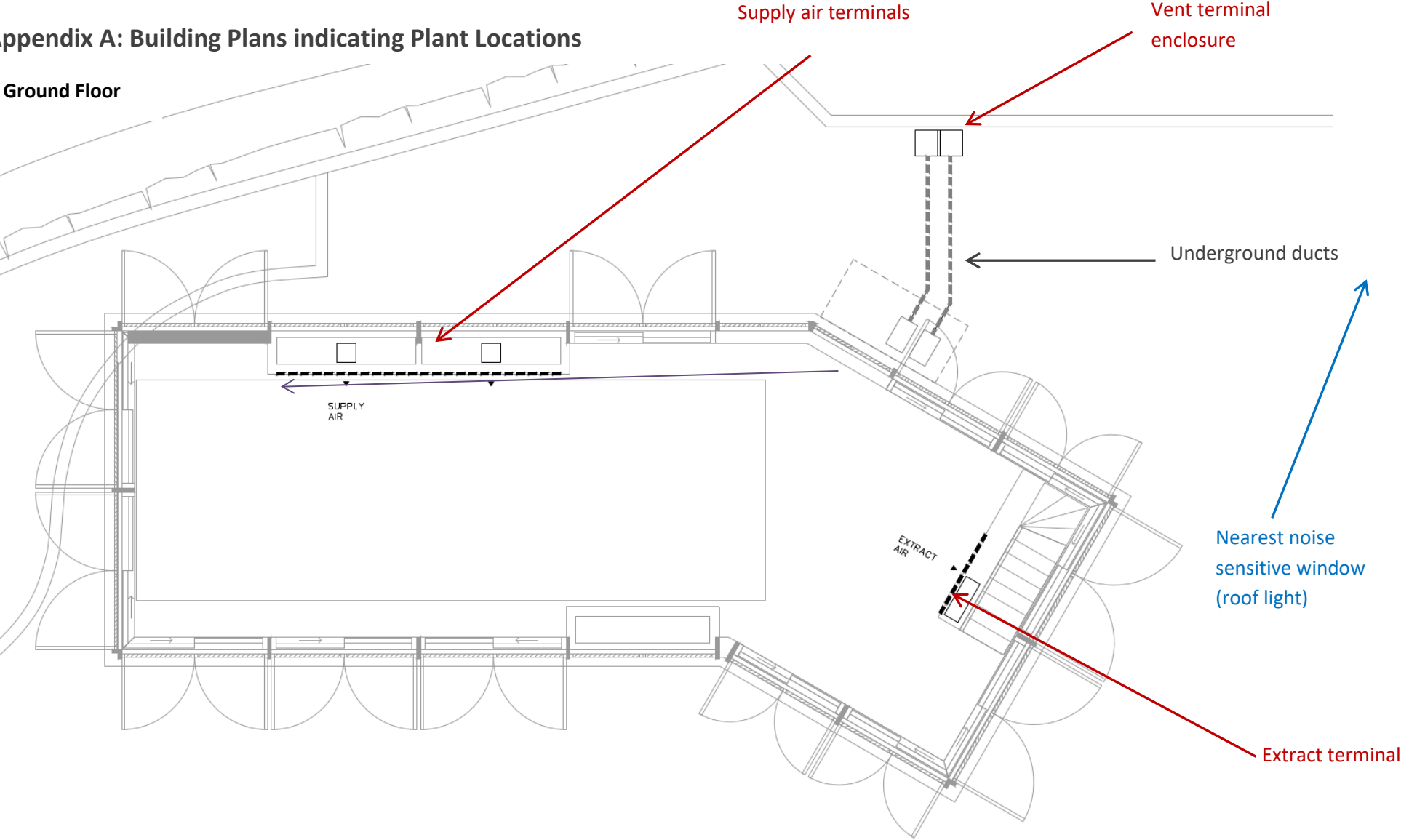
7.0 Summary

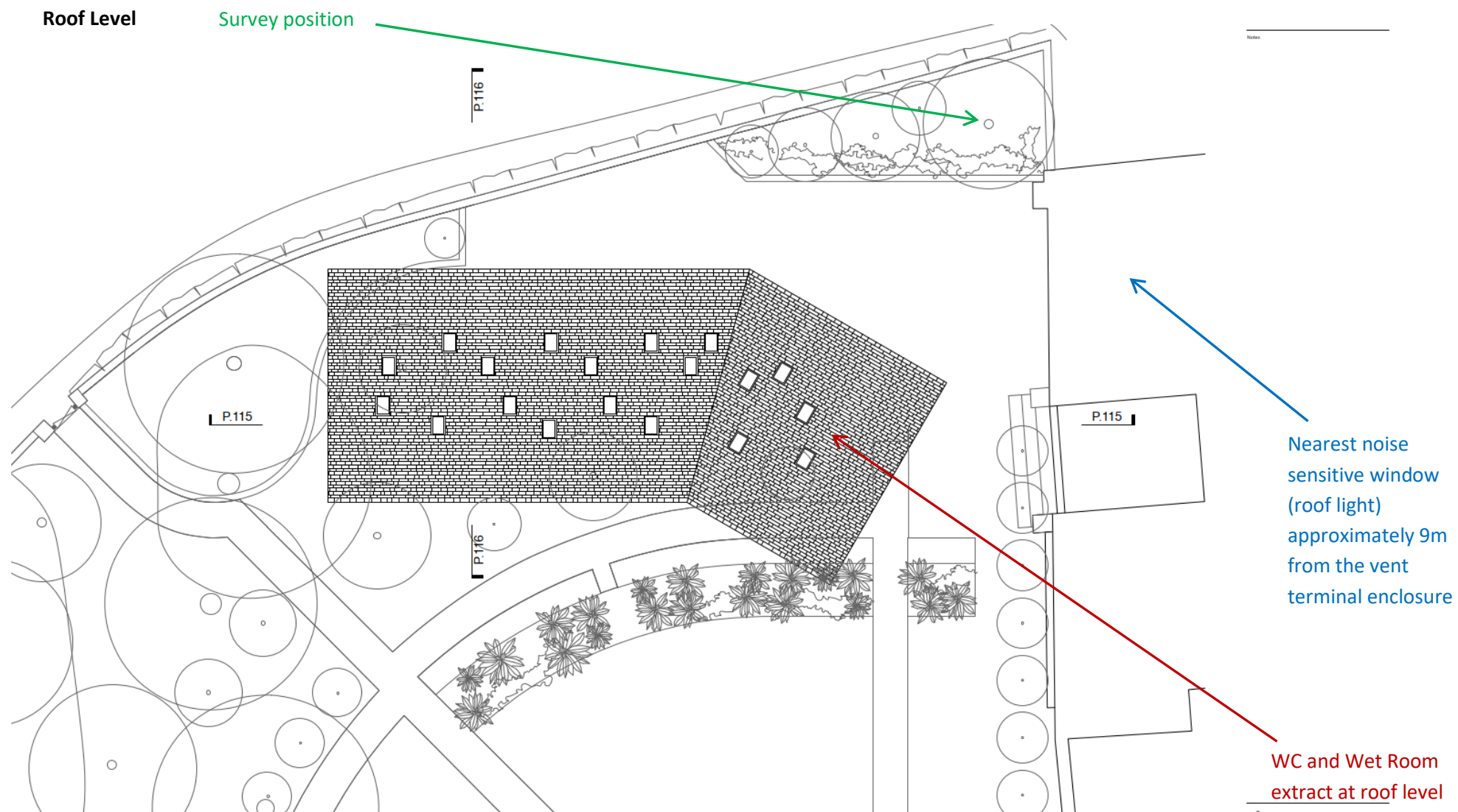
- 7.1 A background noise survey has been undertaken at a location representative of the noise environment at the nearest noise sensitive windows.
- 7.2 A BS4142:2014 assessment has been undertaken based on the survey results.

- 7.3 Provided that the noise control discussed in Section 5 is implemented, namely 900mm long attenuators to the pool AHU duct runs and the lining of the vent terminal enclosure, the calculated plant noise levels are **10dB** below the representative night-time background noise level.
- 7.4 This is an indication that the plant noise will have a low impact on the surrounding area and therefore noise should not be a determining factor in the planning judgement.

Appendix A: Building Plans indicating Plant Locations

Ground Floor

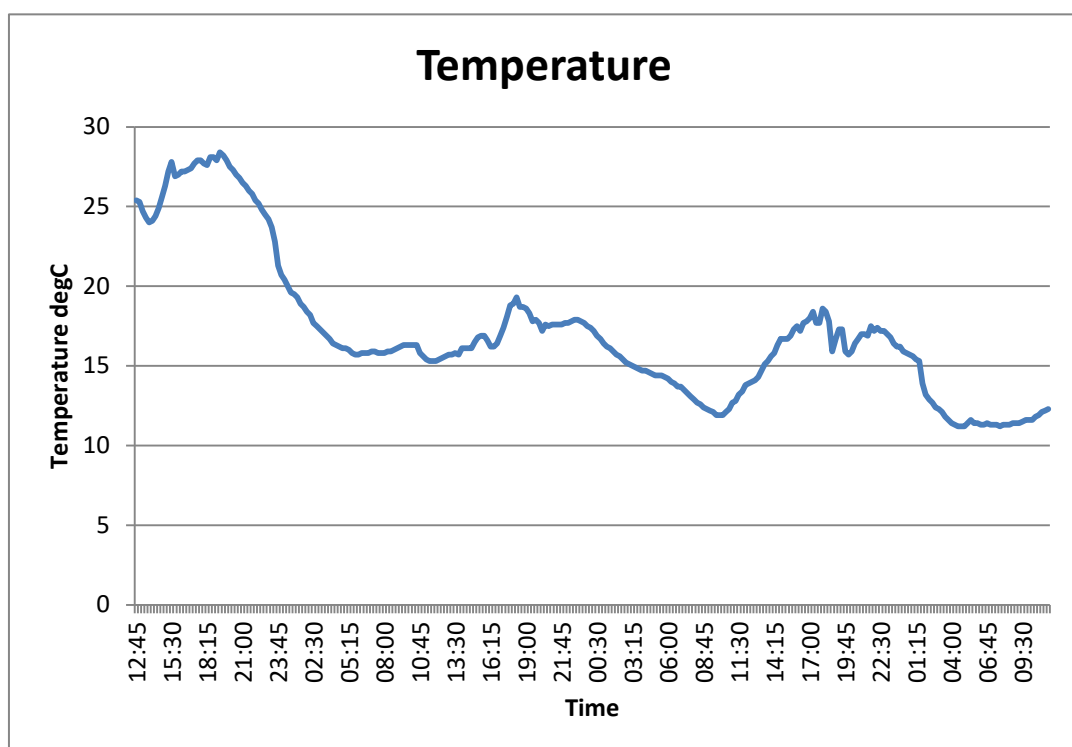
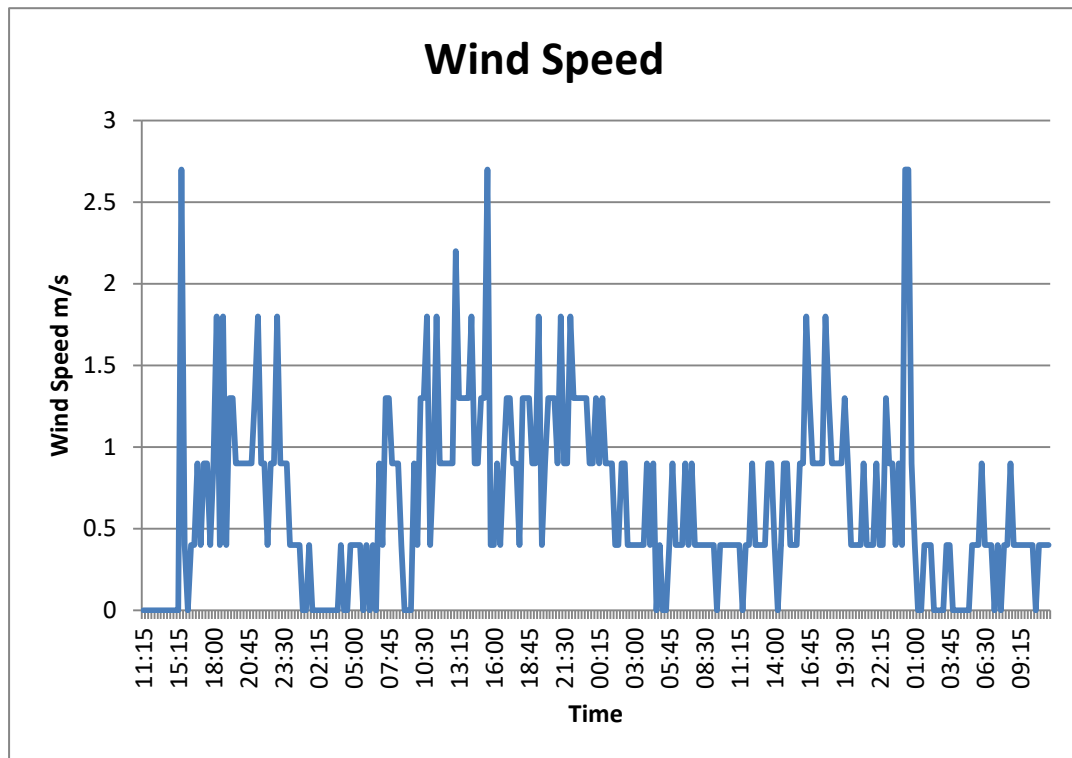




[illegible]

Appendix B: Weather Conditions

Weather was monitored using a Davis logging weather station set up in the garden of Netley Cottage. Wind speeds were generally low for most of the survey period. A 30 minuet shower was recorded in the early hours of the morning of the 27th otherwise no other precipitation was recorded. The weather did not have a material impact on the survey results.



Appendix C: Equipment

The following equipment was used for the survey

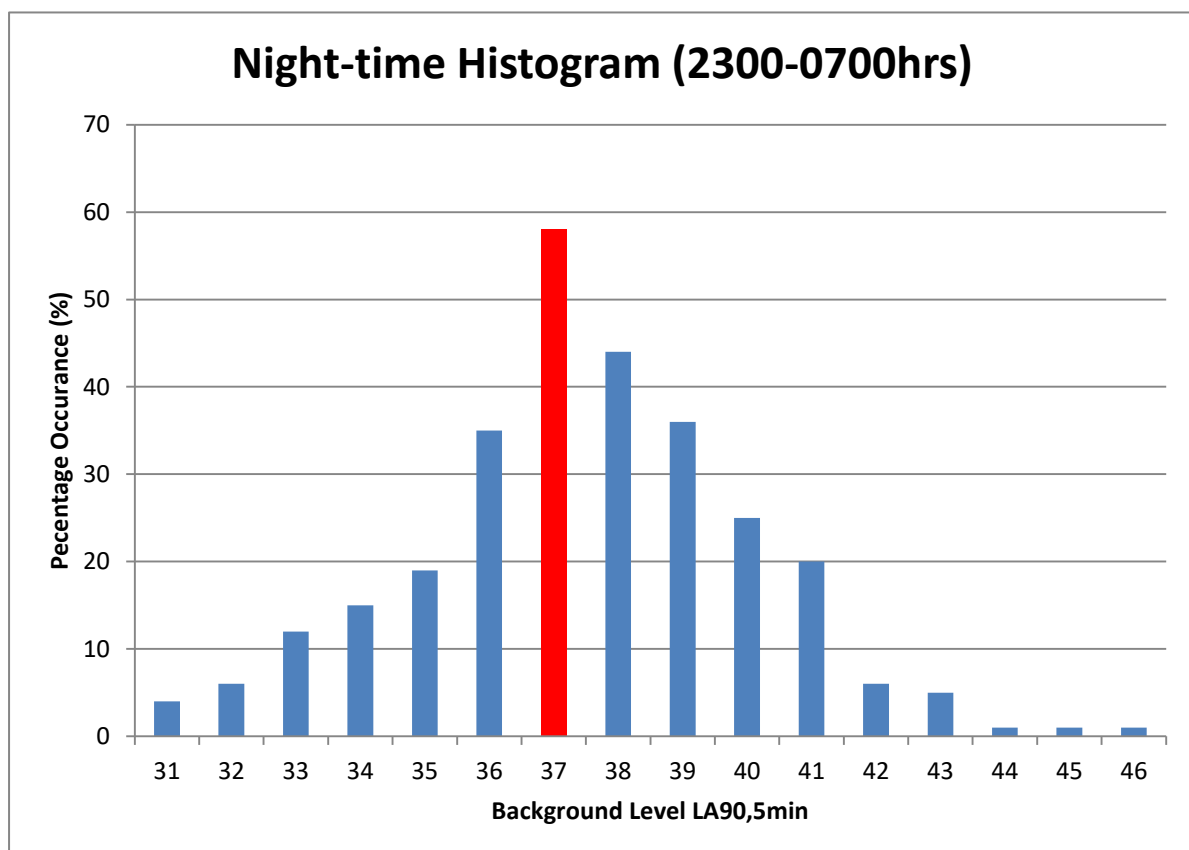
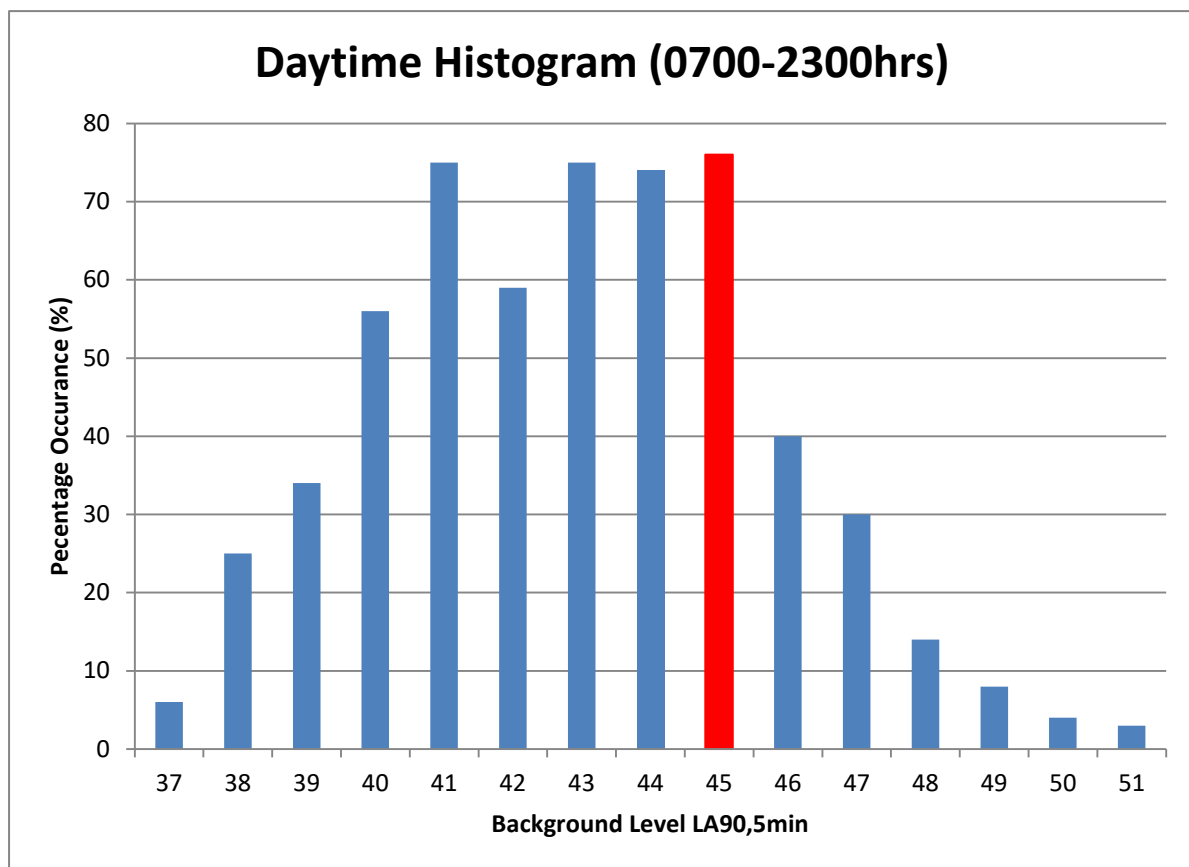
Item	Manufacturer	Type	Serial Number
Sound Level Meter	Rion	NL-52	00643058
Preamplifier	Rion	NH-25	43086
Microphone	Rion	UC-59	06838
Calibrator	Rion	NC-74	34546657
Windshield	Rion	WS-15	NA

Calibration certificates are available on request.

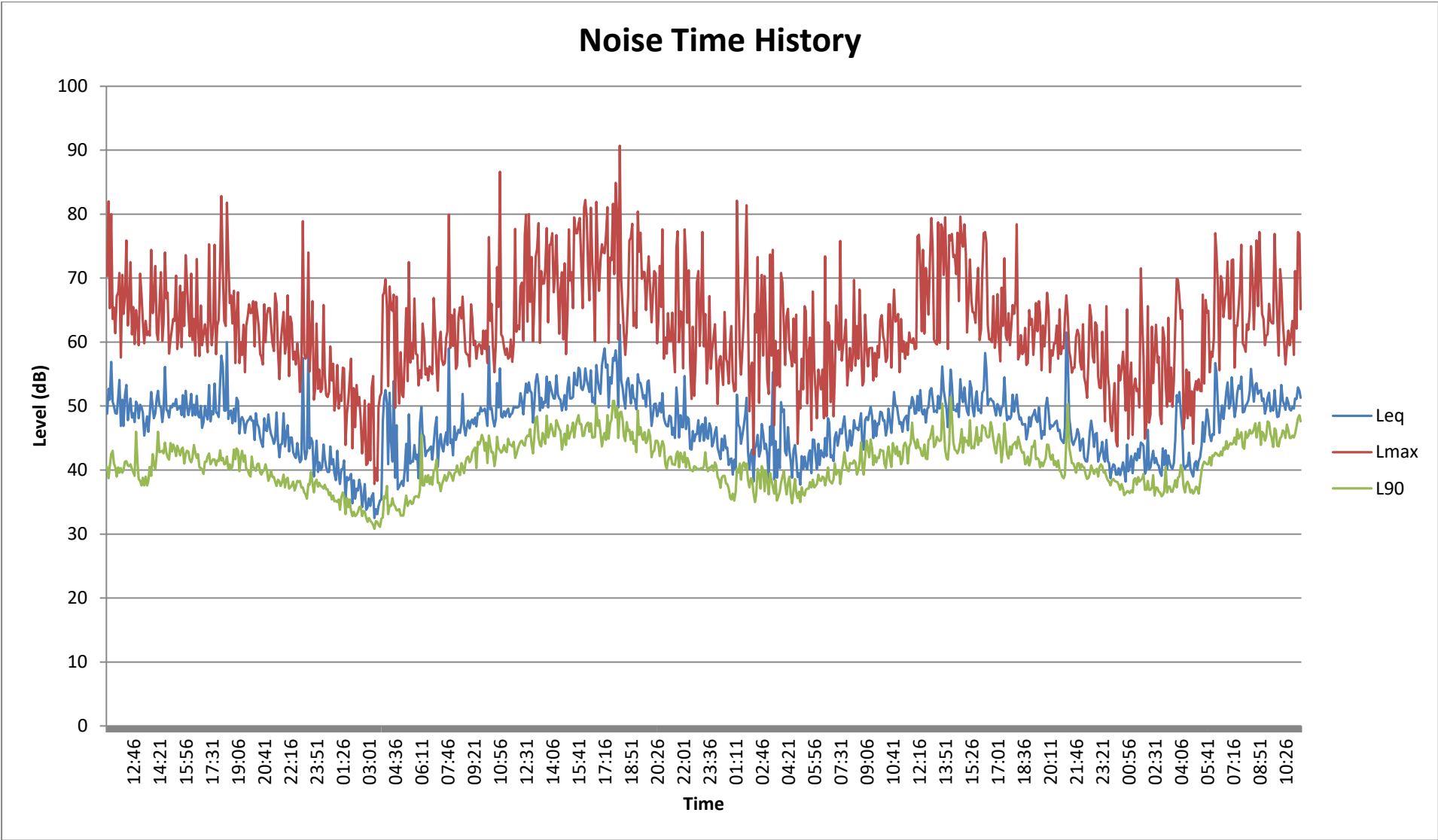
The sound level meter and associated cabling was calibrated before and after the survey and no significant drift from calibration was noted.

The sound level meter was setup up to integrate measurements over a 5 minute time period and recorded L_{eq} , L_{max} , L_{min} and $L_{90,50,10,1}$ statistics.

Appendix D: Statistical Analysis



Appendix E: Noise Time History



Appendix F: Table of Survey Results

Time	L _{Aeq}	L _{Amax}	L _{A90}	L90							
				63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
26/06/2020 11:16	49	70	41	48	42	39	37	35	31	26	19
26/06/2020 11:21	53	82	39	49	42	38	36	33	28	22	16
26/06/2020 11:26	51	65	41	51	45	40	38	34	29	22	16
26/06/2020 11:31	57	80	43	52	47	43	39	35	30	22	15
26/06/2020 11:36	51	64	43	53	48	42	39	37	33	27	18
26/06/2020 11:41	50	65	41	52	46	41	38	35	30	24	17
26/06/2020 11:46	49	61	40	54	46	41	37	34	29	22	16
26/06/2020 11:51	49	67	39	50	44	40	36	33	27	21	16
26/06/2020 11:56	51	68	40	53	44	40	37	34	28	22	15
26/06/2020 12:01	54	71	40	50	44	39	37	34	30	23	17
26/06/2020 12:06	47	58	40	51	45	41	37	34	29	23	16
26/06/2020 12:11	51	71	40	51	44	40	36	33	29	23	20
26/06/2020 12:16	47	64	40	50	43	40	37	34	29	24	19
26/06/2020 12:21	52	67	41	52	45	41	38	35	32	26	19
26/06/2020 12:26	53	76	41	52	46	42	38	35	30	25	19
26/06/2020 12:31	48	63	41	50	44	40	37	35	31	25	19
26/06/2020 12:36	49	65	41	51	45	41	37	35	30	24	17
26/06/2020 12:41	51	73	41	50	45	40	37	35	32	27	21
26/06/2020 12:46	48	61	40	51	44	40	36	34	31	24	17
26/06/2020 12:51	49	66	40	51	44	39	36	34	30	24	17
26/06/2020 12:56	48	60	39	49	43	39	36	34	29	23	16
26/06/2020 13:01	51	65	46	49	43	41	45	40	36	26	17
26/06/2020 13:06	50	63	41	50	44	40	37	36	31	24	16
26/06/2020 13:11	48	60	39	50	43	38	36	33	29	23	16
26/06/2020 13:16	50	71	38	50	42	38	35	33	28	21	16
26/06/2020 13:21	50	67	38	50	43	38	35	32	27	21	16
26/06/2020 13:26	49	63	39	52	44	39	36	33	28	21	15
26/06/2020 13:31	45	60	38	48	42	38	35	32	26	20	16
26/06/2020 13:36	47	63	39	50	43	39	36	34	28	23	17
26/06/2020 13:41	48	61	38	50	42	38	35	32	27	21	17
26/06/2020 13:46	46	62	38	50	43	39	35	33	28	22	17
26/06/2020 13:51	49	61	41	50	43	40	38	35	31	26	19
26/06/2020 13:56	52	74	39	51	42	38	37	33	29	24	18
26/06/2020 14:01	50	65	43	53	45	41	39	37	33	25	18
26/06/2020 14:06	48	67	41	51	43	40	38	35	31	25	19
26/06/2020 14:11	49	72	40	51	43	40	37	35	30	23	17

26/06/2020 14:16	51	61	43	55	47	42	40	37	32	24	16
26/06/2020 14:21	52	60	46	56	48	45	43	41	37	30	22
26/06/2020 14:26	50	66	43	50	43	41	40	38	34	28	20
26/06/2020 14:31	50	71	43	53	44	41	40	38	34	27	20
26/06/2020 14:36	48	60	43	54	45	41	39	38	35	28	18
26/06/2020 14:41	49	63	43	53	44	40	40	38	34	25	17
26/06/2020 14:46	56	74	44	54	45	42	41	39	36	28	18
26/06/2020 14:51	49	67	43	54	46	41	39	37	34	28	22
26/06/2020 14:56	49	68	42	53	45	41	39	37	33	27	22
26/06/2020 15:01	48	58	42	52	45	41	39	36	32	25	18
26/06/2020 15:06	50	60	44	53	46	43	41	39	35	29	21
26/06/2020 15:11	50	62	43	51	44	41	40	38	34	28	22
26/06/2020 15:16	50	64	44	51	45	42	41	38	35	29	22
26/06/2020 15:21	50	63	43	53	47	43	40	38	34	28	21
26/06/2020 15:26	51	70	42	53	46	41	39	37	33	27	21
26/06/2020 15:31	49	59	44	55	46	42	40	39	35	29	23
26/06/2020 15:36	50	62	43	52	45	42	40	38	34	28	20
26/06/2020 15:41	50	69	42	53	44	41	39	38	33	27	21
26/06/2020 15:46	49	59	43	53	45	42	40	38	34	29	23
26/06/2020 15:51	52	68	44	54	48	42	40	38	34	29	24
26/06/2020 15:56	48	63	41	51	43	40	38	36	31	26	20
26/06/2020 16:01	52	74	43	52	45	42	40	38	33	28	22
26/06/2020 16:06	50	70	43	52	45	42	40	38	34	29	22
26/06/2020 16:11	49	65	43	54	48	43	40	37	33	25	18
26/06/2020 16:16	50	61	42	52	44	40	39	37	32	25	20
26/06/2020 16:21	52	71	41	53	45	41	38	36	32	25	19
26/06/2020 16:26	49	60	42	52	44	41	39	37	32	26	20
26/06/2020 16:31	50	64	44	53	45	42	40	39	35	30	24
26/06/2020 16:36	49	58	43	53	44	41	40	38	33	27	20
26/06/2020 16:41	52	73	42	52	44	41	39	37	31	23	17
26/06/2020 16:46	49	63	43	53	45	41	39	38	33	27	20
26/06/2020 16:51	48	58	40	51	43	40	37	35	31	24	19
26/06/2020 16:56	50	66	40	50	43	40	37	35	29	22	16
26/06/2020 17:01	47	60	40	52	43	39	37	35	30	24	19
26/06/2020 17:06	48	61	39	51	43	39	37	34	28	20	15
26/06/2020 17:11	50	63	41	53	45	40	38	36	31	25	20
26/06/2020 17:16	49	61	41	52	43	40	38	36	31	25	19
26/06/2020 17:21	48	58	42	53	44	41	39	37	33	26	20
26/06/2020 17:26	53	75	43	53	45	42	39	37	32	23	18
26/06/2020 17:31	48	63	41	52	44	40	38	36	30	24	19
26/06/2020 17:36	49	60	41	51	43	40	38	37	31	26	21

26/06/2020 17:41	49	62	42	53	44	41	39	36	31	25	19
26/06/2020 17:46	54	75	42	52	44	40	39	36	32	25	20
26/06/2020 17:51	49	58	41	52	45	41	38	36	30	25	19
26/06/2020 17:56	49	63	42	53	44	40	38	37	32	25	19
26/06/2020 18:01	48	64	41	53	45	41	38	36	32	25	19
26/06/2020 18:06	54	73	43	53	47	42	39	38	33	27	21
26/06/2020 18:11	58	83	42	53	44	40	38	36	31	25	19
26/06/2020 18:16	56	71	42	53	44	41	39	37	32	25	18
26/06/2020 18:21	49	63	41	52	43	40	37	36	31	25	19
26/06/2020 18:26	49	63	41	53	43	40	37	36	31	24	18
26/06/2020 18:31	60	82	42	52	45	41	39	37	32	25	19
26/06/2020 18:36	48	73	40	49	42	39	37	36	30	24	18
26/06/2020 18:41	49	66	41	51	43	40	38	36	30	23	17
26/06/2020 18:46	49	67	40	50	43	40	37	35	29	22	16
26/06/2020 18:51	47	63	41	50	43	40	37	36	31	24	18
26/06/2020 18:56	50	68	43	51	44	42	40	39	34	27	20
26/06/2020 19:01	48	57	42	51	44	41	38	36	32	25	18
26/06/2020 19:06	51	64	43	52	44	42	40	39	35	28	22
26/06/2020 19:11	51	68	43	50	43	41	39	38	35	31	26
26/06/2020 19:16	46	57	40	50	43	40	37	35	30	26	21
26/06/2020 19:21	48	60	42	52	45	42	38	37	33	27	21
26/06/2020 19:26	48	58	43	52	45	42	39	37	34	29	24
26/06/2020 19:31	48	63	41	51	45	41	38	36	31	25	19
26/06/2020 19:36	46	55	42	50	44	41	37	36	35	30	26
26/06/2020 19:41	47	63	40	51	45	42	37	34	29	23	17
26/06/2020 19:46	48	64	40	51	45	42	37	34	28	21	16
26/06/2020 19:51	48	66	39	49	44	41	36	33	28	19	15
26/06/2020 19:56	48	65	39	48	43	40	36	33	29	20	15
26/06/2020 20:01	48	65	42	49	44	42	38	37	32	26	21
26/06/2020 20:06	48	66	40	49	45	42	37	35	30	25	20
26/06/2020 20:11	45	59	40	48	44	41	38	35	29	21	16
26/06/2020 20:16	49	66	40	47	44	41	37	35	29	22	16
26/06/2020 20:21	47	65	41	49	45	41	38	36	31	25	18
26/06/2020 20:26	47	62	41	49	44	41	38	35	31	25	19
26/06/2020 20:31	45	58	40	48	44	40	36	34	29	24	19
26/06/2020 20:36	44	58	39	48	44	41	36	34	28	23	18
26/06/2020 20:41	44	57	40	49	45	41	37	34	28	23	17
26/06/2020 20:46	48	66	40	50	46	41	37	34	28	22	16
26/06/2020 20:51	46	60	41	51	46	42	37	35	30	23	17
26/06/2020 20:56	46	64	40	49	44	41	37	35	27	19	15
26/06/2020 21:01	49	65	38	49	43	40	36	33	26	18	14

26/06/2020 21:06	47	65	39	48	43	40	37	33	28	21	16
26/06/2020 21:11	46	63	40	48	44	41	37	34	28	22	17
26/06/2020 21:16	45	60	39	48	43	40	36	33	27	20	16
26/06/2020 21:21	44	59	39	48	43	40	36	33	28	21	16
26/06/2020 21:26	45	68	38	48	43	39	35	33	26	19	14
26/06/2020 21:31	49	66	38	48	43	39	34	32	26	18	14
26/06/2020 21:36	44	59	39	48	42	39	35	34	29	23	17
26/06/2020 21:41	42	54	38	47	41	38	35	33	28	23	17
26/06/2020 21:46	44	60	38	48	42	38	35	33	26	20	15
26/06/2020 21:51	44	62	38	48	42	39	35	33	27	20	15
26/06/2020 21:56	49	65	39	48	43	39	37	34	29	24	18
26/06/2020 22:01	44	58	37	46	41	38	34	32	26	18	14
26/06/2020 22:06	46	60	39	46	42	38	35	33	29	22	16
26/06/2020 22:11	47	67	39	48	41	38	35	34	29	23	18
26/06/2020 22:16	43	55	37	45	40	37	34	32	27	21	16
26/06/2020 22:21	45	64	37	46	41	37	34	32	26	21	15
26/06/2020 22:26	45	63	38	45	41	38	35	33	26	19	14
26/06/2020 22:31	43	57	38	45	41	38	35	34	28	21	15
26/06/2020 22:36	42	59	37	46	41	37	34	32	26	19	14
26/06/2020 22:41	42	57	37	46	41	38	35	33	26	19	14
26/06/2020 22:46	44	60	38	47	42	39	35	34	27	19	15
26/06/2020 22:51	42	57	38	46	42	39	35	33	27	22	16
26/06/2020 22:56	41	52	38	47	43	40	35	33	26	20	16
26/06/2020 23:01	42	56	37	46	42	39	34	32	26	19	14
26/06/2020 23:06	58	79	37	46	43	39	34	31	26	19	14
26/06/2020 23:11	43	58	37	46	42	38	33	31	24	17	13
26/06/2020 23:16	42	57	36	45	41	38	33	30	24	19	14
26/06/2020 23:21	43	58	36	45	41	37	33	30	24	17	13
26/06/2020 23:26	59	74	38	46	41	38	35	33	27	21	15
26/06/2020 23:31	43	55	38	46	41	39	35	32	27	23	18
26/06/2020 23:36	45	61	40	47	43	40	37	35	29	24	18
26/06/2020 23:41	44	66	38	46	43	40	35	32	27	22	17
26/06/2020 23:46	39	51	37	46	42	39	34	30	24	18	13
26/06/2020 23:51	41	53	38	47	44	41	35	31	24	18	14
26/06/2020 23:56	45	63	39	48	44	40	35	32	26	20	15
27/06/2020 00:01	40	53	37	47	43	40	35	31	23	17	14
27/06/2020 00:06	41	56	38	48	45	41	35	31	23	17	13
27/06/2020 00:11	40	52	38	48	44	40	35	31	23	17	13
27/06/2020 00:16	40	53	37	48	44	40	35	31	23	18	14
27/06/2020 00:21	44	66	37	47	44	41	34	30	22	16	13
27/06/2020 00:26	42	55	38	47	44	40	35	30	22	16	13

27/06/2020 00:31	40	52	37	47	44	40	34	30	22	17	13
27/06/2020 00:36	40	51	37	46	43	40	34	30	22	16	13
27/06/2020 00:41	40	52	36	45	42	39	33	29	22	16	13
27/06/2020 00:46	44	59	37	46	43	39	34	30	23	19	14
27/06/2020 00:51	41	54	35	45	42	38	33	29	22	17	13
27/06/2020 00:56	42	57	36	46	42	38	33	29	24	18	14
27/06/2020 01:01	40	49	35	45	41	38	33	29	22	17	13
27/06/2020 01:06	38	51	35	45	41	37	32	29	23	18	14
27/06/2020 01:11	43	56	35	45	40	37	32	29	24	20	15
27/06/2020 01:16	39	50	35	44	41	37	32	28	22	18	14
27/06/2020 01:21	38	52	34	44	41	36	31	27	21	16	13
27/06/2020 01:26	40	51	36	44	41	36	33	30	26	22	18
27/06/2020 01:31	40	56	37	43	41	38	33	29	24	20	15
27/06/2020 01:36	42	56	36	43	40	37	33	30	26	23	18
27/06/2020 01:41	35	44	33	42	38	35	30	27	21	17	13
27/06/2020 01:46	39	49	36	42	39	36	32	30	25	21	15
27/06/2020 01:51	38	51	34	42	40	36	31	28	22	18	14
27/06/2020 01:56	39	54	35	43	40	38	33	29	24	20	15
27/06/2020 02:01	39	57	34	41	39	36	31	27	22	18	14
27/06/2020 02:06	35	43	33	42	39	35	30	26	20	16	13
27/06/2020 02:11	38	53	34	42	38	35	31	28	23	19	15
27/06/2020 02:16	36	47	33	42	38	34	30	27	22	18	14
27/06/2020 02:21	37	53	33	42	39	35	30	26	21	17	13
27/06/2020 02:26	37	50	34	42	39	35	31	27	23	19	14
27/06/2020 02:31	39	51	34	44	41	36	31	28	23	18	14
27/06/2020 02:36	37	48	34	44	41	36	31	28	22	17	13
27/06/2020 02:41	34	43	33	43	40	35	30	26	20	16	13
27/06/2020 02:46	36	45	34	43	40	36	31	27	22	17	13
27/06/2020 02:51	38	51	34	43	40	36	31	26	22	18	14
27/06/2020 02:56	34	41	33	42	40	35	30	25	19	15	13
27/06/2020 03:01	34	41	32	42	39	34	29	25	20	16	13
27/06/2020 03:06	36	50	33	42	40	35	30	26	20	16	13
27/06/2020 03:11	34	42	32	42	39	34	29	25	22	18	14
27/06/2020 03:16	36	53	32	41	39	33	29	25	21	17	14
27/06/2020 03:21	36	55	31	40	39	33	28	25	20	16	13
27/06/2020 03:26	33	38	31	40	38	33	28	24	19	15	13
27/06/2020 03:31	34	40	32	41	39	34	29	25	21	17	13
27/06/2020 03:36	33	38	32	42	39	34	28	25	21	17	13
27/06/2020 03:41	34	50	31	41	40	34	28	24	20	16	13
27/06/2020 03:46	35	52	31	41	40	34	28	24	19	15	13
27/06/2020 03:51	35	52	32	41	40	34	29	26	21	18	14

27/06/2020 03:56	48	67	33	41	39	34	28	24	22	18	13
27/06/2020 04:01	51	68	36	41	39	35	31	26	28	22	14
27/06/2020 04:06	53	70	36	42	40	35	30	26	29	22	15
27/06/2020 04:11	50	65	38	43	45	36	34	31	29	22	14
27/06/2020 04:16	41	53	33	41	39	34	29	25	24	20	14
27/06/2020 04:21	52	69	35	43	40	35	30	26	24	21	15
27/06/2020 04:26	44	65	34	42	40	35	30	26	24	22	18
27/06/2020 04:31	41	65	36	42	41	36	31	27	25	22	17
27/06/2020 04:36	54	67	35	42	40	35	30	26	24	22	18
27/06/2020 04:41	39	50	34	43	40	36	31	26	23	20	16
27/06/2020 04:46	47	67	34	42	40	34	30	26	23	20	15
27/06/2020 04:51	37	56	34	42	39	34	31	27	23	20	15
27/06/2020 04:56	37	50	34	42	39	34	31	27	23	19	15
27/06/2020 05:01	38	58	33	41	38	34	30	26	21	17	14
27/06/2020 05:06	38	52	33	41	38	34	30	26	21	18	14
27/06/2020 05:11	38	51	33	42	39	34	31	26	22	18	14
27/06/2020 05:16	40	58	35	42	40	35	32	29	24	20	15
27/06/2020 05:21	44	65	36	43	40	36	33	30	25	22	18
27/06/2020 05:26	38	54	34	42	40	36	32	28	24	20	17
27/06/2020 05:31	49	73	35	42	39	36	32	28	24	20	16
27/06/2020 05:36	41	57	35	42	40	36	32	29	24	20	16
27/06/2020 05:41	41	60	35	42	40	35	31	28	23	19	15
27/06/2020 05:46	41	57	35	43	40	35	32	28	23	19	15
27/06/2020 05:51	44	67	36	42	39	36	33	30	25	22	19
27/06/2020 05:56	42	58	36	43	39	37	33	30	25	22	18
27/06/2020 06:01	42	58	36	44	40	37	32	29	26	23	18
27/06/2020 06:06	39	53	36	44	40	36	33	29	24	19	14
27/06/2020 06:11	47	56	37	42	40	37	34	31	27	23	18
27/06/2020 06:16	50	54	46	42	39	36	36	38	40	39	34
27/06/2020 06:21	46	63	38	42	39	35	33	31	30	27	22
27/06/2020 06:26	45	60	38	43	39	37	34	32	29	24	18
27/06/2020 06:31	42	55	39	43	39	36	34	33	32	29	24
27/06/2020 06:36	43	56	38	43	38	35	34	33	30	28	22
27/06/2020 06:41	43	54	39	44	40	37	35	34	31	28	24
27/06/2020 06:46	43	56	38	43	40	37	34	32	28	25	20
27/06/2020 06:51	44	56	39	44	40	39	36	34	30	26	20
27/06/2020 06:56	42	55	38	44	40	38	35	33	27	22	17
27/06/2020 07:01	44	67	40	46	42	39	36	34	31	27	23
27/06/2020 07:06	47	62	40	46	42	39	36	35	31	28	22
27/06/2020 07:11	48	56	42	47	43	41	37	35	34	32	27
27/06/2020 07:16	41	52	38	47	42	39	34	32	28	24	19

27/06/2020 07:21	44	60	38	46	42	39	34	32	27	23	18
27/06/2020 07:26	46	62	37	46	41	38	34	31	26	20	16
27/06/2020 07:31	44	57	38	46	42	38	35	33	27	22	17
27/06/2020 07:36	43	56	38	47	42	40	36	33	28	21	16
27/06/2020 07:41	45	57	39	52	42	39	36	34	29	24	18
27/06/2020 07:46	46	61	38	47	42	39	35	33	27	21	16
27/06/2020 07:51	44	62	39	48	43	39	36	33	28	22	16
27/06/2020 07:56	59	80	40	48	42	40	37	35	30	24	19
27/06/2020 08:01	44	59	40	47	42	39	36	34	29	24	18
27/06/2020 08:06	45	64	39	47	41	39	36	34	29	23	16
27/06/2020 08:11	42	59	38	45	42	39	36	33	27	21	16
27/06/2020 08:16	47	65	40	49	43	40	37	35	29	22	16
27/06/2020 08:21	45	56	40	48	43	40	37	35	30	23	17
27/06/2020 08:26	46	56	41	47	42	40	38	36	31	25	19
27/06/2020 08:31	46	64	40	48	42	40	37	35	29	22	16
27/06/2020 08:36	46	65	39	47	42	39	36	35	29	23	16
27/06/2020 08:41	47	64	41	49	43	40	38	36	32	26	19
27/06/2020 08:46	52	67	41	48	43	40	38	35	31	24	17
27/06/2020 08:51	47	63	40	48	42	40	37	35	30	23	16
27/06/2020 08:56	45	59	41	49	43	41	38	37	32	25	18
27/06/2020 09:01	47	58	42	48	43	41	39	38	33	27	21
27/06/2020 09:06	48	58	42	49	43	42	39	38	32	26	18
27/06/2020 09:11	47	56	41	50	44	41	38	36	31	25	18
27/06/2020 09:16	48	66	42	48	43	41	39	36	32	26	19
27/06/2020 09:21	48	64	43	50	44	41	40	39	32	25	19
27/06/2020 09:26	47	60	43	50	44	42	41	39	33	25	18
27/06/2020 09:31	48	60	44	50	45	43	41	39	33	26	17
27/06/2020 09:36	47	57	40	49	44	41	38	36	30	24	18
27/06/2020 09:41	49	59	44	50	45	43	42	40	35	28	19
27/06/2020 09:46	49	60	44	50	44	43	41	40	35	28	21
27/06/2020 09:51	50	59	45	51	45	43	41	40	36	29	22
27/06/2020 09:56	49	58	46	50	45	44	43	42	36	30	22
27/06/2020 10:01	49	62	45	50	45	43	42	41	35	29	22
27/06/2020 10:06	50	59	43	50	44	42	40	39	33	25	18
27/06/2020 10:11	49	62	44	51	45	43	41	40	35	28	20
27/06/2020 10:16	47	57	41	49	44	41	38	36	31	27	21
27/06/2020 10:21	59	76	45	53	46	44	43	42	36	28	21
27/06/2020 10:26	50	63	44	51	45	43	40	39	35	28	22
27/06/2020 10:31	50	66	43	50	45	42	40	39	34	26	17
27/06/2020 10:36	48	59	43	50	44	42	40	38	33	26	18
27/06/2020 10:41	47	55	41	49	43	41	38	36	31	25	18

27/06/2020 10:46	48	60	42	51	44	42	39	37	31	25	18
27/06/2020 10:51	54	72	45	51	45	43	41	40	37	31	24
27/06/2020 10:56	50	66	43	50	43	42	40	39	35	28	22
27/06/2020 11:01	56	87	43	50	43	41	40	39	35	31	25
27/06/2020 11:06	48	61	43	50	44	42	39	38	34	27	20
27/06/2020 11:11	48	61	43	49	43	42	40	39	34	27	20
27/06/2020 11:16	49	59	44	50	44	42	41	39	35	30	23
27/06/2020 11:21	48	58	43	50	44	41	39	38	34	28	21
27/06/2020 11:26	49	59	43	48	43	41	39	39	34	30	24
27/06/2020 11:31	50	57	45	51	44	42	40	40	37	32	26
27/06/2020 11:36	48	58	44	49	44	42	39	39	36	31	23
27/06/2020 11:41	49	60	44	50	44	42	39	39	36	33	27
27/06/2020 11:46	49	57	44	50	45	42	40	39	35	30	24
27/06/2020 11:51	50	60	44	50	44	43	41	40	37	33	27
27/06/2020 11:56	50	78	42	50	44	43	39	37	32	27	20
27/06/2020 12:01	50	62	42	51	45	43	39	37	33	26	20
27/06/2020 12:06	50	63	43	52	45	43	40	39	34	27	21
27/06/2020 12:11	50	62	44	50	45	44	41	40	35	28	20
27/06/2020 12:16	52	69	44	53	47	44	41	40	36	30	23
27/06/2020 12:21	51	69	45	53	46	44	42	40	36	30	23
27/06/2020 12:26	49	60	44	51	45	44	41	40	35	29	21
27/06/2020 12:31	52	77	44	50	45	43	41	40	35	28	22
27/06/2020 12:36	54	80	45	54	45	44	42	40	36	30	23
27/06/2020 12:41	52	63	45	51	46	44	42	41	37	31	25
27/06/2020 12:46	54	80	45	50	46	44	42	41	37	31	24
27/06/2020 12:51	52	66	46	53	47	44	43	42	38	33	27
27/06/2020 12:56	52	73	44	52	45	43	41	40	35	28	22
27/06/2020 13:01	47	60	43	50	44	42	40	38	33	26	20
27/06/2020 13:06	51	67	46	52	45	44	42	42	37	30	23
27/06/2020 13:11	54	73	48	51	47	46	44	44	40	35	27
27/06/2020 13:16	55	75	48	52	47	45	44	44	41	36	30
27/06/2020 13:21	53	79	45	50	45	43	42	40	37	32	24
27/06/2020 13:26	49	60	44	50	43	41	40	39	36	34	25
27/06/2020 13:31	51	71	44	50	44	42	40	39	35	30	24
27/06/2020 13:36	50	69	46	49	44	43	42	41	38	33	25
27/06/2020 13:41	51	69	45	50	44	43	41	41	36	31	24
27/06/2020 13:46	51	72	44	51	46	44	41	39	34	28	21
27/06/2020 13:51	55	78	49	54	47	45	45	44	41	36	29
27/06/2020 13:56	50	63	45	53	45	44	42	41	36	30	23
27/06/2020 14:01	54	75	46	50	45	44	43	42	38	32	25
27/06/2020 14:06	53	75	47	51	46	44	43	43	39	35	28

27/06/2020 14:11	52	77	46	50	45	44	43	42	38	34	28
27/06/2020 14:16	51	68	45	50	45	43	42	41	37	32	25
27/06/2020 14:21	51	70	45	50	44	43	42	41	37	32	25
27/06/2020 14:26	55	77	48	51	46	45	45	44	40	34	27
27/06/2020 14:31	52	69	47	49	45	45	44	43	39	34	26
27/06/2020 14:36	51	61	46	50	45	44	43	42	38	32	23
27/06/2020 14:41	51	68	46	50	45	44	43	42	38	32	25
27/06/2020 14:46	49	71	43	49	44	42	40	39	34	28	21
27/06/2020 14:51	50	60	44	50	44	43	41	40	35	29	22
27/06/2020 14:56	52	72	46	52	46	44	42	41	37	31	25
27/06/2020 15:01	49	58	44	52	45	43	41	40	35	28	22
27/06/2020 15:06	53	64	47	53	46	45	43	43	39	34	27
27/06/2020 15:11	55	78	45	51	45	44	42	41	36	29	22
27/06/2020 15:16	51	70	46	53	45	44	42	42	37	31	24
27/06/2020 15:21	51	71	46	52	45	44	42	42	38	31	24
27/06/2020 15:26	51	65	47	50	46	45	44	43	40	34	27
27/06/2020 15:31	55	80	45	51	45	43	42	41	37	31	25
27/06/2020 15:36	53	77	47	51	46	44	43	42	38	34	27
27/06/2020 15:41	53	77	48	51	47	45	44	43	40	35	29
27/06/2020 15:46	56	79	49	51	47	46	45	44	41	36	28
27/06/2020 15:51	56	79	47	51	46	45	44	43	39	32	26
27/06/2020 15:56	53	73	47	51	46	45	44	43	39	34	27
27/06/2020 16:01	53	65	45	51	46	44	42	41	36	31	25
27/06/2020 16:06	53	81	45	52	46	45	42	41	37	30	23
27/06/2020 16:11	56	82	47	51	48	45	44	42	39	32	25
27/06/2020 16:16	54	79	47	51	46	45	43	43	39	33	25
27/06/2020 16:21	53	71	47	50	46	45	44	43	39	35	28
27/06/2020 16:26	52	67	46	51	45	44	43	42	38	32	26
27/06/2020 16:31	56	81	47	52	46	45	44	43	39	34	26
27/06/2020 16:36	51	73	45	50	45	44	42	41	36	30	22
27/06/2020 16:41	51	68	45	49	44	43	42	41	37	32	25
27/06/2020 16:46	50	60	45	50	44	43	42	41	37	31	24
27/06/2020 16:51	56	82	50	50	47	47	46	45	42	37	30
27/06/2020 16:56	54	73	47	50	46	45	44	43	38	33	26
27/06/2020 17:01	53	68	48	50	46	45	44	44	40	34	27
27/06/2020 17:06	52	73	46	55	45	44	43	42	37	31	23
27/06/2020 17:11	56	75	44	49	44	43	41	40	34	28	20
27/06/2020 17:16	58	74	45	49	45	43	42	41	36	31	24
27/06/2020 17:21	59	74	46	52	45	44	42	41	37	32	25
27/06/2020 17:26	56	77	45	50	44	43	41	40	36	29	21
27/06/2020 17:31	57	81	49	51	46	45	45	44	41	36	29

27/06/2020 17:36	50	60	45	48	44	43	42	41	36	30	24
27/06/2020 17:41	55	73	47	50	45	45	44	43	40	34	28
27/06/2020 17:46	54	73	48	50	46	45	44	44	40	35	28
27/06/2020 17:51	58	82	51	53	48	48	47	46	44	39	32
27/06/2020 17:56	57	71	51	52	48	48	47	46	44	39	33
27/06/2020 18:01	59	85	48	51	46	46	45	44	40	35	27
27/06/2020 18:06	56	80	50	53	48	47	46	45	42	37	31
27/06/2020 18:11	50	60	45	50	45	43	42	41	36	30	22
27/06/2020 18:16	63	91	49	51	47	46	45	44	41	37	32
27/06/2020 18:21	54	70	49	51	47	46	45	45	42	37	31
27/06/2020 18:26	53	65	48	51	47	46	44	43	40	34	26
27/06/2020 18:31	51	62	45	50	45	44	42	41	37	31	23
27/06/2020 18:36	50	58	45	50	45	43	41	40	36	29	22
27/06/2020 18:41	54	62	48	51	46	45	44	43	40	33	26
27/06/2020 18:46	54	68	46	50	46	44	43	42	38	32	25
27/06/2020 18:51	53	76	46	51	46	44	43	42	38	32	24
27/06/2020 18:56	50	76	45	49	45	43	42	40	35	30	24
27/06/2020 19:01	53	79	46	49	45	44	43	42	38	33	26
27/06/2020 19:06	51	63	44	50	45	43	41	40	35	30	22
27/06/2020 19:11	51	65	45	49	45	43	41	40	36	32	25
27/06/2020 19:16	50	62	43	49	44	42	40	38	33	27	19
27/06/2020 19:21	55	80	49	51	48	47	46	45	41	35	27
27/06/2020 19:26	54	74	46	50	46	45	43	41	36	32	25
27/06/2020 19:31	54	77	47	50	46	45	43	42	38	31	23
27/06/2020 19:36	53	70	45	50	45	44	42	40	36	29	22
27/06/2020 19:41	51	71	45	49	45	44	41	40	36	30	25
27/06/2020 19:46	52	71	46	50	45	44	42	41	38	32	24
27/06/2020 19:51	50	65	44	50	45	43	41	39	34	28	20
27/06/2020 19:56	54	70	45	48	45	44	41	40	36	30	23
27/06/2020 20:01	54	73	46	48	45	44	43	42	39	34	26
27/06/2020 20:06	51	68	45	49	45	44	42	41	37	31	25
27/06/2020 20:11	47	63	42	47	43	42	39	38	32	26	20
27/06/2020 20:16	48	67	43	47	43	42	40	38	34	28	22
27/06/2020 20:21	50	71	43	48	44	42	40	38	34	27	20
27/06/2020 20:26	50	71	45	49	44	43	41	40	36	29	22
27/06/2020 20:31	48	60	45	48	44	43	41	40	36	30	24
27/06/2020 20:36	49	63	44	48	44	43	41	40	35	28	21
27/06/2020 20:41	51	72	42	46	43	42	39	38	32	25	18
27/06/2020 20:46	49	66	44	48	45	43	41	39	33	27	21
27/06/2020 20:51	52	78	45	49	45	43	42	40	35	30	24
27/06/2020 20:56	48	57	44	48	45	44	41	39	34	29	23

27/06/2020 21:01	47	61	41	47	43	41	38	36	31	26	20
27/06/2020 21:06	47	58	40	47	43	41	38	36	30	22	17
27/06/2020 21:11	47	65	42	48	43	42	39	37	32	27	20
27/06/2020 21:16	49	60	42	47	44	42	39	37	33	27	21
27/06/2020 21:21	48	60	42	47	43	41	39	38	33	28	21
27/06/2020 21:26	46	65	41	46	42	41	38	36	30	23	16
27/06/2020 21:31	47	59	41	46	43	41	38	36	31	26	21
27/06/2020 21:36	45	55	41	46	43	41	38	36	30	25	18
27/06/2020 21:41	53	75	43	50	45	43	39	38	33	27	20
27/06/2020 21:46	50	77	43	47	44	42	39	38	34	29	22
27/06/2020 21:51	45	60	40	47	43	41	38	36	29	23	17
27/06/2020 21:56	49	65	43	49	44	42	40	38	32	27	21
27/06/2020 22:01	47	65	42	47	43	41	39	38	33	27	20
27/06/2020 22:06	47	56	41	47	43	41	38	37	32	27	21
27/06/2020 22:11	55	78	43	48	44	42	39	38	33	28	21
27/06/2020 22:16	46	73	40	46	42	41	38	36	30	25	18
27/06/2020 22:21	48	63	42	46	43	41	39	38	32	27	20
27/06/2020 22:26	48	71	41	46	43	41	38	37	31	26	20
27/06/2020 22:31	43	57	40	45	41	39	37	36	30	24	17
27/06/2020 22:36	43	51	40	45	42	40	37	36	30	24	17
27/06/2020 22:41	46	62	40	46	42	40	37	35	29	22	16
27/06/2020 22:46	45	52	41	45	43	41	38	36	30	24	18
27/06/2020 22:51	46	58	41	46	43	41	38	36	30	25	19
27/06/2020 22:56	46	69	40	45	42	40	37	36	30	26	19
27/06/2020 23:01	48	71	40	46	43	40	37	36	30	24	17
27/06/2020 23:06	45	59	40	46	42	40	37	36	30	25	18
27/06/2020 23:11	47	66	40	45	42	40	37	36	31	24	17
27/06/2020 23:16	47	77	40	45	41	40	37	36	29	22	15
27/06/2020 23:21	45	59	41	45	42	40	37	36	31	25	18
27/06/2020 23:26	48	64	43	46	42	41	40	39	34	28	21
27/06/2020 23:31	45	54	41	45	41	40	37	36	31	26	18
27/06/2020 23:36	45	57	40	44	41	39	37	36	30	24	16
27/06/2020 23:41	47	67	40	45	42	40	38	36	31	26	19
27/06/2020 23:46	47	56	40	45	41	40	37	36	31	25	19
27/06/2020 23:51	44	59	41	44	41	40	37	36	31	26	20
27/06/2020 23:56	44	61	40	45	41	40	37	35	30	26	19
28/06/2020 00:01	46	63	41	45	41	40	38	37	32	27	20
28/06/2020 00:06	47	56	41	44	41	40	38	36	31	25	18
28/06/2020 00:11	44	50	39	44	41	38	36	35	29	23	17
28/06/2020 00:16	43	57	39	44	41	39	36	34	28	22	16
28/06/2020 00:21	42	58	37	43	39	37	34	33	27	21	15

28/06/2020 00:26	45	56	39	44	40	38	36	35	29	22	15
28/06/2020 00:31	43	53	39	44	40	39	36	35	30	24	17
28/06/2020 00:36	45	65	39	44	41	39	36	35	29	23	16
28/06/2020 00:41	43	57	38	43	40	38	35	34	28	22	15
28/06/2020 00:46	44	57	38	43	40	38	35	34	28	22	16
28/06/2020 00:51	41	54	37	42	39	37	34	33	27	22	16
28/06/2020 00:56	42	60	36	41	38	36	33	31	25	20	14
28/06/2020 01:01	42	63	35	41	38	35	33	31	26	20	14
28/06/2020 01:06	39	54	36	40	38	35	33	32	27	23	16
28/06/2020 01:11	42	52	35	41	38	35	32	31	25	20	15
28/06/2020 01:16	40	53	37	41	38	36	33	32	27	21	15
28/06/2020 01:21	52	82	40	42	40	39	37	36	31	26	19
28/06/2020 01:26	47	69	40	42	40	38	37	35	31	26	19
28/06/2020 01:31	47	58	41	42	40	39	38	37	33	28	21
28/06/2020 01:36	44	55	39	43	40	38	36	34	29	25	19
28/06/2020 01:41	46	59	41	42	40	39	38	37	32	27	20
28/06/2020 01:46	47	64	41	42	41	39	38	37	33	28	22
28/06/2020 01:51	49	72	40	43	41	39	37	36	32	28	20
28/06/2020 01:56	51	81	41	43	41	39	38	36	34	30	24
28/06/2020 02:01	43	64	39	42	40	38	36	34	29	23	17
28/06/2020 02:06	40	49	37	41	39	37	35	33	28	22	15
28/06/2020 02:11	43	56	39	41	39	37	36	34	30	25	18
28/06/2020 02:16	43	57	39	41	40	38	36	34	30	24	18
28/06/2020 02:21	38	42	36	40	38	35	34	32	27	22	15
28/06/2020 02:26	43	64	35	40	37	34	32	31	25	20	15
28/06/2020 02:31	44	62	36	40	38	35	33	32	27	22	16
28/06/2020 02:36	46	73	40	40	39	38	37	36	32	27	19
28/06/2020 02:41	42	51	39	40	39	38	36	35	31	26	18
28/06/2020 02:46	43	65	37	39	38	36	34	32	28	23	17
28/06/2020 02:51	47	71	41	41	39	38	37	36	33	29	22
28/06/2020 02:56	46	58	40	40	39	38	37	36	32	28	21
28/06/2020 03:01	43	70	37	40	39	36	34	32	28	22	15
28/06/2020 03:06	44	64	40	40	40	37	36	35	32	28	21
28/06/2020 03:11	42	54	39	40	39	37	36	34	30	25	19
28/06/2020 03:16	39	52	36	39	38	35	34	32	26	21	15
28/06/2020 03:21	47	74	40	41	40	38	37	35	31	26	19
28/06/2020 03:26	44	58	39	40	40	37	36	34	30	25	18
28/06/2020 03:31	55	74	37	42	40	37	34	33	28	22	16
28/06/2020 03:36	39	47	36	39	38	35	33	31	27	22	15
28/06/2020 03:41	45	60	38	40	39	36	35	33	31	26	19
28/06/2020 03:46	39	53	35	39	39	35	32	30	26	21	15

28/06/2020 03:51	43	59	36	40	40	35	33	31	27	21	15
28/06/2020 03:56	40	53	37	40	40	35	33	31	28	23	16
28/06/2020 04:01	51	71	38	39	39	36	34	32	31	24	16
28/06/2020 04:06	49	69	39	40	40	36	35	33	31	26	19
28/06/2020 04:11	50	62	40	42	41	38	37	35	32	26	19
28/06/2020 04:16	43	56	38	41	40	36	34	33	28	26	20
28/06/2020 04:21	42	64	36	41	39	35	32	31	27	23	17
28/06/2020 04:26	47	65	38	40	39	36	34	32	29	25	18
28/06/2020 04:31	43	59	39	40	40	37	35	34	31	26	21
28/06/2020 04:36	42	58	36	41	40	35	33	31	26	23	18
28/06/2020 04:41	39	56	35	41	39	34	32	30	24	20	15
28/06/2020 04:46	43	64	37	41	39	36	34	32	27	22	18
28/06/2020 04:51	44	57	39	42	40	38	36	33	30	25	19
28/06/2020 04:56	42	64	37	40	40	37	33	31	27	23	17
28/06/2020 05:01	39	44	36	40	40	36	33	31	25	20	15
28/06/2020 05:06	40	52	37	40	40	36	33	31	27	23	17
28/06/2020 05:11	38	50	35	41	39	35	32	29	24	20	14
28/06/2020 05:16	42	57	37	41	40	36	34	31	28	24	18
28/06/2020 05:21	40	53	36	41	40	36	33	31	24	20	15
28/06/2020 05:26	42	66	36	42	41	37	33	31	26	22	17
28/06/2020 05:31	41	65	37	41	41	37	34	31	27	23	18
28/06/2020 05:36	40	50	37	42	40	37	33	32	27	23	17
28/06/2020 05:41	43	59	37	42	41	37	34	32	28	23	16
28/06/2020 05:46	43	61	38	42	40	37	34	32	29	25	17
28/06/2020 05:51	40	46	37	42	40	37	34	32	27	23	17
28/06/2020 05:56	45	68	39	43	41	38	35	33	29	24	17
28/06/2020 06:01	45	56	37	43	41	38	35	32	27	23	17
28/06/2020 06:06	42	53	38	42	41	38	34	33	27	22	16
28/06/2020 06:11	40	48	38	42	41	38	35	33	27	23	16
28/06/2020 06:16	44	56	39	43	42	39	36	34	29	24	17
28/06/2020 06:21	41	54	38	42	41	39	36	33	27	23	16
28/06/2020 06:26	43	53	38	43	41	39	36	33	27	22	16
28/06/2020 06:31	42	56	39	43	41	39	36	34	29	24	18
28/06/2020 06:36	42	48	39	42	41	39	36	34	29	25	18
28/06/2020 06:41	45	73	38	42	41	38	35	32	27	22	16
28/06/2020 06:46	42	48	39	42	41	38	36	34	29	25	18
28/06/2020 06:51	48	63	40	43	41	38	37	36	31	27	22
28/06/2020 06:56	47	63	39	42	40	37	35	34	28	24	19
28/06/2020 07:01	42	51	38	43	40	37	35	33	28	24	19
28/06/2020 07:06	42	60	38	44	40	37	35	33	27	21	15
28/06/2020 07:11	41	48	39	43	40	38	36	34	29	24	17

28/06/2020 07:16	45	55	41	44	42	40	38	36	31	26	20
28/06/2020 07:21	46	66	39	43	42	38	36	35	30	25	17
28/06/2020 07:26	44	60	40	42	41	38	37	36	31	25	18
28/06/2020 07:31	45	59	40	43	40	39	37	36	31	25	18
28/06/2020 07:36	46	76	38	42	39	37	35	33	28	21	16
28/06/2020 07:41	46	57	40	43	40	38	37	35	31	26	19
28/06/2020 07:46	47	60	41	44	42	40	38	37	33	28	21
28/06/2020 07:51	48	61	43	44	42	40	39	38	35	31	24
28/06/2020 07:56	46	64	41	43	41	39	38	37	33	27	19
28/06/2020 08:01	43	53	40	42	40	39	37	35	31	26	20
28/06/2020 08:06	44	56	40	43	40	38	37	35	31	25	17
28/06/2020 08:11	46	59	41	42	41	39	38	37	32	27	19
28/06/2020 08:16	44	56	41	43	41	39	38	36	32	26	19
28/06/2020 08:21	45	58	41	44	41	39	38	37	32	26	19
28/06/2020 08:26	48	70	42	45	42	40	38	37	33	27	20
28/06/2020 08:31	47	56	41	43	41	39	39	37	31	25	19
28/06/2020 08:36	47	63	39	43	40	38	36	35	30	23	19
28/06/2020 08:41	46	57	40	44	41	39	37	36	30	25	20
28/06/2020 08:46	47	68	41	44	42	39	38	37	32	28	23
28/06/2020 08:51	49	60	44	46	44	42	41	40	35	29	22
28/06/2020 08:56	43	53	40	42	40	39	37	36	31	25	18
28/06/2020 09:01	43	54	39	42	40	38	36	35	30	24	17
28/06/2020 09:06	48	64	42	43	41	39	39	37	33	28	22
28/06/2020 09:11	48	59	45	45	43	42	41	40	37	31	25
28/06/2020 09:16	48	56	43	45	42	41	40	39	35	29	22
28/06/2020 09:21	49	59	42	44	41	40	39	38	34	28	20
28/06/2020 09:26	50	59	45	46	43	42	41	40	37	32	26
28/06/2020 09:31	48	59	43	46	43	42	40	38	34	28	21
28/06/2020 09:36	45	54	41	45	41	39	38	37	31	25	19
28/06/2020 09:41	48	58	42	46	43	40	39	38	33	28	21
28/06/2020 09:46	45	55	41	46	42	40	38	37	31	25	20
28/06/2020 09:51	47	59	42	46	42	41	39	38	33	27	20
28/06/2020 09:56	47	58	42	45	41	40	39	38	33	27	20
28/06/2020 10:01	49	63	43	46	43	41	40	39	34	28	21
28/06/2020 10:06	49	64	43	46	42	41	40	39	34	29	22
28/06/2020 10:11	48	61	43	46	42	41	40	39	34	28	21
28/06/2020 10:16	48	60	41	46	42	40	37	37	32	27	21
28/06/2020 10:21	45	57	40	46	41	39	37	36	31	26	20
28/06/2020 10:26	47	58	43	47	42	41	39	39	34	28	21
28/06/2020 10:31	50	66	44	47	43	42	41	40	35	29	23
28/06/2020 10:36	48	66	42	46	41	40	39	38	33	26	19

28/06/2020 10:41	46	56	41	46	41	39	38	36	31	25	18
28/06/2020 10:46	49	64	44	46	43	42	41	39	36	30	22
28/06/2020 10:51	52	68	43	48	43	41	40	39	34	29	22
28/06/2020 10:56	50	63	43	47	41	41	39	38	33	27	20
28/06/2020 11:01	50	64	44	48	43	42	40	39	35	30	23
28/06/2020 11:06	49	64	42	48	43	41	39	38	33	27	20
28/06/2020 11:11	47	55	43	48	43	41	39	38	34	28	22
28/06/2020 11:16	48	64	41	47	41	40	38	37	31	26	18
28/06/2020 11:21	46	59	42	47	42	41	39	37	32	26	20
28/06/2020 11:26	48	60	44	47	43	42	40	39	35	31	24
28/06/2020 11:31	48	57	44	48	44	43	41	40	35	30	24
28/06/2020 11:36	49	60	44	48	43	42	40	39	35	29	22
28/06/2020 11:41	46	58	41	45	41	40	38	37	31	25	18
28/06/2020 11:46	50	62	44	49	43	42	41	40	34	29	22
28/06/2020 11:51	50	60	44	50	44	43	41	40	35	28	22
28/06/2020 11:56	51	60	47	50	46	45	44	43	39	34	26
28/06/2020 12:01	51	61	45	49	44	43	42	40	37	31	24
28/06/2020 12:06	49	59	44	47	43	42	41	40	35	30	23
28/06/2020 12:11	49	59	43	49	44	42	40	39	34	28	21
28/06/2020 12:16	52	77	45	50	46	43	41	41	36	29	21
28/06/2020 12:21	49	77	44	48	44	42	40	39	34	29	23
28/06/2020 12:26	53	72	43	48	43	42	40	39	34	29	23
28/06/2020 12:31	49	62	42	49	43	41	39	38	33	27	19
28/06/2020 12:36	49	74	42	49	43	41	39	38	32	25	18
28/06/2020 12:41	50	61	44	49	43	42	41	40	35	30	22
28/06/2020 12:46	47	72	42	49	43	41	39	38	32	27	21
28/06/2020 12:51	50	69	42	48	42	41	38	38	32	27	20
28/06/2020 12:56	50	64	45	51	45	43	42	40	35	30	23
28/06/2020 13:01	52	73	45	50	45	43	42	41	36	30	22
28/06/2020 13:06	53	79	46	50	45	44	43	42	37	29	21
28/06/2020 13:11	51	75	47	51	45	45	43	43	39	33	26
28/06/2020 13:16	49	60	44	49	45	42	40	39	35	29	22
28/06/2020 13:21	49	60	44	50	45	43	40	40	35	28	21
28/06/2020 13:26	49	60	45	50	45	43	42	40	37	32	25
28/06/2020 13:31	52	79	45	49	44	43	43	40	36	30	22
28/06/2020 13:36	50	60	45	48	44	43	41	40	35	29	22
28/06/2020 13:41	52	78	45	49	44	43	42	40	36	31	25
28/06/2020 13:46	56	78	50	50	47	47	46	46	43	38	30
28/06/2020 13:51	53	71	47	50	46	45	43	43	39	33	26
28/06/2020 13:56	51	80	43	50	44	42	40	39	33	28	22
28/06/2020 14:01	50	71	42	49	43	41	39	38	32	26	19

28/06/2020 14:06	47	59	42	50	43	41	38	37	31	24	19
28/06/2020 14:11	50	77	44	52	45	42	41	40	36	29	22
28/06/2020 14:16	56	76	51	50	47	46	45	46	45	39	31
28/06/2020 14:21	53	77	49	49	46	45	44	44	41	36	29
28/06/2020 14:26	49	73	44	50	45	44	41	40	35	29	22
28/06/2020 14:31	49	74	43	50	45	43	40	39	33	26	18
28/06/2020 14:36	49	71	43	49	44	42	39	39	33	27	20
28/06/2020 14:41	50	77	43	50	44	42	39	38	34	28	20
28/06/2020 14:46	48	66	43	50	45	42	40	39	34	28	21
28/06/2020 14:51	54	80	45	51	45	43	41	40	36	31	24
28/06/2020 14:56	52	76	46	51	46	44	43	42	38	31	24
28/06/2020 15:01	51	75	43	49	44	42	39	39	33	28	21
28/06/2020 15:06	53	78	45	50	44	43	42	41	37	32	26
28/06/2020 15:11	50	74	44	48	43	42	41	40	36	30	23
28/06/2020 15:16	49	62	45	49	43	42	41	40	36	32	27
28/06/2020 15:21	49	67	44	49	44	42	40	39	35	30	23
28/06/2020 15:26	54	73	48	50	45	44	43	43	40	34	28
28/06/2020 15:31	53	67	43	51	45	43	39	39	35	30	24
28/06/2020 15:36	50	65	44	50	45	43	40	39	34	28	21
28/06/2020 15:41	48	65	43	51	44	43	40	39	34	27	19
28/06/2020 15:46	51	63	45	51	45	43	42	41	36	30	22
28/06/2020 15:51	52	68	47	52	46	44	43	43	38	32	26
28/06/2020 15:56	49	72	44	50	44	43	41	40	34	28	21
28/06/2020 16:01	50	60	45	49	43	42	41	41	37	31	23
28/06/2020 16:06	49	62	45	49	44	43	41	40	36	29	21
28/06/2020 16:11	52	71	47	51	47	45	44	43	39	33	25
28/06/2020 16:16	53	77	47	52	45	44	42	42	39	33	26
28/06/2020 16:21	58	77	47	49	44	44	42	42	39	34	27
28/06/2020 16:26	56	76	45	48	44	42	41	41	37	31	24
28/06/2020 16:31	50	63	45	49	44	43	42	41	37	31	24
28/06/2020 16:36	51	60	45	50	44	43	42	41	37	31	23
28/06/2020 16:41	51	60	48	49	46	45	44	43	40	34	27
28/06/2020 16:46	51	60	47	49	45	44	43	42	39	33	27
28/06/2020 16:51	51	67	45	49	45	44	41	41	36	30	22
28/06/2020 16:56	49	59	43	48	44	42	40	39	34	28	20
28/06/2020 17:01	49	61	43	48	43	42	40	39	33	26	18
28/06/2020 17:06	50	68	44	48	44	43	41	40	35	29	21
28/06/2020 17:11	50	60	46	49	45	44	42	41	37	31	24
28/06/2020 17:16	49	57	44	48	44	42	41	40	35	30	22
28/06/2020 17:21	50	69	41	49	44	41	38	37	30	23	16
28/06/2020 17:26	50	63	43	50	45	42	40	39	34	28	21

28/06/2020 17:31	55	73	47	50	46	45	43	43	39	34	26
28/06/2020 17:36	50	61	45	48	44	43	41	41	36	30	23
28/06/2020 17:41	48	60	43	48	44	41	39	39	32	26	19
28/06/2020 17:46	48	65	42	48	43	41	38	38	32	23	16
28/06/2020 17:51	48	60	44	48	43	42	41	39	35	29	23
28/06/2020 17:56	48	62	42	50	44	42	39	38	32	25	19
28/06/2020 18:01	52	66	44	48	44	42	41	40	35	28	22
28/06/2020 18:06	49	64	44	48	44	42	40	40	35	29	22
28/06/2020 18:11	51	66	44	49	44	43	41	40	35	27	21
28/06/2020 18:16	52	78	43	48	44	43	41	39	33	26	20
28/06/2020 18:21	49	57	45	49	45	44	42	41	37	30	25
28/06/2020 18:26	48	58	44	47	44	43	41	40	35	28	21
28/06/2020 18:31	48	61	43	50	44	42	41	39	33	27	20
28/06/2020 18:36	47	58	43	48	44	42	40	39	33	26	19
28/06/2020 18:41	47	59	43	47	44	42	39	38	31	25	19
28/06/2020 18:46	47	62	41	48	44	42	38	37	30	23	17
28/06/2020 18:51	45	56	41	48	43	41	38	37	31	25	18
28/06/2020 18:56	46	57	42	46	43	41	39	38	33	27	20
28/06/2020 19:01	48	65	41	47	43	41	38	36	30	24	18
28/06/2020 19:06	47	63	41	47	43	41	38	38	31	24	18
28/06/2020 19:11	48	64	44	46	43	42	40	39	34	29	22
28/06/2020 19:16	49	58	44	48	45	43	40	39	35	29	21
28/06/2020 19:21	49	62	45	49	45	43	41	40	35	30	22
28/06/2020 19:26	48	66	42	48	43	41	39	38	31	25	18
28/06/2020 19:31	48	62	42	48	43	42	39	38	33	26	19
28/06/2020 19:36	50	66	42	48	43	41	38	37	32	25	17
28/06/2020 19:41	48	64	40	47	43	40	38	36	30	23	16
28/06/2020 19:46	45	56	41	47	43	41	38	37	31	24	17
28/06/2020 19:51	46	63	41	46	42	40	38	37	30	23	17
28/06/2020 19:56	46	59	41	47	42	41	38	37	31	25	18
28/06/2020 20:01	50	63	42	48	43	41	39	38	32	26	19
28/06/2020 20:06	51	68	44	48	44	43	41	40	35	29	22
28/06/2020 20:11	49	65	44	48	44	43	41	40	35	29	22
28/06/2020 20:16	46	55	42	47	43	41	39	38	32	26	20
28/06/2020 20:21	47	59	42	48	43	41	39	37	31	24	16
28/06/2020 20:26	47	58	42	48	43	41	39	39	33	27	19
28/06/2020 20:31	47	60	41	47	43	41	38	36	30	23	17
28/06/2020 20:36	48	60	41	46	43	41	38	37	30	24	17
28/06/2020 20:41	48	63	41	48	43	41	38	36	29	23	17
28/06/2020 20:46	46	57	42	46	43	40	37	36	31	26	21
28/06/2020 20:51	46	65	40	47	43	40	37	35	28	21	16

28/06/2020 20:56	45	58	40	46	42	40	37	35	29	23	18
28/06/2020 21:01	45	59	39	46	42	39	36	35	28	22	16
28/06/2020 21:06	44	59	39	45	41	39	36	34	28	20	15
28/06/2020 21:11	47	64	39	45	41	39	36	35	29	24	18
28/06/2020 21:16	62	67	45	45	43	40	38	39	39	36	30
28/06/2020 21:21	57	64	50	45	43	41	42	43	44	44	39
28/06/2020 21:26	48	59	44	46	42	40	38	38	36	35	30
28/06/2020 21:31	47	58	42	46	42	41	38	37	33	31	26
28/06/2020 21:36	45	55	41	46	42	41	37	37	31	27	22
28/06/2020 21:41	44	56	41	47	43	41	38	36	30	26	21
28/06/2020 21:46	45	56	41	47	43	41	37	36	29	24	19
28/06/2020 21:51	45	61	40	46	42	40	36	35	29	24	18
28/06/2020 21:56	46	62	41	46	43	41	38	37	30	24	18
28/06/2020 22:01	46	61	41	47	43	41	38	37	30	24	19
28/06/2020 22:06	43	57	40	46	42	41	37	36	29	22	17
28/06/2020 22:11	45	56	41	45	43	41	38	37	29	22	17
28/06/2020 22:16	45	63	41	45	42	41	37	37	28	20	15
28/06/2020 22:21	42	55	40	45	42	41	37	36	28	22	16
28/06/2020 22:26	41	53	39	46	42	40	36	35	27	19	14
28/06/2020 22:31	41	51	39	46	42	40	36	34	26	18	14
28/06/2020 22:36	43	58	39	45	42	40	36	35	27	19	15
28/06/2020 22:41	46	66	39	46	42	41	37	35	26	19	14
28/06/2020 22:46	48	64	41	47	43	42	38	36	28	20	15
28/06/2020 22:51	46	58	40	46	43	41	37	36	27	18	14
28/06/2020 22:56	44	57	39	46	43	41	36	35	26	18	14
28/06/2020 23:01	46	63	40	46	43	41	37	36	27	19	14
28/06/2020 23:06	46	63	40	46	43	41	37	36	28	20	15
28/06/2020 23:11	41	55	39	45	42	40	36	35	26	19	14
28/06/2020 23:16	42	53	40	45	43	41	38	36	28	20	14
28/06/2020 23:21	43	53	41	46	44	42	38	36	28	21	15
28/06/2020 23:26	44	62	41	46	43	42	38	36	27	19	14
28/06/2020 23:31	42	55	40	45	42	41	37	35	27	19	14
28/06/2020 23:36	41	48	40	44	42	40	37	36	27	20	14
28/06/2020 23:41	45	66	39	45	42	40	36	35	27	19	14
28/06/2020 23:46	41	55	38	45	41	39	36	34	25	16	13
28/06/2020 23:51	41	53	38	44	41	39	35	34	24	17	13
28/06/2020 23:56	39	47	38	43	40	39	35	34	24	16	13
29/06/2020 00:01	40	46	38	44	41	40	36	34	24	16	13
29/06/2020 00:06	41	51	39	43	41	40	36	34	26	18	14
29/06/2020 00:11	41	54	38	44	41	39	36	34	25	18	14
29/06/2020 00:16	39	45	38	43	41	40	35	34	25	18	14

29/06/2020 00:21	39	44	38	43	40	39	35	34	25	18	14
29/06/2020 00:26	40	56	38	43	40	38	35	34	25	18	14
29/06/2020 00:31	39	54	37	43	40	38	34	32	25	19	14
29/06/2020 00:36	40	56	38	43	40	38	35	34	25	18	14
29/06/2020 00:41	41	59	37	42	39	37	34	33	26	19	14
29/06/2020 00:46	40	55	36	42	39	37	33	32	25	19	14
29/06/2020 00:51	38	49	36	42	39	37	34	32	25	19	14
29/06/2020 00:56	44	65	37	42	40	37	34	32	26	21	16
29/06/2020 01:01	40	45	37	42	40	37	34	32	26	22	16
29/06/2020 01:06	41	54	36	42	40	37	33	32	26	21	15
29/06/2020 01:11	42	57	37	42	40	37	34	33	26	21	15
29/06/2020 01:16	40	46	37	41	39	37	34	32	26	21	15
29/06/2020 01:21	42	53	39	41	40	38	35	34	29	24	17
29/06/2020 01:26	43	54	39	41	40	38	35	34	30	25	18
29/06/2020 01:31	42	52	38	41	40	37	35	33	28	23	17
29/06/2020 01:36	43	53	39	41	40	38	36	34	30	24	17
29/06/2020 01:41	42	50	38	41	40	37	35	34	30	24	18
29/06/2020 01:46	44	72	38	41	40	38	36	34	30	25	18
29/06/2020 01:51	44	63	39	41	40	37	36	34	31	25	17
29/06/2020 01:56	44	58	39	41	40	38	36	35	31	26	20
29/06/2020 02:01	39	45	37	40	39	36	34	32	28	24	17
29/06/2020 02:06	40	47	37	41	39	36	34	32	28	23	17
29/06/2020 02:11	46	66	38	41	40	37	35	34	30	25	18
29/06/2020 02:16	40	47	37	41	39	37	34	32	28	24	17
29/06/2020 02:21	40	49	37	40	39	36	34	32	28	23	16
29/06/2020 02:26	42	62	37	41	39	37	34	33	29	24	17
29/06/2020 02:31	43	54	39	42	40	38	36	35	31	26	18
29/06/2020 02:36	41	58	36	40	39	36	33	31	26	21	15
29/06/2020 02:41	42	63	37	41	39	37	34	32	28	22	16
29/06/2020 02:46	41	57	37	41	40	37	34	32	28	22	16
29/06/2020 02:51	41	58	37	41	39	36	34	32	27	22	16
29/06/2020 02:56	40	49	37	40	40	36	33	32	28	23	16
29/06/2020 03:01	39	47	36	40	40	36	33	31	27	22	15
29/06/2020 03:06	43	62	36	41	39	36	33	31	27	22	15
29/06/2020 03:11	41	61	37	40	39	36	34	32	27	22	15
29/06/2020 03:16	43	53	41	41	40	38	37	36	33	28	20
29/06/2020 03:21	40	50	37	41	40	36	34	32	27	22	16
29/06/2020 03:26	42	64	37	41	40	37	34	32	29	24	17
29/06/2020 03:31	41	51	37	41	40	37	34	32	29	24	18
29/06/2020 03:36	40	56	37	41	39	36	34	32	28	23	16
29/06/2020 03:41	40	50	37	41	40	37	34	32	27	22	15

29/06/2020 03:46	41	54	37	41	40	37	35	32	28	23	16
29/06/2020 03:51	45	63	38	42	40	38	36	33	29	24	17
29/06/2020 03:56	52	70	37	41	39	36	33	32	28	24	17
29/06/2020 04:01	51	70	39	41	40	37	35	33	31	26	18
29/06/2020 04:06	52	67	39	42	41	37	35	33	31	27	20
29/06/2020 04:11	49	64	41	43	43	39	37	35	32	27	20
29/06/2020 04:16	47	65	40	42	40	38	36	32	31	26	20
29/06/2020 04:21	41	46	38	42	40	37	34	32	28	24	19
29/06/2020 04:26	40	49	37	42	40	36	33	31	26	23	18
29/06/2020 04:31	41	56	38	42	40	37	34	32	28	24	20
29/06/2020 04:36	41	48	38	43	41	38	35	32	27	23	19
29/06/2020 04:41	43	55	38	43	40	37	34	33	28	24	18
29/06/2020 04:46	40	49	37	42	40	37	34	31	27	22	16
29/06/2020 04:51	40	52	37	42	40	37	34	32	26	22	16
29/06/2020 04:56	39	44	36	42	40	37	34	32	25	19	14
29/06/2020 05:01	41	53	37	42	40	37	34	32	26	21	15
29/06/2020 05:06	41	54	37	42	40	37	35	32	27	21	15
29/06/2020 05:11	40	53	37	42	40	37	34	32	27	23	17
29/06/2020 05:16	41	54	36	43	40	37	34	31	26	21	14
29/06/2020 05:21	42	52	38	43	41	39	36	34	27	22	16
29/06/2020 05:26	44	52	40	43	41	39	37	36	30	26	19
29/06/2020 05:31	48	67	41	45	43	40	38	36	30	25	17
29/06/2020 05:36	44	54	41	43	42	41	38	37	32	27	20
29/06/2020 05:41	47	67	41	44	42	41	38	36	31	27	19
29/06/2020 05:46	50	65	41	45	41	40	37	36	31	26	18
29/06/2020 05:51	48	65	41	45	42	40	38	36	30	24	17
29/06/2020 05:56	46	55	42	46	44	42	39	37	32	27	19
29/06/2020 06:01	45	59	41	46	43	42	38	36	30	23	17
29/06/2020 06:06	46	58	42	45	43	42	39	38	32	26	18
29/06/2020 06:11	46	61	42	46	43	42	39	37	32	26	19
29/06/2020 06:16	57	77	43	46	44	43	40	38	33	29	21
29/06/2020 06:21	55	74	43	47	44	43	40	38	32	25	18
29/06/2020 06:26	50	69	42	47	44	42	39	38	32	26	20
29/06/2020 06:31	46	56	42	48	44	43	39	38	31	25	18
29/06/2020 06:36	49	70	43	48	45	44	40	38	32	27	20
29/06/2020 06:41	50	69	42	48	45	43	39	38	31	26	19
29/06/2020 06:46	48	64	44	49	45	43	40	39	33	28	21
29/06/2020 06:51	50	67	43	49	45	43	40	39	33	27	20
29/06/2020 06:56	52	68	45	48	45	44	41	39	34	29	21
29/06/2020 07:01	54	73	43	49	45	44	40	38	33	26	17
29/06/2020 07:06	50	64	44	49	45	43	40	39	34	27	19

29/06/2020 07:11	50	64	44	50	46	44	41	40	34	28	20
29/06/2020 07:16	55	73	44	51	46	45	41	39	34	26	19
29/06/2020 07:21	51	73	44	51	46	44	41	40	34	29	21
29/06/2020 07:26	48	56	45	50	46	45	42	41	35	29	21
29/06/2020 07:31	50	63	44	52	46	44	41	39	34	28	21
29/06/2020 07:36	52	63	46	53	47	45	43	42	38	32	25
29/06/2020 07:41	53	66	45	52	46	44	42	41	35	29	22
29/06/2020 07:46	53	69	45	54	47	45	42	41	35	29	22
29/06/2020 07:51	55	75	46	52	46	45	43	41	36	30	22
29/06/2020 07:56	49	60	44	51	46	44	41	39	33	25	18
29/06/2020 08:01	49	59	43	50	45	44	41	39	33	25	18
29/06/2020 08:06	50	59	46	52	46	45	43	42	36	30	23
29/06/2020 08:11	50	63	45	52	47	45	42	41	34	26	19
29/06/2020 08:16	51	62	45	52	46	45	42	41	36	29	21
29/06/2020 08:21	52	65	46	53	47	46	43	42	37	31	23
29/06/2020 08:26	56	75	46	51	46	45	43	41	37	31	24
29/06/2020 08:31	53	71	46	52	46	45	43	41	37	30	22
29/06/2020 08:36	51	62	46	52	46	45	43	42	37	31	23
29/06/2020 08:41	53	69	47	54	47	46	44	43	38	32	25
29/06/2020 08:46	54	76	45	54	47	45	43	41	35	27	19
29/06/2020 08:51	52	66	47	52	47	45	43	42	38	31	23
29/06/2020 08:56	52	77	47	52	47	46	44	44	38	32	23
29/06/2020 09:01	53	70	44	52	46	44	41	40	33	27	19
29/06/2020 09:06	51	64	46	51	46	45	43	42	36	30	23
29/06/2020 09:11	51	64	46	52	46	45	43	41	36	30	22
29/06/2020 09:16	49	60	45	51	45	44	42	40	35	28	21
29/06/2020 09:21	50	61	45	51	45	44	42	41	36	29	21
29/06/2020 09:26	51	61	48	56	48	46	45	43	38	30	22
29/06/2020 09:31	52	66	47	65	47	45	44	43	38	29	18
29/06/2020 09:36	49	63	46	52	45	44	43	41	36	29	21
29/06/2020 09:41	50	63	45	51	45	44	42	41	35	28	20
29/06/2020 09:46	49	63	44	49	44	43	41	39	34	27	20
29/06/2020 09:51	53	77	47	51	46	45	44	42	38	32	26
29/06/2020 09:56	50	70	46	50	45	44	43	42	38	31	24
29/06/2020 10:01	48	64	44	50	45	43	41	40	33	25	17
29/06/2020 10:06	48	58	44	49	44	43	41	40	33	26	19
29/06/2020 10:11	50	71	45	50	45	44	42	41	35	29	22
29/06/2020 10:16	53	69	45	49	45	44	42	41	36	29	21
29/06/2020 10:21	51	63	46	50	45	45	43	42	37	31	23
29/06/2020 10:26	50	60	46	50	45	44	43	42	37	30	22
29/06/2020 10:31	49	57	45	50	45	44	42	41	36	29	20

29/06/2020 10:36	51	60	47	52	46	45	44	43	38	31	22
29/06/2020 10:41	51	62	46	51	45	45	43	42	37	31	23
29/06/2020 10:46	50	60	45	52	45	44	42	41	35	28	19
29/06/2020 10:51	49	61	45	52	46	44	42	41	35	27	19
29/06/2020 10:56	50	63	45	50	46	45	43	41	35	28	20
29/06/2020 11:01	50	58	45	50	45	44	43	41	35	29	22
29/06/2020 11:06	51	71	46	53	46	44	43	41	36	29	20
29/06/2020 11:11	51	62	47	56	47	45	44	43	38	31	21
29/06/2020 11:16	53	77	48	54	48	47	45	44	40	34	25
29/06/2020 11:21	52	77	49	55	48	47	45	44	40	35	26
29/06/2020 11:26	51	65	48	55	50	47	44	43	39	32	23

Appendix G: Manufacturer's Data Sheets and Calculations

Pool AHU

Dantherm
CONTROL YOUR CLIMATE

Technical data

DanX 1/2/3

Project	Netly Cottage	Page	2
AHU	Pool Unit	Date	12/08/2020
Size	2	Time	15:47:53
		Signature	JH

MIXING BOX

Input	Incoming temperature, supply air	25.0	°C
	Incoming relative humidity, supply air	13.2	%
	Incoming temperature, extract air	30.0	°C
	Incoming relative humidity, extract air	60.0	%
	Fresh air percentage	100	%
Output	Outgoing temperature, supply air	25.0	°C
	Outgoing relative humidity, supply air	13.2	%
	Outgoing temperature, extract air	30.0	°C
	Outgoing relative humidity, extract air	60.0	%

CROSS-FLOW HEAT EXCHANGER

Input	Incoming temperature, supply air	-5.0	°C
	Incoming relative humidity, supply air	99.0	%
	Incoming temperature, extract air	30.0	°C
	Incoming relative humidity, extract air	60.0	%
Output	Temperature efficiency	85.6	%
	Outgoing temperature, supply air	25.0	°C
	Outgoing relative humidity, supply air	13.2	%
	Outgoing temperature, extract air	14.6	°C
	Heat recovered	17.4	kW
	Condensate	11.7	l/h

HEATING COIL LPHW

Air volume	0.49	m ³ /s
On coil air temperature	20.0	°C
Off coil air temperature, design	40.0	°C
Off coil air temperature output, max.	43.5	°C
Water temperature, in	80.0	°C
Water temperature, return wanted	60.0	°C
Water flow rate calculated	0.14	l/s
Water velocity	1.1	m/s
Hydraulic pressure drop	23.2	kPa
Heat output, design	12.2	kW
Heat output, max.	13.8	kW
Frost protection	No frost protection	
Number of rows	2	
Connection size	3/8	inch

SOUND POWER LEVELS

Frequency band	63	125	250	500	1k	2k	4k	8k	Tot	
	---	---	---	---	---	---	---	---	---	---
Supply air side:										
Surroundings	51	47	46	42	37	39	36	31	dB	46 dB(A)
Outdoor air	61	58	61	63	58	58	57	54	dB	65 dB(A)
Supply	66	64	66	70	71	73	69	66	dB	78 dB(A)
Extract side:										
Surroundings	51	47	46	42	37	39	35	30	dB	45 dB(A)
Extract	63	62	65	69	66	66	64	61	dB	72 dB(A)
Exhaust	65	61	63	65	65	67	64	60	dB	72 dB(A)

WC and Wet Room Extract Fans

ICON 30

Stylish toilet, bathroom and utility room ventilation



KEY FEATURES

- Mixed flow fan
- Flow rate up to 117 m³/h
- Recess or surface mounting
- Different colour covers available
- Perfect for longer duct runs
- Unique iris shutter, prevents backdraughts, operates silently
- Interchangeable control modules match fan to installation requirements
- Circular design, no squaring up
- IPX4 rating
- Complies with Building Regulations
- 3 year warranty

TECHNICAL DATA

Specification	ICON 30
Air flow [m ³ /h / l/s]	117 / 32
Fan type	mixed flow
Mounting position	wall / ceiling
Sound pressure @ 3 m [dB(A)]	33.3
Power [W]	15.5
Building regulations	compliant
Duct diameter [mm]	100
Supply voltage	230 V / 1ph / 50 Hz
Ingress protection rating	IPX4
Max ambient temperature [°C]	40
Weight [kg]	1.11
Dimensions H x W x D [mm]	225 x 225 x 144
Part number	72591601

COVERS

52634507	Silver
52634508	Sandstone
52634506	Anthracyte



Silver

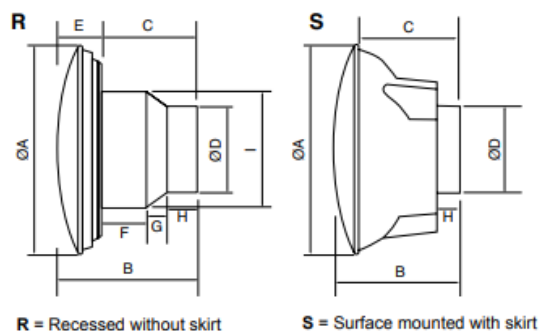


Sandstone



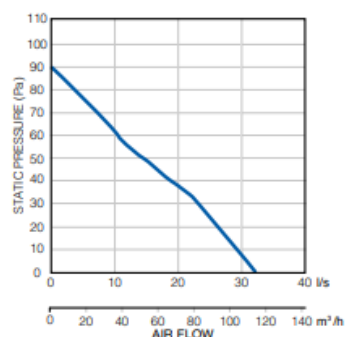
Anthracyte

DIMENSIONS (mm)



Model	A	B	C	D	E	F	G	H	I
ICON 30 (R)	225	144	101	97	43	51	20	30	148
ICON 30 (S)	225	144	92	97	-	-	-	29	-

PERFORMANCE



CONTROLS AND ACCESSORIES

A range of accessories including flexible and rigid ducting kits, controls, switches and grilles are available.

See accessories section for more details.

Pool AHU Exhaust									
Calculation Step	Octave Band Centre Frequency (Hz)								Notes
	63	125	250	500	1k	2k	4k	8k	
In duct sound power level	65	61	63	65	65	67	64	60	Manufacturer's published levels
Proposed attenuator	6	9	14	16	21	24	20	15	Based on typical 900mm long attenuator
Duct Losses	0	0	0	0	1	1	1	1	Conservative approach used as the duct will be buried and possibly concrete
Bend losses	0	0	0	2	4	6	6	6	2 No 400mm bends
End reflection	9	5	2	0	0	0	0	0	400mm square terminal inside enclosure
Terminal ending and directivity	9	8	7	6	6	6	6	6	Lined enclosure 45 degree angle to windows
Plenum Losses	0	1	5	16	18	16	17	17	Treating as lined bend
Distance losses	19	19	19	19	19	19	19	19	Distance losses over 9m
SPL at residential windows	22	19	16	6	-4	-5	-5	-4	
							10	dBA	

Pool AHU Outdoor Air									
Calculation Step	Octave Band Centre Frequency (Hz)								Notes
	63	125	250	500	1k	2k	4k	8k	
In duct sound power level	61	58	61	63	58	53	57	54	Manufacturer's published levels
Proposed attenuator	6	9	14	16	21	24	20	15	Based on typical 900mm long attenuator
Duct Losses	0	0	0	0	1	1	1	1	Conservative approach used as the duct will be buried and possibly concrete
Bend losses	0	0	0	2	4	6	6	6	2 No 400mm bends
End reflection	9	5	2	0	0	0	0	0	400mm square terminal inside enclosure
Terminal ending and directivity	9	8	7	6	6	6	6	6	Lined enclosure 45 degree angle to windows
Plenum Losses	0	1	5	16	18	16	17	17	Treating as lined bend
Distance losses	19	19	19	19	19	19	19	19	Distance losses over 9m
SPL at residential windows	18	16	14	4	-11	-19	-12	-10	
							8	dBA	

Pool AHU Internal Extract									
Calculation Step	Octave Band Centre Frequency (Hz)								Notes
	63	125	250	500	1k	2k	4k	8k	
In duct sound power level	63	62	65	69	66	66	64	61	Manufacturer's published levels
Proposed attenuator	6	9	14	16	21	24	20	15	Based on typical 900mm long attenuator
Duct Losses	11	9	5	2	2	2	2	2	7m of 400mm square ductwork
Bend losses	0	0	0	3	6	9	9	9	3 No 400mm bends
End reflection	9	5	2	0	0	0	0	0	400mm square terminal
Terminal ending and directivity	7	8	10	13	15	16	16	16	Terminal at junction of 2 surfaces minimum 90 angle to windows
Distance losses	19	19	19	19	19	19	19	19	Distance losses over 9m
SPL at residential windows	11	12	15	16	3	-4	-2	0	

14 dBA

Pool AHU Supply									
Calculation Step	Octave Band Centre Frequency (Hz)								Notes
	63	125	250	500	1k	2k	4k	8k	
In duct sound power level	66	64	66	70	71	73	69	66	Manufacturer's published levels
Proposed attenuator	6	9	14	16	21	24	20	15	Based on typical 900mm long attenuator
Duct Losses	15	12	6	3	3	3	3	3	9m of 400mm square ductwork
Bend losses	0	0	0	2	4	6	6	6	2 No 400mm bends
End reflection	9	5	2	0	0	0	0	0	400mm square terminal
Terminal ending and directivity	3	2	1	0	0	0	0	0	Terminal at junction of 2 surfaces 45 degree angle to windows
Distance losses	24	24	24	24	24	24	24	24	Distance losses over 15m
Screening	8	9	10	13	16	18	20	22	Conservative screening from pool roof in window open configuration
SPL at residential windows	1	3	9	12	3	-2	-4	-4	

11 dBA

WC and Wet Room Extract Fans

Calculation Step	Level	Notes
Sound Pressure Level	33 dBA at 3m	Manufacturer's sound pressure level, test conditions not given.
Sound Power Level	54 dBA	Assume hemispherical spreading, conversion to SWL
Sources	+3 dB	2 No fans
Duct Losses	-1 dB	7m, 100mm cylindrical duct run
End reflection	-11 dB	Based on 100mm terminal using 125Hz.
Distance Losses	-28 dB	Worst case 7m to window, 90 degree angle, 2 surfaces
Calculated Level at Windows	17 dB	

Appendix H: Acoustic Feature Correction

BS4142:2014 introduces the concept of an acoustic feature correction. This is a penalty given to noise sources which are subjectively more annoying. The three main characteristics are tonality, impulsivity and intermittency.

Tonality

The fan could be tonal however there is no way to assess this in the design stage, to adopt a cautious approach a 4dB penalty has been applied.

Impulsivity

The fans operate on a soft start and do not generate clunks or bangs. Therefore no penalty has been applied for impulsivity

Intermittency

The fans will operate intermittently depending whether the pool is in use therefore 3dB penalty has been applied for Intermittency.