



Acoustic Survey and Assessment for Proposed Residential Development at, Land at 9 Ansleigh Avenue, Manchester, M8 5SU.

Prepared for:

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1. Introduction

- 1.1. Martin Environmental Solutions has been commissioned to undertake an acoustic assessment to support the discharge of a planning condition for a residential development on land at 9 Ansleigh Avenue, Manchester, M8 5SU, planning reference 130768/FO/2021.

Site Location and Context

- 1.2. The development site is situated to the end of Ansleigh Avenue, A quiet residential cul-de-sac surrounded by residential dwellings to the east, south and west. To the northeast is a building suppliers centre. A tramline is located 60m to the west beyond existing housing.

- 1.3. An aerial Photograph is enclosed in Figure 1.

- 1.4. The condition attached to the planning permission reads

“4) a) Before the development commences a scheme for acoustically insulating the proposed residential accommodation against noise from the nearby tram line shall be submitted to and approved in writing by the City Council as local planning authority.

There may be other actual or potential sources of noise which require consideration on or near the site, including any local commercial/industrial premises. The approved noise insulation scheme shall be completed before any of the dwelling units are occupied.

Noise survey data must include measurements taken during a rush-hour period and night time to determine the appropriate sound insulation measures necessary. The following noise criteria will be required to be achieved:

Bedrooms (night time - 23.00 - 07.00) 30 dB LAeq (individual noise events shall not exceed 45 dB L_{Amax,F} by more than 15 times)

Living Rooms (daytime - 07.00 - 23.00) 35 dB LAeq

Gardens and terraces (daytime) 55 dB LAeq



b) Prior to first occupation of the residential unit, a verification report will be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that the internal noise criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the internal noise criteria.

Due to the proximity of the development to the tram line, it will be necessary for vibration criteria to apply which can be found in BS 6472: 2008 "Guide to evaluation of human exposure to vibration in buildings". Groundborne noise/re-radiated noise must/shall also be factored into the assessment and design.

Reason - To protect the amenity of the occupants of the premises once the development hereby approved is occupied, pursuant to policies SP1, H1 and DM1 of the Core Strategy."

- 1.5. A discussion with the planning officer has confirmed that no vibration monitoring is required for the site and an e-mail confirming this is included within Appendix A.



2. Policy and Guidance

- 2.1. The impact of noise can be a material consideration in the determination of planning applications. The planning system has the task of guiding development to the most appropriate locations. It is recognised that on occasions it will be difficult to reconcile some land uses, such as housing, hospitals, or schools, with other activities that generate high levels of noise. However, the planning system is tasked to ensure that, wherever practicable, noise-sensitive developments are separated from major sources of noise (such as road, rail and air transport and certain types of industrial development).
- 2.2. The Government's publication of the National Planning Policy Framework (NPPF), updated in February 2019, states that planning policies and decisions should prevent new and existing development from contributing to or being put at unacceptable risk from, of being adversely affected by unacceptable levels of noise pollution.
- 2.3. The Government have also issued the Noise Policy Statement for England (NPSE). The NPSE clarifies the Government's underlying principles and aims in relation to noise and sets a vision to promote good health and a good quality of life through the effective management of noise while having regard to the Government's sustainable development strategy. The NPSE aims to mitigate and minimise adverse impacts on health and quality of life through the effective management and control of noise.
- 2.4. The NPSE introduces the following terms, although no sound levels are given to represent these, many authorities have identified the sound level criteria in line with the World Health Organisation, BS8233:2014 and BS4142: 2014 levels. The terms introduced by the NPSE are:
- NOEL – No Observed Effect Level (<30dB(A) inside <50dB(A) outside, 10dB below background)
- LOAEL – Lowest Observed Adverse Effect Level (30-35dB(A) inside 50-55dB(A) outside, background to +5dB)
- SOAEL – Significant Observed Adverse Effect Level (>35dB(A) inside, >55dB(A) outside, >+10dB above background)
- 2.5. The sound levels within the brackets of the previous paragraph are those determined as appropriate levels to indicate the relevant effect levels represented by the NPSE.



- 2.6. Other commonly used examples of standards utilised by Local Planning authorities for the consideration of noise impacts include comparison of the likely noise levels to be experienced at a development, with levels that have been recommended by the World Health Organisation (WHO) as Guidelines for the prevention of Community Noise Annoyance and within BS8233: 2014.
- 2.7. The WHO recommended noise levels for outdoor amenity areas (gardens) that should not be exceeded are 55dB(A) $L_{Aeq,16hr}$ in order to avoid 'Serious Community Annoyance' or 50dB(A) $L_{Aeq,16hr}$ to avoid 'Moderate Community Annoyance' during the day. For indoor levels WHO set 35dB(A) $L_{Aeq,16hr}$ during the day to prevent Moderate Annoyance and 30 dB(A) $L_{Aeq,8hr}$ at night to prevent sleep disturbance.
- 2.8. The WHO guidance also recommends that maximum sound levels at night should not regularly exceed 45dB(A) within bedrooms to prevent sleep disturbance. Regularly is considered to be more than 10 times during any 8-hour night-time period.
- 2.9. BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings' also specifies desirable noise levels to be achieved inside dwellings.
- 2.10. BS 8233:2014 'Sound insulation and noise reduction for buildings – Code of Practice' also specifies desirable noise levels to be achieved inside dwellings. BS 8233 presents two levels, the first between the hours of 07:00 – 23:00 and the second between 23:00 -07:00.
- 2.11. The daytime period suggests internal noise levels of 35dB $L_{Aeq,16hr}$, for resting in living rooms and bedrooms while for night-time a level of 30dB $L_{Aeq,8hr}$ is recommended. Criteria for external areas mirrors that within the WHO guidance.
- 2.12. The above guidance also matches the requirements of the planning condition imposed by Manchester Council.
- 2.13. In addition, the 'ProPG Planning & Noise, Professional Practice Guidance on Planning & Noise, New Residential Development' provides a 4-staged approach to undertaking a risk assessment in relation to anticipated sound levels at new residential

development and the provision of mitigation measures. The guidance is principally aimed at sites exposed predominantly to noise from transportation sources.

- 2.14. The first stage consists of an initial noise risk assessment, based on indicative day and night-time noise levels. Simply put, the higher the ambient noise in an area the greater the impact. The levels given are shown below although it should be noted that these are in excess of both the Lancashire guidance, WHO and BS 8233: 2014.

Noise Risk Category*	Potential Effect if Unmitigated	Pre-Planning Application Guidance
0 – Negligible $L_{Aeq,16hr} < 50dB$ $L_{Aeq,8hr} < 40dB$	May be noticeable but no adverse effect on health and quality of life	In this category the development is likely to be acceptable from a noise perspective, nevertheless a good acoustic design process is encouraged to improve the existing environment and/or safeguard against possible future deterioration and to protect any designated tranquil areas. A noise assessment may be requested to demonstrate no adverse impact from noise. Application need not normally be delayed on noise grounds.
1 – Low $L_{Aeq,16hr} 50-63dB$ $L_{Aeq,8hr} 40-55dB$	Adverse effect on health and quality of life	In this category the development may be refused unless a good acoustic design process is followed and is demonstrated via a Level 1 Acoustic Design Statement which confirms how the adverse impacts of noise on the new development will be mitigated and minimised and that a significant adverse impact will not arise in the finished development. Planning conditions and other measures to control noise may be required.
2 – Medium $L_{Aeq,16hr} 63-69dB$ $L_{Aeq,8hr} 55-60dB$ $L_{AFmax} > 80dB^{**}$	Significant adverse effect on health and quality of life	In this category the development is likely to be refused unless good acoustic design process is followed and is demonstrated via a Level 2 Acoustic Design Statement which confirms how the adverse impacts of noise on the new development will be mitigated and minimised, and clearly demonstrates that a significant adverse noise impact will not arise in the finished development. Planning conditions and other measures to control noise will normally be required.
3 – High $L_{Aeq,16hr} > 69dB$ $L_{Aeq,8hr} > 60dB$ $L_{AFmax} > 80dB^{**}$	Unacceptable adverse effect of health and quality of life	In this category the development is very likely to be refused on noise grounds, even if a good acoustic design process is followed and is demonstrated via a Level 2 Acoustic Design Statement. Applicants are advised to seek expert advice on possible mitigation measures. Advice on the circumstances when the refusal of a new housing on noise grounds should normally be anticipated is included in the ProPG.

- 2.15. Stage 2, consists of a full assessment of the prevailing ambient noise and requires 4 elements to be considered:

- I. Element 1 – Good Acoustic Design
- II. Element 2 – Internal Noise Level Guidelines
- III. Element 3 – External Amenity Area Noise Assessment
- IV. Element 4 – Assessment of Other Relevant Issues



- 2.16. A good acoustic design is implicit in meeting the requirements of the NPPF and can help to resolve many potential acoustic issues.
- 2.17. Details of the criteria considered suitable are provided above for both internal and external sound levels. Element 4 includes such issues as local and national policy, likely occupants, wider planning objectives.



3. The Assessment

- 3.1 In order to obtain representative sound levels for the area on site monitoring was undertaken over the 28-29th November 2021.
- 3.2 The sound level meter, a Cirrus Optimus Green meter, was positioned to the centre north of the site. The meter was calibrated before and after the measurement period with no significant variation. Details of the meter and calibration results are shown in Appendix C, full calibration details are available on request.
- 3.3 The weather at the time was generally dry with no wind, a couple of short showers were identified, although these would only result in slightly higher sound levels are not considered to have significantly impacted the measurements.
- 3.4 The full results are provided in Appendix B with a summary in the table below.

Start Time	End Time	Duration	L _{Aeq}	L _{A90}	L _{AMax}
28/11/2021 17:00	29/11/2021 23:00	05:59:59	48.6	40.1	85.6
29/11/2021 23:00	29/11/2021 07:00	08:00:00	42.8	35.2	73.7
29/11/2021 07:00	29/11/2021 19:00	12:00:01	46.6	43.1	75.8

- 3.5 Background sound levels were dominated by wildlife, bird song, and distant traffic. Passing trams on the nearby line were identified as achieving a maximum of 52dB(A), although following a review of the tram timetable not all trips could be identified.
- 3.6 The adjacent building yard was also fairly quiet with the occasional forklift truck movement, these peaked at around 53dB(A) but were generally much quieter. The only sustained elevated sound level identified was from a nearby car engine which was left running after the owner had some trouble starting it. This lasted for around 7 minutes at 09:12 in the morning.
- 3.7 As can be seen from the monitoring results the external sound level on site is below the low recommended value of 50dB(A) and well below the Council's requirement of 55dB(A). The only identified sound levels exceeding the 55dB(A) requirement were bird song, a dog, the neighbour's car and to planes.



Internal Sound levels

- 3.8 Given a 12dB attenuation¹ for an open window the sound levels to be experienced by the future occupants are slightly above the criteria set by the council. Achieving 36.6dB(A) daytime, 30.8dB(A) night with maximum not regularly exceeded at 38.3dB(A). As such no further action is required. However, it is acknowledged that the council prefer a **12 dB reduction** to be considered. This would result in day and night-time average sound levels just exceeding the recommended criterion levels.
- 3.9 A review of the night-time maximum sound levels has identified a night-time maximum not regularly exceeded (10 times) of 50.3dB(A), this excludes a short period of fireworks being let off from 00:07-00:09. Through an open window this would result in maximum sound levels of 38.3dB(A).
- 3.10 Further mitigation measures are therefore required and it is advised that standard double-glazing units are fitted to the property. A standard 6/12/6 double glazing unit will provide a sound reduction, $R_w(C;C_{tr})$, of 33(-1;-3) when closed. This would ensure that passing trams and occasional forklift truck movements would not be heard within the property at a level to cause annoyance.
- 3.11 In order to be able to keep windows closed additional ventilation provision must be made for the property. As such it is recommended that a Positive Input Ventilation (PIV) System ventilation system is used incorporating into the design of the building. In addition to acoustic trickle ventilators for all windows to habitable rooms to the proposed properties.
- 3.12 These PIV systems draw air into the building, often via the loft space where the air is drier and warmer than outside and forces it through the house via ventilation ducts into communal areas. This in turn provides a slight positive pressure within the building and forces air out through gaps, trickle ventilation slots etc.
- 3.13 This system has additional benefits of being quiet, reducing moisture in the property maintaining a movement of fresh air without draughts and in this case when suitably located, ensuring harmful polluted air from the front of the property does not enter the building and thereby adversely affect the occupants.

¹ BS8233: 2014; Guidance on sound insulation and noise reduction for buildings



- 3.14 PIV's are also low maintenance devices and cost effective to run with most systems only costing a couple of pence per day to run.
- 3.15 The ventilators must achieve a similar or better performance to the windows when open and a number of suitable models are available from suppliers including the Greenwood DN Vent providing 34dB (C_{tr}) attenuation or the Titon, Trimvent Select S13 Ventilator providing 33dB (C_{tr}) attenuation. Other models and manufacturers are available.
- 3.16 Care must be taken to ensure that windows are well fitted and gaps between the window frame and the brick work are minimised. Where gaps do occur, these should be filled with a suitable acoustic material, not expandable foam. The window frame should be sealed across the full depth of the frame and not just around the edges. This will ensure that sound does not 'leak' around the edge of the frame.
- 3.17 A consideration of 'double-trams' has also been requested it is presumed this relates to double length trams and has been suggested that these were in operation at the time. However, a doubling of the tram length is likely to result in a double of the sound emissions and therefore an increase of 3dB above the monitored results.
- 3.18 As a worst case this would increase the sound levels during the day and night to 51.6dB and 45.8dB although in reality with other sound sources in the area and given the short duration of tram passes this increase is unlikely over the averaging periods used. It would also increase the maximum sound levels by 3dB to 53.3dB(A) if these were attributed to tram movements.
- 3.19 A review of the audio over the monitoring period has identified these peaks during the night-time period as sirens, planes with tram noise at 48.9dB(A), therefore a level of 51.9dB(A) for a double tram.
- 3.20 Maximum sound levels through the above glazing would therefore be 21.9dB(A).
- 3.21 Comments have also been received over the potential that the adjacent building yard was not operating at a full capacity at the time of the monitoring due to Covid. A discussion has been held with the building yard who have confirmed normal operations at the time of the monitoring. The buildings to the building yard also act as a barrier to the yard activities which are concentrated to the northern end of the yard.



- 3.22 However, to ensure that no adverse impact is experienced it is recommended that a 2m high close boarded fence with a minimum density of 12Kg.m² be erected along the boundary with the building yard.
- 3.23 Given the lower level of the building yard in respect to the development site this would result in a 3m high barrier, to that side. This would provide a reduction of 12dB for anyone utilising the garden amenity area. Assuming a doubling of activity at the builders yard an increase of 3dB would be experienced, thus the average sound levels would not increase above recommended 50dB(A) with the fencing in place.

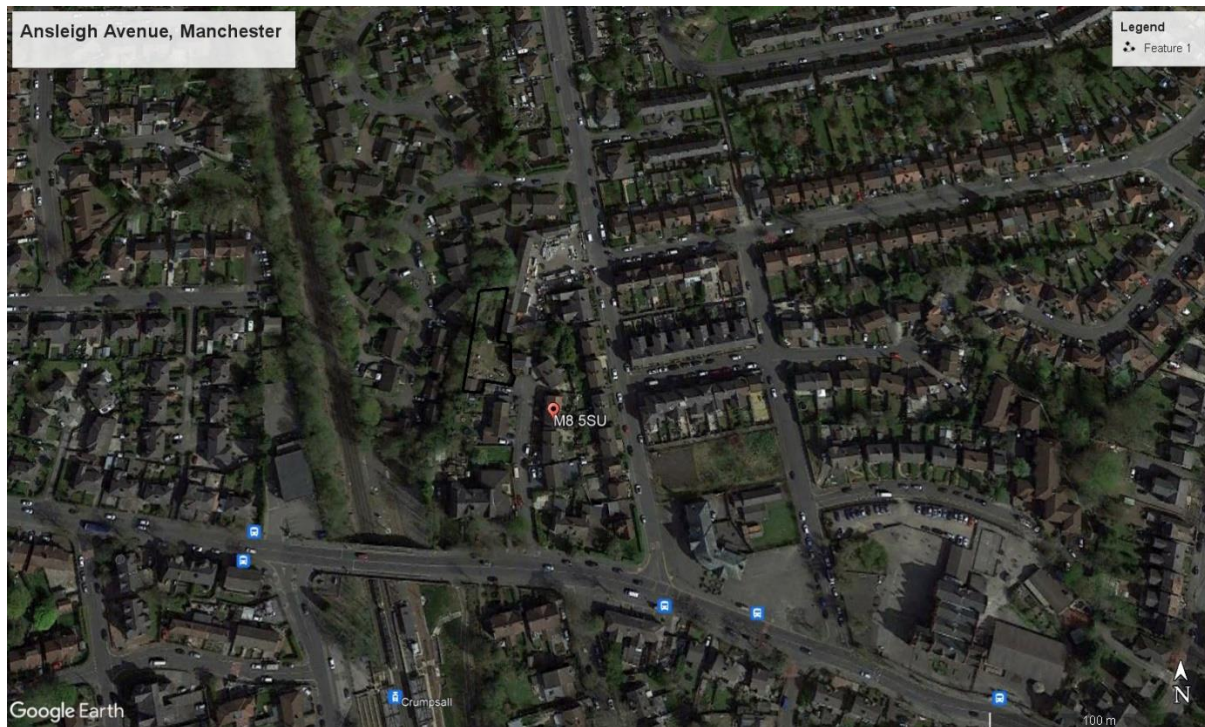


4 Conclusion

- 4.1 On-site monitoring has identified existing background sound levels in the area will slightly exceed the recommended criterion assuming a 12 dB reduction for an open window.
- 4.2 Mitigation measures in the form of standard 6/12/6 double-glazing units with trickle window vents to ensure a suitable level of ventilation is achieved, are therefore recommended.
- 4.3 In addition, concern has been raised over the activities at the nearby builders merchants, while investigations have indicated a normal level of activity it is recommended that a 2m close boarded fence be erected along the boundary with the builders yard to ensure no adverse impact will be experienced from any future increase in activity.
- 4.4 The above mitigation measures will ensure that the internal and external sound levels are acceptable, and will comply with the Council's planning condition and will result in a No Observe Effect on the future residents in line with the Noise Policy Statement for England.
- 4.5 As such the development will meet the objectives of the National Planning Policy Framework in ensuring that no significant adverse impact is experienced by the future residents. The development is therefore considered to be acceptable in terms of noise.



Figure 1 – Aerial Photograph





Appendix A – E-mail from Planning Officer

info@m-e-solutions.co.uk

From: Janine Renshaw-Livesey <janine.renshaw-livesey@manchester.gov.uk>
Sent: 26 November 2021 09:23
To: info@m-e-solutions.co.uk
Subject: Re: 130768/FO/2021 - 9 Ansleigh Avenue Manchester

Dear Neil,

Thank you for your email.

I can confirm that from a planning perspective, vibration details are not a material consideration and therefore, would not have to be included within acoustic report.

Best wishes Janine.

From: info@m-e-solutions.co.uk <info@m-e-solutions.co.uk>
Sent: 25 November 2021 15:02
To: Janine Renshaw-Livesey <janine.renshaw-livesey@manchester.gov.uk>
Subject: 130768/FO/2021 - 9 Ansleigh Avenue Manchester

Dear Janine,

Thank you for your time earlier today regarding the above planning application and the conditioned requiring a noise assessment to be undertaken.

I understand from our discussion that you are satisfied that no vibration assessment is required to be undertaken and only a noise assessment is required.

It is the intention to undertake a noise survey on site to establish the prevailing background sound levels. These will be used to assess the impact on the future occupants of the proposed property, in line with levels detailed within the condition and the relevant standard guidance documents. This will enable any mitigation measures to be identified and detailed within the report.

As discussed would you be so kind as to confirm by return that the vibration measurements are not required.

Thank you so much.

Kind regards
Neil

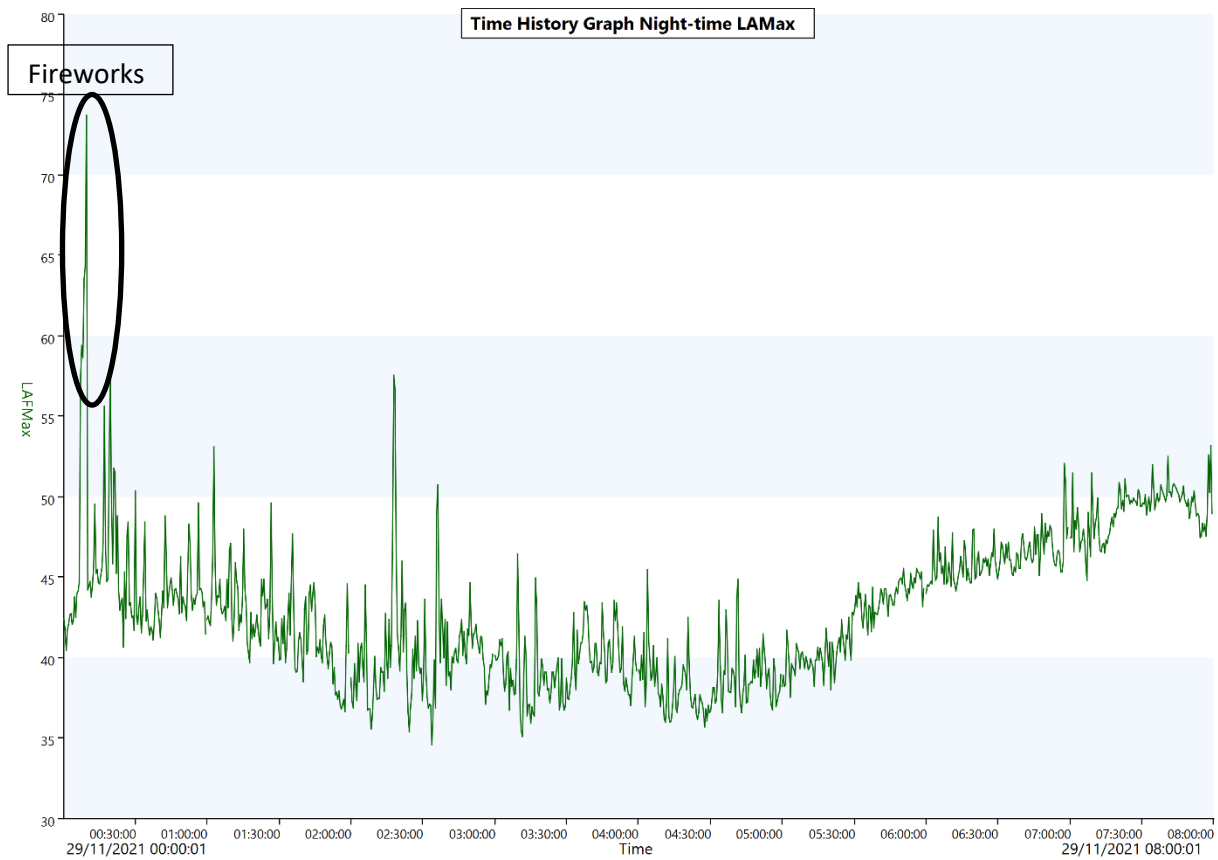
Neil Martin
Martin Environmental Solutions
Tel: 07976884154
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Appendix B – Full Monitoring Results

Time	L _{Aeq} (dB)	L _{AMax} (dB)	L _{A90} (dB)
28/11/2021 17:00	45.4	58.9	42.3
28/11/2021 18:00	44.5	66.6	40.9
28/11/2021 19:00	45.7	69.4	43.2
28/11/2021 20:00	54.8	85.6	40.7
28/11/2021 21:00	42.4	61.2	39.4
28/11/2021 22:00	41.3	52.2	39.1
28/11/2021 23:00	45.0	73.7	39.7
29/11/2021 00:00	39.3	53.1	35.9
29/11/2021 01:00	38.3	57.5	34.2
29/11/2021 02:00	37.1	46.4	34.6
29/11/2021 03:00	36.2	45.5	34.3
29/11/2021 04:00	40.3	45.5	36.5
29/11/2021 05:00	44.3	52.0	42.8
29/11/2021 06:00	47.7	53.2	45.4
29/11/2021 07:00	47.4	75.8	45.6
29/11/2021 08:00	47.1	62.7	45.6
29/11/2021 09:00	48.9	75.3	45.3
29/11/2021 10:00	45.2	62.4	42.3
29/11/2021 11:00	45.6	69.9	43.2
29/11/2021 12:00	45.9	64.1	43.0
29/11/2021 13:00	47.3	66.5	43.5
29/11/2021 14:00	46.7	66.2	44.4
29/11/2021 15:00	45.8	70.6	43.1
29/11/2021 16:00	46.1	67.2	42.6
29/11/2021 17:00	44.9	67.4	41.9
29/11/2021 18:00	46.1	59.9	42.9





Appendix C – Meter and calibration details

Audio Quality	16 bit, 16 kHz
Last Factory Calibration	12/04/2021
Time	28/11/2021 16:24
Level	93.7 dB
Offset	-0.66 dB
Time	29/11/2021 19:20
Level	93.7 dB
Offset	-0.96 dB
Latitude	53° 31' 4.36" N
Longitude	2° 14' 25.43" W
Altitude	0m
Accuracy	Ideal