Technical Note - Former Walkers Site, Crabtree Lane, Manchester Additional Noise Information

Date: 20th February 2024

Introduction

A Noise Impact Assessment has previously been completed for the development proposals which comprised site clearance and demolition of all existing structures on site to permit redevelopment works which comprise the construction of 9No. industrial units and all associated external works ('Proposed Development'), at the Former Walkers Site, Crabtree Lane in Clayton, Manchester M11 4GU (the 'Site'). This noise impact assessment ('Former Walkers Site, Crabtree Lane Clayton' dated: December 2023) is described in TRC report ref. 572948.0001.r1 (the 'Report'), as appended to this Technical Note.

Subsequent to the submission of the Planning Application, comments from the Local Planning Authority (LPA) have been received in relation to the Noise Impact Assessment:

> *Before they can fully review the submitted TRC Noise Impact Assessment, Ref: 572948.0001.r1, dated December 2023, they would initially comment that this report identifies the nearest noise sensitive receptors to the development as residential properties on Ashton New Road approximately 75 metres to the north of the site. Clarification is required of why the Strawberry Duck public house at 76 Crabtree Lane, which appears to include landlord/landlady residential accommodation and is significantly closer, has not been identified as the nearest NSR.

This technical note has been produced to address these recommended conditions and comments provided.

Response to Comment

Comment

*Before they can fully review the submitted TRC Noise Impact Assessment, Ref: 572948.0001.r1, dated December 2023, they would initially comment that this report identifies the nearest noise sensitive receptors to the development as residential properties on Ashton New Road approximately 75 metres to the north of the site. Clarification is required of why the Strawberry Duck public house at 76 Crabtree Lane, which appears to include landlord/landlady residential accommodation and is significantly closer, has not been identified as the nearest NSR.

Response to Comment

Residential receptors were identified at which operational noise levels from the Proposed Development were predicted, following guidance from British Standard 4142 (BS4142). These receptors are dwellings on south side of A662 to west of Crabtree Lane (NSR1) and dwellings on north side of A662 opposite Crabtree Lane (NSR2). The findings of the numerical BS 4142 assessment, as presented in the Report, indicate that adverse impacts are unlikely and that the overall level of impact is likely to be low at NSR1 and NSR2.

Reference should be made to Figures 5.1 and 5.2 of the Report for a graphical representation of the predicted noise levels. This demonstrates that the operational noise levels at the Potential Residential Occupants at 76 Crabtree Lane (located over 70m from the proposed Site entrance) would be of similar magnitude to NSR1 and NSR2, the lower end of 37 dB - 42 dB $L_{Ar,15min}$ Rating Level (including a 2 dB character correction). Therefore, with a representative measured night-time background sound level of 47 dB $L_{A90,15min}$, the Rating Level is predicted to be 5-10 dB below measured background sound levels. This location is considered to have an approximately equivalent noise exposure to operational noise from the Proposed Development to receptors already assessed.

It is therefore concluded that the operation of the Proposed Development at the Site would result in a **not significant** effect at the Potential Residential Occupants at 76 Crabtree Lane.

Annexes

Annex A – Noise Impact Assessment
Former Walkers Site, Crabtree Lane, Manchester
December 2023 (TRC Ref.: 572948.0001.r1)

Noise Impact Assessment

Former Walkers Site,
Crabtree Lane, Manchester

December 2023
572948.0001.r1

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Quality Control

Client Name:	Chancerygate Manchester Limited
Project Name:	Former Walkers Site, Crabtree Lane, Manchester
Project No.:	572948
Document Title:	Noise Impact Assessment

Version:	Date:	Prepared By:	Reviewed By:	Approved By:
1.0	18th December 2023	Matthew Hyden	Gabor Antony	Gabor Antony

Executive Summary

Site and Report Context	TRC Companies Ltd (TRC) was commissioned by Chancerygate Manchester Limited (the 'Client') to undertake a noise survey and impact assessment for the proposed industrial development at the Former Walkers Site, Crabtree Lane in Clayton, Manchester M11 4GU (the 'Site'). The purpose of this report is to form part of the Client's planning application for said development. A qualitative assessment of construction noise and vibration impacts has been undertaken and it has been found that significant adverse impacts are unlikely to occur as a result of the construction of the development. An operational noise impact assessment has been undertaken in accordance with BS 4142:2014+A1:2019 to assess the potential impact of commercial / industrial noise from the proposed development.
Summary	The assessment has found that the requirements for commercial / industrial noise in Manchester City Councils 'Noise and Planning Technical Guidance' document are likely to be met and no adverse noise impacts are predicted as a result of the operation of the development. At this stage of the development, details of fixed plant and equipment that will form part of the development are not available. Therefore, noise emission limits have been identified based on Manchester City Council's acoustic requirements. Due to the relatively loud background sound environment and the distance / screening between the development and the nearest receptors, these limits should be relatively straight forward to achieve using appropriate design.
Conclusions and Recommendations	It has been concluded that the proposed development is likely to comply with Manchester City Councils noise policy requirements and is unlikely to result in significant adverse impacts at nearby receptors.
This Executive Summary is part of this complete report; any findings, opinions, or conclusions in this Executive Summary are made in context with the complete report. TRC recommends that the user reads the entire report for all supporting information related to findings, opinions, and conclusions.	

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1.0 Introduction

TRC Companies Ltd (TRC) was commissioned by Chancerygate Manchester Limited (the Client) to undertake a noise survey and assessment for the proposed industrial development at the Former Walkers Site, Crabtree Lane in Clayton, Manchester M11 4GU (the 'Site'). The proposed works at the Site comprise the site clearance and demolition of all existing structures on site to permit redevelopment works which comprise the construction of 9No. industrial units and all associated external works (the 'Proposed Development').

1.1 Current Site and Proposed Development

The Site (shown in **Figure 1**) is situated within an existing industrial/commercial area and was previously used as an industrial / commercial operation by Walkers. The Site is bounded by:

- To the north by a supermarket (Aldi) with Ashton New Road further to the north (60m away) The nearest residential properties are situated on Ashton New Road (approximately 75m away);
- To the east by other commercial and industrial operations including Home Bargains discount shop (approx. 25m away);
- To the south by an industrial unit;
- To the west by the Crabtree Lane.

The nearest residential receptors to the Site are residential properties on Ashton New Road, approximately 75m north of the Site. Reference should be made to **Figure 1** for the Site and its surrounding area.

The Proposed Development layout is made up of 9 units and is shown in **Figure 2**.

1.2 Purpose and Structure of this Report

The scope of this report is to assess the potential noise impacts of the scheme as part of a planning application for the development.

This assessment is divided into the following sections:

- Relevant planning policy (national and local) and guidance
- Baseline noise survey
- Construction noise assessment
- Operational noise assessment
- Conclusions

1.3 Suitably Experienced Acoustician

This assessment and report has been produced by Sam Leung under the guidance of Matthew Hyden, who has also reviewed and approved this report.

Sam Leung is an Acoustic Consultant and holds a BEng (hons) in Mechanical Engineering and a BSc (hons) in Audio Acoustics. Sam is also an associate member of the Institute of Acoustics (IoA).

Matthew is a Fellow of the Institute of Acoustics (FIOA), a chartered acoustic engineer (CEng) and has a BEng (hons) in Electroacoustics.

Matthew has over 23 years' experience undertaking noise impact assessments for commercial / industrial developments in line with the guidance in current and previous versions of BS 4142.

The standard limitations associated with this assessment are presented in **Annex A**.

2.0 Planning Policy and Standards

This section of the report summarises the BREEAM criteria and associated guidance relevant to the assessment.

2.1 National Policy

National Planning Policy Framework, (NPPF, 2023)

The "National Planning Policy Framework" (NPPF) sets out the Government's requirements for the planning system. Paragraph 174 of the NPPF advises:

> *"Planning policies and decisions should contribute to and enhance the natural and local environment by;… preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of… noise pollution... Development should, wherever possible, help to improve local environmental conditions…"*

With specific regard to noise, paragraph 185 of the NPPF states that:

> *"Planning policies and decisions should 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 […] 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;"*

With regard to the 'adverse impacts' referred to above, the NPPF directs the reader to the advice contained in DEFRA's "Noise Policy Statement for England" (NPSE). This policy statement introduces the concept of a "Significant Observed Adverse Effect Level" (SOAEL), "Lowest Observed Adverse Effect Level" (LOAEL) and "No Observed Adverse Effect Level" (NOAEL). However, whilst the intent of the NPSE in relation to the NPPF is clear, the NPSE does not, at this time, provide any quantitative threshold values for each identified level of "effect." Indeed, the NPSE carefully highlights that:

> *"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."*

Planning Practice Guidance, Noise (PPG, 2019)

In February 2014 Planning Practice Guidance (PPG) was published and was most recently updated in 2023. The overall aim of this guidance is to tie together the principles of the NPPF and the Explanatory Note of the Noise Policy Statement for England. The PPG states that:

> *"Plan-making and decision making need to take account of the acoustic environment and in doing so consider:*
>
> - *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."*

This includes:

> *"identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation."*

A summary of the effects of noise exposure associated with both noise generating Proposed Developments and noise sensitive developments is presented within the PPG and repeated as follows:

Table 1 - PPG Noise Guidance

Response	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level (NOAEL)			
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 change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
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 (SOAEL)			
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

In light of the above, it can be seen that whilst the NPPF and associated planning practice guidance sets out stringent imperatives to ensure the satisfactory development of land in relation to possible noise impacts, the NPPF does not generally provide any detailed technical guidance defining what may be considered to constitute a 'significant' or 'other' adverse impact. In the absence of such technical guidance, reference needs to be made to sustainable development standards set out in local planning policy and/or relevant industry standard guidance documents.

2.2 Local Planning Policy

Manchester City Council Core Strategy Development Plan Document

The Manchester City Council (MCC) Core Strategy Development Plan Document provides guidance on noise and development management in paragraphs 13.6 and Policy DM 1 'Development Management'. The relevant sections are reproduced below:

Development Management

13.6 - All new developments should follow the 'Development Principles' and accord with the design guidance set out in the Supplementary Planning Documents.

Policy DM1

All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document:- … […]

- *Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise.*

Manchester City Council Planning and Noise Technical Guidance (October 2022)

In addition to the Core Strategy document, MCC have produced a 'Planning and Noise ' Technical Guidance' document (dated October 2022). Section 3.7.1.5 of the document covers Industrial / Commercial developments. This section of the document provides the following guidance:

BS 4142 should be used to assess the likely impact of noise from industrial and commercial sources at noise sensitive premises (section 3.5). One of the indications of the impact of a BS 4142 assessment is 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 impactor 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.

The Council consider that new developments should contribute and enhance the area in which they are located and where possible i.e. prevent 'noise creep', contribute to the improvement of people's health and quality of life as per the NPSE. With this in mind, the design objective should be:

'The development should be designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.'

Where this criterion cannot be achieved, the various noise control measures considered as part of the assessment should be fully explained (i.e. relocation of noise sources, use of quieter equipment, enclosures, screening, restriction of the hours of operation) and the achievable noise level should be identified. This information will allow a judgement to be made concerning the application and its likely impact on the surrounding area.

With specific reference to 'noise and vibration from fixed plant / equipment, the document states:

'Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location'.

2.3 Relevant Guidance

BS4142:2014: "Methods for Rating and Assessing Industrial and Commercial Sound"

BS 4142 provide a rating and assessment methodology for assessing the potential adverse impact of industrial and commercial noise sources on neighbouring dwellings.

The assessment procedure initially compares the 'Rating Level' of the source with the 'Background Noise Level' when the source is not present.

The 'Rating Level' (L_{Ar}) referred to is the specific noise level of the noise source under investigation (in terms of the L_{Aeq} noise index), to which corrections are applied if the noise has certain audible characteristics. The following corrections (based on a subjective assessment of noise source characteristics) is given:

Table 2 - BS4142:2014 Character Correction for Rating Level Calculation

Character Correction				
Feature / Perception	**Tonality**	**Impulsivity**	**Intermittency**	**Other Acoustic Characteristics**
Just Perceptible	+2dB	+3dB	When the specific sound has identifiable On/Off conditions that are readily distinctive. +3dB	+3dB
Clearly Perceptible	+4dB	+6dB		
Highly Perceptible	+6dB	+9dB		

The standard also provides a number of objective methods for identifying if character corrections apply.

The 'Background Sound Level' (L_{A90}) represents the noise level that is exceeded for 90% of the stated measurement period. For assessment purposes, the background sound level needs to be determined without the noise source under investigation operating.

The time of operation needs to be taken into account. During the day (normally taken to be 07.00 to 23.00 hours) a one-hour assessment period is considered appropriate. During the night (normally taken to be 23.00 - 07.00 hours) a 15-minute time period is normally used.

The following guidance is then based on the outcome of this initial assessment:

- 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.

- The standard states that: "Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact,"
- 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.

A note accompanying the above guidance states:

> *"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."*

The initial estimate of the impact should then be modified to account for its context. Such considerations include:

- The absolute level of the sound - the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. 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.
- Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.
- The character and level of the residual sound compared to the character and level of the specific sound.
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

3.0 Baseline Noise Data

3.1 Acoustic Character of Site

The Site is situated within an existing industrial/commercial area and was previously used as an industrial/commercial site. The nearest noise sensitive receptors to the development are residential properties on the A662 Ashton New Road, approximately 75 metres to the north of the site.

The dominant source of noise at the noise sensitive receptors is traffic on Ashton New Road. The dominant source of sound at the site is also traffic on Ashton New Road, although occasional more local traffic on Crabtree Lane and occasional delivery noise to nearby commercial / industrial operations is also audible here.

3.2 Baseline Noise Monitoring

Baseline noise monitoring was undertaken to establish the existing ambient sound level at the nearest noise sensitive receptors to the site.

An unattended baseline measurement was undertaken over 24 hours from 14:30hrs on 21st of November to 14:30hrs on 22nd of November. In addition, short term attended noise measurements were made in close proximity to the nearest noise sensitive receptors on the 21st and 22nd of November.

Figure 3 shows the noise monitoring locations in addition to the location of the nearest noise sensitive receptors (residential dwellings on Ashton New Road).

The microphone of the unattended sound level meter was mounted on a pole and fixed to a fence approximately 1.5m above ground level at the location 'U1' shown in **Figure 3**. This position was approximately 1.5 metres from the façade of the existing building.

The attended sound level measurements were made with the sound level meter mounted on a tripod in a free field position at 1.5 metres above local ground at location 'A1' shown in **Figure 3**. This position was approximately the same distance from Ashton New Road as the façade of the nearest noise sensitive receptors.

The equipment used for the noise survey is listed in **Table 3** below.

Table 3 - Noise Monitoring Equipment

Location	Equipment details	
Unattended noise monitoring	Manufacturer	Rion
	Type	NL-52
	Serial No.	00610175
	Latest Calibration	01/11/2023
Attended noise monitoring	Manufacturer	Svantek
	Type	SVAN-977
	Serial No.	34170
	Latest Calibration	01/08/2023

The sound level meter conforms to BS EN 61672-1 (Class 1 accuracy) and the calibrator conforms to BS EN 60942 (Class 1 accuracy). The entire signal path was checked for calibration at the beginning and end of the unattended and attended surveys, with no significant drift noted (the check at the end of the unattended survey was within 0.1 dB of the reference level).

Weather conditions on site were measured throughout the duration of the survey using a Larson Davis weather station, set up in close proximity to the unattended monitoring location (U1). Observations were also made by the surveyor whilst on site. **Table 4** provides a summary of the weather conditions for the survey period.

Table 4 - Weather Conditions

Condition	Start	During (observed and from weather station on site)	End
Wind Speed (m/s)	<1 m/s	< 1 m/s	<1 m/s
Wind Direction	N/A	N/A	N/A
Precipitation	No	Generally dry but very light observed drizzle between 09:00 and 12:00 hrs on the 23rd November.	No

Condition	Start	During (observed and from weather station on site)	End
Temperature	8ºC	5 to 11ºC	8ºC
Cloud Cover	10%	Varied	70%

Periods of the survey where there was precipitation (light drizzle) have been removed from the data analysis.

3.3 Baseline Noise Monitoring Results

The unattended noise monitoring results are shown in the time history graph in **Annex B** and summarised in **Table 5** below.

Table 5 - Unattended Noise Monitoring Results

Noise Metric[1]	Measured Sound Pressure Levels in dB ref 2 x 10^{-5} Pa
$L_{Aeq,16hr}$ Day	66
$L_{Aeq,8hr}$ Night	46
Maximum measured $L_{Afmax,16hr}$ Day	89
Maximum measured $L_{Afmax,8hr}$ Night	74
Modal $L_{AF90,15min}$ Day	52
Modal $L_{AF90,15min}$ Night	41
Mean $L_{AF90,15min}$ Day	47
Mean $L_{AF90,15min}$ Night	43
Median $L_{AF90,15min}$ Day	47
Median $L_{AF90,15min}$ Night	42

The results of the attended noise monitoring are summarised in **Table 6** below.

Table 6 - Attended Noise Monitoring Results

Measurement Period	Ambient Noise Level	Maximum Noise Level	Range of Background Sound Levels
21/11/2023 14:45 - 15:45 hrs	69 dB $L_{Aeq,1hr}$	89 dB L_{AFmax}	58 - 60 dB $L_{A90,15min}$
22/11/2023 12:15 - 14:15 hrs	70 dB $L_{Aeq,1hr}$	99 dB L_{AFmax}	58 - 60 dB $L_{A90,15min}$

3.4 Representative Background Sound Levels

Comparison of the measured daytime L_{A90} noise levels at the attended and unattended noise monitoring positions shows that noise levels are significantly higher at the attended monitoring position.

As the attended monitoring location is likely to best represent the nearest noise sensitive receptors (NSRs)[2], this indicates that the measurements made at the long term location are likely to present a significant under estimate of the background sound levels at the NSRs, that are situated closer to the A662.

Therefore, the daytime representative background sound level has been assumed to be the lowest measured $L_{A90,15\ minute}$ period from the attended noise monitoring.

To estimate the representative night-time background sound level, a correction factor will be applied to the attended daytime levels. On the assumption that the difference between daytime and night-time L_{A90} levels will be similar at both locations, a correction equal to the difference between the daytime and night-time L_{A90} values at the unattended monitoring position has been applied to the daytime levels to estimate the night-time representative background sound level at the NSRs (the 11 dB difference in modal $L_{A90,15min}$ levels will be used as this results in the lowest, and hence worst case, night-time background sound level).

Based on the information, the representative background sound levels to be used in the impact assessment are as follows:

- Daytime: 58 dB $L_{A90,T}$
- Night-time: 47 dB $L_{A90,T}$

[1] Daytime is assumed as 07:00 to 23:00 hrs and night-time as 23:00 to 07:00 hrs as described in BS 4142.
[2] There we no suitable safe and secure measurement locations to establish an unattended monitoring station closer to the NSRs.

4.0 Construction Noise

4.1 Construction Noise Assessment

Examples of possible sources of construction noise and vibration include:

- Increased noise levels on-site due to construction activities, plant and road haulage vehicles; and
- Increased noise levels off-site due to road haulage vehicles.

An assessment of specific construction noise impacts is dependent upon a number of construction design details, and construction programmes that are not available at this stage. The potential impact of any construction activity will be addressed through the preparation of a Construction Environmental Management Plan (CEMP). TRC has provided some guidance on suitable mitigation options to address potential noise impacts, which can be included within the CEMP to ensure that any amenity impacts, arising from the various construction activities, are considered and minimised.

The main contractor will refer to the guidance provided within BS 5228:2009 Code of practice for noise and vibration control on construction and open sites, (Parts 1 and 2), in order to minimise disruption during construction.

On Site Construction

Assumptions have been made in terms of the procedure for development which can be broken down into the following phases:

- Site Preparation (including earthworks);
- Construction; and
- Fit Out.

Construction Traffic

The construction of the Site will generate intermittent increases in HGV movements on the roads in the vicinity of the Site. The type and number of vehicles generated during the construction period will be dependent on the type and intensity of work being undertaken.

The number of construction vehicle movements will vary depending on the stage of construction of the development. Once the development reaches fit-out stage, the number of construction vehicles will be smaller than during the main construction phase and the proportion of HGV's will also be smaller.

Construction Noise Mitigation

Potentially significant impacts during the construction phase are associated with noise generating activities adjacent to potentially sensitive receptors. By employing appropriate site management practices, the potential for adverse noise impacts from construction vehicles and plant during the works will be minimised. A range of measures are suggested, which can form part of a site-specific Construction Environmental Management Plan (CEMP) within which all contractor activities will be undertaken.

Prior to any construction activity on site, a detailed CEMP will be drawn up and agreed with the contractor to set out the appropriate site management practices to be adhered to. The Construction Environmental Management Plan will cover the following matters:

- Methods and materials that should be used to ensure that the generation of noise is minimised;
- The use of prefabricated materials wherever possible;
- Regarding optimum site layout, noise generating activities to be located away from sensitive receptors; and

- Good housekeeping and management, i.e.
  - Review of plant and activities to ensure noise minimisation measures are in place and operating;
  - Public relations, e.g., provision of telephone numbers for complaints, pre-warning of noisy activities, sensitive working hours;
  - Controlling of site traffic and setting up of access routes away from sensitive receptors; and
  - Provision of noise monitoring during activities likely to affect sensitive receptors.

The contractor will be responsible for the execution of the CEMP and will ensure that appropriate personnel understand their responsibilities in terms of the minimisation of noise and the appropriate reporting and dealing with incidents. The contractor will also be responsible for identifying and organising appropriate training.

Mitigation measures may include the following where possible:

- Regular monitoring where the potential for significant noise is identified;
- Where possible, 'silenced' plant and equipment to be used;
- Where vehicles are standing for a significant period of time, engines to be switched off;
- Screening around those parts of the Site at which activities are likely to generate noise;
- Location of noise generating plant at a low level and as distant as possible from sensitive receptor;
- Plant to operate at low speeds, where possible, and incorporate automatic low speed idling;
- Location of site haul roads, entrances and exits to prevent the need for vehicles to reverse and also minimise impacts upon sensitive receptors;
- The inclusion of the traffic route management plan;
- All plant to be properly maintained (greased, blown silencers replaced, saws kept sharpened, teeth set and blades flat, worn bearings replaced, etc.);
- Consideration to be given to temporary screening or enclosures for static noisy plant to reduce noise emissions and plant should be certified to meet any relevant EC Directive standards;
- All contractors to be made familiar with the guidance in BS 5228 (Parts 1 and 2) which should form a pre-requisite of their appointment; and
- Early and good public relations with the adjacent tenants and occupants of buildings will also reduce the likelihood of complaints.

4.2 Construction Noise Residual Impacts

Potential noise impacts during the construction phase are associated with noise generating activities adjacent to sensitive receptors. By employing appropriate site management practices, including limiting working hours, the potential for adverse noise impacts from construction vehicles and plant during the construction (which is temporary in nature) can be suitably controlled, as has been demonstrated on numerous similar sites, and therefore significant adverse impacts can be avoided.

5.0 Operational Noise

As required by the Manchester City Council technical guidance, the potential noise impact of the operation of the proposed development has been assessed based on the guidance in BS 4142:2014+A1:2019.

There are three main sources of commercial / industrial noise likely to be associated with the proposed development, as follows:

- Operational traffic noise - i.e., vehicle movements and operations on site, in particular HGV movements and reversing alarms.
- Fixed plant noise - i.e., noise from any fixed mechanical or industrial plant on site.
- Noise from deliveries (e.g. noise from unloading).

Noise from deliveries and unloading is considered unlikely to result in adverse impacts at the nearest noise sensitive receptors, due to the following reasons:

- The significant distance between the unloading areas (i.e., inner area of the site) and the nearest noise sensitive receptors (approx. 120m).
- The site arrangement means that all deliveries / unloading will take place in area of the site where the proposed buildings will provide significant screening to nearby receptors.
- The layout of the site is such that all vehicles can reverse into loading bays and unload directly into buildings, meaning there is unlikely to be significant externally generated noise.
- All deliveries / loading / unloading will be undertaken in accordance with a delivery noise management plan and well managed delivery activities are unlikely to generate significant noise levels outside the site boundary.

Therefore, noise from deliveries / unloading has not been considered further in this report. However, noise from HGV movements (including reversing alarms) and fixed plant and equipment will be assessed.

Noise from HGV movements on site will be predicted and assessed at nearby noise sensitive receptors. However, at this stage of the development there is no detailed information available on the fixed plant and equipment that will be included in the development. Therefore, this element of the assessment will be dealt with by identifying appropriate noise emissions limits based on local and national planning policy and guidance.

5.1 Operational Noise Prediction - On-Site HGV Movements

In order to facilitate the assessment of operational HGV noise, a 3-D noise model has been developed using CadnaA noise modelling software. This model has been used to predict the specific sound level from the proposed development at the nearest noise sensitive receptors.

Modelling Assumptions and Inputs

The general horizontal plan information of the area surrounding and including the proposed development site was imported from Google Earth, Open Street Map and Defra LIDAR Data. Building height information was based on proposed building heights and site observation of existing buildings.

The following parameters and assumptions were used when developing the noise model:

- Default ground absorption, G=0 hard ground to all area;
- Two orders of reflection;
- Buildings are reflecting (smooth, non-structured façade);
- HGV movements represented by line sources with sound power level (SWL) calculated based on the BS 5228-1:2009+A1:2014 'haul road' methodology and SWL data from the same document.
- Reversing alarms represented by points sources with a SWL of 100 dB

The project transport consultant has provided information on HGV movements likely to be generated by the proposed development.

The traffic data shows that the majority of HGV movements likely to be generated by the development will happen during daytime hours (07:00 to 23:00) and there are likely to be 2 HGVs arriving per hour to the site during daytime hours.

The traffic data shows that there are no HGV movements expected after 23:00 hours, but there could be up to 1 HGV movement between 06:00 and 07:00 hours. This is the night-time period in the context of a BS 4142 assessment. Therefore, the following vehicle movement assumptions have been used in the noise model:

- Daytime Scenario - 2 HGV movements over an hour assessment period, reversing alarms operational for 30 seconds per vehicle.
- Night-time Scenario - 1 HGV over a 15-minute assessment period, reversing alarm operational for 30 seconds per vehicle.

Modelling Results

The results of the noise modelling (and therefore the predicted 'specific sound levels') are presented in **Table 7** below. Noise mapping showing the results are presented in **Figure 4** and **Figure 5**, for day and night-time operations respectively.

Table 7 - Predicted Specific Noise Levels

Location	Daytime Specific Sound Level, dB $L_{Aeq,1hr}$	Night-time Specific Sound Level, dB $L_{Aeq,15min}$
NSR1 - Dwellings on south side of A662 to west of Crabtree Lane	33 dB	36[3] dB
NSR2 - Dwellings on north side of A662 opposite Crabtree Lane	33 dB	36 dB

5.2 Operational Noise Prediction - On-Site HGV Movements

Based on the results of prediction exercise above, a noise impact assessment in line with the guidance in BS 4142:2014+A1:2019 (referred to as BS 4142 hereafter) has been undertaken.

In order to carry out this assessment, it is necessary to apply character correction, where appropriate, to the predicted specific sound levels to arrive at a rating level.

Noise from HGV movements on site is unlikely to draw specific attention as it is in character with the existing residual noise environment at the NSRs.

However, the sound of tonal reversing alarms is by its very nature tonal and intermittent. However, the need to add a correction depends on how perceptible / distinctive the alarms are at the NSR against the residual noise climate. Residual noise levels are considered to be relatively high at the NSRs (69 - 72 dB $L_{Aeq,15mins}$ during the daytime). It is therefore considered unlikely that the reversing alarms would be readily distinguishable above residual sound levels. However, to present a worst case assessment a 2 dB feature correction for just perceptible tonality has been applied to the specific sound level.

Table 8 summarises the findings of a noise impact assessment in accordance with BS 4142

Table 8 - BS 4142 Impact Assessment

Assessment Period	Specific Sound Level at NSRs, dB $L_{Aeq,T}$	Character Correction	Rating Level, dB $L_{Ar,Tr}$	Representative Background Sound Level, dB $L_{A90,T}$	Rating Level Minus Background Sound Level
Daytime	33	2	35	58	- 23
Night-time	36	2	38	47	- 9

[3] Even though there are more HGV movements during the daytime period, the night-time specific level is higher. This is because the night-time assessment period is 15 minutes and the daytime assessment period is 1 hour. Therefore, the daytime noise levels are reduced as they are 'spread' over a longer time period.

The findings of the numerical BS 4142 assessment indicate that adverse impacts are unlikely and that the overall level of impact is likely to be low.

In addition, the '5 dB below background' criteria of the MCC has also been met.

When undertaking a BS 4142 assessment it is also necessary to consider the context in which the specific sound level occurs.
One item to note is that the specific noise levels are low in absolute terms and even with windows open, noise levels inside receptors would be significantly below desirable internal noise levels criteria.

In addition, the nature of the sound generated by the proposed development is very similar to the existing residual noise climate at the NSRs, that is dominated by road traffic and includes a number of existing commercial / industrial noise sources.

These two points could potentially reduce the level of impact of the proposed development at the nearby noise sensitive receptors. However, as the numerical assessment is already significantly below background and has found adverse impacts are unlikely to occur, it is not considered necessary to alter the findings of the initial, numerical assessment.

5.3 Noise from Fixed Plant and Equipment

The location and nature of new external fixed plant / equipment that will form part of the development is not yet fully defined.

Without details of the proposed new plant / equipment it is not possible to carry out a detailed noise impact assessment for the site. Therefore, noise emission limits will be proposed for the development based on the results of the background sound survey, MCC noise guidance and guidance in BS 4142:2014+A1:2019 (BS 4142).

Noise emission limits have been based on achieving the '5 dB below background'[4] requirements outlined in the MCC Planning and Noise Technical Guidance Document (described in Section 2 of this report).

All external noise generating plant and equipment should be designed (i.e., specified, located and, where necessary, attenuated) so that the cumulative free-field rating level (defined in accordance with BS 4142) does not exceed the following vales at the nearest sensitive building facades:

Table 9 - Noise Emission Limits

Assessment Period	Representative Background Sound Level, dB $L_{A90,T}$	Plant Noise Emission Limit (rating level ref. BS 4142), dB $L_{Ar,Tr}$
Daytime (07:00 to 23:00 hrs)	58	53
Night-time (23:00 to 07:00 hrs)	47	42

By achieving these limits, adverse noise impacts should be avoided. If required, these noise limits could be secured through the use of appropriately worded planning conditions.

Due to the relatively high residual / background sound environment and the distance / screening between the site and the nearest receptors, it should be relatively straight forward to achieve the identified limits with appropriate design.

[4] Rating levels 4 dB above background would still result in a BS 4142 conclusion that adverse impacts are unlikely. Therefore, the proposed noise emission limit of 5 dB below background are considered to be relatively onerous / safe.

6.0 Uncertainty

There are a number of areas of uncertainty associated with this assessment, the key areas of uncertainty are likely to be:

- Measurement uncertainty
- Method of selection of representative background sound levels
- Prediction and assessment uncertainty

Background sound measurements have been carried out over an approximate 24-hour period. There is some uncertainty associated with the measurements and selection of representative background sound level as the long-term unattended measurements could not be taken in close proximity to the nearest NSRs. It was therefore necessary to rely on shorter term attended measurements and a correction based on differences between day and night-time at the longer-term monitoring position to identify representative background sound levels.

There is some uncertainty associated with all prediction methodologies including those used in this assessment. However, we consider that reasonable assumptions have been made during the prediction and assessment process and have followed good practice guidance wherever possible.

As in all noise assessments, there is some uncertainty associated with the process of identifying noise impacts. However, due to the use of good practice assessment methodology and the significant margin by which rating levels are below background sound levels, it is considered this uncertainty is unlikely to affect the findings of this assessment.

7.0 Conclusions and Recommendations

TRC Companies Ltd (TRC) was commissioned by Chancerygate Manchester Limited to undertake a noise survey and impact assessment for the proposed industrial development at the Site.

The purpose of this report is to form part of the Client's planning application for said development.

The assessment has found that the requirements for commercial / industrial noise in Manchester City Councils 'Noise and Planning Technical Guidance' document are likely to be met.

In addition, no significant adverse noise impacts are predicted as a result of the construction or operation of the development, either during daytime or night-time periods.

At this stage of the development, details of fixed plant and equipment that will form part of the development are not available. Therefore, noise emission limits have been identified based on Manchester City Council's noise requirements. Due to the relatively loud background sound environment and the distance / screening between the development and the nearest receptors, these limits should be relatively straight forward to achieve using appropriate design.

Figures

Figure 1 - Site Location and Surrounding Area

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Figure 2 - Proposed Development Layout

Figure 3 - Noise Monitoring Locations

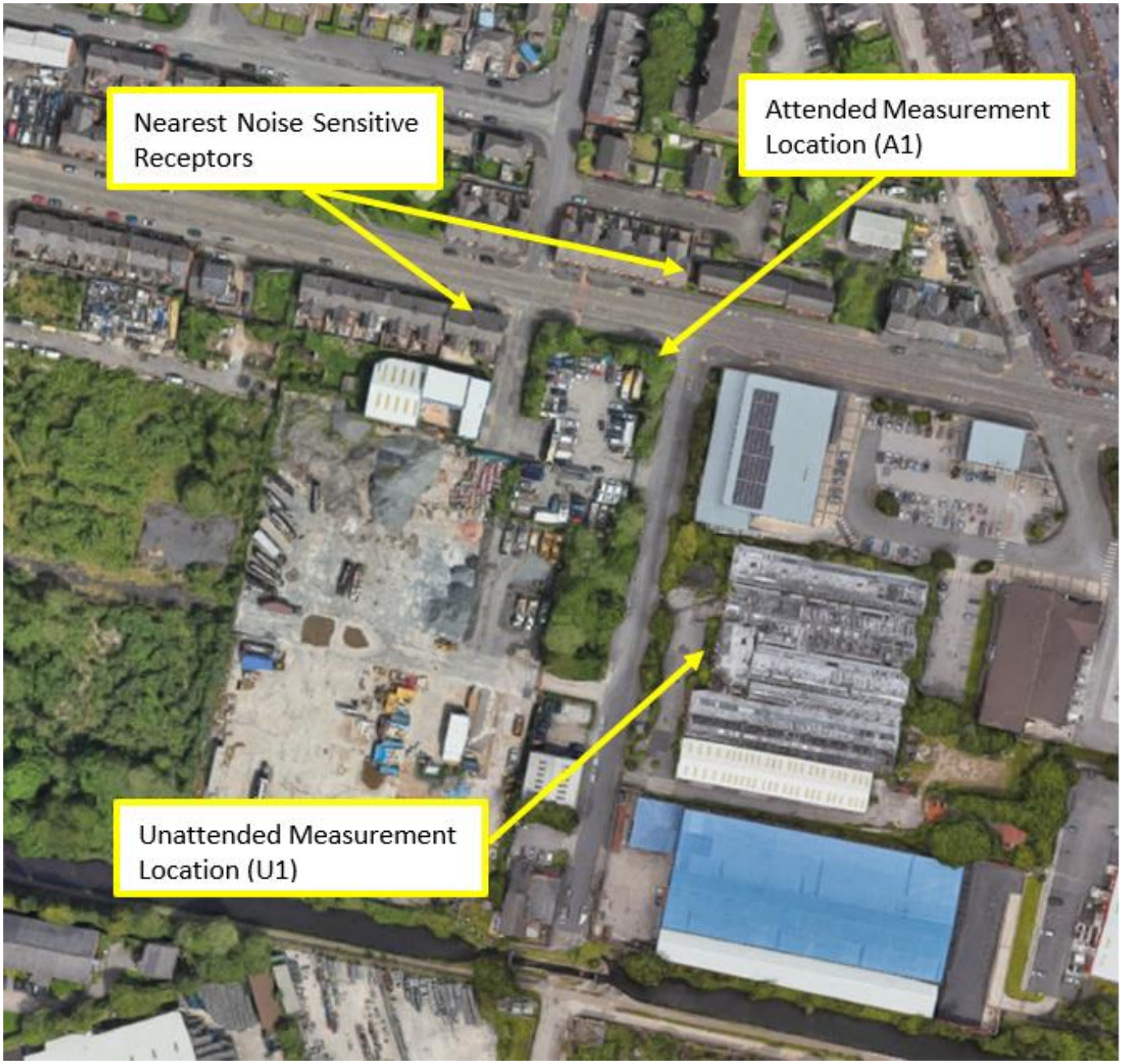


Figure 4 - Daytime Noise Map

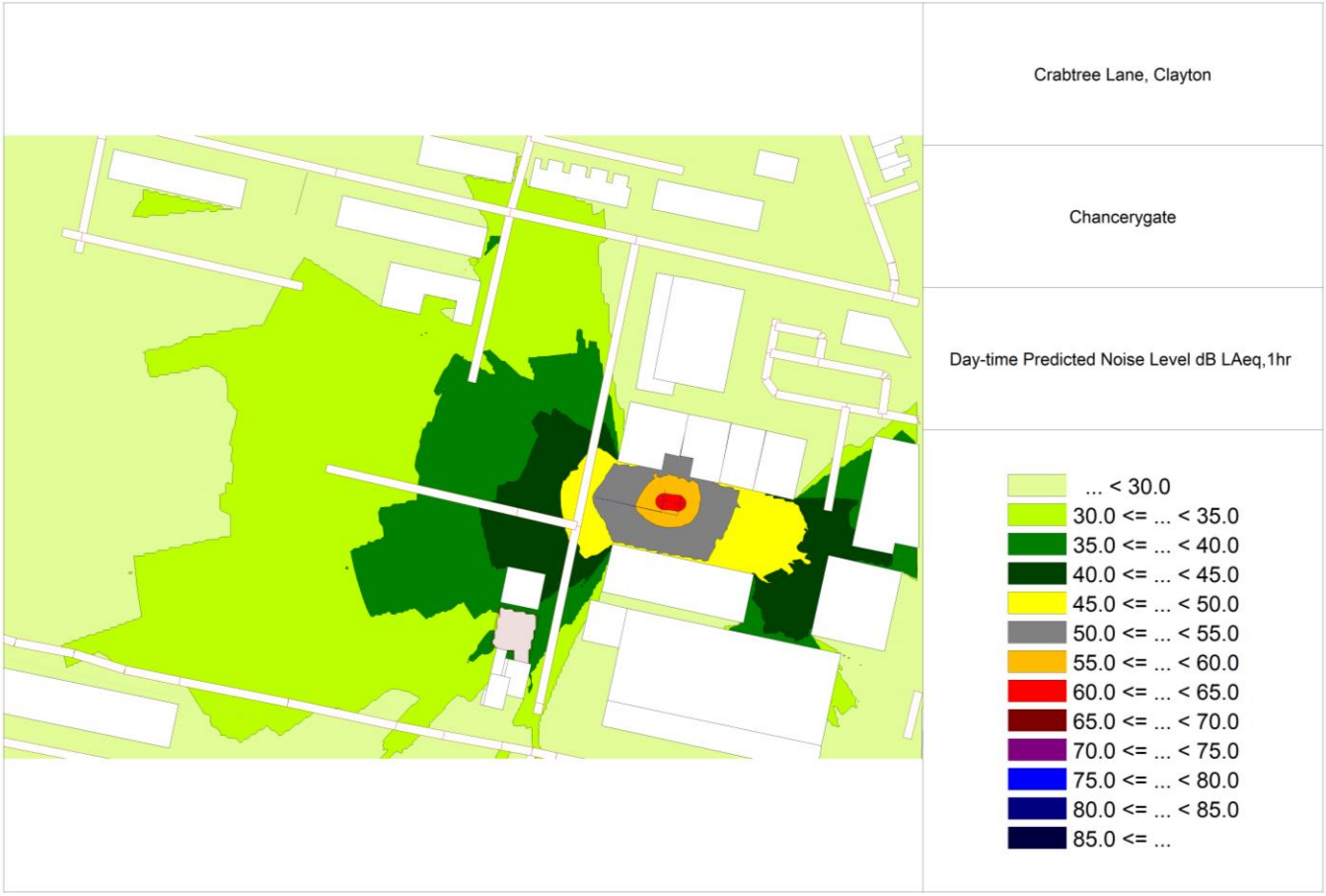
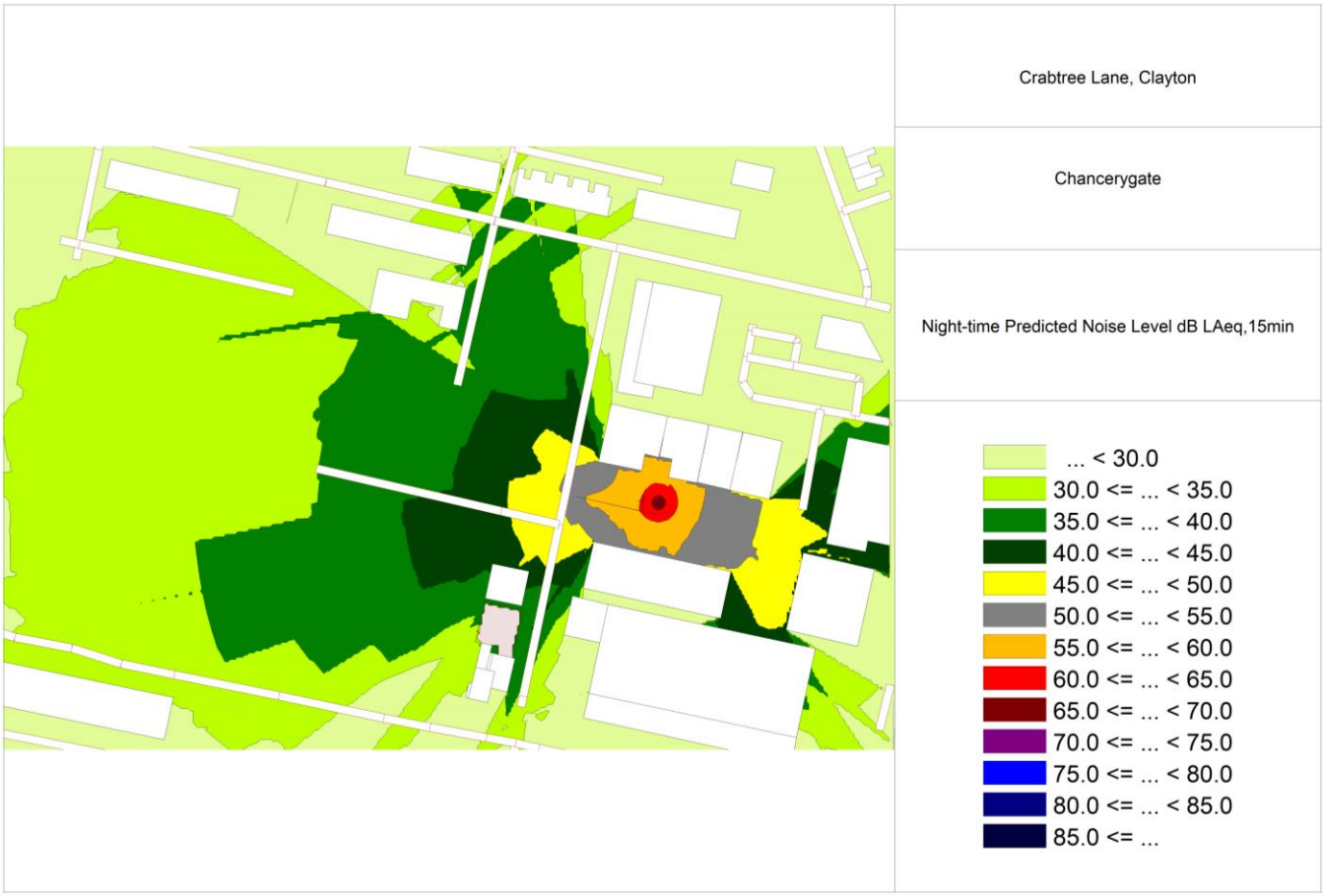


Figure 5 - Night-time Noise Map



Annexes

Annex A - Limitations and Exclusions

Reliance

The recommendations contained in this report represent TRC's professional opinions, based upon the currently available information, and are arrived at in accordance with currently acceptable professional standards. This report is based upon a specific scope of work requested by the Client. The contract between TRC and its Client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of TRC's Client and anyone else specifically identified in writing by TRC as a user of this report. TRC will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, TRC makes no express or implied warranty as to the contents of this report.

Significant Assumptions

The reliability of information provided by others to TRC cannot be guaranteed to be accurate or complete. Performance of this assessment is intended to reduce, but not eliminate, uncertainty regarding environmental conditions associated with the subject site; therefore, the findings and conclusions made in this report should not be construed to warrant or guarantee the subject site, or express or imply, including without limitation, warranties as to its marketability for a particular use. TRC found no reason to question the validity of information received unless explicitly noted elsewhere in this report.

Third Party Information

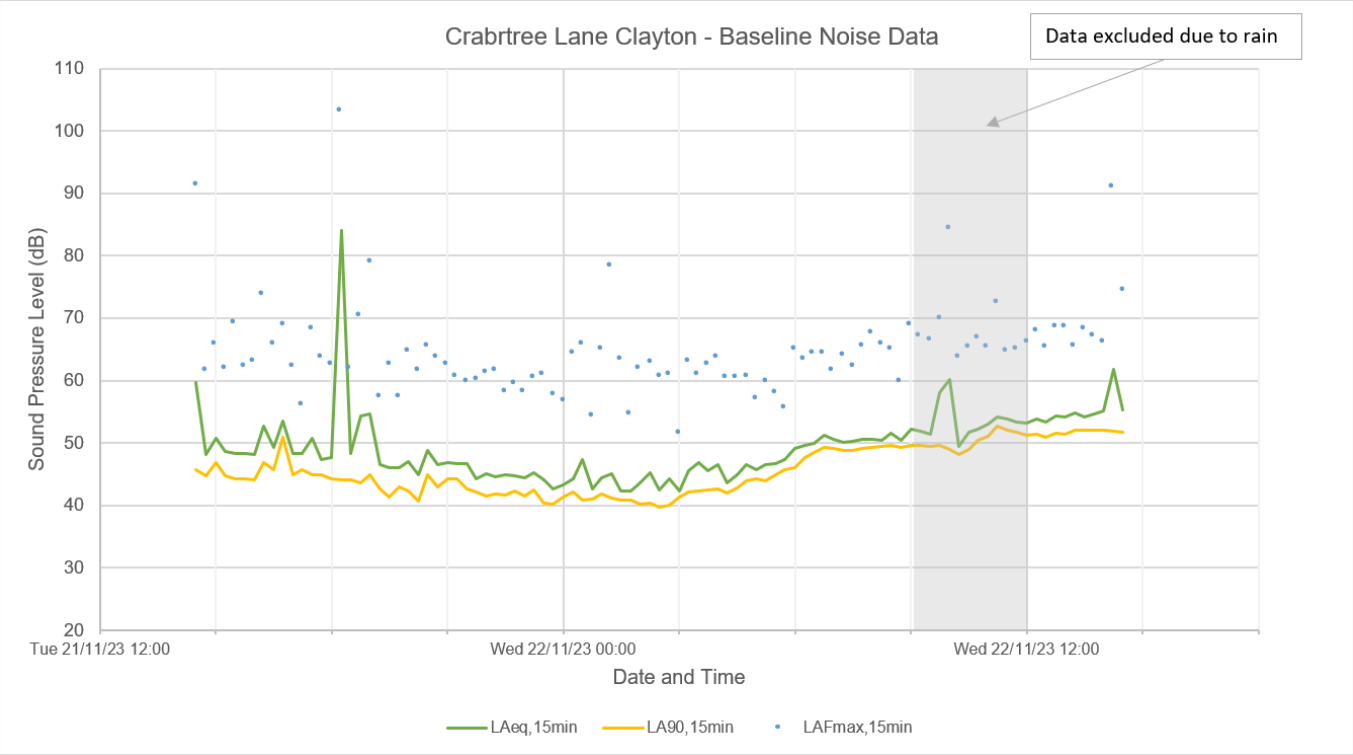
TRC has been provided with information from third parties for information purposes only and without representation or warranty, express or implied as to its accuracy or completeness and without any liability on such third parties part to revise or update the information. Where reliance has been provided by third parties to potential purchasers, this is noted in our report.

In performing the services to which this report relates, TRC has relied upon the information obtained from third parties. TRC makes no representation or warranty, express or implied as to the accuracy or completeness of any statement or advice contained within this report that is based upon the information obtained from third parties and to the fullest extent permissible by law we hereby exclude any and all liability we may have in respect of the same, provided that nothing shall be taken as limiting TRC's liability in respect of personal injury (including death) caused by its negligence.

Interpretation of Findings

TRC's report is based upon the information provided to TRC and TRC's observations made during the subject property reconnaissance. Given the inherent limitations of environmental assessment work, TRC does not guarantee that the subject property is free of additional air pollution sources or considerations, or that latent or undiscovered conditions will not become evident in the future. TRC's report is prepared in accordance with the proposal and the standard terms and conditions agreed between the Client and TRC, and no other warranties, representations, or certifications are made.

Annex B - Unattended Noise Data Time History



Annex C - Raw Data

Date	Start time	$L_{Aeq,15min}$	L_{Amax}	$L_{A90,15min}$
21/11/2023	14:30	59.7	91.3	45.7
	14:45	48.1	61.7	44.8
	15:00	50.7	65.8	46.8
	15:15	48.7	61.9	44.7
	15:30	48.3	69.3	44.3
	15:45	48.4	62.3	44.2
	16:00	48.2	63.2	44.1
	16:15	52.7	73.8	46.9
	16:30	49.3	66	45.8
	16:45	53.6	69	51
	17:00	48.3	62.2	45
	17:15	48.3	56.1	45.8
	17:30	50.7	68.2	45
	17:45	47.3	63.8	45
	18:00	47.7	62.6	44.2
	18:15	84.1	103.1	44.1
	18:30	48.3	61.9	44.1
	18:45	54.3	70.5	43.7
	19:00	54.6	78.9	44.9
	19:15	46.5	57.5	42.7
	19:30	46	62.6	41.4
	19:45	46.1	57.5	43
	20:00	47.1	64.6	42.3
	20:15	45	61.6	40.7
	20:30	48.8	65.6	45
	20:45	46.6	63.8	43
	21:00	46.8	62.6	44.3
	21:15	46.7	60.7	44.2
	21:30	46.7	59.7	42.7
	21:45	44.2	60.2	42.2
	22:00	45.1	61.2	41.6
	22:15	44.6	61.5	41.9
	22:30	45	58.4	41.7
	22:45	44.8	59.4	42.3
	23:00	44.5	58.4	41.6
	23:15	45.2	60.3	42.5
	23:30	44.1	61.1	40.4
	23:45	42.6	57.7	40.3
22/11/2023	0:00	43.3	56.8	41.3
	0:15	44.3	64.4	42.2
	0:30	47.4	65.9	40.8
	0:45	42.6	54.3	41.1
	1:00	44.5	65.1	41.8
	1:15	45.1	78.2	41.2
	1:30	42.4	63.3	40.8
	1:45	42.3	54.6	40.8
	2:00	43.7	61.8	40.2
	2:15	45.2	62.9	40.4
	2:30	42.5	60.7	39.8
	2:45	44.3	60.9	40
	3:00	42.4	51.5	41.3
	3:15	45.5	63.1	42.1
	3:30	46.8	61	42.4
	3:45	45.5	62.6	42.5
	4:00	46.5	63.8	42.7
	4:15	43.7	60.3	42

Date	Start time	$L_{Aeq,15min}$	L_{Amax}	$L_{A90,15min}$
22/11/2023	4:30	44.9	60.5	42.9
	4:45	46.6	60.7	43.9
	5:00	45.7	57.2	44.2
	5:15	46.6	59.8	44
	5:30	46.7	58	45
	5:45	47.3	55.7	45.8
	6:00	49.1	65.1	46.1
	6:15	49.7	63.6	47.7
	6:30	50	64.3	48.5
	6:45	51.2	64.4	49.3
	7:00	50.6	61.6	49.1
	7:15	50.2	64	48.9
	7:30	50.3	62.1	48.9
	7:45	50.6	65.7	49.2
	8:00	50.6	67.8	49.3
	8:15	50.5	66	49.4
	8:30	51.6	65.1	49.6
	8:45	50.5	59.9	49.3
	9:00	52.3	68.8	49.6
	9:15	51.9	67.1	49.7
	9:30	51.5	66.4	49.4
	9:45	58.1	69.9	49.6
	10:00	60.2	84.5	49
	10:15	49.5	63.8	48.1
	10:30	51.8	65.3	49
	10:45	52.3	66.7	50.5
	11:00	53.1	65.4	51.1
	11:15	54.2	72.5	52.7
	11:30	53.8	64.8	52.1
	11:45	53.4	64.9	51.7
	12:00	53.2	66.1	51.2
	12:15	53.8	68.1	51.4
	12:30	53.4	65.4	50.9
	12:45	54.3	68.7	51.6
	13:00	54.2	68.7	51.5
	13:15	54.9	65.5	52
	13:30	54.2	68.3	52.1
	13:45	54.6	67.1	52
	14:00	55.1	66.3	52
	14:15	61.8	91.2	51.9
Data in red excluded due to precipitation (drizzle)				

Annex D - Acoustic Terminology

The acoustic terms used in this report are explained below:

Unit /Term	Definition
Decibel (dB)	Decibels (dB) are the units used to measure / quantify sound level. A decibel is 10 times the logarithmic ratio of a sound level to a standard reference level.
dB(A)	The human ear is more sensitive to mid-frequency sound than to high and low frequencies. To take account of this when measuring / decribing noise the 'A' weighting scale is used so that the measured noise corresponds roughly to the overall level of noise that is discerned by the average human. The measured or calculated 'A' weighted noise level is known as the dB(A) level. As decibels are logarithmic, noise levels in terms of dB(A) do not have a linear relationship to each other. For similar noises, a change in noise level of 10dB(A) represents a doubling or halving of subjective loudness. A change of 3dB(A) is often described just perceptible.
L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time, hence L_{90} is the noise level that is exceed for 90% of the time and is often used to describe the 'background' noise.
L_{eq}	L_{eq} is defined as a notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (e.g. 1 minute or 1 hour). The use of digital technology in sound level meters now makes the measurement of Leq very straightforward and it is often described as a type of average.
L_{max}	L_{max} is the maximum sound pressure level recorded over the period stated. Lmax is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.