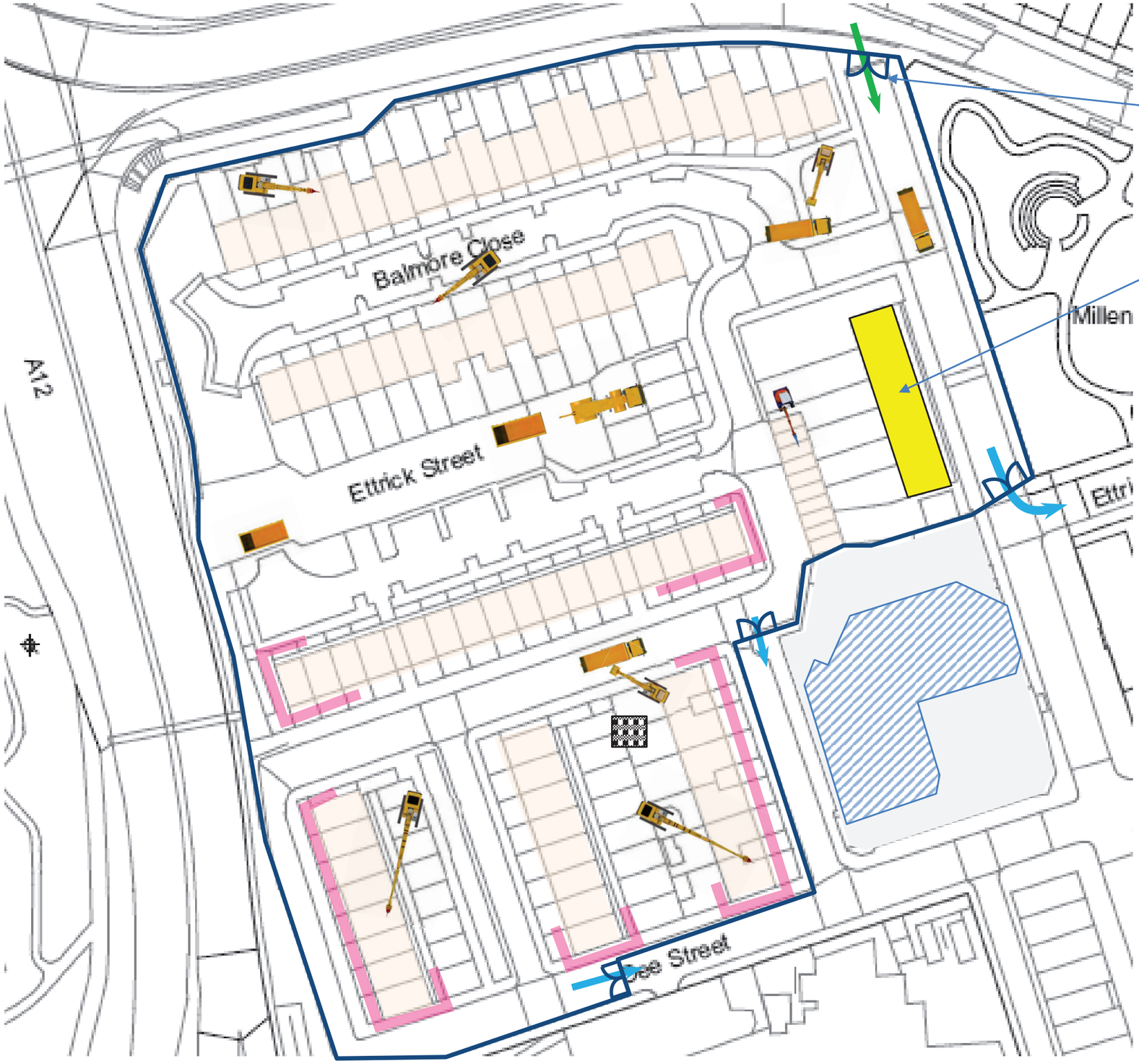

Construction access from new Abbott Road alignment

Jura House – Project Office

KEY

- Harding/ Gates
- Traditional Scaffold
- Long Reach Excavator
- Loader Excavator
- Mini Excavator
- Roll on/off skip
- Concrete Crusher
- Site Accommodation
- Vehicle Access
- Vehicle Egress

BLUE SKY BUILDING
founded on excellence

PROJECT: Aberfeldy Village
CLIENT: EcoWorld

TITLE: **Phase C D. De olition Logistics**

DRAWING NO.: BSB-AV-00

REVISION NO. & DATE: Rev 0 – 24/09/2021

BLUE SKY BUILDING
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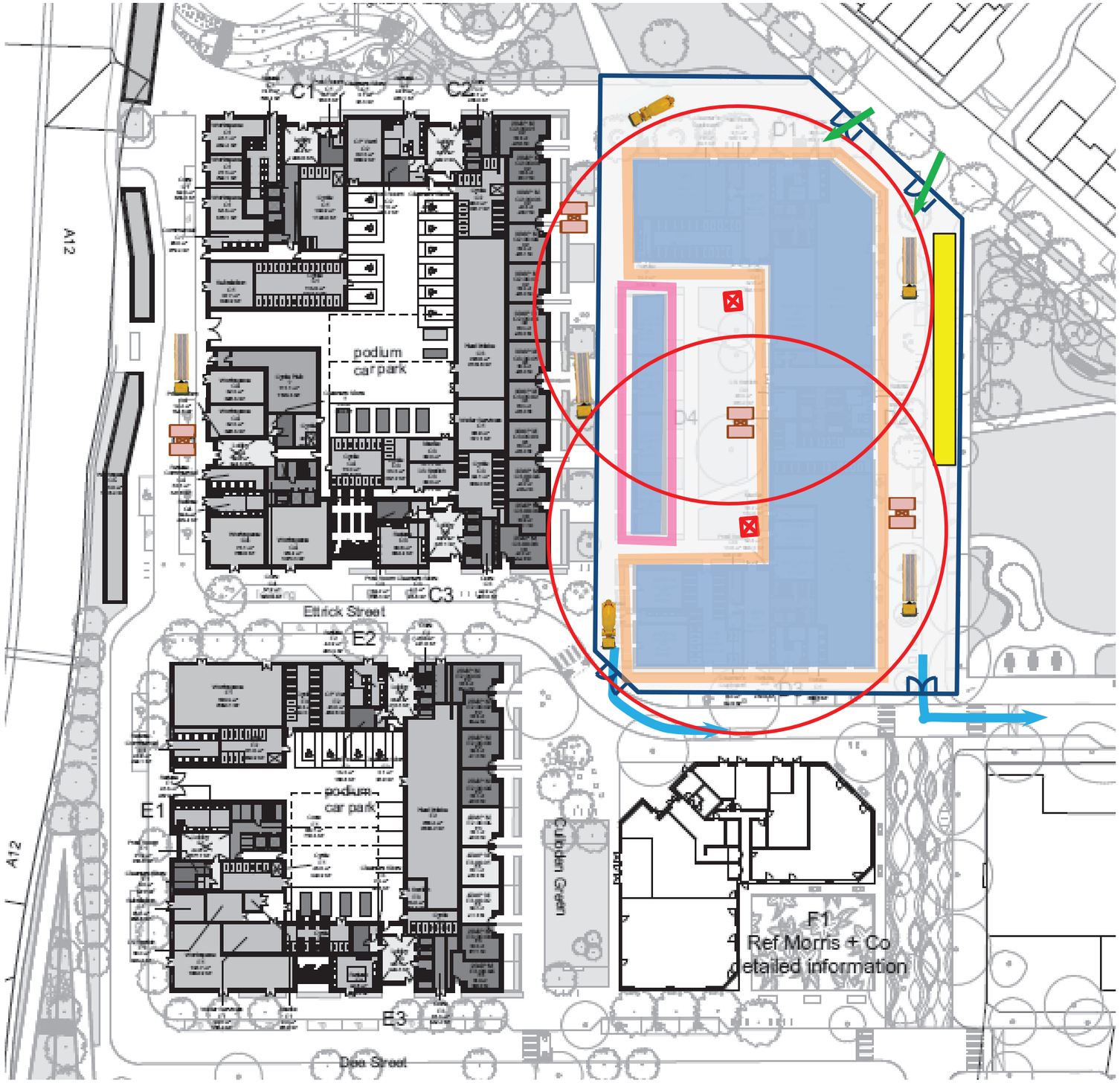
PROJECT: Aberfeldy Village
CLIENT: EcoWorld

TITLE: Phase C. C 1- E1-3 Construction Logistics

DRAWING NO.: BSB-AV-009

REVISION NO. & DATE: Rev 0 – 24/09/2021



KEY

- Harding/ Gates
- Mast Climbers
- Traditional Scaffold
- Luffing Jib Tower Crane
- Mobile Crane
- Site Accommodation
- Platform Hoists
- Vehicle Access
- Vehicle Egress

BLUE SKY BUILDING
founded on excellence

PROJECT: Aberfeldy Village
CLIENT: EcoWorld

TITLE: Phase D. D 1- Construction Logistics

DRAWING NO.: BSB-AV-010

REVISION NO. & DATE: Rev 0 – 24/09/2021

8.0

TRAFFIC MANAGEMENT

This section highlights the measures by which the Contractor will avoid nuisance to the public that may arise from increases in traffic flows and temporary rearrangements of the road network associated with the construction works. Measures have been considered in relation to access routes, site access, timing of movements, environmental standards, vehicle registration and parking.

The Contractor will maintain existing public access routes and rights-of-way during construction. Any operations requiring vehicle manoeuvring or interruptions to the footway will be planned, notified and controlled. Condition surveys of highways and footpaths will be undertaken and agreed with LBTH before demolition and construction works are undertaken.

From summer 2015 the SLS (TfL & London Councils Safe Lorry Scheme) required almost all HGVs, irrespective of current exemptions, over 3.5 tonnes that drive in Greater London to be fitted or retrofitted with:

- Side guards (also known as “lateral protection devices”) irrespective of vehicle type; and
- Both Class V and VI mirrors, irrespective of vehicle age or registration date.

The contractor will ensure that all sub-contractors and suppliers delivery vehicles comply with the scheme and any non-complying vehicles are turned away from site.

CLOCS Compliance

The project will adopt Construction Logistics and Community Safety (CLOCS) standards for all delivery vehicles. (CLOCS Standard for construction logistics, V1.2 2014) Fleet Operator Recognition Scheme (FORS) Silver accreditation as a minimum will be a contractual requirement, FORS Gold operators will be appointed where possible. Where FORS Silver operators are appointed, written assurance will be sought from contractors that all vehicles over 3.5t are equipped with additional safety equipment (as per CLOCS Standard P13), and that all drivers servicing the site will have undertaken approved additional training (e.g. Safe Urban Driving + 1 x e-learning module or Work Related Road Risk Vulnerable Road User training + on-cycle hazard awareness course + 1 x e-learning module etc.). CLOCS Compliance will be included as a contractual requirement.

Desktop checks will be made against the FORS database of trained drivers and accredited companies as outlined in the CLOCS Standard Managing Supplier Compliance guide. These will be carried out as per a risk scale based on that outlined in the CLOCS Managing Supplier Compliance guide.

Checks of FORS ID numbers will form part of the periodic checks and will be carried out as per an appropriate risk scale. Random spot checks will be carried out by site staff on vehicles and drivers servicing the site at a frequency based on the aforementioned risk scale. These will include evidence of further training, license checks, evidence of routing information, and checks of vehicle safety equipment. Results from these checks will be logged and retained and enforced upon accordingly.

Collision reporting data will be requested from operators and acted upon when necessary.

Access routes

The Contractor will use designated construction traffic routes for deliveries to the site and removal of waste etc.

Access routes to and from the site to be used by heavy goods vehicles (HGVs) will be agreed with TfL and LBTH prior to initiation of the construction programme, to minimise disruption to the road and pedestrian network. The Transport for London Road Network (TLRN) will be used as far as possible to reach the site, with construction traffic making final approaches to site using the B125.

At this stage we do not know which direction specific traffic will approach from but that will become clearer once the materials are better known, and ultimately when contractors can place supply orders. However, the site is well placed for vehicle access, and we would expect that most construction traffic will approach from the A12 and A13 to reach site.

Detailed logistics plans will be developed as part of the contractor’s Final CEMP, when procurement will be further advanced, and more knowledge of vehicle origination and routes can be planned.

Pedestrian access for operatives and staff will be located close to the main vehicular access gates with separate pedestrian gates and footpaths provided.

To minimise the likelihood of congestion during the construction period, strict monitoring and control of vehicles entering and egressing the sites will be implemented. Construction deliveries will be carefully planned with delivery times agreed with each sub-contractor and supplier using a booking system. Delivery schedules will be produced in order to look at the profiles of up

and coming deliveries, and to regulate deliveries and eliminate bottle necks.

Specific time slots will be allocated to the sub-contractors and suppliers for the use of cranes and hoists, to ensure that the main plant will be utilised efficiently, and that deliveries are not queued.

Construction Traffic Forecast

The number of lorry movements, hours of operation and any lorry holding areas will be agreed in advance with LBTH. The Contractor will maintain an up-to-date log of all drivers that will include a written undertaking from them to adhere to approved routes for construction traffic.

There will be no daytime or overnight parking of lorries within the vicinity of the construction site.

Estimated numbers of construction related vehicle journeys for the construction period will be calculated based on volumes of excavated waste material, imported concrete, brickwork, cladding and fit out materials when designs are further advanced.

Operatives Journeys to Work

Operatives should be encouraged to come to work by public transport or cycle. No parking would be permitted on site.

Bike parking and showers should be provided on site.

The site is served by Hammersmith & City, District and DLR stations, and D8 and 309 bus routes.

9.0 SITE WASTE MANAGEMENT

The Contractor will use working methods that minimise waste. Any waste arising from the site will be properly categorised and dealt with in accordance with appropriate legislation. Opportunities for re-using or recycling construction or demolition waste should be explored and implemented.

The Contractor will carry out the works in such a way that, as far as is reasonably practicable, the amount of spoil and waste (including groundwater, production water and run-off) to be disposed of is minimised.

The disposal of all waste or other materials removed from the Site will be in accordance with the requirements of the Environment Agency, Control of Pollution Act (COPA), 1974, Environment Act 1995, Special Waste Regulations 1996, Duty of Care Regulations 1991 and the Waste Management Regulations 2011.

In general, and in accordance with the principles of the UK Government's 'Waste Strategy 2010', a principal aim during enabling works and construction will be to reduce the amount of waste generated and exported from the Development site.

This approach complies with the waste hierarchy whereby the intention is first to minimise, then to treat at source or compact and, finally, to dispose of off-site as necessary. All relevant Contractors will be required to investigate opportunities to minimise and reduce waste generation, such as:

- Agreements with material suppliers to reduce the amount of packaging or to participate in a packaging take-back scheme.
- Implementation of a 'just-in-time' material delivery system to avoid materials being stockpiled, which increases the risk of their damage and disposal as waste.
- Attention to material quantity requirements to avoid over-ordering and generation of waste materials.
- Re-use of materials wherever feasible (e.g. re-use of crushed concrete from demolition for the piling platform; re-use of excavated soil for landscaping).
- The Government has set broad targets for the use of reclaimed aggregate, and in keeping with best practice, Contractors will be required to maximise the proportion of materials recycled.
- Segregation of waste at source.

- Re-use and recycling of materials off-site where re-use on-site is not practical (e.g. through use of an off-site waste segregation facility and re-sale for direct re-use or re-processing). Our expectations in this regard are shown in the following table.

The Final CEMP is to include the full environmental management requirements specified in a Site Waste Management Plan (SWMP). Should the SWMP be reviewed and updated, the waste management measures detailed here should be updated to reflect any changes.

Material	Target	Probable Location
Architectural salvage	100% re-used	Several architectural salvage companies in London.
Structural steel for re-use	100% re-used	Steel used in temporary works is likely to be previously used and will be retained for subsequent re-use. Whole steel members removed in the demolition may be similarly re-use on subsequent projects
Metals	100% recycled	Every effort will be made to recycle these materials. Waste and off-cut metals will be segregated on site and taken for recycling to a waste transfer station.
Hard-core (crushed concrete, masonry etc.)	100% recycled	Crushed on site and reused.
Excavated material/ clay etc.	100% recycled	Clay – 100% processed for re-use (subject to analysis).
Timber	Up to 80% re-used The amount re-used will depend on the material	We will attempt to salvage any re-useable timber for hoardings, battening, shuttering etc. for possible use on site with the balance being retained by the Contractors.
Glass (non-tempered, non-laminated and non-bomb proofing film etc.)	100% recycled	Processing facility in Greenwich.
Plasterboard	100% recycled	Processing plants via British Gypsum
Mixed waste	The amount recycled will depend on the material	An absolute minimum will remain for transport to landfill.
Asbestos	100% landfill	Taken to a licensed site.

10.0 NOISE AND VIBRATION

The Contractor will discuss and agree with LBTH whether to seek their formal consent in accordance with Section 61 of Control of Pollution Act 1974 to his proposed methods of work and to the steps he proposes in order to minimise noise. Notwithstanding this, the Contractor will discuss in detail and agree the proposed noise and vibration control measures with the Local Authority.

Best Practicable Means

Best Practicable Means (BPM) of noise control will be applied during construction works to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors arising from construction activities.

Designated site-based staff shall have the authority to take the steps necessary on behalf of the contractor to ensure noise and vibration is adequately controlled and managed, according to the circumstances associated with each worksite. At the commencement of their appointment on the project (or prior to start of works on site), all site staff are to be briefed on their responsibilities to the application of BPM to minimise construction noise and vibration and the content of any planning consents, codes of construction or other legal agreements. The performance of the training should then be regularly reviewed and repeated throughout the construction programme as appropriate.

The general principles of noise management are given below:

Control at source:

- Equipment – noise emissions limits for equipment brought to site.
- Equipment – method of directly controlling noise e.g. by retrofitting controls to plant and machinery.
- Equipment - indirect method of controlling noise e.g. acoustic screens.
- Fit all plant and equipment with appropriate mufflers or silencers of the type recommended by the manufacturer.
- Follow manufacturer's guidance and measures to operate plant and equipment and use it in a manner which minimises noise.
- Equipment - indirect method of controlling noise e.g. benefits and practicality of using alternative construction methodology to achieve the objective as opposed to more conventional but noisier techniques; selection of quieter tools/machines; application of quieter processes.

- Reduce loading / unloading heights for muck away and material movement to mitigate impact noise.
- Handle all material in a manner that minimises noise
- Use all plant and equipment only for tasks for which it has been designed for.
- Maximise screening from existing features / structures or employ the use of full or partial enclosures for fixed plant. The enclosures should be well maintained. Fixed plant can include generators, compressors, pumps, batching plant and ventilation plant.

Control across site by:

- Administrative and legislative control,
- Control of working hours,
- Control of delivery areas and times,
- Careful choice of compound location,
- Locate the site access away from noise sensitive receptors. Keep internal haul routes well maintained.
- Limit material and plant loading and unloading to normal working hours.
- Physically screening site,
- Control of noise via Contract specification of limits,
- Noise Monitoring, to check compliance with noise level limits, cessation of works until alternative method is found.
- Many of the activities which generate noise can be mitigated to some degree by careful operation of machinery and use of tools. This may best be addressed by toolbox talks and site inductions.

Noise control

The Contractor's environmental team will undertake a noise assessment as part of the Construction Noise and Vibration Report, to predict noise levels at adjoining properties. This noise assessment will be carried out in accordance with BS5228-1: 2009+A1: 2014 'Code of Practice for noise and vibration on construction and open sites'.

This assessment allows the Contractor to select the most appropriate tools, methodology and controls to minimise disruptions of buildings at close proximity of the adjacent structures (sensitive receptors) and in particular live and occupied premises during the enabling, piling and excavation periods.

Noise levels will be monitored by the Contractor during the works. LBTH shall be given access to all noise readings if required as soon as they become available.

Although the noise levels to be included in a formal agreement between the Contractor and LBTH are the maximum to be allowed, at sensitive locations the Contractor will be requested to achieve, where practicable, noise levels lower than the specified limits.

Noise Control Measures

The Contractor shall comply with the recommendations set out in BS5228:2009 and in particular with the following requirements:

- Vehicles and mechanical plant will be maintained in a good and effective working order and operated in a manner to minimise noise emissions. The contractor will ensure that all plant complies with the relevant statutory requirements;
- HGV and site vehicles will be equipped with broadband, non-tonal reversing alarms;
- Compressor, generator and engine compartment doors will be kept closed and plant turned off when not in use;
- All pneumatic tools will be fitted with silencers/mufflers;
- Care would be taken when unloading vehicles to avoid un-necessary noise;
- The use of particularly noise plant will be limited, i.e. avoiding use of particularly noisy plant early in the morning;
- Restrict the number of plant items in use at any one time;
- Plant maintenance operations will be undertaken at distance from noise-sensitive receptors;
- Reduce the speed of vehicle movements;
- Ensure that operations are designed to be undertaken with any directional noise emissions pointing away from noise-sensitive receptors;
- When replacing older plant, ensure that the quietest plant available is considered;
- Drop heights will be minimised when loading vehicles with rubble;
- Vehicles should be prohibited from waiting within the site with their engines running or alternatively, located in waiting areas away from sensitive receptors;
- Local hoarding, screens or barriers should be erected to shield particularly noisy activities;
- Temporary noise screens will be used to reduce noise from particularly noisy activities and the height of perimeter hoarding will be extended where this would assist in reducing noise disturbance at sensitive receptors; and
- Hours of operation should be strictly enforced and any deviations other than those previously identified will be with the consent of the local authority;
- Limiting of high impact activities (including breaking out or piling works) to specific times of the day. For example, this may include 2 hours on – 2 hours off, or the restriction of such activities to between 09:00-12:00 and 14:00-17:00;
- Piling will be carried out with the method that minimises both noise and the transmission of vibration to sensitive receptors;
- Vehicles, plant and equipment will undergo regular servicing and maintenance to prevent irregular noise levels;

- The location of stationary plant in areas which will have a minimized impact on occupied residential and commercial properties, where feasible;
- Static plant, when in operation, is to be sound attenuated using methods based on the guidance and advice in the BS 5228, where practical;
- Implementation of Best Practice Means (as defined in Section 72 of the COPA) by trade contractors at all times, and are to carry out all work in such a manner as to reduce disturbances from noise and vibration;
- Preference for electrically powered plant, to mechanically powered alternatives, where practical;

Construction Traffic

The Contractor will incorporate the following measures into the scheme to avoid noise related impacts from construction traffic:

- Vehicles will not wait or queue up with engines running on the site or the public highway;
- Vehicles will be properly maintained to comply with noise emissions standards;
- Deliveries will be restricted to be within working hours of the site; and
- Design and routing of access routes will minimise vehicle noise and the need to perform reversing manoeuvres.

Vibration control

Vibration is a particular risk during the demolition, piling and excavation stages. The measures taken to reduce the acoustics of these two operations will also assist in mitigating the effects of vibration on neighbours and their property.

A digital seismograph measuring device will be used to measure the amount of vibration produced during the works. Where elevated levels are recorded the source will be investigated and, where possible, alternative techniques employed to reduce the levels.

The Contractor will comply with the vibration levels established by agreement with LBTH, which will consider BS 5228-2.

11.0 AIR QUALITY

The Contractors will, as far as reasonably practical, seek to control and limit emissions to the atmosphere in terms of gaseous and particulate pollutants from tools and equipment used on site and dust from construction activities.

We recommend that the site activities should be assessed in accordance with the Mayor of London's SPG "The Control of Dust & emissions during Construction & Demolition". The contractors must submit a statement to Camden for approval identifying proposed dust control measures before work starts. Special precautions must be taken when materials containing asbestos are encountered.

Throughout the project, the Contractors will ensure the following:

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site
- Display the name and contact details of person(s) accountable for air quality and dust issues on the Site boundary. This may be the environment manager/engineer or the site manager
- Display the head or regional office contact information
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the LBTH.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken
- Make the complaints log available to the LBTH when asked
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
- Hold regular liaison meetings with other high-risk construction sites within 500m of the Site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised
- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the LBTH when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary

- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the Site boundary that are at least as high as any stockpiles on site
- Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period
- Avoid site runoff of water or mud
- Keep site hoarding, barriers and scaffolding clean using wet methods
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site
- Cover, seed or fence stockpiles to prevent wind whipping
- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards
- Ensure all vehicles switch off engines when stationary - no idling vehicles
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems
- Ensure an adequate water supply on the Site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate
- Use enclosed chutes and conveyors and covered skips
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods
- Avoid bonfires and burning of waste materials
- Ensure effective water suppression is used during breaking out operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water

suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground
- Avoid explosive blasting, using appropriate manual or mechanical alternatives
- Bag and remove any biological debris or damp down such material before breaking out
- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable
- Only remove the cover in small areas during work and not all at once
- Avoid scabbling (roughening of concrete surfaces) if possible
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust
- Use water-assisted dust sweeper(s) on the access and local roads, if required
- Avoid dry sweeping of large areas
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site logbook
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable)
- Access gates to be located at least 10m from receptors where possible

12.0 GROUND CONDITIONS

This section is to be updated by the Principal Contractor in the Final CEMP.

The preparation of a Remedial Statement will direct any environmental management, monitoring and other requirements.

The contractor is also to include the management of groundwater, and potential impacts associated with the construction works.

Some of the proposed management measures are outlined below.

The management of infiltration and promotion of leaching to groundwater is to occur with regards to the following:

- Completion of a Foundation Works Risk Assessment, informed by a site investigation;
- Implement measures to minimize infiltration to groundwater (Principal and Secondary Aquifer);
- Avoid stockpiling of contaminated soil;
- Any stockpiled material is to be covered and placed on an impermeable surface.
- Remove / treat any gross contamination if identified.
- Waste characterisation (as part of the pre-commencement investigations)
- Groundwater is to be managed during excavation works.

13.0 SURFACE WATER MANAGEMENT

This section sets out the requirements on the Contractors for managing the environmental impacts of constructing the development, associated with surface water management.

The contractor will prepare a detailed Surface Water Management Plan and site-specific Erosion and Sediment Control Plan, which will minimise discharge of potentially polluted site water to nearby drains and overland flow routes;

- No polluted water is to be discharged from the site;
- Sediment and erosion controls are to be regularly inspected to ensure sufficient capacity;
- Wheel washes are to be implemented on site;
- Drainage of surface runoff and de-watering effluents to settling tanks to remove suspended solids prior to discharge to sewer or removal by a suitably licenced waste operator;
- Storage of chemicals and hazardous materials within bunded areas, with adequate capacity (of 110%);
- Bunded areas are to be regularly inspected to ensure that sufficient capacity is available;
- Prevention of spills and leaks.

Key Site Activities Using Water

Activity	Water Use	Source: Potable or Non-Potable
Site Cabins	Drinking, Kitchen, Canteen	Potable
	Toilets and urinals, showers and hand washing	Non-potable
Drainage	Flushing	Both
General Cleaning	Tool rinsing, boot washing, plant & equipment washing	Non-Potable
Site Dust Suppression	Dampening (bowsers) and misting	Non-Potable
Concrete Production	Mixing	Non-Potable
Masonry	Mortar mixing	Both
Screeds	Laying	Both
Concrete wash out	Plant wash out	Non-Potable
Commissioning	M&E pipe and plant testing	Both (as appropriate to system)

Key Options for Water Sustainability	
Activity	Options to Reduce Potable Water Demand
Site Cabins	Efficient showers, taps, toilets and urinal controls. Trigger controls on catering taps and use of vessels for washing rather than under running taps. Rainwater capture for toilet flushing. Waterless urinals
Drainage	Reuse water collected from dewatering, e.g. dewatering Use water from attenuation tanks or rainwater harvest tanks
General cleaning	Fill containers rather than use running taps or open hoses Trigger operated spray guns Use of a closed water recycling system for wheel washing.
Site Dust Suppression	Use of control systems to allow damping activities to be altered for different applications. Use of water efficient road sweepers. Use water collected from elsewhere for dust suppression (e.g. from attenuation tanks).
Masonry	Use water butts as opposed to long hose runs when mixing mortar in remote areas of the site
Screed	Apply in early morning/ late afternoon for natural cooling (reduced need for damping) Use ready mix
Concrete Production	Consider water storage where water for cleaning could be blended with potable for production.
Concrete Wash out	Consider collecting wastewater filtering and reusing

14.0 ECOLOGY

This section is to be updated upon the completion of further ground conditions investigations. The Ecology section of the construction-phase CEMP for the Proposed Development will outline the procedures that will be put into place to control and limit disturbance to areas of nature conservation interest and protected species in accordance with relevant legislative requirements and accepted industry practice, as appropriate. The following measures are to be implemented:

- Enabling works are to be undertaken outside of the bird breeding season, which runs from March to September (inclusive).
- Where this is not possible, bird nest checks will be undertaken no more than 48 hours in advance of clearing by an appropriately qualified ecologist.
- Should any active bird nests be identified within the construction works area, all works on site are to cease immediately and the area around the nest is to be protected from disturbance. A suitably qualified ecologist is to be contacted immediately.
- In accordance with the requirements of the Wildlife and Countryside Act 1981, active nests are not to be disturbed and cannot be relocated.
- A cordon of an appropriate size is to be established to avoid disturbance to the nest, for the duration it is active.
- No injury, harm or death to fauna during the construction works is to occur.

All works are to be carried out in accordance with 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' (2009).

15.0 CONCLUSION

In addition to this outline CEMP, other supporting management plans have been drafted and submitted in support of the Planning Application, specifically a Construction Logistics Plan (CLP).

It is anticipated that the implementation of the CEMP and CLP as well as required management plans (e.g. Dust Management Plan) will be secured through appropriately worded planning conditions. The CEMP is based on the LBTH Code of Construction Practice and established good management principles. It is intended that the CEMP (and other plans, as relevant) will be 'live working' documents, and that the Principal Contractor's appointed representative will update the documents accordingly with any amended construction environmental management measures as the phased construction of the proposed development progresses.

REFERENCES

The contractor shall comply with all relevant legislation, standards, codes of practice, and guidance for the works being carried out including (but not exclusive to) those listed in this section.

Legislation

- The Explosives Regulations 2014
- Clean Air Act 1993
- Public Health Act 1961
- Health and Safety at Work, etc. Act 1974
- Control of Pollution Act 1974
- Control of Pollution (Amendment) Act 1989
- Environmental Protection Act 1990
- New Roads and Street Works Act 1991
- Lifting Operations and Lifting Equipment Regulations 1998
- Special Waste Regulations 1996
- Control of Lead at Work Regulations 2002
- Control of Asbestos Regulations 2012
- Ionising Radiations Regulations 2017
- Electricity at Work Regulations 1989
- Control of Noise at Work Regulations 2005
- Controlled Waste (Registration of Carriers & Seizure of Vehicles) Regulations 1991
- Environmental Protection (Duty of Care) Regulations 1991
- Management of Health & Safety at Work Regulations 1999
- Provision & Use of Work Equipment Regulations 1998
- Personal Protective Equipment at Work Regulations 1992
- Construction (Design & Management) Regulations 2015
- Control of Substances Hazardous to Health Regulations 2002
- Work at Height Regulations 2005
- Dangerous Substances and Explosive Atmosphere Regulations 2002
- Manufacture and Storage of Explosives Regulations 2005

British Standards

- BS 5228 Code of Practice for noise control on construction and open sites
- BS 5607 Code of Practice for safe use of explosives in the construction industry
- BS 6187 Code of Practice for demolition
- BS 7121 Safe use of cranes

Guidance

- HSE Guidance booklets:
- HSG 47 Avoiding danger from underground services
- L21 Management of health and safety at work
- L101 Safe work in confined spaces

HSE Guidance Notes

- GS 6 Avoidance of danger from overhead electric lines
- CS 15 The cleaning and gas freeing of tanks containing flammable residues
- EH 40 Occupational exposure limits (revised annually)

HSE Construction Information Sheet

- No.45 Establishing exclusion zones when using explosives in demolition.

Asbestos Removal

Legislation

- The Health and Safety at Work etc. Act 1974
- The Control of Pollution Act 1974
- The Special Waste Regulations 1996
- The Personal Protective Equipment at Work Regulations 1992 (as amended)
- The Control of Asbestos Regulations 2012
- Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009
- The Construction (Design and Management) Regulations 2015

Approved Codes of Practice

- L21 Management of health and safety at work: Management of Health and Safety at Work Regulations 1999 (second edition)
- L24 Workplace health, safety and welfare. Workplace (Health, Safety and Welfare) Regulations 1992
- L25 Personal protective equipment at work (Second edition). Personal Protective Equipment at Work Regulations 1992 (as amended). Guidance on Regulations
- L64 Safety signs and signals. The Health and Safety (Safety Signs and Signals) Regulations 1996
- L87 Safety representatives and safety committees (third edition)
- L95 A guide to the Health and Safety (Consultation with Employees) Regulations 1996
- L127 The management of asbestos in non-domestic premises (second edition)
- L143 Work with materials containing asbestos. Control of Asbestos Regulations 2012
- L144 Managing health and safety in construction: Construction (Design and Management) Regulations 2015

British Standards

- BS 8520-1:2009 Equipment used in the controlled removal of asbestos-containing materials. Controlled wetting equipment. Specification
- BS 8520-2:2009 Equipment used in the controlled removal of asbestos-containing materials. Negative Pressure Units
- BS 8520-3:2009 Equipment used in the controlled removal of asbestos-containing materials. Operation, cleaning and maintenance of class H vacuum cleaners
- BS EN ISO 13982-1:2004+A1:2010 Protective clothing for use against solid particulates. Performance requirements for chemical protective clothing providing protection to the full body against airborne solid particulates (type 5 clothing)
- BS EN ISO/IEC 17020:2012 General criteria for the operation of various types of bodies performing inspection
- BS EN ISO/IEC 17024:2012 Conformity assessment. General requirements for bodies operating certification of persons
- BS EN ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories

HSE Guidance Booklets & Leaflets

- HSG189/2 Working with asbestos cement
- HSG210 Asbestos essentials task manual. Task guidance sheets for the building, maintenance and allied trades
- HSG213 Introduction to asbestos essentials. Comprehensive guidance on working with asbestos for the building, maintenance and allied trades
- HSG227 A comprehensive guide to Managing Asbestos in Premises
- HSG247 Asbestos: The licensed contractor's guide
- HSG248 Asbestos: The analyst's guide for sampling, analysis and clearance procedures
- HSG264 Asbestos: The survey guide
- INDG188 Asbestos alert (pocket card) for building maintenance, repair and refurbishment workers
- INDG223 A short guide to managing asbestos in premises. (Rev 3)
- INDG255 Asbestos dust kills – keep your mask on (Rev 1)
- INDG289 Working with Asbestos in Buildings
- OC 282/28 Fit testing of respiratory protective equipment face pieces.

INTRODUCING BLUE SKY BUILDING
FOUNDED ON EXCELLENCE

In 2012, Julian Daniel, our Founder and Managing Director spotted the opportunity to create a company of his own, Blue Sky Building, which would embody the enthusiasm and passion he feels for the industry.

Blue Sky Building is an innovative construction management company which delivers unique solutions. Our founding directors boast a combined experience of over eight decades, uniting their background in the delivery of bespoke construction with the expertise and skills needed to manage complex engineering and construction projects, particularly in the midst of the kind of city centre environment prevalent in London and the South East.

We act as a trusted collaborator, setting the kind of standards other constructors aspire to, by offering our clients quality, professionalism and innovation. We've built our reputation upon offering a bespoke service each time, tailored to meet the individual needs of each client.

We know our industry and understand how the construction process works. We study our clients' business and we understand the wider business climate, bringing all three together in a pursuit of excellence which is as relentless as it is refreshing.

At Blue Sky Building, no resource is more valuable than the people charged with delivering our vision. The principles we work around are excellence, quality and safety and the values underpinning our work are intelligence, honesty, integrity and trust.

Our Promise:

- A focus on the client;
- Clarity of leadership and direction;
- Accessible and practical advice;
- Input and ownership up to Director level;
- Appropriate and timely communication;
- Simple solutions to complex issues;
- Advice which is independent and maintains the integrity of the clients' procurement process;
- In depth knowledge of the market and links to key trade contractors; and
- Value added throughout - from design, through procurement and on to construction.

OUR SERVICES
CONSTRUCTION DELIVERY
PRECONSTRUCTION
PROJECT MANAGEMENT
CONSULTANCY

OUR VALUES
INTELLIGENCE
HONESTY
INTEGRITY
TRUST

BLUE SKY BUILDING


PLARWORKS
31
CYCLE CAFE
ECOWORLD
LONDON
CREATING TOMORROW & BEYOND
POPLAR
HARCA

Appendix: Socio Economics

Annex 1: Socio-Economics Planning Policy Context
Annex 2: Education and Healthcare Facilities within Local Impact Area

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Annex 1: Socio-Economics Planning Policy Context

A Final Report by Hatch
October 2021

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October 2021

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National Planning Policy

National Planning Policy Framework, 2021

1.1 The National Planning Policy Framework (NPPF) sets out the Government's economic, environmental and social planning policies for England. The latest iteration of the NPPF was published in 2021 and states that the purpose of the planning system is to contribute to the achievement of sustainable development.

1.2 The NPPF advocates Sustainable Development and this should be reflected by the emerging local plan and be informed by robust evidence to support clearly defined allocations for land for employment.

1.3 The framework states that housing provisions should be reflective of current and future demographic trends and market signals i.e. size, type, tenure of housing needed for different groups in the community. Where major development involving the provision of housing is proposed, planning policies and decisions should expect at least 10% of the total number of homes to be available for affordable home ownership.

1.4 Furthermore, NPPF identifies several key principles in relation to building a strong, competitive economy and creating the conditions which can support businesses' expansion. In this regard, it recommends identifying strategic sites which can match this strategy and encourage sustainable economic growth.

1.5 Good design is also identified as a key aspect of sustainable development which has the potential to create better and healthier places in which to live and work. New developments are encouraged to include public space and to support local facilities, which can further support the integration of these new developments with existing businesses and communities.

1.6 Local planning authorities are further encouraged to promote healthy communities by supporting developments which provide social infrastructure, such as education facilities within the local area.

National Planning Practice Guidance, 2018

1.7 The Practice Guidance provides a methodology for assessing economic development needs. It states that plan makers should liaise closely with the business community to understand their current and potential future requirements.

1.8 Guidance for the effective use of land states that where a planning application is submitted, local planning authorities will need to consider whether the proposed development would have an unreasonable impact on the daylight and sunlight levels enjoyed by neighbouring occupiers, as well as assessing whether daylight and sunlight within the development itself will provide satisfactory living conditions for future occupants.

Regional Planning Policy

The London Plan, 2021

1.9 The 2021 London Plan sets out the Mayor's vision for London and outlines the strategic approach to economic, social, environmental, cultural, housing and transport development in London over the next 20 to 25 years. It is a spatial development strategy which covers London's 32 boroughs and the Corporation of the City of London.

1.10 It places an emphasis on good growth, referring to sustainable growth that works for everyone. The approach frames economic growth by its potential to improve the health and quality of life of all Londoners, to reduce inequalities and to make the city a better place to live, work and visit. Each policy area in the New Plan is informed by six Good Growth policies:

- Building strong and inclusive communities;
- Making the best use of land;
- Creating a healthy city;
- Delivering the homes Londoners need;
- Growing a good economy; and
- Increasing efficiency and resilience

1.11 The New London Plan recognises the importance of consolidating office provision in London, especially in town centres, to accommodate and support the projected growth in office employment (see Policy E1: Offices, para. 6.1.3).

1.12 The New London Plan also emphasises the important role of cultural facilities, such as music venues, in providing opportunities for all Londoners to experience and get involved in culture, stating that the capital's culture and creative sector delivers "both economic and social benefits for the capital", such as building strong communities, increasing healthy life outcomes and generating civic pride (see Policy HC5: Supporting London's culture and creative industries).

1.13 Policy G4 states development proposals should not result in the loss of protected open space and where possible create areas of publicly accessible open space, particularly in areas of deficiency.

1.14 Development and regeneration proposals for an area provide an opportunity to re-think how land and buildings are used and whether there is a more optimal configuration or use of that land. The co-location of facilities with other uses, such as other forms of social infrastructure or housing, is encouraged to use land more efficiently and to enable a more integrated service delivery (see Policy S2: Health and Social care facilities, para. 5.2.8-9).

1.15 Policy H1 sets the ten-year targets for net housing completions that each local planning authority should plan for. According to this policy, the LBTH should aim for 34,730 net housing completions in the period 2019-2029. This is the highest housing target of all London Boroughs and emphasises the role LBTH is expected to have in contributing to overall housing delivery across London.

Mayor's Economic Development Strategy, 2018

1.16 The Mayor's Economic Development Strategy sets out a plan to grow London's economy, support businesses, boost innovation and create a create a fairer, more inclusive economy that works for all Londoners.

1.17 The strategy recognises the importance of tourism for the capital, and pledges to improve the "visitor experience" by continuing to develop its tourism offer and focusing on the quality of visitor infrastructure and amenities.

1.18 Educational and lifelong learning is highlighted as an important input for a more inclusive economy. To this end, the document states that the mayor will invest in new spaces for learning to improve the quality of the learning environment for students. Similarly, the strategy is committed to continuing investing in community and social infrastructure such as schools, health services and green spaces, as well as cultural facilities to build inclusive communities.

London Environment Strategy, 2018

1.19 The London Environment Strategy sets out a plan to reduce air pollution with an aspiration to turn London into a zero carbon city by 2050. As well as cleaning up toxic air, it places importance on creating new green spaces where most needed within the city.

1.20 The strategy recognises the gradual loss of green space across London in recent years, as well as the imbalance in provision of green space in different parts of London. It states 'almost half of Londoners have poor access to parks' and that the quality of parks has declined as Council budgets have become tighter. It highlights the benefits of quality green space on people's health, quality of life and attractiveness of London as a place to 'live, visit and do business'.

1.21 One of the aims from the strategy is for London to be the world's first National Park City, where 'more than half of its area is green' and the 'natural environment is protected and the network of green infrastructure is managed to benefit all Londoners.'

1.22 The strategy recognises that Areas of Deficiency in Access in Public Open Space (AoD) have reduced in recent years in London, particularly in large regeneration areas like Kings Cross and the Olympic Park. Where there is no space to create new parks so planning guidelines have promoted the creation of pocket parks and other small open spaces less than 400m from where people live.

1.23 The London Plan includes policies that ensure any development outside of the protected green space network, including gardens, does not lead to an overall loss of green cover (proposal 5.1.1.b).

Local Planning Policy

Tower Hamlets Plan 2031

1.24 The Tower Hamlets Plan sets out how the London Borough will grow and develop until 2031. It identifies how many new homes, jobs and services are needed to support the area's growing population and where and how they should be provided.

1.25 Key strategic objectives are:

- **Managing the growth and shaping change;** Growth must contribute positively to existing needs and be delivered alongside appropriate social and transport infrastructure. As well as this growth must be balanced, well designed, optimise the use of the best available technological innovations, and enhance the environment and well-being of Tower Hamlets residents.
- **Sharing the benefits of growth;** Growth must deliver social, economic and environmental net gains jointly and simultaneously, promote community cohesion, enable community leadership and engagement as well as bring an improved quality of life, health benefits and reduce health inequalities.

1.26 The plan also sets out the policies to maximise the supply of housing in the borough to meet both local and strategic needs. It states that in the period 2016-2031 a minimum of 54,889 additional homes will be built, which is greater than the objectively assessed need of 46,458 homes. Of this total, 21,100 dwellings will be affordable (representing 45% of the overall need).

1.27 Section 4 of the Tower Hamlets Plan 2031 establishes the Vision for Lower Lea Valley. It states that by 2031, "*the Lower Lea Valley will experience comprehensive regeneration and redevelopment of former and underused industrial areas. Connectivity will be transformed with a series of new bridges and riverside walkways across the River Lea, and crossings along the A12 and A13, which will integrate existing and new communities in the area. The development of the Lea River Park (including the Leaway) will provide a new strategic publicly green space and a series of new pedestrian and cycling routes, linking the River Lea to London's wider green grid network. Development in the area will have sufficient transport and social infrastructure to facilitate the creation of thriving mixed communities alongside vibrant neighbourhood centres. Housing provision will be accelerated through the Poplar Riverside Housing Zone and delivered alongside new local employment, enterprise and business opportunities.*"

1.28 Development in the Lower Lea Valley will be required to accommodate the following uses to meet the future needs of the borough: a minimum of 5,478 residential units, 755 office jobs, 1,023 industrial jobs, a primary school, a secondary school, 1.4ha of open space as well as retail and leisure floorspace.

Tower Hamlets Growth and Economic Development Plan 2018-2023

1.29 The draft Growth and Economic Development Plan is a short-term strategy for Tower Hamlets that identifies the policies required to create a borough that delivers sustainable and inclusive economic growth in a way that enables residents and businesses to prosper.

1.30 The Plan examines the challenges facing Tower Hamlets and sets out three priorities in order to overcome these difficulties. These priorities are **preparing young people for success**, **helping working age residents thrive** and **creating the conditions for business growth**.

1.31 Despite Tower Hamlets exceeding the national average in terms of educational attainment at secondary level, the borough does experience excellent progress of sustained employment for young people. The Plan aims to alleviate this problem by equipping young people with tools to help them make the right decisions in their pursuit of further education, training and/or employment. It also aims to pilot a programme of careers education early in secondary school, before critical options and choices are made.

1.32 There is also a mismatch between residents' skills and the jobs available in the borough and beyond Tower Hamlets. The Plan outlines how the Growth and Economic Development

Partnership Board will work with employers and training partners to identify areas of skills shortage in the borough and create a pipeline of willing and able employees.

1.33 The Plan sets to improve the conditions for business growth by implementing a programme of business support for Tower Hamlets businesses and entrepreneurs, developing a Workspace Strategy to inform the provision of workspace in new developments and establishing a High Street and Town Centres Strategy that details a programme of support for the borough's town centres and high streets.

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Appendix: Socio Economics

Annex 1: Socio-Economics Planning Policy Context

Annex 2: Education and Healthcare Facilities within Local Impact Area

Annex 2

Primary Schools

Ref	School Name	Capacity	Pupils on Roll
1	Bygrove Primary School	241	255
2	Culloden Primary - A Paradigm Academy	630	683
3	Cyril Jackson Primary School	492	465
4	Lansbury Lawrence Primary School	429	469
5	Manorfield Primary School	800	730
6	Marner Primary School		690
7	Mayflower Primary School	390	389
8	Our Lady and St Joseph Catholic Primary School	472	442
9	St Paul with St Luke CofE Primary School	240	190
10	St Paul's Way Trust School	1620	1791
11	St Saviour's Church of England Primary School	240	242
12	Stebon Primary School	720	688
13	The Clara Grant Primary School	462	456
14	Woolmore Primary School	630	618

Secondary Schools

Ref	School Name	Capacity	Pupils on Roll
1	Bow School	1350	1234
2	Langdon Park Community School	950	1040
3	George Green's School	1239	1219
4	Central Foundation Girls' School	1550	1533
5	Stepney All Saints Church of England Secondary School	1540	1445
6	Bishop Challoner Boys' School	600	587
7	Canary Wharf College 3	1200	345
8	Stepney Green Mathematics and Computing College	1215	1207
9	Mulberry UTC	800	393

GP Surgeries

Ref	Practice Name	Patients	GP FTEs	Patients to GP Ratio
1	Aberfeldy Practice	10,124	5	2,025
2	The Chrisp Street Hth Ctr	15,204	7.4	2,055
3	Dr Nagappan Selvan/Gough Walk Surgery	11,576	1	11,576
4	St Andrews Health Centre	14,581	7.9	18,46
5	Star Lane Medical Centre	20,132	11.6	1,736
6	The Ruiz Medical Practice	5,806	1	5,806
7	ST PAULS WAY MEDICAL CENTRE	15,207	8.5	1,789
8	Bromley-By-Bow Health Centre	N/A	N/A	N/A

Dental Practices

Ref	Practice Name	Number of Doctors
1	All Saints Dental Care	5
2	Chrisp Street Dental Centre	3
3	Align and Smile	7
4	Sunny Smiles Dental Innovations	4
5	Nilesh Patel	-
6	The Canning Town Dental Practice	-

Community Facilities

Ref	Practice Name
1	Teviot Centre
2	Teviot Community Hall
3	Poplar Bangladeshi Community
4	Aberfeldy Neighbourhood Centre
5	The Reach Community Hub
6	Burcham Street Community Centre
7	The Teviot Action Group

Appendix: Air Quality

Annex 1: Glossary
Annex 2: Traffic Data
Annex 3: Model Verification Study

Appendix: Air Quality

ANNEX 1 - GLOSSARY

Term	Definition
Accuracy	A measure of how well a set of data fits the true value.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Ambient air	Outdoor air in the troposphere, excluding workplace air.
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between 2 years, which is useful for pollutants that have higher concentrations during the winter months.
AQMA	Air Quality Management Area.
DEFRA	Department for Environment, Food and Rural Affairs.
Exceedance	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.
Fugitive emissions	Emissions arising from the passage of vehicles that do not arise from the exhaust system.
LAQM	Local Air Quality Management.
NO	Nitrogen monoxide, a.k.a. nitric oxide.
NO_2	Nitrogen dioxide.
NO_x	Nitrogen oxides.
O_3	Ozone.
Percentile	The percentage of results below a given value.
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
ppb parts per billion	The concentration of a pollutant in the air in terms of volume ratio. A concentration of 1 ppb means that for every billion (10^9) units of air, there is one unit of pollutant present.
ppm parts per million	The concentration of a pollutant in the air in terms of volume ratio. A concentration of 1 ppm means that for every billion (10^6) units of air, there is one unit of pollutant present.
Ratification (Monitoring)	Involves a critical review of all information relating to a data set, in order to amend or reject the data. When the data have been ratified they represent the final data to be used (see also validation).
µg/m³ micrograms per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of 1µg/m³ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.
UKAS	United Kingdom Accreditation Service.
Uncertainty	A measure, associated with the result of a measurement, which characterizes the range of values within which the true value is expected to lie. Uncertainty is usually expressed as the range within which the true value is expected to lie with a 95% probability, where standard statistical and other procedures have been used to evaluate this figure. Uncertainty is more clearly defined than the closely related parameter 'accuracy', and has replaced it on recent European legislation.
Validation (modelling)	Refers to the general comparison of modelled results against monitoring data carried out by model developers.
Validation (monitoring)	Screening monitoring data by visual examination to check for spurious and unusual measurements (see also ratification).

Term	Definition
Verification (modelling)	Comparison of modelled results versus any local monitoring data at relevant locations.

Appendix: Air Quality

Annex 1: Glossary

Annex 2: Traffic Data

Annex 3: Model Verification Study

ANNEX 2 - TRAFFIC DATA

Table 2.1: Baseline Traffic Data (2019)

Road Link	AADT	HGV	Speed (kph)	
			Freeflow	Congestion/ Junction
Abbott Road (East of Underpass)	8466	0.5%	35	20
Abbott Road (East of Oban Street)	7527	0.8%	30	20
Leven Road	1398	2.4%	26	20
Oban Street	987	0.5%	24	20
Bromley Hall Road	1254	2.4%	32	20
Lochnagar Street	3079	5.9%	32	20
Zetland Street	3086	7.6%	32	20
Abbott Road Underpass (One-Way)	2767	6.0%	32	20
A1206 Preston's Road	20739	7.7%	32	20
A12 (Between Lochnagar Street and A13)	82024	4.8%	64	30
A12 (North of Lochnagar Street)	79039	5.6%	64	30
A12 On-slip from A13 (St. Leonards Road)	18462	6.1%	48	30
Trafalgar Way	2994	5.6%	32	20
Upper Bank Street	9412	12.0%	48	30
Poplar High Street	6228	3.9%	32	20
Saltwell Street	6308	3.9%	32	20
A1206 Cotton Street	30047	11.1%	32	20
A1261 Aspen Way (West of A12)	105909	15.2%	64	30
Blackwall Tunnell	71397	4.8%	48	30
Upper North Street (A13 to Cordelia Street)	5710	1.6%	32	20
Upper North Street (Cordelia Street to B140 St. Paul's Way)	6631	0.9%	32	20
B140-St. Paul's Way	11158	7.0%	32	20
Cordelia Street	2522	0.6%	32	20
Devons Road	9842	2.9%	32	20
Devas Street W of Purdy Street	9399	7.6%	32	20
Chrisp Street (South of Burcham Street)	8358	1.6%	32	20

Chrisp Street (North of Burcham Street)	10018	0.9%	32	20
Campbell Road	9842	2.9%	32	20
Devas Street (West of A12 junction)	9769	9.5%	32	20
Burcham Street/St Leonard Road	4710	3.3%	32	20
A1261 Aspen Way (West of Lower Lea Crossing rbt)	111678	14.9%	64	30
Abbott Road slip to A12	5154	7.4%	32	20
Stephenson Street	6086	7.4%	48	30
A1011 Manor Road (North of A13)	11217	16.8%	48	30
A1011 Manor Road (North of Star Lane)	9277	12.0%	48	30
Cody Road	6189	7.3%	48	30
Star Lane (East of A1011)	8827	5.0%	48	30
A124 (East of Manor Road)	18287	11.2%	48	30
A124 (East of Ordnance Road)	17235	11.0%	48	30
Lower Lea Crossing	37361	15.3%	48	30
A13 (From A12/A13 interchange to Abbott Road)	54401	6.7%	48	30
A13 (West of A12/A13 interchange)	23499	15.0%	48	30
A1020 Leamouth Road	21984	7.3%	48	30
A13 (East of Leamouth Road)	52076	6.0%	48	30
A13 Newham Way (East of Abbott Road)	107775	16.1%	48	30
A1011 Silvertown Way (South of A13)	10506	8.0%	48	30
A12 Off-slip (St. Leonard Road from Blackwall Tunnel)	11714	4.9%	48	30
A102 On-slip (to Blackwall Tunnel)	11389	6.7%	48	30
A102 Off-slip (to A13 east and west)	15270	8.6%	48	30
A102 off-slip (to A13 west)	15989	5.2%	48	30
A102 on-slip (from A13 east)	18561	7.9%	48	30

Table 2.2: Baseline + Committed Developments (2031)

Road Link	AADT	HGV	Speed (kph)	
			Freeflow	Congestion/ Junction
Abbott Road (East of Underpass)	7240	9.6%	35	20
Abbott Road (East of Oban Street)	8965	9.1%	30	20

Leven Road	3744	2.4%	26	20
Oban Street	3333	0.5%	24	20
Bromley Hall Road	1254	2.4%	32	20
Lochnagar Street	2581	7.4%	32	20
Zetland Street	2304	6.7%	32	20
Abbott Road Underpass (One-Way)	5539	8.8%	32	20
A1206 Preston's Road	25156	9.2%	32	20
A12 (Between Lochnagar Street and A13)	88575	9.7%	64	30
A12 (North of Lochnagar Street)	85389	9.1%	64	30
A12 On-slip from A13 (St. Leonards Road)	16237	10.9%	48	30
Trafalgar Way	2343	0.0%	32	20
Upper Bank Street	10250	14.8%	48	30
Poplar High Street	5041	5.3%	32	20
Saltwell Street	4949	4.3%	32	20
A1206 Cotton Street	28339	6.4%	32	20
A1261 Aspen Way (West of A12)	109733	14.4%	64	30
Blackwall Tunnell	100330	10.1%	48	30
Upper North Street (A13 to Cordelia Street)	5898	1.2%	32	20
Upper North Street (Cordelia Street to B140 St. Paul's Way)	7678	0.8%	32	20
B140-St. Paul's Way	11670	6.5%	32	20
Cordelia Street	2327	0.8%	32	20
Devons Road	9536	4.3%	32	20
Devas Street W of Purdy Street	10192	8.2%	32	20
Chrisp Street (South of Burcham Street)	11816	3.3%	32	20
Chrisp Street (North of Burcham Street)	11649	1.1%	32	20
Campbell Road	10688	1.7%	32	20
Devas Street (West of A12 junction)	4974	14.5%	32	20
Burcham Street/St Leonard Road	4638	3.6%	32	20
A1261 Aspen Way (West of Lower Lea Crossing rbt)	130495	13.4%	64	30
Abbott Road slip to A12	1469	9.2%	32	20
Stephenson Street	5809	8.3%	48	30

A1011 Manor Road (North of A13)	14419	8.6%	48	30
A1011 Manor Road (North of Star Lane)	10818	7.3%	48	30
Cody Road	8111	5.4%	48	30
Star Lane (East of A1011)	5034	0.4%	48	30
A124 (East of Manor Road)	21195	8.7%	48	30
A124 (East of Ordnance Road)	19977	8.4%	48	30
Lower Lea Crossing	46021	12.1%	48	30
A13 (From A12/A13 interchange to Abbott Road)	58629	14.2%	48	30
A13 (West of A12/A13 interchange)	16830	12.2%	48	30
A1020 Leamouth Road	24481	11.9%	48	30
A13 (East of Leamouth Road)	29261	10.2%	48	30
A13 Newham Way (East of Abbott Road)	124173	15.2%	48	30
A1011 Silvertown Way (South of A13)	20813	7.6%	48	30
A12 Off-slip (St. Leonard Road from Blackwall Tunnel)	10113	20.9%	48	30
A102 On-slip (to Blackwall Tunnel)	8503	8.8%	48	30
A102 Off-slip (to A13 east and west)	13258	15.3%	48	30
A102 off-slip (to A13 west)	9908	8.0%	48	30
A102 on-slip (from A13 east)	13351	11.9%	48	30

Table 2.3: Baseline + Committed Developments + Construction Traffic (2026)

Road Link	AADT	HGV	Speed (kph)	
			Freeflow	Congestion/ Junction
Abbott Road (East of Underpass)	7240	9.6%	35	20
Abbott Road (East of Oban Street)	8965	9.1%	30	20
Leven Road	3744	2.4%	26	20
Oban Street	3333	0.5%	24	20
Bromley Hall Road	1408	11.2%	32	20
Lochnagar Street	2735	11.6%	32	20
Zetland Street	2304	6.7%	32	20
Abbott Road Underpass (One-Way)	5539	8.8%	32	20
A1206 Preston's Road	25156	9.2%	32	20

A12 (Between Lochnagar Street and A13)	88675	9.8%	64	30
A12 (North of Lochnagar Street)	85443	9.2%	64	30
A12 On-slip from A13 (St. Leonards Road)	16291	11.1%	48	30
Trafalgar Way	2343	0.0%	32	20
Upper Bank Street	10250	14.8%	48	30
Poplar High Street	5041	5.3%	32	20
Saltwell Street	4949	4.3%	32	20
A1206 Cotton Street	28339	6.4%	32	20
A1261 Aspen Way (West of A12)	109733	14.4%	64	30
Blackwall Tunnell	100353	10.1%	48	30
Upper North Street (A13 to Cordelia Street)	5898	1.2%	32	20
Upper North Street (Cordelia Street to B140 St. Paul's Way)	7678	0.8%	32	20
B140-St. Paul's Way	11670	6.5%	32	20
Cordelia Street	2327	0.8%	32	20
Devons Road	9536	4.3%	32	20
Devas Street W of Purdy Street	10192	8.2%	32	20
Chrisp Street (South of Burcham Street)	11816	3.3%	32	20
Chrisp Street (North of Burcham Street)	11649	1.1%	32	20
Campbell Road	10688	1.7%	32	20
Devas Street (West of A12 junction)	4974	14.5%	32	20
Burcham Street/St Leonard Road	4638	3.6%	32	20
A1261 Aspen Way (West of Lower Lea Crossing rbt)	130495	13.4%	64	30
Abbott Road slip to A12	1469	9.2%	32	20
Stephenson Street	5809	8.3%	48	30
A1011 Manor Road (North of A13)	14419	8.6%	48	30
A1011 Manor Road (North of Star Lane)	10818	7.3%	48	30
Cody Road	8111	5.4%	48	30
Star Lane (East of A1011)	5034	0.4%	48	30
A124 (East of Manor Road)	21195	8.7%	48	30
A124 (East of Ordnance Road)	19977	8.4%	48	30
Lower Lea Crossing	46033	12.1%	48	30

A13 (From A12/A13 interchange to Abbott Road)	58706	14.3%	48	30
A13 (West of A12/A13 interchange)	16830	12.2%	48	30
A1020 Leamouth Road	24504	11.9%	48	30
A13 (East of Leamouth Road)	29361	10.4%	48	30
A13 Newham Way (East of Abbott Road)	124273	15.2%	48	30
A1011 Silvertown Way (South of A13)	20825	7.7%	48	30
A12 Off-slip (St. Leonard Road from Blackwall Tunnel)	10113	20.9%	48	30
A102 On-slip (to Blackwall Tunnel)	8526	9.0%	48	30
A102 Off-slip (to A13 east and west)	13296	15.5%	48	30
A102 off-slip (to A13 west)	9908	8.0%	48	30
A102 on-slip (from A13 east)	13351	11.9%	48	30

Table 2.4: Baseline + Committed Developments + Proposed Development (2031)

Road Link	AADT	HGV	Speed (kph)	
			Freeflow	Congestion/ Junction
Abbott Road (East of Underpass)	491	10.5%	35	20
Abbott Road (East of Oban Street)	6480	7.4%	30	20
Leven Road	4477	2.4%	26	20
Oban Street	4477	0.0%	24	20
Bromley Hall Road	2128	1.7%	32	20
Lochnagar Street	3049	1.8%	32	20
Zetland Street	1919	5.1%	32	20
Abbott Road Underpass (One-Way)	0	0.0%	32	20
A1206 Preston's Road	25391	9.1%	32	20
A12 (Between Lochnagar Street and A13)	90395	10.0%	64	30
A12 (North of Lochnagar Street)	87326	9.1%	64	30
A12 On-slip from A13 (St. Leonards Road)	16287	11.9%	48	30
Trafalgar Way	2257	0.0%	32	20
Upper Bank Street	10228	14.7%	48	30
Poplar High Street	5071	5.2%	32	20

Saltwell Street	4979	4.3%	32	20
A1206 Cotton Street	27281	6.4%	32	20
A1261 Aspen Way (West of A12)	109293	14.5%	64	30
Blackwall Tunnell	101051	10.2%	48	30
Upper North Street (A13 to Cordelia Street)	6029	1.3%	32	20
Upper North Street (Cordelia Street to B140 St. Paul's Way)	7654	0.8%	32	20
B140-St. Paul's Way	11915	6.2%	32	20
Cordelia Street	2234	0.9%	32	20
Devons Road	7791	5.2%	32	20
Devas Street W of Purdy Street	10214	6.9%	32	20
Chrisp Street (South of Burcham Street)	12661	4.0%	32	20
Chrisp Street (North of Burcham Street)	12039	1.7%	32	20
Campbell Road	10158	1.5%	32	20
Devas Street (West of A12 junction)	6870	8.5%	32	20
Burcham Street/St Leonard Road	5538	4.0%	32	20
A1261 Aspen Way (West of Lower Lea Crossing rbt)	127741	13.8%	64	30
Abbott Road slip to A12	1950	8.5%	32	20
Stephenson Street	5698	7.4%	48	30
A1011 Manor Road (North of A13)	14437	9.0%	48	30
A1011 Manor Road (North of Star Lane)	10926	7.4%	48	30
Cody Road	8108	5.4%	48	30
Star Lane (East of A1011)	5001	0.3%	48	30
A124 (East of Manor Road)	20987	8.8%	48	30
A124 (East of Ordnance Road)	19863	8.5%	48	30
Lower Lea Crossing	45615	12.1%	48	30
A13 (From A12/A13 interchange to Abbott Road)	59188	14.4%	48	30
A13 (West of A12/A13 interchange)	17020	11.9%	48	30
A1020 Leamouth Road	25956	12.3%	48	30
A13 (East of Leamouth Road)	29269	10.7%	48	30
A13 Newham Way (East of Abbott Road)	123828	15.4%	48	30
A1011 Silvertown Way (South of A13)	20959	8.3%	48	30

A12 Off-slip (St. Leonard Road from Blackwall Tunnel)	9392	21.1%	48	30
A102 On-slip (to Blackwall Tunnel)	8022	9.1%	48	30
A102 Off-slip (to A13 east and west)	13887	14.8%	48	30
A102 off-slip (to A13 west)	8946	7.9%	48	30
A102 on-slip (from A13 east)	13756	11.9%	48	30

Appendix: Air Quality

ANNEX 3 – MODEL VERIFICATION STUDY

NO_2

Most nitrogen dioxide (NO_2) is produced in the atmosphere by reaction of nitric oxide (NO) with ozone. It is therefore most appropriate to verify the model in terms of primary pollutant emissions. Verification of concentrations predicted by the ADMS model has followed the methodology presented in LAQM.TG(16).

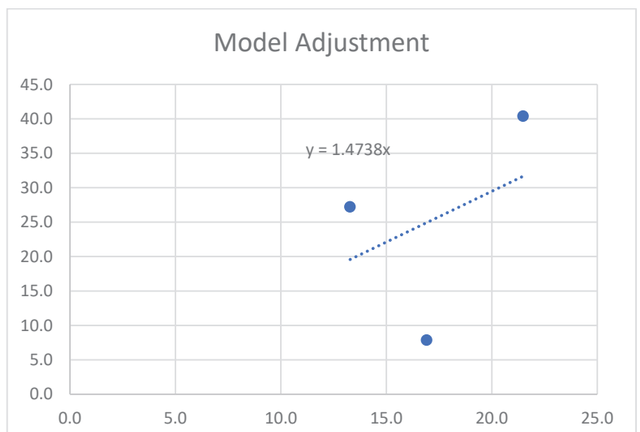
The model has been run to predict annual mean road-NO_x concentrations at three nearby monitoring sites.

The model output of road-NOx (i.e. the component of total NO_x coming from road traffic) has been compared to the 'measured' road-NO_x (Table 3.1). The 'measured' road NO_x has been calculated from the measured NO_2 concentrations by using the Defra NO_x to NO_2 calculator available on the UK-AIR website.

Table 3.1: Comparison of Modelled and Monitored NOx concentrations

Monitoring Location	Total Monitored NO_2	Background NO2	Monitored Road NOx	Modelled Road NOx	Ratio
Blackwall	47	35.5	27.2	13.3	2.05
84	39	35.5	7.9	16.9	0.46
83	52	35.5	40.4	21.5	1.88

Figure 3.1: Comparison of Modelled and Monitored Road NOx concentrations



The results in Table 3.1 and Figure 3.1 indicate that the ADMS model under-predicted the road NO_x concentrations at the selected monitoring sites. An adjustment factor was therefore determined as the ratio between the measured road-NO_x contribution and the modelled road-NO_x contribution (1.47). This factor has then been applied to the modelled road-NO_x concentration for each location to provide an adjusted modelled road-NO_x concentration.

The annual mean road-NO_2 concentration was determined using the Defra NO_x:NO_2 spread sheet calculation tool and added to the background NO_2 concentration to produce a total adjusted NO_2 concentration.

Particulate Matter (PM_{10} and $PM_{2.5}$)

There was insufficient roadside monitoring data available against which the modelling could be verified. Consequently, the verification factor determined above for adjusting the road-NO_x contribution has been applied to the predicted road-PM_{10} and road-$PM_{2.5}$ contributions, consistent with guidance provided in LAQM.TG(16).

Model Uncertainty

An evaluation of model performance has been undertaken to establish confidence in model results. LAQM.TG(16) identifies a number of statistical procedures that are appropriate to evaluate model performance and assess the uncertainty. These include root mean square error (RMSE); fractional bias (FB) and correlation coefficient (CC). These parameters estimate how the model results agree or diverge from the observations. The simplest parameter to calculate and to interpret is the RMSE, which has therefore been used in this assessment to understand the model uncertainty.

The RMSE value calculated after verification was 4.8. Guidance provided in LAQM.TG(16) indicates that for RMSE values higher than 25% of the objective level, that the model should be revisited. Ideally an RMSE value should be within 10% of the air quality objective level. For annual mean NO_2, which has an objective level of 40µg/m^3, this equates to 4µg/m^3. The RMSE value calculated for this assessment is therefore considered to fall within the acceptable limits, therefore the final predictions can be considered to be robust.

Appendix: Climate Change

Annex 1: Trium Climate Change Technical Note

Appendix: Climate Change

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TRIUM

Climate Change

Technical Note

Contents

1. Introduction

1.1 This technical note describes a future climate scenario which has been developed using the future climate projections data published by the Met Office (UKCP18) in November 2018. UKCP18 projections consider the climate effects arising from a series of 'Representative Concentration Pathways' (RCP) emissions scenarios.

1.2 The purpose of this technical note is to present projection data for the future climate and to provide guidance to the EIA technical team on how to consider whether the effects of the Proposed Development (defined under the current climate conditions) may alter under the future climate scenario. In the context of the future climate condition, consideration needs to be given to:

- The change in the magnitude of impact of the Proposed Development;
- Receptor vulnerability;
- Vulnerability of the Proposed Development; and
- Resilience of the Proposed Development.

Climate Projections

1.3 UKCP18 gives probabilistic projections[1] for a number of atmospheric variables, with different temporal and spatial averaging, for several future time periods, under four different future RCP emissions scenarios.

1.4 In general, the longer the lifetime of a development, the greater the uncertainty about the impact of climate change over time. Uncertainty is dealt with by presenting projections which are probabilistic in nature, and which give the probability of different climate outcomes.

1.5 To make use of the probabilistic projections, an emissions scenario and percentile outcome (i.e. the likelihood of the change in climate occurring) needs to be identified.

1.6 The emissions scenario and probabilistic projection are detailed within this document and have been used by all technical disciplines contributing to the Environmental Impact Assessment (EIA), to ensure consistency in approach.

Emission Scenarios

1.7 The RCP emission scenarios represent four distinct Representative Concentration Pathways (RCP2.6, RCP4.5, RCP6.0 and RCP8.5) available in the UKCP18 climate projections. These are named according to the concentration of greenhouse gas modelled to occur in the atmosphere in 2100. The RCPs have been developed for long-term and near-term climate modelling and provide time-dependant projections of atmospheric greenhouse gas concentrations. These pathways were developed based on a literature review of current climate modelling research and have been chosen to represent the full range of climate outcomes presented within the literature.

1.8 The emission scenarios represent assumptions in terms of climate policy, land use and technological development, with RCP2.6 representing the 'optimum' emission scenario (i.e. measures aimed at achieving the maximum reduction in GHG emissions).

1.9 RCP 8.5 is the most conservative, highest emission, and highest-impact scenario. It assumes that technological development will slow and that there will be little to no decarbonisation of world power from new technology. It also assumes that no further climate mitigation or regulations to reduce climate change or air pollution will be implemented.

1.10 More information on the RCPs can be found in the UKCP18 Guidance: Representative Concentration Pathways[2].

[1] Probabilistic projections give a range of possible climate change outcomes and their relative likelihoods i.e. unlikely, likely or very likely ranging across 10th to 90th percentiles.

[2] UKCP18 Guidance: Representative Concentration Pathways https://www.metoffice.gov.uk/binaries/content/assets/mohippo/pdf/ukcp18/ukcp18-guidance-rcp.pdf

Adopted Emissions Scenario: RCP8.5

1.11 RCP8.5 has been used in the climate projections presented in this technical note as it represents a suitably conservative emissions scenario with regards to climate policy, land use, and technological development. This is in accordance with the Institute of Environmental Management and Assessment's (IEMA's) Climate Change Resilience and Adaptation guidance[3], which states that *"Recommended best practice is to use the higher emissions scenario (RCP 8.5 in the latest UKCP18 projections) at the 50th percentile, for the 2080s timelines, unless a substantiated case can be made for not doing this (e.g. anticipated lifespan of the project is shorter than 2080s)"*.

1.12 The use of RCP8.5 is also in accordance with *"the National Policy Statement on National Networks, which states that developments should use the UKCP09 high emissions scenario at the 50% probability level"*[3]; therefore, this RCP has been identified as the most reasonable conservative emissions scenario for identifying future climate change projections.

[3] Institute of Environmental Management and Assessment, (2020); Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation.

2. Approach to Assessment

1.13 These steps provide a guide to assessing climate change within the EIA. More information and guidance can be found in references listed in Appendix C.

Step 1: Define the Future Climate Condition

1.14 Within the "Climate Change" section of the chapter, firstly identify the climate variables that are relevant to the assessment. So, for example, the variables of relevance might be 'wind', 'temperature', 'humidity' etc.

1.15 The next stage is to determine how these variables change under the future climate scenario based on the information presented in appendix A. The future climate condition should be discussed in terms of the 50% probability level, but also acknowledge the predicted extremes at the 10% and 90% probability levels.

1.16 This stage defines the future climate condition that is relevant to your assessment.

Step 2: Define Receptor Vulnerability

1.17 Receptors that have been identified for inclusion within the technical assessment need to be considered in terms of their vulnerability[4] (i.e. susceptibility or resilience) to changes in the future climate. The vulnerability of the resource / receptors (including identifying individual receptors / sub-groups) should be defined using the definitions provided below.

1.18 Vulnerability of a receptor should generally be defined as follows and presented in tabular format:

- **High vulnerability**: the receptor is directly dependent on existing and/or prevailing climatic factors, and reliant on these specific existing climate conditions continuing in future (e.g. river flows and groundwater level); or only able to tolerate a very limited variation in climate conditions.
- **Moderate vulnerability**: the receptor is dependent on some climatic factors, but able to tolerate a range of conditions (e.g. a species which has a wide geographic range across the entire UK).
- **Low vulnerability**: climatic factors have little influence on receptors.

1.19 Table 1 provides an example of receptor sensitivity and vulnerability presented within a table.

[4] Please note that 'receptor sensitivity' is different to the consideration of 'vulnerability'. Reference to **sensitivity** of a resource / receptor in the EIA assessment reflects the receptor's **value** in terms of its quality or condition, and expresses its **proneness** to being potentially impacted through a change in the existing environment (i.e. existing climate conditions) in which is resides, as a result of the implementation of a Proposed Development.
Vulnerability is defined as a receptor's **susceptibility** or **resilience** to a change in climate (i.e. change in the existing environment).
By way of an example to highlight this difference, a highly sensitive receptor does not mean that it is highly vulnerable to climate change, while conversely a low sensitive receptor may be highly vulnerable to climate change.
Taking account of receptor vulnerability within the assessment requires consideration of whether climate change will alter the existing environment (i.e. existing climate conditions) within which the resource / receptor resides, and as a result, making a judgement as to whether climate change will alter the magnitude of the impact (defined under the current climate conditions) experienced by the resource / receptor (based on its vulnerability) because of the implementation of the Proposed Development. The higher the vulnerability of an individual resource / receptor to climate change, the greater the change in the magnitude of the impact.
For example, climate change alters the environment and for a high vulnerability receptor, results in amplifying the impact (of the Proposed Development) experienced by the receptor.
Conversely, an individual resource / receptor with a greater resilience (low vulnerability) to changes in the existing climate conditions is not likely to experience a change in the impact experienced as a result of the Proposed Development (i.e. no change in the magnitude of impact).
Please also note that there may be instances when a broad description of a resource / receptor group may comprise of sub-groups which may vary in their vulnerability to climate change. Where relevant, individual resource / receptors may need to be identified and considered as part of the climate change assessment.

TRIUM

Table 1. Summary of Receptor Sensitivity and Vulnerability for Assessment

Resource / Receptor *(include as groups or as individual receptors as relevant)*	Sensitivity *(as per standard EIA criteria)*	Vulnerability *(as per the criteria cited above)*

Step 3: Magnitude of Impact, Nature and Scale of Effects and Effect Significance

1.20 Consider whether the magnitude of impact and resultant nature and scale of the effects of the Proposed Development (as defined earlier on in the chapter) during the operational phase will be worse or improved under the future climate conditions, and whether the changes alter the overall significance of effects identified for the Proposed Development, without climate change.

1.21 In most cases, there is likely to be an absence of published, accepted quantifiable methods for considering climate change effects for technical topics.

1.22 Therefore, this 'assessment' is likely to be qualitative and based on professional opinion which draws on the information available and acknowledges the level of uncertainty surrounding climate change projections.

1.23 Present the assessment as a narrative. Tables and supporting figures can be presented if helpful but are not essential. Appendix B gives examples of calculating the effect.

Step 4: Identify any Mitigation Needed

1.24 If any adverse significant effects are identified (as a result of the impact of climate change), appropriate mitigation will need to be identified.

1.25 When considering the adoption of mitigation to address any significant effects arising from changes in climate, consideration should be given to when the mitigation might be most usefully implemented over the duration of the scheme.

1.26 Mitigation measures include identifying appropriate resilience and adaptive management measures.

1.27 Resilience measures include design features (e.g. habitable rooms within residential units located above the flood level which accounts for climate change) and construction materials (e.g. materials resistant to increases in temperature), to provide an appropriate resilience to changes in the existing climatic conditions, as well as occurrences of extreme weather.

1.28 Adaptive management measures allow for the uncertainty surrounding climate change and its impact to be accounted for. Consideration should be given as to whether there are opportunities to introduce mitigation measures later into the project when there is more certainty over future climate projections. These measures could be secured through a commitment to prepare a management plan / strategy (or equivalent) which would periodically review the need for such measures and their integration into the scheme if / when required.

1.29 Where mitigation is proposed, consideration of the effectiveness of the measures should be taken into account, with reference to the resulting magnitude of impact and the resulting residual effect and its significance.

3. The Future Climate Condition for EIA

1.30 A summary of the future climate projections based on RCP8.5 is presented in Appendix A and described below for the climatic variables temperature, precipitation, and total cloud cover. Table 2 provides a breakdown of the data provided for each climatic variable in appendix A. UKCP18 data for wind is not yet available, so UKCP09 data has been presented.

Table 2. Climatic Variables for which Future Climate Projection Data is Provided

Climatic Variable	Climate Projection	Variable	Temporal Average
Temperature	**UKCP18 RCP8.5**	Mean	Annual
			Seasonal
		Mean Daily Max	Annual
			Seasonal
		Mean Daily Min	Annual
			Seasonal
Precipitation	**UKCP18 RCP8.5**	Mean	Annual
			Seasonal
Wind*	**UKCP09 A1B**	Mean	Annual
			Seasonal
Total Cloud	**UKCP18 RCP8.5**	Mean	Annual
			Seasonal

***Note**: UKCP18 probabilistic data for wind is not available, nor any RCP8.5 data for wind through alternative projections. For this reason, UKCP09 wind data has been presented for the A1B scenario, as it is comparable to RCP8.5.

Future London Climate Condition

1.31 The following description provides a high level overview of the future climate in London in 2100 under the UKCP18 using RCP8.5. Appendix A provides the data underlying this description.

Temperature[5]

1.32 Changes in temperature can have implications for the built and natural environment, built infrastructure, and human health. Increases in temperature can lead to impacts on human health, especially in urban areas such as London, where buildings can retain heat, leading to increased night-time temperatures. This is of particular interest when assessing developments within London, with its urbanised character and high population density.

1.33 The projected trends of climate changes in the 21st century indicate a move towards warmer, wetter winters and hotter, drier summers. Probabilistic projections show that there will be more warming in the summer than in the winter.

1.34 In summer, there is a pronounced north / south contrast when considering temperature changes, with greater increases in maximum summer temperatures over the southern UK compared to northern Scotland.

Precipitation[6]

1.35 Precipitation can have significant socio-economic impacts on various timescales, and can have implications related to pluvial or surface flooding, as surface run-off inundates the urban landscape. Flooding is one of the most socially and economically disruptive hazards within the UK, and has impacts on energy supply, transport and infrastructure.

[5] UKCP18 Factsheet: Temperature (2018) https://www.metoffice.gov.uk/binaries/content/assets/mohippo/pdf/ukcp18/ukcp18-factsheet-temperature.pdf

[6] UKCP18 Factsheet: Precipitation (2018) https://www.metoffice.gov.uk/binaries/content/assets/mohippo/pdf/ukcp18/ukcp18-factsheet-precipitation.pdf

TRIUM

1.36 Year to year, a high level of variability in precipitation has been observed, with a slight overall increase in UK winter precipitation over the last few decades.

1.37 Probabilistic projections show that while the probability of dry summers increases, the probability of wet summers reduces only slightly. Trends indicate drier summers, with reductions in rainfall, are largest in the south of England.

Wind [7]

1.38 Wind data is not available for RCP8.5, nor probabilistic projections for any of the RCP emissions scenarios. UKCP09 A1B data has been presented in Appendix A.

1.39 UKCP18 guidance reports no significant trends in 'storminess', which is determined by maximum gust speeds, from the UK over the last four decades. Global projections over the UK suggest an increase in near surface wind speeds for the second half of the 21st century during the winter season. An increase in frequency of winter storms is also predicted. Though, it should be noted that the increase in wind speeds is modest compared to the variability observed.

Summary

1.40 This note provides a future climate condition for the technical assessment of the Proposed Development in relation to climate change. It has been developed to ensure consistency across the technical topics covered in the EIA.

1.41 The data provided within this technical note is up to date 3 August 2020 2020. It is acknowledged that more information will become available on the UKCP18 interface over time, and revisions of this note shall be provided as appropriate.

[7] UKCP18 Factsheet: Wind https://www.metoffice.gov.uk/binaries/content/assets/mohippo/pdf/ukcp18/ukcp18-factsheet-wind.pdf

Appendix A: Future Climate Projection Data

Table 3. UKCP18 Future Climate Projections: RCP8.5 Emissions Scenario

Climate Variable	Predicted Change from Baseline 2080s			Absolute Values 2080s		
	10th Percentile	50th Percentile	90th Percentile	10th Percentile	50th Percentile	90th Percentile
Mean Air Temperature	°C	°C	°C	°C	°C	°C
Annual Average	2.41	4.11	5.98	12.86	14.56	16.43
Winter Average	1.45	3.47	5.65	6.07	8.09	10.27
Spring Average	1.44	2.92	4.57	10.63	12.11	13.76
Summer Average	2.73	5.41	8.15	19.41	22.09	24.83
Autumn Average	2.26	4.29	6.56	13.47	15.50	17.77
Maximum Air Temperature	°C	°C	°C	°C	°C	°C
Annual Average	2.44	4.33	6.38	16.55	18.44	20.49
Winter Average	1.59	3.30	5.25	8.91	10.62	12.57
Spring Average	1.44	3.35	5.44	14.63	16.54	18.63
Summer Average	2.79	6.04	9.52	23.97	27.22	30.70
Autumn Average	1.80	4.48	7.44	16.64	19.32	22.28
Minimum Air Temperature	°C	°C	°C	°C	°C	°C
Annual Average	2.17	3.96	6.07	8.79	10.58	12.69
Winter Average	1.31	3.50	6.19	3.13	5.32	8.01
Spring Average	1.43	3.01	4.94	6.48	8.06	9.99
Summer Average	2.74	4.96	7.5	14.67	16.89	19.43
Autumn Average	1.98	4.36	6.91	9.55	11.93	14.48
Precipitation	%	%	%	mm / day	mm / day	mm / day
Annual Average	-13.00	-1.79	9.66	1.52	1.72	1.92
Winter Average	-3.04	21.46	52.25	1.68	2.11	2.64
Spring Average	-23.42	-8.27	8.41	1.25	1.50	1.78
Summer Average	-71.24	-35.57	3.62	0.49	1.10	1.77
Autumn Average	-12.05	5.75	24.61	1.68	2.02	2.38
Total Cloud Anomaly	%	%	%	(0-1)	(0-1)	(0-1)
Annual Average	-16.47	-8.15	-0.28	0.57	0.63	0.68
Winter Average	-3.78	0.25	4.24	0.70	0.73	0.76
Spring Average	-17.25	-6.24	4.67	0.56	0.64	0.71
Summer Average	-39.02	-19.02	1.03	0.40	0.53	0.66
Autumn Average	-16.89	-7.27	1.50	0.55	0.62	0.68

TRIUM

Table 4. UKCP09 Future Climate Projections for Wind: A1B Emissions Scenario

Climate Variable	Predicted Change from Baseline 2080s			Absolute Values 2080s		
	10th Percentile	50th Percentile	90th Percentile	10th Percentile	50th Percentile	90th Percentile
Wind	n/a	M s-1^2	n/a	n/a	n/a	n/a
Annual Average	n/a	-0.065	n/a	n/a	n/a	n/a
Winter Average	n/a	-0.052	n/a	n/a	n/a	n/a
Spring Average	n/a	-0.154	n/a	n/a	n/a	n/a
Summer Average	n/a	-0.01	n/a	n/a	n/a	n/a
Autumn Average	n/a	-0.044	n/a	n/a	n/a	n/a

Appendix B: Examples of Defining Effect 'Scale within an EIA

Receptor Sensitivity	Magnitude of Impact			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Very Low	Minor	Negligible	Negligible	Negligible

Example 1

'Normal EIA'
Receptor A = High Sensitive
Magnitude of Impact = Low
Resultant Effect = Moderate

Climate Change
Receptor A = High Sensitive
Vulnerability = Low
(*climate change has little influence on receptor as resilient to changes in existing environment / climate, so climate change unlikely to alter the magnitude of impact*)
Magnitude of Impact = Low
Resultant Effect = Moderate

Example 2

'Normal EIA'
Receptor A = High Sensitive
Magnitude of Impact = Low
Resultant Effect = Moderate

Climate Change
Receptor A = High Sensitive
Vulnerability = High
(*receptor directly dependent on existing environment / climate, so change is likely to alter the magnitude of impact, i.e. change in the environment as a result of the Proposed Development)*
Magnitude of Impact = High
(*qualitative judgement*)
Resultant Effect = Major

Example 3

‘Normal EIA’	Climate Change
Receptor A = Low Sensitive	Receptor A = Low Sensitive
Magnitude of Impact = Low	Vulnerability = Low
Resultant Effect = Negligible	(*climate change has little influence on receptor as resilient to changes in existing environment / climate, so climate change unlikely to alter the magnitude of impact*)
	Magnitude of Impact = Low
	Resultant Effect = Negligible

Example 4

‘Normal EIA’	Climate Change
Receptor A = Low Sensitive	Receptor A = Low Sensitive
Magnitude of Impact = Low	Vulnerability = High
Resultant Effect = Negligible	(*receptor directly dependent on existing environment / climate, so change is likely to alter the magnitude of impact, i.e. change in the environment as a result of the Proposed Development)*
	Magnitude of Impact = High
	(*qualitative judgement*)
	Resultant Effect = Moderate

Appendix C: Policy and Guidance

Policy and Guidance

- EU Guidance on Integrating Climate Change and Biodiversity into the Environmental Impact Assessment (2013)[8]
- IEMA Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation (Nov 2015)[9]
- UK Climate Change Risk Assessment Evidence Report (2017)[10]
- 2017 EIA Regulations[11]

[8] EU Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessments http://ec.europa.eu/environment/eia/pdf/EIA%20Guidance.pdf
[9] IEMA EIA Guide to Climate Change Resilience and Adaptation https://www.iema.net/assets/templates/documents/iema_guidance_documents_eia_climate_change_resilience_and_adaptation%20(1).pdf
[10] UK Climate Change Risk Assessment (2017) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/584281/uk-climate-change-risk-assess-2017.pdf
[11] EIA 2017 Regulations http://www.legislation.gov.uk/uksi/2017/571/introduction/made

Appendix: Noise and Vibration

Appendix: Noise and Vibration

ANNEX 1: INTRODUCTION TO NOISE

In order to assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided.

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0 dB (the threshold of hearing) to over 120 dB.

The ear is less sensitive to some frequencies than to others. The A-weighting scale is used to approximate the frequency response of the ear. Levels weighted using this scale are commonly identified by the notation dB(A).

A noise impact on a community is deemed to occur when a new noise is introduced that is out of character with the area, or when a significant increase above the pre-existing ambient noise level occurs. For levels of noise that vary with time, it is necessary to employ a statistical index that allows for this variation. These statistical indices are expressed as the sound level that is exceeded for a percentage of the time period of interest.

In the UK, traffic noise is measured as the L_{A10}, the noise level exceeded for 10% of the measurement period. The L_{A90} is the level exceeded for 90% of the time and has been adopted to represent the background noise level in the absence of discrete events. An alternative way of assessing the time varying noise levels is to use the equivalent continuous sound level, L_{Aeq}. This is a notional steady level that would, over a given period of time, deliver the same sound energy as the actual fluctuating sound.

To put these quantities into context, where a receiver is predominantly affected by continuous flows of road traffic, a doubling or halving of the flows would result in a just perceptible change of 3dB, while an increase of more than 25%, or a decrease of more than 20%, in traffic flows represent changes of 1dB in traffic noise levels (assuming no alteration in the mix of traffic or flow speeds).

Note that the time constant and the period of the noise measurement should be specified. For example, BS 4142 specifies background noise measurement periods of 1 hour during the day and 5 minutes during the night. The noise levels are commonly symbolised as $_{A90(1hour)}$ and $L_{A90(5mins)}$. The noise measurement should be recorded using a ‘FAST’ time response equivalent to 0.125 ms.

Appendix: Noise and Vibration

ANNEX 2: GLOSSARY OF TERMS

Term	Definition
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log10 (s1/s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
$L_{eq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,F}$	A noise level index defined as the maximum noise level during the period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. L_{90} can be considered to be the ‘average minimum’ noise level and is often used to describe the background noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ($L_{Aeq,T}$).
Residual Noise Level	The ambient noise remaining at a given position in a given situation when specified sources are suppressed to a degree such that they do not contribute to the ambient noise level ($L_{Aeq,T}$)
Specific Noise Level	The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source (the noise source under investigation) over a given time interval ($L_{Aeq,T}$)
Rating Noise Level	The specific noise level plus any adjustment for the characteristic features of the noise ($L_{Ar,Tr}$).

Appendix: Noise and Vibration

ANNEX 3: LEGISLATION, POLICY AND GUIDANCE

National Policy: National Planning Policy Framework

1.1 The National Planning Policy Framework (NPPF) (February 2021) sets out the Government's economic, environmental and social planning policies for England. It attempts to summarise in a single document all previous national planning policy advice. Taken together, these policies articulate the Government's vision of sustainable development, which should be interpreted and applied locally to meet local aspirations.

1.2 Under Section 15; Conserving and enhancing the natural environment, the following is stated in paragraph 174:

> *"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 soil, air, water or noise pollution or land instability…"*

1.3 The NPPF goes on to state in paragraph 185 that:

> *"Planning policies and decisions should also 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, as well as potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> *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"*

Noise Policy Statement for England, 2010 (NPSE)

1.4 The NPSE seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. It also sets out the long-term vision of Government noise policy:

1.5 "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".

1.6 The NPSE clarifies that noise should not be considered in isolation of the wider benefits of a scheme or development, and that the intention is to minimise noise and noise effects as far as is reasonably practicable having regard to the underlying principles of sustainable development.

1.7 The first two aims of the NPSE follow established concepts from toxicology that are applied to noise impacts, for example, by the World Health Organisation. They are:

NOEL – No Observed Effect Level - the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise; and

LOAEL – Lowest Observed Adverse Effect Level - the level above which adverse effects on health and quality of life can be detected.

1.8 The NPSE extends these to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level - The level above which significant adverse effects on health and quality of life occur.

1.9 The NPSE notes:

> *"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".*

Planning Practice Guidance (PPG) – Noise

1.10 The Government's PPG on noise provides guidance on the effects of noise exposure, relating these to people's perception of noise, and linking them to the NOEL and, as exposure increases, the LOAEL and SOAEL.

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

1.12 The LOAEL is described in PPG as the level above which "noise starts to cause small changes in behaviour and / or attitude e.g. turning up the volume of the television, speaking more loudly, or, 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 perceived change in the quality of life."

1.13 PPG identifies the SOAEL as the level above which "noise causes a material change in behaviour and/or attitude, 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."

Acoustics Ventilation and Overheating Residential Design Guide

10.1 The Association of Noise Consultants' Acoustics, Ventilation and Overheating (AVO) Group produced the AVO Guide in 2020 for use by acoustics practitioners and those involved in the planning, development, design and commissioning of new dwellings.

10.2 The AVO Guide provides risk categories which can be used to assist designers to adopt an integrated approach to the acoustic design within the context of the ventilation and thermal comfort requirements.

10.3 For overheating, the AVO Guide provides thresholds where there is the potential that the noise causes a 'material change in behaviour'. The AVO Guide does not propose limits or onsets between risk categories though it does present a graphical illustration of the evolution between low, medium and high-risk categories. The AVO guidance levels are implemented as follows:

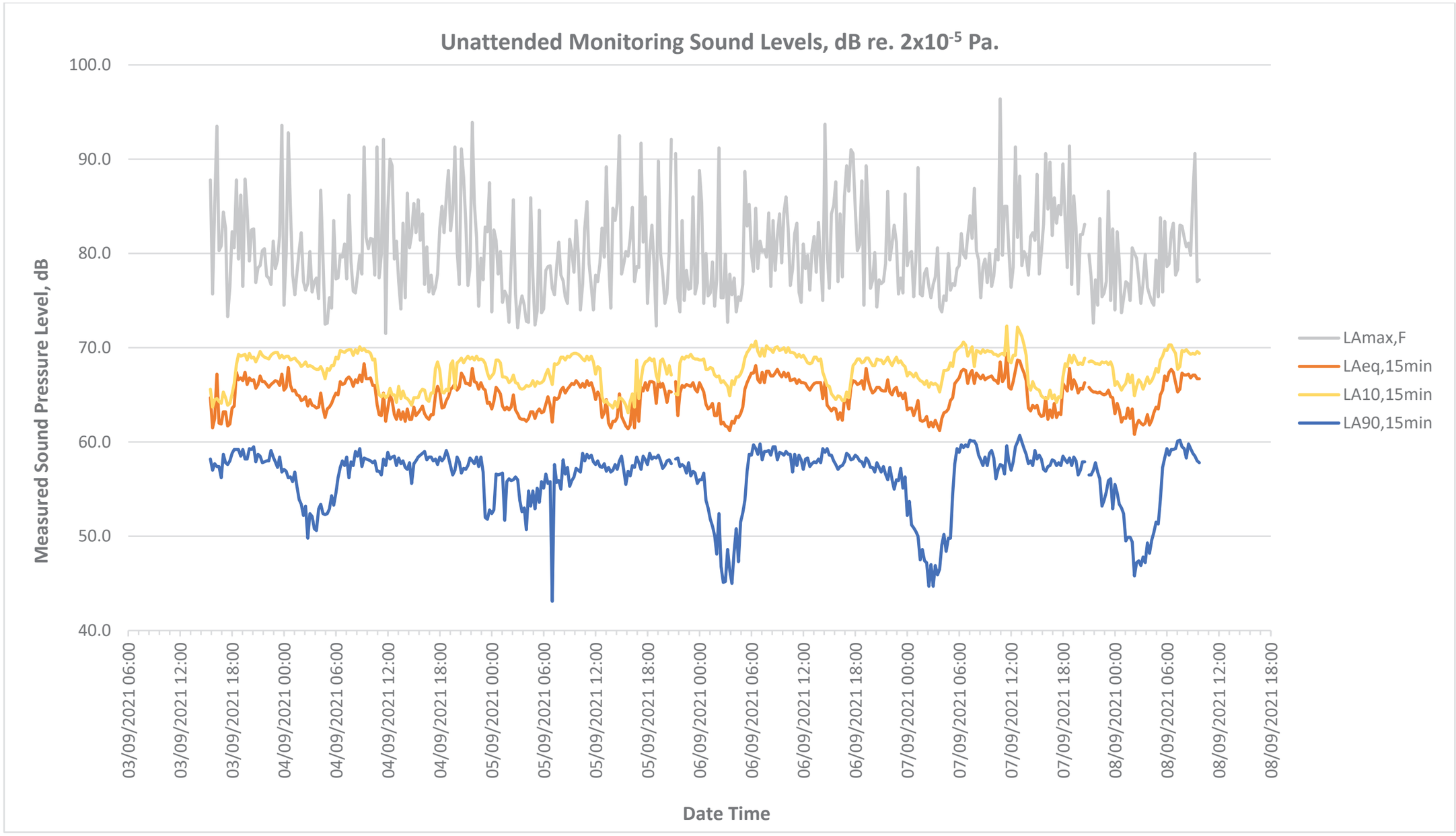
AVO Risk Category	External Noise Level, $L_{Aeq,T}$ dB	
	Daytime	Night-time
Negligible	< 50	< 45
Low	50 - 57	45 - 51
Medium	58 - 65	51 - 57
High	> 65	> 57

10.4 Based on the guidance, overheating should be considered at least for the medium and high categories. All ventilation across the development should provide adequate airflow, in compliance with Approved Document F.

10.5 Additionally, where windows need to remain closed to achieve the noise criteria they can still be opened for purge or rapid ventilation or indeed at the occupants' discretion.

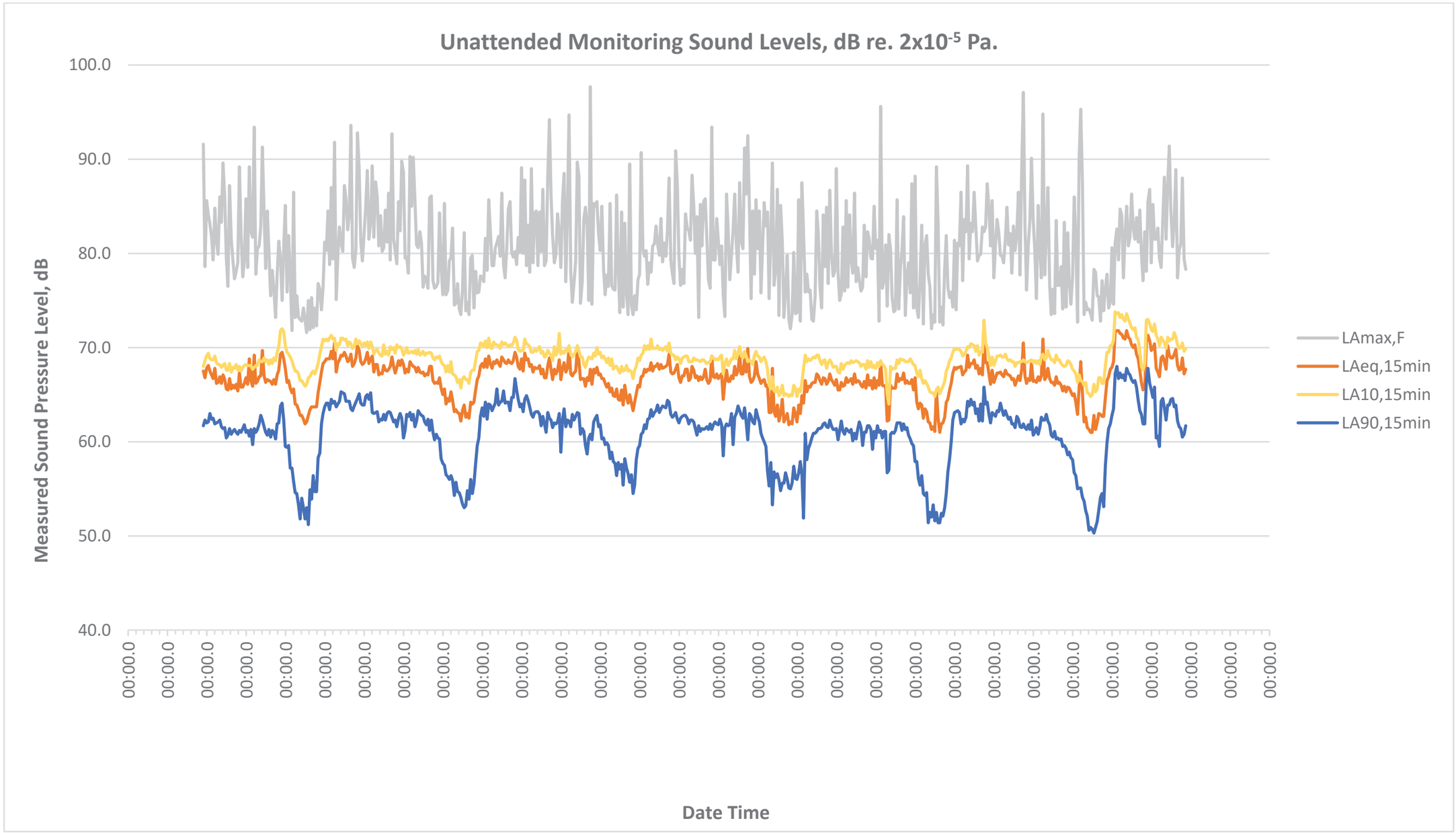
Appendix: Noise and Vibration

ANNEX 4: UNATTENDED SURVEY RESULTS – P1



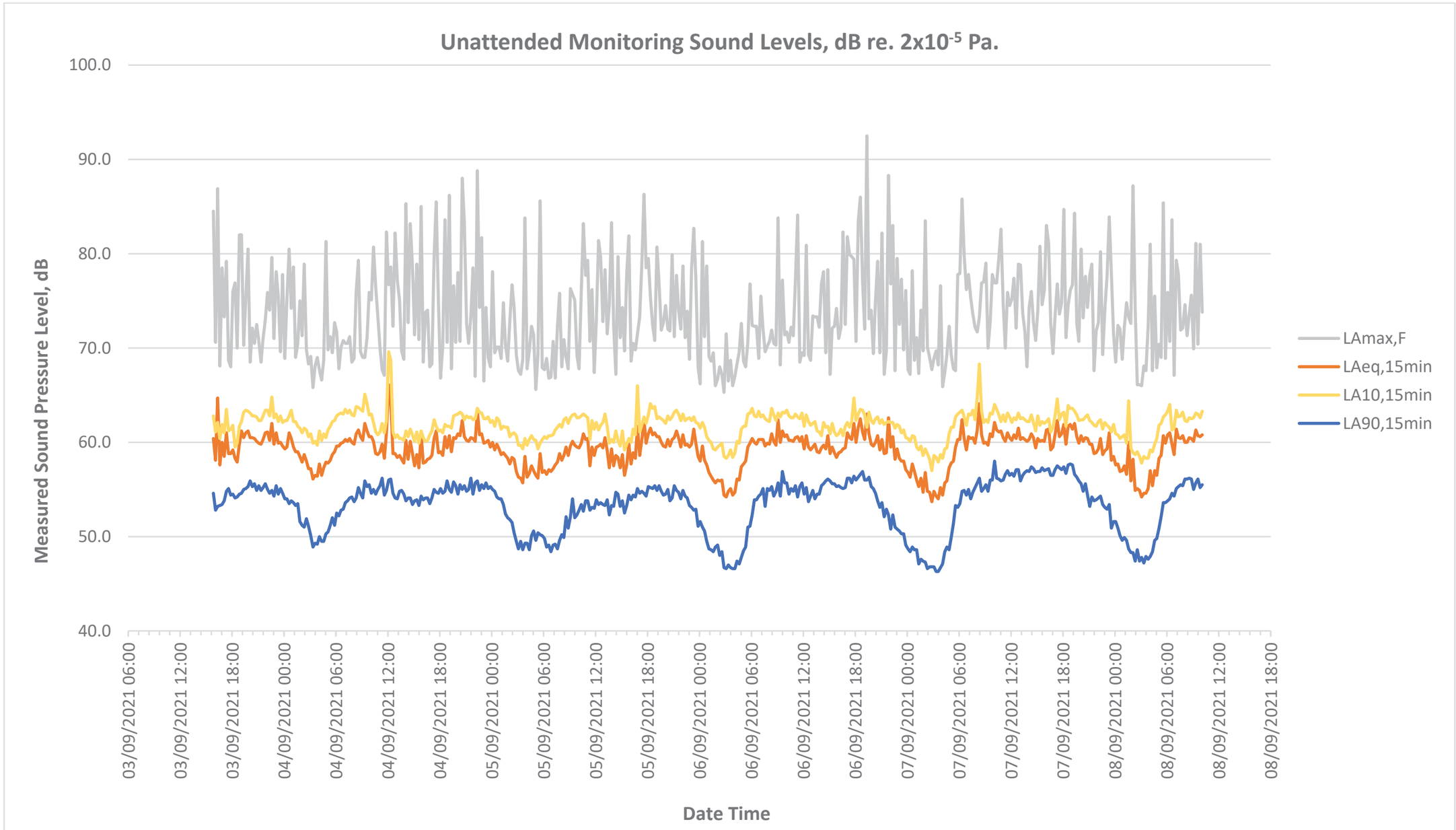
Appendix: Noise and Vibration

ANNEX 5: UNATTENDED SURVEY RESULTS – P2



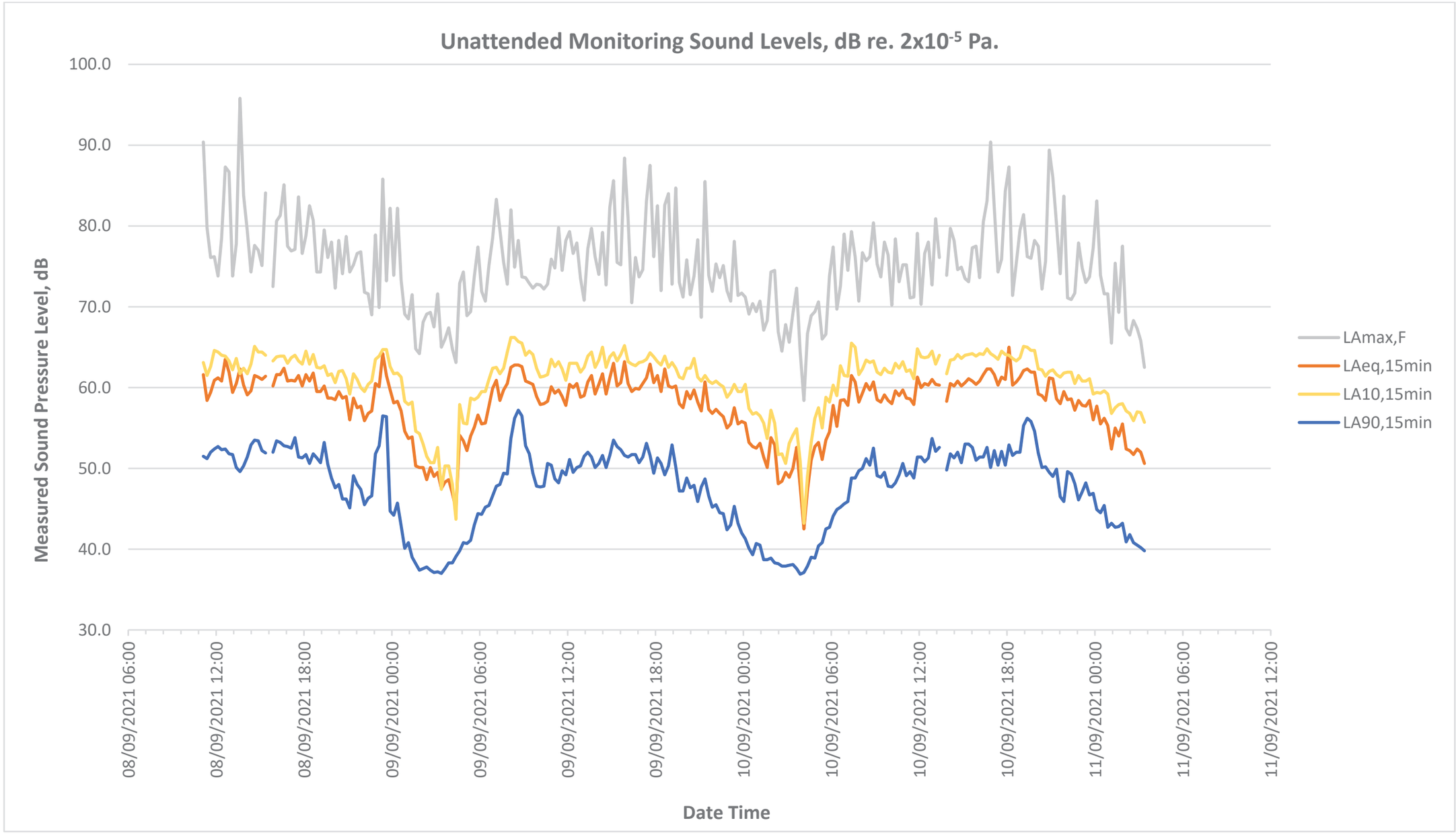
Appendix: Noise and Vibration

ANNEX 6: UNATTENDED SURVEY RESULTS – P3



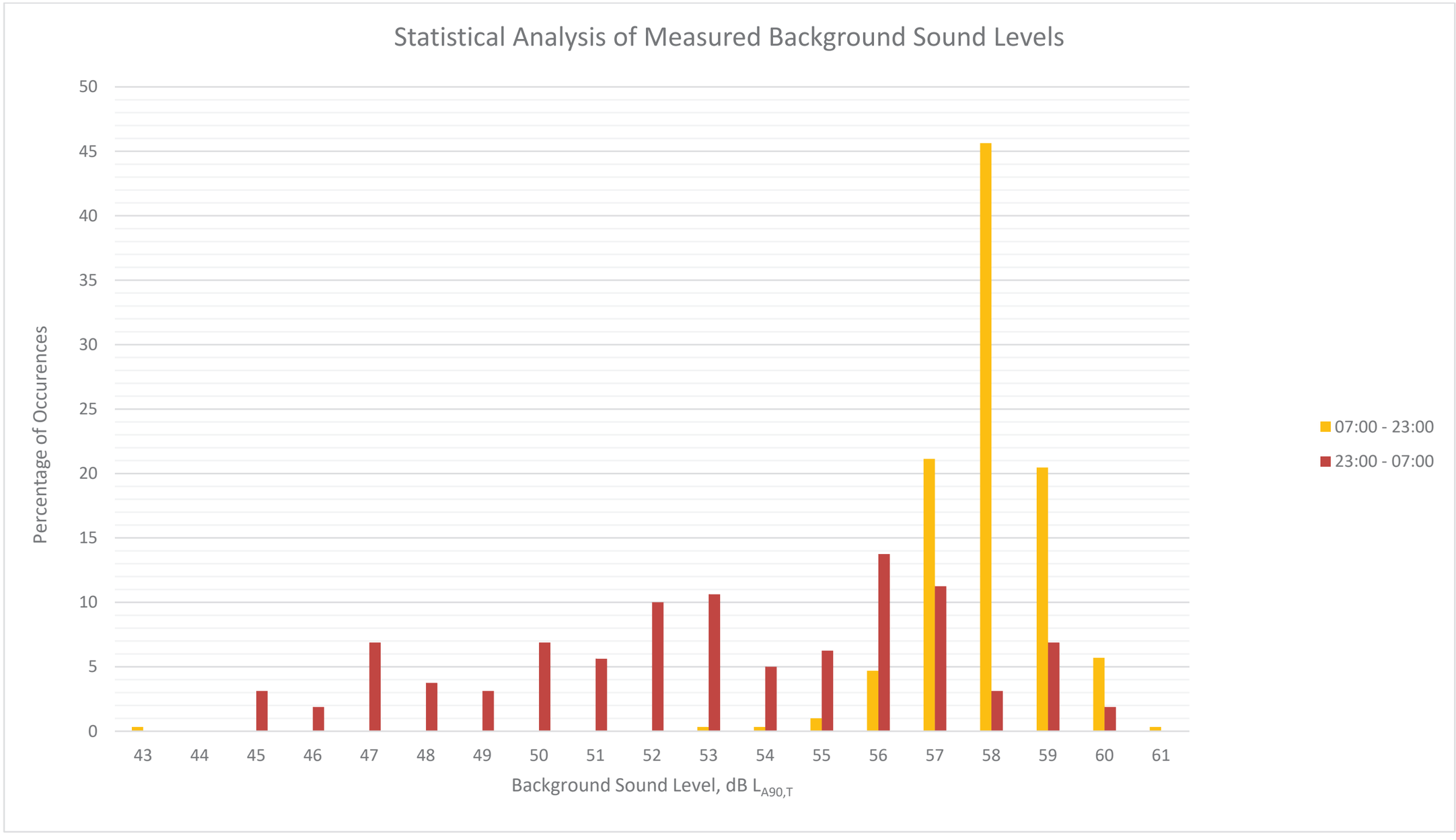
Appendix: Noise and Vibration

ANNEX 7: UNATTENDED SURVEY RESULTS – P4



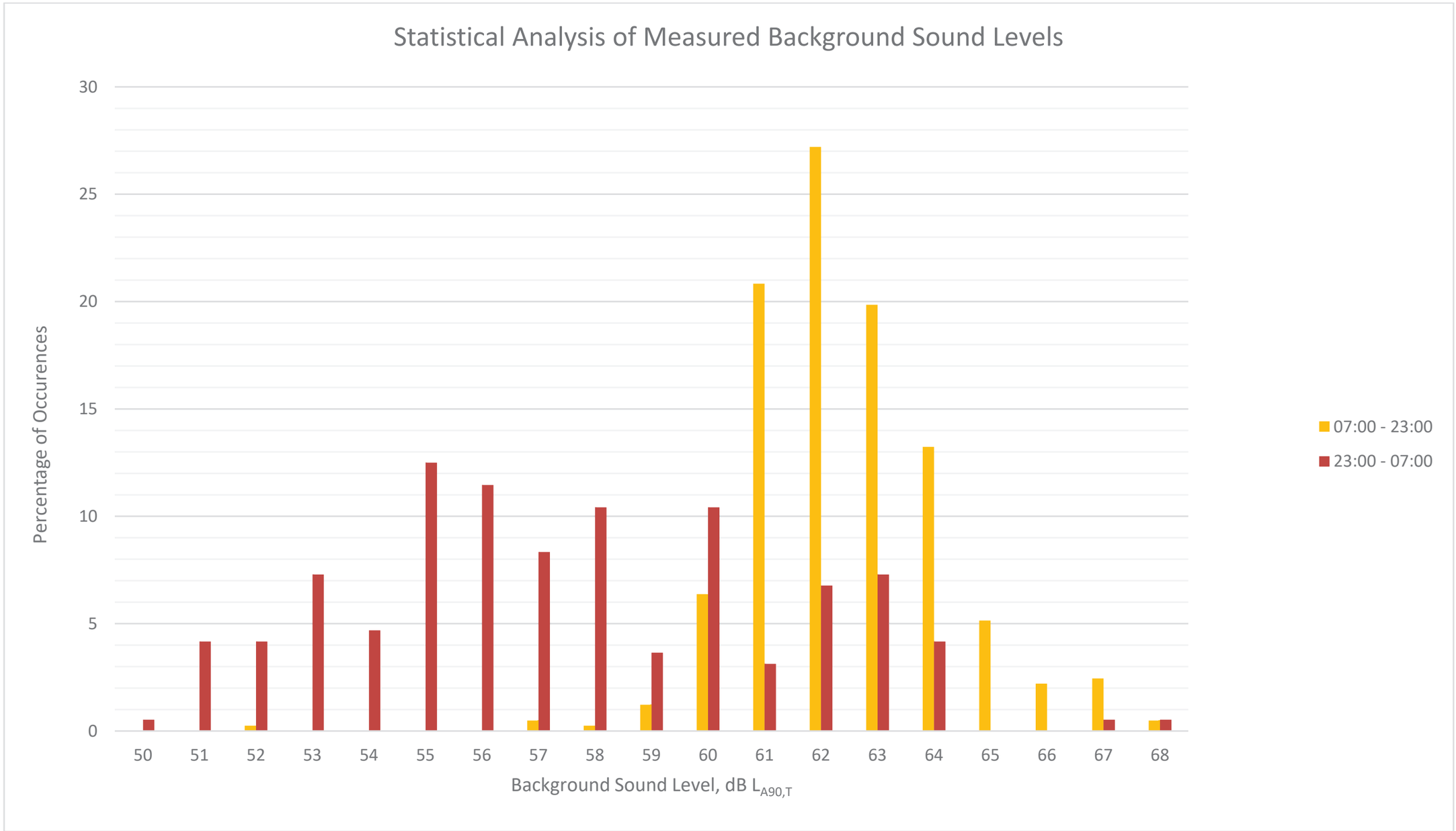
Appendix: Noise and Vibration

ANNEX 8: STATISTICAL ANALYSIS OF BACKGROUND SOUND LEVELS – P1



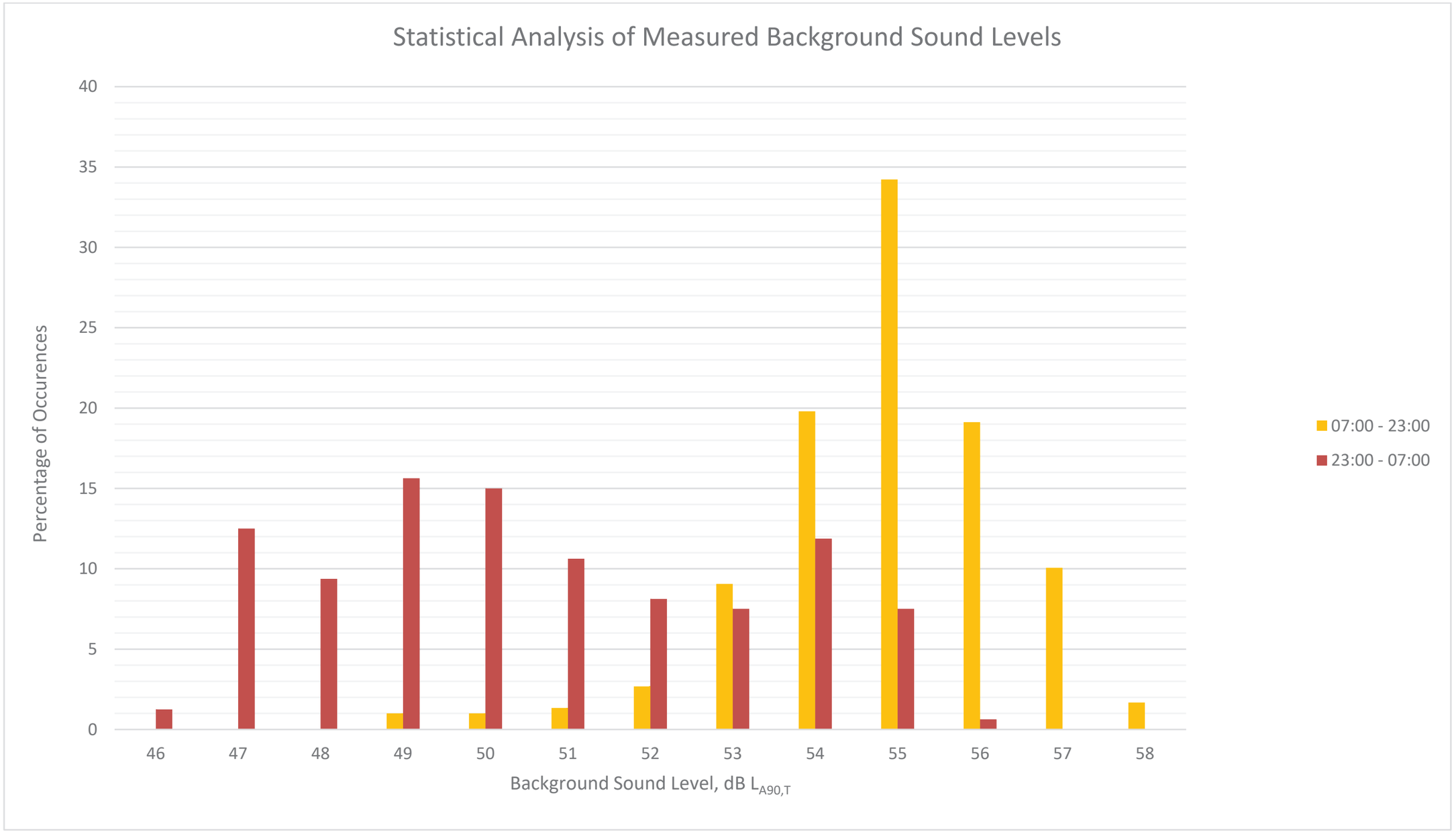
Appendix: Noise and Vibration

ANNEX 9: STATISTICAL ANALYSIS OF BACKGROUND SOUND LEVELS – P2



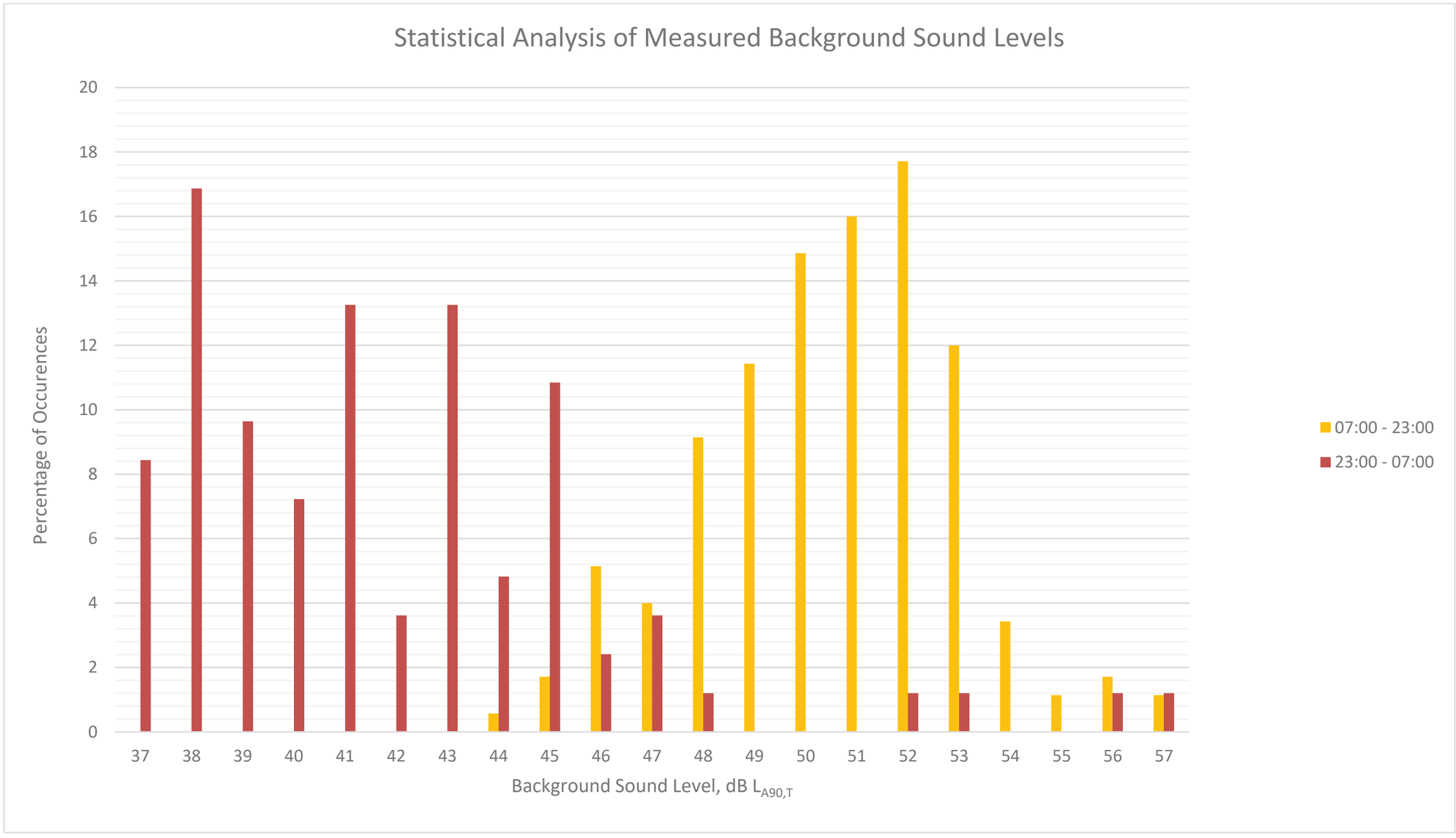
Appendix: Noise and Vibration

ANNEX 10: STATISTICAL ANALYSIS OF BACKGROUND SOUND LEVELS – P3



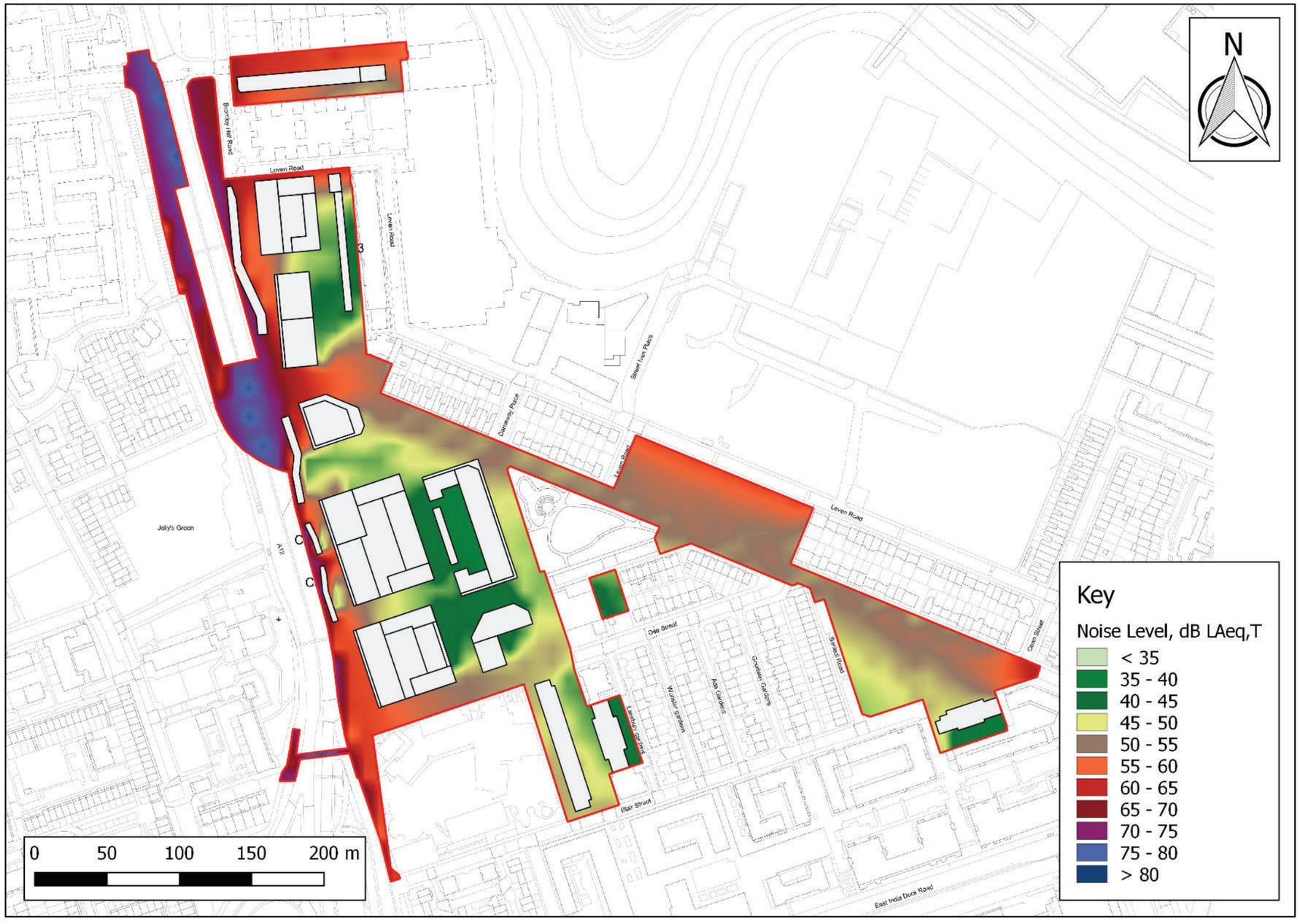
Appendix: Noise and Vibration

ANNEX 11: STATISTICAL ANALYSIS OF BACKGROUND SOUND LEVELS – P4



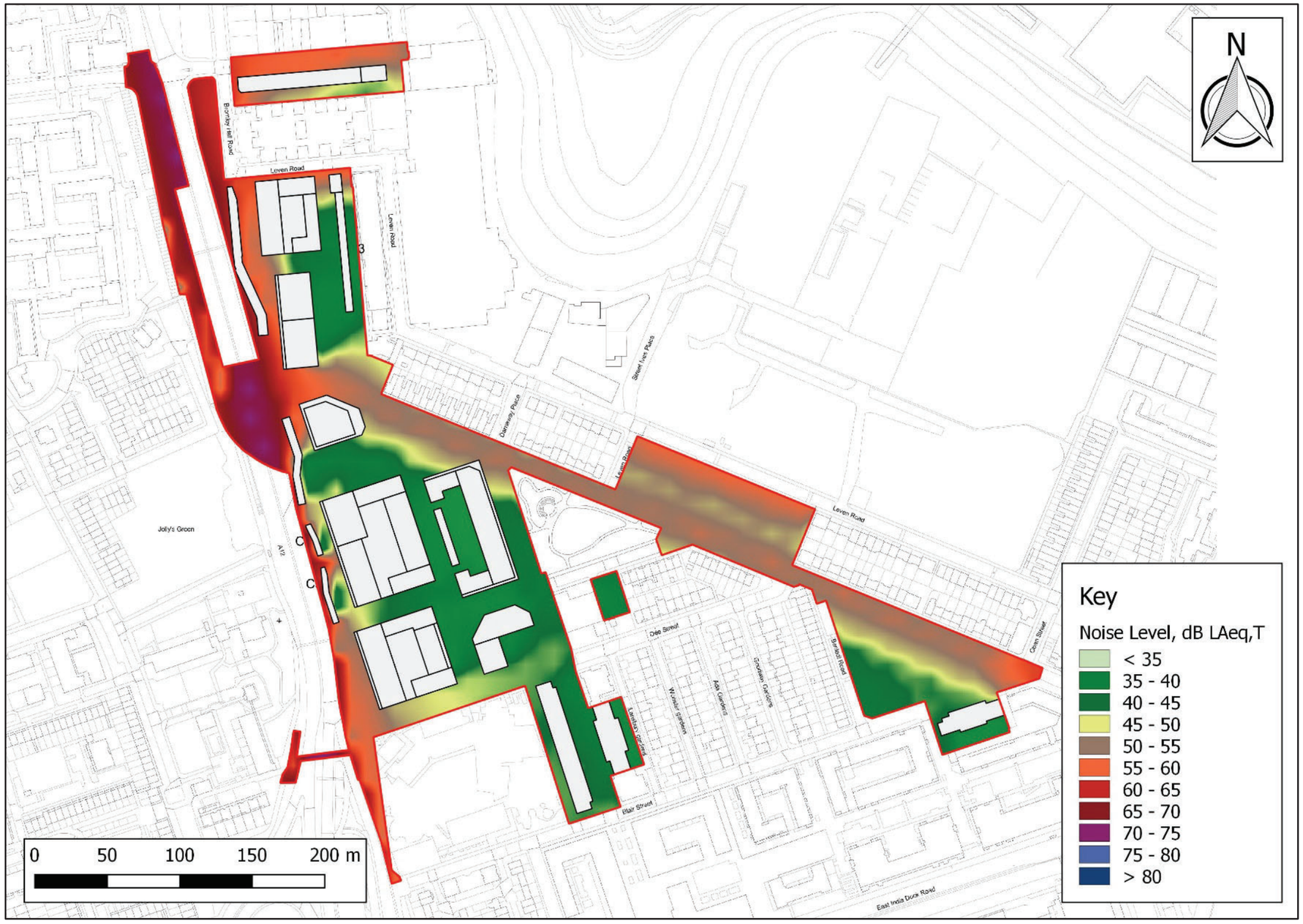
Appendix: Noise and Vibration

ANNEX 12: DAYTIME NOISE CONTOUR, 1.5M



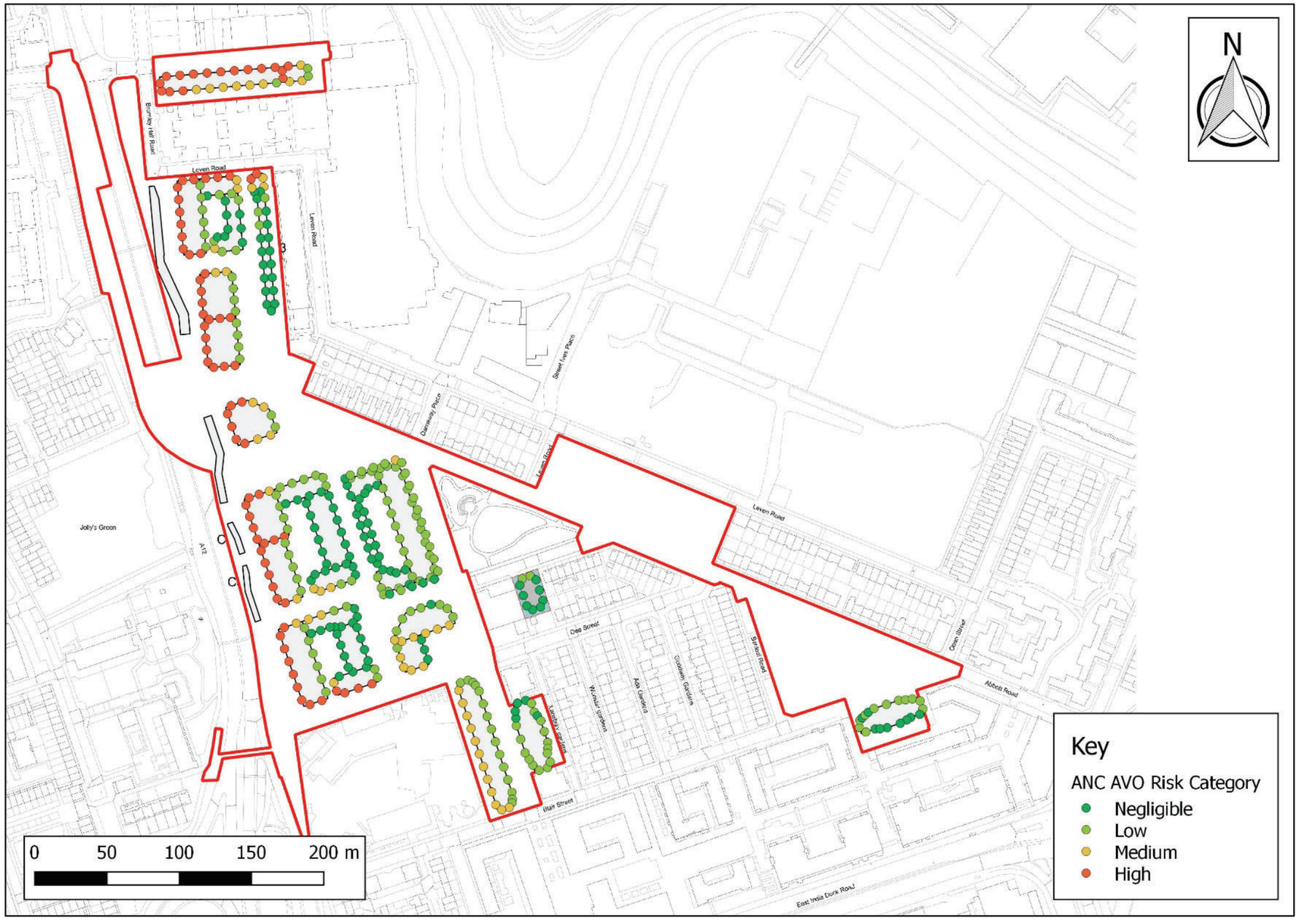
Appendix: Noise and Vibration

ANNEX 13: NIGHT-TIME NOISE CONTOUR, 1.5M



Appendix: Noise and Vibration

ANNEX 14: ANC ACOUSTICS VENTILATION AND OVERHEATING RISK CATEGORIES



Appendix: Noise and Vibration

ANNEX 15: TRAFFIC DATA

Road Link	AAWT (2031)	
	Do Minimum	With Development
Abbott Road (East of Underpass)	6569	425
Abbott Road (East of Oban Street)	7903	5898
Leven Road	3778	4340
Oban Street	3278	4341
Bromley Hall Road	1087	1992
Lochnagar Street	2294	2847
Zetland Street	2004	1663
Abbott Road Underpass (One-Way)	4800	0
A1206 Preston's Road	21800	22004
A12 (Between Lochnagar Street and A13)	75806	77364
A12 (North of Lochnagar Street)	73080	74738
A12 On-slip from A13 (St. Leonards Road)	13896	13939
Trafalgar Way	2031	1956
Upper Bank Street	8883	8864
Poplar High Street	4368	4394
Saltwell Street	4289	4315
A1206 Cotton Street	24559	23642
A1261 Aspen Way (West of A12)	93914	93537
Blackwall Tunnell	85867	86483
Upper North Street (A13 to Cordelia Street)	5112	5225
Upper North Street (Cordelia Street to B140 St. Paul's Way)	6654	6633
B140-St. Paul's Way	10114	10326
Cordelia Street	2017	1936
Devons Road	8264	6752
Devas Street W of Purdy Street	8832	8852
Chrisp Street (South of Burcham Street)	10239	10972
Chrisp Street (North of Burcham Street)	10095	10433
Campbell Road	9263	8803
Devas Street (West of A12 junction)	4311	5953
Burcham Street/St Leonard Road	4019	4799
A13 (From A12/A13 interchange to Abbott Road)	50178	50656
A13 (West of A12/A13 interchange)	14404	14567
A1020 Leamouth Road	21215	22494
A13 (East of Leamouth Road)	25043	25050
A13 Newham Way (East of Abbott Road)	106272	105978
A1011 Silvertown Way (South of A13)	18037	18163
A12 Off-slip (St. Leonard Road from Blackwall Tunnel)	8655	8038
A102 On-slip (to Blackwall Tunnel)	7277	6866
A102 Off-slip (to A13 east and west)	11347	11885
A102 off-slip (to A13 west)	8480	7656
A102 on-slip (from A13 east)	11426	11773

Appendix: Water Resources, Drainage and Flood Risk

Annex 1: Flood Risk Assessment
Annex 2: Drainage Strategy
Annex 3: Thames Water – Potable Water Supply Correspondence
Annex 4: Sustainable Urban Drainage System (SuDS) Proforma

Appendix: Water Resources, Drainage and Flood Risk

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New Aberfeldy Masterplan
Flood Risk Assessment

Job No: 2272

Date: 08th October 2021

Revision: 1.1

Project name	New Aberfeldy Masterplan	Job Number
Report Name	Flood Risk Assessment	2272

Document Revision History

Revision Ref	Issue Date	Purpose of issue / description of revision
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1.1	08/10/2021	Issued for Planning Approval

Document Validation (latest issue)

Revision	Issue Date	Purpose of issue / description of revision / version			
1.1	8/10/2021	Issued for Planning Approval			
			Prepared by	Checked by	Verified by
		Initials	JA/TP	TP	CP

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Contents

1 Introduction

1.1 Purpose of Report

Parmarbrook has been instructed by EcoWorld London Development Company Ltd. to prepare a Flood Risk Assessment (FRA) in support of a hybrid planning application for the New Aberfeldy Masterplan.

The scope of this report is limited to an assessment of flood risk at the site and the measures required to appropriately mitigate flood risk for the lifetime of the development, taking into consideration the vulnerability of the proposed use to flood risk. A preliminary surface water drainage scheme is reported separately.

1.2 Information Source

The assessment has been undertaken in accordance with the below documents and guidance detailed within the National Planning Policy Framework (NPPF) and the accompanying Planning Practice Guidance (PPG).

- Ordnance Survey (OS);
- British Geological Survey (BGS);
- Environment Agency (EA);
- Department for Environment, Food and Rural Affairs (DEFRA);
- Thames Water Sewer Records;
- National Planning Policy Framework, July 2021
- National Planning Practice Guidance (NPPG) August 2021
- Policy SI 12 Flood Risk Management, The London Plan 2021
- Policy SI 13 Sustainable Drainage, The London Plan 2021
- London Borough of Tower Hamlets Local Plan 2020
- London Borough of Tower Hamlets Strategic Flood Risk Assessments
- London Borough of Tower Hamlets Preliminary Flood Risk Assessment
- London Borough of Tower Hamlets Local Flood Risk Management Strategy
- London Borough of Tower Hamlets Surface Water Management Plan

It is to be noted that this FRA has been undertaken as a desktop study and no intrusive site investigations have been undertaken to inform this report.

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2 Planning Policy and Guidance

2.1 National Planning Policy Framework

At a national level, the National Planning Policy Framework (NPPF), July 2021 and associated Planning Practice Guidance (PPG), ensures flood risk is taken into account at all stages of the planning process. The aim of this is to avoid inappropriate development in areas at risk of flooding and to direct development towards areas at lowest flood risk. The updates to this document do not fundamentally alter the previous work undertaken with respect to flood risk or surface water drainage.

The NPPF retains a risk based approach to the planning process and defines four flood zones. These zones are to be used as the basis for applying the sequential test to consider a development in terms of Flood Risk Vulnerability Classifications. These define the type of development that is considered appropriate within each zone.

The NPPF and associated PPG establishes the flood zones as the starting point for assessment with the overarching aim to steer new development to areas with the lowest probability of flooding. The flood zones are defined as follows:

- **Flood Zone 1** (Low Probability) comprises land assess as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%);
- **Flood Zone 2** (Medium Probability) comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year;
- **Flood Zone 3a** (High Probability) comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year; and
- **Flood Zone 3b** (The Functional Floodplain) typically is considered to have an annual probability of flooding of 1 in 20 of greater (>5%) in any year.

2.2 The London Plan 2021: Policies SI 12 & SI 13

The London Plan 2021 provides an overall strategic plan for the Mayor of London, 32 London boroughs and the City of London Corporation. The plan sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20 – 25 years.

Policies SI 12 and SI 13 are related to improving water quality, flood mitigation and reducing flood risk through sustainable urban drainage systems.

Policy SI 12 (Flood Risk Management) states that:

A. Current and expected flood risk from all sources (as defined in paragraph 9.2.12) across London should be managed in a sustainable and cost-effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers.
B. Development Plans should use the Mayor's Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Local Flood Risk Management Strategies, where necessary, to identify areas where

particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Boroughs should cooperate and jointly address cross-boundary flood risk issues including with authorities outside London.

C. Development proposals should ensure that flood risk is minimised and mitigated, and that residual risk is addressed. This should include, where possible, making space for water and aiming for development to be set back from the banks of watercourses.
D. Developments Plans and development proposals should contribute to the delivery of the measures set out in Thames Estuary 2100 Plan. The Mayor will work with the Environment Agency and relevant local planning authorities, including authorities outside London, to safeguard an appropriate location for a new Thames Barrier.
E. Development proposals for utility services should be designed to remain operational under flood conditions and buildings should be designed for quick recovery following a flood.

Policy SI 13 (Sustainable Drainage) states that:

A. Lead Local Flood Authorities should identify – through their Local Flood Risk Management Strategies and Surface Water Management Plans – areas where there are particular surface water management issues and aim to reduce these risks. Increases in surface water run-off outside these areas also need to be identified and addressed.
B. Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:
    1) rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
    2) rainwater infiltration to ground at or close to source
    3) rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens).
    4) rainwater discharge direct to a watercourse (unless not appropriate)
    5) controlled rainwater discharge to a surface water sewer or drain
    6) controlled rainwater discharge to a combined sewer.
C. Development proposals for impermeable surfacing should normally be resisted unless they can be shown to be unavoidable, including on small surfaces such as front gardens and driveways.
D. Drainage should be designed and implemented in ways that promote multiple benefits including increased water use efficiency, improved water quality, and enhanced biodiversity, urban greening, amenity and recreation.

2.3 London Borough of Tower Hamlets Local Plan 2031

The Local Plan was adopted in January 2020, it sets out how the borough of Tower Hamlets will grow and develop until 2031 and identifies how many new homes, jobs and services are needed to support our growing population, and where and how they should be provided. It will also shape how our places will look and feel and influence the way that our communities interact with each other and the spaces around them. It also provides a series of policies to ensure development is well-designed, accessible, safe and respects and enhances the environment, and can be delivered alongside new infrastructure and local services.

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Policy D.ES4 (Flood Risk) states that:

1. Development is required to be located in areas suitable for the vulnerability level of the proposed uses with:
    a. highly vulnerable uses not allowed within flood zone 3a
    b. essential infrastructure and more vulnerable uses within flood zone 3a required to pass the exception test, and
    c. highly vulnerable uses within flood zone 2 required to pass the exception test.
2. Development is required to provide a flood risk assessment if it meets any of the following criteria:
    a. The development site is over 1 hectare in size within flood zone 1
    b. The site is within flood zones 2 or 3a
    c. The development may be subject to other sources of flooding, as defined in the Tower Hamlets Strategic Flood Risk Assessment.
3. The flood risk assessment should include:
    a. A sequential test if the development is in flood zone 2 or 3
    b. The risks of both on and off-site flooding to and from the development for all sources of flooding including fluvial, tidal, surface run-off, groundwater, ordinary watercourse, sewer and reservoir
    c. An assessment of tidal risk in the event of a breach in the River Thames defences
    d. The impact of climate change using the latest government guidance
    e. Demonstration of safe access and egress, and
    f. Mitigation measures, taking account of the advice and recommendations set out in the Tower Hamlets Strategic Flood Risk Assessment.
4. Site design of development which meets criteria outlined in Part 2 above is required to:
    a. undertake a sequential approach to development layout to direct highest vulnerability uses to areas of the site with lowest flood risk, and
    b. incorporate flood resilience and/or resistance measures.
5. Development is required to protect and where possible increase the capacity of existing water spaces and flood storage areas to retain water.
6. Development is required to enable effective flood risk management through:
    a. requiring development along the River Thames and the River Lea and its tributaries to be set back by the following distances unless significant constraints are evidenced:
        i. A minimum of a 16-metre buffer strip along a tidal river, and
        ii. A minimum of a 8-metre buffer strip along a fluvial river.
    b. optimising opportunities to realign or set back defences and improve the riverside frontage to provide amenity space and environmental enhancement.

Policy D.ES5 (Sustainable Drainage) states that:

1. Development is required to reduce the risk of surface water flooding, through demonstrating how it reduces the amount of water run-off and discharge from the site through the use of appropriate water reuse and sustainable drainage systems techniques.
2. Major development is required to submit a drainage strategy which should demonstrate that surface water will be controlled as near to its source as possible in line with the sustainable drainage systems hierarchy.
3. Development is required to achieve the following run-off rates:
    a. New development in critical drainage areas is required to achieve a greenfield run-off rate and volume leaving the site

b. All other development should seek to achieve greenfield runoff rate and volume leaving the site. Where this is not possible, the minimum expectation is to achieve at least 50% attenuation of the site's surface water run-off at peak times prior to redevelopment.

2.4 London Borough of Tower Hamlets Strategic Flood Risk Assessments

The LBTH Strategic Flood Risk Assessment was published in August 2017 to determine flood risk across the borough.

The Level 1 SFRA aims to collate and review all information available regarding flood risk for the borough, to enable the Sequential Test to be undertaken. In addition, it identifies areas at risk of flooding from all sources and provides information to allow the LBTH to set suitable policies to address flood risk management.

The Level 2 SFRA allows the Exception Test to be undertaken for Sites which cannot be located within a lower flood risk area. This report also provides enough information to assist each borough with strategic planning for their administrative area.

Information from both SFRAs regarding tidal, fluvial, surface water, sewer and groundwater flooding is included within Section 2 of this FRA.

2.5 London Borough of Tower Hamlets Preliminary Flood Risk Assessment

The LBTH's Preliminary Flood Risk Assessment (PFRA) was published in May 2011, to provide a high-level summary of flood risk to the borough.

The report describes the probability and subsequent consequences of past and future flooding, and considers flooding from overland surface water runoff, groundwater, sewers and ordinary watercourses. Information from the PFRA regarding flooding is included within Section 2 of this FRA.

2.6 London Borough of Tower Hamlets Local Flood Risk Management Strategy

The LBTH Local Flood Risk Management Strategy (LFRMS)xii was published in June 2015, to provide guidance and information for residents, businesses and developers regarding Tower Hamlets strategy for dealing with flooding within the borough.

It was completed to fulfil LBTH's requirement and duties as Lead Local Flood Authority (LLFA) and sets out how LBTH plan to manage flood risk across the Borough. In general, the LFRMS describes LBTH's commitment to work to address local flood risk and provides a framework of how local flood risk will be managed.

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3 Site Description & Context

3.1 Site Location

The Aberfeldy estate is located in Lansbury ward in the south-east of Tower Hamlets. Aberfeldy is one of the most physically and geographically segregated parts of the borough, with the A12 and A13 road networks splitting the estate from the rest of Poplar and Blackwall.

The site is located to the south of the River Lea and the Leven Yard Gasworks site. It is bounded to its west by the A12 and borders the Aberfeldy Village Development and Culloden Primary School to the south.

The site is centred on the approximate National Grid Reference TQ 38483 81132, as shown in **Figure 1**.

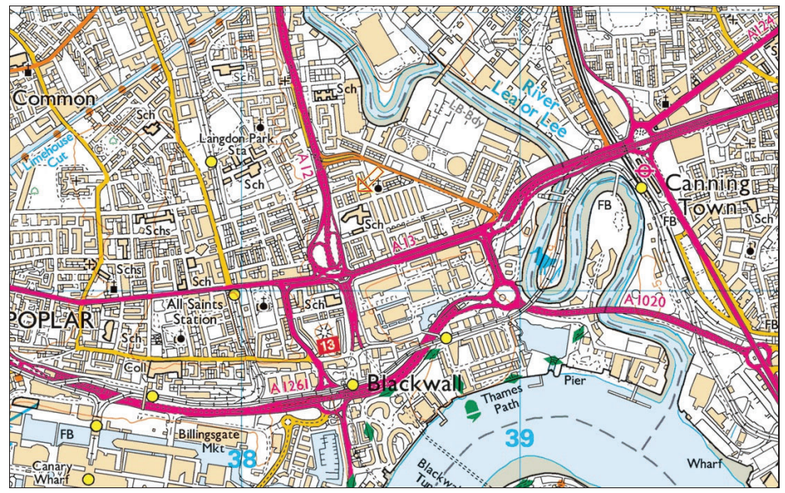

Figure 1 - Site Location

3.2 Existing and Proposed Development

The existing site includes:

- Existing homes on the Aberfeldy estate, including the properties and land around Balmore Close
- The Nairn Street Estate to the north and the new Poplar Works development adjacent to the A12.
- Land at Lochnagar Street to the north of Bromley Hall School
- Abbott Road and the existing green spaces or Braithwaite Park and Leven Road Open Space
- Land along Blair Street, adjacent to Braithwaite Park, which will complete the courtyard building within the built phase of Aberfeldy Village; and
- The existing vehicular underpass, Jollys Green, land parallel to the A12 and the pedestrian underpass at Dee Street.