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**NEIGHBOURHOOD CENTRE, FINCHWOOD PARK
FINCHAMPSTEAD**

NOISE IMPACT ASSESSMENT

Technical Report: R10773-1 Rev 1

Date: 2nd October 2024

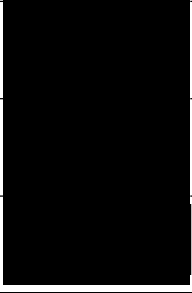
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1.0 INTRODUCTION

- 1.1 24 Acoustics Ltd has been appointed by CALA Homes, to provide a noise impact assessment for the new Neighbourhood Centre at Finchwood Park, Finchampstead. A reserved matters application has been submitted for a new build development to include residential accommodation and retail units.
- 1.2 The planning officer has requested a noise assessment to consider noise associated with road traffic on the new Nine Mile Ride Extension road and the commercial relationship with the residential. Accordingly, this noise impact assessment has included:
- Environmental noise monitoring;
 - Consideration of the noise arising from nearby sources affecting the site;
 - Assessment of internal noise levels within the dwellings;
 - Assessment of external noise in amenity areas;
 - Consideration of noise arising from the new commercial units.
- 1.3 This report presents the results of the assessment, following site visits and ambient noise surveys undertaken between 28th August and 3rd September 2024.
- 1.4 An explanation of acoustical terms used in this report is provided in Appendix A. All sound pressure levels in this report are given in dB re: 20 μ Pa.

2.0 SITE DESCRIPTION

- 2.1 The site is located in what will be a residential area once the Finchwood Park residential development is completed (outline planning reference O/2014/2179 and 140764).
- 2.2 The land is currently undeveloped with the newly constructed Nine Mile End Extension road running along the north-eastern boundary of the site. A new primary school is proposed to the north-west of the site. The existing Hogwood Industrial Estate is located to the further north-east on the other side of the road.
- 2.3 It is proposed to construct a new four-storey apartment block comprising 18 apartments with associated parking. On the ground floor it is proposed to include two retail commercial units.

- 2.4 The primary source of environmental noise at the site is from vehicles using the new Nine Mile End Extension road to the north-east. This new road is open to traffic and road traffic flows are expected to increase as the wider development is completed.
- 2.5 The existing site and noise survey location are shown in Figure 1. The proposed ground floor layout is shown in Figure 2 and the proposed first floor plan in Figure 3.

3.0 CRITERIA

National Planning Policy Framework and Noise Policy Statement for England

- 3.1 The National Planning Policy Framework (NPPF) [Reference 1] states in relation to noise that planning policies and decisions should aim to:
- 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;
 - Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.
- 3.2 The NPPF also refers to the Noise Policy Statement for England (NPSE) [Reference 2] which is intended to apply to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise. The NPSE sets out the Government's long-term vision to 'promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development' which is supported by the following aims.
- Avoid significant adverse impacts on health and quality of life;
 - Mitigate and minimise adverse impacts on health and quality of life.
- 3.3 The NPSE defines the concept of a 'significant observed adverse effect level' (SOAEL) as 'the level above which significant adverse effects on health and quality of life occur'. The following guidance is provided within the NPSE:

"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.”

- 3.4 The National Planning Practice Guidance (NPPG) [Reference 3] is written to support the NPPF with more specific planning guidance. The NPPG reflects the NPSE and states that noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. The NPPG states that noise can over-ride other planning concerns but should not be considered in isolation from the other economic, social and environmental dimensions of the proposed development.
- 3.5 The NPPG expands upon the concept of SOAEL (together with Lowest Observable Adverse Effect Level, LOAEL and No Observed Effect Level, NOEL) as introduced in the NPSE and provides a table of noise exposure hierarchy for use in noise impact assessments in the planning system.
- 3.6 The NPPG also expands on the ‘agent of change’ principle and provides guidance on how the risk of conflict between new development and existing businesses can be addressed, including where mitigation is required.
- 3.7 The NPPF, NPSE and NPPG documents do not refer to specific noise criteria. For residential developments 24 Acoustics considers that the spirit of the requirements of the NPPF and NPSE will be complied with if criteria and guidance from British Standard 8233: 2014, British Standard 4142: 2014 and the World Health Organisation.

Professional Practice Guidance on Planning & Noise (ProPG)

- 3.8 The Professional Practice Guidance on Planning and Noise (ProPG) [Reference 4] was published jointly by the Association of Noise Consultants, Institute of Acoustics and Chartered Institute of Environmental Health in May 2017. The guidance relates to the consideration of existing sources of transportation noise upon proposed new residential development and strives to:
- Advocate full consideration of the acoustic environment from the earliest possible stage of the development control process;
 - Encourage the process of good acoustic design in and around new residential developments;

- Outline what should be taken into account in deciding planning applications for new noise-sensitive developments;
- Improve understanding of how to determine the extent of potential noise impact and effect; and
- Assist the delivery of sustainable development.

3.9 The guidance describes a recommended approach for new residential development, which includes four key elements of the assessment process, identified below:

- (i) Good acoustic design process;
- (ii) Internal noise level guidelines;
- (iii) External amenity area noise assessment;
- (iv) Assessment of other relevant issues.

3.10 It is important to note that the guidance in ProPG does not constitute an official government code of practice and neither replaces nor provides an authoritative interpretation of the law or government policy. It is provided for guidance only and has no formal place within planning legislation.

BS 8233: 2014 and World Health Organisation Criteria

3.11 BS 8233:2014 [Reference 5] provides design guidance for dwelling houses, flats and rooms in residential use and recommends that internal noise levels in dwellings do not exceed 35 dB $L_{Aeq,16\text{ hour}}$ in living rooms and bedrooms during the day, 40 dB $L_{Aeq, 16\text{ hour}}$ in dining rooms during the day and 30 dB $L_{Aeq, 8\text{ hour}}$ in bedrooms at night.

3.12 The standard states that the above limits apply to steady external noise sources without specific character, and also states the following:

"Noise has a specific character if it contains features such as a distinguishable, discrete and continuous tone, is irregular enough to attract attention, or has strong low-frequency content, in which case lower noise limits might be appropriate."

3.13 BS 8233 also notes that *"Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,f}$, depending on the character and number of events per night."*

- 3.14 The World Health Organisation (WHO) [Reference 6] provides guidance on desirable internal noise levels to minimise the risk of sleep disturbance. The WHO 2000 guidelines suggest internal noise levels not exceeding 30 dB $L_{Aeq,8hr}$ or regularly exceeding 45 dB $L_{Amax,f}$ for 'a good night's sleep'.
- 3.15 BS 8233:2014 suggests an upper guideline value of 55 dB $L_{Aeq,16\text{ hour}}$ for noise levels in external amenity spaces such as gardens. This is considered an aspirational limit and BS 8233. BS 8233 also states that development should not be prohibited on the basis of noise levels within external amenity areas.

Noise from Car Movements and Deliveries

- 3.16 There is no published guidance on methods for assessing noise arising from car park activities. A practical method, used successfully at planning and appeals is to examine the predicted noise level (L_{eq}) arising from the proposed activities against the prevailing ambient noise level (L_{eq}).
- 3.17 The Department of Transport assessment methodology, 'Calculation of Road Traffic Noise', HMSO, 1988 [Reference 7] provides a method for determining noise from road traffic use but does not cover this type of situation where there are very low traffic flows travelling at slow speeds. Therefore, the results of noise measurements of slow moving cars from 24 Acoustics library data (i.e. as would be moving within the car park) shall be used as the basis for the calculations and assessment of the noise from vehicle movements associated with the proposed development upon existing properties
- 3.18 The wider Finchwood Park development is a large area of land that is being developed to provide circa 1500 dwellings a school, community facilities and areas of open space and parking. In this respect, the retail/commercial units and the nearest residential receptors will be built at the same time and the noise levels in the area will change significantly from the existing prevailing levels.
- 3.19 On this basis, the use of BS 4142: 2014 is unreliable for the assessment of delivery noise at this site (in line with paragraph 8.5 and Clause 11 of BS 4142). Therefore, noise from deliveries has been considered against the guidance set out in BS 8233.

Sound Insulation Between Residential & Retail/Commercial Use

- 3.20 Approved Document E [Reference 8] of the Building Regulations requires that compliance with the sound insulation requirements be demonstrated by Pre-Completion Testing (PCT).

- 3.21 The party floor separating the ground floor units from first floor residential properties must, therefore, achieve the Building Regulations minimum airborne sound insulation performance of 45 dB $D_{nT,w} + C_{tr}$.
- 3.22 It is recommended that party floors separating residential properties from the ground floor convenience store and retail unit also be specified to achieve a minimum airborne sound insulation performance of 55 dB $D_{nT,w}$.

Summary of Noise Criteria

- 3.23 The impact of noise upon the site has been assessed using the following methodology:
- BS 8233: 2014 and the WHO Guidelines for recommended internal noise levels, inside the properties. An upper internal daytime level of 35 dB $L_{Aeq, 16 \text{ hour}}$ for bedrooms, living rooms and communal lounges should apply; and a night-time level for bedrooms of 30 dB $L_{Aeq, 8 \text{ hour}}$ should apply. Similarly, a maximum night-time internal level of 45 dB $L_{Amax, fast}$ should apply in bedrooms for regular events.
 - BS 8233: 2014 for guideline external noise levels in external amenity spaces, with a guideline upper value of 55 dB $L_{Aeq, 16 \text{ hour}}$ in gardens.
 - An assessment of noise associated with the car park and deliveries shall be undertaken to establish noise levels at the nearest noise sensitive receptors.

4.0 ENVIRONMENTAL NOISE MEASUREMENTS AND RESULTS

Measurement Instrumentation and Procedure

- 4.1 Environmental noise measurements were undertaken between 28th August and 3rd September 2024 in order to determine prevailing noise levels at the site. Measurements were undertaken using the following equipment:
- 1 x Rion precision sound level meter Type NL-52
 - Brüel & Kjær acoustic calibrator Type 4231
- 4.2 Long-term measurements were undertaken on the north-eastern side of the site, in-line with the proposed façade of the Neighbourhood Centre. The survey location is shown in Figure 1.

- 4.3 Measurements were undertaken in free-field conditions at an approximate height of 4.5 m above local grade level.
- 4.4 The instrumentation's calibration was verified before and after the surveys in accordance with the manufacturer's 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 9].
- 4.5 Weather conditions during the survey were mainly fine and dry with wind speeds generally below 5 m/s.

Results

- 4.6 The measured noise levels from Location 1 are summarised in Table 1 and shown graphically in Appendix B.

Date	Daytime (07:00 - 23:00) dB LAeq, 16 hour	Night Time (23:00 – 07:00)	
		dB LAeq, 8 hour	dB LAmax, f (typical)
Wednesday 28/8/2024	53	42	62
Thursday 29/8/2024	52	45	61
Friday 30/8/2024	54	41	61
Saturday 31/8/2024	51	42	62
Sunday 1/9/2024	49	40	60
Monday 2/9/2024	53	43	63
Tuesday 3/9/2024	54	-	-
Representative	52	42	62

Table 1: Ambient Noise Levels at Location 1 (North-Eastern Façade)

- 4.7 24 Acoustics considers the typical maximum to be the 10th highest LAmax, f noise level during the relevant night-time period (in line with WHO guidance).

- 4.8 The primary noise source at Location 1 was noise from vehicles the new Nine Mile End Extension (NMRE) road. During the site visits there was no noticeable noise from Hogwood Industrial Estate.

Future Road Traffic Noise Levels

- 5.1 The Finchwood Park residential development has not yet been completed and the Nine Mile Ride Extension is expected to see higher vehicle flows once the wider development is complete. The following assessment has been based on the measured levels discussed above and the projected peak hour vehicle movements on the new road in 2026 provided in the Royal HaskoningDHV transport assessment issued for planning in October 2014 (ref. PB2112/RR01002/303814/Lond) and in the Nine Mile Ride Extension South (NMRES) Transport Assessment by JNPGGroup in 2019 (ref. M42740-JNP-66-XX-RP-D-1003).
- 5.2 Consideration has also been given to the count of existing traffic flows undertaken on the existing Nine Mile Ride road to the east of the site in 2023 (site no. 804576) by the Department for Transport.
- 5.3 It has not been possible to provide a direct comparison with existing daytime noise because 18-hour traffic flow data is not available for the current or future use of the Nine Mile Road Extension. Based on reasonable judgement of the above information, the following free-field noise levels are predicted at the nearest façade of the Neighbourhood Centre, to be used in this assessment:
- Daytime 57 dB $L_{Aeq, 16 \text{ hour}}$
 - Night-time 47 dB $L_{Aeq, 8 \text{ hour}}$ and 65 dB $L_{Amax, f}$
- 5.4 Noise levels along the new road to the south of the new building will be lower than these values. This road is a no-through road providing access to the school only and has not been considered in the transport assessments undertaken at the outline planning stage.

5.0 ASSESSMENT AND RECOMMENDED MITIGATION MEASURES

Internal Noise Levels and Noise Mitigation to Residential Dwellings

- 5.5 The following calculations are based on the room dimensions and window areas as shown on the planning drawings provided by Omega Architects dated June 2024.
- 5.6 The external wall (non-glazed) constructions will be specified to achieve a minimum sound insulation performance of 52 dB R_w , which is readily achievable with lightweight and traditional masonry constructions.
- 5.7 Ventilation will be provided to all habitable rooms within the building by means of mechanical ventilation with heat recovery (MVHR).
- 5.8 The minimum acoustic requirements for glazing apply to all new habitable rooms as described in Table 2.

Glazing Type	Minimum Octave (Hz) Band Sound Reduction Index, dB					
	125	250	500	1k	2k	4k
GL1	24	20	25	35	38	35

Table 2: Glazing Sound Insulation Specifications

- 5.9 In making a comparison with the values in Table 2, it is important that the glazing figures used are the result of tests in accordance with ISO 10140, Part 2: 2010. The quoted minimum sound reduction specifications must be achieved by the entire glazing system as a whole, including frames, seals, any insulated panels and not just the glass. The requirements also apply to any external doors to habitable rooms.
- 5.10 For guidance, the following glazing configuration would be capable of achieving the required sound reduction performance if installed properly (i.e. with appropriate frames and seals, etc.):
- Glazing Type GL1 (Minimum 31 dB R_w):
- 4 mm glass / 12 mm cavity (minimum) / 4 mm glass (or equivalent)
- 5.11 All recommendations made apply to the acoustic performance of the window systems and compliance with other requirements (e.g. security/thermal) should be checked by others.
- 5.12 It is considered that with the proposed mitigation measures as detailed above, suitable internal noise levels can be achieved for the proposed dwellings.

External Amenity Areas

- 5.13 Balconies are to be provided to the apartments on all façades of the building. Based on the measured and predicted noise levels, external noise levels on the majority of balconies will be at or below 55 dB $L_{Aeq, 16 \text{ hour}}$ and hence acceptable.

Convenience Store Deliveries & Car Park Vehicle Movements

- 5.14 An assessment of delivery noise and vehicle movements associated with the convenience store and retail unit has been undertaken.
- 5.15 Based on observations at similar sized stores, a representative daytime delivery period is considered to comprise approximately 30 minutes of delivery activity as follows:
- HGV enters the car park to the south-east of the site from the new road and manoeuvres through the car park to park at the parking bays approximately 10m from the south-western façade of the Neighbourhood Centre;
 - Loading from the HGV through the side entrance of the convenience store using caged trolleys;
 - HGV departs the car park through the south-east of the site.
- 5.16 With reference to the measured prevailing noise levels, it is recommended that deliveries to the convenience store and retail unit only occur between the hours of 07:00 to 20:00 hours. The existing ambient noise level during these hours is the order of 49 dB $L_{Aeq, 1 \text{ hour}}$.
- 5.17 A noise management plan is recommended for the proposed convenience store, which should require the following best practice items:
- Installation of resilient matting to the rear access passageway and delivery entrance for caged trolleys
 - Do not leave engines idling
 - Use of broadband reversing alarms only
 - Deliveries to take place between 07:00 and 20:00 hours only
 - No more than two HGV deliveries per day
- 5.18 An example noise management plan is provided in Appendix B.

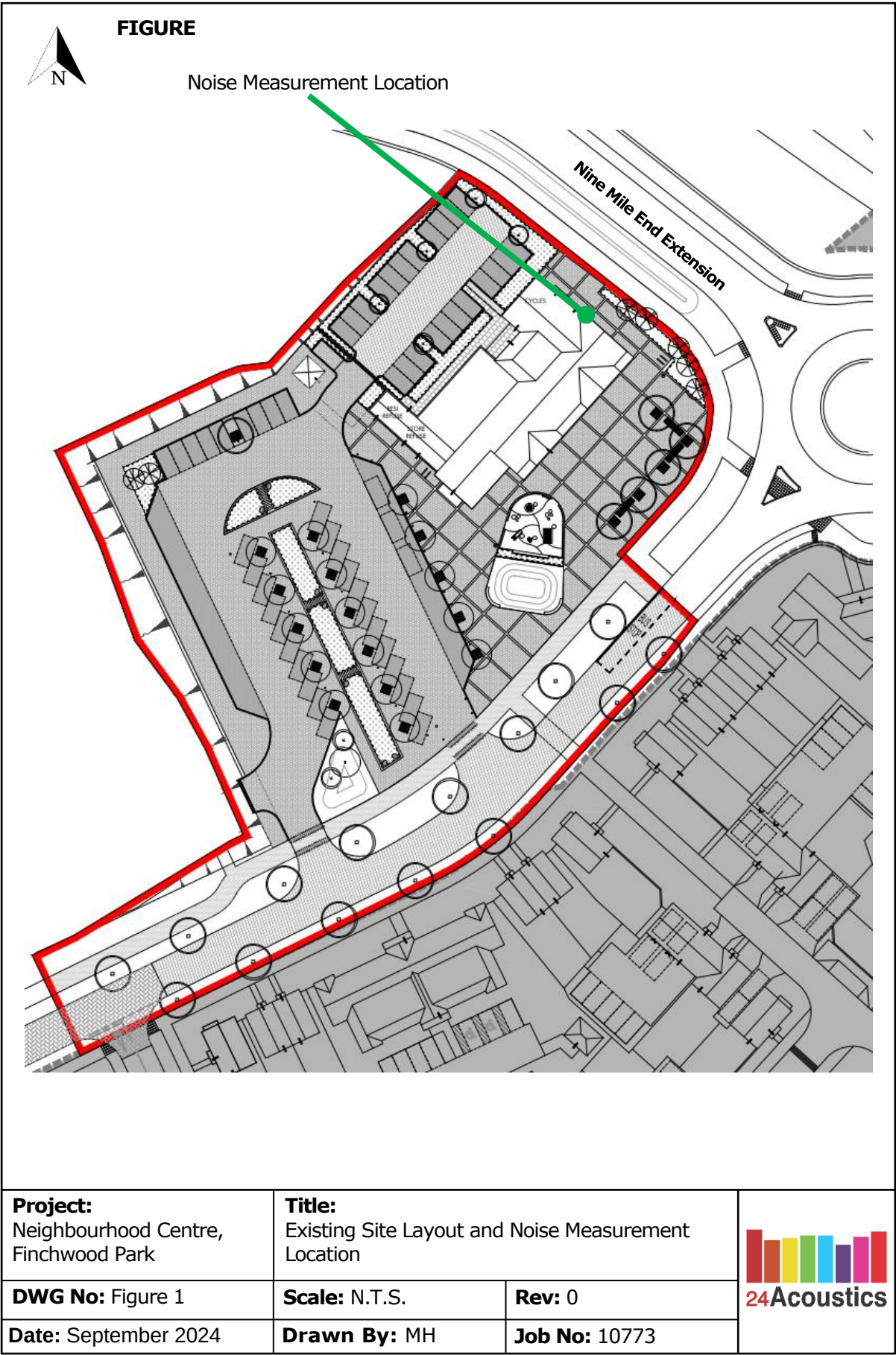
- 5.19 Using library noise data of HGV deliveries from similar convenience stores, the following resultant noise levels from a delivery and combined customer vehicle movements are expected at the nearest residential windows:
- Nearest west facing living room 54 dB $L_{Aeq, 1 \text{ hour}}$
 - Nearest properties to the south 41 dB $L_{Aeq, 1 \text{ hour}}$
- 5.20 The provision of MVHR to the nearest residential apartments will serve to reduce the need to open windows during deliveries and noise levels in the nearest rooms would be lower than 30 dB $L_{Aeq, 1 \text{ hour}}$ which is acceptable.
- 5.21 HGV deliveries will be of short duration and infrequent (no more than 2 deliveries per day in daytime hours). In the context of the proposed mitigation measures and a neighbourhood centre that will provide a service to the new residents, noise arising from deliveries to the convenience store is considered acceptable.
- 5.22 The car park has 34 spaces and assuming 20 vehicle movements an hour, noise levels at the nearest residential window would be in the region of 39 dB $L_{Aeq, 1 \text{ hour}}$, which is below the prevailing ambient noise levels and acceptable.

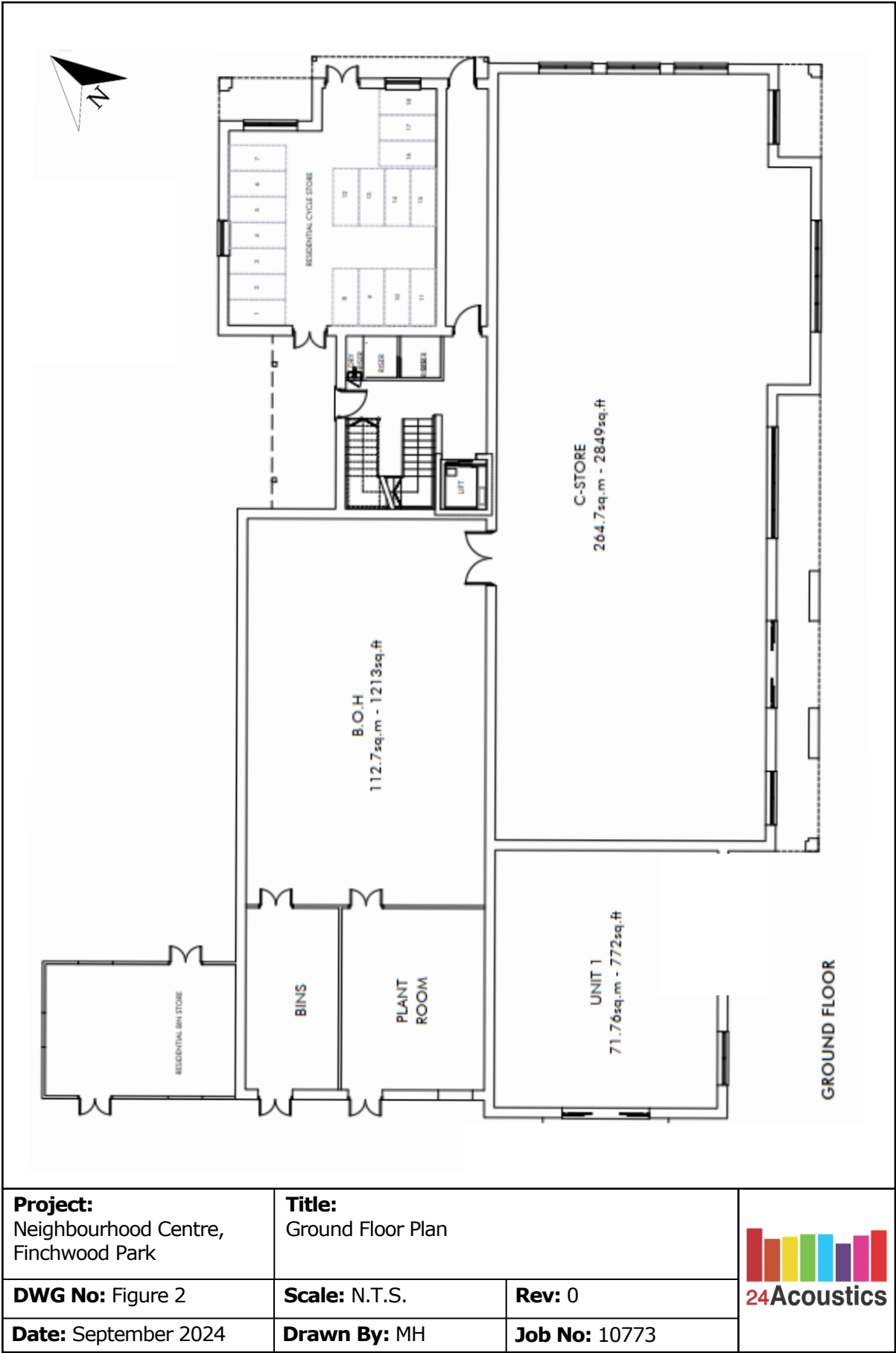
6.0 CONCLUSIONS

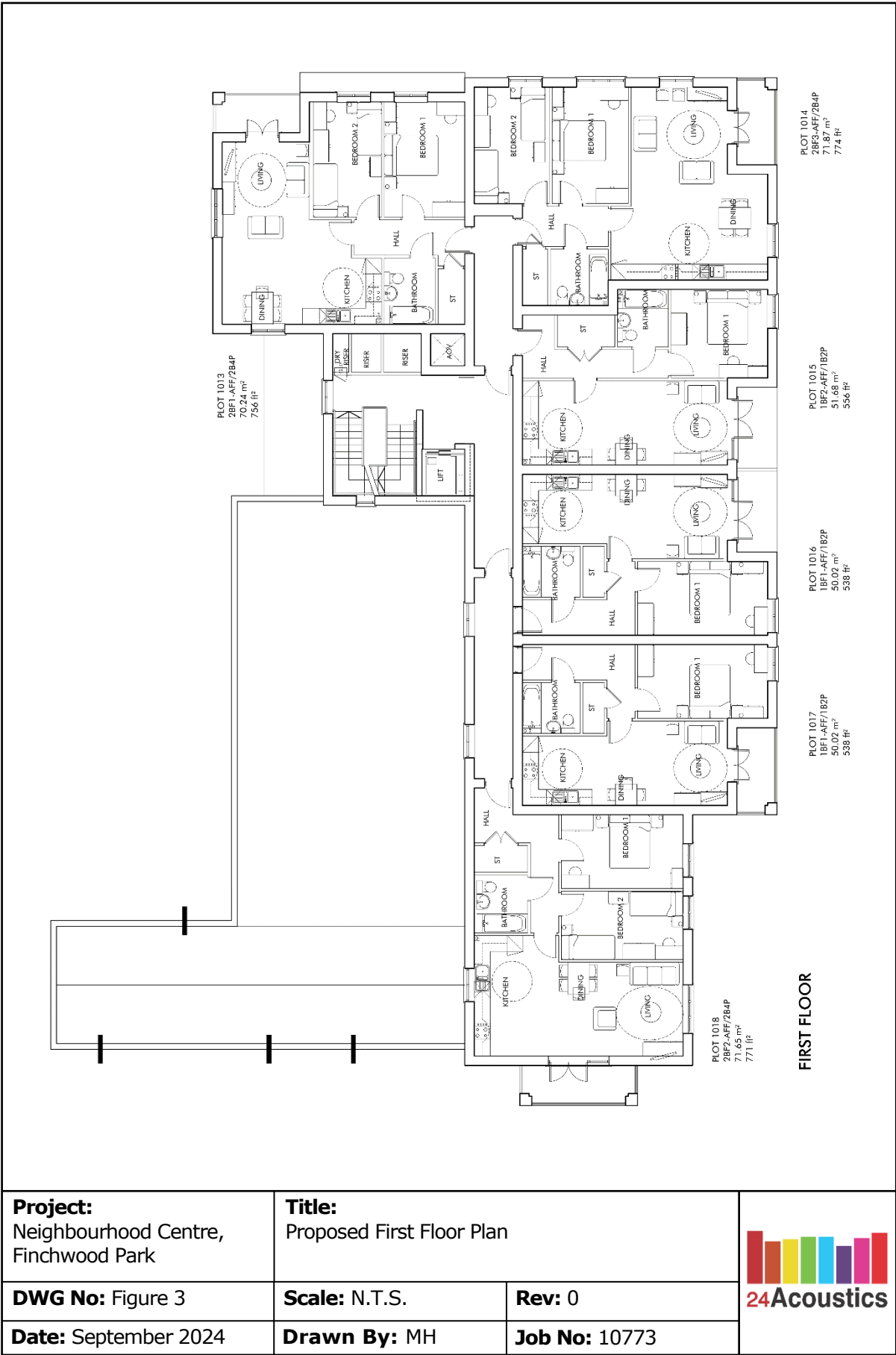
- 6.0 CALA Homes has instructed 24 Acoustics Ltd to undertake a noise impact assessment in relation to a Neighbourhood Centre at Finchwood Park, Finchampstead. This report has assessed noise from nearby roads including current and future traffic flows.
- 6.1 Environmental noise surveys have been undertaken at the site, to determine the level of noise from the existing sources, during daytime and night-time periods.
- 6.2 Calculations have been completed to determine mitigation measures such that acceptable internal noise levels from road traffic noise would be achieved within the properties in accordance with defined criteria (BS 8233:2014 and WHO).
- 6.3 Calculations have been undertaken to establish noise levels associated with the proposed convenience store and retail unit, which are acceptable in the context of the proposed development.
- 6.4 It is therefore concluded that, with the recommended measures, an acceptable internal and external noise environment can be achieved within the development.

REFERENCES

1. Ministry of Housing, Communities and Local Government. The National Planning Policy Framework (NPPF), 2023.
2. DEFRA. Noise Policy Statement for England, 2010.
3. Ministry of Housing, Communities and Local Government. Planning Practice Guidance, 2019.
4. ProPG Professional Practice Guidance on Planning and Noise (ProPG), ANC, IOA, CIEH, May 2017.
5. British Standards Institution. British Standard 8233: Guidance on sound insulation and noise reduction for buildings, 2014.
6. World Health Organisation. Guidelines for Community Noise, 1999.
7. Department of Transport. Calculation of Road Traffic Noise, 1988
8. Approved Document E "Resistance to the Passage of Sound" 2003 of the Building Regulations 2010.
9. British Standards Institution. BS 7445: 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use' 1991.
10. Building Regulations. Approved Document F -Ventilation, 2021.







APPENDIX A: NOISE UNITS

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 importance 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 dB(A) weighting. This is an internationally accepted standard for noise measurements.

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

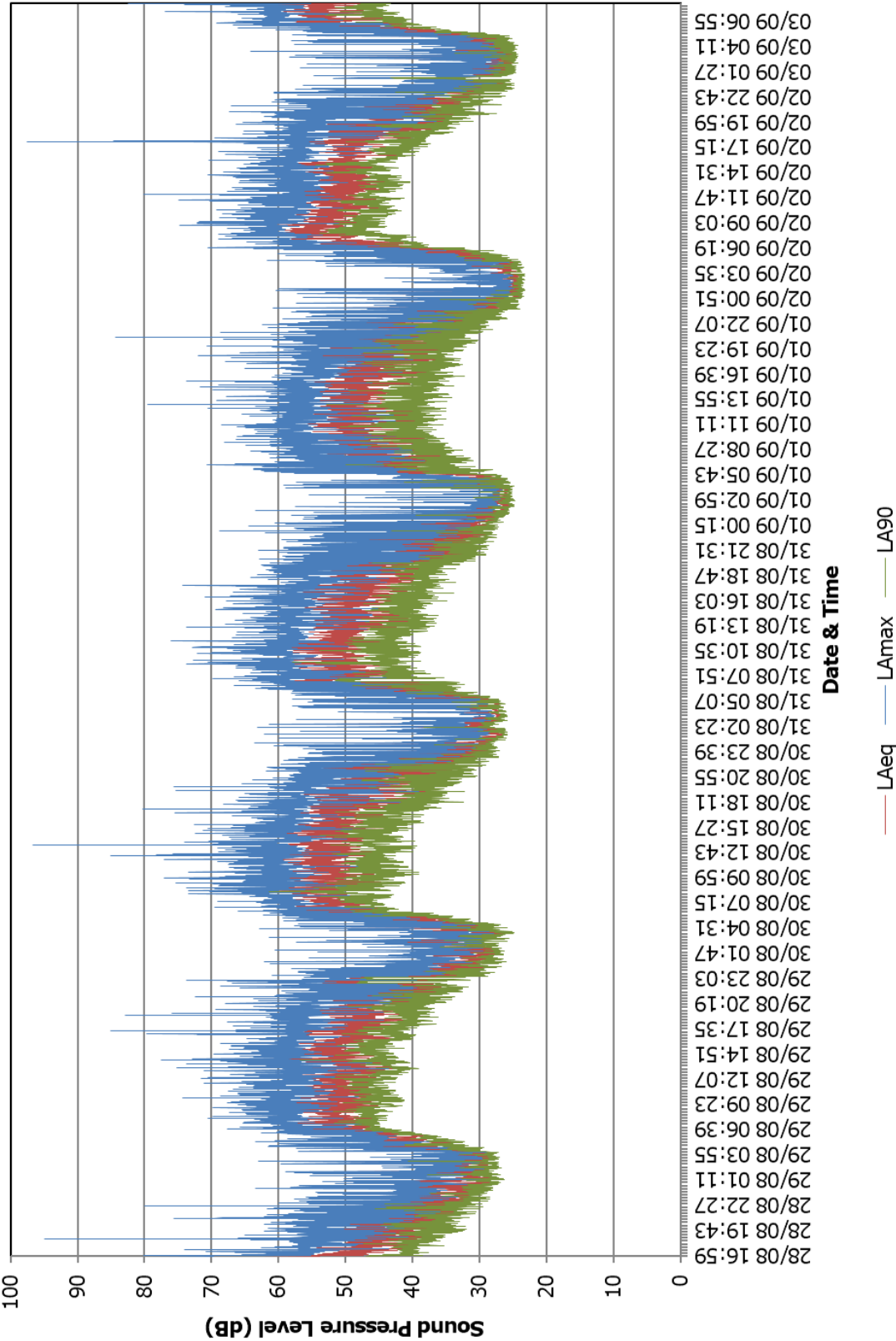
- ii) The L_{Aeq} noise level

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 interval, 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

Environmental Noise Measurements
28th August to 3rd September 2024



APPENDIX C – EXAMPLE NOISE MANAGEMENT PLAN

Objective

This noise management policy has been written to inform *unit occupier*'s employees and supplier delivery employees of their obligations to this site.

The *unit occupier* shall endeavour to respect and value the considerations of neighbours.

All deliveries are to be made with the least noise possible and delivery drivers should be mindful of neighbours at all times.

Any staff or supplier delivery driver found not to be adhering to this policy will be subject to disciplinary action.

Vehicle Movements

- No heavy goods delivery vehicles to be allowed on site outside of 07:00 to 20:00 hours;
- Staff vehicles to reverse into their parking positions as expediently as (safely) possible;
- Delivery vehicle radios to be switched off before arriving on site;
- Vehicle horns only to be sounded if required in safety-critical situations;
- Engines and HGV refrigeration units to be shut down when vehicles are stationary.

Cage Trolleys

- Care to be taken with cage trolleys to avoid additional, unnecessary noise, taking care to avoid sudden movements and impacts etc.

Communication

- Spoken communication between staff/ vehicle delivery to be undertaken at normal vocal effort. Shouting or raised voices are not permitted at any time (unless to warn of a safety-critical situation).

Staff Awareness

- All staff to be made aware of this policy and the nature of the site as a noise-sensitive site;
- Awareness of the policy to form part of the induction for new members of staff;
- All staff and supplier delivery drivers to be made aware of this policy via their own company procedures;
- Signs will be erected within the unloading/delivery areas, to remind all members of staff of the requirement to adhere to this policy.