

Report

Comparison of Baseline Sound Surveys Spring Park Data Centre Campus

Sweco UK Limited
3rd Floor,
All Saints Street
Bristol, BS1 2LZ
+44 117 332 1100

13/02/2025
Project Reference: 65204515-007
Document Reference: 65204515-007-SWE-ZZ-XX-T-U-0003
Revision: C02
Prepared For: Ark Estates 4 Limited

Status / Revisions

Rev.	Date	Reason for issue	Prepared	Reviewed	Approved
C01	30.01.25	For Information	MA 29.01.25	AF 29.01.25	MA 30.01.25
C02	13.02.25	Comments addressed	MA 13.02.25	AF 13.02.25	MA 13.02.25

Certifying Body

Sweco are full members of the ANC:



© Sweco 2025. This document is a Sweco confidential document; it may not be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, photocopying, recording or otherwise disclosed in whole or in part to any third party without our express prior written consent. It should be used by you and the permitted discloses for the purpose for which it has been submitted and for no other.

Table of contents

1	Introduction.....	4
2	Baseline Sound Survey August 2016	5
2.1	Noise Survey Overview.....	5
2.2	Survey Equipment and Methodology.....	5
2.3	Weather Conditions	7
2.4	Observations.....	7
2.5	Sound Survey Results	7
3	Baseline Sound Survey May 2019.....	10
3.1	Noise Survey Overview.....	10
3.2	Survey Equipment and Methodology.....	10
3.3	Weather Conditions	12
3.4	Observations.....	13
3.5	Sound Survey Results	13
4	Baseline Sound Survey May 2023.....	17
4.1	Noise Survey Overview.....	17
4.2	Survey Equipment and Methodology.....	17
4.3	Weather Conditions	19
4.4	Observations.....	20
4.5	Sound Survey Results	20
5	Baseline Sound Survey November 2024	24
5.1	Noise Survey Overview.....	24
5.2	Survey Equipment and Methodology.....	24
5.3	Weather Conditions	26
5.4	Observations.....	26
5.5	Sound Survey Results	27
6	Comparison of Survey Results	31
7	Conclusion.....	33

Appendices

Appendix A – Glossary of Acoustic Terminology

1 Introduction

Sweco UK have been instructed by Ark Estates 4 Limited (Ark) to prepare a summary of the historic and latest baseline environmental sound surveys undertaken at noise sensitive receptor locations around the Spring Park Data Centre Campus, in order to evaluate how the baseline acoustic environment have evolved through the years and how this has impacted the noise climate in the surrounding areas.

This summary report is intended to inform the Environmental Control and Protection Team at Wiltshire Council.

Sweco UK (formerly MLM) have undertaken four baseline surveys in the last 8 years, the results of which are presented in this summary report. The following baseline surveys are presented:

- The first was carried out in August 2016, before the construction of the P3 and P4 data centre building. SQ17, P1 and P2 buildings were in operation and no construction was happening in the site.
- The second was carried out in May 2019, SQ17, P1 and P2 buildings were in operation, and construction works for P3 and P4 data centre buildings were ongoing.
- The third was carried out in May 2023 with SQ17, P1, P2, P3 and P4 data centre buildings in operation.
- And the latest survey was carried out in November 2024 for information purposes with SQ17, P1, P2, P3 and P4 data centre buildings in operation. The operation of the site is understood to be the same in the last two surveys.

The environmental sound monitoring exercises were carried out at the nearest noise-sensitive residential receptors (NSRs) in the area.

The results published herein are identical to those presented in the previous noise survey reports, and some changes in the format can be seen through the years. This exercise is a summary, and it is not intended to analyse in detail sound survey results.

This report contains references of a technical nature. A glossary of acoustic terminology has therefore been provided in Appendix A to assist in any interpretation.

2 Baseline Sound Survey August 2016

2.1 Noise Survey Overview

The prevailing sound conditions at the location of the closest noise sensitive receptors were determined by a detailed environmental noise survey, undertaken between Tuesday 9th and Wednesday 10th August 2016 at two monitoring positions.

2.2 Survey Equipment and Methodology

All sound measurements were undertaken by a suitable qualified acoustician, certified as competent in environmental sound monitoring, and in accordance with the principles of BS 7445¹.

All acoustic measurement equipment used during the sound survey conformed to Type 1 specification of BS 61672¹. A full inventory of this equipment is shown in Table 1 below.

Item	Make & Model	Serial Number
Sound Level Meter	RION NL-52	01054199
Preamplifier	RION NH-25	53272
Microphone	RION UC-59	08655
Sound Level Meter	RION NL-52	00620957
Preamplifier	RION NH-25	20998
Microphone	RION UC-59	03875
Calibrator	B&K 4231	2615249

The sound measurement equipment used during the survey was calibrated at the start and end of the measurement period. The calibrator used had itself been calibrated by an accredited calibration laboratory within the twelve months preceding the measurements. No significant drift in calibration was found to have occurred on the sound level meters. Calibration certificates of the equipment are available upon request.

$L_{Aeq,T}$, $LA_{90,T}$ and $L_{AF,max}$ acoustic parameters were recorded over sequential 15-minute periods.

Measurements were carried out at the following monitoring positions, as described in Table 2 and shown in Figure 1: Noise Monitoring Positions and NSRs.

¹ British Standard 61672-1: 2013: Electroacoustics. Sound level meters. Part 1 Specifications. BSI.

These positions were chosen as they were considered to be representative of the existing ambient and background noise values as impinging upon the existing nearest dwellings to the site.

Table 2: Summary of Measured Noise Levels			
Measurement position	Description	Microphone height above ground	Condition
MP1	Located within private farmland to the south of Spring Park Campus in close proximity to the nearest dwelling.	≈ 1.5m	Free-Field
MP2	Located approximately 10m from the edge of Westwells Road.	≈ 1.5m	Free-Field

MP1 is considered as being representative of both the private farm dwelling and the residential development of Wadwick Green to the south-east.

MP2 is considered as being representative of typical sound conditions at all receptors to the east, off Westwells Road.



Figure 1: Noise Monitoring Positions and NSRs (Aerial photography courtesy of Google Maps 2016)

2.3 Weather Conditions

The survey period was selected following close monitoring of local weather conditions. Weather conditions were suitable for the noise measurement exercise, it being dry with only light winds.

All microphones were fitted with a protective windshield and the appropriate correction applied on the Sound Level Meter.

2.4 Observations

Since the survey was largely unattended it is not possible to comment on the specific nature of the sound climate for the entire duration of the survey, however sound sources were noted during our time on site and are described below.

- MP1 – Largely unattended measurement of the sound climate representative of the nearest noise-sensitive receptors to the south of the site. The microphone was located under free-field conditions, at a height of 1.5 metres above local ground. The sound climate at this location was very quiet, mainly dominated by noise from trees, birds, sheep and occasional aircrafts.
- MP2 – Largely unattended measurement of the sound climate representative of the nearest noise-sensitive receptor to the east of the site. The microphone was located under free-field conditions, at a height of 1.5 metres above local ground. The sound climate at this location was dominated by traffic noise from Westwells Road at approximately 10 metres away, occasional aircrafts, and occasional pedestrians and nearby domestic gardening works.

2.5 Sound Survey Results

The results of the sound monitoring, in terms of the typical $L_{A90,one\ hour}$ daytime (07:00-23:00) and $L_{A90,15\ minutes}$ night-time (23:00-07:00) are summarised in Table 3. In addition to the typical background sound levels, average ambient $L_{Aeq,T}$ sound levels are presented to add context. Values have been rounded to the nearest whole number.

Full-tabulated and charted results of the sound measurements are presented below. The statistical analysis for obtaining the typical background sound levels in accordance with BS4142 can also be found below.

Measurement position	Period (T)	Equivalent continuous SPL $L_{Aeq,T}$ (dB)	Typical background sound level $L_{A90,T}$ (dB)
MP1	Daytime (07:00 – 23:00)	43	32
	Night time (23:00 – 07:00)	36	28
MP2	Daytime (07:00 – 23:00)	60	40
	Night time (23:00 – 07:00)	49	28

Full charted results of the sound measurements are presented in the figures below.

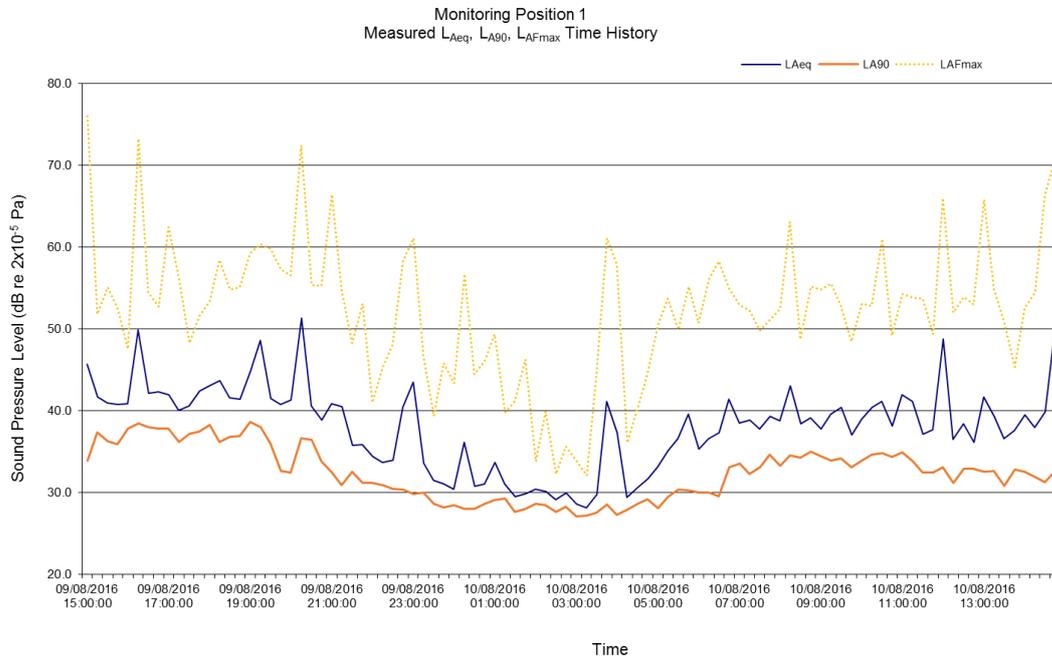


Figure 2: Monitoring Position 1 – Time History Graph 2016

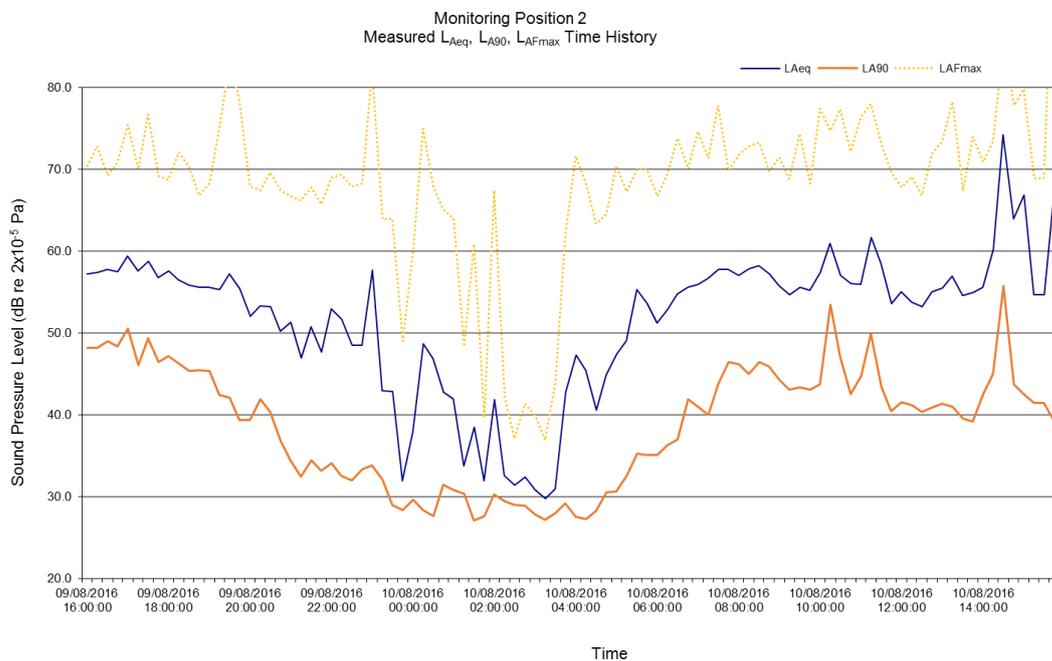


Figure 3: Monitoring Position 2 – Time History Graph 2016

The statistical analysis for obtaining the typical background sound levels used in this assessment can be found in the images below.

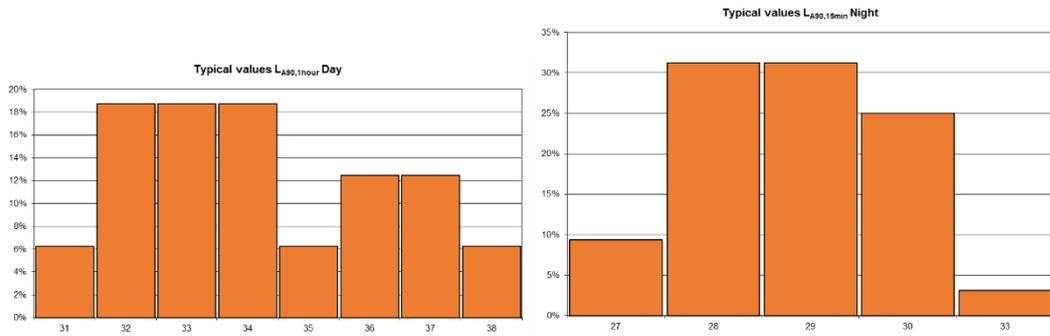


Figure 4: Daytime and Night-time L_{A90} Statistical Analysis –Position 1 2016

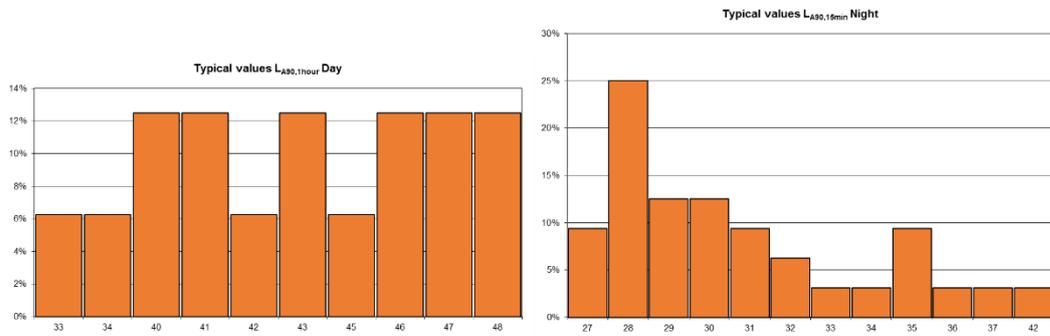


Figure 5: Daytime and Night-time L_{A90} Statistical Analysis –Position 2 2016

3 Baseline Sound Survey May 2019

3.1 Noise Survey Overview

The prevailing sound conditions at the location of the closest noise sensitive receptors were determined by a detailed environmental noise survey, undertaken between Friday 17th and Thursday 23rd May 2019 at three monitoring positions.

3.2 Survey Equipment and Methodology

All sound measurements were undertaken by a suitably qualified acoustician, certified as competent in environmental sound monitoring, and in accordance with the principles of BS 7445.

All acoustic measurement equipment used during the sound survey conformed to Type 1 specification of BS 61672. A full inventory of this equipment is shown in Table 4 below.

Item	Make & Model	Serial Number	Calibration Certificate Number	Date of Expiration of Calibration
Sound Level Meter	RION NL-52	00620901	TCRT18/1581	4 July 2020
Preamplifier	RION NH-25	76417		
Microphone	RION UC-59	13342		
Sound Level Meter	RION NL-52	00620957	TCRT19/1015	7 January 2021
Preamplifier	RION NH-25	20998		
Microphone	RION UC-59	03875		
Sound Level Meter	RION NL-52	00620900	UCRT19/1471	14 April 2021
Preamplifier	RION NH-25	31972		
Microphone	RION UC-59	03797		
Calibrator	B&K 2250	3006737	TCRT/19/1016	7 January 2021
Calibrator	B&K ZC 0032	16513		

The sound measurement equipment used during the survey was calibrated at the start and end of the measurement period. The calibrators used have themselves been calibrated by an accredited calibration laboratory within the twelve months preceding the measurements. No significant drift in calibration was found to have occurred on the sound level meters. Calibration certificates of the above equipment are available upon request.

$L_{Aeq,T}$, $L_{A90,T}$ and $L_{AF,max}$ acoustic parameters were register over sequential 15-minute periods.

Measurements were carried out at the following monitoring positions, as described in Table 5 and shown in Figure 6. These positions were chosen as they were considered to be representative of the existing ambient and background noise values as impinging upon the existing nearest dwellings to the site.

For ease of comparison, MP1 and MP2 are in locations identical to those utilised in the 2016 survey, insofar as was practicable.

Table 5: Summary of Measured Noise Levels			
Measurement position	Description	Microphone height above ground	Condition
MP1	Located within private farmland to the south of Spring Park Campus in close proximity to the nearest dwelling.	≈1.5m	Free-Field
MP2	Located in proximity to approximately 30m from the edge of Westwells Road.	≈1.4m	Free-Field
MP3	Located within the woodland area adjacent to Bradford Road.	≈1.5m	Free-Field

MP1 is considered as being representative of both the private farm dwelling and the residential development of Wadwicks Green to the south-east.

MP2 is considered as being representative of typical sound conditions at all receptors to the east, off Westwells Road.

MP3 is considered as being representative of the typical sound conditions at the dwellings off Bradford Road.



Figure 6: Noise Monitoring Positions and approximate site boundary for Spring Park Data Centre Campus (Aerial photography courtesy of Google Maps 2019)

3.3 Weather Conditions

The survey period was selected following close monitoring of local weather conditions. Weather conditions were generally suitable for the noise measurement exercise, it being dry with only light winds. The periods excluded from the Assessment due to unsuitable weather are 16:00 to 23:00 on Friday 17 May.

It must be noted that construction works on site (for P4 and P3 data centre buildings) were found to be noticeable at the receptors' locations, and therefore periods from 07:00 to 18:00 Monday to Friday and 07:00 to 14:00 on Saturday have been discarded for the assessment.

All microphones were fitted with a protective windshield and the appropriate correction applied on the Sound Level Meter.

3.4 Observations

Since the survey was largely unattended it is not possible to comment on the specific nature of the sound climate for the entire duration of the survey, however sound sources were noted during time on site and are described below.

- MP1 – Largely unattended measurement of the sound climate representative of the nearest noise-sensitive receptor to the south of the site. The microphone was located under free-field conditions, at a height of 1.5 metres above local ground. During equipment setup the sound climate at this position was dominated by construction noise. Birdsong and very faint road traffic were audible. During equipment retrieval at night, the sound climate was dominated by plant noise and distant road traffic noise. Based on observations on site, the plant noise was steady and identified as ventilation noise, and therefore it is attributed to the existing Data Centre.
- MP2 – Largely unattended measurement of the sound climate representative of the nearest noise-sensitive receptor to the east of the site. The microphone was located under free-field conditions, at a height of 1.4 metres above local ground. The sound climate at this location was dominated by local traffic noise from Westwells Road, and birdsongs; and to a lesser extent construction noise and occasional aircrafts. During equipment retrieval at night, the sound climate at this position was dominated by steady plant noise. Nearby road traffic was intermittent and occasionally dominant when vehicles were in proximity. Additionally, residential activity (i.e. people talking) was audible but not itself a source of dominant noise.
- MP3 – Largely unattended measurement of the sound climate representative of the nearest noise-sensitive receptor to the west of the site. The microphone was located under free-field conditions, at a height of 1.5 metres above local ground. The sound climate at this location was dominated by local road traffic from Bradford Road. To a lesser extent, vehicle movements to the south-east and a tonal low-frequency hum possibly from the adjacent MOD site were noticeable. Although construction noise was not identified, the periods with potential construction activity has been discarded to avoid extraneous sound sources not representative of the noise climate at this location. During equipment retrieval at night, the sound climate at this position was dominated by the aforementioned tonal low-frequency hum and to a lesser extent plant noise which may be attributed to the Data Centre.

3.5 Sound Survey Results

The results of the sound monitoring, in terms of the typical $L_{A90, \text{one hour}}$ daytime (07:00-23:00) and $L_{A90, 15 \text{ minutes}}$ night-time (23:00-07:00) are summarised in Table 6. In addition to the typical background sound levels, average ambient $L_{Aeq,T}$ sound levels and typical maximum $L_{AF, \text{max}}$ sound levels are presented to add context. Values have been rounded to the nearest whole number.

Periods from 07:00 to 18:00 Monday to Friday and 07:00 to 14:00 on Saturday have been discarded for the assessment due to construction activity on site.

Full-tabulated and charted results of the sound measurements are presented below. The statistical analysis for obtaining the typical background sound levels in accordance with BS4142 can also be found below.

Table 6: Summary of Measured Noise Levels				
Measurement position	Period (T)	Equivalent continuous SPL $L_{Aeq,T}$ (dB)	Typical Maximum SPL L_{AFmax} (dB)	Typical background sound level $L_{A90,T}$ (dB)
MP1	Daytime (18:00-23:00)	52	76	33-35
	Night-time (23:00-07:00)	47	73	28-29
MP2	Daytime (18:00-23:00)	47	70	34
	Night-time (23:00-07:00)	47	71	24
MP3	Daytime (18:00-23:00)	56	74	43
	Night-time (23:00-07:00)	52	71	28-29

Full charted results of the sound measurements are presented in the figures below.

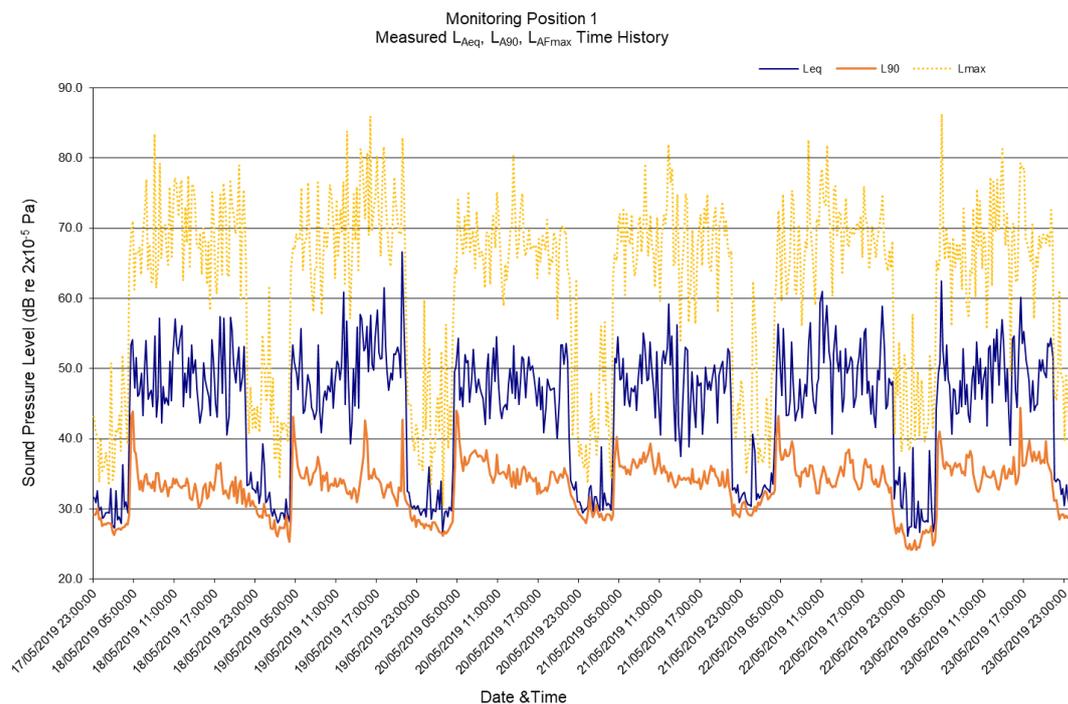


Figure 7: Monitoring Position 1 – Time History Graph 2019

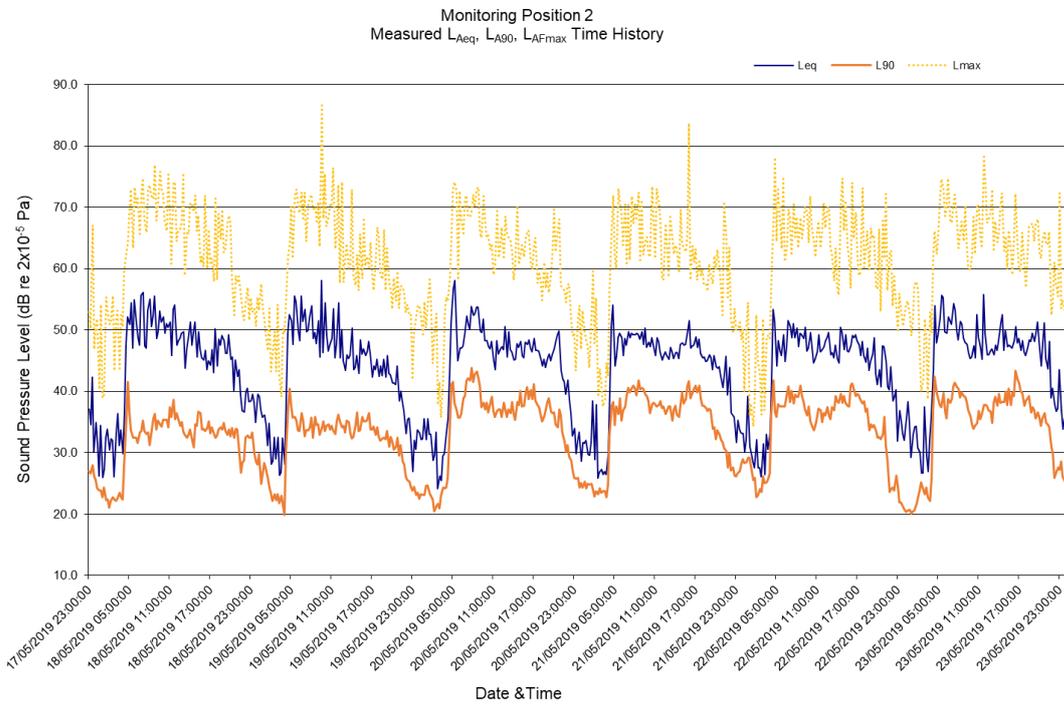


Figure 8: Monitoring Position 2 – Time History Graph 2019

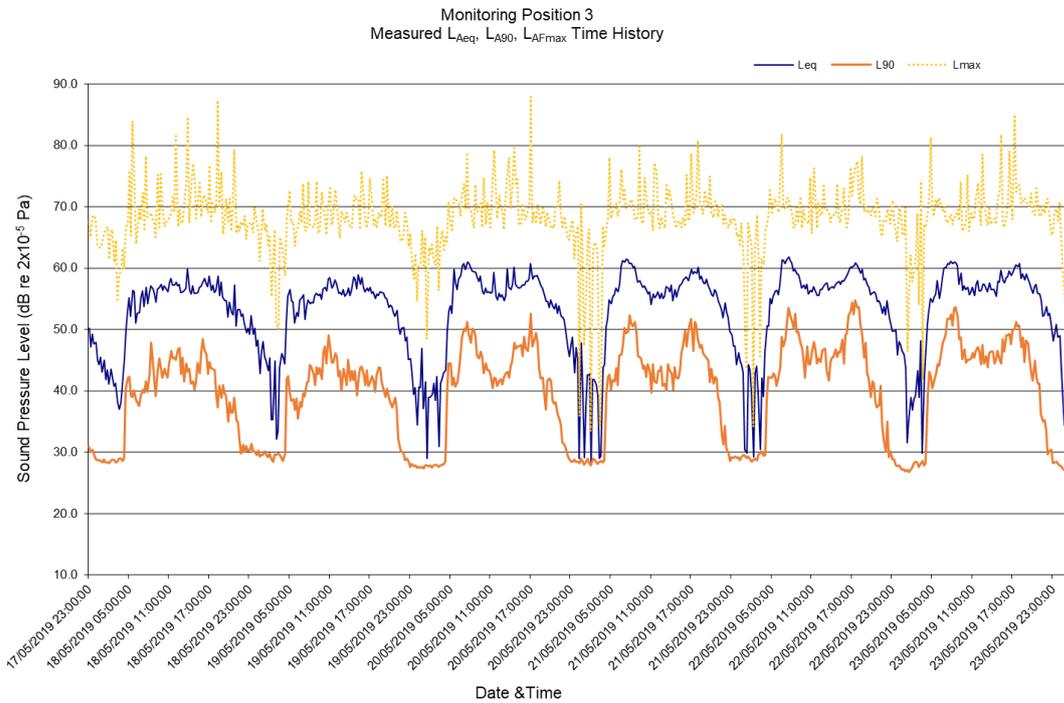


Figure 9: Monitoring Position 3 – Time History Graph 2019

The statistical analysis for obtaining the typical background sound levels used in this assessment can be found in the images below.

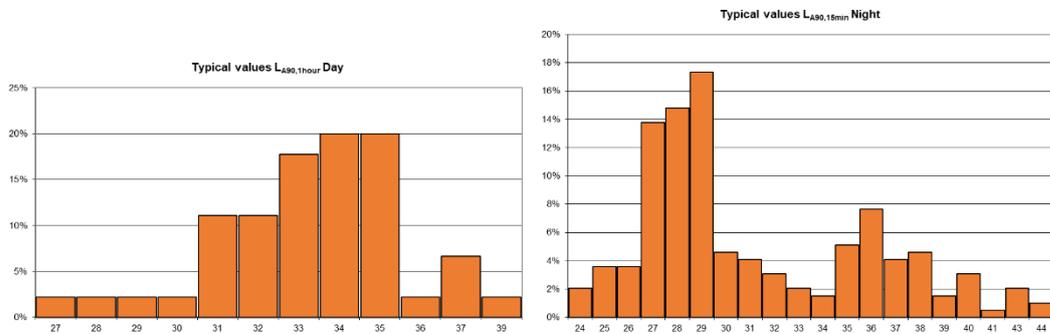


Figure 10: Daytime and Night-time L_{A90} Statistical Analysis –Position 1 2019

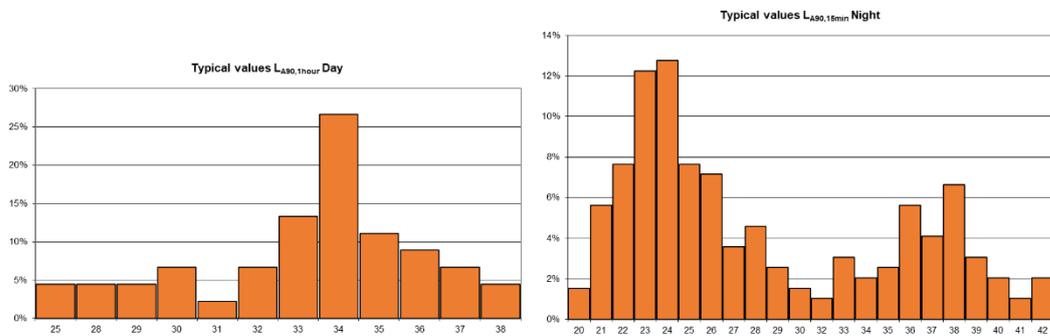


Figure 11: Daytime and Night-time L_{A90} Statistical Analysis –Position 2 2019

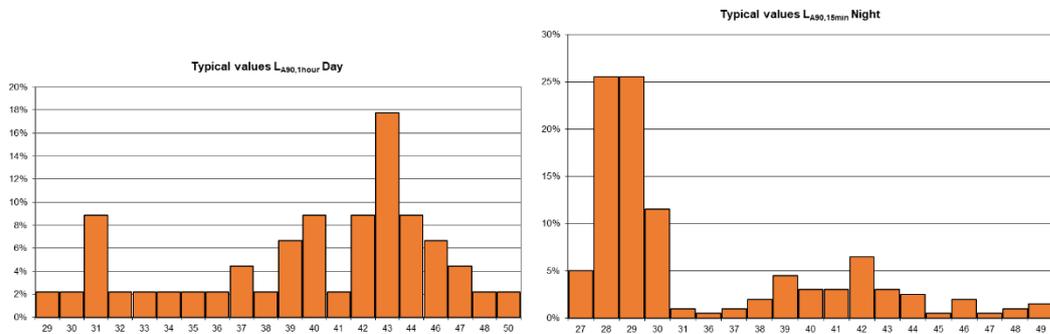


Figure 12: Daytime and Night-time L_{A90} Statistical Analysis –Position 3 2019

4 Baseline Sound Survey May 2023

4.1 Noise Survey Overview

The prevailing sound conditions at the location of the closest noise sensitive receptors were determined by a detailed environmental noise survey, undertaken between Tuesday 2nd and Tuesday 9th May 2023 at three monitoring positions.

4.2 Survey Equipment and Methodology

All sound measurements were undertaken by a suitably qualified acoustician, certified as competent in environmental sound monitoring, and in accordance with the principles of BS 7445.

All acoustic measurement equipment used during the sound survey conformed to Type 1 specification of BS 61672. A full inventory of this equipment is shown in Table 7 below.

Item	Make & Model	Serial Number	Calibration Certificate Number	Date of Expiration of Calibration
Sound Level Meter	RION NL-52	00620900	TCRT23/1325	20 April 2025
Preamplifier	RION NH-25	31972		
Microphone	RION UC-59	03797		
Sound Level Meter	RION NL-52	00620957	TCRT23/1134	6 February 2025
Preamplifier	RION NH-25	20998		
Microphone	RION UC-59	03875		
Sound Level Meter	RION NL-52	01054199	TCRT21/1756	29 October 2023
Preamplifier	RION NH-25	54272		
Microphone	RION UC-59	08655		
Calibrator	RION NC-75	34212940	TCRT22/1291	11 May 2023

The sound measurement equipment used during the survey was calibrated at the start and end of the measurement period. The calibrator used had itself been calibrated by an accredited calibration laboratory within the twelve months preceding the measurements. No significant drift in calibration was found to have occurred on the sound level meters. Calibration certificates of the above equipment are available upon request.

$L_{Aeq,T}$, $L_{A90,T}$ and $L_{AF,max}$ acoustic parameters were recorded over sequential 15-minute periods.

Measurements were carried out at the following monitoring positions, as described in Table 8 and shown in Figure 13. These positions were chosen following investigations on site and are considered to be representative of the existing ambient and background noise values as impinging upon the existing nearest dwellings to the site.

For ease of comparison, MP1, MP2 and MP3 are identical, insofar as was possible, to the locations used in the 2019 survey.

Table 8: Summary of Measured Noise Levels			
Measurement position	Description	Microphone height above ground	Condition
MP1	Located within private farmland to the south of Spring Park Campus in close proximity to the nearest dwelling.	≈1.5m	Free-Field
MP2	Located approximately 5m from the edge of Westwells Road at the mid-point between Rowan Lane and Moor Green.	≈1.5m	Free-Field
MP3	Located within the woodland approximately 20m from the edge of Bradford Road.	≈1.5m	Free-Field

MP1 is considered as being representative of both the private farm dwelling and the residential development of Wadswick Green to the south-east.

MP2 is considered as being representative of typical sound conditions at all receptors to the east, off Westwells Road.

MP3 is considered as being representative of the typical sound conditions at the dwellings off Bradford Road.



Figure 13: Noise Monitoring Positions and approximate site boundary for Spring Park Data Centre Campus (aerial photography courtesy of Google Maps 2023)

4.3 Weather Conditions

The survey period was selected following close monitoring of local weather conditions. Weather conditions were largely suitable for the noise measurement exercise, it being generally dry with only light winds. The following periods have however been removed from the assessment due to unsuitable weather conditions:

- Rain was recorded between 05:00 – 17:00 on Saturday 6th May and between 17:00 – 00:00 on Monday 8th May.
- High winds were recorded between 16:00 – 19:00 on Wednesday 3rd May and between 16:00 – 19:00 Friday 5th May.

All microphones were fitted with a protective windshield and the appropriate correction applied on the Sound Level Meter.

4.4 Observations

Since the survey was largely unattended it is not possible to comment on the specific nature of the sound climate for the entire duration of the survey, however sound sources were noted during our time on site and are described below.

- MP1 – Largely unattended measurement of the sound climate representative of the nearest noise-sensitive receptor to the south of the site. The microphone was located under free-field conditions, at a height of 1.5 metres above local ground. The ambient noise climate at MP1 was controlled largely by distant traffic and local natural noises including birdsong and the local grazing of cattle. Other noise sources included occasional local vehicle movements, aircraft flyovers, and occasional animal noise including specifically Cockerels. No mechanical agricultural noise (i.e. farm equipment) was noted during the attended portions of the survey. It was identified in previous site attendances in 2019 that building services noise from the Spring Park Campus commercial premises was audible at this location during night-time hours, however it is not possible to confirm if this is still the case in this latest survey.
- MP2 – Largely unattended measurement of the sound climate representative of the nearest noise-sensitive receptor to the east of the site. The microphone was located under free-field conditions, at a height of 1.5 metres above local ground. The ambient noise climate at MP2 was controlled largely by local traffic on Westwells Road and natural sounds in the vicinity including birdsong and wind-noise through the vegetation. Other contributions include helicopter and plane flyovers. Whilst not audible at the measurement location itself, steady-state ventilation noise was observed during the survey period along Rowan Lane to the north and as such may have contributed to the underlying background noise levels at MP2 – this is supported in the historic Sweco surveys and observations.
- MP3 – Largely unattended measurement of the sound climate representative of the nearest noise-sensitive receptor to the west of the site. The microphone was located under free-field conditions, at a height of 1.5 metres above local ground. The ambient noise climate at MP3 was controlled by local traffic on Bradford Road and natural sounds in the vicinity including birdsong and wind noise through the vegetation. Also, occasionally audible as a subtle low-frequency hum, determined as emanating from the MOD substation facilities to the east. This low-frequency hum was also observed in the historic survey and attendances.

4.5 Sound Survey Results

The results of the sound monitoring, in terms of the typical $L_{A90, \text{one hour}}$ daytime (07:00-23:00) and $L_{A90, 15 \text{ minutes}}$ night-time (23:00-07:00) are summarised in Table 9 below. In addition to the typical background sound levels, average ambient sound levels and typical maximum sound levels are presented to add context. Values have been rounded to the nearest whole number.

Aside from the periods of rain and high wind detailed above, the full survey period has been used in the determining of the typical background noise levels.

Full-tabulated and charted results of the sound measurements are presented below in this report. The statistical analysis for obtaining the typical background sound levels used in this assessment can also be found below.

Measurement position	Period (T)	Equivalent continuous SPL $L_{Aeq,T}$ (dB)	Typical Maximum SPL L_{AFmax} (dB)	Typical background sound level $L_{A90,T}$ (dB)
MP1	Daytime (07:00 – 23:00)	50	72	36
	Night time (23:00 – 07:00)	45	68	28
MP2	Daytime (07:00 – 23:00)	59	84	41
	Night time (23:00 – 07:00)	56	79	26
MP3	Daytime (07:00 – 23:00)	61	79	43
	Night time (23:00 – 07:00)	54	75	31

Full charted results of the sound measurements are presented in the figures below.

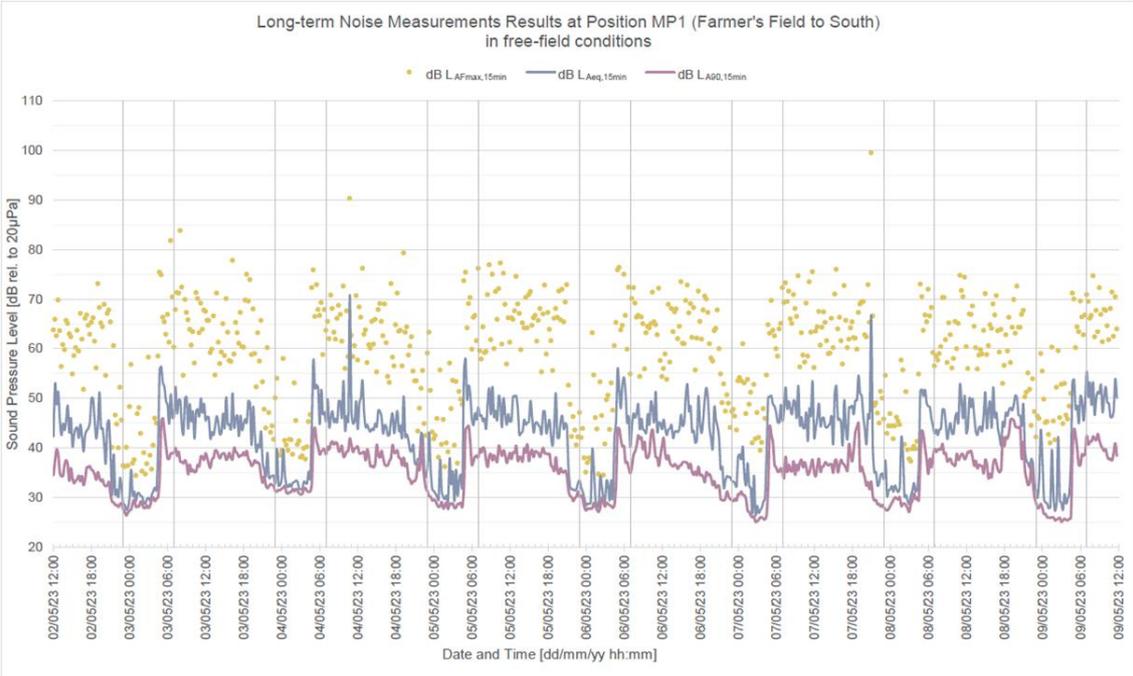


Figure 14: Monitoring Position 1 – Time History Graph 2023

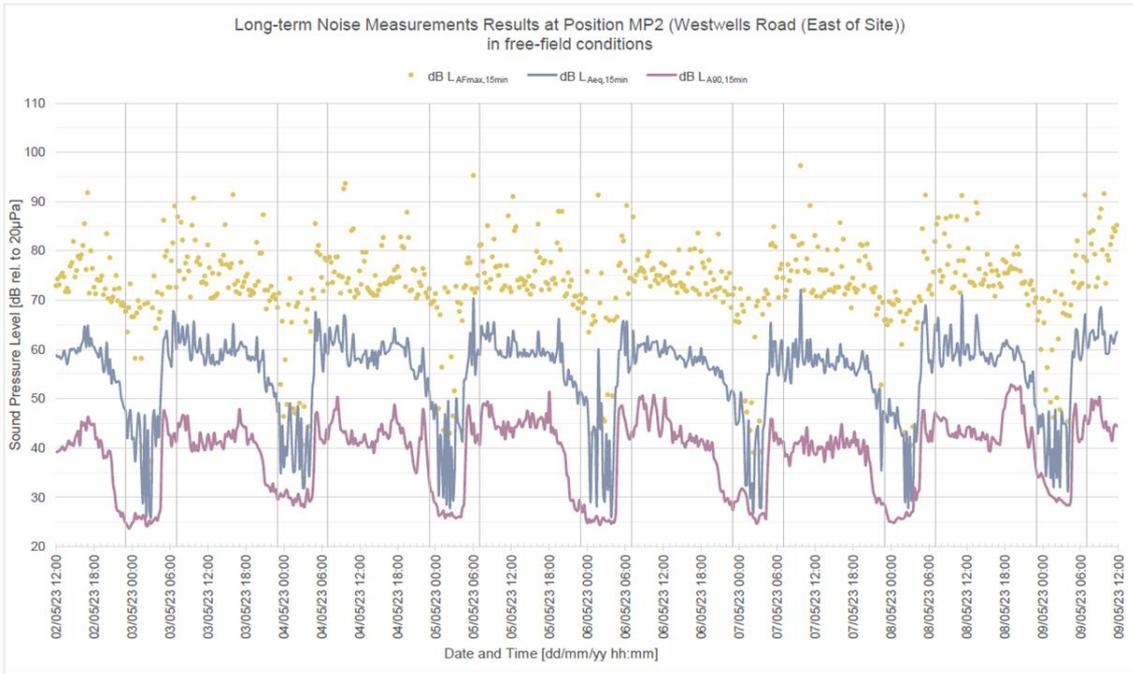


Figure 15: Monitoring Position 2 – Time History Graph 2023

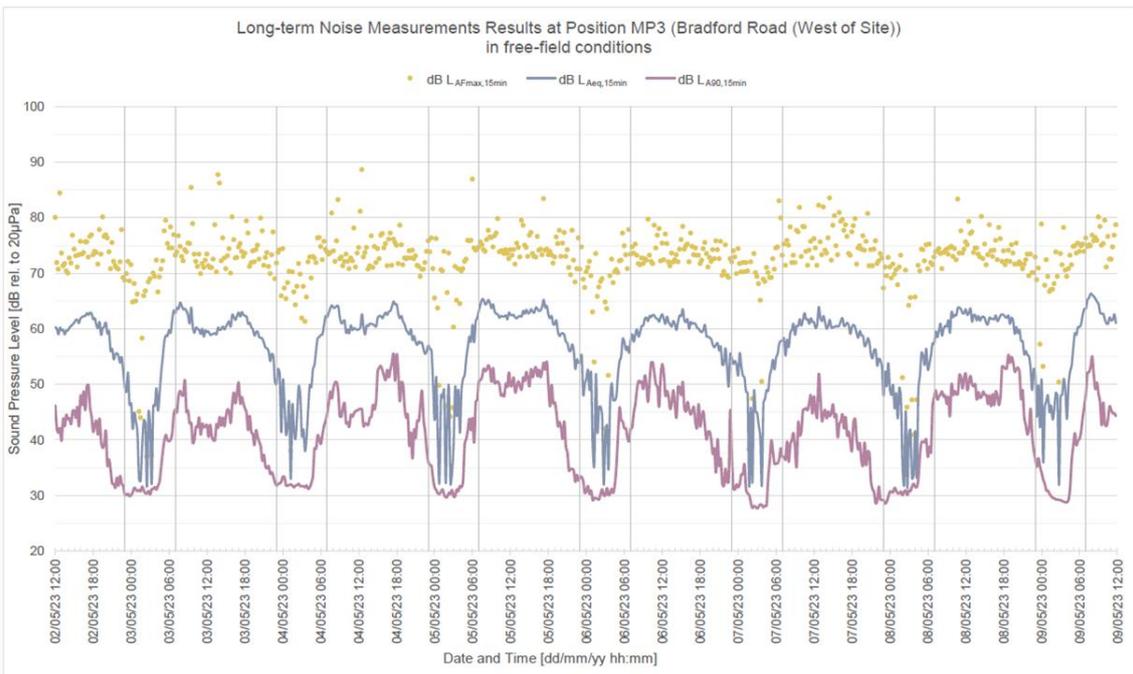


Figure 16: Monitoring Position 3 – Time History Graph 2023

The statistical analysis for obtaining the typical background sound levels used in this assessment can be found in the images below.

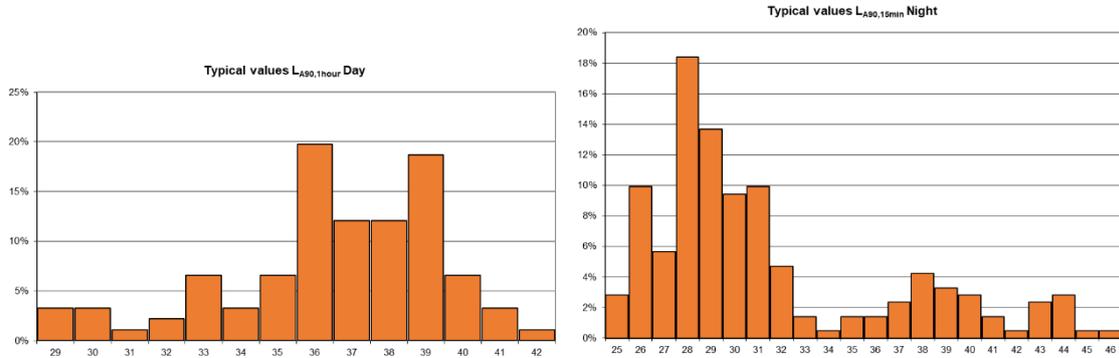


Figure 17: Daytime and Night-time L_{A90} Statistical Analysis –Position 1 2023

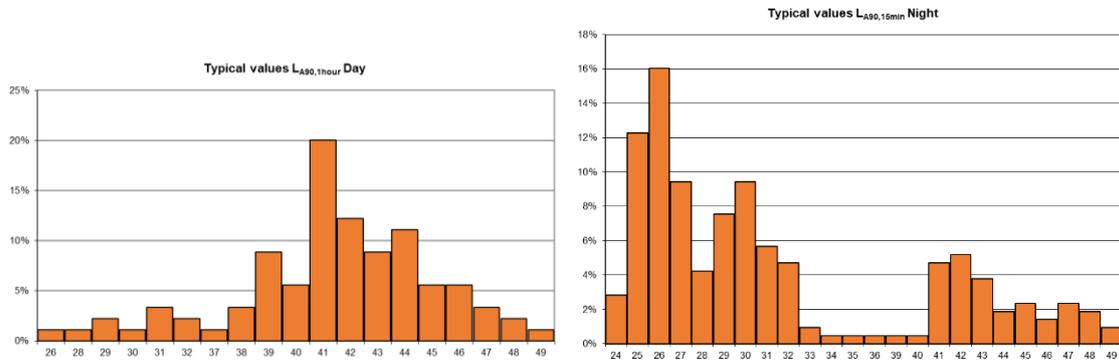


Figure 18: Daytime and Night-time L_{A90} Statistical Analysis –Position 2 2023

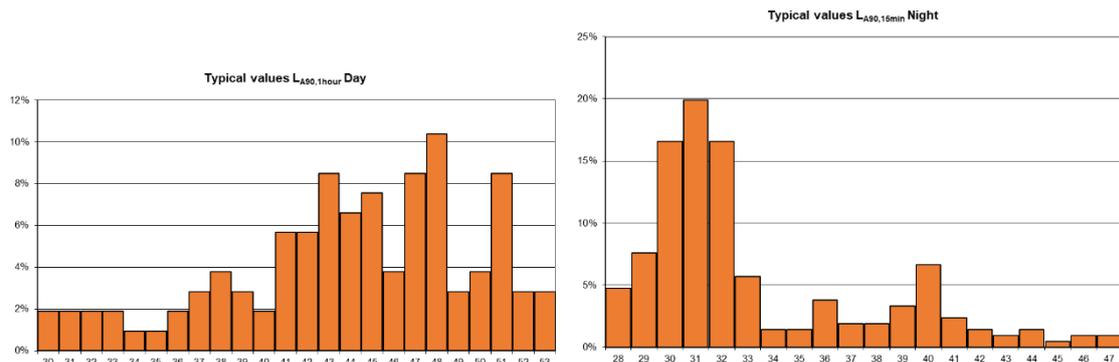


Figure 19: Daytime and Night-time L_{A90} Statistical Analysis –Position 3 2023

5 Baseline Sound Survey November 2024

5.1 Noise Survey Overview

The prevailing sound conditions at the location of the closest noise sensitive receptors were determined by a detailed environmental noise survey, undertaken between Monday 11th and Monday 18th November 2024 at three monitoring positions.

5.2 Survey Equipment and Methodology

All sound measurements were undertaken by a suitably qualified acoustician, certified as competent in environmental sound monitoring, and in accordance with the principles of BS 7445.

All acoustic measurement equipment used during the sound survey conformed to Type 1 specification of BS 61672. A full inventory of this equipment is shown in Table 10 below.

Item	Make & Model	Serial Number	Calibration Certificate Number	Date of Expiration of Calibration
Sound Level Meter	RION NL-52	00620900	TCRT23/1325	20 April 2025
Preamplifier	RION NH-25	31972		
Microphone	RION UC-59	03797		
Sound Level Meter	01dB Fusion	11051	TCRT23/1765	25 October 2025
Preamplifier	01dB PRE-22N°	1507093		
Microphone	GRAS 40CE	330831		
Sound Level Meter	RION NL-52	01054199	TCRT23/1767	25 October 2025
Preamplifier	RION NH-25	54272		
Microphone	RION UC-59	08655		
Calibrator	B&K 4231	2615249	TCRT24/1407	31 May 2025
Calibrator	RION NC-74	34662223	TCRT24/1470	27 June 2025

The sound measurement equipment used during the survey was calibrated at the start and end of the measurement period. The calibrators used have themselves been calibrated by an accredited calibration laboratory within the twelve months preceding the measurements. No significant drift in calibration was found to have occurred on the sound level meters. Calibration certificates of the above equipment are available upon request.

$L_{Aeq,T}$, $L_{A90,T}$ and $L_{AF,max}$ acoustic parameters were recorded over sequential 15-minute periods.

Measurements were carried out at the following monitoring positions, as described in Table 11 and shown in Figure 20. These positions were chosen as they were considered to be representative of the existing ambient and background noise values as impinging upon the existing nearest dwellings to the site.

The monitoring locations are the same as those utilised in the sound survey carried out in May 2023 for comparison purposes.

Table 11: Summary of Measured Noise Levels			
Measurement position	Description	Microphone height	Position
MP1	Located within private farmland to the south of Spring Park Campus in close proximity to the nearest dwelling.	≈ 1.5m	Free-Field
MP2	Located approximately 5m from the edge of Westwells Road at the mid-point between Rowan Lane and Moor Green.	≈ 1.5m	Free-Field
MP3	Located within the woodland approximately 10m from the edge of Bradford Road.	≈ 1.5m	Free-Field

MP1 is considered as being representative of both the private farm dwelling and the residential development of Wadswick Green to the south-east.

MP2 is considered as being representative of typical sound conditions at all receptors to the east, off Westwells Road.

MP3 is considered as being representative of the typical sound conditions at the dwellings off Bradford Road.



Figure 20: Noise Monitoring Positions and approximate site boundary for Spring Park Data Centre Campus (Aerial photography courtesy of Google Maps 2024)

5.3 Weather Conditions

The survey period was selected following close monitoring of local weather conditions. Weather conditions were largely suitable for the noise measurement exercise, it being generally dry with only light winds.

The only periods with potential rain and higher winds were on the Sunday 17th and Monday 18th and, therefore those periods have been removed from the assessment.

All microphones were fitted with a protective windshield and the appropriate correction applied on the Sound Level Meter.

5.4 Observations

Since the survey was largely unattended it is not possible to comment on the specific nature of the sound climate for the entire duration of the survey, however sound sources were noted during our time on site and are described below.

- MP1 – Largely unattended measurement of the sound climate representative of the nearest noise-sensitive receptor to the south of the site. The ambient noise climate at MP1 was controlled largely by distant traffic and local natural noises including vegetation and birdsong.

Other noise sources included occasional local vehicle movements and microlight flyovers. No mechanical agricultural noise (i.e. farm equipment) or animal noise was noted during the attended portions of the survey. This was reported in previous surveys; however, it was not possible to confirm if this is still the case in this latest survey.

- MP2 – Largely unattended measurement of the sound climate representative of the nearest noise-sensitive receptor to the east of the site. The ambient noise climate at MP2 was controlled largely by local traffic on Westwells Road and natural sounds in the vicinity including birdsong and wind-noise through the vegetation. Ventilation noise from nearby mechanical services plant was not observed during the time on site; this was reported in the observations of the 2023 survey. Construction works in the area to the southwest were audible; primarily resulting from crane movements.
- MP3 – Largely unattended measurement of the sound climate representative of the nearest noise-sensitive receptor to the west of the site. The ambient noise climate at MP3 was controlled by local traffic on Bradford Road and natural sounds in the vicinity including birdsong and wind noise through the vegetation.

5.5 Sound Survey Results

The results of the sound monitoring, in terms of the typical $L_{A90, \text{one hour}}$ daytime (07:00-23:00) and $L_{A90, 15 \text{ minutes}}$ night-time (23:00-07:00) are summarised in Table 12. In addition to the typical background sound levels, average ambient $L_{Aeq,T}$ sound levels and typical maximum $L_{AF,max}$ sound levels are presented to add context. Values have been rounded to the nearest whole number.

Aside from the days with potential rain and high wind detailed above, the full survey period has been used in the determining of the typical background noise levels.

Full-tabulated and charted results of the sound measurements are presented below. The statistical analysis for obtaining the typical background sound levels can also be found below.

Table 12: Summary of Measured Noise Levels				
Measurement position	Period (T)	Equivalent continuous SPL $L_{Aeq,T}$ (dB)	Typical Maximum SPL L_{AFmax} (dB)	Typical background sound level $L_{A90,T}$ (dB)
MP1	Daytime (07:00 – 23:00)	45	74	35
	Night time (23:00 – 07:00)	35	53	29
MP2	Daytime (07:00 – 23:00)	60	76	41-44
	Night time (23:00 – 07:00)	51	74	26-28
MP3	Daytime (07:00 – 23:00)	62	77	41
	Night time (23:00 – 07:00)	54	75	30

Full charted results of the sound measurements are presented in the figures below.

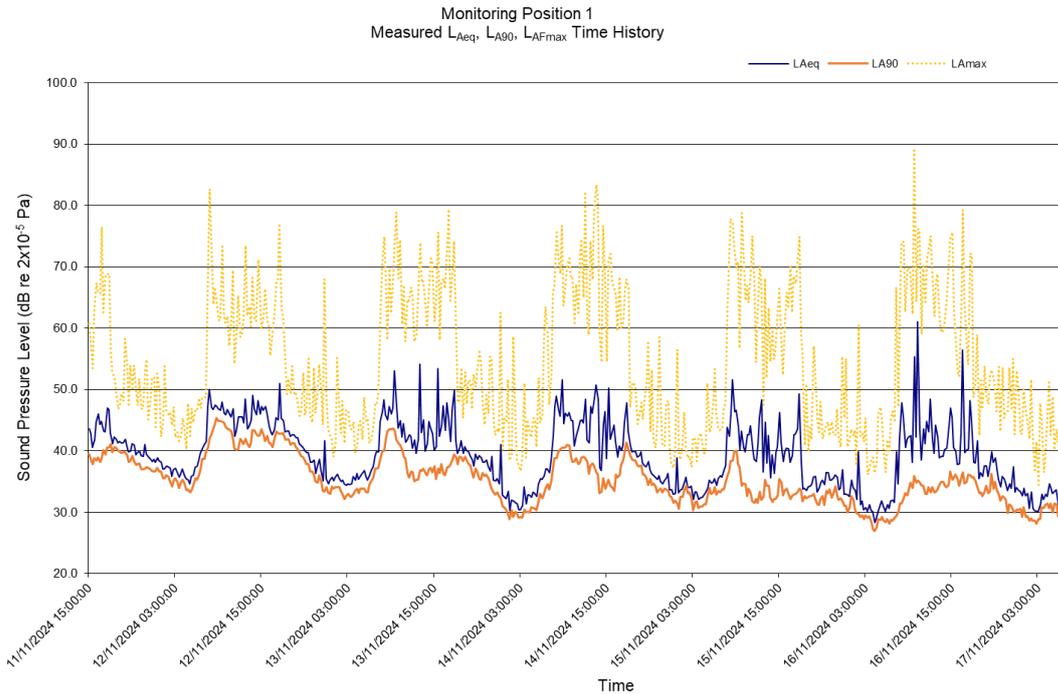


Figure 21: Monitoring Position 1 – Time History Graph 2024

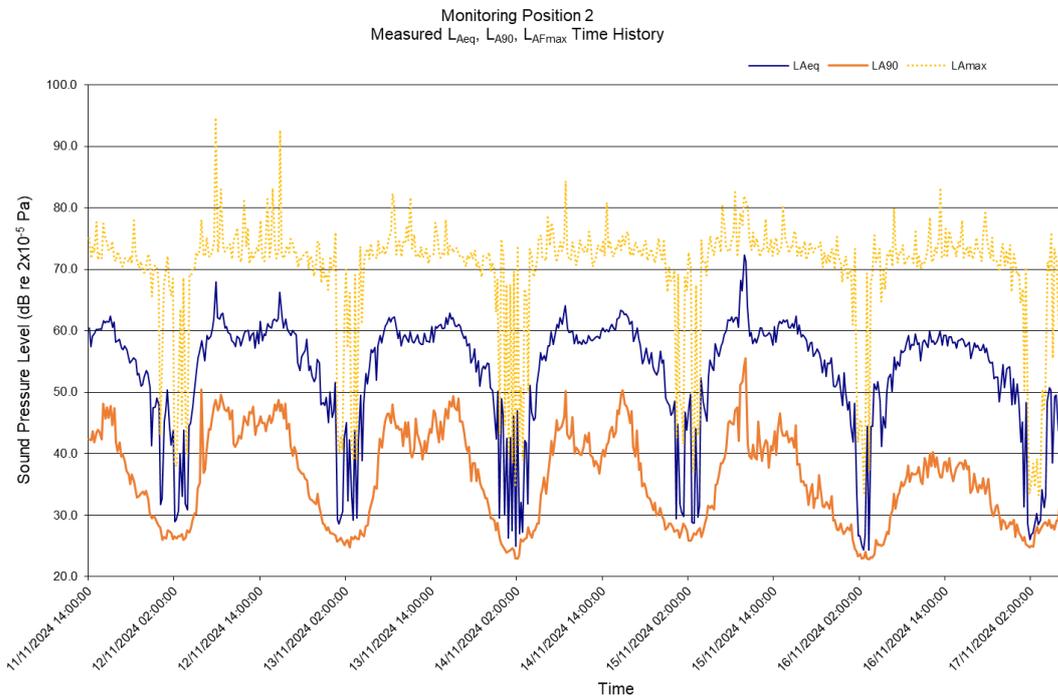


Figure 22: Monitoring Position 2 – Time History Graph 2024

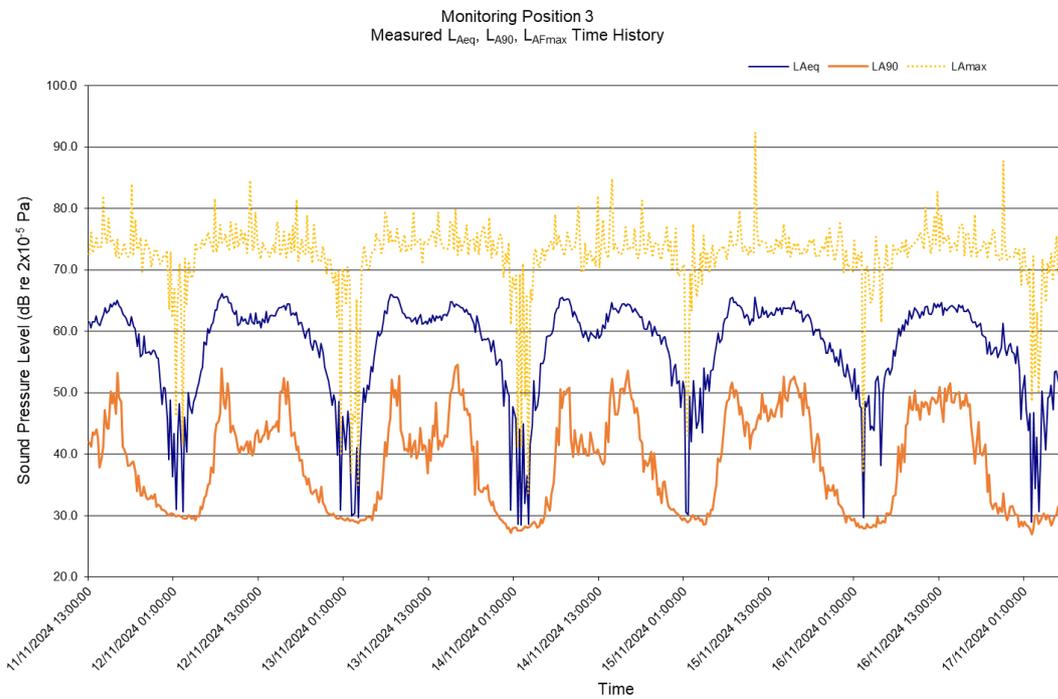


Figure 23: Monitoring Position 3 – Time History Graph 2024

The statistical analysis for obtaining the typical background sound levels used in this assessment can be found in the images below.

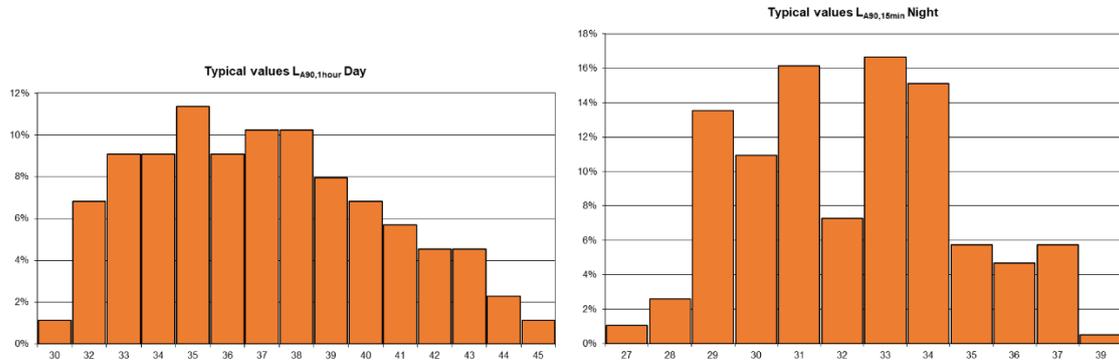


Figure 24: Daytime and Night-time L_{A90} Statistical Analysis –Position 1 2024

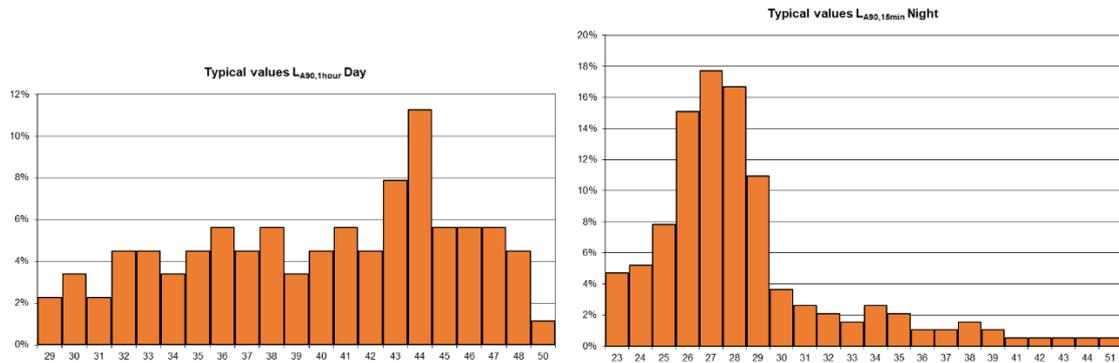


Figure 25: Daytime and Night-time L_{A90} Statistical Analysis –Position 2 2024

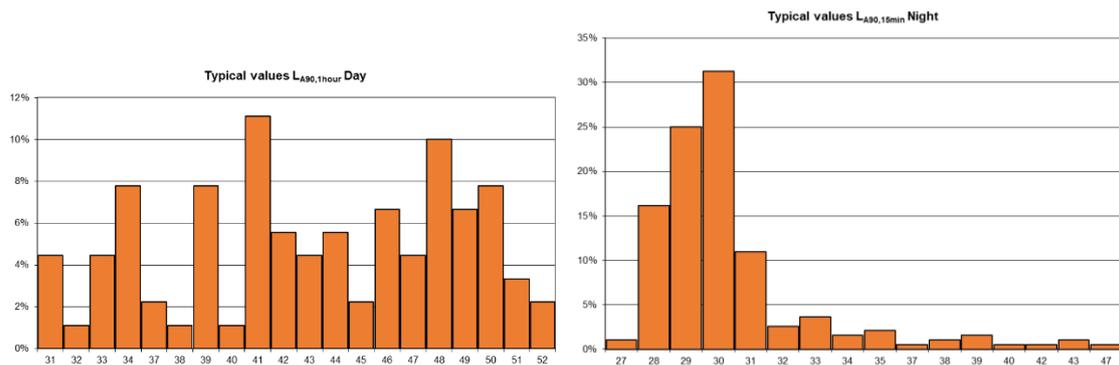


Figure 26: Daytime and Night-time L_{A90} Statistical Analysis –Position 3 2024

6 Comparison of Survey Results

The results of the four baseline surveys undertaken since 2016 are presented below to allow comparison. As set out above, monitoring locations were matched as closely as was practicable to the positions utilised in previous surveys; however, small differences in location were unavoidable due to site constraints.

Table 13 presents a comparison of the measured ambient $L_{Aeq,T}$ noise levels between 2016 and 2024.

Table 13: Summary of Measured $L_{Aeq,T}$ Noise Levels 2016 -2019 -2023 -2024					
Measurement position	Period (T)	Equivalent continuous SPL $L_{Aeq,T}$ (dB)			
		2016	2019	2023	2024
MP1	Daytime (07:00 – 23:00)	43	52	50	45
	Night time (23:00 – 07:00)	36	47	45	35
MP2	Daytime (07:00 – 23:00)	60	47	59	60
	Night time (23:00 – 07:00)	49	47	56	51
MP3	Daytime (07:00 – 23:00)	-	56	61	62
	Night time (23:00 – 07:00)	-	52	54	54

As can be seen above, some changes in the ambient noise levels were measured between 2016 and 2024, especially for the surveys in 2019 and 2023. These differences can be partially explained by the omission of data as set out herein; in 2019, the core daytime measurement results between 07:00 - 18:00 (Monday to Friday) and 07:00 – 14:00 (Saturday) were discarded due to the potential impact of construction works, and in 2023 some periods were discarded for weather conditions. The ambient noise levels measured in 2016 and 2024 are very similar what suggests that the operation of additional data centre buildings (P3 and P4) has not increased the ambient noise levels in the surrounding area. The ambient noise levels can readily be affected by local noise sources and therefore the changes in local conditions (more or less traffic, and local neighbouring noise sources) can also explain the difference in readings in the surveys.

Table 14 presents a comparison of the measured background $L_{A90,T}$ noise levels between 2016 and 2024.

Table 14: Summary of Measured $L_{A90,T}$ Noise Levels 2016 -2019 -2023 -2024					
Measurement position	Period (T)	Background SPL $L_{A90,T}$ (dB)			
		2016	2019	2023	2024
MP1	Daytime (07:00 – 23:00)	32	33-35	36	35
	Night time (23:00 – 07:00)	28	28-29	28	29
MP2	Daytime (07:00 – 23:00)	40	34	41	41-44
	Night time (23:00 – 07:00)	28	24	26	26-28
MP3	Daytime (07:00 – 23:00)	-	43	43	41
	Night time (23:00 – 07:00)	-	28-29	31	30

As can be seen above, there are minor changes in the typical background sound levels measured through the years. Especially at night, the background levels measured since 2016 have not significantly changed. The typical background noise levels measured in 2016 and 2024 are closely comparable. This supports the fact that the operation of additional data centre buildings (P3 and P4) has not increased the background noise levels in the surrounding area.

Table 15 presents a comparison of the measured maximum L_{Amax} noise levels between 2016 and 2024.

Table 15: Summary of Measured L_{Amax} Noise Levels 2016 -2019 -2023 -2024					
Measurement position	Period (T)	Maximum SPL $L_{Amax,T}$ (dB)			
		2016	2019	2023	2024
MP1	Daytime (07:00 – 23:00)	-	76	72	74
	Night time (23:00 – 07:00)	-	73	68	53
MP2	Daytime (07:00 – 23:00)	-	70	84	76
	Night time (23:00 – 07:00)	-	71	79	74
MP3	Daytime (07:00 – 23:00)	-	74	79	77
	Night time (23:00 – 07:00)	-	71	75	75

L_{Amax} levels are affected by short-term maximum noise events, and can be related to traffic noise, neighbouring noises, aircraft noise, etc. L_{Amax} noise events are not likely to be directly related to the operation of constant/steady state external plant, and so any potential changes are not expected to be resulting from the data centre site operations. However, the summary has been presented for information purposes and it can be seen that the results are showing consistent levels across the surveys.

7 Conclusion

Sweco UK have been instructed by Ark Estates 4 Limited (Ark) to prepare a summary of the historic and latest baseline environmental sound surveys undertaken at noise sensitive receptor locations around the Spring Park Data Centre Campus, in order to evaluate how the baseline sound surveys have evolved through the years and how this has impacted the noise climate in the surrounding areas.

This summary is intended to inform the Environmental Control and Protection Team at Wiltshire Council.

Since 2016, two data centres buildings have been constructed within the site. and the noise surveys undertaken in 2023 and 2024 include the operation of these two data centres. It is understood that operation for Spring Park Campus facilities is the same for the surveys undertaken in 2023 and 2024.

The results of four baseline sound monitoring exercises carried out at three positions to determine the existing ambient sound climate at the nearest noise-sensitive receptors (NSRs) to the development, are presented in this report.

During surveys, it was noted a low frequency hum from the MOD substation, although this was noticeable at the position to the west along Bradford Road, during the day.

The comparison of the survey results are not showing any increase in noise level in the area surrounding the site that would be considered significant or likely to affect noise sensitive receptors in the area. Observations on site also support the consistency of the noise climate and noise levels in the Spring Park Campus surrounding area.

Appendix A – Glossary of Acoustic Terminology

Sound is the vibration of particles in a medium, such as air, which may be detected by the human ear. This sound is defined as noise when it is audible and unwanted or undesirable to a listener.

The vibration, or oscillation, of particles about an equilibrium position results in local pressure fluctuations from the normal pressure. These local pressure fluctuations are described as sound pressure, and the number of oscillations per second is described as the frequency.

The human ear responds to an incredibly large range of sound pressure, from 0.00002 Pa to 200 Pa, and the perceived loudness is proportional to the logarithm of the sound pressure squared. For this reason, sound is measured in terms of a logarithmic parameter, the sound pressure level, to approximate the response of the ear. Sound pressure levels are quantified in decibels (dB) relative to the threshold of hearing.

The human ear responds to a wide range of sound frequencies, from the lowest perceptible bass note, around 20 Hz, to the highest perceptible treble note, around 20,000 Hz. The ear does not respond equally to each frequency and is most sensitive to sound within the mid-frequency range of around 600 to 8000 Hz.

The response of the ear to each frequency also varies with the sound pressure level. For very loud sounds the difference in perceived loudness between each frequency is less pronounced than for low level sound.

Acousticians measure sound pressure levels using sound level meters, which incorporate a microphone.

A sound level meter approximates the response of the human ear to sound by using frequency filters. For typical environment sounds, the A-weighting filter is used to approximate the response of the ear at typical sound pressure levels. The sound pressure level, adjusted to approximate the response of the ear, is quantified in A-weighted decibels, dB(A) or dB L_{pA} .

In a typical environment, the A-weighted sound pressure level will vary with time. For this reason, acousticians use statistical measurement parameters to describe the sound environment. The most common measurement parameters are as follows:

- dB $L_{Aeq,T}$: Equivalent continuous A-weighted sound pressure level. This is the energy-average sound pressure level during a measurement period, T.
- dB $L_{AFmax,T}$: Maximum A-weighted sound pressure level. This is the maximum sound pressure level during a measurement period, T, and measured in a way that approximates the time-response of the ear.
- dB $L_{A90,T}$: 90th percentile A-weighted sound pressure level. This is the sound pressure level exceeded for 90% of the measurement period, T, commonly referred to as the background sound level.

Sound pressure levels in typical environments are presented in Table A1. Further definitions of acoustic parameters are presented in Table A2.

Table A1: Sound pressure levels within typical environments	
Sound Pressure Level, dB	Typical Environment or Description
0	Threshold of hearing
15 to 25	A recording studio
25 to 35	A hotel bedroom at night
35 to 45	An unoccupied office
45 to 55	Quiet residential street
55 to 65	Normal conversation, 1 m away TV programme, listener position
65 to 75	Raised voices, 1 m away Urban high street traffic
75 to 85	Busy motorway traffic, on hard shoulder Typical small plant room
85 to 95	High-speed hand-dryer, operator position Inside London underground (average)
95 to 105	Pneumatic hammer, operator position Concert orchestra
105 to 115	Typical nightclub Untreated generator plantroom
115 to 140	Aircraft take-off, close proximity Threshold of pain

Table A2: Definitions of Acoustic Terminology and Parameters	
Wording	Description
Ambient sound level	The total sound pressure level in a given position from all surrounding sources of noise, both near and far. Normally expressed as an equivalent continuous A-weighted sound pressure level, dB $L_{Aeq,T}$.
A-weighting	The process of weighting the observed sound pressure level at each frequency band, to approximate the sensitivity of the human ear to sounds of different frequencies. A-weighted sound pressure levels are expressed as dB(A) or dB L_{Ap} .
C_{tr}	Spectrum adaptation term No. 2 as defined in BS EN ISO 717-1. This term is a correction that applies to the weighted standardised level difference to account for how well a partition insulates against sound which has mainly low and medium frequency content (e.g. road traffic noise, amplified disco music).
Decibel	A logarithmic value quantifying the sound pressure at a specified position or sound power, relative to a reference sound pressure or sound power (20 μ Pa for sound pressure, 10-12 W for sound power).
Façade	A sound monitoring position is a "façade" position when it includes a strong reflection from an adjacent building or structure. This corresponds with a position that is between 1 and 2 metres away from a reflecting building or structure.
Free-field	A sound monitoring position is a "free-field" position when it is not affected by sound reflections from surrounding buildings and structures. This corresponds with a position at least 3.5 metres away from reflecting buildings or structures.
Frequency	The number of oscillations per second of a vibrating particle in a medium, measured in Hertz (Hz) or cycles per second.
Impact sound	Sound due to impacts on a floor, such as due to footfall, as observed in the room below the floor.
$L_{A10,18hr}$	The A-weighted sound pressure level exceeded during 10% of the 18-hour time interval between 06:00 and 24:00. This is the UK Road Traffic Noise Index, as defined in the Calculation of Road Traffic Noise (CRTN, HMSO, 1988).
$L_{A90,T}$	The A-weighted sound pressure level exceeded during 90% of the time interval, T. Typically used to quantify the background sound level at a specified position.
$L_{Aeq,T}$	The equivalent continuous A-weighted sound pressure level over a time interval, T. This is an energy-average sound pressure level over the specified time period.
$L_{AFmax,T}$	The maximum A-weight sound pressure level during a specified time interval, T. Measured with "fast" time-weighting (which approximates the time-response of the human ear).

Table A2: Definitions of Acoustic Terminology and Parameters	
Wording	Description
Noise	Unwanted or undesirable sounds observed by a listener.
Octave band	A frequency band used in acoustical measurements. An octave is a frequency interval between two sounds where the frequency of the lower sound is half the frequency of the upper sound. The human hearing range is divided into ten logarithmically equal frequency divisions called octave bands, with centre-band frequencies as follows: (16 Hz, 32 Hz,) 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1000 Hz, 2000 Hz, 4000 Hz, 16000 Hz.
Rating level, $L_{A,r,T}$	The specific sound level plus a correction accounting for acoustic features such as impulses, tones, intermittent features, or any other characteristics that draw more attention to the sound source.
Residual sound level	The equivalent continuous A-weighted sound pressure level of the ambient sound remaining at a specified position when the specific sound source (the sound source being assessed) does not contribute to the ambient sound.
Reverberation	The reflection of sound from room surfaces, resulting in the prolongation or persistence of a sound in a room.
Reverberation time	Time, in seconds, required for the sound pressure level in a room to decrease by 60 dB after a sound source has stopped. Long reverberation times are present in large empty rooms with hard surfaces (e.g. a cathedral); short reverberation times are present in smaller rooms with soft furnishing (e.g. typical living room, a recording studio).
R_w	The weighted sound reduction index of an architectural element. A single-figure rating of the sound insulation provided by the architectural element in idealised conditions over a range of frequencies. Measured in a laboratory in accordance with BS EN ISO 140-3 (or BS EN ISO 10140-2), with single figure rating determined in accordance with BS EN ISO 717-1.
Sound	The vibration, or oscillation, of particles in a medium, such as air, which may be detected by the human ear.
Sound insulation	The ability of architectural elements or structures to reduce the transmission of sound, predominantly due to the reflection of sound incident on the element or structure. Typically measured as the difference in sound pressure levels between a “source” room containing a loudspeaker and an adjacent “receiving” room.
Sound power level	A logarithmic measurement that quantifies the total sound power of a source emitted in all directions relative to a reference sound power ($W_{ref} = 1 \text{ pW}$ or 10^{-12} W). Equal to $10 \log_{10} (W / W_{ref})$ and expressed in decibels.
Sound pressure level (SPL)	A logarithmic measurement that quantifies the sound pressure at a specified position relative to a reference sound pressure ($p_{ref} = 20 \text{ } \mu\text{Pa}$). Equal to $20 \log_{10} (p / p_{ref})$ and expressed in decibels.

Table A2: Definitions of Acoustic Terminology and Parameters	
Wording	Description
Specific sound level	The equivalent continuous A-weighted sound pressure level at a specified position due to the specific sound source (the sound source being assessed).
Third-octave band	A higher-resolution frequency band used in acoustical measurements. A third-octave band is equal to one of three logarithmically equal parts of the corresponding octave frequency band. The upper band edge frequency is equal to the lower band-edge frequency multiplied by $2^{1/3}$.