Aldi store

Victoria Avenue East
Manchester
M9 7HW

Service Yard
Noise Impact Assessment

On behalf of

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T: 01252 519881
W: noisesolutions.co.uk
E: hello@noisesolutions.co.uk
Noise Solutions Ltd, Unit 5, Oriel Court, Omega Park, Alton GU34 2YT Reg no. 3483481

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	Name	Qualifications	Initials	Date
Prepared by:	Nigel Chandler	BSc(Hons), MIOA	NAC	15th June 2022
Reviewed and approved by:	Jon Stump	BSc(Hons), MIOA	JS	15th June 2022
For and on behalf of Noise Solutions Ltd				

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01	18 Jul 2022	Additional evening and Sunday noise impact comparisons; Delivery noise management plan included	NAC	JS
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Reg no. 3483481 Trading office Unit 5, Oriel Court, Omega Park, Alton GU34 2YT

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1.0 Introduction

1.1. Noise Solutions Ltd (NSL) has been commissioned by Aldi Stores Limited to undertake an assessment of the noise impact of the use of the service yard at the proposed Aldi store on Victoria Avenue East in Manchester, in relation to Condition 8 of Manchester City Council's decision notice 133148/FO/2022.

1.2. An environmental noise survey was undertaken to establish prevailing noise levels affecting the development site. Noise emissions from activities within the service yard – deliveries to the store and waste collections from it – have been predicted at the nearest noise sensitive receptors and assessed in accordance with National Policy and the local authority's requirements.

1.3. To assist with the understanding of this report a glossary of acoustic terms can be found in **Appendix A**. An in-depth glossary of acoustic terms can be viewed online at http://www.acoustic-glossary.co.uk.

2.0 Site layout and development proposals

2.1. It is proposed to redevelop a site on Victoria Avenue East to provide a new Aldi store. The site has previously been occupied by a restaurant, which will be demolished as part of the redevelopment works.

2.2. The store's service area is to be located at the northwest corner of the building.

2.3. The Aldi delivery vehicles will approach the site from Victoria Avenue East, enter through the car park and reverse up to a roller shutter door, providing level access from the trailer bed. This negates the requirement for tail-lift operation and wheeling trolleys across rough external ground finishes which is a scenario that often occurs at other food stores. Trollies are only manoeuvred internally, either inside the trailer or within the store, on flat level surfaces. Lorries will also exit the site onto Victoria Avenue East. Up to four deliveries by articulated lorries are expected in any 24-hour period. No more than one delivery will take place in any hour.

2.4. There are expected to be two general waste collections each week, typically in the mornings. Food waste would be collected fortnightly. All other recyclable waste, such as plastic and cardboard, will be taken back to the Regional Distribution Centre to be recycled. The majority of recyclable waste removal from site is therefore expected to be undertaken using the same vehicles bringing incoming goods.

2.5. All Aldi bin and waste is stored internally within the back of house area and wheeled onto the rear of collection vehicles in a similar fashion to incoming deliveries, avoiding the need to wheel

trolleys on the ground.

3.0 Nearest noise sensitive receptors

3.1. The site lies between Victoria Avenue East and the M60 motorway.

3.2. The nearest residential premises are apartments at 261 Victoria Avenue East (Receptor R1), immediately to the northwest of the proposed store. The nearest residential windows are approximately 20m from the delivery bay entrance doors but screened from the doors, and the rear of delivery vehicles at the delivery bay, by the store building envelope.

3.3. **Appendix B** contains an aerial photograph showing the site and surrounding area.

4.0 Policy context

National Planning Policy Framework

4.1. A new edition of NPPF was published in July 2021 and came into effect immediately. The original National Planning Policy Framework (NPPF[1]) was published in March 2012, with revisions in July 2018 and February 2019 - this document replaced the existing Planning Policy Guidance Note 24 (PPG 24) "Planning and Noise." The 2021 revised edition contains no new directions or guidance with respect to noise, and hence, all previous references remain extant. The paragraph references quoted below relate to the July 2021 edition.

4.2. Paragraph 174 of the NPPF states that the planning system should contribute to and enhance the natural and local environment by (amongst others) *"preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, water or noise pollution or land stability."*

4.3. The NPPF goes on to state in Paragraph 185:

"planning policies and decisions 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 quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason ...

4.4. The NPPF document does not refer to any other documents or British Standards regarding noise other than the Noise Policy Statement for England (NPSE[2]).

[1] National Planning Policy Framework, DCLG, March 2012

[2] Noise Policy Statement for England, DEFRA, March 2010

4.5. Paragraph 2 of the NPPF states that *"planning law requires that applications for planning permission must be determined in accordance with the development plan unless material considerations indicate otherwise."*

4.6. Paragraph 12 of the NPPF states that *"The presumption in favour of sustainable development does not change the statutory status of the development plan as the starting point for decision making. Where a planning application conflicts with an up-to-date development plan (including any neighbourhood plans that form part of the development plan), permission should not usually be granted. Local planning authorities may take decisions that depart from an up-to-date development plan, but only if material considerations in a particular case indicate that the plan should not be followed"*.

4.7. Paragraph 119 states that "Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. Strategic policies should set out a clear strategy for accommodating objectively assessed needs, in a way that makes as much use as possible of previously-developed or 'brownfield' land"

Noise Policy Statement for England

4.8. The Noise Policy Statement for England (NPSE[3]), published in March 2010, sets out the long-term vision of Government noise policy. The Noise Policy aims, as presented in this document, are: "*Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

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

4.9. The NPSE makes reference to the concepts of NOEL (No Observed Effect Level) and LOAEL (Lowest Observed Adverse Effect Level) as used in toxicology but applied to noise impacts. It also introduces the concept of SOAEL (Significant Observed Adverse Effect Level) which is described as the level above which significant adverse effects on health and quality of life occur.

[3] Noise Policy Statement for England, Defra, March 2010

4.10. The first aim of the NPSE is to avoid significant adverse effects, taking into account the guiding principles of sustainable development (as referenced in Section 1.8 of the NPSE). The second aim seeks to provide guidance on the situation that exists when the potential noise impact falls between the LOAEL and the SOAEL, in which case: *"...all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development."*

4.11. Importantly, the NPSE goes on to state that: "This does not mean that such adverse effects cannot occur."

4.12. The NPSE does not provide a noise-based measure to define SOAEL, acknowledging that the SOAEL is likely to vary depending on the noise source, the receptor and the time in question. NPSE advises that: *"Not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."*

4.13. It is therefore likely that other guidance will need to be referenced when applying objective standards for the assessment of noise, particularly in reference to the SOAEL, whilst also taking into account the specific circumstances of a proposed development.

Planning Practice Guidance – Noise

4.14. An updated Planning Practice Guidance (PPG[4]) for noise was published on 22 July 2019 and provides additional guidance and elaboration on the NPPF. It advises that when plan-making and decision-taking, the Local Planning Authority should consider the acoustic environment in relation to:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

4.15. This guidance introduced the concepts of NOAEL (No Observed Adverse Effect Level), and UAEL (Unacceptable Adverse Effect Level). NOAEL differs from NOEL in that it represents a situation where the acoustic character of an area can be slightly affected (but not such that there is a perceived change in the quality of life). UAEL represents a situation where noise is 'very disruptive' and should be 'prevented' (as opposed to SOAEL, which represents a situation where noise is 'disruptive', and should be 'avoided').

[4] Planning Practice Guidance – Noise, https://www.gov.uk/guidance/noise--2, 22 July 2019

4.16. As exposure increases above the LOAEL, the noise begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. As the noise exposure increases, it will then at some point cross the SOAEL boundary.

4.17. The LOAEL is described in PPG[5] as the level above which *"noise starts to cause small changes in behaviour and attitude, for example, having to turn up the volume on the television or needing to speak more loudly to be heard"*.

4.18. PPG identifies the SOAEL as the level above which *"noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present."*

4.19. In line with the Explanatory Note of the NPSE, the PPG goes on to reference the LOAEL and SOAEL in relation to noise impact. It also provides examples of outcomes that could be expected for a given perception level of noise, plus actions that may be required to bring about a desired outcome. However, in line with the NPSE, no objective noise levels are provided for LOAEL or SOAEL although the PPG[6] acknowledges 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."*

4.20. The relevant guidance in the PPG in relation to the adverse effect levels is summarized below:

Table 1 Table of effects (Planning Policy Guidance)

Response	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not Present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not Intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. 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

[5] Paragraph: 005 Reference ID: 30-005-20190722
[6] Paragraph: 006 Reference ID: 30-006-20190722

Response	Examples of Outcomes	Increasing Effect Level	Action
Lowest Observed Adverse Effect Level			
Present and Intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, 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 small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and Disruptive	The noise causes a material change in behaviour, attitude or other physiological response, 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
Present and very Disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

4.21. The Planning Practice Guidance[7] states the following in relation to mitigation measures:

> *"For noise sensitive developments, mitigation measures can include avoiding noisy locations in the first place; designing the development to reduce the impact of noise from adjoining activities or the local environment; incorporating noise barriers; and optimising the sound insulation provided by the building envelope."*

[7] Paragraph: 010 Reference ID: 30-010-20190722

4.22. In addition, the Guide notes that it may also be relevant to consider[8]:

> *"... whether any adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time (and the effect this may have on living conditions). In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations".*

5.0 Acoustic standards and guidance

Manchester City Council

5.1. Approval for the proposed store was granted on 22 September 2022, subject to Conditions. Decision notice 133148/FO/2022 refers.

5.2. Conditions 7 and 8 are relevant to the servicing of the store, as follows:

> *7) Deliveries, servicing and collections, including waste collections shall not take place outside of the following hours:*
>
> *07.00 to 22.00 hrs Monday to Saturday;*
>
> *09.00 to 17.00 Sundays and Bank Holidays.*
>
> *Reason - To safeguard the amenities of nearby residential occupiers, pursuant to Policies DM1 and SP1 of the Manchester Core Strategy.*
>
> *8) Prior to the retail unit hereby approved becoming operational, a Noise Management Plan (NMP) shall be submitted to and approved in writing by the City Council as Local Planning Authority. The NMP shall include an assessment of noise from all activities associated within the loading bay and service yard. Where applicable, the noise assessment should take account of multiple noise sources operating simultaneously and report the cumulative impact. The noise impact of the development should be controlled to the criteria set out in the City Council's Planning and Noise Technical Guidance.*
>
> *Reason - To safeguard the amenities of the occupiers of the building and occupiers of nearby properties, pursuant to policies SP1 and DM1 of the Manchester Core Strategy and saved policy DC26 of the Unitary Development Plan for the City of Manchester.*

5.3. From correspondence between Manchester City Council's Environmental Health Department and

[8] Paragraph: 006 Reference ID: 30-006-20190722

Aldi it is understood that the City Council requires an assessment of the potential noise impact of deliveries to be made using the method described in BS 4142:2014+A1:2019, with the rating level of deliveries at the nearest noise-sensitive receptor to be at least 5dB below the existing representative background sound level.

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

5.4. BS 4142:2014+A1:2019[9] is intended to be used to assess the likely effects of sound on people residing in nearby dwellings. The scope of BS 4142:2014 includes *"sound from fixed plant installations which comprise mechanical and electrical plant and equipment"* and *"sound from the loading and unloading of goods and materials at industrial and/or commercial premises"*.

5.5. The procedure contained in BS 4142:2014 is to quantify the *"specific sound level"*, which is the measured or predicted level of sound from the source in question over a one-hour period for the daytime and a 15 minute period for the night-time. Daytime is defined in the standard as 07:00 to 23:00 hours, and night-time as 23:00 to 07:00 hours.

5.6. The specific sound level is converted to a rating level by adding penalties on a sliding scale to account for either potentially tonal or impulsive elements. The standard sets out objective methods for determining the presence of tones or impulsive elements, but notes that it is acceptable to subjectively determine these effects.

5.7. The penalty for tonal elements is between 0dB and 6dB, and the standard notes: *"Subjectively, this can be converted to a penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible."*

5.8. The penalty for impulsive elements is between 0dB and 9dB, and the standard notes: *"Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible."*

5.9. The assessment outcome results from a comparison of the rating level with the background sound level. The standard states:

- *Typically, the greater this difference, the greater the magnitude of the impact.*
- *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;*

[9] For brevity, references to "BS4142" and "BS4142:2014" should be understood as "BS 4142:2014 +A1:2019"

- *A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context;*

- *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or 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.*

5.10. The standard does state that "*adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.*"

5.11. The standard goes on to note that: *"Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night."*

5.12. In addition to the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level, the 2014 edition places emphasis upon an appreciation of the context, as follows:

"An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context."

5.13. BS 4142:2014 requires uncertainties in the assessment to be considered, and where the uncertainty is likely to affect the outcome of the assessment, steps should be taken to reduce the uncertainty.

BS 8233:2014 Guidance on sound insulation and noise reduction for buildings.

5.14. This Standard provides recommended guideline values for internal noise levels within dwellings, as shown in Table 2.

Table 2 BS 8233 Desirable Internal Ambient Noise Levels for Dwellings

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

5.15. BS 8233:2014 advises that: *"regular individual noise events…can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values."*

6.0 Existing noise climate

Environmental sound levels

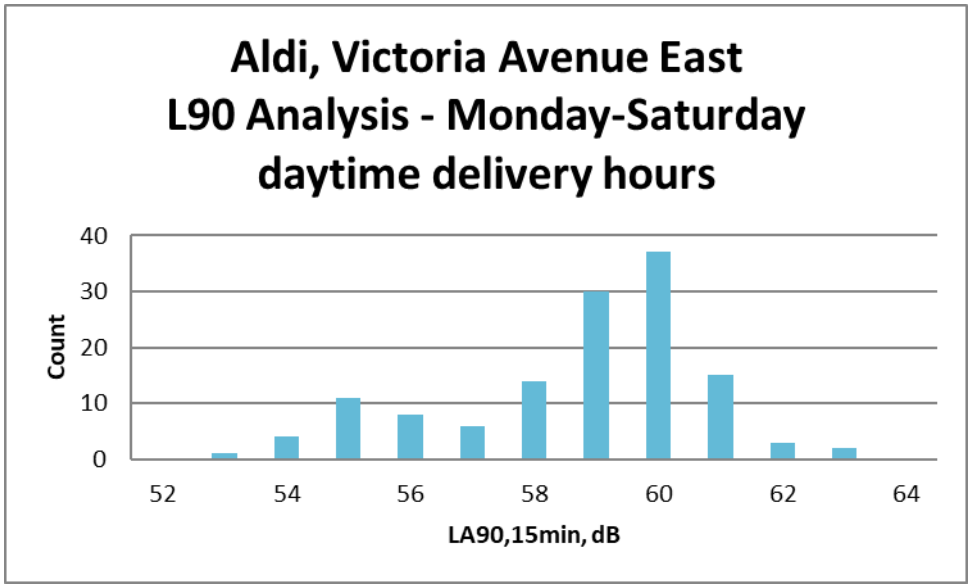
6.1. An environmental noise survey was undertaken to establish the typical background sound levels at a location representative of the noise climate outside the façades of the nearest noise sensitive receptor to the proposed loading bay during the quietest times at which activity will occur.

6.2. The results of the environmental sound survey are summarised in Table 3. The full set of measurement results and details of the survey methodology are presented in **Appendix D**.

Table 3 Summary of survey results – permitted servicing hours

Measurement period	Range of recorded sound pressure levels (dB)			
	$L_{Aeq(15mins)}$	$L_{Amax(15mins)}$	$L_{A10(15mins)}$	$L_{A90(15mins)}$
Monday-Saturday delivery hours				
07.00-22.00 hours	56-65	63-87	58-68	53-63
Sunday delivery hours				
09.00-17.00 hours	60-64	65-85	61-66	56-62

Figure 1 Histogram of L_{A90} background sound pressure levels, Monday-Saturday, 07.00-22.00hrs



6.3. Further statistical analysis has been carried out on the daytime background (L_{A90}) data, and the

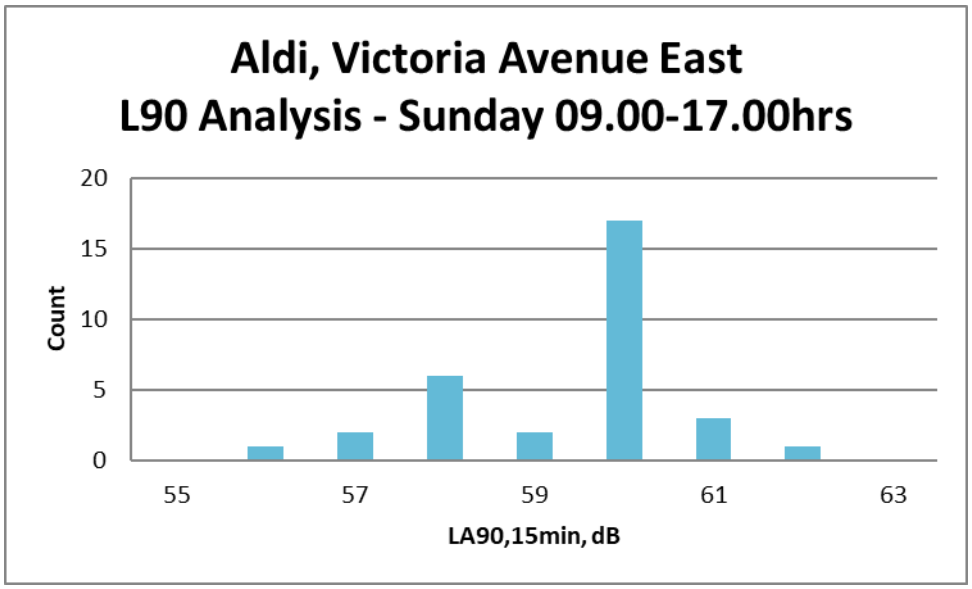
mean and median values are shown in Table 4 below.

Table 4 Statistical analysis of $L_{A90,15min}$ levels during the daytime period (Monday-Saturday)

dB, L_{A90} daytime period	
Mean	59
Mode	60
Median	59

6.4. From the histogram analysis, 54 dB has been selected to be a robust representation of the L_{A90} background sound pressure level during the permitted daytime delivery period (Monday-Saturday, 07.00-22.00 hours.

Figure 2 Histogram of Sunday daytime L_{Aeq} background sound levels (09.00 to 17.00 hours)



6.5. Further statistical analysis has been carried out on the daytime L_{Aeq} data, and the mean and median values are shown in Table 5 below.

Table 5 Statistical analysis of $L_{Aeq,15min}$ levels during the Sunday delivery period (08.00-1700hrs)

dB, L_{Aeq} daytime period	
Mean	59
Mode	60
Median	60

6.6. From the histogram analysis, 57 dB has been selected to be a robust representation of the L_{A90} background sound pressure level during the permitted Sunday servicing hours.

6.7. Representative background sound levels are therefore considered to be:

- 54dB L_{A90} for permitted Monday to Saturday servicing hours (07.00 to 22.00 hours);
- 57dB L_{A90} for permitted Sunday servicing hours (08.00 to 17.00 hours).

7.0 Assessment of delivery and collection noise

Sound pressure levels of activities associated with store deliveries and collections

7.1. The sound pressure levels associated with refrigerated lorry deliveries were established by measurement of a delivery at a similar Aldi store already in operation. The measurements included all aspects of the delivery including, but not limited to, the arrival, unloading, movement of cages and the departure of the lorry. The sound pressure levels were normalised to a distance of 10m from the delivery area and have been converted to Sound Exposure Levels (SEL) for ease of comparison/calculation. Typical L_{Amax} levels were also established.

7.2. As noted previously, waste collections will be undertaken using the same process as deliveries.

7.3. It should be noted that the example delivery represented a standard operation.

7.4. Table 6 details typical source noise levels, used within the assessment, with the data presented in terms of SEL and maximum individual noise event levels (L_{AFmax}).

Table 6 Reference noise data for delivery activities (at 10m)

Noise Source	SEL, dB(A)	L_{Afmax}, dB(A)
Lorry arrival	69	61
Lorry reversing & manoeuvring into loading bay	65	58
Door open/close	60	68
Cage and pallet movement	51	59
Engine starts and lorry departs	74	71

Delivery noise impact assessment

7.5. The information contained in Table 6 was used to 'build-up' a source noise level based on the number of activity events over the required assessment period using the following equation:

7.6. $$L_{Aeq,T} = SEL + 10.\log\left(\frac{1}{T}\right) + 10.log(N)$$ (Equation 1)

Where:
SEL is the L_{Aeq} over a one second period, and represents the noise energy from an event (e.g. cage movement) compressed into one second;
T is the reference time period in seconds; and
N is the number of movements in the time period, T.

7.7. The closest part of the loading bay is located approximately 21m from the nearest residential façade (Receptor R1). Approximate distances used in the calculations are shown in Table 7 below.

Table 7 Distances to nearest residential façade

Item	Closest distance to R1, m
Lorry arrives and turns	47
Lorry reverses and manoeuvres into loading bay	25
Door open / close	21
Cage/pallet movement (internally, central location within trailer assumed)	26
Engine starts and lorry departs	35

7.8. Aldi requires drivers to switch off refrigeration units when making store deliveries. In addition, reversing warning signals are disabled when headlights are switched on, so there are no audible warnings at night; vehicles are fitted with "traditional" beepers (rather than white noise or voice alarms). An appropriate noise management plan (see below) will be implemented to reduce delivery noise to a minimum.

7.9. Table 8 presents the calculated cumulative L_{Aeq} and 'maximum' L_{Amax} noise levels at the receptor. Full calculations are included within **Appendix C**. Calculations include acoustic reflections from the side wall of the store building alongside the loading bay.

Table 8 Predicted delivery noise levels

Receptor	Period	Predicted noise levels at upper window of most affected residential dwelling	
		$L_{Aeq,T}$, dB	Range of L_{Afmax} (dB)
R1 façade	Daytime, 1hr	31	48-63

BS 4142:2014 delivery noise assessment

7.10. Table 9 presents the assessment of the likely impact at Receptor R1 during the permitted delivery hours, in accordance with the BS 4142:2014+A1:2019 methodology.

7.11. BS 4142:2014+A1:2019 feature corrections applied are:

- +3dB intermittency for all activities
- +6dB tonality for lorry reversing alarms; note that in practice this would not apply on dark mornings – see paragraph 7.8.
- +6dB impulsivity for operation of doors and movement of trolleys/cages

Table 9 R1 Assessment of predicted external delivery noise levels using BS 4142:2014 during permitted servicing hours (Monday to Saturday, 07.00-22.00hrs), Sunday 09.00-17.00hrs).

Results	Monday to Saturday	Sunday	Relevant Clauses of BS4142:2014	Commentary
Background Sound level	L_{A90} = 54dB	L_{A90} = 57dB	8.1, 8.2	Representative typical background sound level determined from a range of measurements
Assessment made during the daytime, so the reference interval is one hour			7.2	
Specific Sound Level	$L_{Aeq,1hr}$ = 31dB	$L_{Aeq,1hr}$ = 31dB	7.3.6	Calculations presented in Appendix C
Rating Level	35dB	35dB	9.2	
Excess of Rating Level over background sound level	(35-54) dB = -19dB	(35-57) dB = -22dB		
Assessment of impact: No impact			11	

7.12. It can be seen that the predicted delivery noise level is significantly below the background sound level during all parts of the proposed delivery hours, and comfortably meets Manchester City Council's requested criterion.

Context and uncertainties

7.13. As the standard advises, the estimated impact must be considered within the context of the site and the surrounding acoustic environment. The following must, therefore, also be taken into consideration when determining the potential impact that may be experienced:

- The assessments are undertaken at a single residential window. The impact on all other residential windows will be lower due to distance losses and noise screening provided by the building structure.
- The number of expected deliveries by large articulated lorries is low (typically four per 24 hour period).

7.14. Where possible uncertainty in this assessment has been minimised by taking the following steps:

- The measurement of the background sound levels was undertaken over a period including the quietest times of the day and night.
- The sound level meter and calibrator used have a traceable laboratory calibration and were field calibrated before and after the measurements.

- Uncertainty in the calculated impact has been reduced by the use of a well-established calculation method.

- Care was taken to ensure that the measurement position was representative of the noise climate outside the nearby residential dwellings and not at a position where higher noise levels are present.

BS 8233:2014 and WHO delivery noise assessment

7.15. A BS 4142:2014 assessment considers only external noise levels at the location of sensitive receptors and does not consider the attenuation offered by the building envelope.

L_{Amax} assessment

7.16. The highest predicted L_{Amax} levels resulting from delivery activities at the nearest residential windows (63dB) are at the lower end of the range of existing L_{Amax} sound levels during the proposed delivery hours (63-87dB). It is noted that BS 8233:2014 gives no specific daytime guidance on the impact of L_{Amax} levels, which are predominantly associated with sleep disturbance.

7.17. Therefore, the anticipated L_{Amax} levels resulting from delivery activities would be of negligible significance.

Discussion of results

7.18. The results of the assessment have demonstrated that the noise impact associated with deliveries to the store, during both the daytime and night-time periods, will be significantly below the level at which a *'low impact'* would be expected, when assessed in accordance with BS 4142:2014+A1:2019.

7.19. Noise from delivery activities comfortably complies with Manchester City Council's requested criterion.

8.0 Delivery noise management plan

- Deliveries are scheduled and agreed with the store to reduce to a minimum the time taken to deliver the goods and therefore limit potential for noise impact;

- Delivery bay doors are well maintained to minimise noise when opening / closing;

- Headlights are to be switched on when entering the delivery yard before 07.00hrs and after 20.00hrs, at all times of the year, to ensure audible reversing alarms are disabled during noise-sensitive periods.

- Lorry engine and refrigeration is turned off as soon as practicable and they are not left running during deliveries;
- The radio in the lorry cabin is switched off / muted before arrival;
- All employees speak in hushed voices;
- There is a general requirement for all drivers to minimise noise at all times;
- Delivery vehicles are driven around the area in a considerate manner, e.g. speed being kept to a practical minimum and all items properly fastened in order to ensure rattles and bangs are kept to a minimum;
- If a complaint arises, employees will follow a set of guidelines which set out how to deal with complaints quickly and effectively and to address any issues raised.

9.0 Potential for cumulative noise effects

9.1. As previously noted, there will be no more than one delivery or waste collection within an hour, and the predicted specific sound pressure level relating to any delivery or collection is 31dB $L_{Aeq\ 1hr}$. The predicted plant specific sound level due to plant noise, at the worst-affected residential window, is 28dB $L_{Aeq\ 1hr}$[10]. The combined worst-case noise level due to servicing and plant would therefore be 33 $L_{Aeq\ 1hr}$.

9.2. The lowest existing ambient sound level measured during the permitted delivery hours was 56dB $L_{Aeq\ 15min}$.

9.3. The predicted sound level due to deliveries and collections is therefore significantly below the existing ambient sound level, and will not result in any increase in the sound level experienced at the nearest residential façade. Noise from servicing of the store would therefore be within the "not present" category in the PPG Noise effects table (Table 1 in this report).

10.0 Conclusions

10.1. Noise Solutions Limited has been commissioned by Aldi Stores Limited to undertake an assessment of the noise impact from servicing of the proposed Aldi store along Victoria Avenue East in Manchester.

[10] Noise Solutions Limited plant noise impact assessment report 90766/PNIA dated 19th June 2023 refers

10.2. In support of these assessment works, a baseline noise survey was undertaken to determine the prevailing environmental noise levels at the nearest noise sensitive receptors to the store during representative periods. Reference noise measurements of delivery activity at a similar operating Aldi store were used in the assessment.

10.3. The results of the survey were used to undertake an assessment of the likely noise impact from deliveries to and waste collections from the store. For the purposes of the assessment, the methodology used in BS 4142:2014+A1:2019 was utilised. Further assessments were undertaken taking into consideration guidance from the World Health Organisation and BS 8233:2014.

10.4. The results of the assessments were analysed and reviewed in line with the aims and advice contained within the National Policy Statement for England, the National Planning Policy Framework and the Planning Practice Guidance.

10.5. The assessment has concluded that deliveries and collections would be significantly below the level at which a 'low impact' would be expected, when assessed using the method in BS 4142:2014+A1:2019 and would also comply with Manchester City Council's requested criterion.

10.6. It is therefore considered that the requirements of Condition 8 in Manchester City Council's decision notice 133148/FO/2022 have been suitably addressed.

Appendix A Acoustic terminology

Parameter	Description
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ($L_{Aeq,T}$).
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 $\log_{10}$ (s1/s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20µPa. The threshold of normal hearing is in the region of 0 dB and 140 dB is the threshold of pain. A change of 1 dB is only perceptible under controlled conditions.
dB(A), L_{Ax}	Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).
Fast Time Weighting	Setting on sound level meter, denoted by a subscript F, that determines the speed at which the instrument responds to changes in the amplitude of any measured signal. The fast time weighting can lead to higher values than the slow time weighting when rapidly changing signals are measured. The average time constant for the fast response setting is 0.125 (1/8) seconds.
Free-field	Sound pressure level measured outside, far away from reflecting surfaces (except the ground), usually taken to mean at least 3.5 metres
Façade	Sound pressure level measured at a distance of 1 metre in front of a large sound reflecting object such as a building façade.
$L_{Aeq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level recorded during a noise event with a period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise. $L_{A10,18h}$ is the A –weighted arithmetic average of the 18 hourly $L_{A10,1h}$ values from 06:00-24:00.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. Generally used to describe background noise level.

Appendix B Aerial photograph of site and plan showing delivery route



Store plan


Gym Parking
Approx. 121 Spaces
Soft landscaping to perimeter
Existing United Utilities underground water utility
Gate to existing structure, to be retained
Soft landscaping to perimeter
Existing access into shared estate parking to be retained
Apartment Parking
Approx. 49 Spaces
Land transferred to Rugby club plot to square off land to pitches (0.04Acres)
Line of current pitches
Assumed site boundary, subject to confirmation
Assumed site boundary, subject to confirmation
119 Total Car Parking Spaces
2.7m x 5m
(Incl. 8x accessible bays, 9x Parent & Child and 4 EV spaces)
Existing Apartments
Localised location of United Utilities underground water utility as surveyed through trial pits. Easement from centreline of 1200mm pipe as noted on UU records
Land required to facilitate entrance from adjacent rugby club plot (0.368 Acres)
UNIT A
Proposed ALDI Foodstore
1884m² Total GIA
1974m² Total GEA
1331m² Sales Area
Line of current pitches
Existing United Utilities underground water utility
VICTORIA AVENUE EAST
Line of current pitches
Site totem
NEW Shared access/ egress as required to Highway Engineers design and subject to Local Authority approval
New access for Rugby Club
Existing entrance to Rugby club
PROPOSED SITE PLAN
SCALE 1:250 @ A1
SCALE 1:250
RED LINE BOUNDARY
2.10 ACRES (0.85 HA)
PROPOSED FOODSTORE
VICTORIA AVENUE EAST
MANCHESTER
M9 7HW
ALDI STORES LIMITED
PLANNING
1:250
MAY 21
PROPOSED SITE PLAN
16223BOL-100
THE HARRIS PARTNERSHIP
ARCHITECTS

Appendix C Delivery noise impact calculations

R1 façade - daytime

Activity	Measured noise levels		Correction for no. of occurrences		Distance correction		Surface Reflections (dB)	Screening correction (dB)	SEL at receptor (dB)	BS 4142 feature corr'n (dB)*	SEL + Feature Corr'n (dB)	Resultant L_{Amax} at receptor (dB)
	SEL @ 10m	L_{Amax} @10m	No. of occurrences	Correction (dB)	Distance (m)	Correction (dB)						
Lorry arrives	69	61	1	0	47	-13	0	0	56	3	59	48
Lorry reverses and manoeuvres into loading bay	65	58	1	0	25	-8	0	0	57	9	66	50
Door open	60	68	1	0	21	-6	3	-10	47	9	56	54
Cage/pallet movement (inside vehicle/store)	51	59	10	10	26	-8	0	0	52	9	61	50
Door close	60	68	1	0	21	-6	3	-10	47	9	56	54
Engine starts and lorry leaves	74	71	1	0	35	-11	3	0	66	3	69	63
							Cumulative SEL		67	SEL+ Feature	71	
							$L_{Aeq,1hr}$		31	Rating	35	
											Range of L_{Amax}	**48-63**

**See Paragraph 7.11*

Appendix D Environmental sound survey

Details of environmental sound survey

D.1 Measurements of the existing background sound levels were undertaken between 12.45 hours on Friday 10 June and 15.30 hours on Monday 13 June 2022.

D.2 The sound level meter was programmed to record the A-weighted L_{eq}, L_{90}, L_{10} and L_{max} noise indices for consecutive 15-minute sample periods for the duration of the noise survey.

Measurement position

D.3 The representative measurement position was located on a lamp-post in the car park of the existing premises, at the same distance from the M60 motorway as the adjacent apartment building (location indicated on the site plan in **Appendix B**). In accordance with BS 7445-2:1991 *'Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use'*, the measurements were undertaken under free-field conditions. This location is approximately representative of the levels of road traffic noise at the closest noise sensitive receptors.

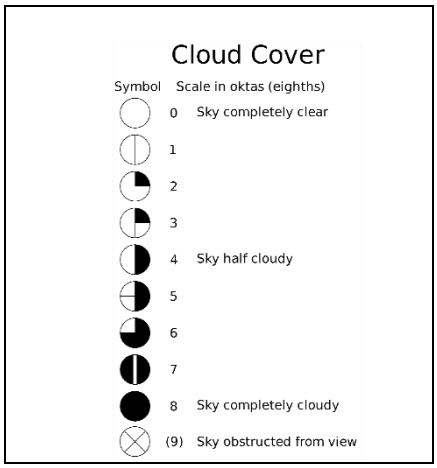
Equipment

D.4 Details of the equipment used during the survey are provided in the table below. The sound level meter was calibrated before and after the survey; no significant change (+/-0.2 dB) in the calibration level was noted.

Description	Model / serial no.	Calibration date	Calibration certificate no.
Class 1 Sound level meter	Svantek 971 / 111624	18/06/2021	Factory conformation certificate
Condenser microphone	ACO Pacific 7052E / 80036		
Preamplifier	Svantek SV 18 / 112639		
Calibrator	Svantek SV 33B / 83850	20/10/2021	1501134-1

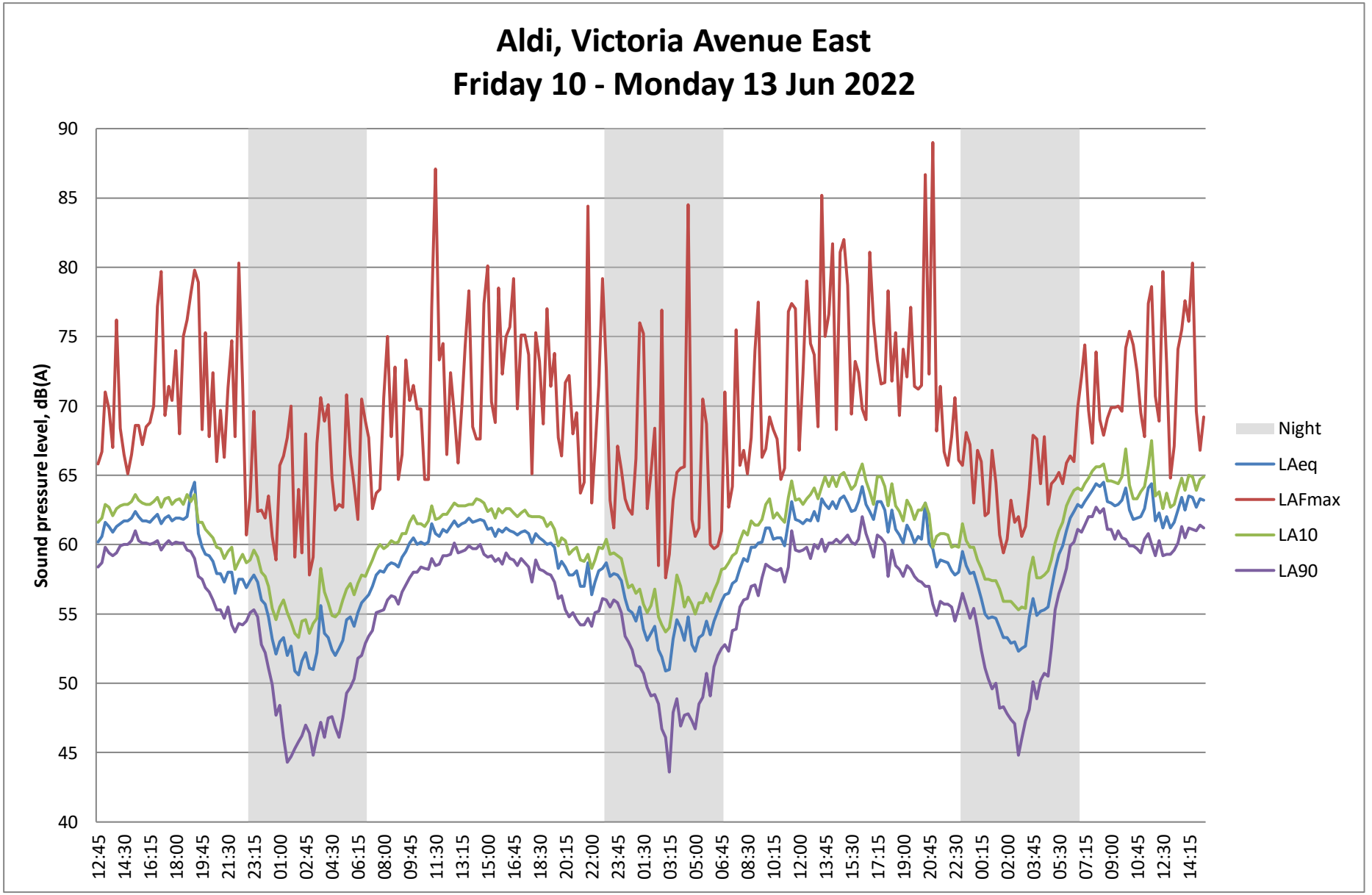
Weather conditions

D.5 Weather conditions were determined both at the start and on completion of the survey. It is considered that the meteorological conditions were appropriate for environmental noise measurements. The table below presents the weather conditions recorded on site at the beginning and end of the survey.

Weather Conditions				
Measurement Location	**Date/Time**	**Description**	**Beginning of Survey**	**End of Survey**
As indicated on Appendix B	12.45 10 Jun - 15.30 13 Jun 2022	Temperature (°C)	19	17
		Precipitation:	No	No
		Cloud cover (oktas - see guide)	6	7
		Presence of fog/snow/ice	No	No
		Presence of damp roads/wet ground	No	No
		Wind Speed (m/s)	3	3
		Wind Direction	NW	NW
		Conditions that may cause temperature inversion (i.e. calm nights with no cloud)	No	No

Results

D.6 The results of the environmental survey are considered to be representative of the background sound pressure levels at the façades of the nearest noise sensitive receptors during the quietest times at which deliveries will be made. During the installation and removal of the sound level meter the noise climate was dominated by traffic on the M60 motorway. The results of the survey are presented in a time history graph overleaf.


Aldi, Victoria Avenue East
Friday 10 - Monday 13 Jun 2022
Sound pressure level, dB(A)
90
85
80
75
70
65
60
55
50
45
40
12:45
14:30
16:15
18:00
19:45
21:30
23:15
01:00
02:45
04:30
06:15
08:00
09:45
11:30
13:15
15:00
16:45
18:30
20:15
22:00
23:45
01:30
03:15
05:00
06:45
08:30
10:15
12:00
13:45
15:30
17:15
19:00
20:45
22:30
00:15
02:00
03:45
05:30
07:15
09:00
10:45
12:30
14:15
Night
LAeq
LAFmax
LA10
LA90