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EAST HORTON GOLF CLUB
FAIR OAK

CONSTRUCTION NOISE AND VIBRATION ASSESSMENT

Technical Report: R10589-1 Rev 1

Date: 20th February 2025

For: East Horton Golf Club
C/o Exdell Ltd
Briarwood
Green Lane
Southampton
SO31 7DF

24 Acoustics Document Control Sheet

Project Title: East Horton Golf Club - Construction Noise and Vibration Assessment

Report Ref: R10589-1 Rev 1

Date: 20th February 2025

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1.0 INTRODUCTION

1.1 24 Acoustics Ltd has been instructed by East Horton Golf Club to undertake an assessment of the potential noise and vibration impact from construction works at East Horton Golf Club, Fair Oak. Planning consent is sought for the construction of a new driving range and building, relandscaping and drainage improvements over two phases.

1.2 This assessment has included the following:

- Ambient noise monitoring with regard to the nearest noise sensitive properties;
- Assessment of noise arising from construction activity, including HGVs;
- Consideration of the potential for vibration from construction activity.

1.3 The assessment has been undertaken using details of the proposed works provided by the contractor.

1.4 This report presents the results of the assessments, following site visits and ambient noise surveys undertaken over the period of 22nd to 29th April 2024.

1.5 All sound pressure levels quoted in this report are in dB relative to 20 µPa. A glossary of the acoustic terminology used in this report is provided in Appendix A.

2.0 CRITERIA

Noise and Vibration - British Standard 5228

2.1 British Standard 5228 Parts 1 and 2 [Reference 1] provide detailed advice on the assessment of noise and vibration from construction sites. Part 1 of the standard addresses noise and Part 2 addresses vibration.

2.2 BS 5228 Parts 1 and 2 make reference to a number of factors which are likely to affect the significance and acceptability of noise and vibration from construction sites. These are:

i) Site location;
ii) Existing ambient noise levels / existing ambient vibration levels;
iii) Duration of site operations;
iv) Hours of work;
v) Attitude of the site operator;
vi) Noise characteristics / vibration characteristics;
vii) The effect of vibration on adjacent buildings.

British Standard 5228 Part 1: Noise

2.3 Part 1 of BS 5228 provides guidance on the control of noise from construction and open sites. The standard provides recommendations for basic methods of noise control relating to construction and open sites where work activities/ operations generate significant noise levels. The standard also provides means of assessing the potential significance of noise through fixed noise limits or by assessing the change in noise level.

BS 5228: Part 2 - Vibration

2.4 Part 2 of BS 5228 provides guidance on the control of vibration from construction activities and assessing its impact on those exposed to it.

2.5 The standard does not recommend absolute criteria for vibration, but advises that the peak particle velocity (PPV) descriptor should be used as an indicator of both human response and effects on buildings.

3.0 SITE DESCRIPTION AND PROPOSED WORKS

3.1 The site currently comprises the existing golf course, club house, parking and access roads, located off Mortimers Lane to the north. The site is located within both Eastleigh Borough Council to the west and Winchester City Council to the east. Figure 1 shows the existing site location.

3.2 The purposes of the works are to achieve drainage improvement works through reprofiling, to improve play, allowing the golf course to be open more regularly and ensuring its viability. The proposed works will be undertaken over two phases as described below and shown on the proposed site plan in Figure 2:

Phase 1 (Greenland Course)

- Closure and re-planting of 1st Fairway;
- New 1st Tee Box and new 1st Fairway along existing Driving Range;
- Improved 18th Green;
- Closure of existing Driving Range; reprofiling and replanting;
- Accessibility improvements;
- Allevitation of waterlogging and poor drainage;

Phase 2 (Parkland Course)

- Closure of holes 14, 15 and 18;
- Reprofiling and landscaping to create a new driving range;
- Creating of swales and drainage to reduce waterlogging and improve drainage;
- Outline planning sought for construction of a new Driving Range building.

3.3 To achieve the drainage and golf play improvements proposed, HGVs will access the site via the existing main entrance off Mortimers Lane, with temporary access tracks within the site to reach the tipping areas. HGV traffic will either approach the site from the west or east along Mortimers Lane, which is a relatively busy road and bus route.

3.4 The anticipated hours of work are as follows:

- 07:30 to 17:00 hours Monday to Friday
- 09:00 to 13:00 hours Saturday;
- No work on Sunday and Bank Holidays.

3.5 The nearest receptors likely to be affected by noise associated with activities on site include the following properties, as shown on Figure 1:

- Receptor R1 - Mortimers Farm (Residential);
- Receptor R2- Broad Oak Stables, Mortimers Lane (Residential);
- Receptor R3 - Adjacent to Moplands Copse (Residential);
- Receptor R4 - Properties on Greenwood Lane (Residential);
- Receptor R5 - Adjacent to Durley Copse (Residential);
- Receptor R6 - Properties on Knowle Lane (Residential);

4.0 ENVIRONMENTAL NOISE MEASUREMENTS

Measurement Instrumentation and Procedure

4.1 Environmental noise measurements were undertaken at the site between 22nd and 29th April 2024 in order to establish existing ambient noise levels representative of nearby residential properties. The measurement locations are described as follows:

- Location 1: Towards the north of the site, approximately 50 meters from Mortimers Lane and the site entrance. Representative of noise levels at Mortimers Farm and Broad Oak Stables;
- Location 2: Towards the south of the site, approximately 150 meters from Greenwood Lane. Representative of noise levels at Moplands Copse, Greenwood Lane and Durley Copse.

4.2 Noise measurements were undertaken with the following instrumentation:

- 2 Nº Rion NL52 Class 1 accuracy sound level meter;
- Norsonic 1251 Class 1 accuracy acoustic calibrator.

4.3 The instrumentation's calibration was checked before and after the surveys in accordance with the manufacturers' instructions. No significant drift in calibration was recorded. Microphones were fitted with environmental weather shields during the measurement periods. Measurements were made in accordance with BS 7445: 1991 "Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use" [Reference 2].

4.4 The weather conditions during the survey period were calm and dry with wind speeds less than 5m/s.

Results

4.5 The measured noise levels at Locations 1 and 2 are shown graphically in Appendix B. Table 1 summarises the overall measured noise levels during the daytime periods at both Locations.

Measurement Results		
Location	**Weekday Daytime (07:30 – 17:00) Average dB $L_{Aeq,T}$**	**Saturday Daytime (09:00 – 13:00) Average dB $L_{Aeq,T}$**
1	55	54
2	45	45

Table 1: Measured Noise Levels

4.6 Noise from road traffic using Mortimers Lane controlled the prevailing noise levels at Location 1. Noise levels at Location 2 were affected by distant road traffic. Noise from other environmental noise sources also contributed to ambient noise levels (e.g. aircraft, birdsong).

4.7 Short periods affected by noise from grounds maintenance works within the golf course site have been excluded from the analysis and results at Location 2.

5.0 CALCULATIONS AND ASSESSMENT

5.1 The following assessment has been undertaken based on information on the proposed works provided by the contractor. This information has been used to undertake predictions of likely noise levels from the works at the nearest residential properties.

5.2 An assessment of the likely noise impact has been undertaken in accordance with the guidance of BS 5228 and noise levels from construction activities have been calculated at the nearest residential receptors.

Noise Threshold Values

5.3 BS 5228-1 describes methods of assessing potential significance through categories based on the prevailing ambient noise level. For this site, the relative (ABC) assessment method would indicate the following threshold values at all nearby noise sensitive properties:

- Weekday 07:30 to 17:00 — 65 dB $L_{Aeq,\ 10\ hour}$
- Saturday 09:00 to 13:00 — 65 dB $L_{Aeq,\ 5\ hour}$

5.4 BPM and noise mitigation shall be employed throughout the works, alongside regular communication with neighbours, as described below.

Mitigation Measures – Noise & Vibration

5.5 The following information is provided to demonstrate how noise and vibration will be controlled during the during the works in order to minimise the impact on nearby sensitive properties.

5.6 Best Practicable Means (BPM), as outlined in Section 72 of the Control of Pollution Act 1974 [Reference 3] will be employed in order to minimise noise and vibration levels throughout the period of the works.

5.7 The following provides examples of mitigation measures that shall be employed at the site, in order to minimise the impacts of noise and vibration.

- Careful selection of plant, construction methods and programming. Only plant conforming with relevant national or international standards, directives and recommendations on noise emissions will be used;
- Responsible site management will include consideration of the impact of noise and vibration on neighbours;
- Regular contact with neighbours to ensure that works are not causing unacceptable impact on their environment and, wherever possible, schedule work activities to suit any specific quiet periods that neighbours may require;
- All plant and equipment will undergo regular maintenance to ensure optimum operation and limit noise caused by wear and tear;
- Construction plant will be located, as far as is reasonably practicable, away from adjacent occupied buildings or as close as possible to noise barriers where these are located between the plant and the buildings;
- Site personnel will be instructed on BPM to reduce noise as part of their induction;
- Training and as required prior to specific work activities;
- When plant is not being used, it shall be shut down and not left to idle;

- Local screening to equipment during key phases with suitably heavy materials if necessary;
- Where practicable, to phase the works to ensure that the noisier activities are not carried out concurrently (within the same site);
- Construction vehicles and deliveries will be co-ordinated to avoid peak hours;
- There will be no vehicles waiting on the public highway with their engines running.

5.8 It should be noted that the above list is not exhaustive and that specific mitigation measures should be implemented by the contractor, in order to minimise the impacts of noise and vibration.

Noise Levels from Construction Works

5.9 Preliminary calculations of the potential noise levels generated by the construction works within the site have been carried out using the guidance of BS 5228. The level of noise generated by construction activities will depend upon a range of factors, which include plant to be used, distance between source and receptor, acoustic screening (where present) and percentage on-time for each item of plant.

5.10 The use of Best Practical Means, as defined in the Control of Pollution Act 1974 has been included for all calculations.

5.11 The contractor has advised that the primary plant in use at the site will comprise the following:

- Tracked Bladed Dozers (up to 2 No.);
- Tracked 360 Excavators (up to 2 No.);
- Tractor and Water Bowser for damping down.
- Road Sweeper on main access road;
- Soil Screener.

5.12 To achieve the drainage and golf play improvements proposed, it is understood that the site will receive up to approximately 50 deliveries of clean inert material per day via HGVs. Movements of HGVs accessing the site off Mortimers Lane and along the access road have also been included in the calculations.

5.13 As noted in the Transport Assessment (by Nick Culhane – Highway Consultant), the site will be acting as a receptor to excavation arisings from existing construction sites, which would otherwise be taken to alternative receptor sites likely to be outside of the borough/district.

5.14 Source-term noise data for the plant has been taken from the database contained in BS 5228. Typical operational periods have been determined from similar sites. Example calculations have been undertaken and the results summarised in Table 2 for the Phase 1 works and Table 3 for the Phase 2 works.

Residential Receptor Location	Typical Noise Level at Receptor dB $L_{Aeq, 10\ hour}$
R1 - Mortimers Farm	48
R2 - Broad Oak Stables	55
R3 - Adjacent to Moplands Copse	49
R4 - Greenwood Lane	47
R5 - Adjacent to Durley Copse	54
R6 - Knowle Lane	54

Table 2: Summary of Predicted Noise Levels – Phase 1 Works

Residential Receptor Location	Typical Noise Level at Receptor dB $L_{Aeq, 10\ hour}$
R1 - Mortimers Farm	49
R2 - Broad Oak Stables	55
R3 - Adjacent to Moplands Copse	54
R4 - Greenwood Lane	55
R5 - Adjacent to Durley Copse	54
R6 - Knowle Lane	51

Table 3: Summary of Predicted Noise Levels – Phase 2 Works

5.15 The predicted noise levels in Tables 2 and 3 are all comfortably below the proposed target level of 65 dB $L_{Aeq, 10\ hour}$ for noise from site works, at all receptor locations.

Vibration

5.16 It is not possible to accurately predict vibration levels due to construction operations. It is generally the case that, subject to good site management, sustained vibration arising from site activities will be lower than that likely to cause disturbance to nearby residents and significantly lower than the risk of the onset of cosmetic structural damage arising.

5.17 Given the distances between residential receptors and the site working areas, and the type of works being undertaken (e.g. no demolition nor piling works) the risk of adverse impacts from vibration is considered very low.

6.0 CONCLUSIONS

6.1 24 Acoustics Ltd has been instructed by East Horton Golf Club to undertake an assessment of the potential noise and vibration impacts from construction works at East Horton Golf Club, Fair Oak. Planning consent is sought for the construction of a new driving range and building, relandscaping and drainage improvements over two phases.

6.2 Ambient noise monitoring has been undertaken to determine existing ambient noise levels representative of the nearest noise sensitive properties.

6.3 Appropriate criteria have been determined for the assessment of noise impacts at the nearest sensitive properties, based British Standard 5228 and the measured ambient noise levels.

6.4 Best Practicable Means (BPM) will be employed at the site and mitigation measures have been identified, in order to minimise the impacts of noise and vibration upon nearby sensitive properties.

6.5 Preliminary calculations demonstrate that noise levels from construction works will be comfortably below the target criterion at the nearest sensitive properties and hence acceptable.

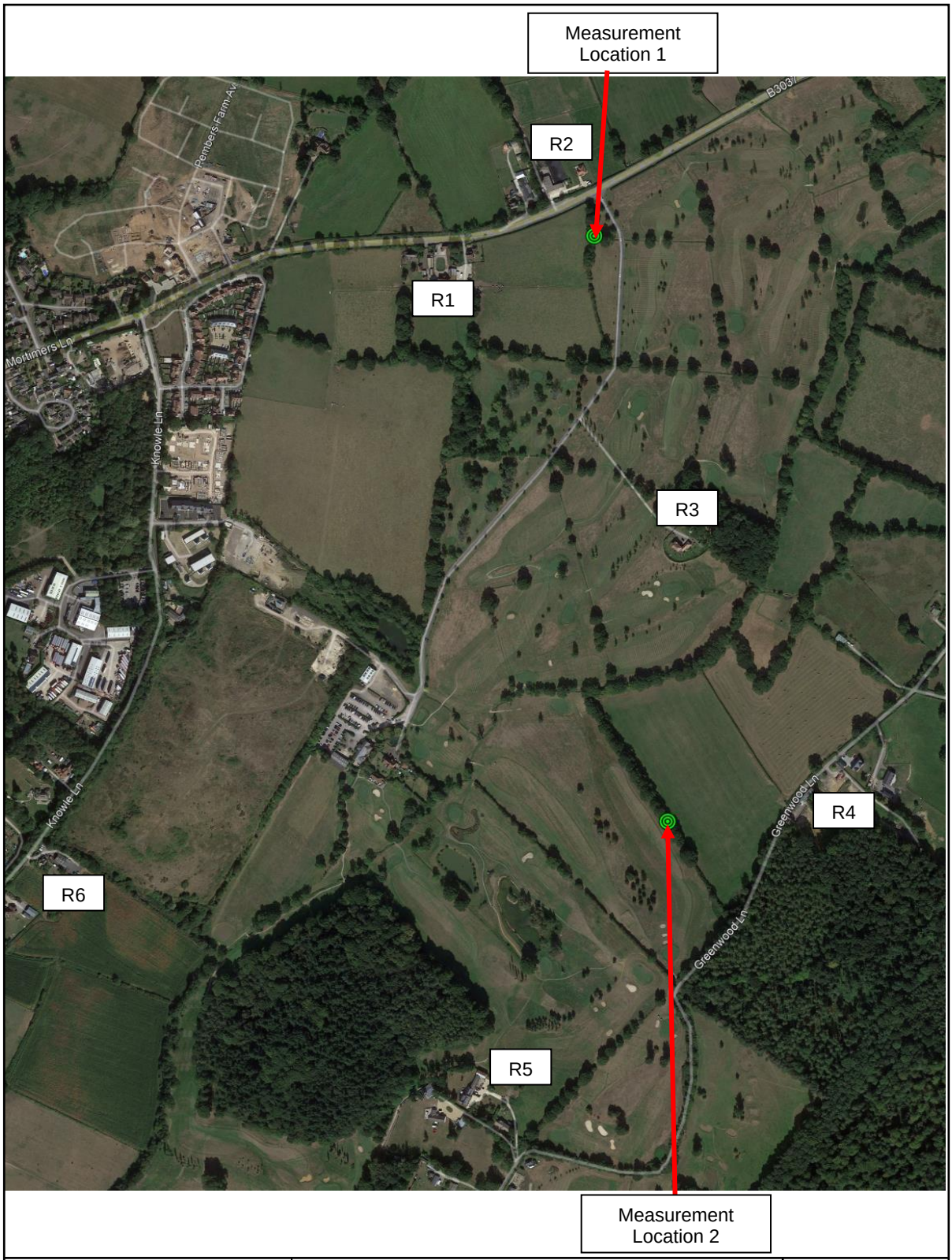
6.6 Given the distances between residential receptors and the site working areas, and the type of works being undertaken, the risk of adverse impacts from vibration is considered very low.

REFERENCES

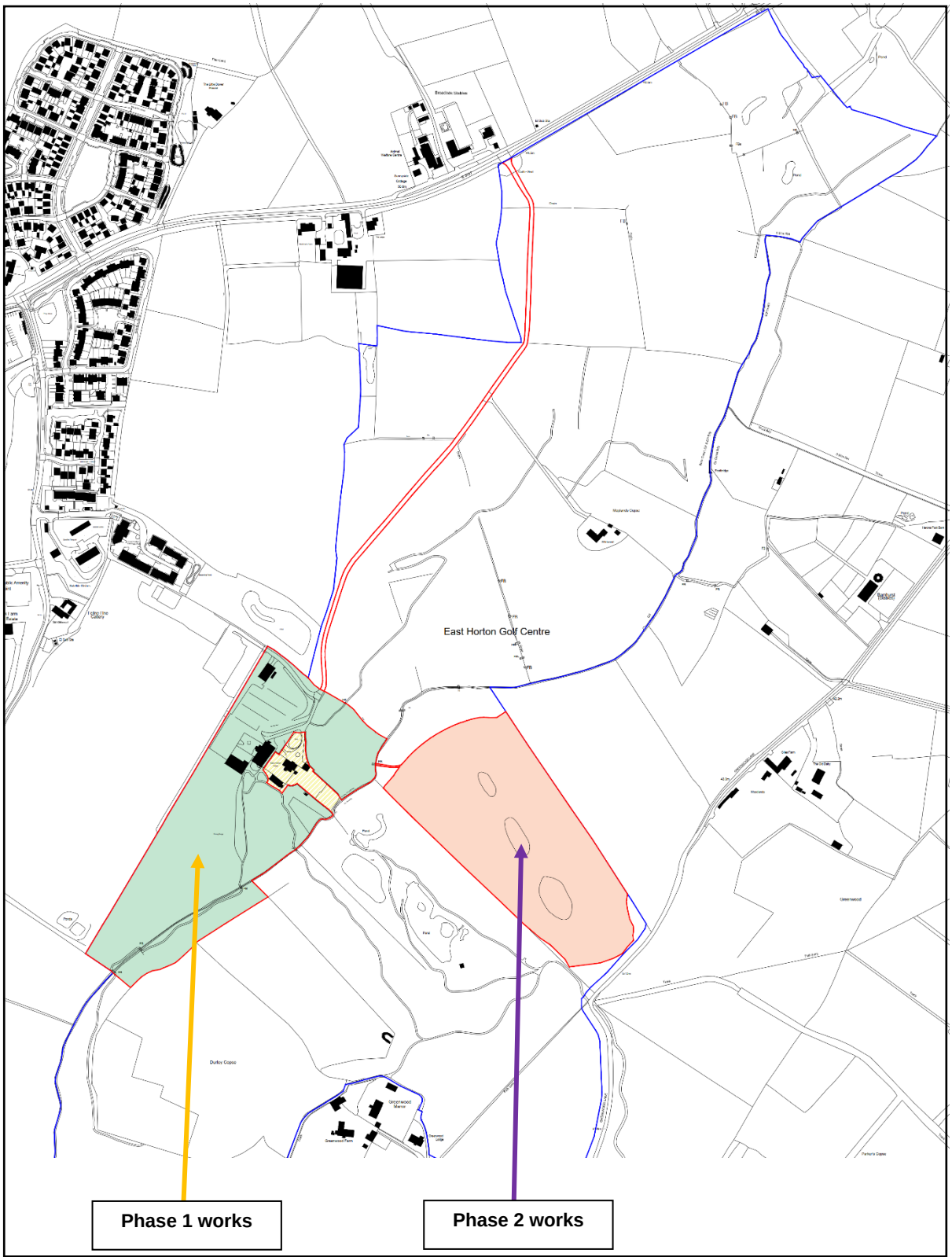
1. British Standards Institution. British Standard 5228: Code of practice for noise and vibration control on construction and open sites. Parts 1 & 2, 2009 + A1: 2014

2. British Standards Institution. BS 7445: 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use' 1991.

3. Control of Pollution Act, 1974



Project: East Horton Golf Club	**Title:** Site Location, Sensitive Receptors and Noise Monitoring Locations	
DWG No: Figure 1	**Scale:** N.T.S.	**Rev:** A
Date: June 2024	**Drawn By:** CM	**Job No:** 10589-1



Project: East Horton Golf Club	**Title:** Proposed Site Plan and Work Areas	
DWG No: Figure 2	**Scale:** N.T.S.	**Rev:** 1
Date: February 2025	**Drawn By:** CM	**Job No:** 10589-1

APPENDIX A: ACOUSTIC TERMINOLOGY

Noise Levels

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in important by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dBA is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dBA. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dBA corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

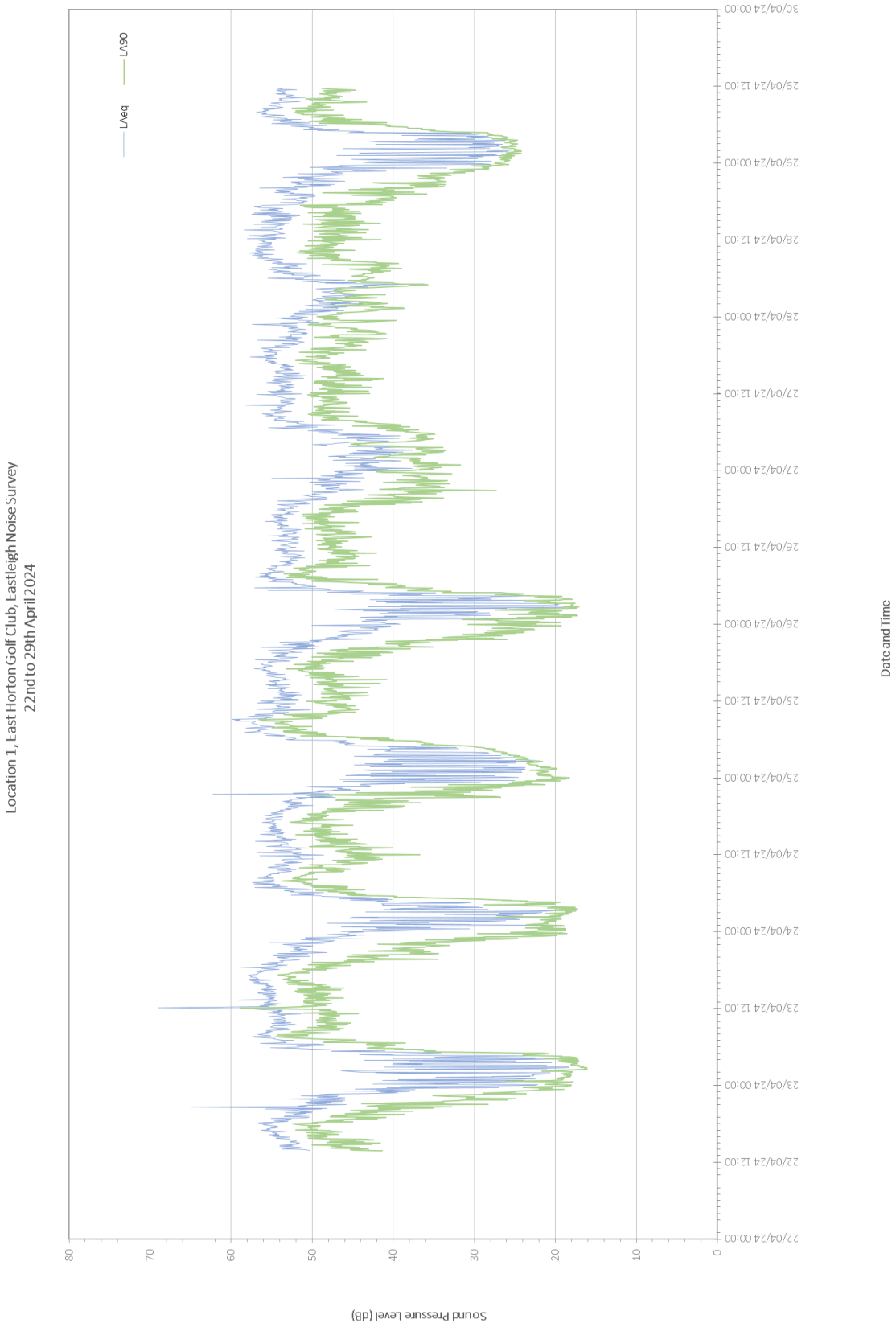
This is the maximum noise level recorded over the measurement period.

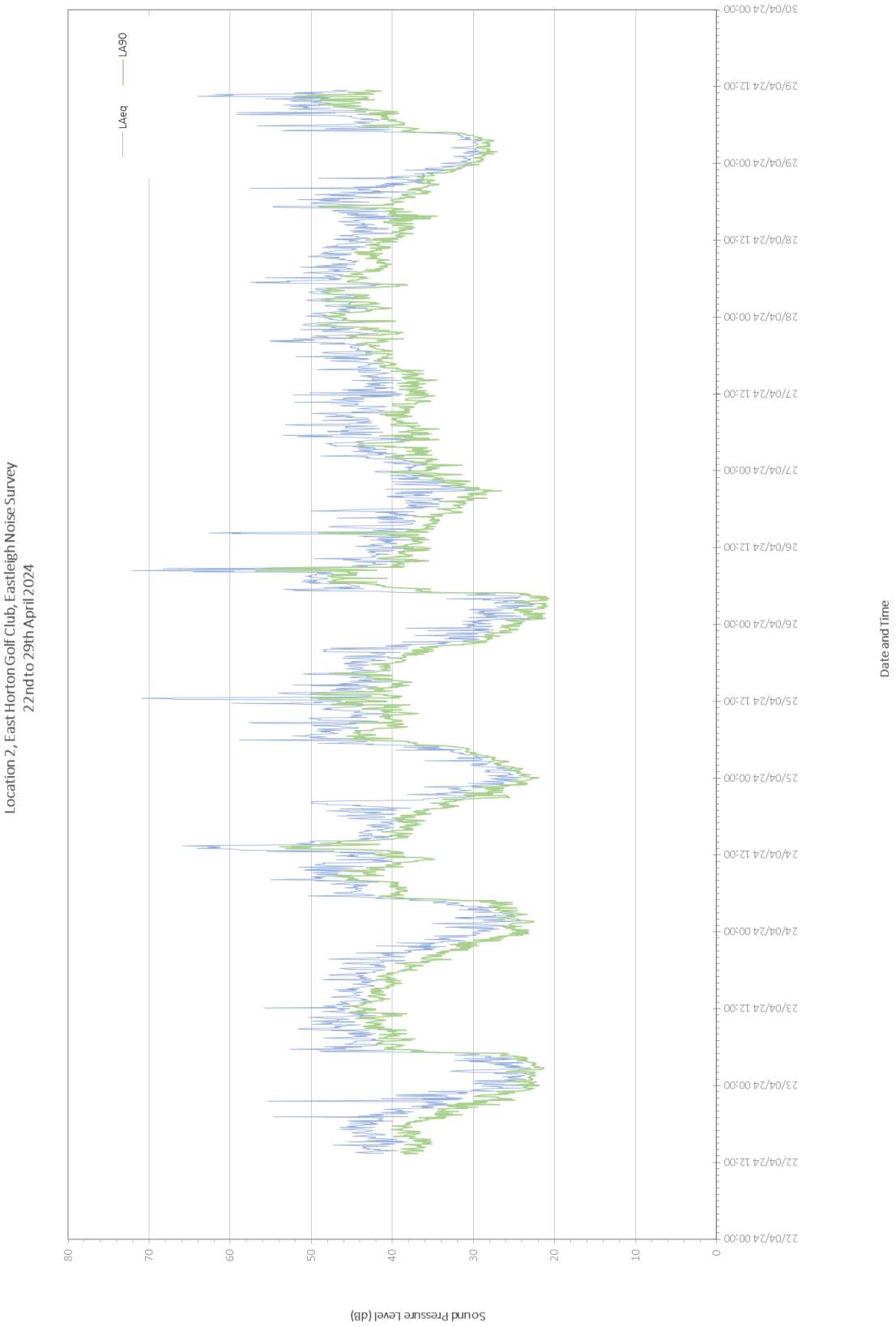
ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time internal, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

APPENDIX B: NOISE MEASUREMENT RESULTS




Location 2, East Horton Golf Club, Eastleigh Noise Survey
22nd to 29th April 2024
LAeq
LA90
Sound Pressure Level (dB)
80
70
60
50
40
30
20
10
0
22/04/24 00:00
22/04/24 12:00
23/04/24 00:00
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