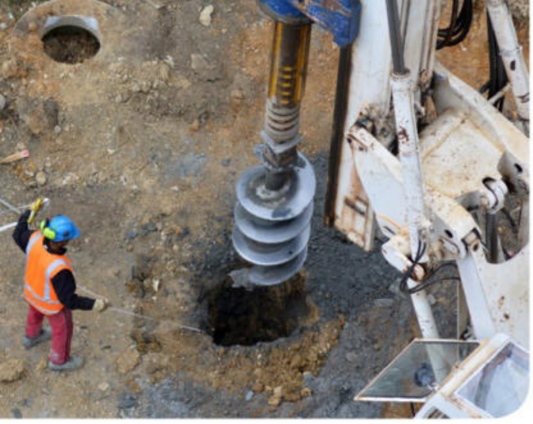


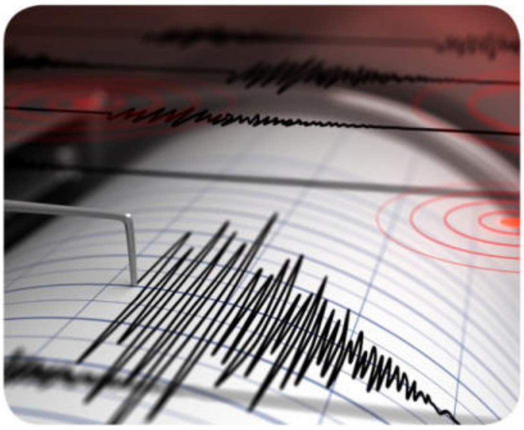
Air & Acoustic Consultants

Bridge Industrial

Weybridge Business Park, Weybridge

Noise Assessment

April 2022



airandacoustics.co.uk

Bridge Industrial

Weybridge Business Park, Weybridge

Noise Assessment

OFFICE ADDRESS:	PROJECT NO:	DATE:
Lombard House 145 Great Charles Street Birmingham B3 3LP	100492	April 2022

REPORT NO.	PREPARED:	DATE ISSUE:	STATUS:	CHECKED:	AUTHORISED:
1	BB	27/04/2022	Final	DS	DS

CHANGE LOG.

VERSION NO.	DATE:	CHECKED BY:	REASON FOR CHANGE:

Weybridge Business Park, Weybridge

Noise Assessment

CONTENTS

APPENDICES:

FIGURES:

TABLES:

1 Introduction

1.1 Brief

1.1.1 Air & Acoustic Consultants Limited have been commissioned by Bridge Industrial to undertake a noise impact assessment in support of a planning application for a proposed industrial development at Weybridge Business Park.

1.2 Application Site

1.2.1 The applicate site is located on a vacant site at Weybridge Business Park, which currently has a number of office buildings, the site is split into two areas by Addlestone Road.

1.2.2 The northern site has residential properties located to the north and southeast, commercial premises to the southwest and the A317 borders the northern boundary.

1.2.3 The southern site has residential properties located to the northeast, east and west and commercial premises to the south and west. The River Wey borders the eastern part of the site which has a number of nearby short-term 48-hour moorings. Addlestone Road and Hamm Moor Lane are adjacent to the northern and western site boundaries.

1.2.4 The National Grid Reference for the centre of the site is, TQ 06321 64681 (British National Grid Coordinates E: 506321, N: 164681). The site location and surrounding area are shown in Figure 1.1.

Figure 1.1: Site Location

1.2.5 The existing noise climate around the site for both the daytime and night-time periods, is dominated by the existing road traffic noise from the local highway network as well as some commercial noise.

1.2.6 The nearest existing noise sensitive receptor is a residential property on Addlestone Road, there are additional noise sensitive residential properties on Hamm Moor Lane and on the opposite side of the River Wey.

1.3 Development Proposals

1.3.1 The development proposals comprise the construction of a number of commercial buildings with associated parking. The proposed layout is shown in Figure 1.2.

Figure 1.2: Proposed Site Layout

1.4 Assessment Scope

1.4.1 The proposed development has the potential to cause adverse noise effects from the following sources:

- The associated construction works (temporary);
- Industrial or commercial activities at the proposed units;
- Vehicle movements inside the proposed site; and
- Loading or unloading of goods vehicles at the proposed units.

1.4.2 The report is structured as follows:

- Section 2 considers the proposed scheme in relation to the relevant national and local planning policies;
- Section 3 sets out the proposed impact assessment methodology;
- Section 4 details the baseline noise environment at the proposed development site;
- Section 5 considers the construction phase impacts;
- Section 6 considers the operational phase impacts;
- Section 7 describes potential mitigation measures for the construction and operational phase(s) (where required); and
- Section 8 summaries and concludes the assessment.

1.4.3 To assist with the understanding of this report a glossary of acoustic terms is provided in Appendix A.

2 Legislation and Policy Context

2.1 Introduction

2.1.1 The prediction and assessments of the likely noise impacts of the proposed development have been completed using the relevant legislation policy and guidance concerning noise, which are discussed in turn below.

2.2 National Planning Policy Framework (NPPF)[i]

2.2.1 The NPPF sets out the Government's planning policy for England. At its heart is an intention to promote more sustainable development. The NPPF addresses noise as a planning issue primarily through the statements in paragraphs 174 and 185.

2.2.2 At paragraph 174:

> *'Planning policies and decisions should contribute to and enhance the natural and local environment by:'*
>
> *'e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and'.*

2.2.3 At paragraph 185:

> *'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> a) *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
>
> *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational amenity value for this reason;'.*

2.2.4 The NPPF refers to the Noise Policy Statement for England (NPSE) for advice on the achievement of these policy aims, and particularly in connection with the explanation of 'adverse impacts'.

2.3 Noise Policy Statement for England (NPSE)[ii]

2.3.1 The NPSE is the overarching government policy on noise. It seeks to clarify the underlying principles and aims in past and existing policy documents, legislation, and guidance in relation to all forms of noise including environmental noise, neighbour noise, and neighbourhood noise (but not noise in the workplace).

[i] Ministry of Housing, Communities and Local Government. 2021. *National Planning Policy Framework.*

[ii] Department for Environment, Food and Rural Affairs. 2010. *Noise Policy Statement for England.*

2.3.2 It uses the established concepts of No Observed Effect Level, (NOEL) and Lowest Observed Adverse Effect Level, (LOAEL). The NPSE extends these by introducing Significant Observed Adverse Effect Level, (SOAEL). This is the level above which significant adverse effects on health and quality of life occur. However, the explanatory note to the NPSE states that it is not possible to identify a single objective value to define SOAEL for noise that is applicable to all sources of noise in all situations. It is likely to be different for different noise sources, for different receptors and at different times.

2.3.3 The NPSE's vision is to:

> *'Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.*
>
> *This long-term vision is supported by the following aims:*
>
> - *Avoid significant adverse impacts on health and quality of life;*
> - *Mitigate and minimise adverse impacts on health and quality of life; and*
> - *Where possible, contribute to the improvement of health and quality of life, through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.'*

2.3.4 The second aim of the NPSE refers to noise impacts that lie somewhere between LOAEL and SOAEL. The NPSE asserts that, while this means that all reasonable steps should be taken to mitigate and minimise adverse effects, this does not mean that such adverse effects cannot occur.

2.4 Planning Practice Guidance (Noise)[iii]

2.4.1 The Government has published Planning Practice Guidance on a range of subjects including noise. The guidance forms part of the NPPF and provides advice on how to deliver its policies. The Planning Practise Guidance (PPG) (Noise) reiterates general guidance on noise policy and assessment methods provided in the NPPF, NPSE and British Standards and contains examples of acoustic environments commensurate with various effect levels.

2.4.2 Paragraph 006 of (Reference ID: 30-006-20190722) of the PPG (Noise) explains that:

> *'The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation.'*

2.4.3 The guidance contained within the PPG (Noise) provides advice on how to deliver the policies of the NPPF. The PPG (Noise) reiterates general guidance on noise policy and assessment methods provided in the NPPF, NPSE and British Standards and contains examples of acoustic environments commensurate with various effect levels. Paragraph: 004 Reference ID: 30-004-20190722 of the PPG (Noise) describes the different effect levels which are defined and briefly outlined below:

- No Observable Effect Level (NOEL);
- Lowest Observable Adverse Effect Level (LOAEL); and
- Significant Observed Adverse Effect Level (SOAEL).

[iii] Department for Levelling Up, Housing and Communities and Ministry of Housing Communities and Local Government. 2019. *Planning Practice Guidance Noise.*

2.4.4 The PPG (Noise) describes noise that is not noticeable to be at levels below the NOEL. Noise exposures in this range are below the LOAEL and no mitigation is required. The PPG (Noise) suggests that noise exposures above the LOAEL cause small changes in behaviour. Examples of noise exposures above the LOAEL provided in the PPG (Noise) are having to turn up the volume on the television; needing to speak more loudly to be heard; or, where there is no alternative ventilation, closing windows for some of the time because of the noise. In line with the NPPF and NPSE, the PPG (Noise) states that consideration needs to be given to mitigating and minimising effects above the LOAEL, but also to take account of the economic and social benefits being derived from the activity causing the noise. The PPG (Noise) suggests that noise exposures above the SOAEL cause material changes in behaviour. Examples of noise exposures above the SOAEL provided in the PPG (Noise) are, where there is no alternative ventilation, keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present. In line with the NPPF and NPSE, the PPG (Noise) states that effects above the SOAEL should be avoided and that whilst the economic and social benefits derived from the activity causing the noise must be taken into account, such exposures are undesirable.

2.4.5 The non-numeric guidance contained within the PPG (Noise), based upon the starting point in the NPSE, is summarised in Table 2.1 below.

Table 2.1: Summary of Guidance from NPSE and PPG (Noise)

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Adverse Effect Level			
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and / or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and / or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening, and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid

Perception	Examples of Outcomes	Increasing Effect Level	Action
Noticeable and very disruptive	Extensive and regular changes in behaviour and / or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation / awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

2.4.6 In line with the NPPF and the NPSE, the guidance confirms that significant adverse effects should be avoided. At the next level down in the hierarchy, where there is an observed adverse effect, the PPG (Noise) confirms that effects should be mitigated and reduced to a minimum (as far as reasonably practicable). No mitigation measures are required for effects that are considered to be below the lowest observed adverse effect level (LOAEL).

2.4.7 However, along with the NPSE it does not provide any numerical definition of the NOEL, LOAEL and SOAEL.

2.4.8 The NPSE refers to the World Health Organisation (WHO) when discussing noise impacts. The WHO Guidelines for Community Noise, (1999) suggest guideline values for internal noise exposure which take into consideration the identified health effects and are set based on the lowest effect levels for the general population. Guideline values for amenity which relate to external noise exposure are set at 50 or 55 dB(A), representing daytime levels below which most of the adult population will be protected from becoming moderately or seriously annoyed respectively.

2.5 The Control of Pollution Act[iv]

2.5.1 The Control of Pollution Act (1974) gives local authorities powers in relation to noise from construction sites including to serve a notice, (under Section 60) specifying exactly how works should be carried out.

2.5.2 An application for prior consent for the work can be completed under Section 61 of the Act providing a collaborative approach to the development.

2.5.3 A Section 61 application demonstrates to the local authority a pro-active approach to reducing environmental impacts, outlining what methods are in place to minimise disruption to the neighbourhood, thus reducing the number of potentials complaints. By having Section 61 consent, a local authority may not issue a Section 60 notice if the terms of the S61 agreement are not breached. Having a Section 61 consent in place minimises the likelihood of the contractor's work being stopped, as a mitigation plan is already in place.

2.6 Local Planning Policy

Runnymede 2030 Local Plan[v]

2.6.1 The Runnymede 2030 Local Plan policies implement the vision and objectives of the borough council for what development is required and which key areas should be protected. The document is ultimately used to make decisions on planning applications.

2.6.2 Policy EE2: Environmental Protection states:

[iv] UK Public General Acts. 1974. *Control of Pollution Act.*

[v] Runnymede Borough Council. 2020. *Runnymede 2030 Local Plan.*

> *"Any report or assessment required by this policy will be expected to be written in line with best practice guidance or advice.*
>
> *Noise*
>
> *Development proposals resulting in or being subject to external noise impacts above Lowest Observed Adverse Effect Level will be expected to implement measures to mitigate and reduce noise impacts to a minimum. Development proposals resulting in or being subject to external noise impacts above Significant Observed Adverse Effect Level will not be supported unless it can be clearly demonstrated that the social and economic benefits of the proposal outweigh noise impacts and unless the scheme's design and layout has been optimised to avoid, mitigate and reduce impacts to a minimum. Proposals which have or would be subject to unacceptable adverse effects will not be supported. Proposals will need to consider the effects of external noise on outside amenity and where possible incorporate opportunities to create areas of relative tranquillity or areas which offer respite from high ambient noise levels. In considering measures to avoid, mitigate and reduce noise impacts, proposals will need to consider the basic principles of noise control:*
>
> - *Separate noise sources from sensitive receptors;*
> - *Control the noise at source; and*
> - *Protect the receptor.*
>
> *For all proposals resulting in or being subject to external noise impacts above Lowest Observed Adverse Effect Level, a noise or acoustic assessment will need to be submitted which demonstrates the avoidance, mitigation or reduction measures identified are the most appropriate and capable of implementation."*

2.7 Runnymede Borough Council Consultation

2.7.1 Pre-application advice was sought from Runnymede Borough Council by the client in which comments were provided on a noise assessment methodology. Full details of the comments are provided in Appendix B.

2.7.2 The points raised have been covered in this assessment however, noise has not been assessed separately in the evening period, only the daytime and night-time periods are specified by BS4142:2014+A1:2019. Additionally, the evening period is likely to be a more sensitive period than the daytime period but less sensitive than the night-time period so a thorough assessment of the night-time period is considered sufficient.

3 Assessment Approach

3.1 Construction Impacts

3.1.1 The activities associated with the construction phase of the proposed development has the potential to generate noise which may have an adverse impact on the surrounding area.

3.1.2 Guidance on the prediction and assessment of noise from development sites is given in British Standard BS 5228 -1:2009 + A1:2014[vi] (BS 5228-1).

3.1.3 Construction noise can have disturbing effects on the surrounding neighbourhood. The effects are varied and are complicated further by the nature of the site works, which will be characterised by varied noise sources which will change location throughout the construction works. The duration of site operations is also an important consideration. Higher noise levels may be acceptable if it is known that the levels will only occur for a limited period.

3.1.4 BS:5228-1 provides guidance on significance criteria for assessing the potential noise impacts associated with the construction phase of projects. There are two methods specified; the ABC method and the 5 dB(A) change method.

3.1.5 The ABC method involves categorising receptors using the ambient sound level they experience, using the method and categories outlined in Table 3.1.

Table 3.1: BS 5228-1 ABC Method

Assessment category and threshold value period	Threshold value, in decibels (dB) ($L_{Aeq,T}$)		
	Category A [A]	Category B [B]	Category C [C]
Night-time (23:00-07:00)	45	50	55
Evenings and weekends	55	60	65
Daytime (07:00-19:00) and Saturdays (07:00-13:00)	65	70	75

NOTE 1 A potential significant effect is indicated if the $L_{Aeq,T}$ noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level

NOTE 2 If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to site noise.

NOTE 3 Applied to residential receptors only

[A] Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

[B] Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

[C] Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

[D] 19:00-23:00 weekdays, 12:00-23:00 Saturdays and 07:00-23:00 Sundays

3.1.6 The 5 dB(A) change method assesses the change in noise levels as a result of the construction works. It states;

[vi] BSI. *BS 5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites. Part 1: Noise.*

"Noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB $L_{Aeq,\,T}$ from site noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant effect.

These evaluative criteria are generally applicable to the following resources:

- *residential buildings;*
- *hotels and hostels;*
- *buildings in religious use;*
- *buildings in educational use;*
- *buildings in health and/or community use.*

For public open space, the impact might be deemed to cause significant effects if the total noise exceeds the ambient noise ($L_{Aeq,\,T}$) by 5 dB or more for a period of one month or more. However, the extent of the area impacted relative to the total available area also needs to be taken into account in determining whether the impact causes a significant effect."

3.2 Operational Impacts

Design Manual for Roads & Bridges LA111 Noise and Vibration

3.2.1 The Design Manual for Road and Bridges LA111 Noise and Vibration sets out the requirements for assessing the effects of highways noise and vibration from construction, operation, and maintenance projects. This standard may also be applied to existing roads, in certain circumstances.

3.2.2 Traffic noise is a general term used to define the noise from traffic using the road network. A traffic stream is made up of a variety of vehicle types which have their own individual noise sources. Close to a road, individual vehicles can be distinguished in the traffic stream, but further from the road the influence of individual vehicles is less noticeable as the noise from traffic becomes a continuous sound.

3.2.3 Noise from road traffic is assessed in terms of the absolute noise levels at noise sensitive receptor and in terms of the change in noise levels at said receptors.

3.2.4 For absolute noise levels the LOAELs and SOAELs are set at the levels provided in Table 3.2.

Table 3.2: Operational Noise LOAELs and SOAELs for All Receptors

Time Period	LOAEL	SOAEL
Day (06:00-24:00)	55 dB $L_{A10,18hr}$ façade	68 dB $L_{A10,18hr}$ façade
Night (23:00-07:00)	40 dB $L_{night,\,outside}$ (free-field)	55 dB $L_{night,\,outside}$ (free-field)

3.2.5 LOAELs and SOAELs should be modified where it is proportionate and merited by local circumstances which can include, but are not limited to:

- Noise sensitive receptors that have reduced sensitivity to noise e.g. where the receptors have good noise insulation.
- Noise sensitive receptors that have an increased sensitivity to noise or vibration e.g. if a building is regularly used by people with hearing impairments.

3.2.6 The effect on people from road traffic can also be reported in terms of nuisance. The assessment of nuisance is based upon a short-term change in road traffic noise of 1 dB, being the smallest that is considered to be perceptible. The long-term change, (typically 15 years after the project is opened) of 3 dB is considered to be perceptible. The magnitude of impact should therefore be considered to be different in the short term and long term.

3.2.7 DMRB indicates the classification of the magnitude of the change in road traffic noise, in the short term as shown in Table 3.3 and long term in Table 3.4.

Table 3.3: DMRB Short Term Magnitude of Change

Short Term Noise Change (dB $L_{A10,18h}$ or L_{night})	Short Term Magnitude
0	No Change
Less than 1.0	Negligible
1.0 – 2.9	Minor
3.0 – 4.9	Moderate
Greater than or equal to 5.0	Major

Table 3.4: DMRB Long Term Magnitude of Change

Long Term Noise Change (dB $L_{A10,18h}$ or L_{night})	Long Term Magnitude
0	No Change
Less than 3.0	Negligible
3.0 – 4.9	Minor
5.0 – 9.9	Moderate
Greater than or equal to 10	Major

3.2.8 Where the magnitude of a change in noise level at sensitive receptors is negligible in the short-term, the change is considered not significant. To determine the significance of impacts of projects an initial assessment is made using Table 3.5.

Table 3.5: Initial Assessment of Operational Noise Significance

Significance	Short Term Magnitude Of Change
Significant	Major
Significant	Moderate
Not Significant	Minor
Not Significant	Negligible

3.2.9 Where the magnitude of change at a noise sensitive receptors in the short-term is minor, moderate or major Table 3.6 along with the output of Table 3.5 shall be used to determine final significance.

Table 3.6: Determining Final Operational Significance on Noise Sensitive Receptors

Local Circumstance	Influence on Significance Judgement
Noise level change (is the magnitude of change close to the minor/moderate boundary?)	1) Noise level changes within 1 dB of the top of the 'minor' range can indicate that it is more appropriate to determine a likely significant effect. Noise level changes within 1 dB of the bottom of a 'moderate' range can indicate that it is more appropriate to consider a change is not a likely significant effect.

Local Circumstance	Influence on Significance Judgement
Differing magnitude of impact in the long term to magnitude of impact in the short term	1) Where the long-term impact is predicted to be greater than the short-term impact, it can be appropriate to conclude that a minor change in the short term is a likely significant effect. Where the long-term impact is predicted to be less than the short term it can be appropriate to conclude that a moderate or major change in the short term is not significant. 2) A similar change in the long term and non-project noise change can indicate that the change is not due to the project and not an indication of a likely significant effect.
Absolute noise level with reference to LOAEL and SOAEL (by design this includes sensitivity of receptor)	1) A noise change where all do-something absolute noise levels are below SOAEL requires no modification of the initial assessment. 2) Where any do-something absolute noise levels are above the SOAEL, a noise change in the short term of 1.0dB or over results in a likely significant effect.
Location of noise sensitive parts of a receptor	1) If the sensitive parts of a receptor are protected from the noise source, it can be appropriate to conclude a moderate or major magnitude change in the short term and/or long term is not a likely significant effect. 2) Conversely, if the sensitive parts of the receptor are exposed to the noise source, it can be more appropriate to conclude a minor change in the short term and/or long term is a likely significant effect. 3) It is only necessary to look in detail at individual receptors in terms of this circumstance where the decision on whether the noise change gives rise to a significant environmental effect is marginal.
Acoustic context	1) If a project changes the acoustic character of an area, it can be appropriate to conclude a minor magnitude of change in the short term and/or long term is a likely significant effect.
Likely perception of change by residents	1) If the project results in obvious changes to the landscape or setting of a receptor, it is likely that noise level changes will be more acutely perceived by the noise sensitive receptors. In these cases it can be appropriate to conclude that a minor change in the short term and/or long term is a likely significant effect. 2) Conversely, if the project results in no obvious changes for the landscape, particularly if the road is not visible from the receptor, it can be appropriate to conclude that a moderate change in the short term and/or long term is not a likely significant effect.

3.2.10 The number of properties affected shall not be used to justify change between the initial operational significance and the final operational significance.

Calculation of Road Traffic Noise[vii]

3.2.11 The potential change in road traffic noise, as a result of the Proposed Development, has been considered in-line with the methodology from the Calculation of Road Traffic Noise (CRTN).

3.2.12 The CRTN method considers road traffic using the Annual Average Weekday Traffic (AAWT) flows for the hours of 06:00 to 00:00 on the selected road links together with the average speed, percentage of heavy vehicles, road surface type and gradients to output predicted road traffic noise levels in terms of the $L_{A10(18hour)}$ parameter, including a façade correction. The methodology assumes that the receptor is downwind of the source (i.e. the road) in moderate winds.

[vii] Department of Transport Welsh Office. *Calculation of Road Traffic Noise.* 2021

3.2.13 Whether or not a significant adverse effect is expected to occur is determined by comparing the predicted noise level, (with the Proposed Development) with the LOAEL and SOAEL values shown in Table 3.7 and considering the increase in noise due to the proposals.

Table 3.7: Desirable Ambient Noise Levels for Dwellings

Effect	Time Period	Threshold Value ($L_{Aeq,T}$)
LOAEL	07:00 – 23:00	50
	23:00 – 07:00	40
SOAEL	07:00 – 23:00	65
External Noise	23:00 – 07:00	55

1.1.1 If the daytime LOAEL threshold is exceeded, the data in Table 3.8 sets out how the magnitude of the impact is described, taking account of the change in daytime noise exposure and the resulting exposure.

Table 3.8: Descriptors of Magnitude of Daytime Road Traffic Noise Change

Magnitude	Change in Noise Level	
	Between LOAEL & SOAEL	Above SOAEL
No Change	0	0
Negligible	Up to 2.9 dB(A)	Up to 0.9 dB(A)
Minor	3.0 – 4.9 dB(A)	1.0 – 2.9 dB(A)
Moderate	5.0 – 9.9 dB(A)	3.0 – 4.9 dB(A)
Major	10 dB(A) or above	5 dB(A) or above

3.2.14 If the night-time LOAEL threshold is exceeded, the data in Table 3.9 sets out how the magnitude of the impact is described taking account of the change in night-time noise exposure and the resulting exposure.

Table 3.9: Descriptors of Magnitude of Night-Time Road Traffic Noise Change

Magnitude	Change in Noise Level	
	Between LOAEL & SOAEL	Above SOAEL
No Change	0	0
Negligible	Up to 0.9 dB(A)	Up to 0.9 dB(A)
Minor	1.0 – 2.9 dB(A)	1.0 – 2.9 dB(A)
Moderate	3.0 – 4.9 dB(A)	3.0 – 4.9 dB(A)
Major	5 dB(A) or above	5 dB(A) or above

1.1.2 The predictions have been based upon the operation of the proposed development at full capacity.

BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound[viii]

3.2.15 BS 4142:2014+A1:2019 is used to rate and assess sound of an industrial and/or commercial nature including:

[viii] BSI. *BS 4142:2014+A1:2019. Methods for rating and assessing industrial and commercial sound.*

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

3.2.16 The purpose of the BS 4142:2014+A1:2019 assessment procedure is to assess the significance of sound of an industrial and/or commercial nature.

3.2.17 BS 4142:2014+A1:2019 refers to noise from the industrial source as the 'specific noise' and this is the term used in this report to refer to noise which is predicted to occur due to activities associated with the proposed commercial/industrial uses.

3.2.18 BS 4142:2014+A1:2019 assesses the significance of impacts by comparing the specific noise level to the background noise level (L_{A90}).

3.2.19 Certain acoustic features can increase the significance of impacts over that expected from a simple comparison between the specific noise level and the background noise level. BS 4142:2014+A1:2019 identifies that the absolute level of sound, the character, and the residual sound and the sensitivity of receptor should all be taken into consideration. BS 4142:2014+A1:2019 includes allowances for a rating penalty to be added if it is found that the specific noise source contains a tone, impulse and/or other characteristics. The specific noise level along with any applicable correction is referred to as the 'rating level'.

3.2.20 The greater the increase between the rating level over the background noise level, the greater the magnitude of the impact. The assessment criteria given by BS 4142:2014+A1:2019 are as follows:

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

3.2.21 During the daytime, BS 4142:2014+A1:2019 requires that noise levels be assessed over 1-hour periods. However, during the night-time, noise levels are required to be assessed over 15-minute periods.

3.2.22 Where the initial estimate of the impact needs to be modified due to context, BS 4142:2014+A1:2019 states that all pertinent factors should be taken into consideration, including:

- The absolute level of sound;
- The character and level of the residual sound compared to the character and level of the specific sound; and

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

Guidelines for Environmental Noise Impact Assessment[ix]

3.2.23 These guidelines were produced by the Institute of Environmental Management and address the key principles of noise impact assessments and are applicable to all development proposals where noise effects are likely to occur.

3.2.24 Noise in the environment can affect human beings and other sensitive receptors and can lead to deterioration of a person's hearing or may disturb sleep. Therefore, noise must be considered, whether in determining the design and layout of new developments or deciding where a new noisy development should be located.

3.2.25 Measuring in decibels means that a 3 dB increase is equivalent to a doubling of the sound energy and a 10 dB increase is a tenfold increase in energy. For broadband sounds which are very similar in all but magnitude, a change or difference in noise level of 1 dB is just perceptible under laboratory conditions, 3 dB is perceptible under most normal conditions, and a 10 dB increase generally appears to be twice as loud. The broad principles may not apply where the change in noise level is due to the introduction of a noise with different frequency and/or temporal characteristics compared to sounds making up the existing noise climate. In which case, changes of less than 1 dB may be perceptible under some circumstances.

3.3 Noise Modelling

3.3.1 The potential levels of noise at the existing noise sensitive receptors, as a result of the proposed development, have been predicted using the environmental noise modelling software CadnaA.

3.3.2 Noise modelling methods and inputs that have been used are provided in Table 3.10.

Table 3.10: Noise Modelling Inputs and Details

Noise Modelling Input	Details
Calculation Algorithm	ISO9613 for industrial noise sources RLS-90 for car parks
Ground Levels	OS terrain 50 data
Noise Sources	Vehicle movements from AAC library HGV loading from AAC library
Time Periods	Daytime 07:00 – 23:00 Night-time 23:00 – 07:00
Height of Receptors	Ground Floor – 1.5 m First Floor – 4.0 m Second Floor – 7.0 m
Proposed Site Layout	Weybridge Business Park Site Layout by UMC Architects
Existing Building and Receptor Locations	Digitised from Google aerial imagery and OpenStreetMap data

[ix] Institute of Environmental Management & Assessment. 2014. *Guidelines for Environmental Noise Impact Assessment*.

Noise Modelling Input	Details
Existing feature locations and base map	Google aerial imagery
Ground absorption	0.8 for soft ground, 0.0 for roads
Project co-ordinate system	OSGB 36 EPSG:27700

3.4 Assessment Receptors

3.4.1 The receptors have been selected to represent the noise sensitive properties most exposed to the potential noise sources, as a result of the proposed development. The selected noise sensitive receptor locations are detailed in Table 3.11 and illustrated in Figure 3.1.

Table 3.11: Noise Sensitive Receptors

Receptor	Height (m)	Description	Receptor Location Description
R01	4.0	22 Hamm Moor Lane	East façade
R02	4.0	20 Hamm Moor Lane	East façade
R03	7.0	Navigation House	East façade
R04	4.0	New House	North façade
R05	4.0	Bourneside	West façade
R06	4.0	Blackboy Farm	North façade
R07	1.5	River Wey Moorings	-

Figure 3.1: Assessment Receptor Locations

3.4.2 Noise decreases with increasing distance from the source; therefore, any receptor that is located at a greater distance from the proposed development than the identified receptors is likely to experience lower operational noise levels as a result of the development.

3.5 Uncertainty and Limitations

3.5.1 Regarding the noise survey measurements, the baseline survey was conducted over an 8-day period to obtain a representative sample of the baseline noise environment. Baseline surveys conducted over a number of days reduce the uncertainty of the resulting measured noise levels.

3.5.2 The calibration drift on the meters was very small; less than 0.1 dB for all measurements. All equipment was within laboratory calibration in accordance with the relevant standards (calibrators every year and sound level meters every 2 years).

3.5.3 In terms of the assessment of the operational sound, it is difficult to consider the impact of sources which are not yet present and cannot be measured or heard in the context of the noise environment at the receptor. The assessment of the operational sound has been made to be as robust as possible based on the information provided at the time of writing the report.

3.5.4 The noise model includes nationally recognised calculation algorithms for the relevant noise sources and any buildings and structures that could have affected noise propagation between the sources and receptors have been included.

3.5.5 In summary, it is considered that whilst there will always be a level of inherent uncertainty in any assessment, where possible, potential sources of uncertainty have been minimised and it is considered to be a representative and robust assessment of the likely impacts.

4 Baseline Conditions

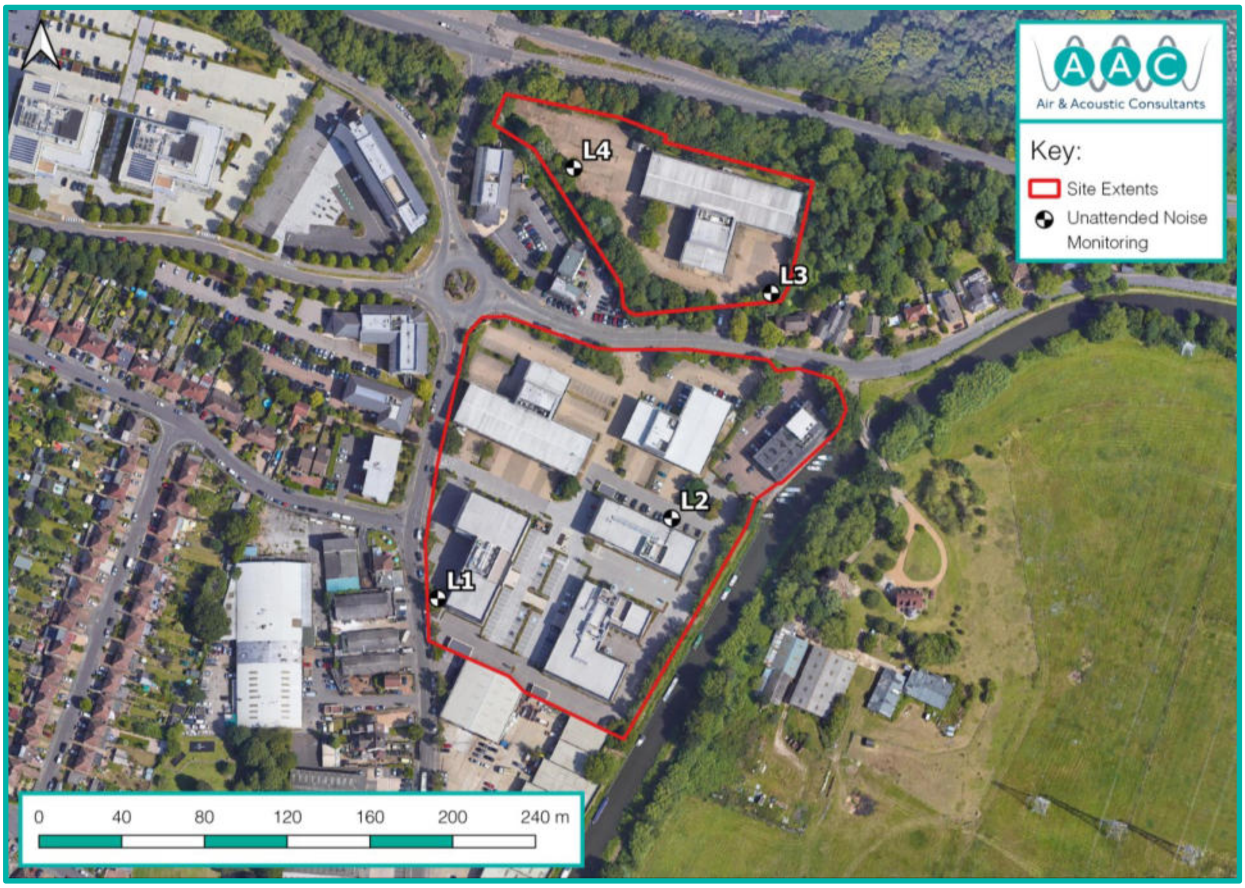
4.1 Noise Monitoring

4.1.1 A long-term unattended baseline noise survey was undertaken between Friday 4th February and Friday 11th February 2022. The survey consisted of four long-term monitoring positions, as illustrated in Figure 4.1.

4.1.2 The monitoring positions were selected to represent the closest existing noise sensitive receptor locations, the details of the monitoring positions are as follows:

- L1 – In the southern part of the site close to Hamm Moor Lane – unattended long-term;
- L2 – In the southern part of the site close to the River Wey – unattended long-term;
- L3 – In the northern part of the site close to Addlestone Road – unattended long-term; and
- L4 – In the northern part of the site close to the A317 – unattended long-term.

Figure 4.1: Noise Monitoring Locations



4.1.3 All measurements were taken using class 1 sound level meters. The microphones' measurement positions were in the acoustic free field and were mounted on a pole at 1.5 m above the ground. Calibration checks were performed at the start and end of the survey; no significant drift in calibration was observed.

4.1.4 The details of the monitoring equipment used is set out in Table 4.1.

Table 4.1: Noise Monitoring Equipment

Equipment Type	Manufacturer	Model	Serial Number	Calibration Due
Sound Level Meter		Model 831	4740	
Pre-Amplifier	Larson Davis	PRMLxT1	71241	11/2023
Microphone		377BO2	334198	
Sound Level Meter		Model 831	4473	
Pre-Amplifier	Larson Davis	PRMLxT1	36007	01/2023
Microphone		377BO2	153565	
Sound Level Meter		Model 831	5817	
Pre-Amplifier	Larson Davis	PRMLxT1	55725	01/2023
Microphone		377BO2	310663	
Sound Level Meter		Model 831	6042	
Pre-Amplifier	Larson Davis	PRMLxT1	69932	02/2023
Microphone		377BO2	319172	
Calibrator	Larson Davis	Cal 200	17574	01/2023

4.1.5 The weather conditions during the survey were generally influenced by westerly winds and the average temperatures were between 3 and 11 °C. There was precipitation recorded on two days during the monitoring period; average wind speeds were less than 5 m/s for the entire survey.

4.1.6 The information provided in Table 4.2, uses data from Weather Underground. The weather station is located on Crockford Park Road, Addlestone (Station ID: IADDLEST9).

Table 4.2: Summary of Weather Conditions

Date	Temp (°C)	Wind Speed (m/s)		Wind Direction	Total Precipitation (mm)
		Average	Peak		
04/02/2022	6.7	1.3	12.3	SW	4.32
05/02/2022	6.5	0.5	7.8	NNE	0.00
06/02/2022	9.1	2.1	16.7	NNW	1.52
07/02/2022	9.5	0.3	6.7	West	0.00
08/02/2022	10.7	0.3	5.5	NE	0.00
09/02/2022	6.0	0.5	6.7	WNW	0.00
10/02/2022	6.0	0.5	6.7	WNW	0.00
11/02/2022	3.1	0.0	3.3	SSE	0.00

4.1.7 It should be noted that the precipitation recorded on the first day of the survey was prior to the installation of any of the sound level monitors.

4.2 Noise Survey Results

4.2.1 A summary of the long-term monitored noise levels at L1, close to Hamm Moor Lane, is presented in Table 4.3 and Table 4.4, the data is presented as an average for the day and night periods but also as a range of the measured 15-minute sound indices during these periods.

Table 4.3: Average Noise Monitoring Results – L1, Hamm Moor Lane, Unattended Long-Term

Date	Period	Average Monitored Noise Level (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{A10}	L_{A90}
04/02/2022	Day 07:00 - 23:00*	62.8	92.3	49.6	86.0	65.0	52.5
	Night 23:00 - 07:00	50.9	80.4	46.5	69.9	51.7	48.3
05/02/2022	Day 07:00 - 23:00	61.2	90.7	50.8	79.0	64.5	53.4
	Night 23:00 - 07:00	50.5	80.1	43.8	69.0	52.9	45.7
06/02/2022	Day 07:00 - 23:00	60.1	89.7	50.2	81.5	63.0	53.0
	Night 23:00 - 07:00	52.7	82.3	47.1	68.2	55.0	48.6
07/02/2022	Day 07:00 - 23:00	61.3	90.8	50.0	78.0	64.8	53.1
	Night 23:00 - 07:00	55.9	85.5	44.2	82.3	55.2	46.0
08/02/2022	Day 07:00 - 23:00	60.9	90.5	48.2	79.9	64.4	51.9
	Night 23:00 - 07:00	56.4	85.9	44.2	83.5	55.3	46.0
09/02/2022	Day 07:00 - 23:00	61.0	90.5	48.0	79.6	64.4	51.6
	Night 23:00 - 07:00	54.6	84.2	44.0	77.4	56.6	46.0
10/02/2022	Day 07:00 - 23:00	61.8	91.3	49.3	81.0	65.0	52.8
	Night 23:00 - 07:00	57.2	86.7	46.9	83.2	56.4	48.6
11/02/2022	Day 07:00 - 23:00*	62.7	92.2	51.0	78.0	66.2	54.9
	Night 23:00 - 07:00	-	-	-	-	-	-
Overall	Day 07:00 - 23:00	61.3	90.9	49.6	80.8	64.6	52.8
	Night 23:00 - 07:00	54.7	84.2	45.5	79.9	55.0	47.2

*Based on partial data.

Table 4.4: Range of Noise Monitoring Results L1, Hamm Moor Lane, Unattended Long-Term

Date	Period	Range of Monitored Noise Levels (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{AF10}	L_{AF90}
04/02/2022	Day 07:00 - 23:00*	53 - 72	82 - 101	47 - 51	62 - 99	54 - 70	50 - 57
	Night 23:00 - 07:00	47 - 56	77 - 85	42 - 51	50 - 82	48 - 58	45 - 53
05/02/2022	Day 07:00 - 23:00	51 - 65	81 - 94	46 - 57	66 - 92	53 - 68	48 - 59
	Night 23:00 - 07:00	46 - 54	75 - 84	40 - 47	59 - 76	47 - 56	43 - 48
06/02/2022	Day 07:00 - 23:00	50 - 67	79 - 96	45 - 53	66 - 98	50 - 68	47 - 59
	Night 23:00 - 07:00	42 - 61	71 - 90	37 - 54	48 - 76	43 - 64	39 - 56
07/02/2022	Day 07:00 - 23:00	49 - 64	78 - 94	43 - 55	58 - 92	50 - 68	45 - 58
	Night 23:00 - 07:00	42 - 69	72 - 98	38 - 50	48 - 97	44 - 65	41 - 51
08/02/2022	Day 07:00 - 23:00	51 - 66	80 - 95	43 - 51	69 - 89	51 - 68	44 - 56
	Night 23:00 - 07:00	41 - 70	71 - 99	37 - 51	46 - 98	43 - 64	39 - 53
09/02/2022	Day 07:00 - 23:00	47 - 67	76 - 97	36 - 52	65 - 91	47 - 69	38 - 56
	Night 23:00 - 07:00	39 - 65	69 - 95	34 - 51	49 - 92	41 - 65	37 - 53

Date	Period	Range of Monitored Noise Levels (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{AF10}	L_{AF90}
10/02/2022	Day 07:00 - 23:00	53 - 70	83 - 100	46 - 53	71 - 96	51 - 69	48 - 58
	Night 23:00 - 07:00	44 - 70	74 - 100	41 - 53	48 - 98	46 - 65	43 - 55
11/02/2022	Day 07:00 - 23:00*	61 - 64	90 - 94	40 - 55	71 - 86	65 - 68	48 - 58
	Night 23:00 - 07:00	-	-	-	-	-	-

*Based on partial data.

4.2.2 A summary of the long-term monitored noise levels at L2, within the southern site and close to The River Wey, is presented in Table 4.5 and Table 4.6, the data is presented as an average for the day and night periods but also as a range of the measured 15-minute sound indices during these periods.

Table 4.5: Average Noise Monitoring Results – L2, River Wey, Unattended Long-Term

Date	Period	Average Monitored Noise Level (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{A10}	L_{A90}
04/02/2022	Day 07:00 - 23:00*	55.3	84.8	46.5	84.3	55.8	48.4
	Night 23:00 - 07:00	46.4	75.9	43.2	55.1	47.5	44.9
05/02/2022	Day 07:00 - 23:00	53.1	82.7	47.1	70.8	54.1	48.8
	Night 23:00 - 07:00	47.0	76.5	40.9	64.6	48.8	43.0
06/02/2022	Day 07:00 - 23:00	54.9	84.4	47.7	75.1	55.8	49.9
	Night 23:00 - 07:00	46.8	76.3	43.4	58.6	47.6	45.0
07/02/2022	Day 07:00 - 23:00	52.3	81.8	46.2	70.4	52.4	47.9
	Night 23:00 - 07:00	44.0	73.5	40.6	54.2	45.3	42.3
08/02/2022	Day 07:00 - 23:00	50.2	79.8	43.6	68.4	51.0	45.5
	Night 23:00 - 07:00	44.7	74.2	40.1	60.7	46.2	41.8
09/02/2022	Day 07:00 - 23:00	51.1	80.6	43.2	71.8	51.4	45.2
	Night 23:00 - 07:00	47.3	76.9	41.8	62.7	49.6	43.8
10/02/2022	Day 07:00 - 23:00	52.8	82.3	45.9	70.3	53.3	47.8
	Night 23:00 - 07:00	47.5	77.0	43.6	61.0	48.8	45.3
11/02/2022	Day 07:00 - 23:00*	52.8	82.3	47.0	68.3	53.9	48.7
	Night 23:00 - 07:00	-	-	-	-	-	-
Overall	Day 07:00 - 23:00	52.9	82.5	46.0	75.3	53.6	47.9
	Night 23:00 - 07:00	46.4	75.9	42.2	60.9	47.9	43.9

*Based on partial data.

Table 4.6: Range of Noise Monitoring Results L2, River Wey, Unattended Long-Term

Date	Period	Range of Monitored Noise Levels (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{AF10}	L_{AF90}
04/02/2022	Day 07:00 - 23:00*	49 - 67	79 - 97	28 - 48	54 - 99	50 - 68	47 - 49

Date	Period	Range of Monitored Noise Levels (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{AF10}	L_{AF90}
	Night 23:00 - 07:00	43 - 51	73 - 81	39 - 48	48 - 63	45 - 52	42 - 49
05/02/2022	Day 07:00 - 23:00	47 - 57	76 - 87	42 - 52	56 - 78	48 - 59	45 - 53
	Night 23:00 - 07:00	43 - 50	72 - 80	38 - 43	55 - 70	44 - 52	40 - 46
06/02/2022	Day 07:00 - 23:00	46 - 59	76 - 88	42 - 51	54 - 89	48 - 61	45 - 53
	Night 23:00 - 07:00	39 - 54	69 - 83	35 - 51	45 - 70	41 - 55	37 - 52
07/02/2022	Day 07:00 - 23:00	45 - 58	75 - 87	40 - 52	52 - 78	47 - 57	42 - 53
	Night 23:00 - 07:00	38 - 51	68 - 80	35 - 46	43 - 65	40 - 53	37 - 48
08/02/2022	Day 07:00 - 23:00	42 - 55	72 - 85	39 - 45	47 - 76	43 - 56	41 - 48
	Night 23:00 - 07:00	37 - 52	66 - 82	33 - 47	42 - 68	39 - 55	35 - 49
09/02/2022	Day 07:00 - 23:00	43 - 57	72 - 87	36 - 49	50 - 87	43 - 61	38 - 50
	Night 23:00 - 07:00	38 - 54	67 - 83	32 - 49	48 - 70	39 - 57	35 - 51
10/02/2022	Day 07:00 - 23:00	48 - 60	77 - 89	42 - 50	54 - 79	48 - 61	45 - 51
	Night 23:00 - 07:00	42 - 54	71 - 83	38 - 50	47 - 70	43 - 55	40 - 52
11/02/2022	Day 07:00 - 23:00*	46 - 57	75 - 86	36 - 51	57 - 75	47 - 59	41 - 53
	Night 23:00 - 07:00	-	-	-	-	-	-

*Based on partial data.

4.2.3 A summary of the long-term monitored noise levels at L3, within the northern site and close to boundary with the residential properties on Addlestone Road, is presented in Table 4.7 and Table 4.8, the data is presented as an average for the day and night periods but also as a range of the measured 15-minute sound indices during these periods.

Table 4.7: Average Noise Monitoring Results – L3, Addlestone Road, Unattended Long-Term

Date	Period	Average Monitored Noise Level (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{A10}	L_{A90}
04/02/2022	Day 07:00 - 23:00*	53.3	82.8	47.3	69.2	54.2	49.4
	Night 23:00 - 07:00	48.0	77.5	43.7	62.5	49.2	45.6
05/02/2022	Day 07:00 - 23:00	54.2	83.8	48.7	71.2	55.3	50.8
	Night 23:00 - 07:00	48.8	78.4	42.6	70.4	50.8	44.7
06/02/2022	Day 07:00 - 23:00	54.7	84.2	47.9	71.5	56.1	50.3
	Night 23:00 - 07:00	48.0	77.5	43.7	63.1	49.2	45.4
07/02/2022	Day 07:00 - 23:00	53.6	83.1	47.3	71.8	54.6	49.6
	Night 23:00 - 07:00	46.7	76.2	42.0	63.3	48.0	44.0
08/02/2022	Day 07:00 - 23:00	52.8	82.4	46.1	71.0	54.2	48.6
	Night 23:00 - 07:00	47.4	76.9	42.3	64.7	49.3	44.1
09/02/2022	Day 07:00 - 23:00	53.1	82.7	45.3	72.3	54.3	48.1
	Night 23:00 - 07:00	46.3	75.9	40.2	60.7	48.8	42.4
10/02/2022	Day 07:00 - 23:00	53.6	83.2	46.0	71.9	54.5	48.8

Date	Period	Average Monitored Noise Level (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{A10}	L_{A90}
	Night 23:00 - 07:00	48.0	77.5	43.3	62.7	49.6	45.1
11/02/2022	Day 07:00 - 23:00*	54.6	84.2	46.8	73.7	56.4	49.8
	Night 23:00 - 07:00	-	-	-	-	-	-
Overall	Day 07:00 - 23:00	53.7	83.3	47.1	71.6	55.0	49.5
	Night 23:00 - 07:00	47.7	77.2	42.7	65.2	49.4	44.6

*Based on partial data.

Table 4.8: Range of Noise Monitoring Results L3, Addlestone Road, Unattended Long-Term

Date	Period	Range of Monitored Noise Levels (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{AF10}	L_{AF90}
04/02/2022	Day 07:00 - 23:00*	51 - 56	80 - 85	46 - 49	57 - 74	52 - 56	48 - 51
	Night 23:00 - 07:00	45 - 55	74 - 84	39 - 48	51 - 72	46 - 54	42 - 50
05/02/2022	Day 07:00 - 23:00	49 - 57	79 - 86	44 - 52	56 - 79	51 - 59	47 - 54
	Night 23:00 - 07:00	44 - 54	73 - 83	39 - 46	50 - 82	46 - 54	41 - 47
06/02/2022	Day 07:00 - 23:00	47 - 59	76 - 89	41 - 51	56 - 79	49 - 63	43 - 53
	Night 23:00 - 07:00	39 - 56	68 - 86	33 - 51	48 - 73	41 - 58	35 - 53
07/02/2022	Day 07:00 - 23:00	47 - 58	77 - 88	41 - 52	55 - 84	49 - 59	43 - 54
	Night 23:00 - 07:00	41 - 54	70 - 84	35 - 48	50 - 74	42 - 56	38 - 49
08/02/2022	Day 07:00 - 23:00	46 - 57	75 - 86	40 - 48	54 - 83	48 - 60	43 - 50
	Night 23:00 - 07:00	39 - 56	69 - 86	34 - 49	51 - 75	40 - 59	37 - 51
09/02/2022	Day 07:00 - 23:00	46 - 58	75 - 87	34 - 50	54 - 84	49 - 60	37 - 52
	Night 23:00 - 07:00	36 - 55	66 - 84	29 - 48	50 - 72	37 - 57	33 - 50
10/02/2022	Day 07:00 - 23:00	50 - 59	80 - 88	42 - 49	57 - 81	50 - 58	45 - 51
	Night 23:00 - 07:00	41 - 56	71 - 85	37 - 50	50 - 73	43 - 57	39 - 52
11/02/2022	Day 07:00 - 23:00*	50 - 58	80 - 87	39 - 51	59 - 83	53 - 60	45 - 53
	Night 23:00 - 07:00	-	-	-	-	-	-

*Based on partial data.

4.2.4 A summary of the long-term monitored noise levels at L4, close to the A317, is presented in Table 4.9 and Table 4.10, the data is presented as an average for the day and night periods but also as a range of the measured 15-minute sound indices during these periods.

Table 4.9: Average Noise Monitoring Results – L4, A317, Unattended Long-Term

Date	Period	Average Monitored Noise Level (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{A10}	L_{A90}
04/02/2022	Day 07:00 - 23:00*	59.4	89.0	50.3	85.3	60.0	53.1
	Night 23:00 - 07:00	51.3	80.8	45.1	65.1	54.0	47.0

Date	Period	Average Monitored Noise Level (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{A10}	L_{A90}
05/02/2022	Day 07:00 - 23:00	58.0	87.6	51.0	74.4	59.9	54.0
	Night 23:00 - 07:00	51.6	81.2	43.5	64.9	54.7	46.3
06/02/2022	Day 07:00 - 23:00	59.2	88.8	51.0	75.4	61.2	54.8
	Night 23:00 - 07:00	51.9	81.5	46.1	67.3	54.2	48.0
07/02/2022	Day 07:00 - 23:00	57.9	87.5	50.4	75.9	59.7	53.5
	Night 23:00 - 07:00	51.4	80.9	42.9	73.3	52.7	45.2
08/02/2022	Day 07:00 - 23:00	56.5	86.1	48.8	73.3	58.5	52.2
	Night 23:00 - 07:00	50.0	79.6	42.5	65.7	52.9	45.0
09/02/2022	Day 07:00 - 23:00	57.2	86.7	47.8	76.3	58.8	51.8
	Night 23:00 - 07:00	52.0	81.6	44.6	65.9	54.9	47.0
10/02/2022	Day 07:00 - 23:00	58.4	88.0	50.5	76.7	60.2	53.9
	Night 23:00 - 07:00	52.3	81.8	46.4	64.7	54.8	48.6
11/02/2022	Day 07:00 - 23:00*	58.6	88.2	51.8	76.2	60.5	54.8
	Night 23:00 - 07:00	-	-	-	-	-	-
Overall	Day 07:00 - 23:00	58.1	87.7	50.2	77.7	59.9	53.5
	Night 23:00 - 07:00	51.6	81.1	44.7	67.9	54.1	46.9

*Based on partial data.

Table 4.10: Range of Noise Monitoring Results L4, A317, Unattended Long-Term

Date	Period	Range of Monitored Noise Levels (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{AF10}	L_{AF90}
04/02/2022	Day 07:00 - 23:00*	55 - 67	84 - 97	25 - 53	62 - 99	58 - 62	28 - 56
	Night 23:00 - 07:00	47 - 55	77 - 85	41 - 50	60 - 73	48 - 58	43 - 52
05/02/2022	Day 07:00 - 23:00	54 - 63	83 - 92	46 - 54	62 - 86	57 - 62	49 - 57
	Night 23:00 - 07:00	48 - 55	77 - 84	40 - 47	58 - 73	50 - 58	42 - 50
06/02/2022	Day 07:00 - 23:00	53 - 62	83 - 92	44 - 56	65 - 88	56 - 65	47 - 58
	Night 23:00 - 07:00	43 - 60	73 - 90	37 - 55	57 - 77	45 - 62	39 - 57
07/02/2022	Day 07:00 - 23:00	51 - 66	81 - 96	42 - 57	62 - 89	55 - 66	45 - 58
	Night 23:00 - 07:00	43 - 62	72 - 92	37 - 49	56 - 88	44 - 60	38 - 53
08/02/2022	Day 07:00 - 23:00	51 - 59	81 - 89	41 - 51	62 - 85	55 - 61	43 - 54
	Night 23:00 - 07:00	43 - 57	72 - 87	35 - 50	58 - 74	43 - 60	37 - 54
09/02/2022	Day 07:00 - 23:00	53 - 65	83 - 94	38 - 52	62 - 92	57 - 61	43 - 55
	Night 23:00 - 07:00	43 - 59	73 - 89	34 - 53	57 - 73	43 - 61	37 - 56
10/02/2022	Day 07:00 - 23:00	55 - 63	84 - 93	45 - 54	63 - 89	57 - 63	48 - 57
	Night 23:00 - 07:00	46 - 59	75 - 89	40 - 53	58 - 72	47 - 62	43 - 56
11/02/2022	Day 07:00 - 23:00*	57 - 62	86 - 91	43 - 56	65 - 88	59 - 62	51 - 58

Date	Period	Range of Monitored Noise Levels (dBA)					
		L_{Aeq}	L_{AE}	L_{AFmin}	L_{AFmax}	L_{AF10}	L_{AF90}
	Night 23:00 - 07:00	-	-	-	-	-	-

*Based on partial data.

4.2.5 During the site visits to install and collect the noise monitoring equipment the dominant noise in the proximity of Hamm Moor Lane was a combination of light traffic and the operation of the 'Victory Car Wash' which used pressure washers to clean vehicles. The ambient noise further into the southern site was quieter and made up of background traffic, some distant commercial noise and other noise such as wind in the trees and birds.

4.2.6 The ambient noise within the northern site was made up of background traffic from the A317 and the occasional vehicle passing on Addlestone Road and other environmental noise such as wind in the trees and birds.

4.2.7 Time history graphs for all of the monitoring positions are given in Appendix C and include the L_{Aeq}, L_{A90} and L_{AFmax} for each 15-minute period.

4.3 Background Sound Levels

4.3.1 As part of an assessment of industrial or commercial sound, following the guidance of BS 4142:2014+A1:2019, a representative background sound level must be determined. Typically, the modal $L_{A90,15min}$ value from the relevant time period is used.

4.3.2 The representative $L_{A90,15min}$ has been identified for both monitoring locations during the daytime period 07:00 – 23:00 and night-time period 23:00 – 07:00 using statistical analysis (see Appendix D). These levels are considered to be the representative background sound level for each period. Apart from the night-time period at L2, all background sound levels are the modal $L_{A90,15min}$ value.

4.3.3 The representative background sound level for each day of monitoring as well as the overall representative level is given in Table 4.11. The background sound level at L1 has been to represent R01, R02 and R03, the background sound level at L2 has been used to represent R06 and R07 and the background sound level at L3 has been used to represent R04 and R05.

Table 4.11: Background Sound Levels Used for the Assessment of Operational Sound

Date	Background Sound Level $L_{A90,15min}$ (dBA)							
	L1		L2		L3		L4	
	Daytime	Night-time	Daytime	Night-time	Daytime	Night-time	Daytime	Night-time
04/02/2022	52*	46	48*	42	49*	44	55*	44
05/02/2022	52	47	48	44	51	45	55	43
06/02/2022	51	43	50	38	51	40	56	40
07/02/2022	52	43	46	39	50	41	53	41
08/02/2022	52	41	46	38	49	39	53	39
09/02/2022	54	39	44	37	48	33	53	41
10/02/2022	51	46	47	43	49	42	54	44

Date	Background Sound Level $L_{A90,15min}$ (dBA)							
	L1		L2		L3		L4	
	Daytime	Night-time	Daytime	Night-time	Daytime	Night-time	Daytime	Night-time
11/02/2022	55*	-	42*	-	47*	-	52*	-
Overall	**51**	**43**	**47**	**41****	**49**	**42**	**54**	**44**

*Based on partial data.

**Non-modal $L_{A90,15min}$ value

4.3.4 Appendix D presents the graphs used in the determination of the representative background sound levels used in this assessment.

4.4 Maximum Night-time Noise Events

4.4.1 For each monitoring location the 15th highest L_{AFmax} noise event during the night-time has been identified. This data will contribute to the assessment of night-time L_{AFmax} noise events that have the potential to cause sleep disturbance.

Table 4.12: Fifteenth Highest L_{AFmax} Night-time Noise Event Per Night

Date	15th Highest L_{AFmax} Night-time Noise Level (dBA)			
	L1	L2	L3	L4
04/02/2022	66.5	56.6	67.5	64.3
05/02/2022	69.5	64.8	63.0	64.3
06/02/2022	71.8	59.5	68.6	67.4
07/02/2022	73.6	58.0	68.2	65.1
08/02/2022	72.6	63.5	69.3	65.1
09/02/2022	72.2	66.6	66.3	65.9
10/02/2022	71.5	65.8	69.4	65.3
Overall	73.6	66.6	69.4	67.4

4.4.2 The maximum noise levels for each night were higher at L1, which was the closest of any position to a road. The maximum noise levels measured are likely to be from vehicles travelling on the local highways.

5 Construction Impact Assessment

5.1.1 At this stage of the scheme, details regarding the construction traffic movements and the type, number and size of construction equipment are not available. Therefore, it is not possible to predict, with any great degree of accuracy, the possible effects arising from construction activities associated with the proposed development.

5.1.2 For the purposes of a generic construction noise assessment, the associated works can be divided into three main phases:

- Demolition
- Earthworks;
- Concreting; and
- Main build.

5.1.3 On weekdays, typical construction working hours are anticipated to be 07:30 – 17:30, and potentially 07:00 – 18:30 in the summer months. On Saturdays, working hours are expected to be between 07:30 and 13:00 hours. Work on Sundays/Bank Holidays will only take place in exceptional circumstances. The construction work will be carried out under the Considerate Constructors Scheme, which, as one of its objectives, aims to reduce adverse noise impacts on nearby residents.

5.1.4 During the construction phase, there would be a slight increase in HGV movements on the surrounding highway network. However, this will be a temporary impact and will decrease as the proposed development progresses towards completion.

5.1.5 Overall, based on the experienced gained from similar sites, and on the existing ambient noise levels at the closest residential receptors, it is anticipated that although the main construction phases may be audible at times, they will result in no more than a minor adverse impact, only during the daytime. It should also be noted that this effect will only be temporary, whilst the construction phase(s) are moving forward.

5.1.6 Following the BS 5228-1:2009+A1:2014 ABC classification method, during the daytime working hours mentioned above, the nearby sensitive receptors would fall into Category A, with a threshold noise level criteria of 65 dB(A) during the daytime.

6 Operational Impact Assessment

6.1 Operational Road Traffic Noise

6.1.1 The potential adverse effects from changes in road traffic noise have been assessed by considering the increase in traffic resulting from the proposed development operating at full capacity.

6.1.2 Based upon transport data provided by the project transport consultants, (Appendix E), the proposed development will generate a worst-case additional 411 vehicle trips on Addlestone Road east of the site accesses.

6.1.3 Traffic data has been provided for all surrounding roads in the opening year and five years in the future. The road that has the highest change in noise level is the link road connecting the Hamm Moor Lane Roundabout with the link road to the A317, however this road has no adjacent sensitive receptors. The worst affected road that has residential properties adjacent is Addlestone Road which will experience a BNL increase of +0.1 dB

6.1.4 To determine the likely impacts the change in noise level must be compared to the DMRB guidance, which is given in Table 3.3 for the short-term impacts and Table 3.4 for the long-term impacts. A review of these tables shows that the predicted impacts are 'no change' from the existing scenario, or in terms of the NPPG (Noise), the NOEL for both the day and night-time periods.

6.2 Operational Commercial Sound

6.2.1 As described in Section 3, the potential adverse effects of commercial and/or industrial sound experienced at the closest noise sensitive receptors have been assessed using the methodology described in BS 4142:2014+A1:2019. The typical background sound levels for the daytime and night-time periods used in the assessment are given in Table 4.11.

6.2.2 The proposed layout for this outline planning application consists of three separate industrial buildings, two units (Unit 210 and Unit 220) are located in the site north of Addlestone Road and a single larger unit (Unit 100) is located in the site south of Addlestone Road.

6.2.3 Unit 100 will have ten HGV docks on the western façade as well as three level access doors, however it is understood that HGVs unloaded at the level access doors will be park inside the building for any unloading with forklifts.

6.2.4 The proposed commercial premises will operate for 24-hours per day 7 days per week and has therefore been assessed during daytime and night-time periods.

6.2.5 The noise rating levels have been predicted at the façades of the previously identified noise sensitive receptors using a CadnaA noise propagation model, these noise rating levels are provided in Table 6.4.

6.2.6 The primary sources of operational sound likely to be produced by the proposed development have been identified as deliveries arriving and departing the site and the loading and unloading operations. Unloading may use trolleys or forklifts inside the buildings or trailers and have been included in the source terms. It is understood that should there be any forklifts on-site they will operate only inside of the buildings.

6.2.7 The source levels used for the predictions of good vehicle movements, loading/unloading and forklifts, have been taken from the Air and Acoustic Consultants library of sound measurements. Details of the sources used in the assessment are provided in Table 6.1.

Table 6.1: Sound Sources Used in the Commercial Noise Assessment

Activity	Sound Power Level (dB) at Octave Band Centre Frequencies (Hz)								Overall dB(A)
	63	125	250	500	1 k	2 k	4 k	8 k	
HGV Movement	65.9	64.2	63.5	66.4	79.6	69.8	63.1	56.6	80.4
HGV Manoeuvring	96.9	93.0	86.3	87.4	88.5	87.7	89.9	75.6	95.4
HGV Loading	78.1	71.3	66.1	64.9	62.9	61.5	58.0	58.8	68.9

6.2.8 At this stage no fixed plant has been specified and has therefore not been included in the assessment.

6.2.9 Each sound source has had corrections added to account for the assessment period and activity duration as well as acoustic feature corrections in line with BS 4142:2014+A1:2019.

6.2.10 The on-time corrections for the operations have been derived using observations of similar types of developments observed by Air and Acoustic Consultants and from the traffic generation data provided by the transport consultants for the project, provided in Appendix E.

6.2.11 The on-time corrections are made using the following equation:

$$10 \times \log\left(\frac{d \times 10^{\frac{L}{10}}}{D}\right)$$

6.2.12 Where d is the duration of the activity in minutes, L is the sound power level of the activity and D is the assessment duration in minutes, one hour during the daytime and 15 minutes during the night-time. The on-time corrected noise sources are provided in Table 6.2.

6.2.13 The numbers of vehicle movement expected for each unit have been predicted by the transport consultants for the project, however only the total numbers of movements per day have been provided. The provided data states there will be 58 HGVs in a day serving the northern site and 84 HGVs serving the southern site. There is no indication of whether certain hours will be busier than others but it is unlikely that HGV movements will be spread equally across the day; assumptions have been made about how many HGVs might enter the sites in the worst-case hours using the traffic predictions and the number of loading/unloading docks shown on the plans.

6.2.14 The total numbers of HGVs serving the northern site will require a minimum of three HGVs to enter and leave the site in some hours during the day. There are four loading bays indicated and so four HGVs have been assumed to enter the northern site during the one hour daytime assessment period and one HGV during the 15 minute night-time assessment period.

6.2.15 The total numbers of HGVs serving the southern site require a minimum of four HGVs to enter and leave the site in some hours and there are ten unloading docks and three level access doors. A maximum of eight HGVs arriving and unloading have been assumed in the daytime assessment period and two during the night-time period.

6.2.16 A single HGV loading/unloading event, is likely to take longer than the 15-minute assessment period and so during the night-time the HGV loading/unloading events have been assumed to last for the whole assessment period.

6.2.17 The on-time corrections that have been applied to sources in the assessment are provided in Table 6.2.

Table 6.2: Sound Source On-Time Calculations

Activity/Equipment Name	Source Sound Power Level L_{WA} (dBA)	Duration (min)		Corrected Sound Power Level L_{WA} (dBA)	
		Daytime	Night-time	Daytime	Night-time
HGV Movement	80.4	4	1	68.6	68.6
HGV Manoeuvring	95.4	1.5	1.5	79.4	85.4
HGV Loading	68.9	40	15	67.1	68.9

6.2.18 The calculation method used for the HGV movements in this assessment is based upon the haul road methodology described in BS 5228:2009+A1:2014.

6.2.19 As part of a BS 4142:2014+A1:2019 assessment distinctive characteristics of any specific sound source are accounted for with penalty corrections for tonality, impulsivity, and intermittency.

6.2.20 A full list of penalties applied to the proposed sources and resulting noise rating levels are provided in Table 6.3 along with justifications.

Table 6.3: BS 4142:2014+A1:2019 Acoustic Feature Corrections

Equipment /Activity	Characteristic and Justification	Penalty (dB)
HGV Movement	The existing ambient noise environment is currently affected by vehicle movements so this source will have similar characteristics and is unlikely to be prominent therefore no penalty has been added.	0
HGV Manoeuvring	There are likely to be predominantly impulsive elements to the sound when reversing and manoeuvring so a + 6 dB penalty has been added.	+6
HGV Loading	The unloading of the trailers is likely to have impulsive components to the noise, however, the impulsivity is likely to be less noticeable that from the manoeuvring.	+3

6.2.21 The sound sources included in the noise propagation model for the operational commercial noise assessment are shown in Figure 6.1.

Figure 6.1: Modelled Sound Source Locations, BS 4142 Commercial Noise Assessment

6.2.22 The predicted noise rating levels at the sensitive receptors are presented in Table 6.4 along with representative background sound levels used in the BS 4142:2014+A1:2019 assessment.

Table 6.4: Predicted Commercial Noise Impacts at Sensitive Receptors

Receptor	Height (m)	Daytime (07.00 – 23.00) (dBA)			Night-time (23:00 – 07:00) (dBA)		
		Rating Level $L_{Ar, Tr}$	Background Level	Diff	Rating Level $L_{Ar, Tr}$	Background Level	Diff
R01	4.0	45.1	51	-5.9	45.9	43	+2.9
R02	4.0	49.0	51	-2.0	49.8	43	+6.8
R03	7.0	57.6	51	+6.6	57.2	43	+14.2
R04	4.0	53.1	49	+4.1	54.3	42	+12.3
R05	4.0	52.0	49	+3.0	52.8	42	+10.8
R06	4.0	40.5	47	-6.5	41.4	41	+0.4
R07	1.5	44.4	47	-2.6	45.0	41	+4.0

6.2.23 It can be seen in Table 6.4, that based upon a reasonable worst-case scenario, during the daytime all but one of the receptors will receive noise rating levels that are less than 5 dB above the background sound level. During the night-time four of the seven receptors will receive noise raring levels that are greater than 5 dB above the background sound level, these include two receptors on Hamm Moor Lane and two receptors on Addlestone Road that are close to the site boundaries.

6.2.24 BS4142:2014+A1:2019 acknowledges context when considering the impacts of new noise sources. In this situation the proposed development will be situated close to an active industrial area which produces industrial sound. This suggests that the noise produced by the proposed development is likely to be similar to sound already experienced by some of the existing noise sensitive receptors, especially on Hamm Moor Lane. Therefore, the impacts suggested by the predicted noise levels are likely to be lower at the receptors on Hamm Moor Lane.

6.2.25 Predicted noise rating level contours are presented in Appendix F, showing how sound is likely to propagate from the sources to the sensitive receptors.

6.2.26 In accordance with national policy, the impacts would be categorised as less than SOAEL and LOAEL, and will require some form of mitigation to reduce the noise levels at the affected residential receptors.

6.3 Operational Commercial Maximum Sound Levels

6.3.1 The WHO Guidelines state that to avoid night-time sleep disturbance indoor sound pressure levels should not exceed approximately 45 dB(A) L_{AFmax} more than 10 – 15 times per night. It is generally accepted that 60 dB(A) L_{AFmax} at the external façades of living spaces corresponds to the LOAEL. These values assume the sound reduction provided by a partially open window is 15 dB, resulting in an internal noise level of 45 dB(A) L_{AFmax}. The night-time maximum sound levels measured during the survey were consistently higher than the WHO L_{AFmax} criterion so the measured L_{AFmax} levels at the closest noise monitoring location have been used in this assessment.

6.3.2 The assessment of maximum noise levels has included noise from an HGV arriving or leaving to both sites and loading of parked HGV at Unit 100.

6.3.3 All maximum events have been modelled as point sources at worst-case locations, the number of sources is fewer than in the BS 4142:2014+A1:2019 industrial noise assessment because maximum noise events are extremely unlikely to be simultaneous.

6.3.4 The source levels used in the assessment, have been taken from the Air and Acoustic Consultants library of sound measurements, details of the sources used in the assessment are provided in Table 6.5.

Table 6.5: Sound Sources Used in the Maximum Noise Assessment

Activity	Sound Power Level (dB) at Octave Band Centre Frequencies (Hz)								Overall dB(A)
	63	125	250	500	1 k	2 k	4 k	8 k	
HGV Movement	84.5	83.9	83.7	87.0	101.2	94.2	87.5	80.6	101.6
HGV Manoeuvring	106.3	93.9	88.7	88.2	89.8	88.4	92.7	84.2	95.9

6.3.5 The sound sources included in the noise propagation model for the maximum operational noise assessment are shown in Figure 6.2.

Figure 6.2: Modelled Sound Source Locations, Maximum Noise Assessment

6.3.6 The predicted levels at receptors from maximum noise events are provided in Table 6.6.

Table 6.6: Predicted Maximum Commercial Noise Impacts at Sensitive Receptors

Receptor	Height (m)	Night-time (23:00 – 07:00) (dBA)		
		Predicted Level	Criteria Level	Difference
R01	4.0	49.6	73.6	-24.0
R02	4.0	54.8	73.6	-18.8
R03	7.0	64.4	73.6	-9.2
R04	4.0	66.4	69.4	-3.0
R05	4.0	62.4	69.4	-7.0
R06	4.0	51.7	66.6	-14.9
R07	1.5	55.5	66.6	-11.1

6.3.7 The predicted maximum noise event levels from the commercial operations are higher than the WHO Community Noise Guideline of 60 dB(A) at three of the seven noise sensitive receptors, however, they are lower than the existing measured night-time maximum levels so mitigation will not be required.

6.3.8 Predicted night-time maximum noise level contours are presented in Appendix F, showing how sound is likely to propagate from the sources to the sensitive receptors.

6.4 Operational Car Parking

6.4.1 The car parking associated with the proposed development has the potential to have adverse impacts on the existing residential properties because of vehicles entering and leaving the site, however, the vehicles will tend to move slowly compared with vehicles travelling on highways.

6.4.2 The total daily vehicle movements have been provided by the traffic consultants for the project Appendix E as have the number of parking space, which are indicated in the proposed plans. There is a higher number of vehicles predicted to enter the southern site however there are also a higher number of parking spaces. The corresponding movements of vehicles per space per hour is 0.15 for the north site and 0.08 for the south site.

6.4.3 The predictions are provided in Table 6.7 along with comparison to the daytime and night-time $L_{Aeq,T}$ sound level that represents each receptor.

Table 6.7: Predicted Car Parking Noise Impacts at Sensitive Receptors

Receptor	Height (m)	Daytime (07.00 – 23.00) (dBA)			Night-time (23:00 – 07:00) (dBA)		
		Predicted $L_{Aeq,16hr}$	Existing $L_{Aeq,16hr}$	Diff	Predicted $L_{Aeq,8hr}$	Existing $L_{Aeq,8hr}$	Diff
R01	4.0	25.8	61	-35.5	25.8	54.7	-28.9
R02	4.0	29.5	61	-31.8	29.5	54.7	-25.2
R03	7.0	37.0	61	-24.3	37.0	54.7	-17.7
R04	4.0	45.2	54	-8.5	45.2	47.7	-2.5
R05	4.0	42.5	54	-11.2	42.5	47.7	-5.2
R06	4.0	34.0	53	-18.9	34.0	46.4	-12.4
R07	1.5	45.1	53	-7.8	45.1	46.4	-1.3

6.4.4 The predicted car parking noise levels at the sensitive receptors are all less than the existing daytime and night-time $L_{Aeq,T}$ sound levels. If the predicted levels were to be added to the existing sound levels the change in noise level would be less than 3 dB and it is unlikely that the change in noise level would be perceptible as specified in the IEMA guidance.

6.4.5 Furthermore the highest predicted car parking noise sound level is at R07 which represents the moorings on the River Wey. These moorings are advertised as having a maximum stay of 48 hours which would make changes in noise level even less noticeable.

7 Mitigation Measures

7.1 Construction

7.1.1 Operators should be properly trained in the use of equipment, made aware of any noise mitigation requirements, and where necessary, be supervised so that reasonable care is taken to minimise their noise impact. BS 5228-1:2009+A1:2014 provides advice on minimising noise from construction activities with the implementation of Best Practicable Means (BPM).

7.1.2 The contractor would regularly brief the construction staff so that they are considerate of the surrounding residents and operate construction plant in a manner which controls noise (where practicable). Once the exact construction methods and plant to be employed are confirmed, any required mitigation measures will be identified. Such measures could include:

- Avoidance of the use of horns and excessive revving of engines;
- Vehicles, generators, concrete pumps, air compressors and other constant noise sources being turned off when not required, or at least throttled back to a minimum;
- Plant to operate at low speeds, where possible, and incorporate automatic low speed idling;
- Selection of 'silenced' plant and equipment where practicable;
- Locating noisy plant and equipment as far away from sensitive receptors as reasonably possible;
- Reducing impulsive noise generating activities such as slamming doors, noisy brakes, impacts etc.;
- Screening either in the form of localised temporary acoustic fencing where the distances between source and receptor cannot be managed, or on the site boundary; and
- All plant being properly maintained (greased, blown silencers replaced, saws kept sharpened, teeth set and blades flat, worn bearings replaced, etc.).

7.2 Operational

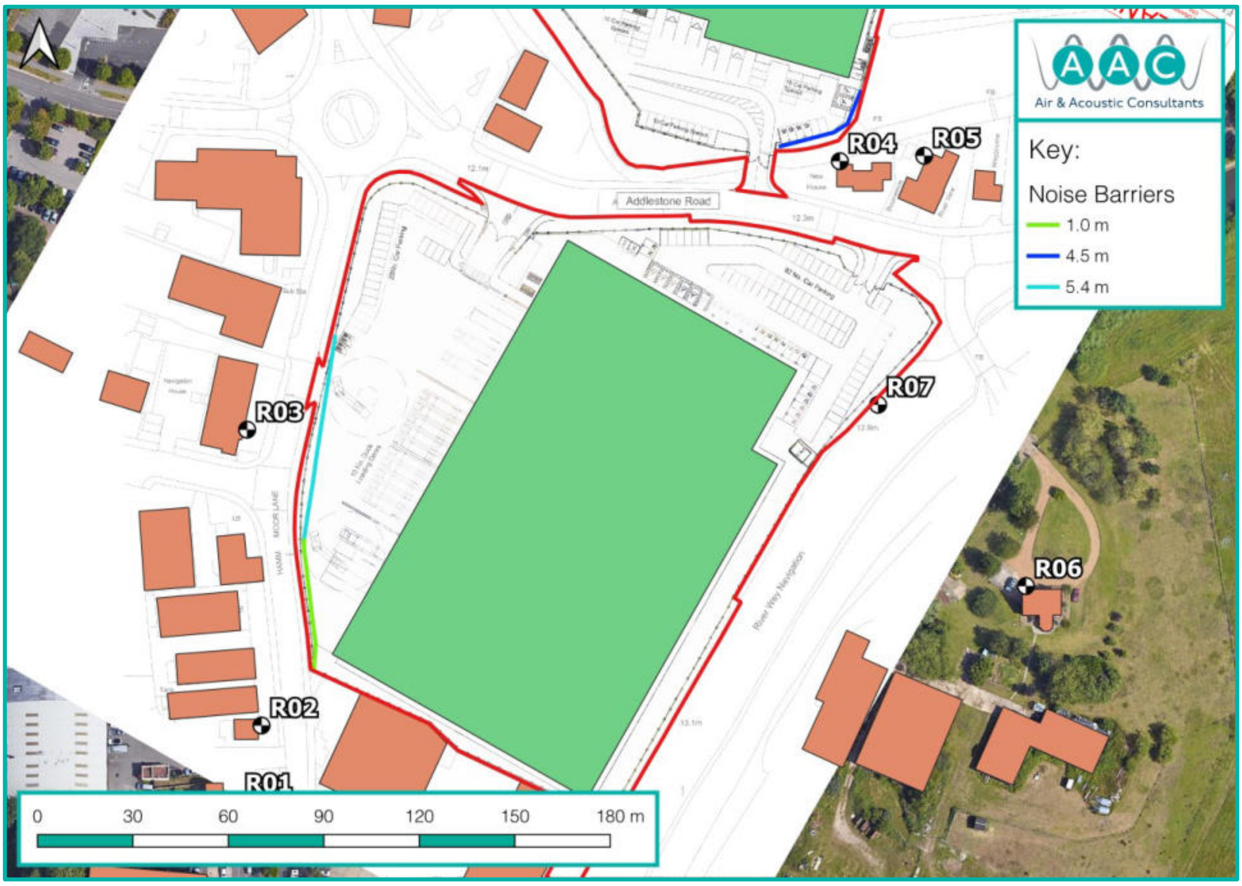
7.2.1 The assessments show that mitigation will be required to ensure commercial noise levels are reduced at sensitive receptors R02, R03, R04 and R05.

7.2.2 The specification of this barrier is as follows:

- Minimum height as specified;
- No gaps or holes in the barrier, below the barrier or between panels; and
- Minimum surface density of 16 kg/m^2.

7.2.3 Figure 7.1 shows where barriers should be located to reduce noise rating levels at the receptors to less than 5 dB above the background sound levels.

Figure 7.1: Noise Mitigation Measures



7.2.4 The assessment has considered the potential noise impact upon the closest noise sensitive receptors to the proposed development. It has been demonstrated, using the methodology and criteria within BS 4142:2014+A1:2019, that the proposed development would represent NOEL to LOAEL if the specified noise mitigation features are included. Where there are no likely adverse effects no further action is required.

8 Summary & Conclusions

8.1 Background

8.1.1 Air and Acoustic Consultants Ltd has been instructed to undertake a noise impact assessment in support of the planning application for the proposed commercial development at Weybridge Business Park.

8.1.2 A long-term unattended baseline noise survey was undertaken at the site during February 2022 to characterise the existing noise environment and help assess the potential impacts and effects of the proposed development upon the nearby noise-sensitive receptors.

8.2 Construction Phase

8.2.1 The specific details of the construction methodology are not known at this stage; however, the potential construction impacts have been considered, based upon the nature and scale of the proposed development, and appropriate mitigation measures have been given.

8.2.2 Assuming the appropriate mitigation measure are employed, the potential construction impacts can be minimised to the point that any adverse impacts will be temporary in nature and result in the LOAEL in terms of potential impacts.

8.3 Operational Phase

8.3.1 The predicted changes in road traffic noise as a result of the development are negligible, roads that have houses adjacent are affected by a maximum of +0.1 dB in the opening year of the development.

8.3.2 The predicted night-time maximum sound levels are less than the noise sensitive receptors experience from the existing sound level environment and the predicted noise levels from the car parks will also be lower than the existing sound levels.

8.3.3 The predicted noise rating levels at some of the closest residential noise sensitive receptors would be greater than the criterion level of +5 dB above the background sound level without any mitigation. Therefore, a mitigation strategy employing acoustic barriers has been designed to ensure that the noise rating level at the noise sensitive receptors is less than +5 dB above the background sound level.

8.3.4 It can, therefore, be concluded that the proposed development with the specified mitigation measures is unlikely to conflict with national, regional and local planning policy or guidance referenced in this assessment.

APPENDICES

airandacoustics.co.uk

Appendix A – Definition of Terms

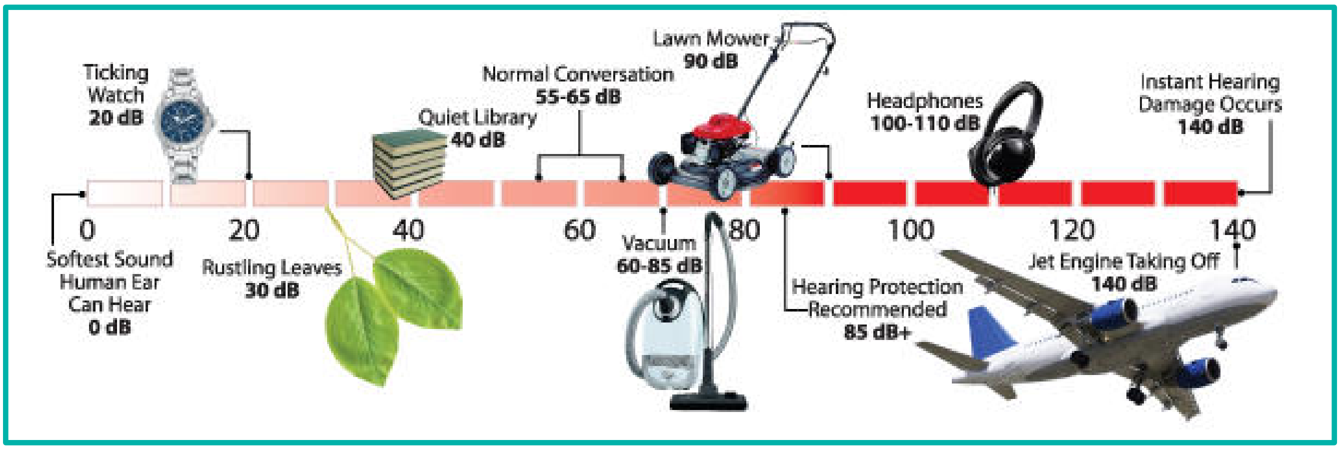
Sound Pressure - Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.

Sound Pressure Level - The sound level is the sound pressure relative to a standard reference pressure of 20 µPa ($2x10^{-5}$ Pascals) on a decibel scale.

Decibels dB - Noise is commonly defined as unwanted sound. The range of audible sound is from 0 dB to 140 dB, which is taken to be the threshold of pain. The sound pressure detected by the human ear covers an extremely wide range. The decibel (dB) is used to condense this range into a manageable scale by taking the logarithm of the ratio of the sound pressure and a reference sound pressure.

The decibel scale is logarithmic and therefore when two noise sources are present together, they must be combined logarithmically, therefore, when two sound sources of the same sound pressure level are combined the resultant level is 3dB(A) higher than the single source. However, in subjective terms the ear can distinguish a difference in 'loudness' between two simple noises sources when there is a 3dB(A) difference between them. I emphasis, loudness, not a measure of annoyance. Again, for simple sources, when two sounds differ by 10dB(A) one is said to be twice as loud as the other.

Figure A.1: Examples of Typical Noise Levels



Noise Level Indices - Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.

'A' Weighted Decibels dB(A) - The frequency response of the ear is usually taken to be about 18Hz (number of oscillations per second) to 18,000Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than at the lower and higher frequencies, and because of this, the low and high frequency component of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most used, and which correlates best with the subjective response to noise, including that of music, is the dB(A) weighting. This electronic filter matches the variation in the frequency sensitivity of the meter to that of the human ear. This is an internationally accepted standard for noise measurements.

Table A.1: Other Standard Noise Units:

Symbol	Name	Definition
$L_{Aeq,T}$	Equivalent Continuous Sound Level	The A-weighted sound pressure level of a steady sound that has, over a given period, the same energy as the fluctuating sound under investigation. The LAeq provides a single value to express the average sound energy over the measurement period and is the most widely used indicator for environmental noise.
$L_{Amax,T}$	maximum 'A' weighted noise level	This is the maximum 'A' weighted noise level recorded during the measurement period, (T).

Symbol	Name	Definition
$L_{A90,T}$	the 'A' weighted noise level	This is the 'A' weighted noise level exceeded for 90% of the measurement period (T). This is normally used to describe the background noise.
$L_{A10,T}$	the 'A' weighted noise level exceeded for just 10 % of time	This is the 'A' weighted noise level exceeded for just 10 % of the measurement period, (T). This is normally used to describe traffic noise.
$L_{A90,T}$	the 'A' weighted noise level exceeded for just 90 % of time	A noise level index. The noise level exceeded for 90% of the time over the period T. L90, can be considered to be the "average minimum" noise level and is often used to describe the background noise.
L_S	Specific noise level.	The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval.
$L_{Ar,Tr}$	Rating noise level	The specific noise level plus any adjustments for characteristic features of the noise.
$D_{n,c,w}$	Laboratory Insulation Rating	A single-number rating of the laboratory measurement of room-to-room airborne sound insulation of a suspended ceiling with a plenum above it.
$D_{nf,w}$	Weighted normalised flanking level difference	A single-number that quantifies the in-situ airborne sound insulation between rooms, when the transmission only occurs through a specified flanking path.
$D_{nT,w}$	Weighted standardized level difference	Single-number quantity that characterizes the in-situ airborne sound insulation between rooms.
R_w	Weighted sound reduction index.	Single-number quantity which characterizes the airborne sound insulating properties of a material or building element over a range of frequencies in a laboratory.
C_{tr}		Correction term applied against the sound insulation single-number values (R_w, D_w and $D_{nT,w}$) to provide a weighting against low frequency performance.
NOEL	No Observed Effect Level	Noise Policy Statement for England (2010) - The noise level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
LOAEL	Lowest Observed Adverse Effect Level	Noise Policy Statement for England (2010) - The noise level above which adverse effects on health and quality of life can be detected.
SOAEL	Significant Observed Adverse Effect	Noise Policy Statement for England (2010) - The noise level above which significant adverse effects on health and quality of life occur.

Appendix B – Runnymede Borough Council Consultation

Table of Contents

1 Introduction

1.1 Proposed Development

1.1.1 Environoise Consulting Limited has been instructed by Runneymede Borough Council to peer review a technical note by others associated with the proposed speculative industrial development at Weybridge Business Park, Addlestone Rd, Addlestone KT15 2UP.

1.1.2 Planning approval is sought for the speculative development of industrial units within the following use classes:

B2 General Industrial:	Use for industrial process other than one falling within class E(g) (previously class B1) (excluding incineration purposes, chemical treatment or landfill or hazardous waste)
B8 Storage or distribution:	This class includes open air storage.
E(g)iii:	Industrial processes which can be carried out in a residential area without detriment to its amenity

1.2 Reviewed Information

1.2.1 The reviewed technical note is Air & Acoustic Consultants 'Technical Note – Weybridge Business Park' (14th March 2022), hereafter referred to as 'TN'. We have also referred to the UMC Architects 'Design and Access Statement', hereafter referred to as 'DAS'.

1.2.2 We have provided comments on the TN and DAS in section 1. In section 2, we have recommended further information which should be requested by Runneymede BC as part of the planning application submission.

2 Peer Review of Technical Note

2.1 Residential Receptors

Potential Additional Residential Receptor

2.1.1 The closest residential receptors have been identified in the TN as the dwellings on Addlestone Road to the north-east of the site and the dwellings on Hamm Moor Lane to the west and south-west. There also appears to be an additional residential dwelling not mentioned in the TN which is accessed by a private track off Addlestone Road to the other side of the River Wey as indicated in Figure 1.1.

2.1.2 Although the distance between site activities and the potential identified additional residential receptor is anticipated to be greater than other residential receptors identified, the background noise level ($L_{A90\ (T)}$) may well be lower due to being further from the road network and the dominant noise source identified in the TN as Victory Car Wash at 14 Hamm More Lane. Therefore, the relative level of noise impact may be greater than at other identified receptors.

2.1.3 It should be confirmed whether the potential identified additional receptor is a residential dwelling and, if so, it should be included as a receptor within noise impact assessments submitted as part of the planning application.

Figure 1.1: Potential additional residential receptor location.

Narrowboat Moorings

2.1.4 The TN refers to the narrowboats moored on the River Wey to the south of the site and states the following:

Based upon a review of the National Trust information, (who own these moorings) they advertise that they allow for a maximum stay of 48 hours.

2.1.5 The TN does not conclude whether the narrowboats should be considered as a receptor in noise impact assessments. Although the moorings are only temporary, assessment of noise impact to transient residences is typical (e.g. hotels; therefore, we recommend that the level of noise impact is assessed to the narrowboat moorings.

2.2 HGV / Fork-Lift Truck Activity

2.2.1 HGVs are proposed to reverse into loading docks to be serviced internally (assumedly with pallet trucks) which will result in less external noise than if HGVs were proposed to be serviced externally. According to the TN, white noise reversing alarms are proposed to HGVs which, due to being atonal, typically provide less annoyance to receptors than other reversing alarms.

2.2.2 It is understood that fork-lift trucks are not proposed for external use on the site. If they are, we would recommend that exclusively electric fork-lift trucks with white noise reversing alarms are specified.

2.2.3 It is understood that the access is now proposed on Addlestone Road rather than Hamm Moor Lane which we would expect would generally reduce the level of noise impact at the receptors.

2.3 Car Park Activity

2.3.1 The DAS includes approximately 150 car parking spaces for the scheme. It is understood that a comparable number of car parking spaces exist on the proposal site; however, it is uncertain whether these are regularly occupied. The noise impact associated with the use these spaces should be assessed as per our recommendations in section 3.5.

2.4 Site Noise Mitigation Measures

2.4.1 The extent of noise mitigation measures cannot be determined until a noise impact assessment is prepared; however, the TN states that a barrier is likely required on the boundary between the site and residential receptors on Hamm Moor Lane. It is not clear whether this is due to the previously proposed access from Hamm Moor Lane. A barrier at the site boundary would be largely ineffective at any practicable height due to the nearest receptor on Hamm Moor Lane, the apartment block, having receptors at 2nd storey level which is approximately a 6-metre height and also due to the relative distances between the noise sources to the barrier and from the barrier to the receptor.

2.4.2 External plant units are proposed at ground floor level which will benefit from shielding provided by intervening buildings between plant units and residential receptors. Appropriate mitigation measures should be capable of reducing plant noise levels to meet an imposed local authority target and be of 'low impact' in accordance with BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'[i] considering the existing industrial nature of the proposal site and distance to residential receptors.

3 Recommended Information for Planning Submission

3.1 Assessment Methodology

3.1.1 The noise survey should be done over a weekday and weekend period (e.g. Thursday to Monday) to reflect proposed 24-hour, 7-day site operations. The level of noise impact should be determined for the daytime (07.00 – 19.00hrs), evening (19.00 – 23.00hrs) and night-time (23.00 – 07.00hrs) periods for both, a typical weekday and the weekend.

3.1.2 Sound propagation should be calculated in accordance with ISO 9613-2:1996 'Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation'[ii].

3.1.3 The Runneymede Borough Council 2030 Local Plan has been reviewed but no specific noise criteria have been set. Therefore, we have recommended the appropriate guidance document to be used for each assessment type.

3.2 Construction Noise and Vibration Impact

3.2.1 Construction noise and vibration impact should be addressed in a construction environmental management plan (CEMP) to be issued prior to the start of the construction phase.

3.3 HGV Delivery Noise Impact

3.3.1 A noise impact assessment of HGV delivery noise should be provided by the applicant which uses projected HGV arrival and departure trip data. The rating noise level from HGV deliveries should be assessed to avoid an adverse impact in accordance with BS 4142:2014+A1:2019.

3.3.2 Loading / unloading activities occurring within the building would not require assessment but all external activities e.g. HGV pass-by and driver door slams will need to be considered.

3.4 Plant Noise Impact

3.4.1 We recommend that the rating noise level from proposed fixed external plant is assessed to avoid an adverse impact in accordance with BS 4142:2014+A1:2019. Mitigation measures should be recommended if plant noise is predicted to exceed targets.

3.5 Car Park Noise Impact

3.5.1 The change in noise level due to the proposed car park should be assessed in accordance with The Institute of Environmental Management & Assessment (IEMA) 'Guidelines for Environmental Noise Impact Assessment'. We recommend that the noise impact due to the proposed car park is controlled to a 'none' or 'not significant' effect. This is achieved where the resultant sound level increase due to car park movements is <3dBA.

3.6 Change in Road Traffic

3.6.1 The change in noise level at residential receptors due to the change in levels of off-site road traffic during the operational phase should be assessed in accordance with 'Department of Transport 'Calculation of Road Traffic Noise'[iii] and National Highways 'Design Manual for Roads and Bridges' LA 111 Noise and Vibration[iv]. The appropriate roads and projected changes in traffic flow should be determined by the project traffic consultant with the projected HGV percentage considered within noise level change calculations.

References

[i] BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'.

[ii] ISO 9613-2:1996 'Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation'

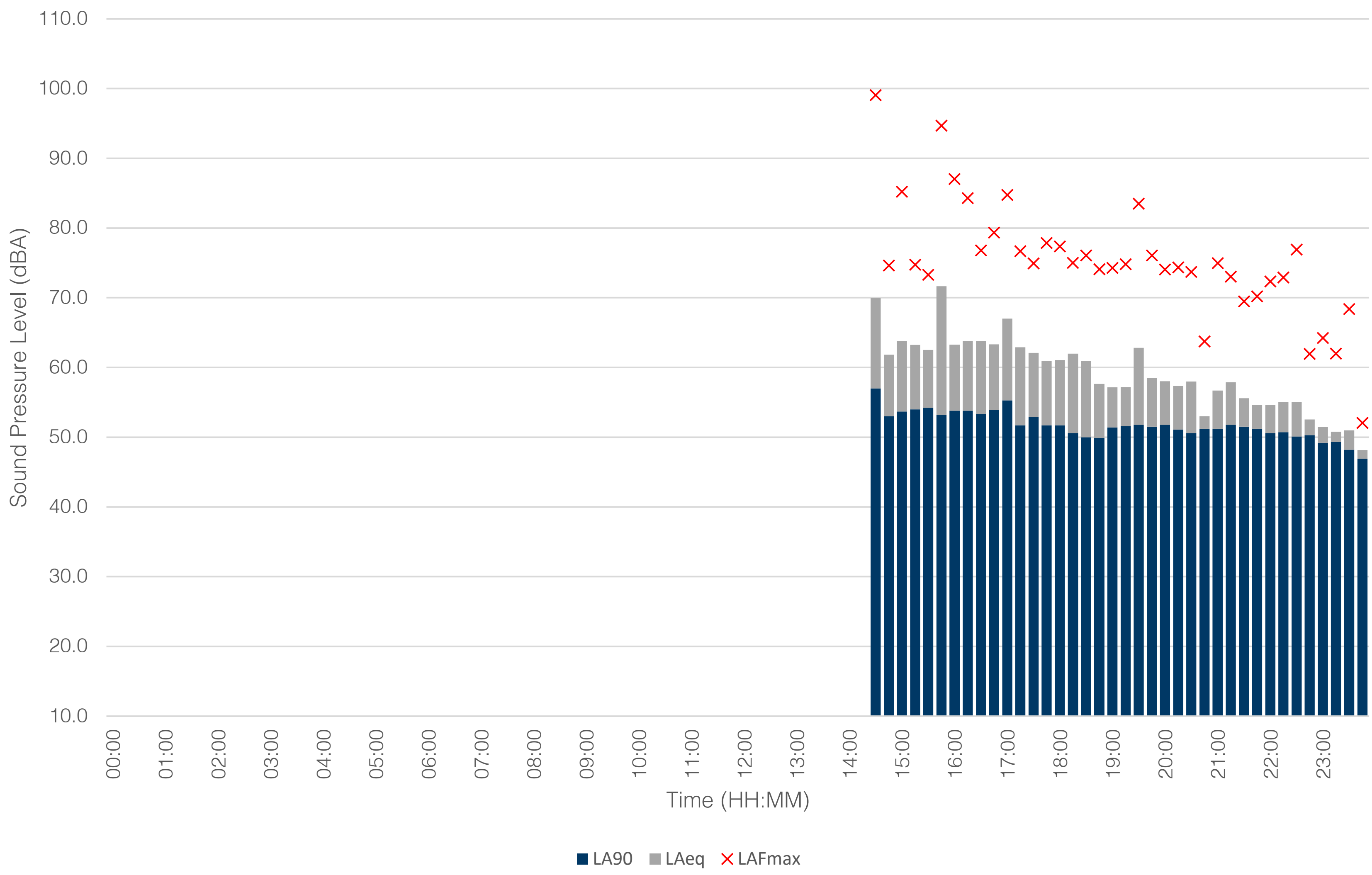
[iii] 'Department of Transport 'Calculation of Road Traffic Noise', 1988.

[iv] National Highways 'Design Manual for Roads and Bridges' LA 111 Noise and Vibration, version 2, May 2020.

Appendix C – Noise Monitoring Time Histories

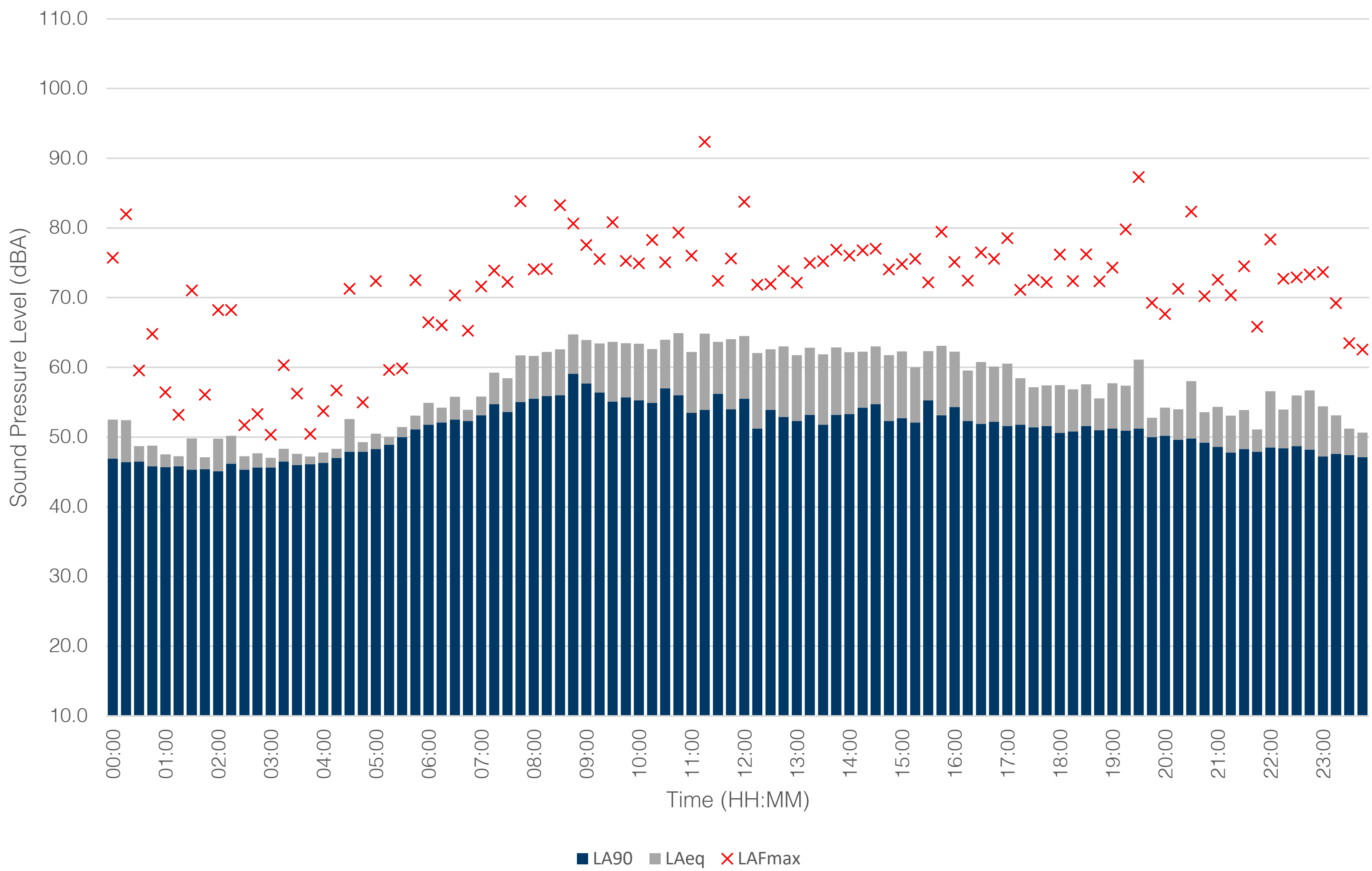
Time History Graph C.1

Project Name:	Weybridge
Measurement Location:	L1
Survey Date:	04/02/2022



Time History Graph C.2

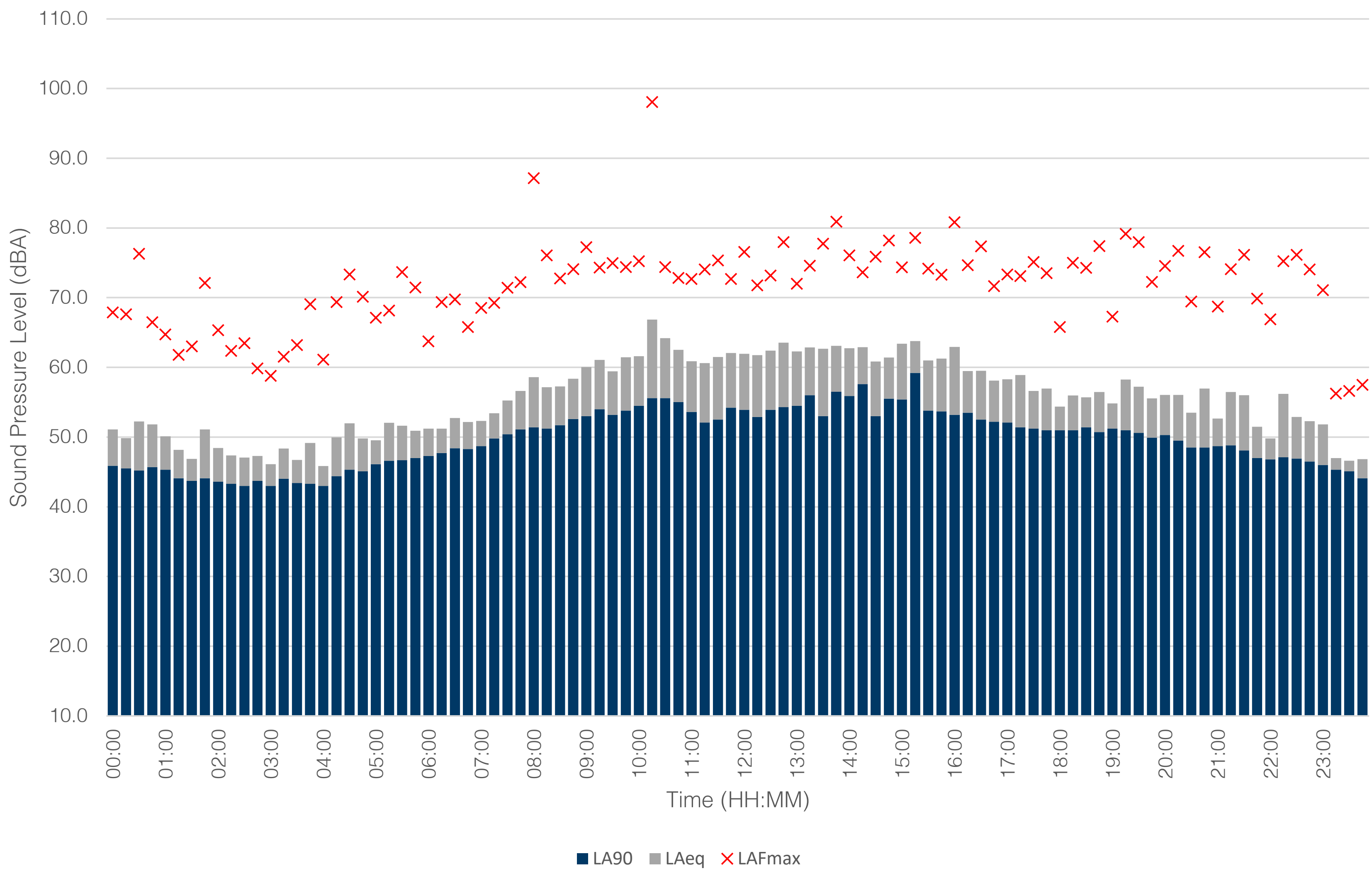
Project Name:	Weybridge
Measurement Location:	L1
Survey Date:	05/02/2022



Time History Graph C.3

Project Name:	Weybridge
Measurement Location:	L1
Survey Date:	06/02/2022

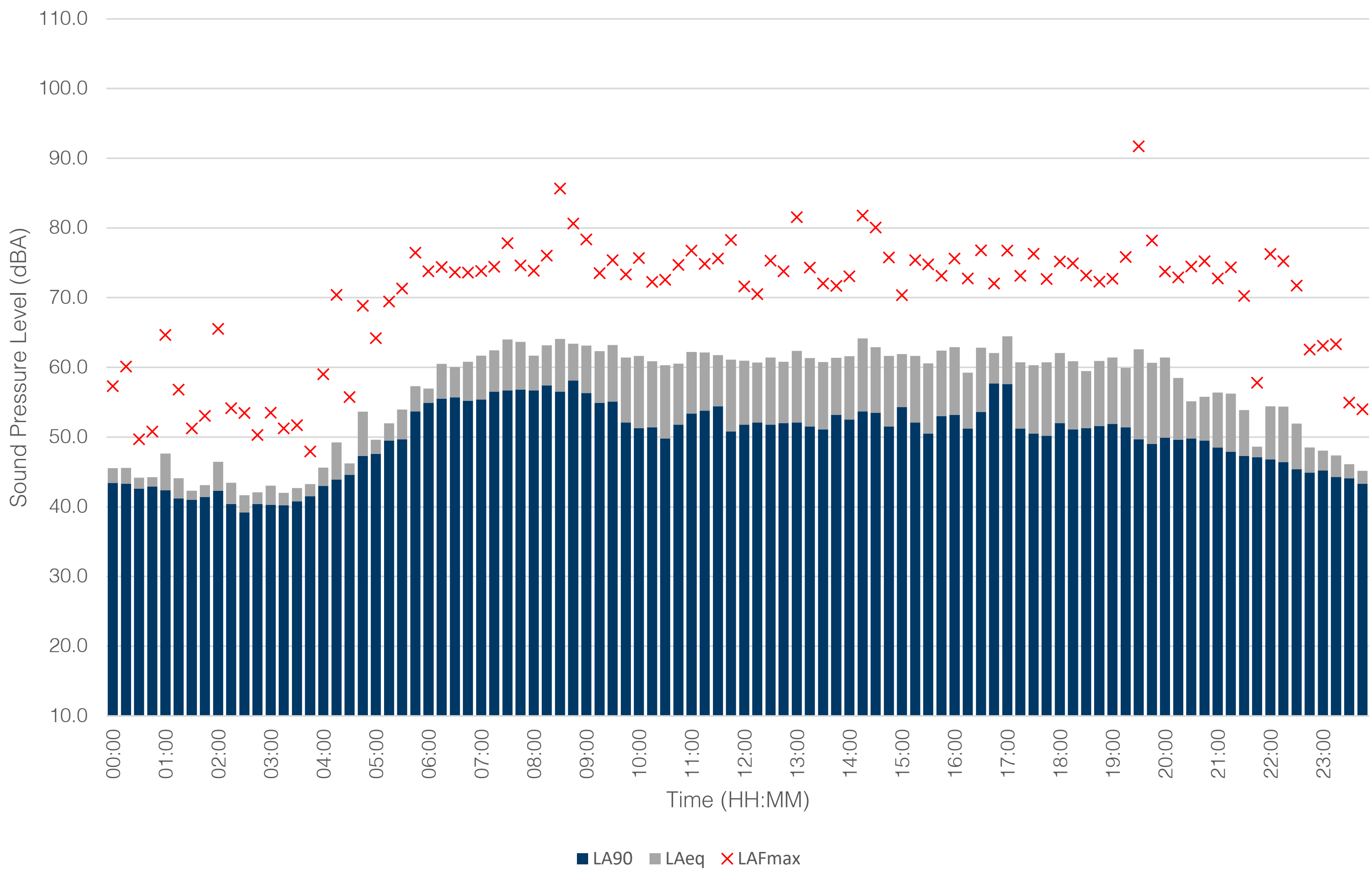
Air & Acoustic Consultants



Time History Graph C.4

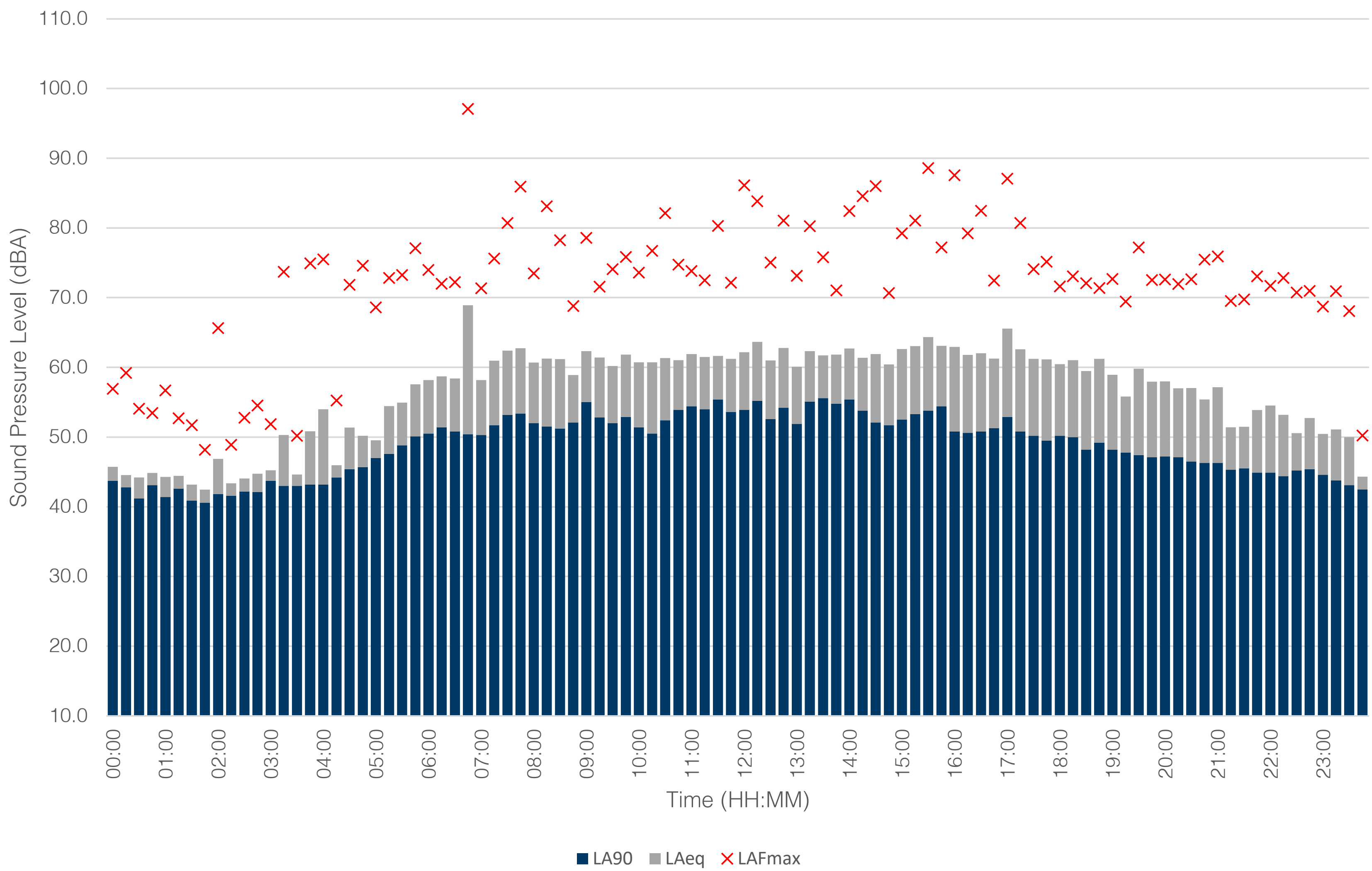
Project Name:	Weybridge
Measurement Location:	L1
Survey Date:	07/02/2022

Air & Acoustic Consultants



Time History Graph C.5

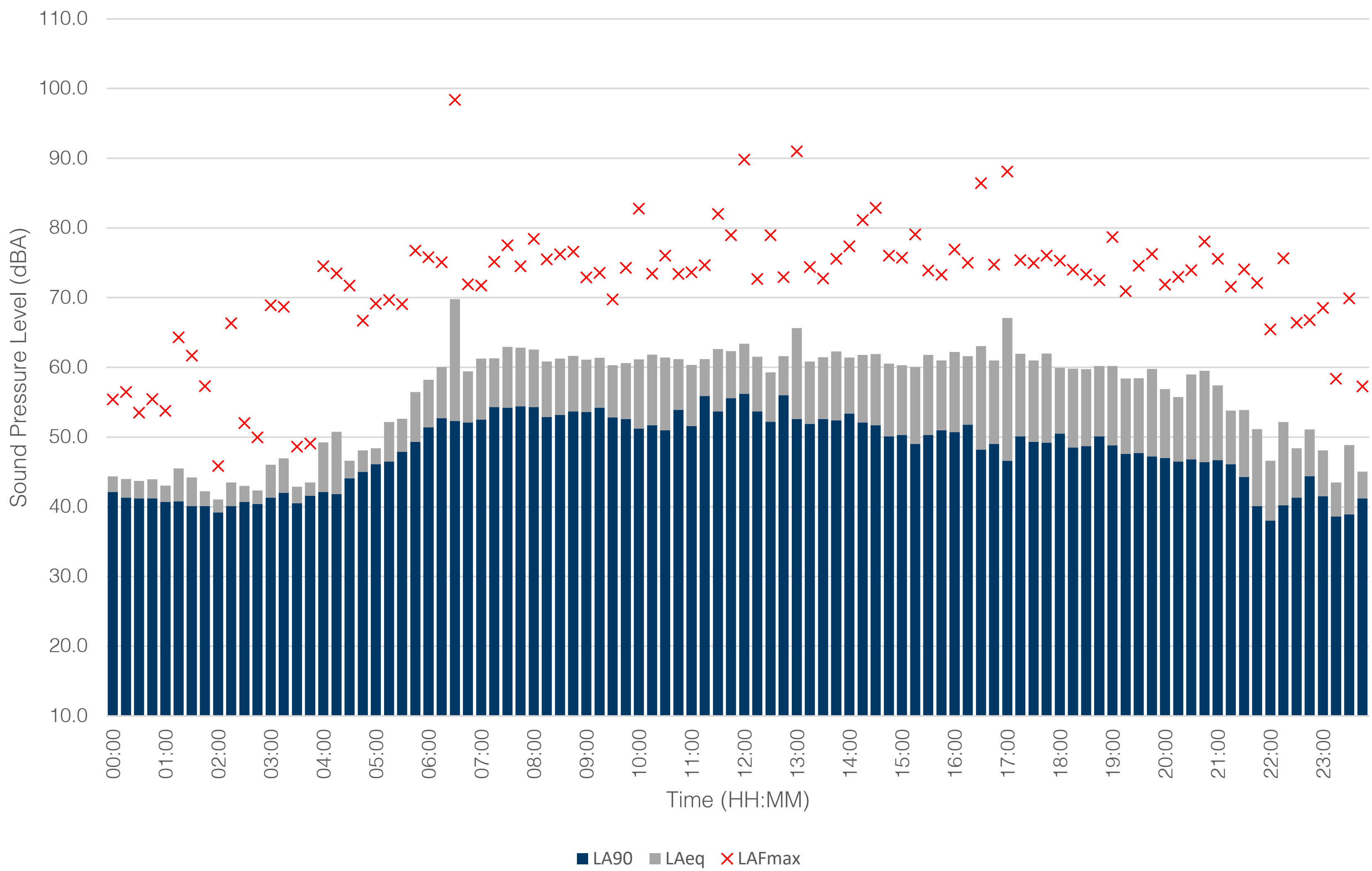
Project Name:	Weybridge
Measurement Location:	L1
Survey Date:	08/02/2022



Time History Graph C.6

Project Name:	Weybridge
Measurement Location:	L1
Survey Date:	09/02/2022

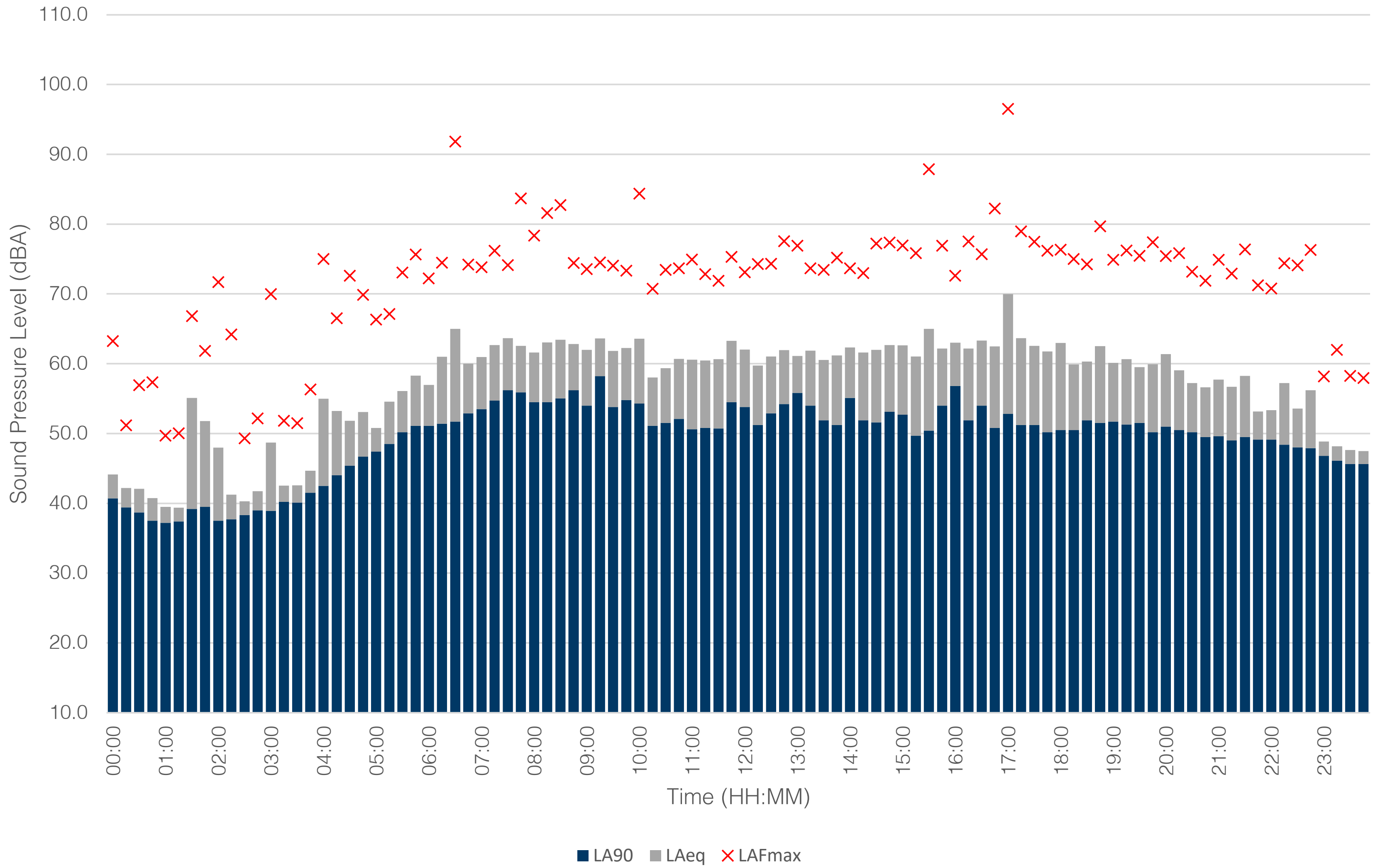
Air & Acoustic Consultants



Time History Graph C.7

Project Name:	Weybridge
Measurement Location:	L1
Survey Date:	10/02/2022

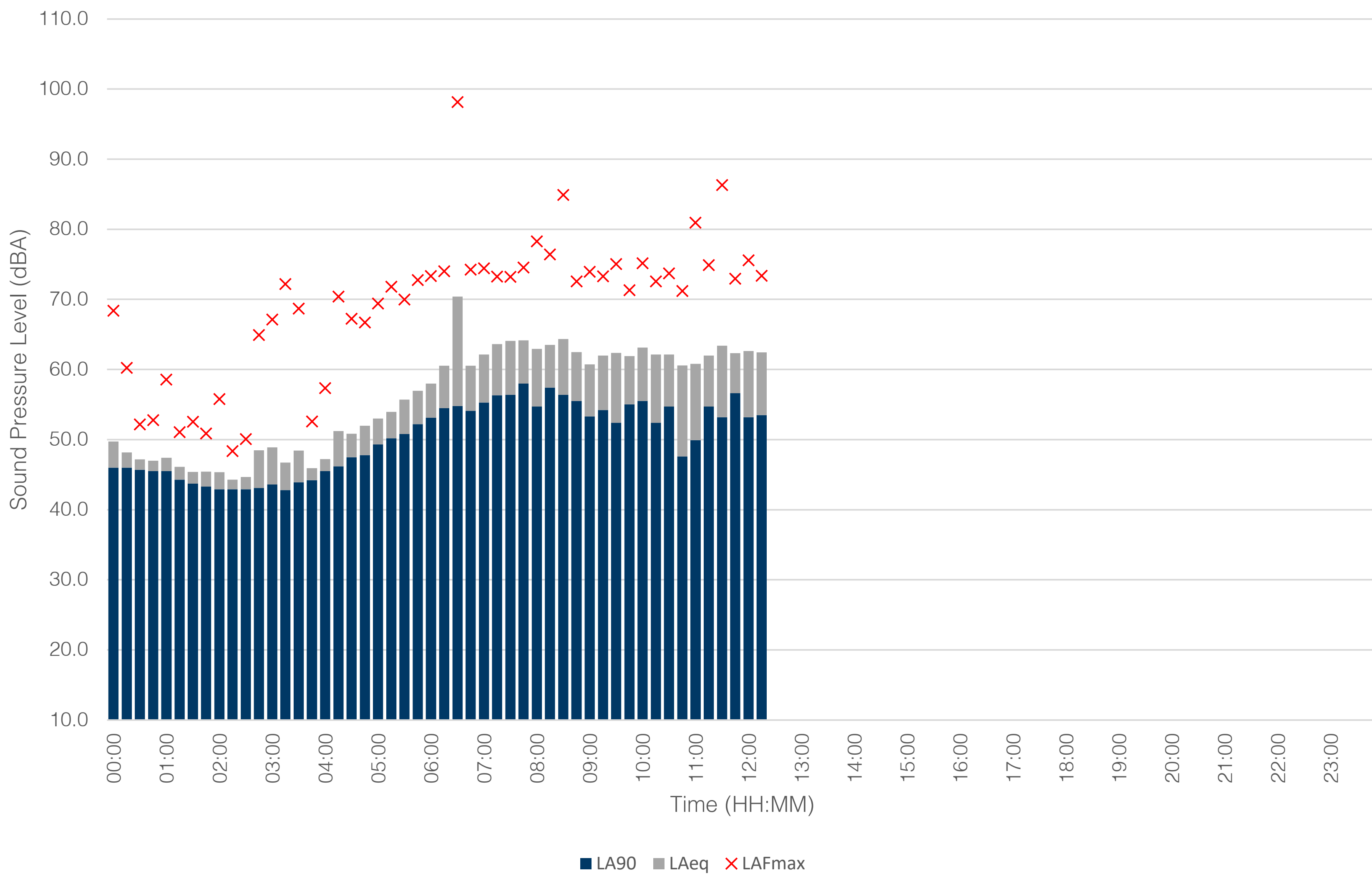
Air & Acoustic Consultants



Time History Graph C.8

Project Name:	Weybridge
Measurement Location:	L1
Survey Date:	11/02/2022

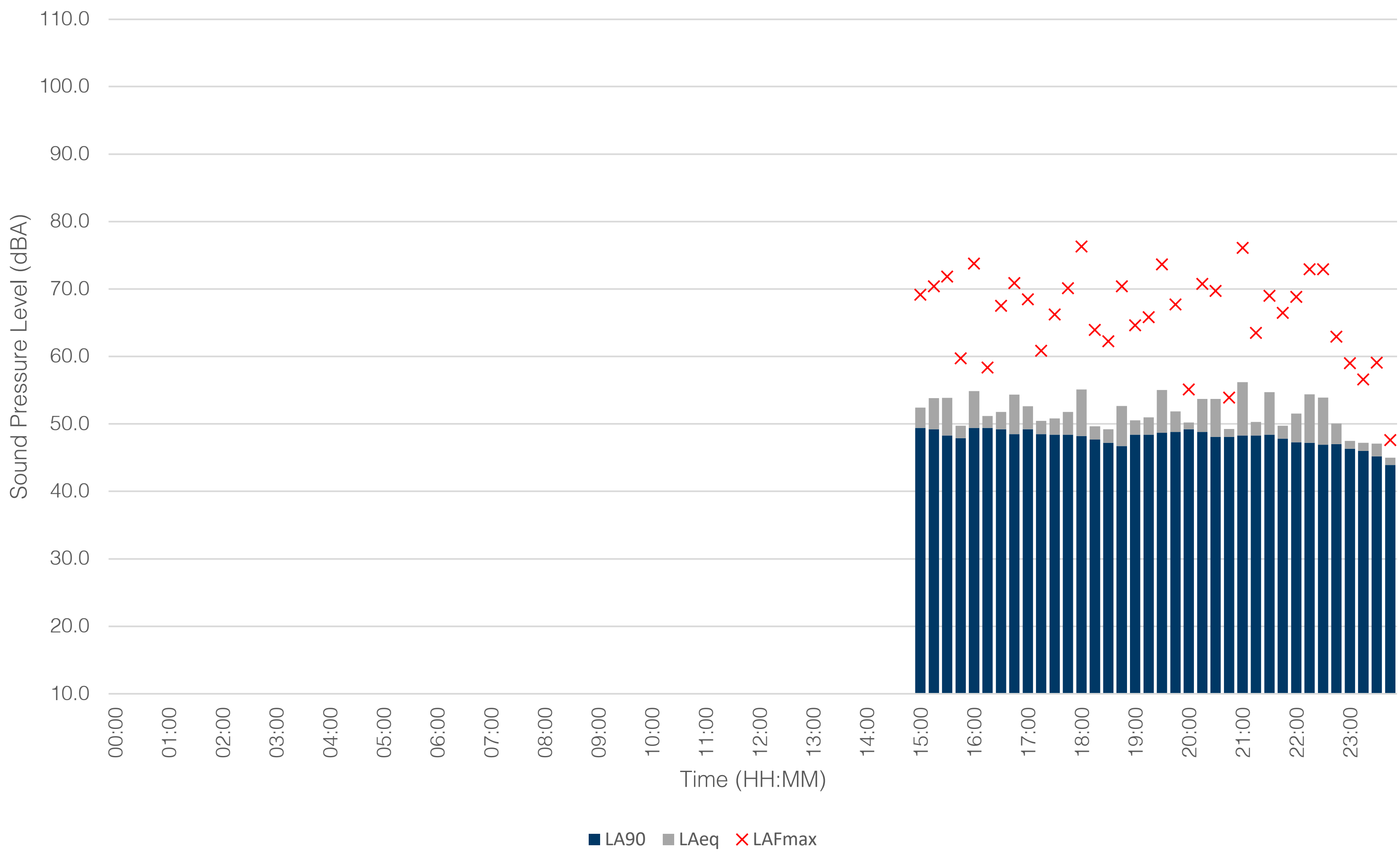
Air & Acoustic Consultants



Time History Graph C.9

Project Name:	Weybridge
Measurement Location:	L2
Survey Date:	04/02/2022

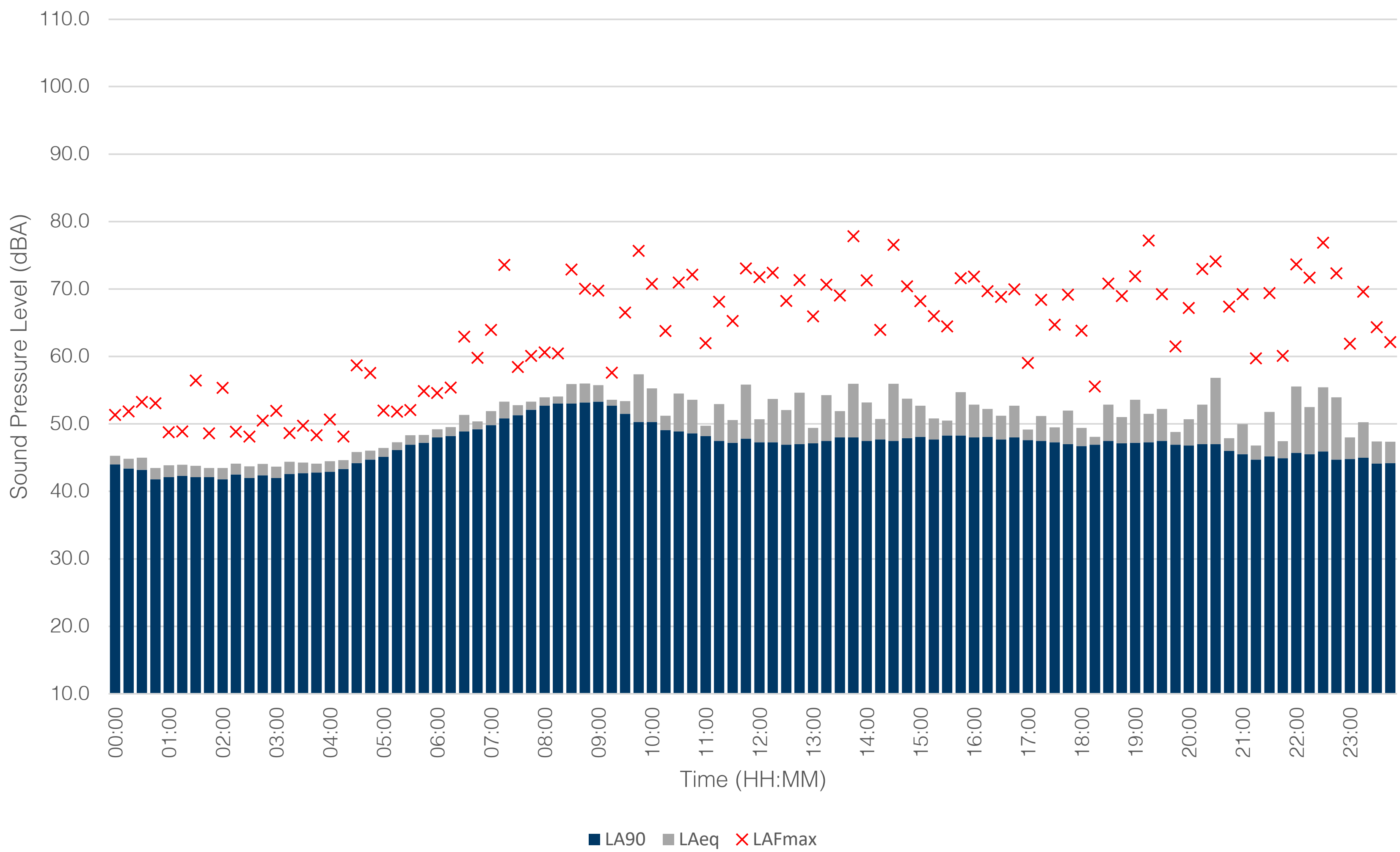
Air & Acoustic Consultants



Time History Graph C.10

Project Name:	Weybridge
Measurement Location:	L2
Survey Date:	05/02/2022

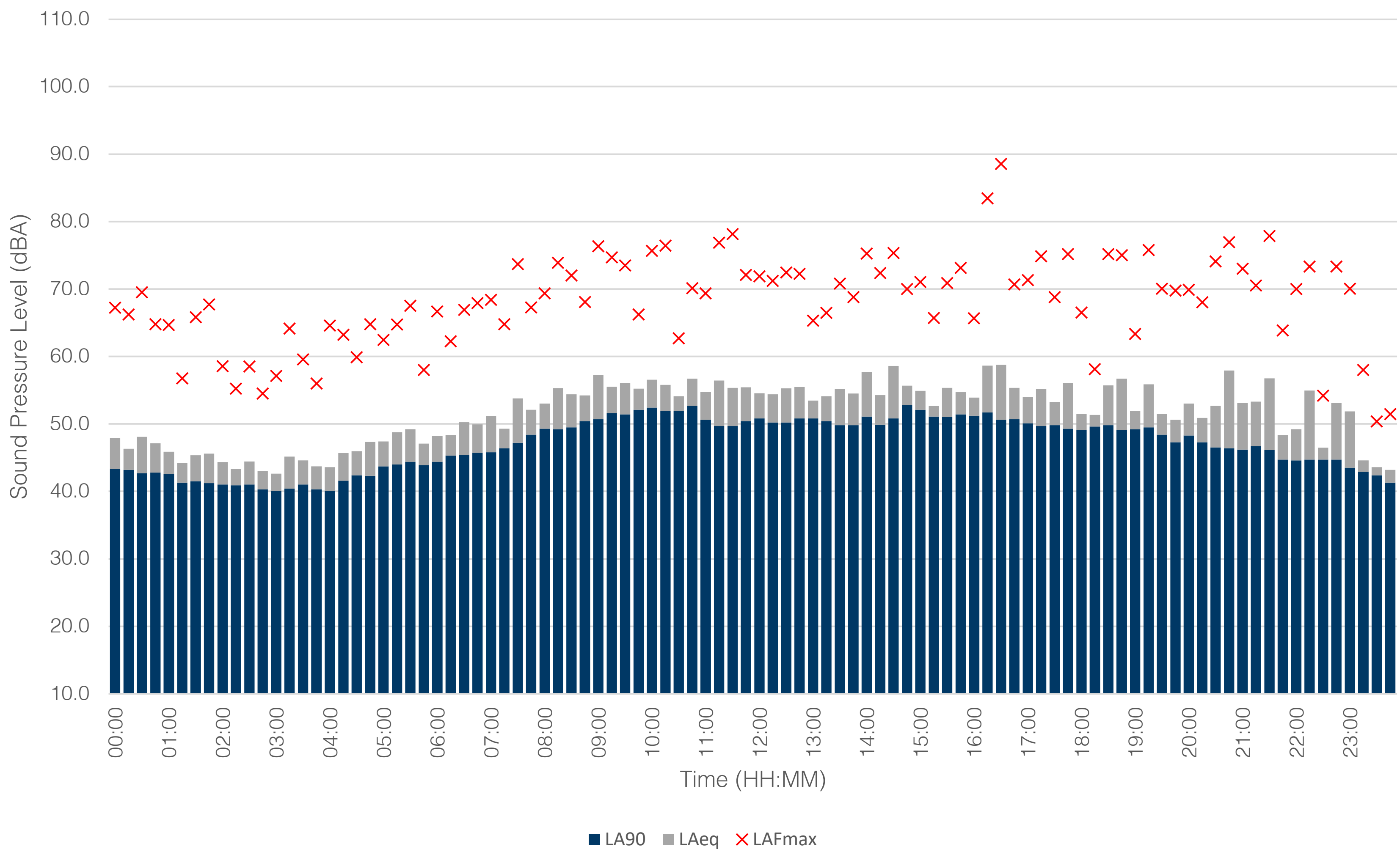
Air & Acoustic Consultants



Time History Graph C.11

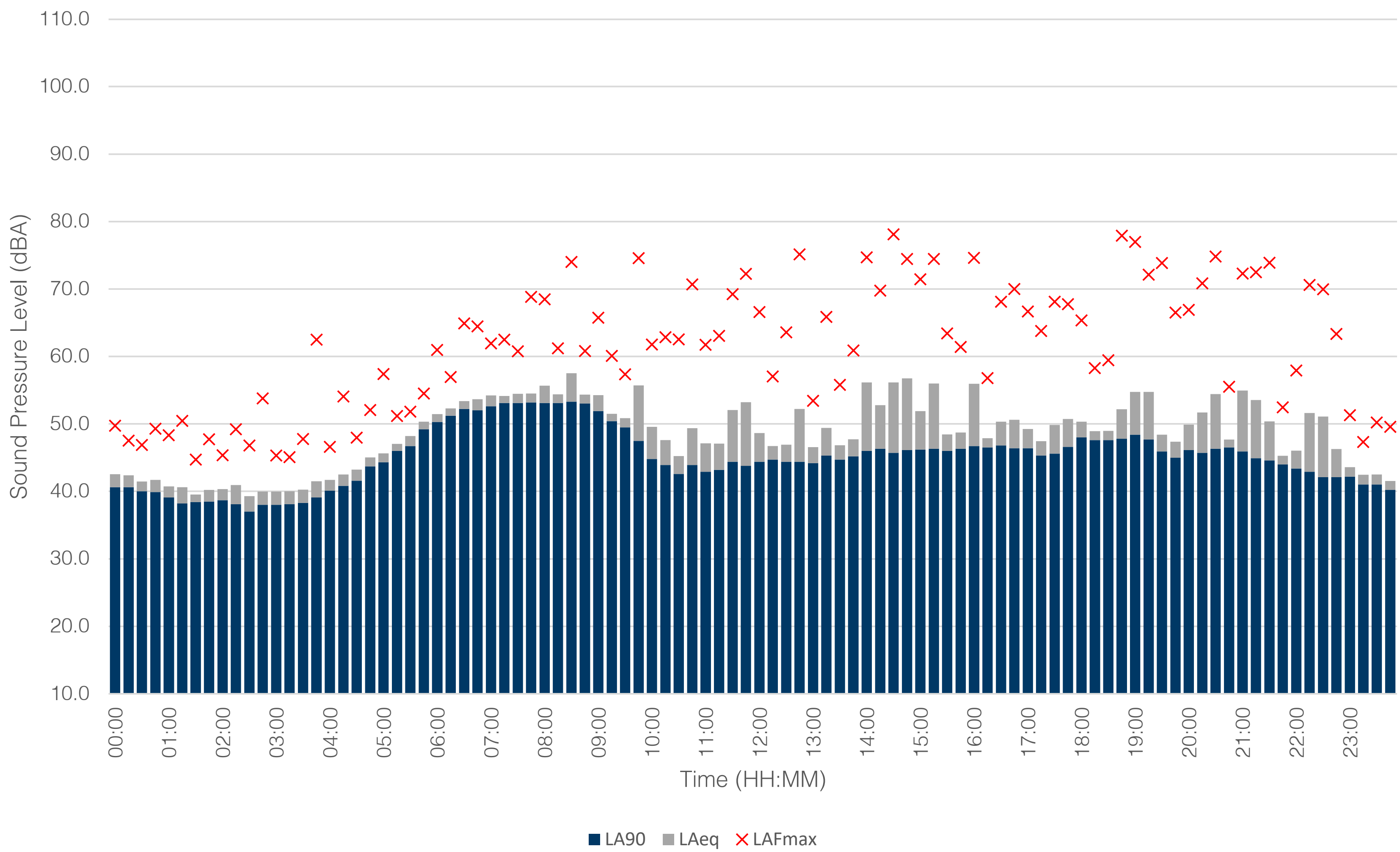
Project Name:	Weybridge
Measurement Location:	L2
Survey Date:	06/02/2022

Air & Acoustic Consultants



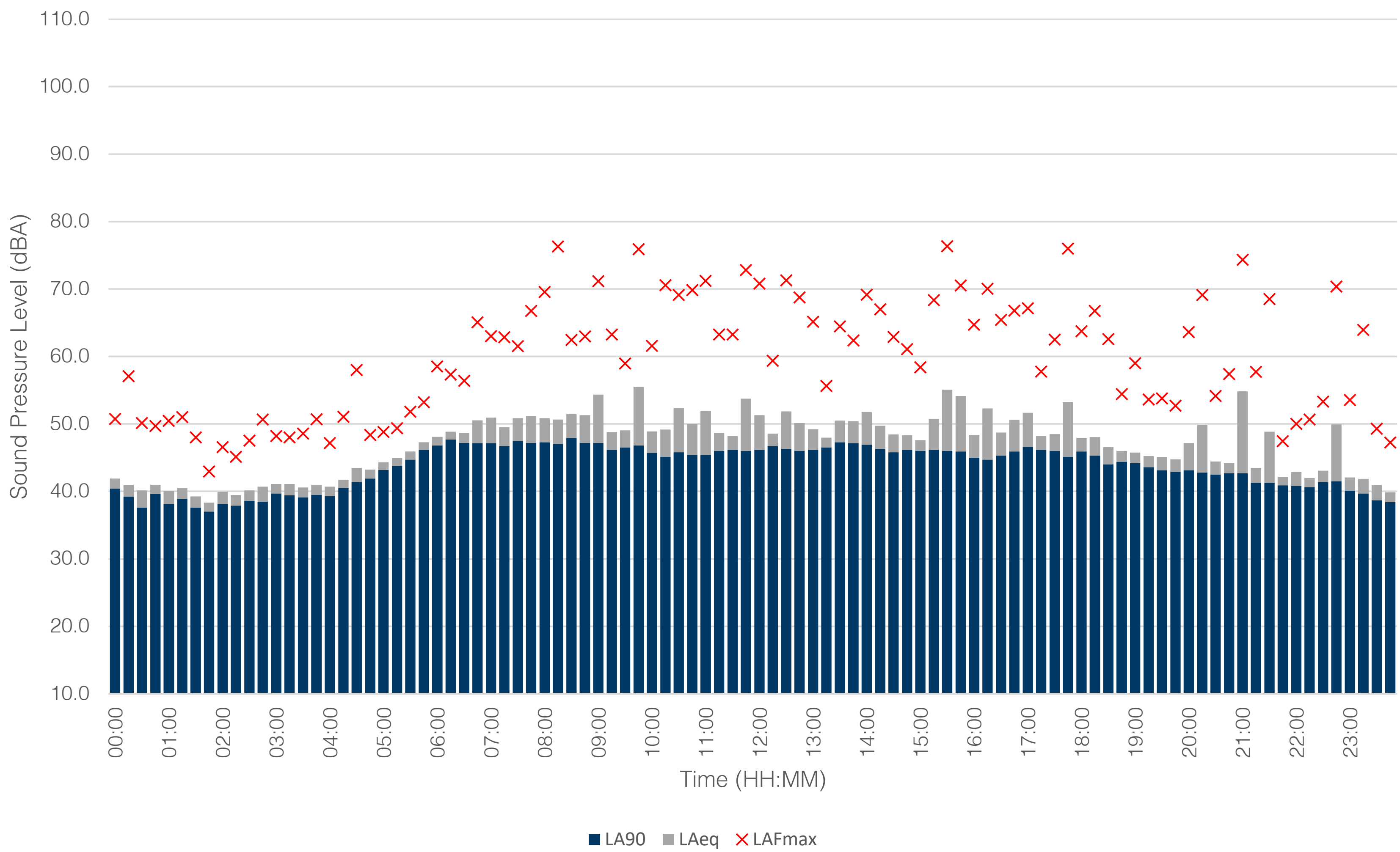
Time History Graph C.12

Project Name:	Weybridge
Measurement Location:	L2
Survey Date:	07/02/2022



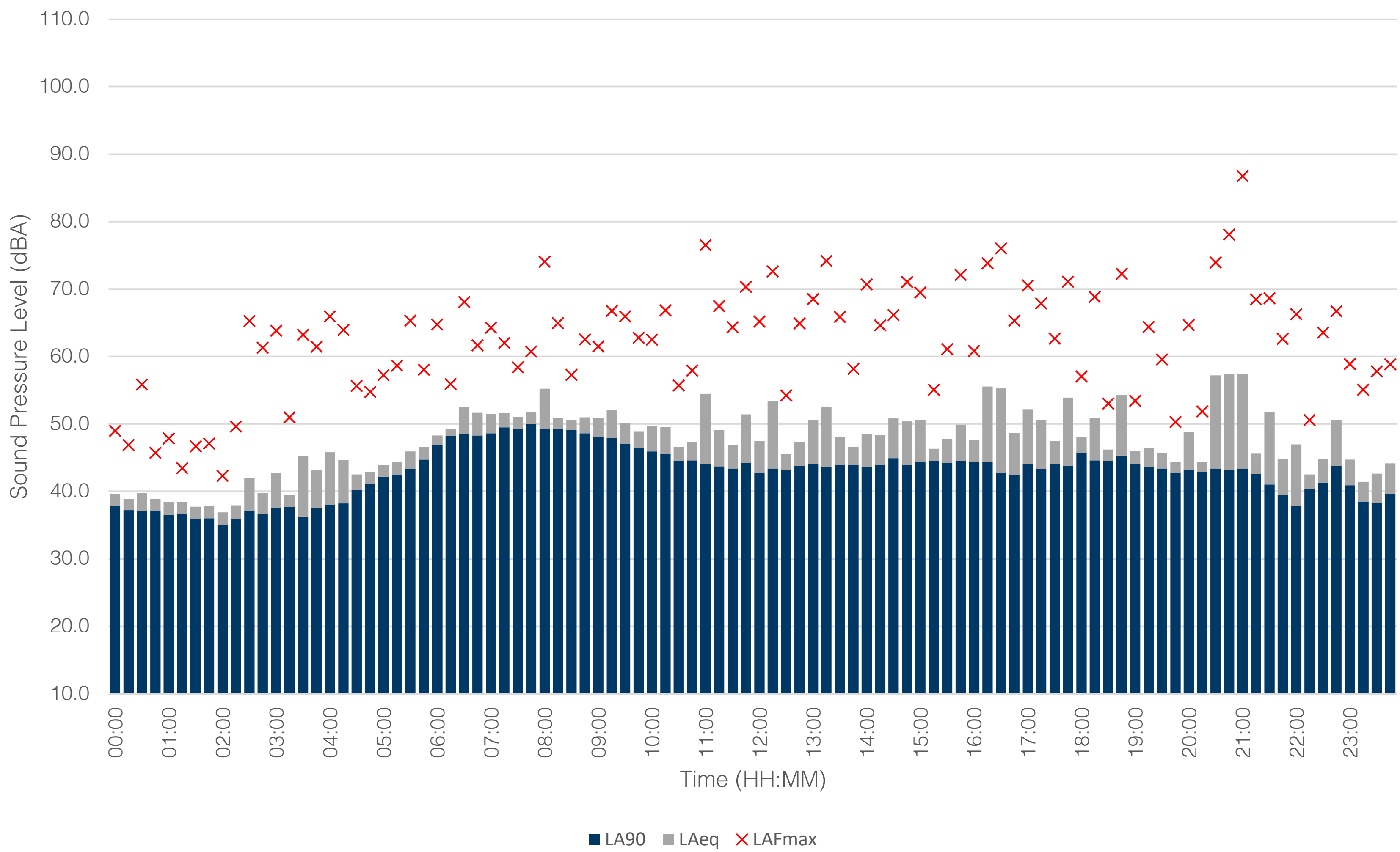
Time History Graph C.13

Project Name:	Weybridge
Measurement Location:	L2
Survey Date:	08/02/2022



Time History Graph C.14

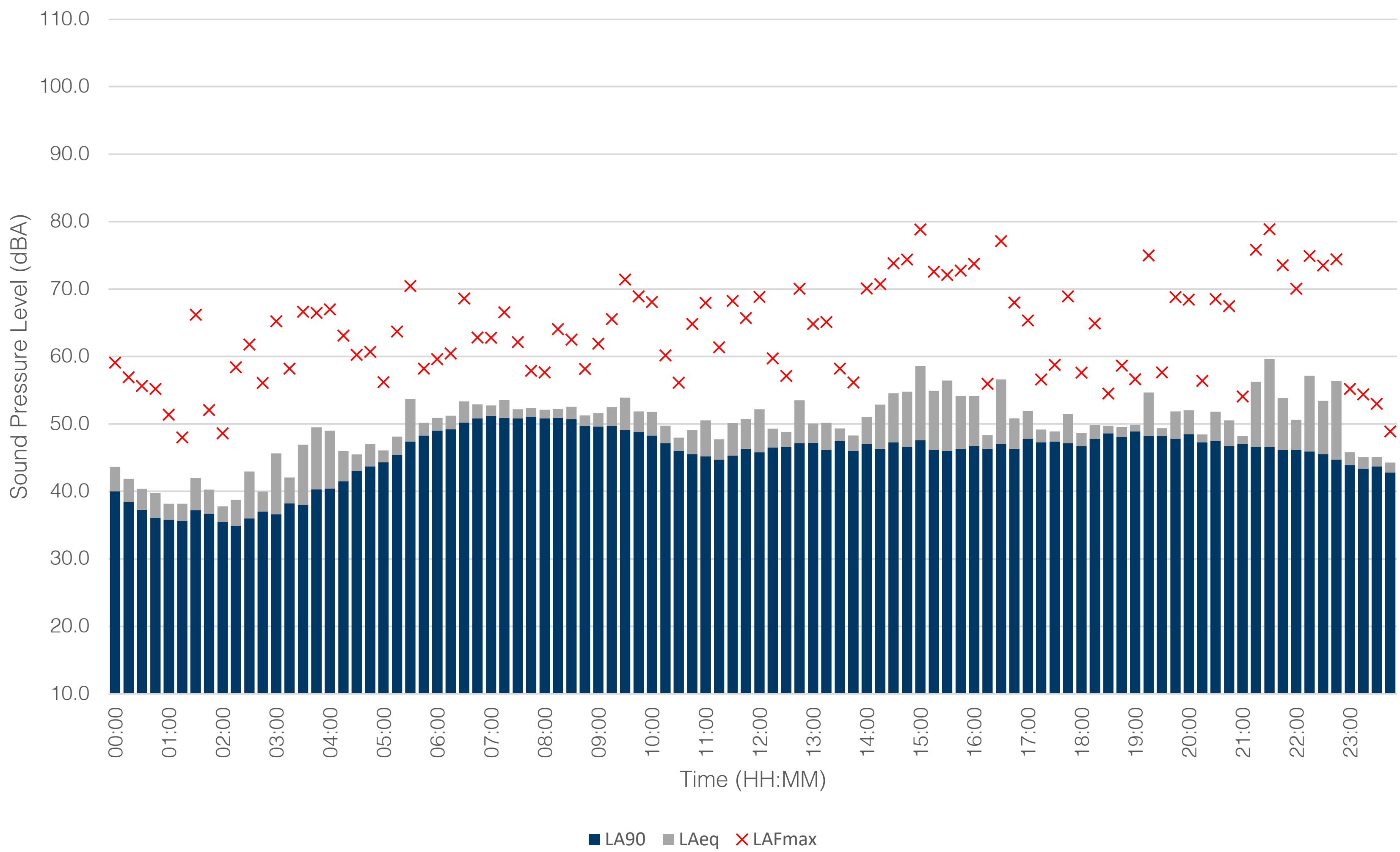
Project Name:	Weybridge
Measurement Location:	L2
Survey Date:	09/02/2022



Time History Graph C.15

Project Name:	Weybridge
Measurement Location:	L2
Survey Date:	10/02/2022

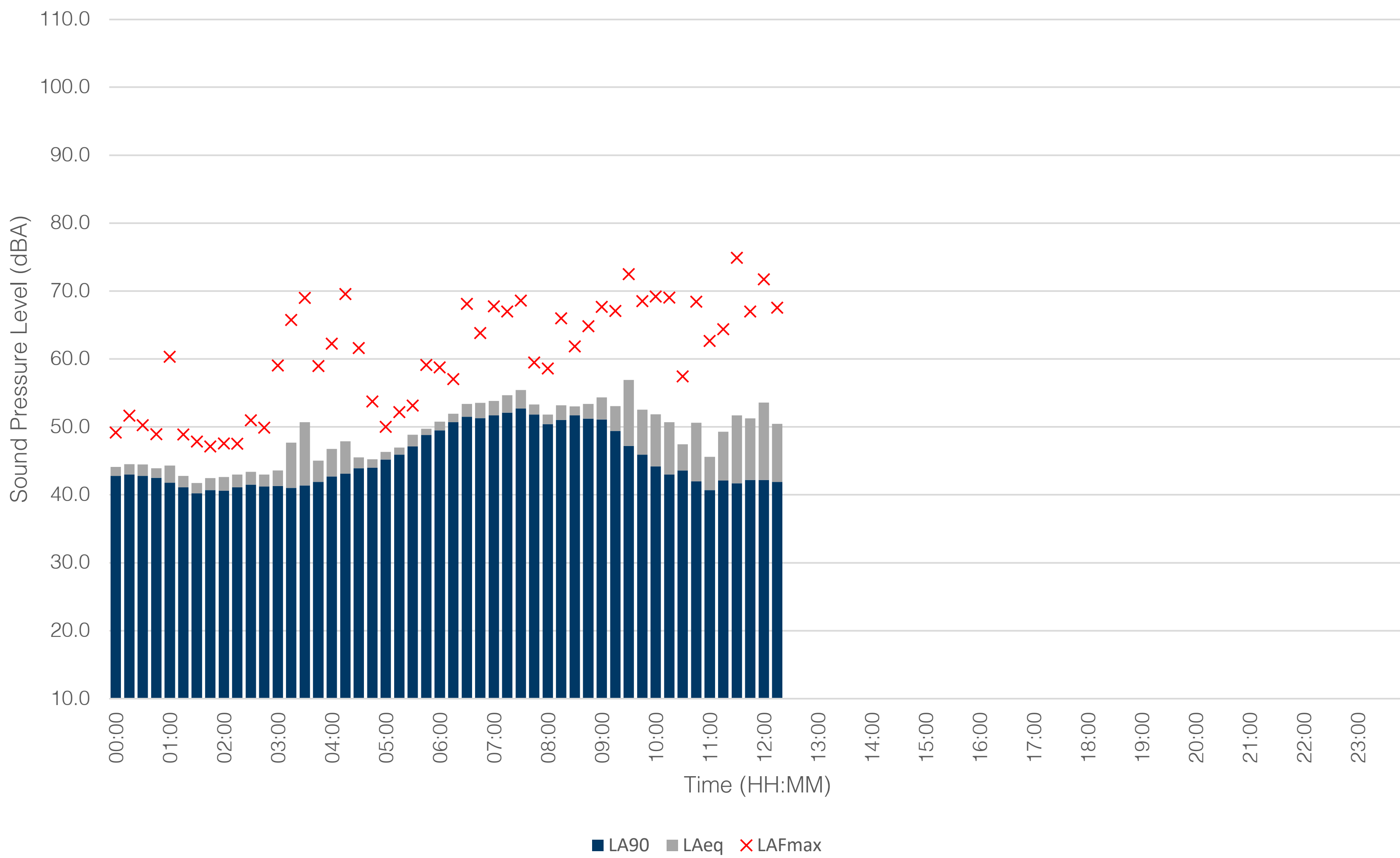
Air & Acoustic Consultants



Time History Graph C.16

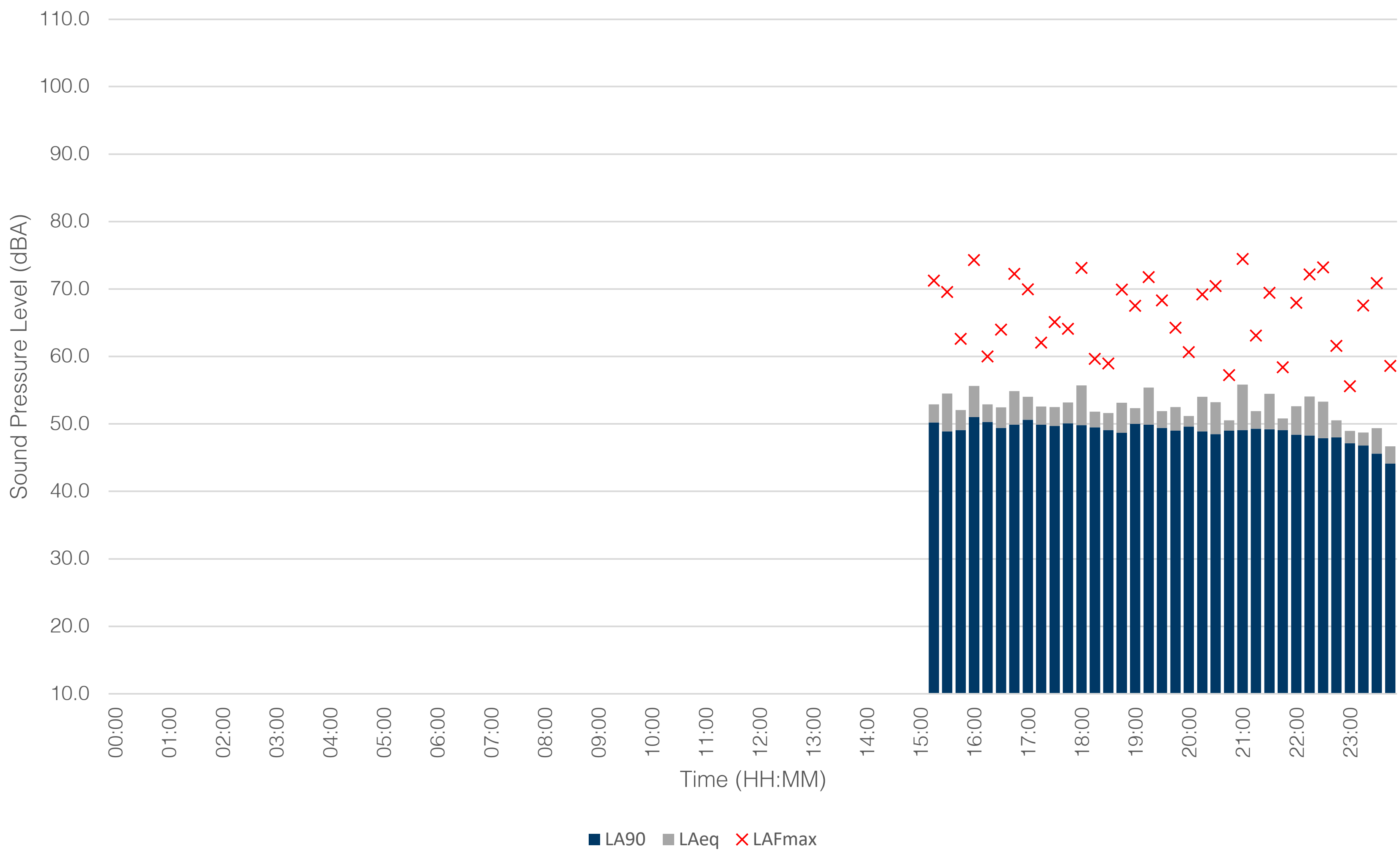
Project Name:	Weybridge
Measurement Location:	L2
Survey Date:	11/02/2022

Air & Acoustic Consultants



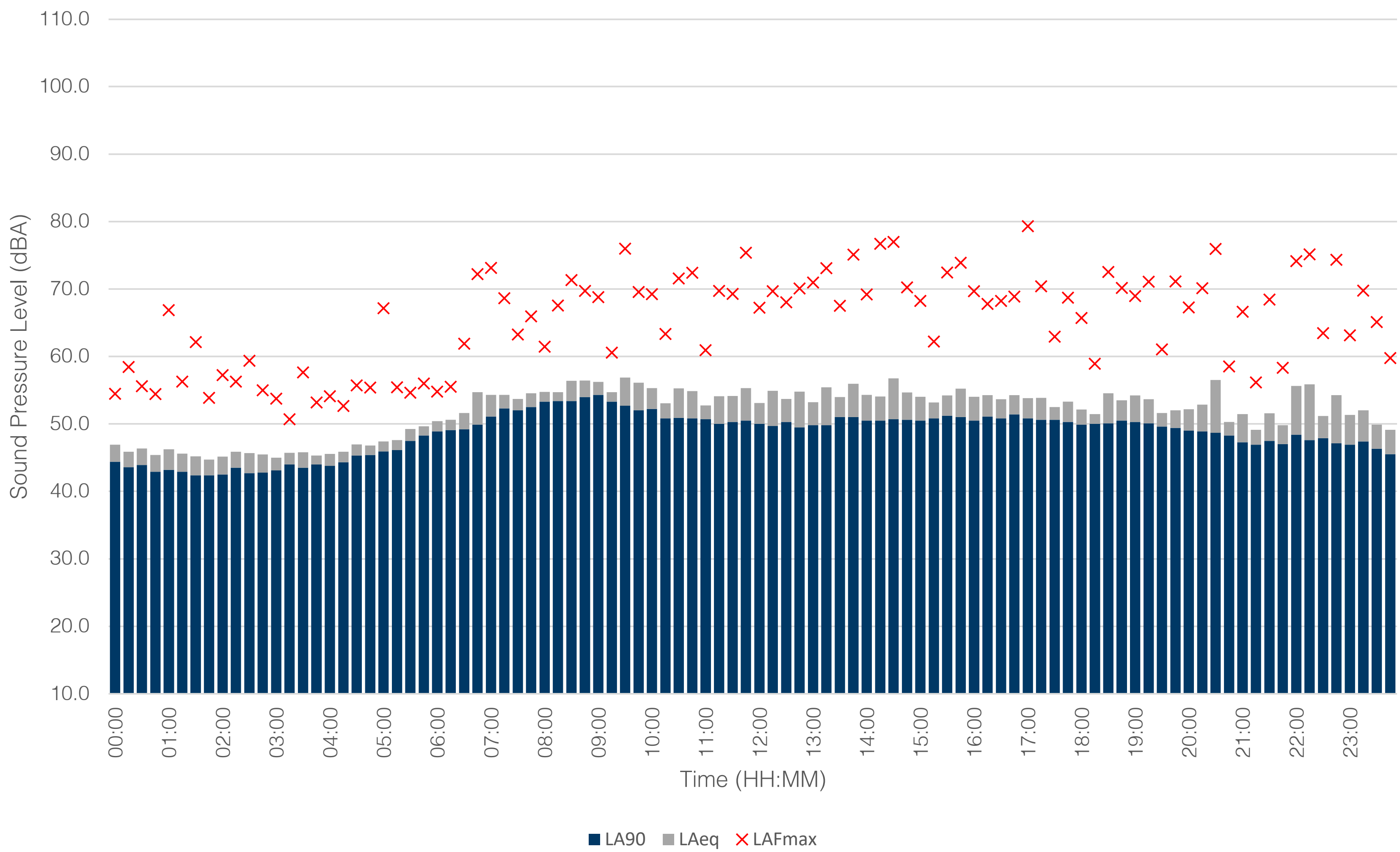
Time History Graph C.17

Project Name:	Weybridge
Measurement Location:	L3
Survey Date:	04/02/2022



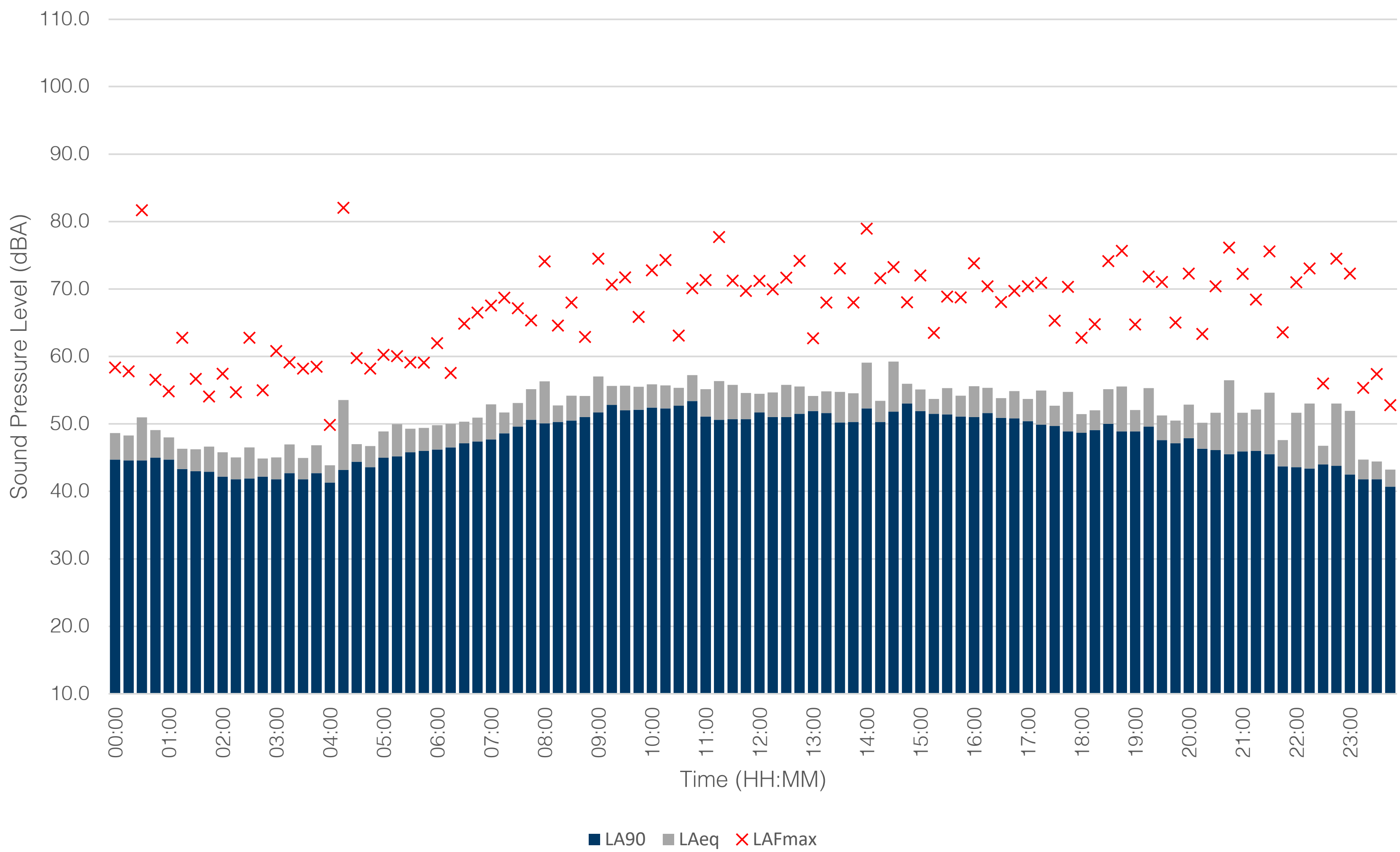
Time History Graph C.18

Project Name:	Weybridge
Measurement Location:	L3
Survey Date:	05/02/2022



Time History Graph C.19

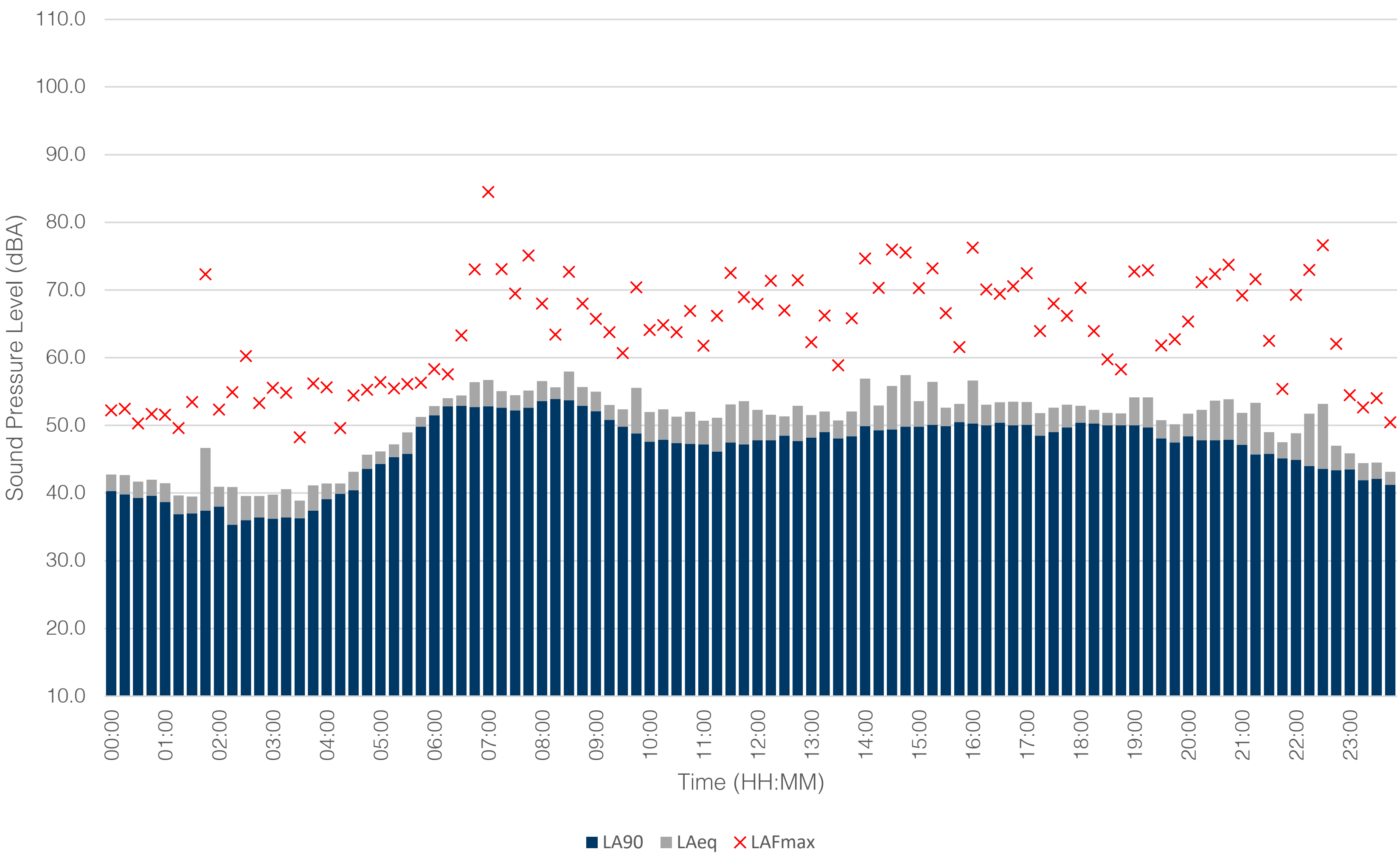
Project Name:	Weybridge
Measurement Location:	L3
Survey Date:	06/02/2022



Time History Graph C.20

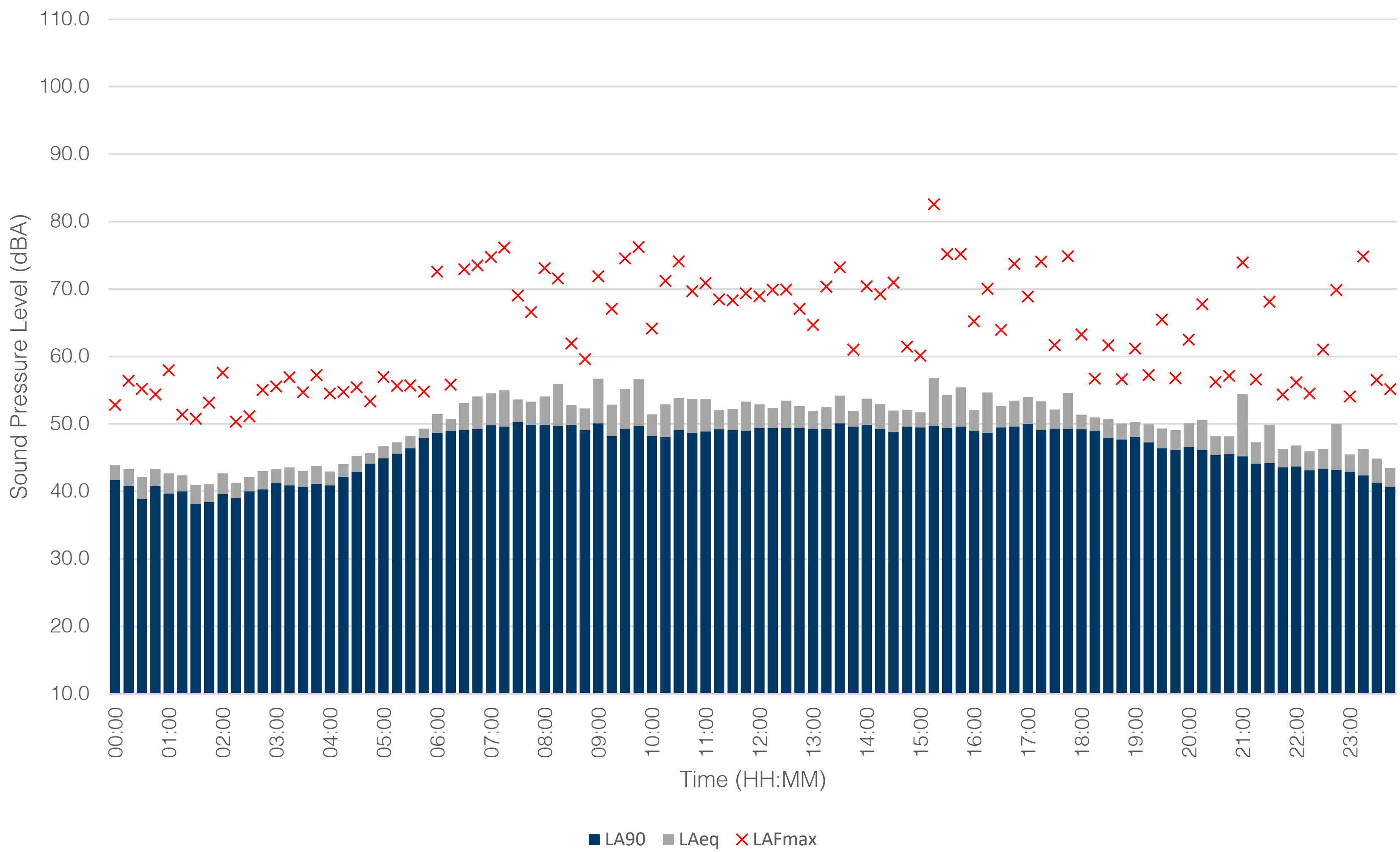
Project Name:	Weybridge
Measurement Location:	L3
Survey Date:	07/02/2022

Air & Acoustic Consultants



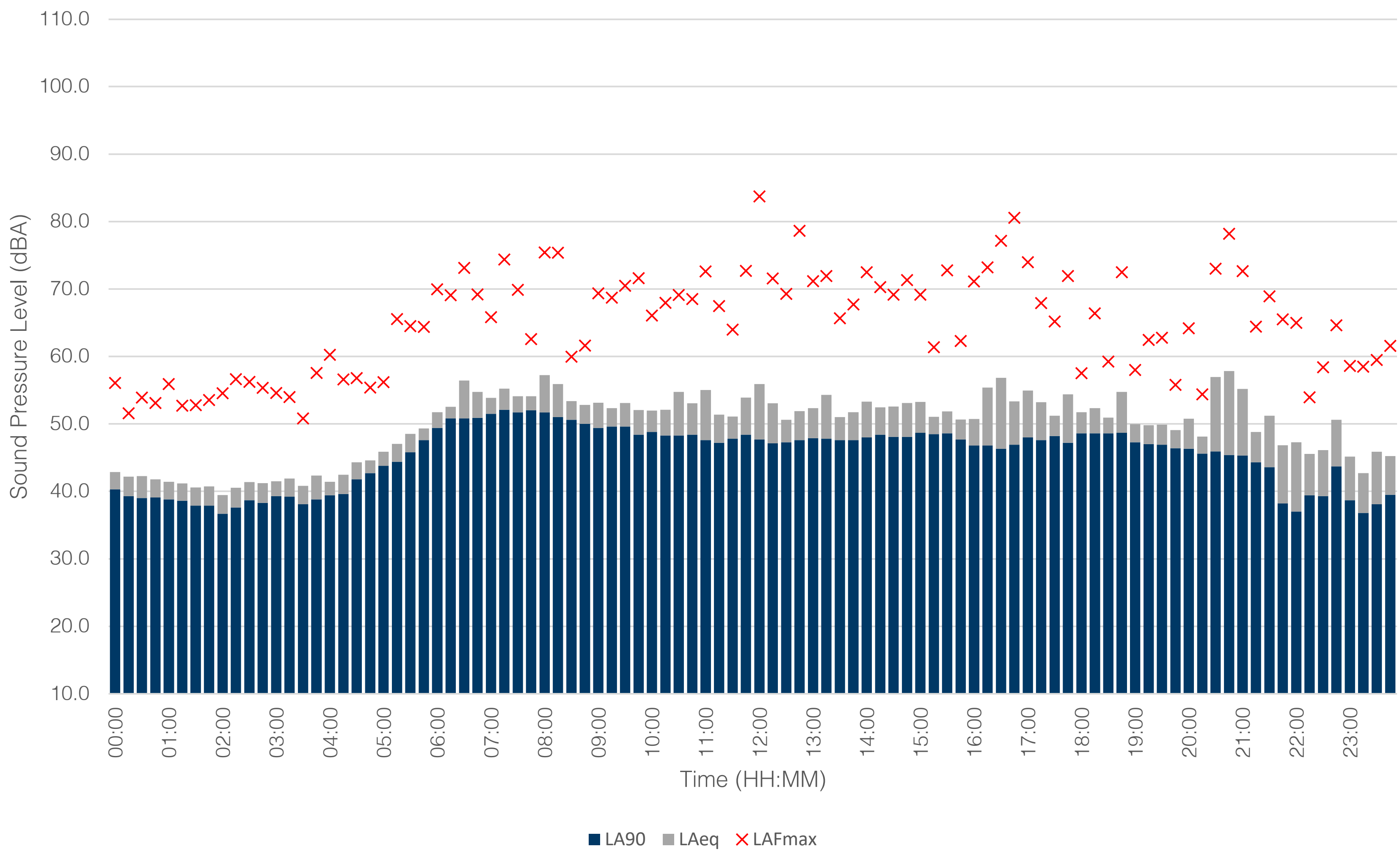
Time History Graph C.21

Project Name:	Weybridge
Measurement Location:	L3
Survey Date:	08/02/2022



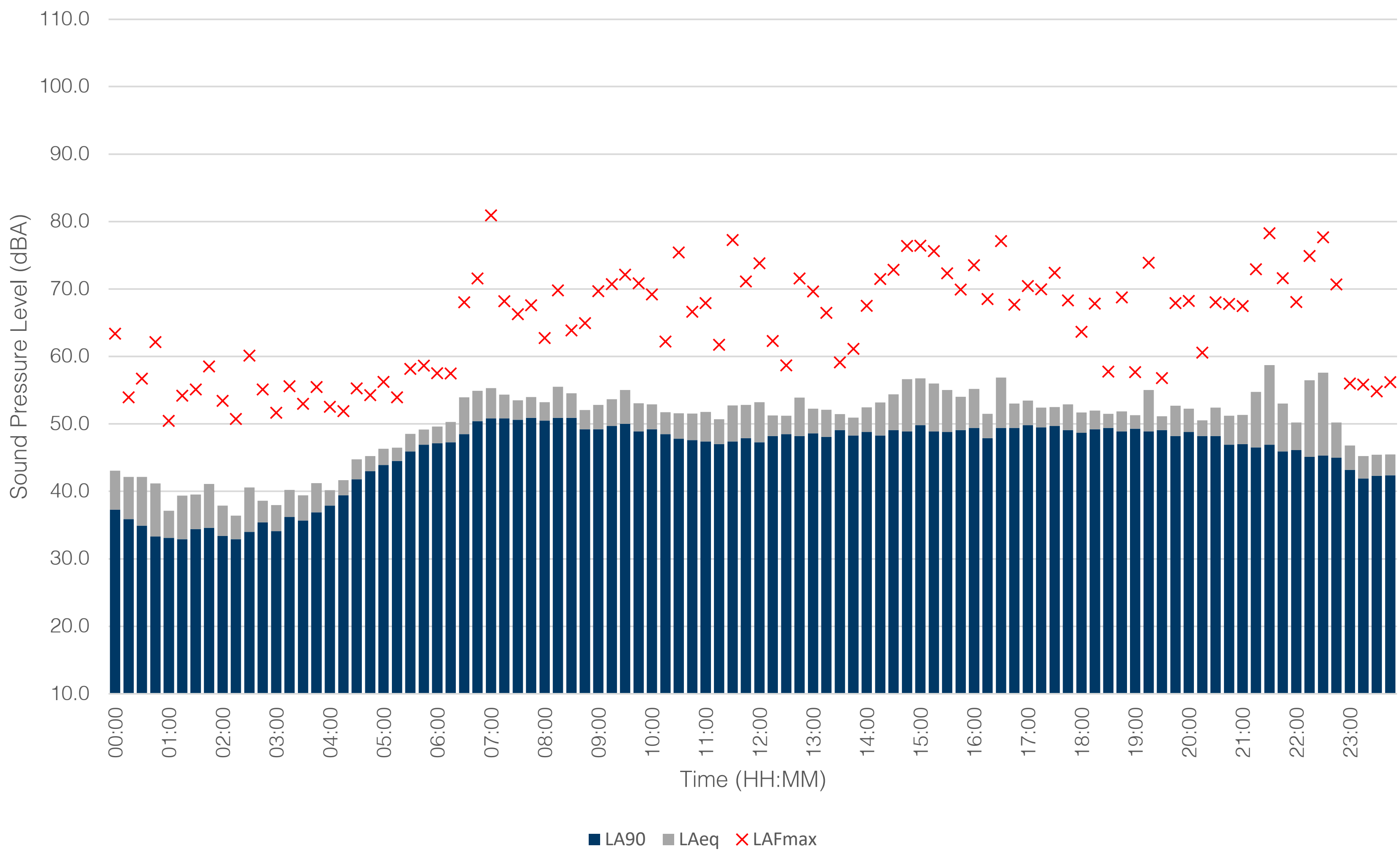
Time History Graph C.22

Project Name:	Weybridge
Measurement Location:	L3
Survey Date:	09/02/2022



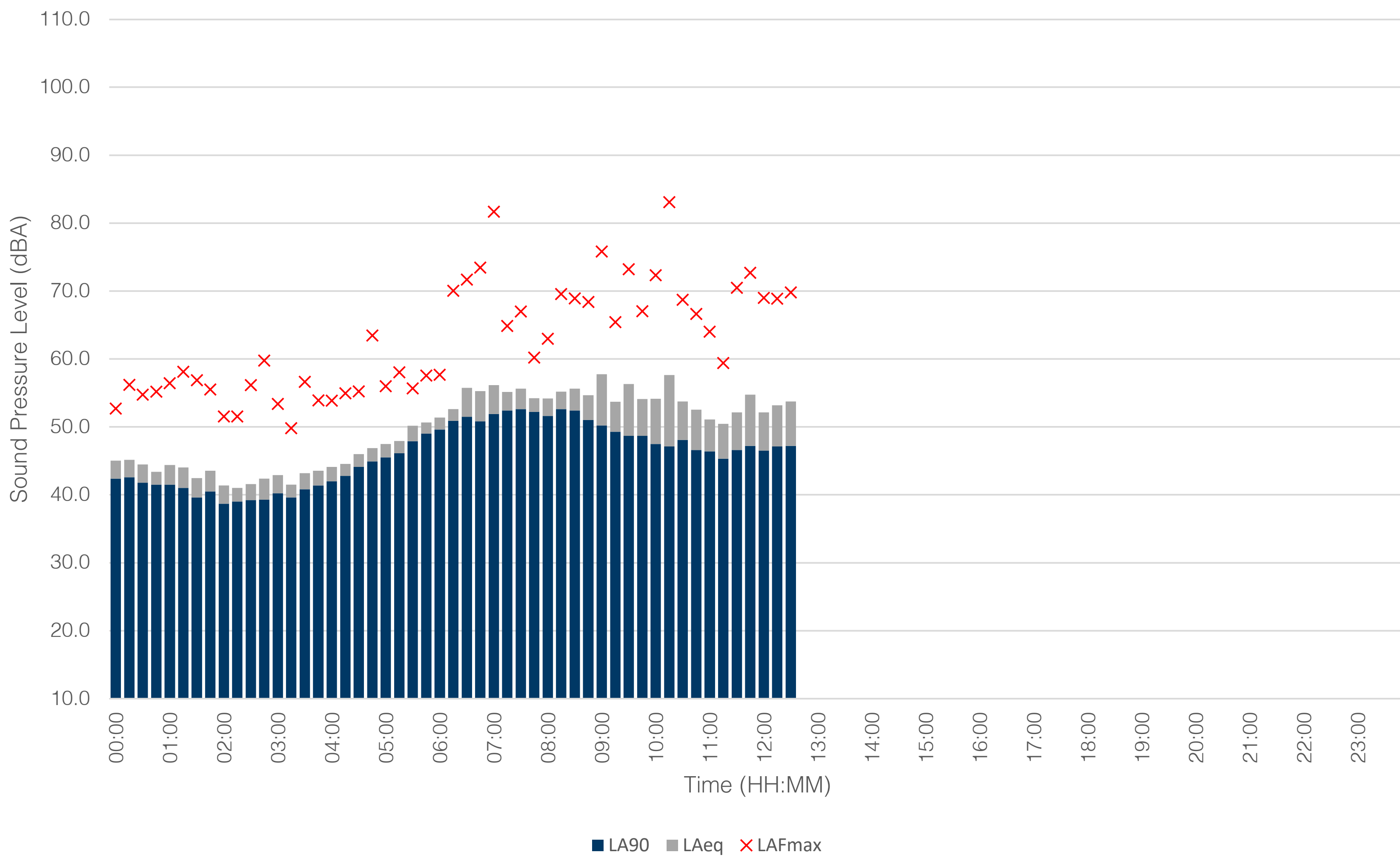
Time History Graph C.23

Project Name:	Weybridge
Measurement Location:	L3
Survey Date:	10/02/2022



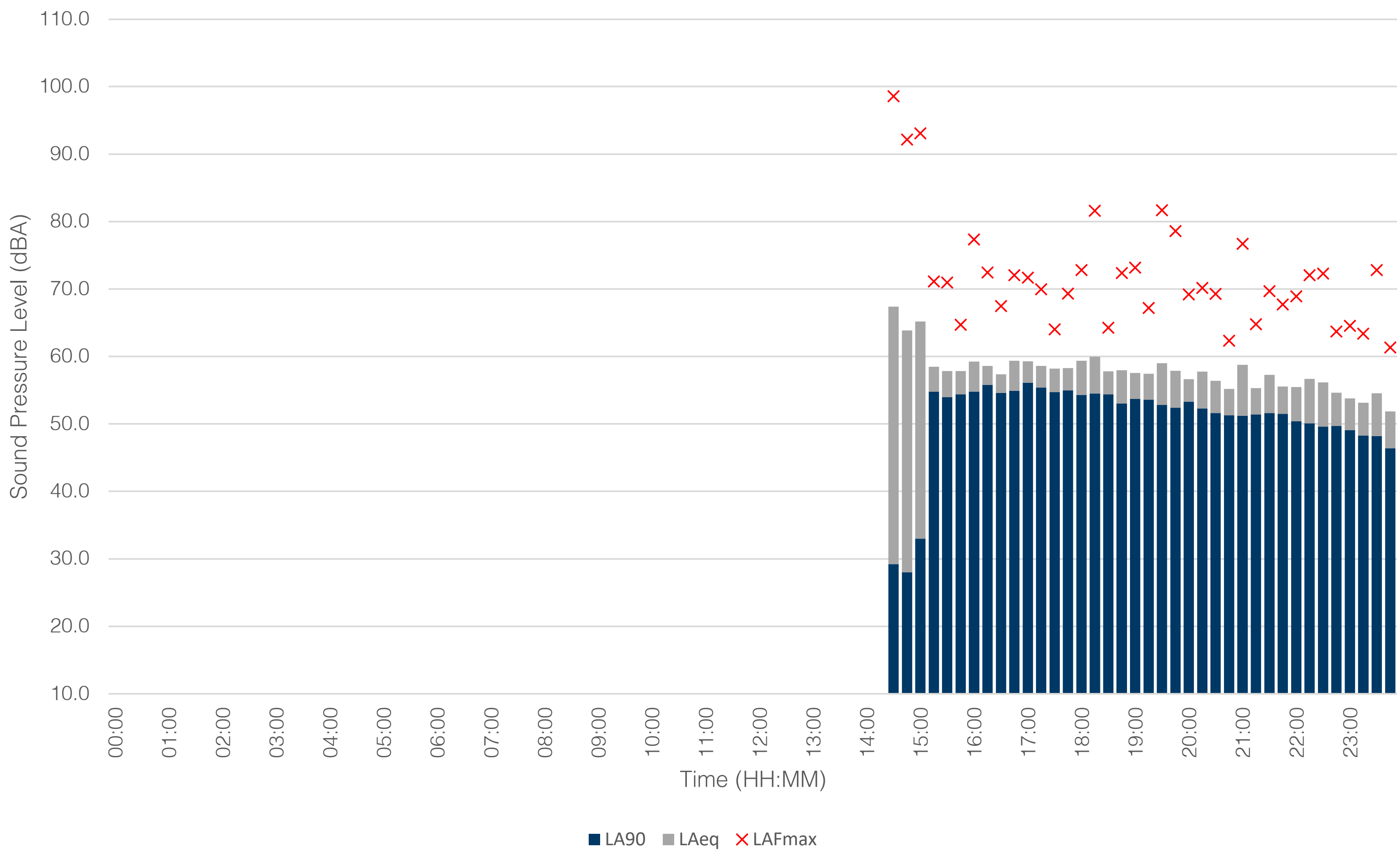
Time History Graph C.24

Project Name:	Weybridge
Measurement Location:	L3
Survey Date:	11/02/2022



Time History Graph C.25

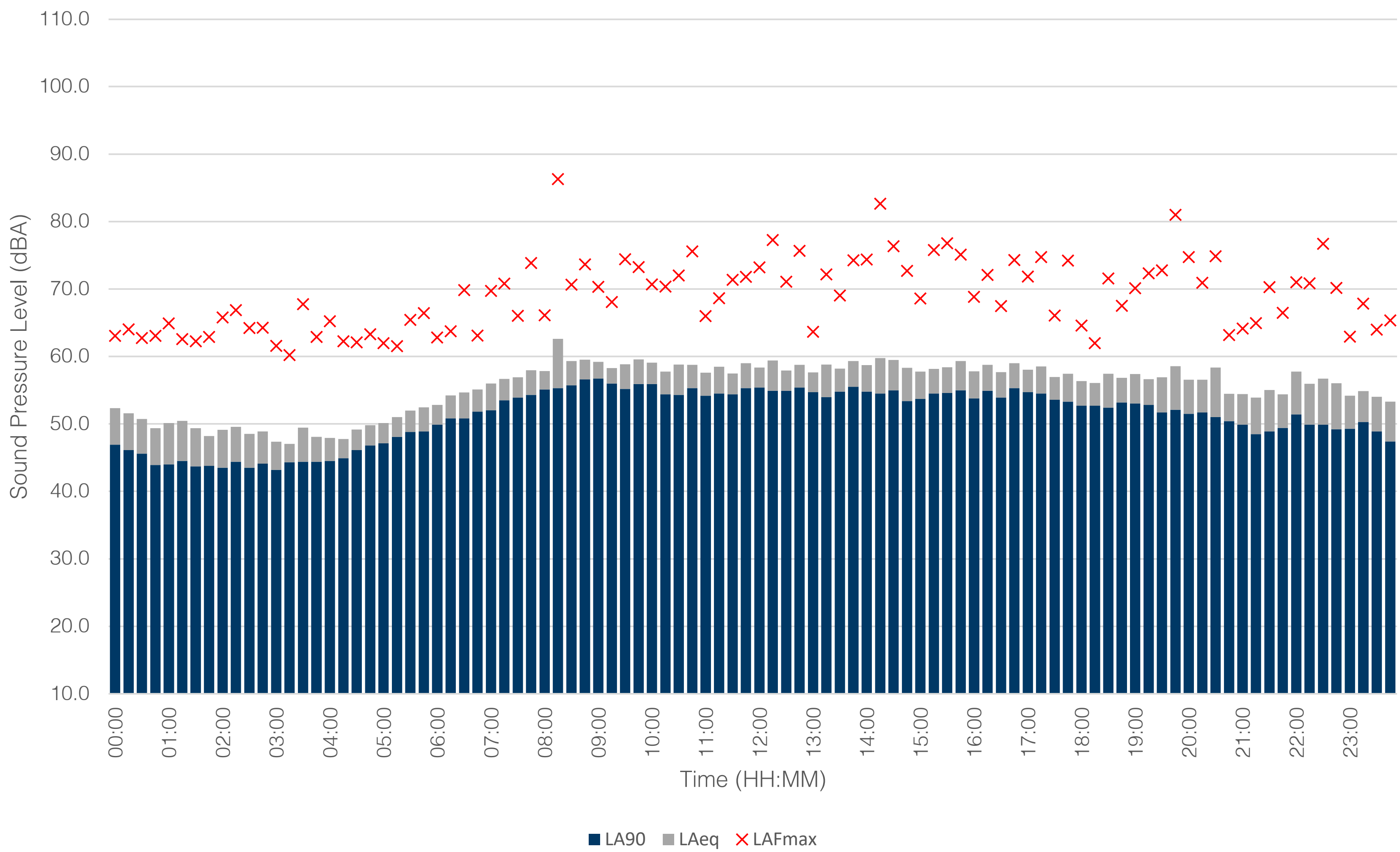
Project Name:	Weybridge
Measurement Location:	L4
Survey Date:	04/02/2022



Time History Graph C.26

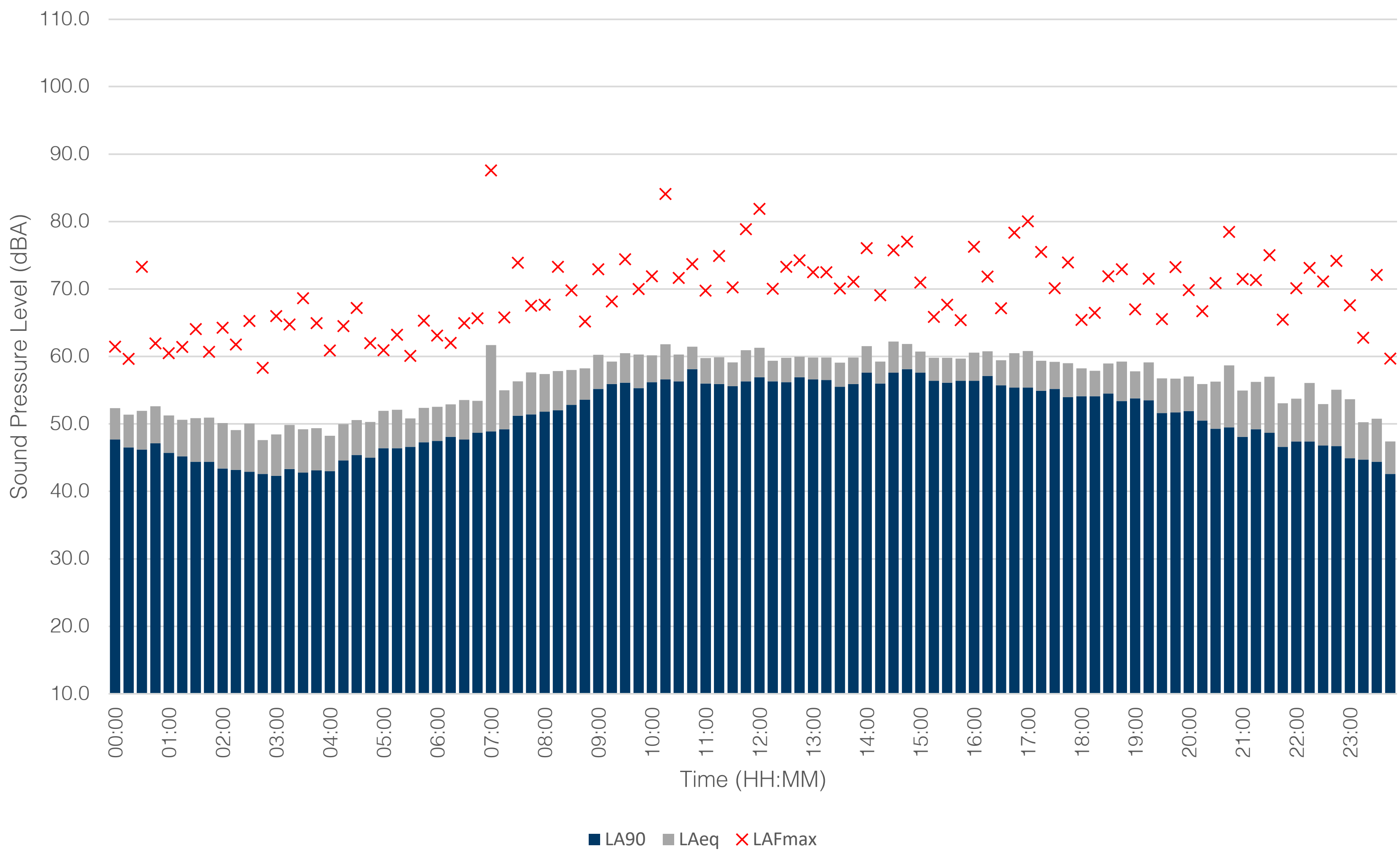
Project Name:	Weybridge
Measurement Location:	L4
Survey Date:	05/02/2022

Air & Acoustic Consultants



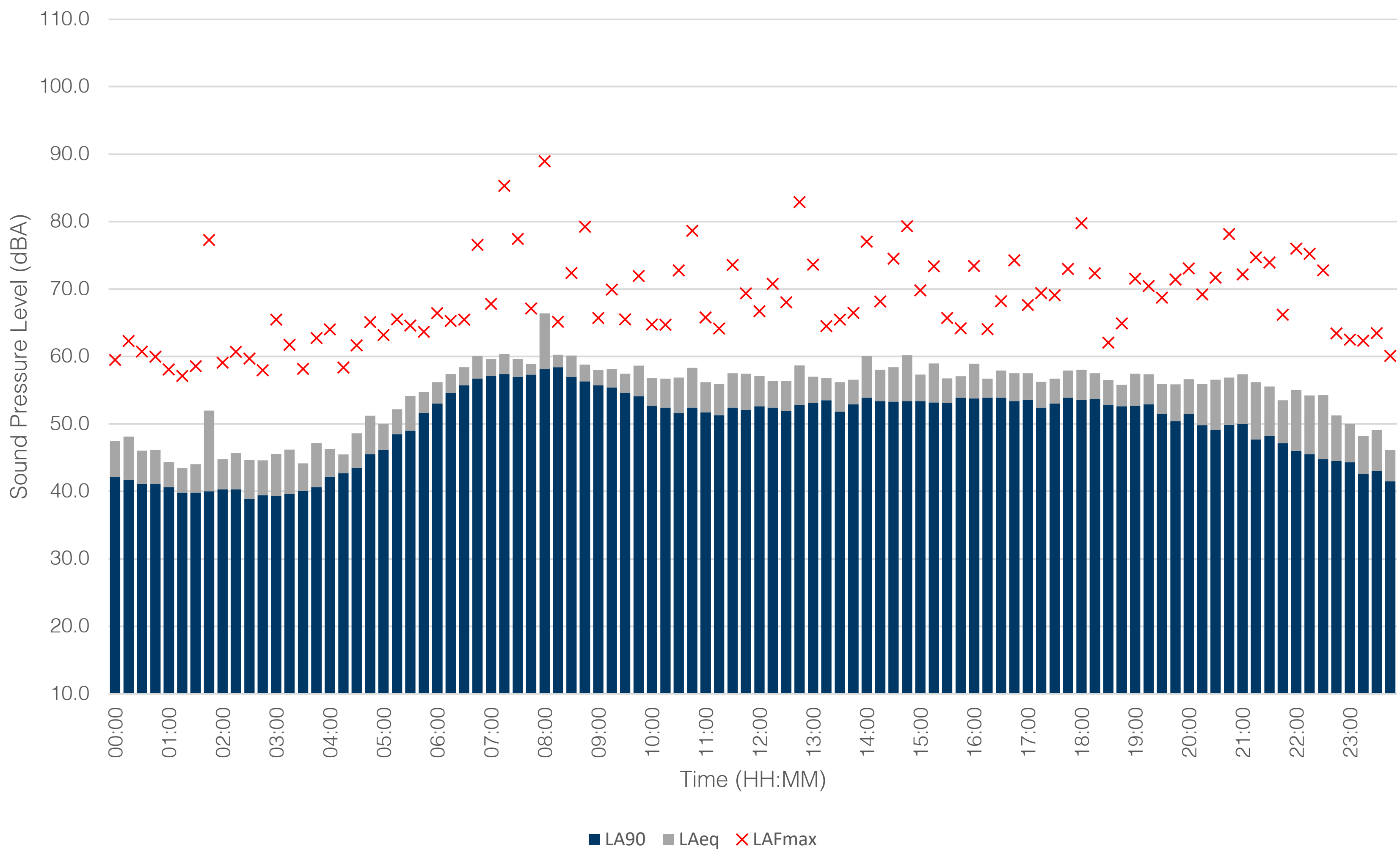
Time History Graph C.27

Project Name:	Weybridge
Measurement Location:	L4
Survey Date:	06/02/2022



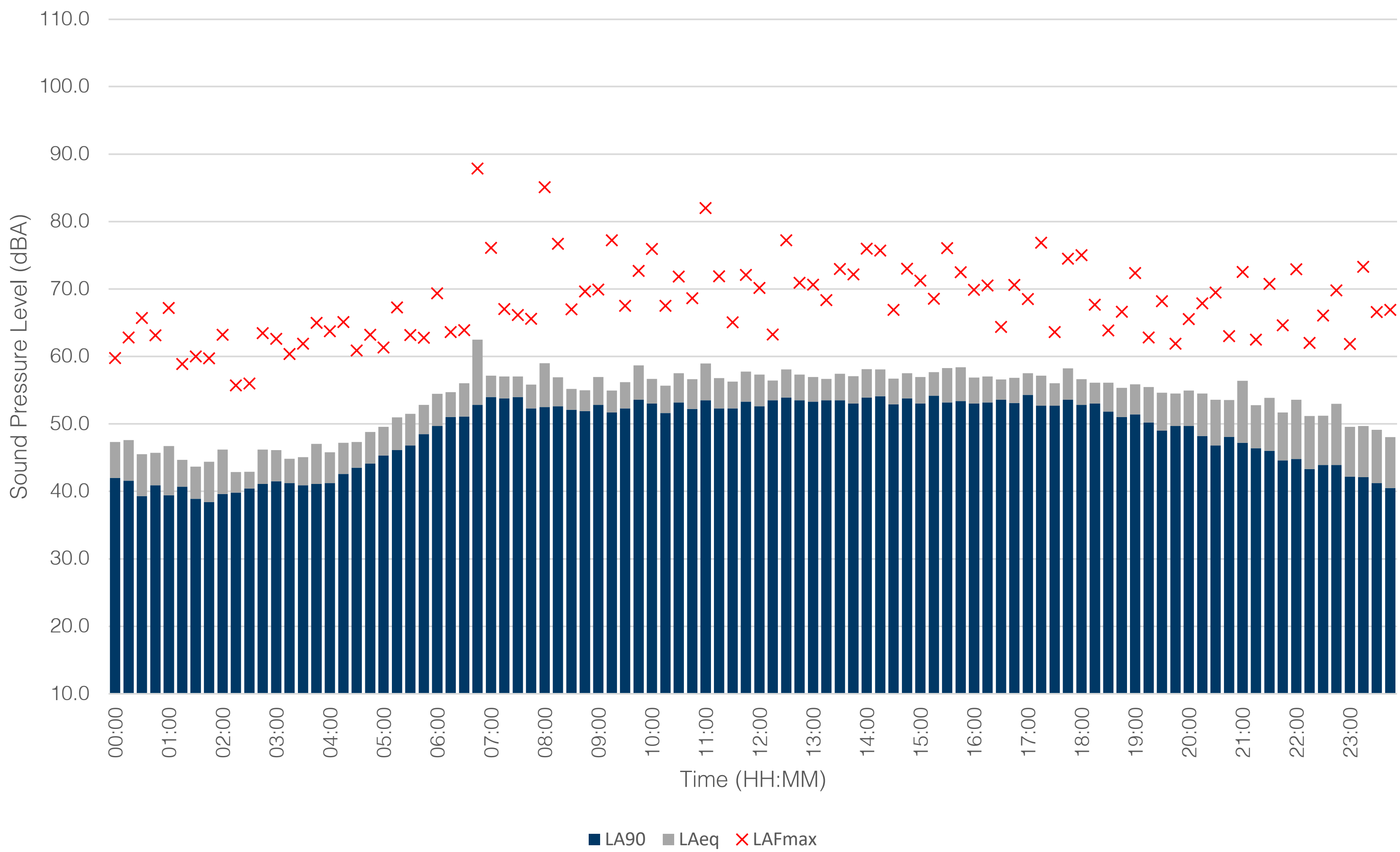
Time History Graph C.28

Project Name:	Weybridge
Measurement Location:	L4
Survey Date:	07/02/2022



Time History Graph C.29

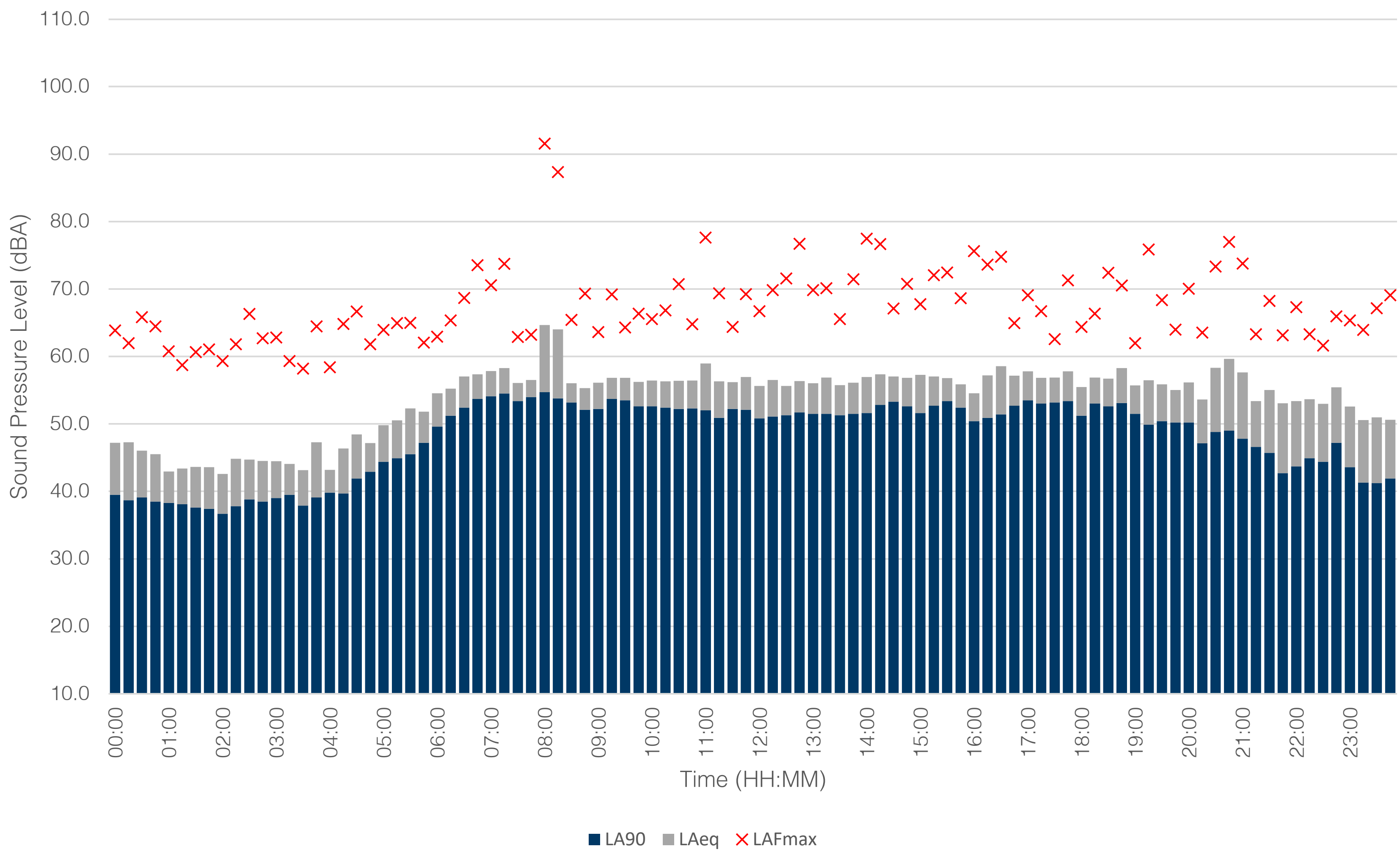
Project Name:	Weybridge
Measurement Location:	L4
Survey Date:	08/02/2022



Time History Graph C.30

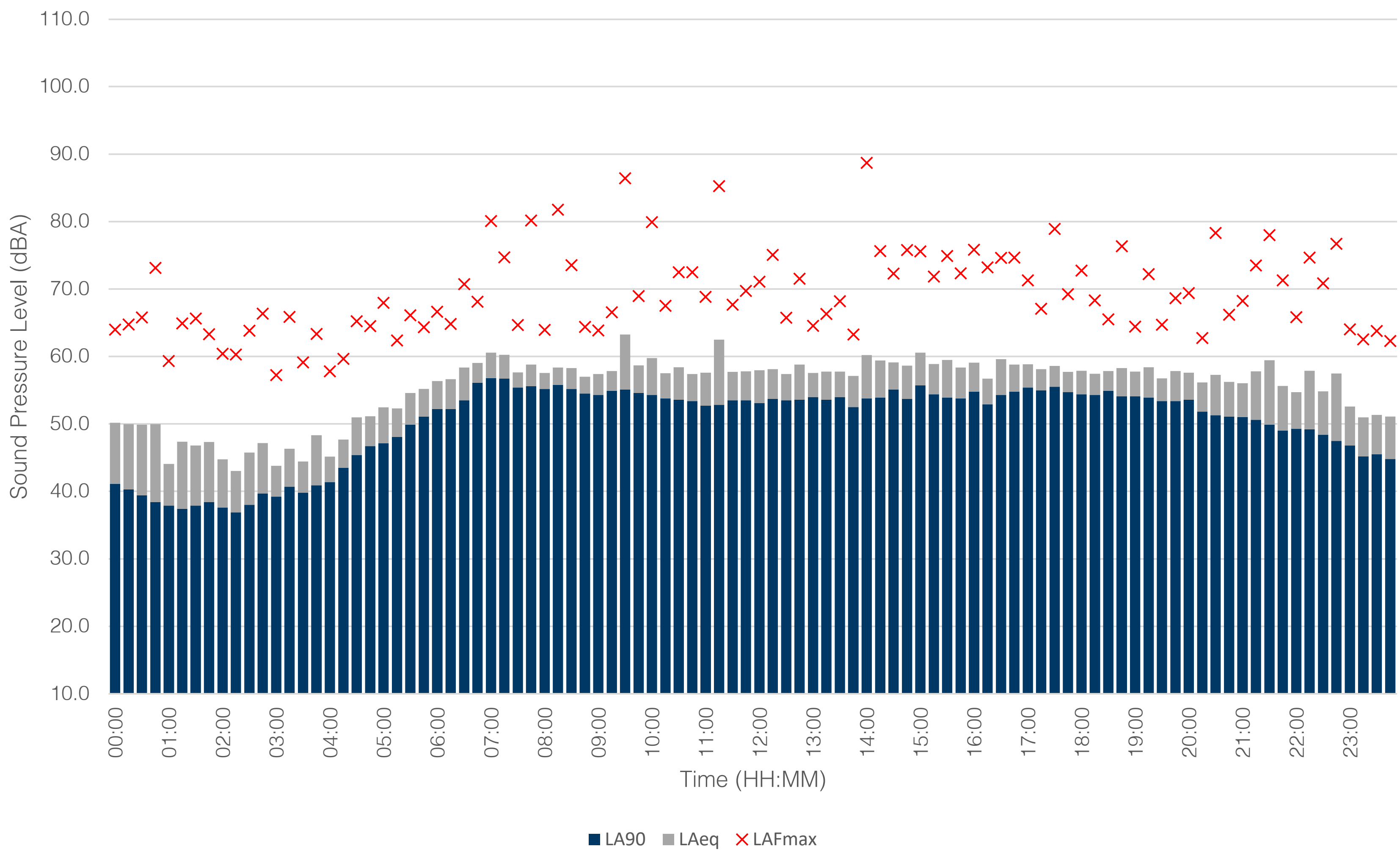
Project Name:	Weybridge
Measurement Location:	L4
Survey Date:	09/02/2022

Air & Acoustic Consultants



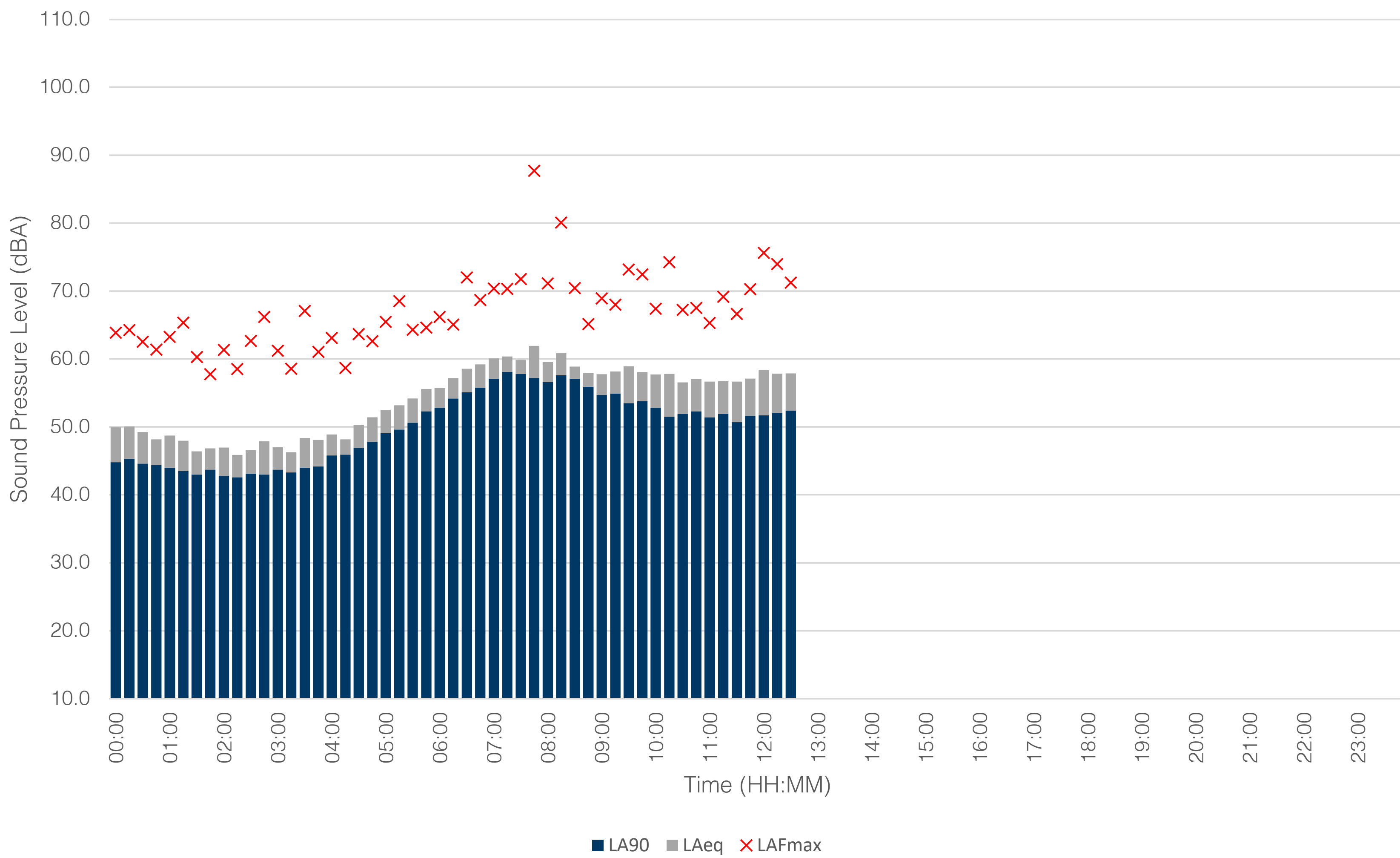
Time History Graph C.31

Project Name:	Weybridge
Measurement Location:	L4
Survey Date:	10/02/2022



Time History Graph C.32

Project Name:	Weybridge
Measurement Location:	L4
Survey Date:	11/02/2022

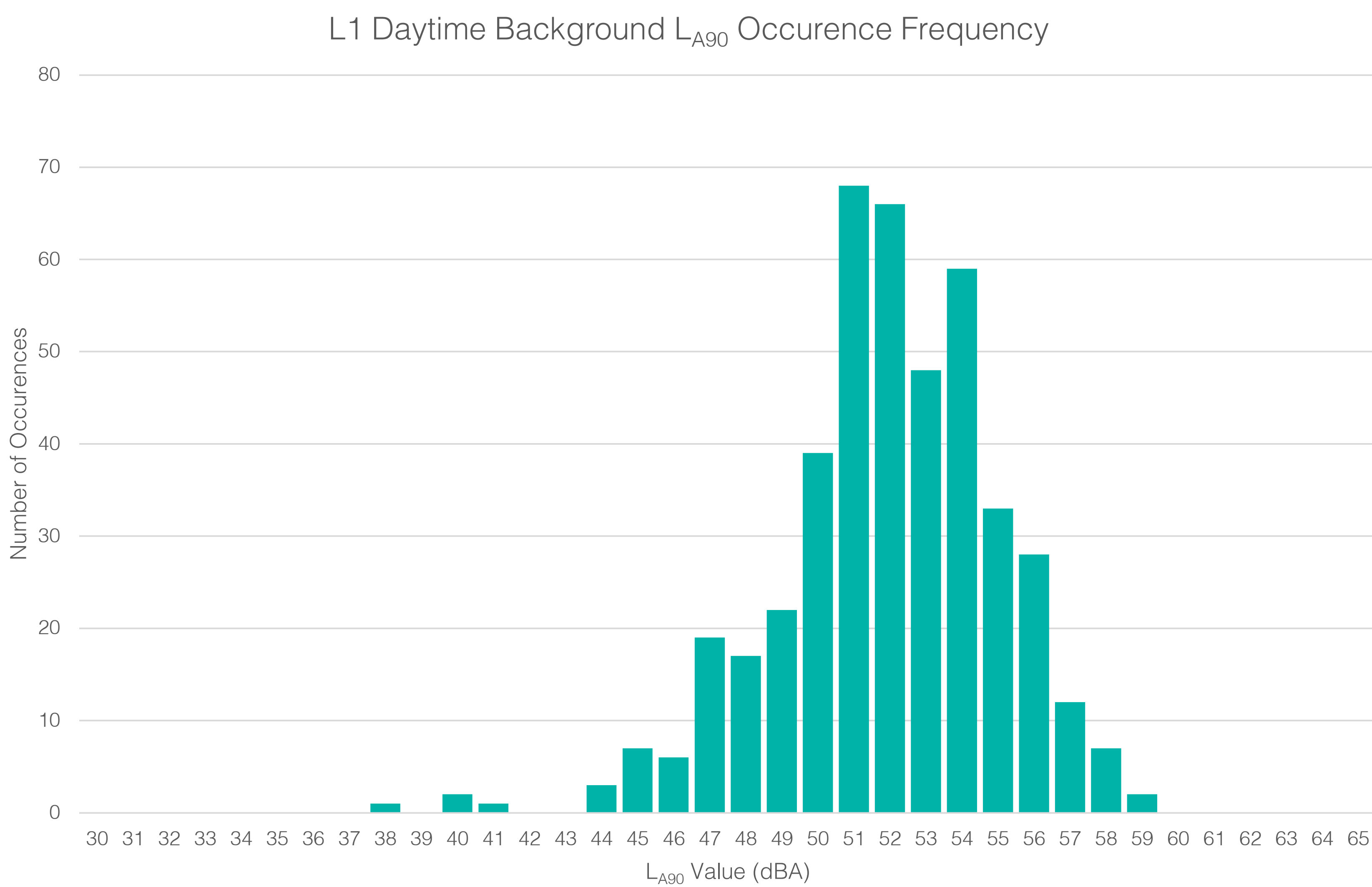


Appendix D – Statistical Analysis of Background L_{A90} Levels

Statistical Analysis Graph D.1

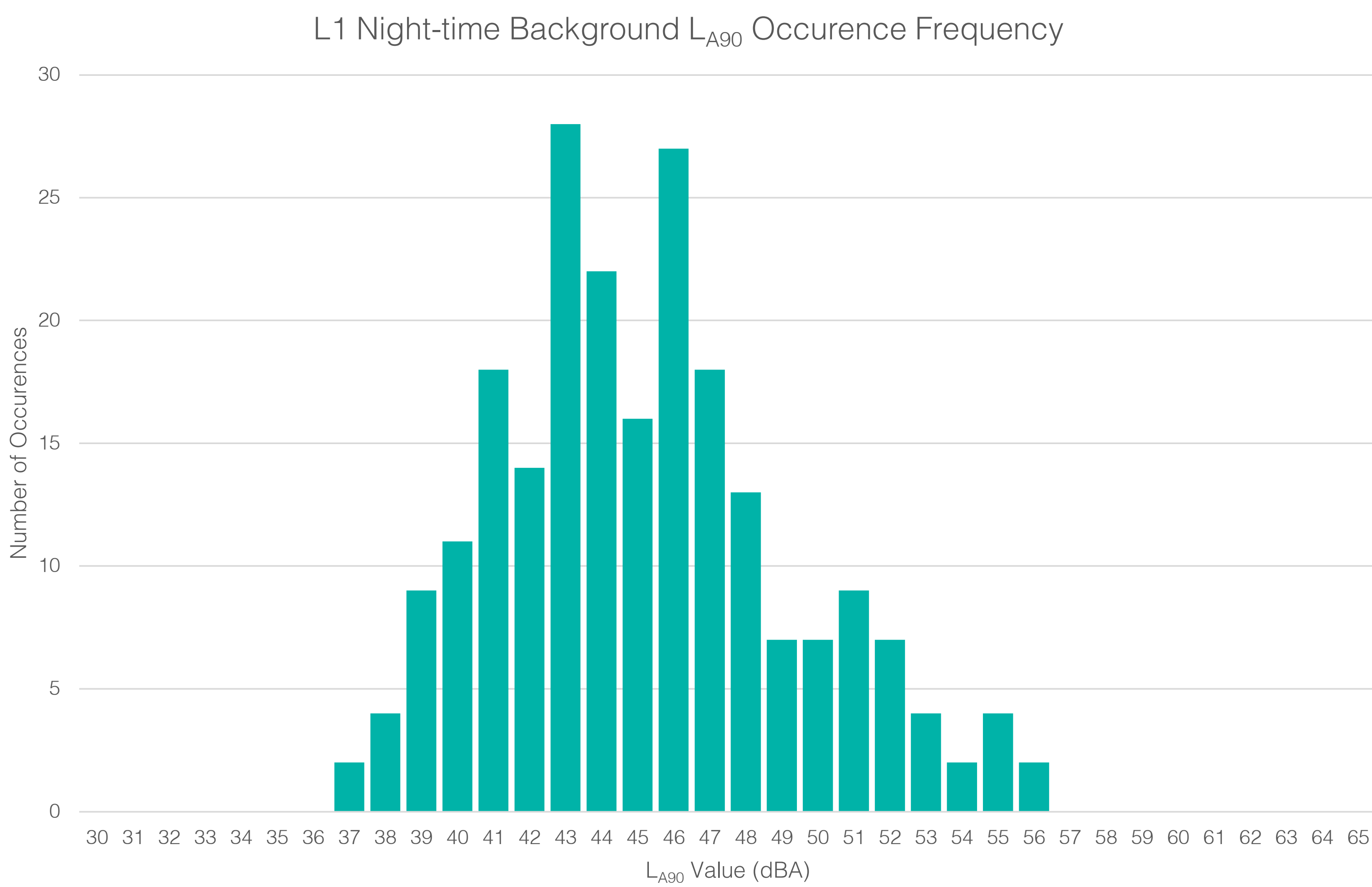
Project Name:	Weybridge
Measurement Location:	L1
Survey Date:	4/2/2022 - 11/2/2022

Air & Acoustic Consultants



Statistical Analysis Graph D.2

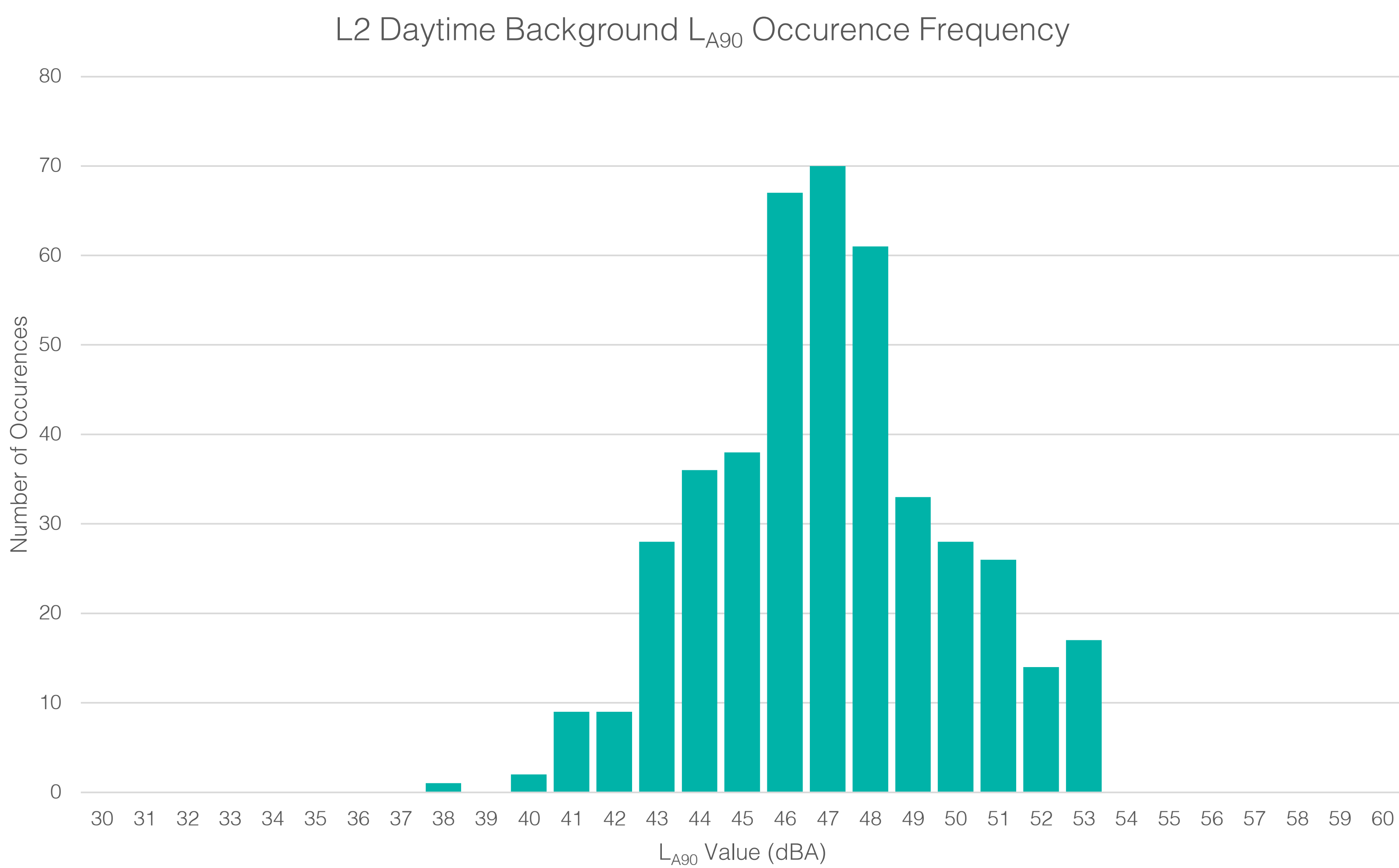
Project Name:	Weybridge
Measurement Location:	L1
Survey Date:	4/2/2022 - 11/2/2022



Statistical Analysis Graph D.3

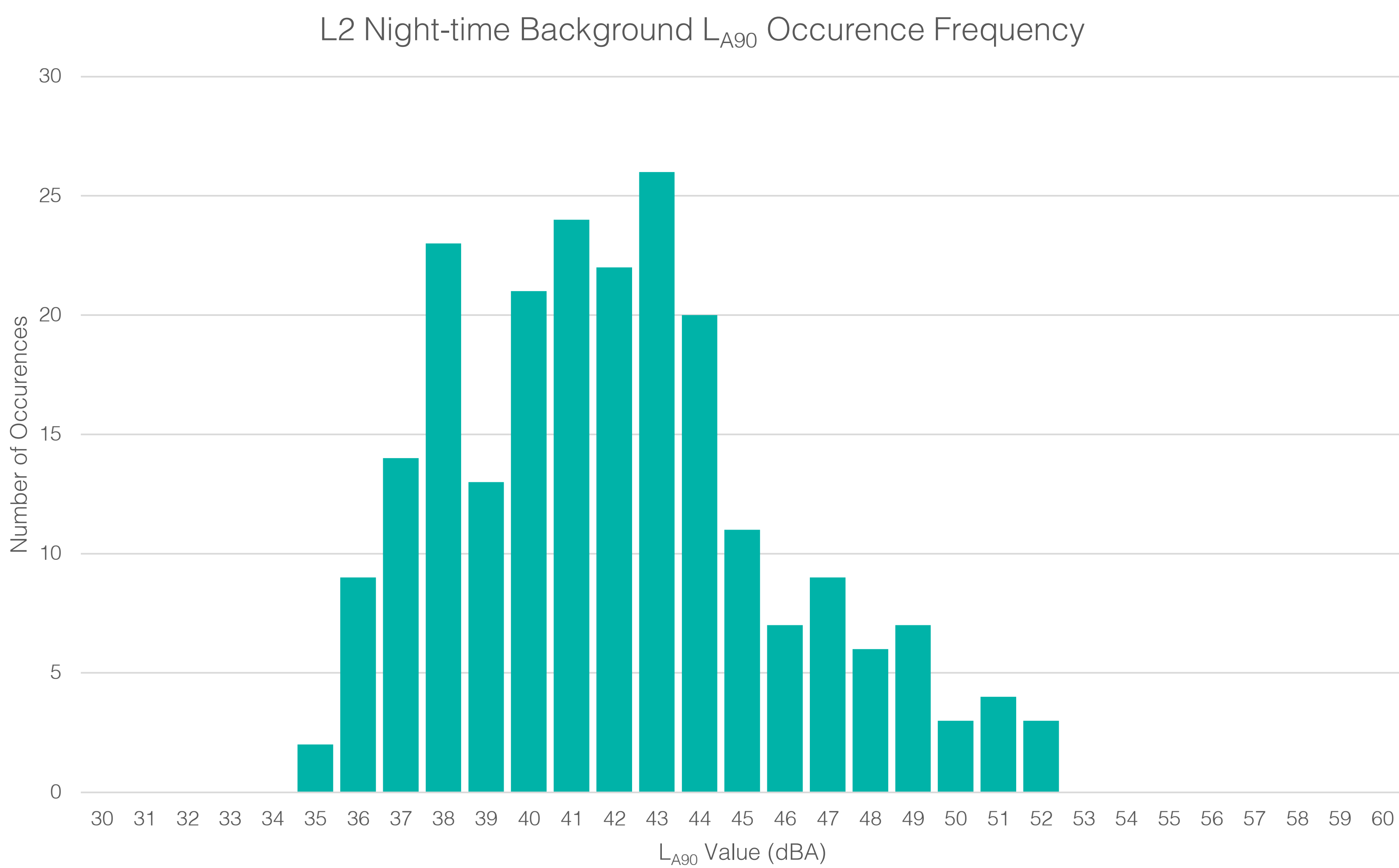
Project Name:	Weybridge
Measurement Location:	L2
Survey Date:	4/2/2022 - 11/2/2022

Air & Acoustic Consultants



Statistical Analysis Graph D.4

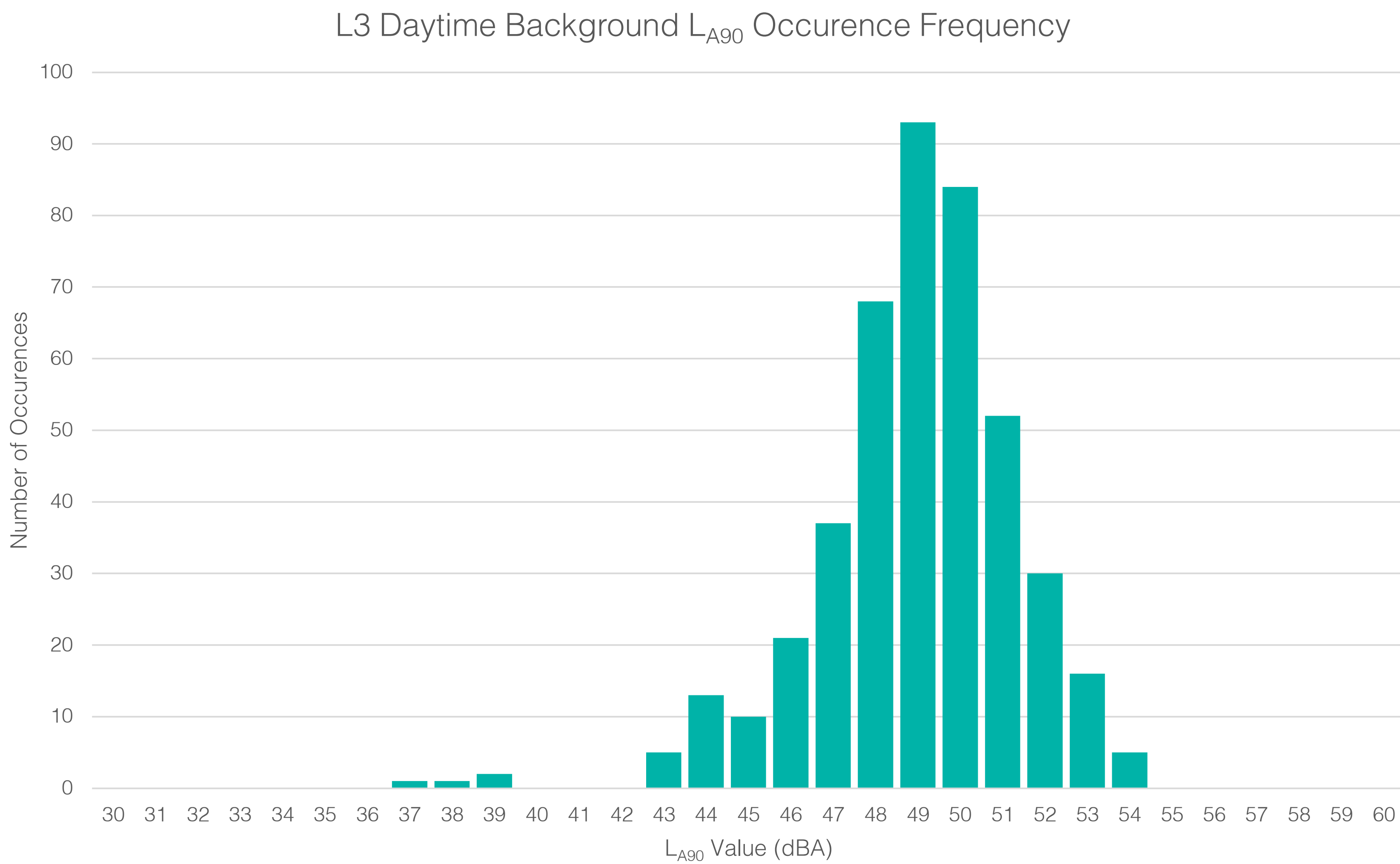
Project Name:	Weybridge
Measurement Location:	L2
Survey Date:	4/2/2022 - 11/2/2022



Statistical Analysis Graph D.5

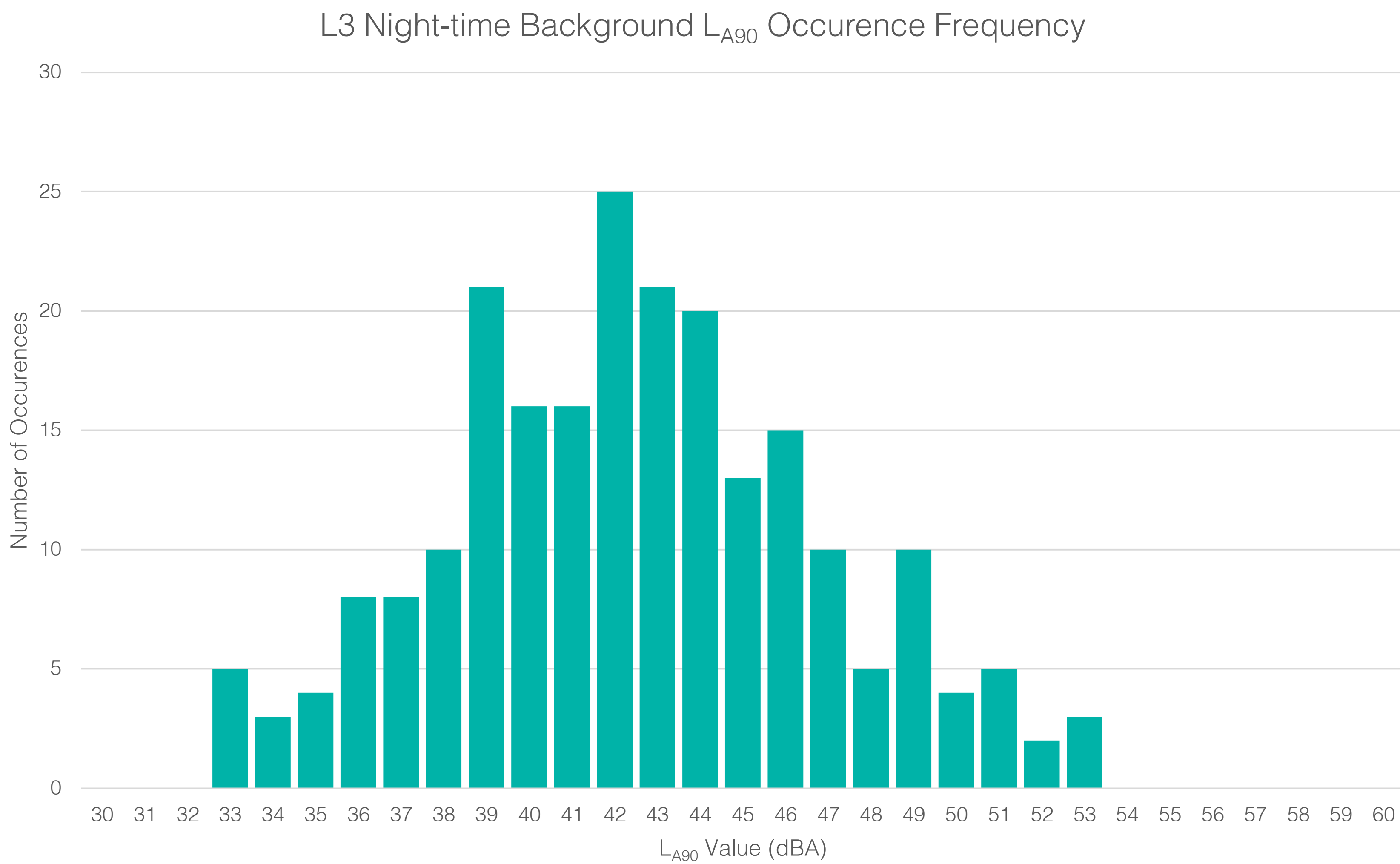
Project Name:	Weybridge
Measurement Location:	L3
Survey Date:	4/2/2022 - 11/2/2022

Air & Acoustic Consultants



Statistical Analysis Graph D.6

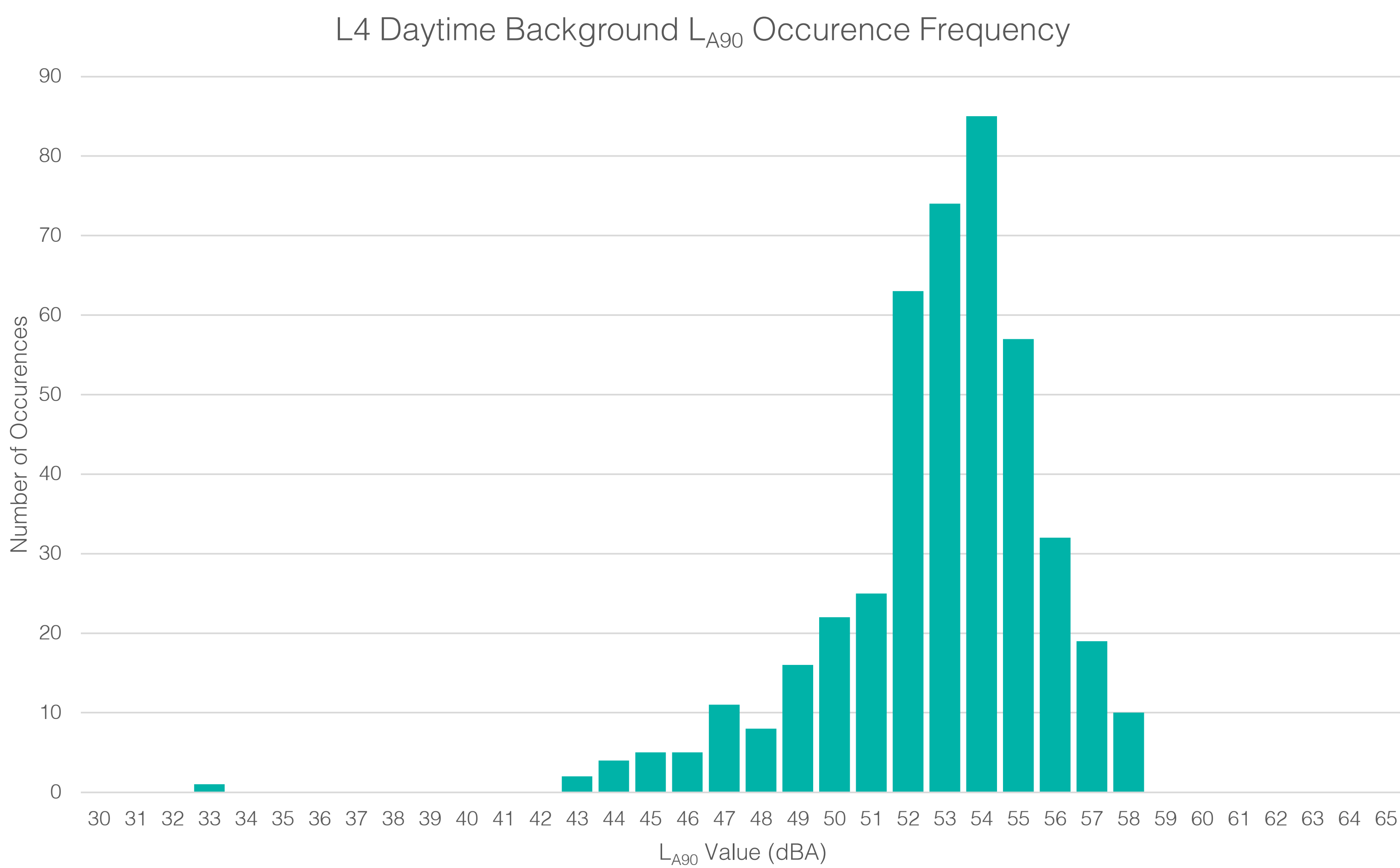
Project Name:	Weybridge
Measurement Location:	L3
Survey Date:	4/2/2022 - 11/2/2022



Statistical Analysis Graph D.7

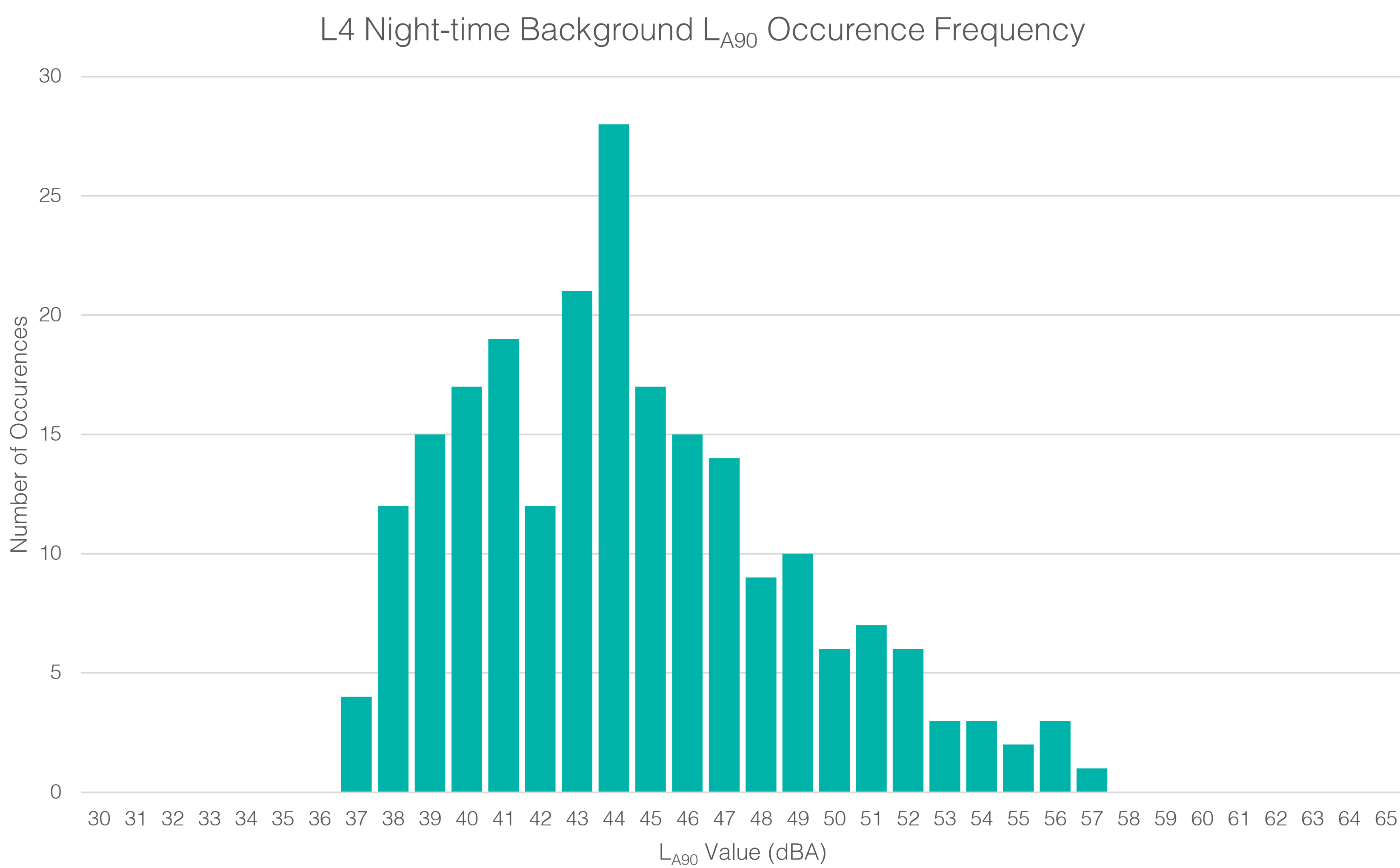
Project Name:	Weybridge
Measurement Location:	L4
Survey Date:	4/2/2022 - 11/2/2022

Air & Acoustic Consultants



Statistical Analysis Graph D.8

Project Name:	Weybridge
Measurement Location:	L4
Survey Date:	4/2/2022 - 11/2/2022



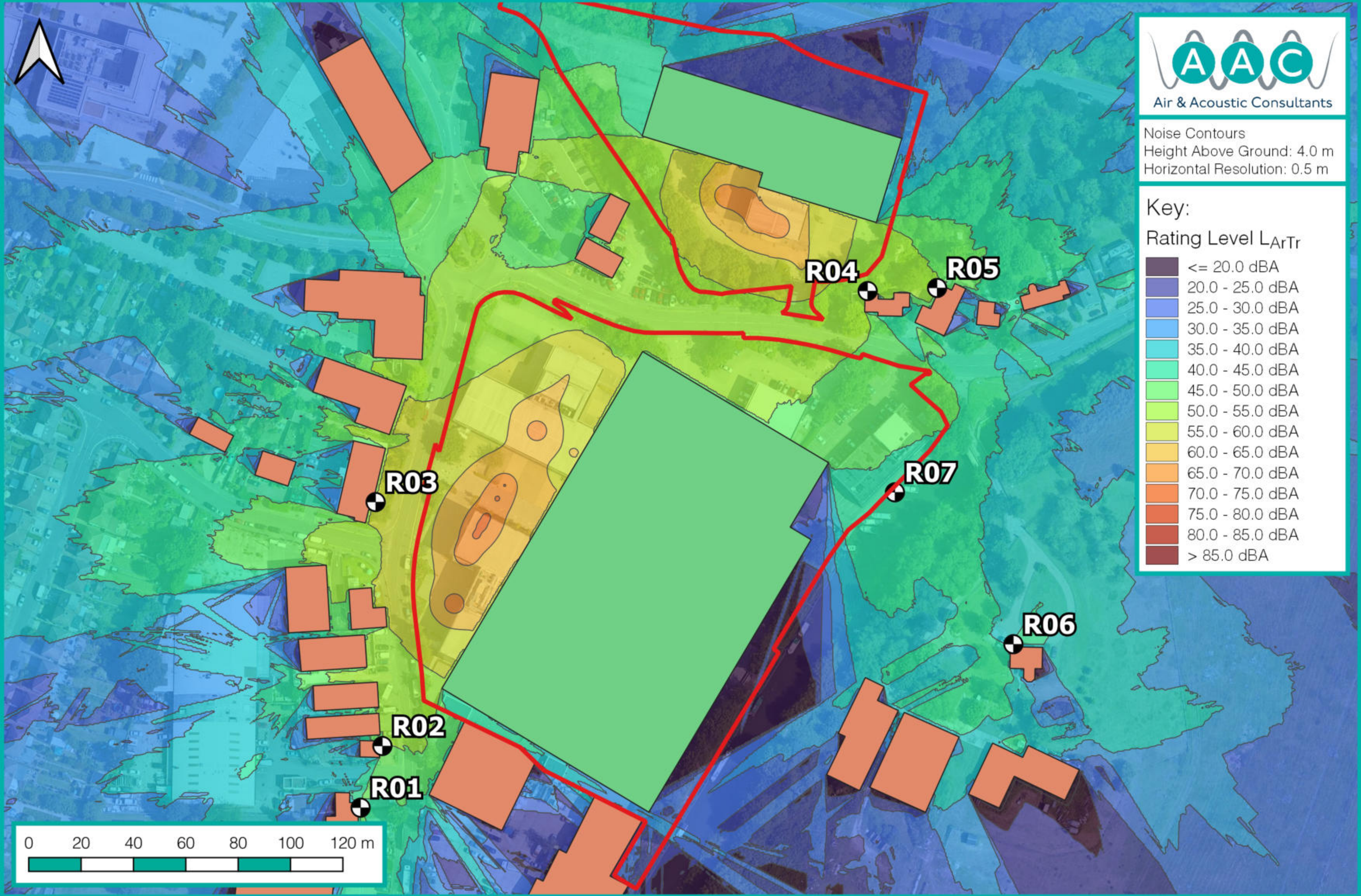
Appendix E – Traffic Data

Table E.1: Development Flow Data provided by the Transport Consultant

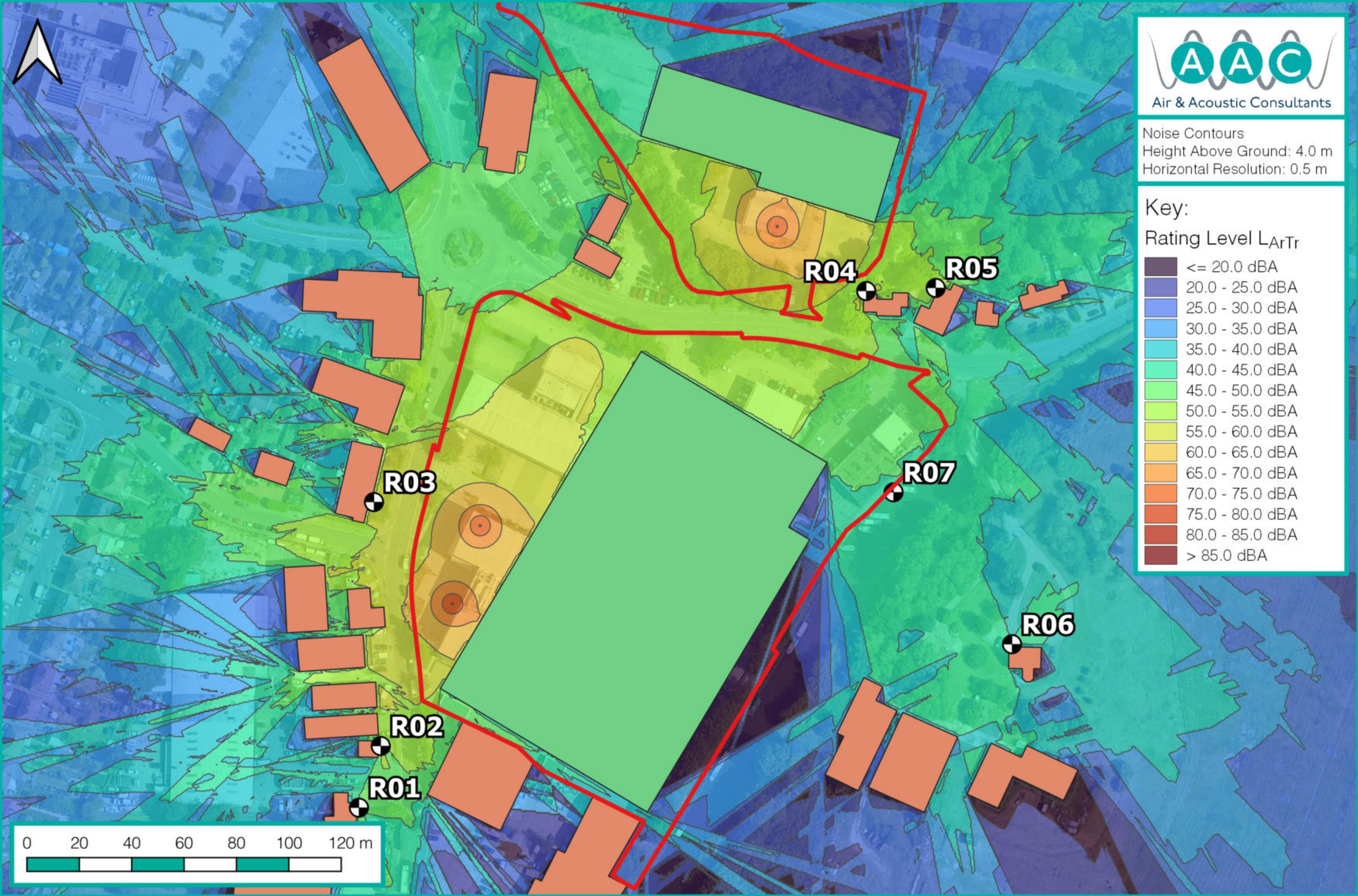
Location of Link	Posted Speed Limit (mph)	2022 Opening Year			2022 Base + Development		
		Total	HGV	HGV%	Total	HGV	HGV%
Site Access (Northern site)	20.0	0	0	0%	183	58	31%
Site Access (Southern Site)	20.0	0	0	0%	236	84	36%
Addlestone Road (east of site accesses)	30.0	2725	87	3%	2733	90	3%
Addlestone Road (west of site accesses)	30.0	2725	87	3%	3136	225	7%
Hamm Moor Lane	30.0	4779	206	4%	4779	206	4%
Dashwood Lang Road	20.0	692	36	5%	692	36	5%
Link Road (two-way)	30.0	4465	93	2%	4875	231	5%
A317 Weybridge Rd (east of Link Rd)	40.0	28086	1209	4%	28153	1231	4%
Link Road (southbound)	30.0	3191	54	2%	3399	124	4%
A317 Weybridge Rd (between Link Rd and Link Rd)	40.0	0	0	0%	33	11	33%
Link Road (northbound)	30.0	2464	95	4%	2946	122	4%
A317 Weybridge Rd (west of Link Rd)	40.0	23038	748	3%	23694	874	4%
Station Road	30.0	11561	238	2%	11732	296	3%
Woburn Hill	40.0	23932	223	1%	24103	281	1%

Appendix F – Noise Contours

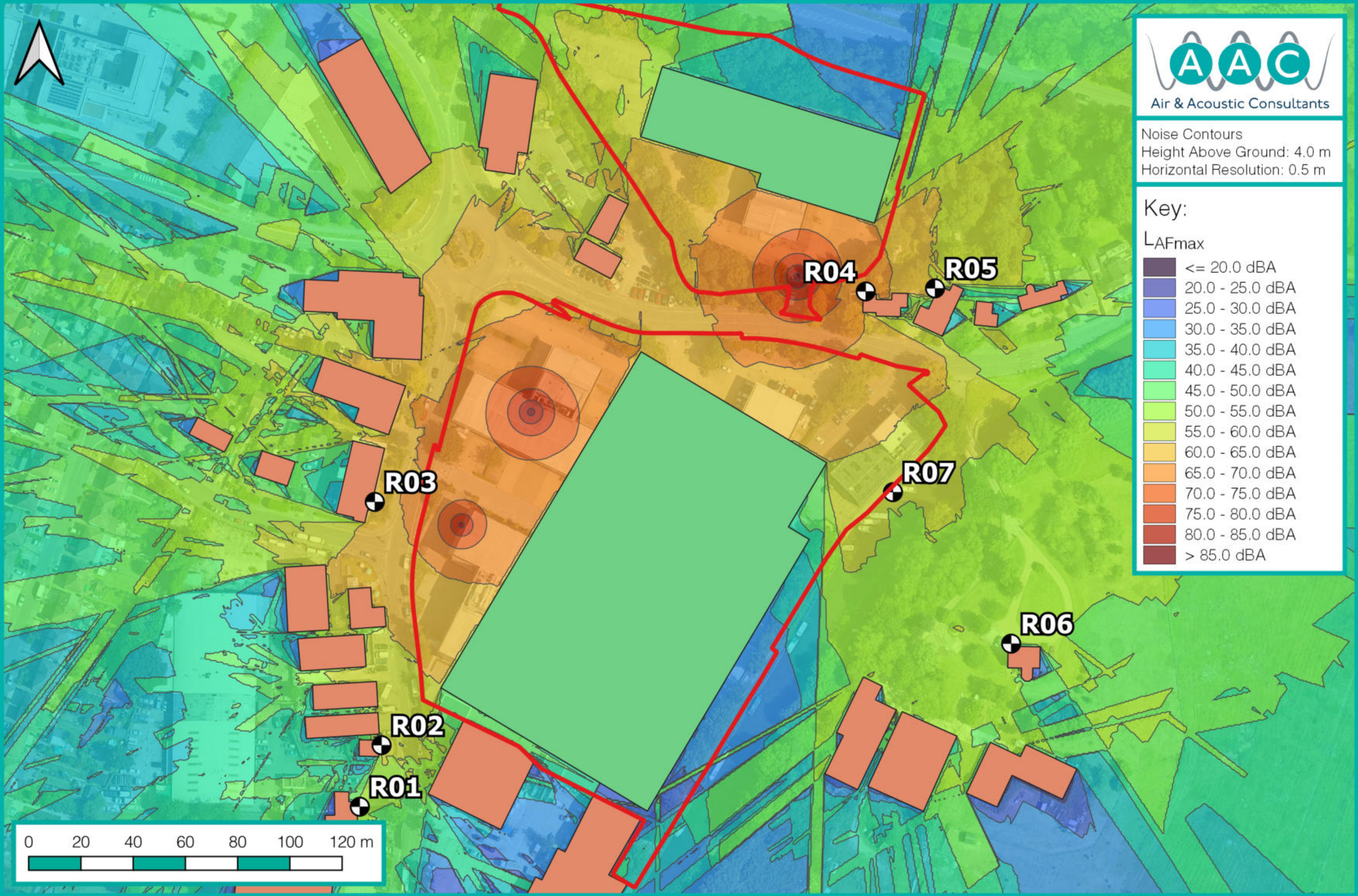
F.1 Daytime Industrial Noise Contours



F.2 Night-Time Industrial Noise Contours



F.3 Night-Time Maximum Noise Contours



Birmingham
0121 389 1472

London
0203 968 9817

info@airandacoustics.co.uk
airandacoustics.co.uk