University of Manchester

FALLOWFIELD DEMOLITION

Demolition Environment Management Plan

DEMP -
February 17 2025

University of Manchester

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FOR PLANNING

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3	
N/A	17-02-2025	29-05-2025	02-09-2025	26-09-2025	

Remarks	For Comment	For Tender	For Planning	
Date	October 2024		RMA 11-2024	
Prepared by	Jim Flannery		RMA 1-2025	
Signature	*MLP IODQQHU\#*		RMA 2-9-2025	
Checked by			RMA 26-09-2025	
Signature				
Authorized by				
Signature				
Project number				
Report number	Rev02-DEMP			
File reference	DEMP/Fallowfield RW24			

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1 INTRODUCTION

1.1 Demolition Environment Management Plan

1.1.1. This Document has been commissioned on behalf of the University of Manchester (UoM) to produce a Demolition Environment Management Plan (DEMP) for the phased demolition of buildings at Fallowfield Campus (the Site). The demolition involves the demolition of several buildings associated with the sites used as student accommodation including halls of residence and ancillary buildings. A site location plan is included as Figure 1 (appended). Condition 17 has already been discharged in relation to Phase 1, Ref: CDN/24/0052 and we are now seeking to discharge in relation to Phases 2 and 3

1.1.2. The demolition works will be undertaken in three distinct phases as presented below and in Figure 2 (appended):

- Phase 1--Owens Park located north of the site at NGR SJ 856 942.has commenced

Phases 2 & 3 are covered by this report

- **Phase 2** – Oak House & Woolton Hall located in the south of the site at NGR SJ 857 940; and
- **Phase 3** – The Limes - located to the east between Owens Park and Oak House at NGR SJ858 941

1.1.3. The DEMP details where possible and appropriate the specific demolition environmental risks, proposed mitigation, in accordance with legislative and other requirements and construction industry best practice.

1.1.4. The DEMP describes how the demolition activities would be undertaken and managed in accordance with these commitments as well as contractual and legislative requirements, and the construction industry's best practice.

1.1.5. It provides details of control measures to be implemented by personnel on site and to avoid, minimize or mitigate the impacts of construction works on the environment, and roles and responsibilities, monitoring and reporting procedures and emergency preparedness and response.

1.1.6. The DEMP is the main reference document to identify environmental aspects, risks, and mitigation to be implemented during the works. The DEMP will contain a record of all the sensitive environmental features that have the potential to be affected by the construction of the proposed scheme in an environmental risk register.

1.1.7. The appointed contractor will develop this DEMP for each of the two demolition phases, providing a more detailed DEMP as design and demolition plans are finalized and more detailed information on environmental effects becomes available. Such that prior to commencement of demolition, the DEMP would be fully comprehensive.

1.1.8. The appointed contractor shall be responsible for safeguarding the environment and for mitigating the effects of the demolition by implementing the requirements detailed in the DEMP.

1.1.9. A DEMP is a live document which will be updated on a regular basis to consider the following:

- Changes in design.
- Changes in external factors such as regulations and standards.
- Any unforeseen circumstances as they arise such as new protected species or new archaeological finds.

- The result of inspections and audits; and,
- Learning points from environmental near misses and incidents.

1.1.10. The DEMP will incorporate the following elements:

- Background and description of the demolition being carried out.
- Consideration of vehicle movements.
- Environmental management considerations; and Biodiversity Considerations
- Emergency preparedness.

1.1.11. All documentation in relation to the environmental management of the works shall be maintained by the Principal Contractor [Graham Construction] and made available to the Construction Project Manager and relevant third parties as required.

1.1.12. Similarly, performance against environmental objectives and targets, and in achieving effective environmental management, shall be subject to on-going review by the appointed Contractor.

1.1.13. To assist in implementing environmental good practices, the Contractor shall be required to register with a Considerate Constructers Scheme (CCS).

1.2 Structure Of The DEMP

1.2.1. This DEMP contains the following information:

- Chapter 1: Introduction – this section includes a summary of the proposed works, the purpose of the DEMP and key environmental constraints.
- Chapter 2: Proposed Works – this section includes a summary of the demolition programmed and the main demolition methodology.
- Chapter 3: Project Team Roles & Responsibilities - this section details who is responsible for key environmental responsibilities on site.
- Chapter 4: Environmental Management Measures – this section comprises general and site-specific mitigation measures which can be applied during construction to minimize potential environmental impacts.
- Chapter 5: Emergency Preparedness – this section details the measures to be followed in the event of an emergency or an environmental incident.

1.3 Key Environmental Constraints

1.3.1. The following points below outline the key environmental impacts that could potentially impact on the work:

- Potential for contaminated land to be present.
- Potential for surface water pollution and flood risk.
- Presence of protected species including bats birds, reptiles and invertebrates; and Protection of neighboring and nearby land users and residents.

1.4 Project Environmental Risks

1.4.1. The risks to the environment that have been identified during the demolition work include the following:

- Environment and ecology.
- Public interest and stakeholders include access and site security.
- Health and safety considerations for the workforce.
- Dust because of demolition, processing, and vehicle movements in dry conditions.
- Noisy demolition activities.
- Spills of fuel, oil, chemicals, or other potential hazardous substances.
- Production and management of waste as a result of the work and incorrect handling of materials.
- Earthworks and earth movement resulting in silt and mud on roads.
- Encountering unexploded ordnance (UXO)
- Encountering contaminated material.

2 WORKS DESCRIPTION

2.1 Site Location and Works Description

2.1.1. The site comprises Fallowfield Campus which is located to the south of Manchester city Centre. The total area of the site is approximately 7.7 hectares (ha) in size, with a site location plan included as Figure 1 (appended).

2.1.2. The demolition works are split into three distinct phases as presented below and in Figure 2 (appended): that as approved under Ref.CDN/24/0052, demolition in the respect of Phase 1 has already commenced. This report focuses on Phases 2 and 3.

- **Phase 1** – Owens Park – situated in the north of the site at National Grid Reference (NGR) SJ 856 942.Already commenced
- **Phase 2** – Oak House & Woolton Hall located in the south of the site at NGR SJ 857 940; and
- **Phase 3** – The Limes – located to the east between Owens Park and Woolton Hall at NGR SJ 858 941.

2.1.3. This detailed DEMP is for the remaining Phases 2 & 3 which will incorporate location specific considerations. Note, the DMP has already been approved for Phase 1of the demolition works undertaken by the UOM direct.

2.1.4. The site is currently owned and operated by the University of UoM. During the work, parts of the wider Fallowfield campus will remain open to UoM staff and students. The areas that will remain under UoM occupation throughout the duration of the demolition works are:

- Ashbourne Hall,
- Sheavyn House,
- Richmond Park,
- Unsworth Park,
- Uttley House and
- Fir's Botanical Grounds

2.1.5. During the completion of the demolition of Phase 2 the other buildings incorporated in Phase 3 will/may be occupied for the duration of the demolition works. During Phase 2, Owens Park (Phase 1) will be segregated and undergo redevelopment, and The Limes may remain operational.

2.1.6. The planned demolition comprises the removal of hazardous materials (including asbestos), demolition, and site clearance including the buildings, associated infrastructure and foundation slabs to facilitate the next stage of redevelopment. The affected buildings are included as Figure 2 (appended).

2.1.7 The planned work is as follows:

- Installation of temporary hoarding to the boundary to a height of 2.0 – 2.4m.
- Disconnection of existing redundant services and the protection of retained services crossing the site.
- Removal and disposal of all asbestos containing/other hazardous materials as identified in the required Refurbishment and Demolition Surveys, and any other areas identified by the Contractor.
- Soft stripping of all levels of individual demolition packages to include timber, partitions, false ceilings, glazing, furnishings, general rubbish, waste, electrical equipment, plumbing, for disposal off site.

- Mitigation Works with regards to identified ecological receptors and protection of trees.
- Management and control of all drains within the site boundary.
- Demolition down to surrounding ground floor slab level or basement level where appropriate.
- Removal of all building foundations.
- Removal of all external hard standing areas including roads, paths, paved areas.
- Processing of suitable demolition arisings to agreed engineering specifications for use as fill material for site voids and site levelling purposes.
- The plugging and sealing of all redundant underground pipework/sewer connections; and,
- The clearing of site surface to be free of all deleterious materials and should be level and free of trip hazards.

2.2 Anticipated Demolition Program

2.2.1. Demolition has commenced for the Phase 1 area (Owens Park) in Q3 2023. Phase 2 (Oak House and Woolton Hall) is expected to start Q3 2025 and Phase 3 (The Limes) Q4 2026. A program for demolition will be produced (subject to the New Limes building being completed.)

2.3 Proposed Key Demolition Sequence

2.3.1. The sequence in which demolition works will take place is outlined below, however some tasks may run concurrently:

- Completion of requisite surveys (asbestos, utilities etc.);
- Utility disconnections.
- Erection of tree protection measures.
- Construction of haul roads (where required) within demolition site.
- Soft strip of buildings.
- Equipment / plant removal.
- Asbestos removal.
- Structural demolition of buildings.
- Floor slab and building foundations removal.
- External hard standing and utilities removal.
- Crushing and screening of demolition arisings; and,
- Filling of voids and site levelling.

2.4 Working Hours

2.4.1. The proposed work is likely to take place within normal working hours, as set out below:

- 08:00 – 18:00 Monday – Friday, with no noisy works until 09:00am; and,
- 08:30 – 14:00 on Saturdays (if required) and no Sunday or bank holiday working.

2.4.2. In the event that working outside of these hours becomes necessary, the contractor will agree additional working hours with the clients representative and planning authority however, measures to remedy unsafe conditions beyond the sites control (Storms etc.) these will be actioned as required.

2.4.3. All deliveries will be taken during normal site hours or occasionally restricted hours on certain days to support student activities. All deliveries will be received by a gateman/banksman. All suppliers will be informed of the site hours and provided with a site layout plan at the time of placing the order.

2.5 Traffic Management

2.5.1. All deliveries will be offloaded within the site boundaries on designated UoM privately owned roads, no offloading is permitted from the public highway. Dedicated offloading and laydown areas will be arranged with a one-way traffic system and segregated from the main works area. Bulk materials, such as aggregates, will be carefully monitored for volumes and enough can be stored on site. This will spread any delivery requirements, reducing the risk of excess construction traffic creating a gridlock.

2.5.2. Construction traffic will access from Wilmslow Road through site gates Phase 1 site will be for construction traffic only. Phases 2 and 3. Access will be from Mossley Road large deliveries associated with the demolition during will be restricted during rush hour periods to avoid adverse impact on residents using the road.

2.5.3. Access to the buildings/areas scheduled for demolition will be through the Mossley Road gate as attached demolition plan to avoid interacting with students, pedestrians/ cyclists, UoM staff (particularly maintenance and catering staff from The Limes during Phase 2 & 3) and the nearby Armitage Sports Centre which is busy on Wednesdays and weekends.

2.5.4. For general site traffic such as wagon access/egress and movement of plant, the contractor will create a Site Traffic Management Plan. This will look at requirements for suitable signage, barriers, warnings, pedestrian segregation and traffic marshals.

2.5.5. The contractor will look to employ a full-time traffic marshal at the site entrance for elements of work that require large volumes of heavy traffic. This is as an additional traffic control measure and for the wheel washing facilities.

2.5.6. It will be the responsibility of the contractor to update the DEMP so that it reflects the decision, and to incorporate subsequent details related to the functionality and specific timings of the options.

2.5.7. The traffic management plan will be developed to ensure the following factors are considered:

- Continual pedestrian, cycle and vehicular access for other site users to ensure minimal disruption.
- Use of Chapter 8 compliant signage on public approach roads to delineate traffic routes for delivery vehicles and trucks where required.
- That all staff and suppliers are informed of access / egress arrangements to ensure that the correct and most direct route is always used; and,
- Deliveries will be scheduled to minimize potential impacts to onsite and public roads, including where possible, arranging deliveries outside of rush hours or times of high student traffic (e.g. Wednesdays afternoons).

2.5.8. Given the location of the demolition works there may be a requirement for traffic management operations on the public highway, however this will be minimized as far as reasonably practicable.

CONSTRUCTION LOGISTICS AND COMMUNITY SAFETY

2.5.9. In line with the University Estate traffic management standards the Principal Contractor must ensure all deliveries or collections by HGV shall be following the Construction Logistics Plan (CLP) relating to the project and working to the requirements of the Construction Logistics and Community Safety (CLoCS) standard. Particular attention must be given to the 'last mile' journey around the campus comprising schools and hospitals. The university campus is exceptionally busy with over 50,000 staff and students in the center of Manchester, so it is critically important that the risk of collision between HGVs and pedestrians or cyclists / motorcycles is carefully managed and mitigated against to keep everyone safe.

2.6 Highway Condition Surveys

2.6.1. A photographic survey of the conditions of the highways surrounding the site has been undertaken with details found in **Appendix C** of this report. Note: As phase one demolition works remain incomplete, this dilapidation survey will be updated prior to the phase 2 and 3 works being carried out. These surveys will include but not limited to affected areas on Chancellors Way, Gunnery Lane, Wilmslow Road, Moseley Road, Old Hall Lane, and Whitworth Lane. The survey shall then be repeated monthly to ensure the roads are unaffected by the demolition works. Should the highways be deemed to be negatively impacted because of the demolition work, the contractor will remedy the identified defects as soon as practicable. Upon completion of the demolition works, the contractor will undertake a photographic survey to ensure any identified defects attributable to the demolition works have been resolved, and that the highways have been left in a satisfactory condition.

2.7 Contractors Compound

2.7.1. It is anticipated that for Phase 1, the contractor's compound will be located at the Owens Park Car Park with welfare facilities temporarily provided at The Mall location until site establishment is completed (prior to utility disconnection/demolition). Confirmation of Phase 2 and 3 has been confirmed prior to demolition, with the compound for each Phase located within the demolition site boundary to prevent unnecessary interaction with third parties. The demolition compound is anticipated to include the following elements:

- Parking and access for construction vehicles.
- Ten No 32' Offices.
- Ten No 32' Canteen/Welfare Block.
- Two No 32' toilet block.
- Two No 20' secure stores.
- Recycling and storage units; and,
- Vehicular entrance / exit and secure pedestrian entrance / exit.

2.7.2.

CONSTRUCTION PLANT AND EQUIPMENT

2.7.3. The following construction plant and equipment are envisaged:

- Hoarding.
- Heras Fencing.
- Pedestrian safety barriers.
- Traffic management signage.
- Scaffolding.
- Small Tools.
- Generators.
- Double bunded fuel bowsers.
- COSHH/chemical store.
- Temporary matting.
- Excavators of various sizes with hydraulic breakers, shears and grapple attachments.
- Dumpers of various sizes.
- Cutting/grinding and other hot work equipment.
- Tipper Lorries
- Low-loader lorries.
- Concrete / brick crusher and screener.
- Various sizes of rollers and vibrating compaction plant.
- Water suppression plant, pressure washer bowsers; and,
- Wheel wash.

2.7.4. The following measures will be in place to mitigate and reduce disruption during construction:

- Materials will be stored locally in the work area to minimize plant access.
- Delivery timings will be coordinated to avoid peak time or high student traffic to alleviate congestion.
- The demolition area will be enclosed with solid timber hoarding to temporary works design with vehicle access gate that is to be locked when not in use.
- The areas of the immediate demolition areas may be enclosed with Heras fencing.
- All access gates onto the working demolition area and the contractor's compound will be locked during evening/ night and closed during the working day.
- Security will be provided by a specialist security firm erecting several CCTV cameras across the site. These will be monitored, and a guard dispatched at any sign of intrusion; and,
- A daily fence inspection will be undertaken and recorded. Any issues will be rectified immediately.

3 GENERAL ARRANGEMENTS

3.1 Roles And Responsibilities

3.1.1. To the Environmental commitments outlined in the DEMP and allow effective construction environmental management, it is important to provide a clear identification of roles and responsibilities. These are identified in Table 3-1.

TABLE 3-1 – KEY ENVIRONMENTAL ROLES AND RESPONSIBILITIES

Activity	Responsible Person	Contact Details
Ensure resources are made available to carry out environmental responsibilities	Contractor's Project Manager	TBC following Contractor Appointment.
Ensure measures detailed in the DEMP are carried out	Contractor's Construction Manager	TBC following Contractor Appointment.
Review DEMP	Contractor's Construction Manager / Health and Safety (HSE) Manager	TBC following Contractor Appointment.
Carry out Environmental Induction Training on site (as part of overall site induction)	Contractor's Site Supervisor Environmental Advisor	TBC following Contractor Appointment.
Ensuring that all environmental standards and commitments are adhered to	Contractor's Construction Manager	TBC following Contractor Appointment.
Carrying out site specific environmental training	Contractor's Construction Manager	TBC following Contractor Appointment.
Carry out Waste Management Duties on Site	Site Waste Representative(s)	TBC following Contractor Appointment.
Carry out regular site environmental checks e.g. spills/leaks, housekeeping, materials storage	Contractor's Construction Manager	TBC following Contractor Appointment.
Ensuring Risk Assessments / Method Statements (RAMS) consider environmental aspects and risks on site	Contractor's Construction Manager / Health and Safety (HSE) Manager	TBC following Contractor Appointment.
Review / Provide environmental input Risk Assessments / Method Statements (RAMS)	Contractor's Construction Manager	TBC following Contractor Appointment.
Identifying requirements for / inputting into / coordinating specific environmental RAMS for the works	Contractor's Construction Manager	TBC following Contractor Appointment.
Producing specific environmental RAMS e.g. ecology, archaeology etc.	Environmental Specialists	TBC following Contractor Appointment.

ENVIRONMENTAL CLERK OF WORKS (ECOW)

3.1.2. The Contractor will assume the duty of the Environmental Clerk of the works to ensure the implementation of the DEMP and delivery of environmental commitments unless one is provided as part of the Employer team.

3.1.3. The Environmental Clerk of Works will undertake the following tasks:

- Review, update and communicate the DEMP to all personnel on site.
- Provide advice and support to the Site Manager and the site team on all environmental matters.
- Carry out environmental training, toolbox talks and briefings. Environmental toolbox talks and briefings will be carried out every month as a minimum.
- Be the main contact point for liaison with Statutory Authorities and the Employer. Accompany Statutory Authorities and the Employer on site during environmental visits.
- Provide advice for managing waste on site.
- Carry out environmental audits and inspections and report any non-compliances on site.
- Carry out environmental incident investigations and brief out lessons learnt by the site teams.
- Take photos of good practices, any environmental issues and incidents.
- Carry out checks and implement environmental mitigation measures daily; and
- Ensure environmental compliance during work.
- Ensure environmental responsibilities are brought to the attention of all personnel as applicable to their work, and to ensure that the DEMP is complied with.

PROJECT / SITE MANAGER

3.1.4. The Project / Site Manager will undertake the following tasks:

- Has overall responsibility for delivery of the project and for meeting environmental objectives and targets.
- Has overall responsibility for ensuring that all appropriate mitigation measures are implemented in accordance with legal and other relevant environmental requirements, planning conditions, company procedures, best practice and as advised by the Environmental Clerk of Works.
- Responsible for ensuring that adequate resources are made available for delivering environmental requirements on site.
- Ensure the competence of staff is appropriate in order to carry out their environmental duties.
- Lead by example to ensure that a high standard of environmental performance is achieved; and,
- Liaise with the E Clerk of the Works with regards to environmental aspects and issues associated with the project.

PLANT MACHINE OPERATORS

3.1.5. The Plant Machine Operator will undertake the following tasks:

- Responsible for carrying out pre-use environmental checks on their equipment.

- Responsible for ensuring that plant and equipment is accompanied by the required Certification and that plant and equipment is regularly serviced and maintained.
- Ensure that all plants and equipment are appropriately silenced.
- Ensure that, as a minimum, a 15-litre spill kit is provided on all mobile construction plant.
- Bring to the attention of the Site Manager / Supervisor any defect in equipment so that it can be taken out of service and repaired or replaced.
- Ensure that equipment is only refueled at designated refueling areas.
- Ensure that drip trays/plant nappies are installed under all refueling operations.
- Comply with site rules with regards to refueling, use of generators and other petrol/diesel driven construction plant.
- Ensure that plant & machinery in intermittent use is shut down between activities, or where not practicable, throttled down to a minimum.
- Report any environmental incidents, hazards or near misses to the supervisor/manager and/or the E Clerk of the Works immediately; and,
- Ensure that all work is carried out in accordance with the DEMP, associated risk assessments and method statements.

ALL SITE PERSONNEL

3.1.6. All site personnel will undertake the following tasks:

- Must carry out their duties in a way that does not have a detrimental effect on the environment.
- Responsible for carrying out activities in compliance with all regulatory standards, codes of practice and project systems and procedures.
- Responsible for reporting any environmental concerns to their supervisors.
- Must attend environmental toolbox talks and briefings as instructed.
- Responsible for reporting all environmental incidents, hazards and near misses.
- Ensure that good housekeeping is always practiced; and,
- Ensure that personal conduct does not detrimentally affect the image of the project.

3.2 Communication

3.2.1. Environmental issues will be communicated on each day of construction through the following arrangements on site. All site staff will attend Health and Safety progress meetings, risk assessment / Method statement briefings and environmental toolbox talks.

3.2.2. A monthly report will be provided to the Employer detailing the implementation of environmental commitments and mitigation measures, training delivered, environmental initiatives undertaken, proposed amendments to the DEMP, updates on environmental audits and monitoring undertaken, and any environmental incidents regarding the project. This will be shared with relevant statutory bodies as applicable.

3.3 External Communication

3.3.1. A Contractor Representative will be made responsible for receiving, documenting and responding to any environmental communication from third parties and the local community as required and as agreed with the Employer.

COMPLAINTS PROCEDURE

3.3.2. The contractor will always aim to create good working relationships with stakeholders, people and businesses that may be affected by our construction work.

3.3.3. A complaints register is available for recording any complaints received and are dealt with in the appropriate manner. It is essential to the success of the project to establish communication links with all externally interested parties.

3.3.4. The Site Foreman will be the direct contact for addressing complaints, their name and contact numbers will be displayed on notice boards posted on the site hoarding with options to escalate to the Site Manager, Contracts Manager and Head Office should it be necessary.

3.4 Training

3.4.1. Prior to starting on site all workforces will be made familiar with the site, works to be undertaken and hazards expected by way of a site induction. Operatives working on the tasks detailed in the RAMS will be briefed by the contractors' Site Supervisor and the briefing attendance sheet signed to confirm the briefing and understanding.

3.4.2. All Operatives will be trained to a minimum of CPCS or CSCS level as appropriate.

3.4.3. Daily briefings will be given to Operatives prior to work commencing and Toolbox Talks will be given on a weekly basis on an appropriate topic linked to the works on site.

3.4.4. All required Permits will be issued on site by the contractor's Responsible Person (Manager/ Site Waste Representative(s) /, Foreman or Engineer) and Operatives will be briefed on the requirements of the permit before work commences.

3.4.5. All personnel will be experienced and competent in the tasks that they are being asked to undertake. Due to the nature of the project, it is expected that all operatives will need to be Asbestos Awareness trained (as a minimum).

3.4.6. It is recommended that the management team receive environmental awareness training.

3.5 Site Auditing

3.5.1. Monthly inspections of the site will be carried out to ensure compliance with the DEMP by Principal Contractor and to minimize the risk of damage to the environment. All environmental incidents will be reported to the Contractor's Construction Manager / Environmental Clerk of the Works ECOW Document control will be in accordance with the Quality Management System (QMS) and copies of the environmental audit report, consents and licenses will be maintained by the Contractor's Construction Manager / E Clerk of the Works. These documents will be stored securely onsite and will be available for review at any time.

3.5.2. Internal and external environmental auditing and inspections will be compiled with.

3.5.3. The Contractor will be responsible for investigating and addressing any non-compliance findings raised by the audit within an agreed time frame and ensuring that corrective and preventative actions have been addressed.

3.6 Local Labour Agreement / Social Value Plan

3.6.1. The appointed demolition contractors shall be required to submit a local labor agreement / social value plan to the Client or their representative for approval. Such an agreement will be audited periodically throughout the work to ensure compliance with the agreement. Key Performance Indicators (KPIs) will be agreed and assessed at regular intervals to ensure adherence.

3.6.2. The agreement shall summarize how the appointed demolition contractor(s) shall engage with the local labor market, communities and applicable organizations whether through direct employment or use of local companies as sub-contractors to ensure:

- Local people / companies benefit from the planned work.
- Local people are provided with opportunities to gain skills needed for employment; and
- The environmental impact of unnecessary travel is minimized by maximizing local employment opportunities.

3.6.3. A local labor agreement for the first phase of the demolition works is included in Appendix B for reference.

4 ENVIRONMENTAL MANAGEMENT MEASURES

4.1 Introduction

4.1.1. This section refers to best practice measures to reduce environmental impacts during the construction of the scheme. This section also includes site specific mitigation under specific construction activities.

4.2 General Environmental Management Measures

4.2.1. The following mitigation measures and best practice should be carried out throughout the whole of the construction phase (general mitigation measures per environmental topic are included in more detail between sections 4.3 – 4.11):

- Securement of Site and implementation of hoarding and any additional fencing around the site to prevent vandalism and pollution events.
- Toolbox talks to be delivered to all site personnel.
- All machinery should use Ultra Low Sulphur Diesel (ULSD) where possible.
- Plants should be well maintained and serviced regularly and shut down in the intervening periods between work or throttled down to a minimum.
- Use of noise control equipment such as jackets, hoods and shrouds on construction equipment such as generators.
- There should be constant monitoring of dust levels and effective methods of work should be adopted to prevent dust becoming airborne at the source for example, using wet sweeping methods to prevent accumulation of dust and mud and using effective exhaust ventilation and filtering to minimize potential dust pollution.
- Spill kits must be made available on site and personnel should be competent at deploying spill kits in the event of a spillage. In the event of a pollution incident, work should cease in the vicinity of the incident and contaminants must be cleaned up immediately. All incidents must be reported, and a Pollution Incident Report form completed. Subsequent waste material resulting from spillage should be disposed of appropriately.
- Minimizing the exposure of bare ground and covering stockpiles; and,
- The works should be effectively programmed in advance to avoid delays in the construction program.

4.2.2. Daily site inspections will be completed by the site manager or a nominated person who will record both on-site and off-site conditions with a focus on the above points and identified key sensitive receptors. Any improvement works identified will be implemented as soon as possible and recorded within the site inspections. These will be made available to the local planning authority upon request.

4.2.3. Any complaints received by the contractor will be recorded, the cause identified, and solutions implemented to prevent future occurrences. A record of complaints and measures implemented will be maintained throughout the project and will be made available to the local planning authority upon request. Further information relating to the reporting of incidents is included in Section 5.8.

4.3 Air Quality and Dust

4.3.1. Air quality will be managed in accordance with legal requirements and best practice guidance. The Contractor will adopt Best Practicable Means (BPM), as defined in the Control of Pollution Act 1974.

The main air quality impacts that may arise during demolition activities are:

- Dust generated from demolition activities.
- Emissions from construction plant; and,
- Emissions from vehicles associated with the construction of the Proposed Scheme, import of construction materials and removal of waste materials, accessing and leaving the Site on the local road network.

LOCAL SENSITIVE RECEPTORS

4.3.2. The site is an active student campus with student accommodation and facilities; therefore, the main sensitive receptor is the Fallow student population. There are areas of Fallowfield Campus which are not within the demolition scope of works and phasing which will remain operational to students and UoM staff throughout the duration of the program. These include Grade II listed buildings such as Ashbourne Hall, Firs Botanical Grounds, Uttley House and annex, along with newer halls of residents such as Sheavyn Hall to the north, Richmond Park and Unsworth Park located to the east. Offsite sensitive receptors also include the residential properties to the north, west and south, along with The Armitage Sports Centre to the east.

MITIGATION AND SITE MANAGEMENT

4.3.3. The following mitigation measures will be implemented throughout the construction phase to minimize air quality impacts:

- Damping down surfaces during dry weather.
- Erection of appropriate hoarding and/or fencing to reduce dust dispersion and restrict public access.
- Appropriate handling and storage of materials, especially stockpiled materials.
- Covering materials stockpiles, deliveries or loads entering and leaving the construction site for the purposes of preventing materials and dust spillage.
- Stockpiles and mounds will be maintained to avoid material slippage.
- Material processing areas will be located centrally within sites, to maximize distance to sensitive receptors.
- Materials stockpiles likely to generate dust should be enclosed or securely sheeted, kept watered or stabilized as appropriate.
- Use of wheel washing, limiting vehicle speeds to 5 mph, avoidance of unnecessary idling of engines and routing of Site traffic as far from residential, educational and commercial properties as possible.
- Fit all equipment (e.g. for cutting, grinding, crushing) with dust control measures such as water sprays wherever possible.
- Damping down dust-generating equipment and vehicles within the site and the provision of dust suppression in all areas of the site that are likely to generate dust.

- Plant to be serviced regularly.
- Plants should be well maintained and shut down in the intervening periods between work or throttled down to a minimum.
- All machinery should use Ultra Low Sulphur Diesel (ULSD) where possible; and,
- Ensuring that a road sweeper is available to clean mud and other debris from hard standing roads and footpaths.

4.3.4. To ensure that dust emissions from vehicle movements are kept at a minimum, the following control measures will be implemented on Site:

- Haul roads and associated vehicle waiting areas shall be regularly inspected and kept clean of mud and materials which may give rise to emissions of dust.
- Plant crossings, site accesses and egress points will be regularly swept and dampened down.
- Unpaved roads and verges shall be maintained in a compacted condition as appropriate and necessary.
- Static water sprinklers and/or bowsers will be provided to damp down haul and access roads as necessary.
- Road sweepers will be used to limit the dust and material on paved roads.
- General site traffic shall be restricted to watered or treated haul roads; and,
- Speed limits should be established and enforced on site traffic routes (speed limits should be reduced in the event of extreme dry conditions to further reduce the potential for the generation of dust).

4.3.5. In addition to the site access and haul roads, there is potential for the generation of dust from general site operations. The control measures to be implemented to reduce these emissions are described below:

- Burning on site of any waste arising from any construction activities is prohibited.
- Equipment likely to generate excessive quantities of dust shall be enclosed, shielded or where appropriate fitted with dust extractors, filters and scrubbers, which shall be fitted and maintained in accordance with the manufacturer's specifications.
- The number of material handling operations shall be kept to a practicable minimum.
- Drop heights of materials on to vehicles and stockpiles shall be kept to a practicable minimum.
- Where appropriate, wind breaks, netting screens or semi-permeable fences shall be used to reduce dust emissions from working areas and/or screen sensitive locations (as identified by the Project/Site Manager). Where necessary, water sprays shall be employed to control dug generated during construction of earthworks and during piling operations; and,
- Where stockpiles are retained long term onsite, they will need to be managed appropriately.

ASBESTOS

4.3.6. The following control measures will be implemented to manage the presence of Asbestos on site, and detailed in the project Asbestos management plan (AMP);

- Personal and boundary air monitoring.

- Protective clothing.
- Respiratory protective equipment.
- Dust control in the form of water suppression; and
- Segregated areas.

4.4 Noise & Vibration Controls

LOCAL SENSITIVE RECEPTORS

Guidance Notes:
Details of control measures in respect of noise and vibration are contained within this section.

1. **Noise and Vibration Issues**
2. **Site Conditions**
3. **Noise, Dust & Vibration Control Measures (General)**
4. **Operating Hours**
5. **Establishment of Baseline Conditions**
6. **Noise Monitoring Plan**
7. **Liaison with the Local Community during the Contract**
8. **Establishment of Working Relationship with the Local Authority**
9. **Section 61 of the Control of Pollution Act (COPA), 1974**
10. **Programming of Works**
11. **Distancing from Sensitive Receptors**
12. **Plant and Equipment**
13. **Traffic Noise during Construction**
14. **Noise Screening**
15. **Vibration**

1. **Noise and Vibration Issues**

Excessive noise and vibration on site not only represent a major hazard to site workers but it can also annoy neighbours and in some cases disturb adjacent wildlife.

Best practice will therefore be implemented in order to minimise noise and vibration and comply with the contents and recommendations of the “Code of Practice for Noise Control on Construction and Open sites” (BS5228-1: 2009+A1:2014).

2. **Site Conditions**

Details of baseline surveys

- Baseline noise surveys were undertaken between Friday 19th and Wednesday 24th May 2023

- The noise monitoring locations are presented below



Phase 1 monitors Noise, Vibration and Dust monitoring Locations

Dust Noise Vibration



Phase 2 Monitors Noise, Vibration and Dust

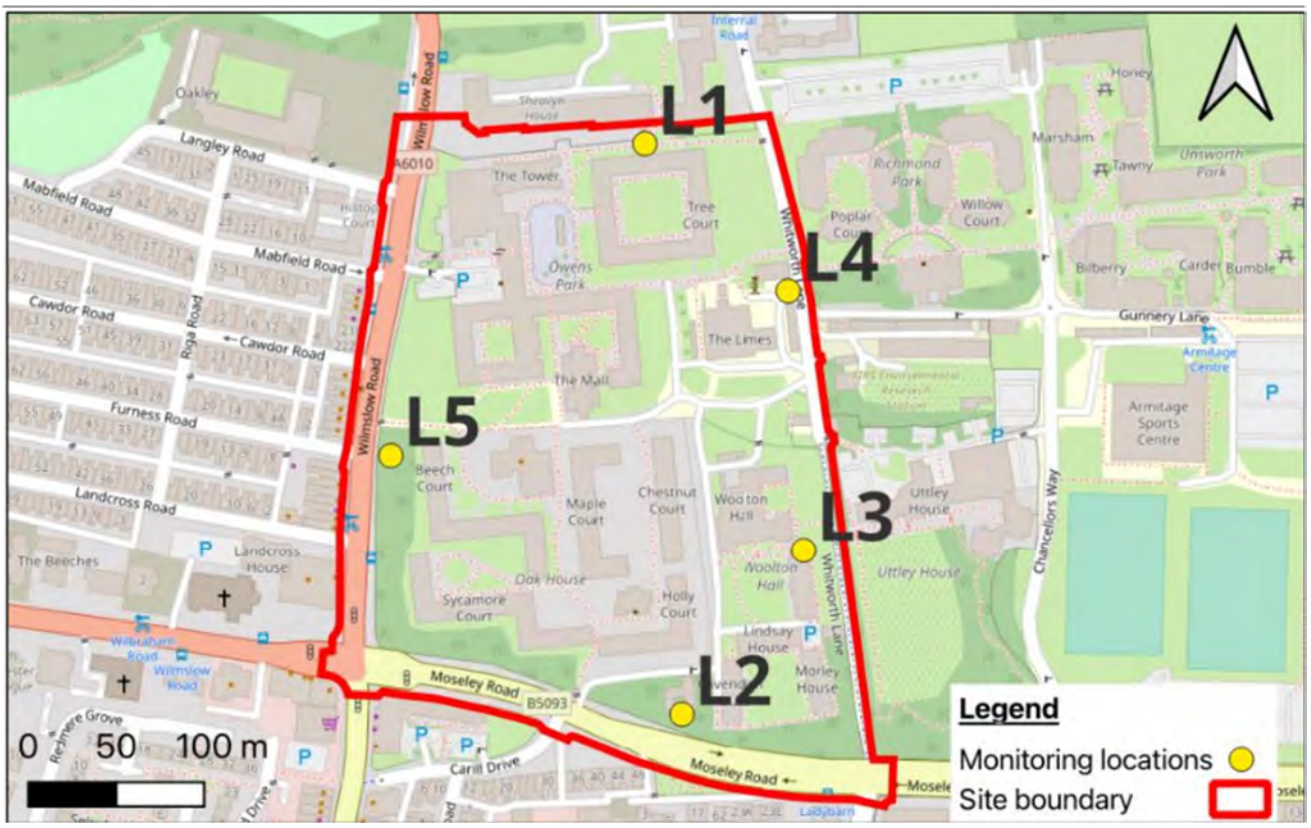
Vibration Noise Dust locations



Phase 3 monitors Vibration, Dust & Noise locations

Vibration Dust Noise

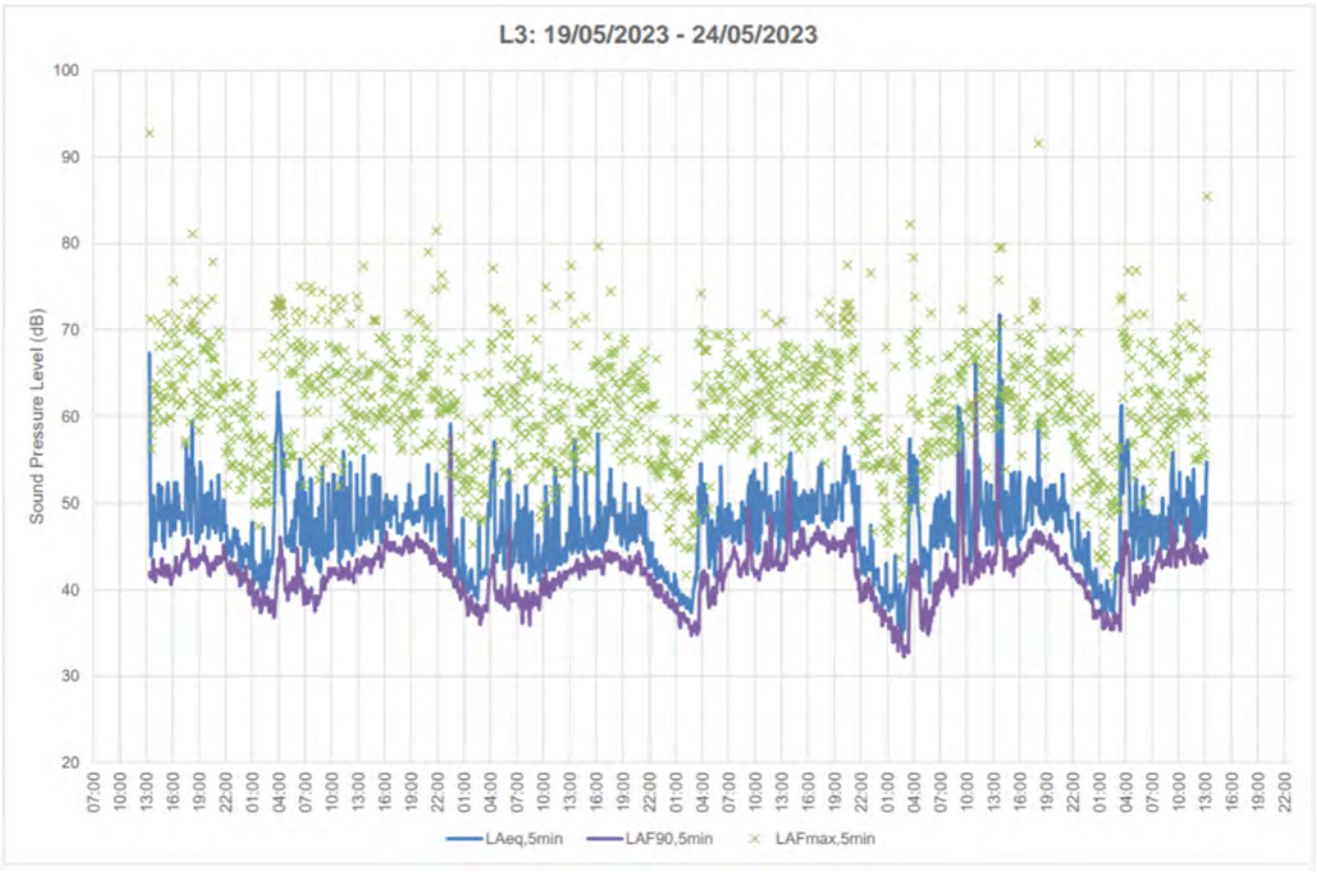
Previous Monitoring stations for baseline assessment

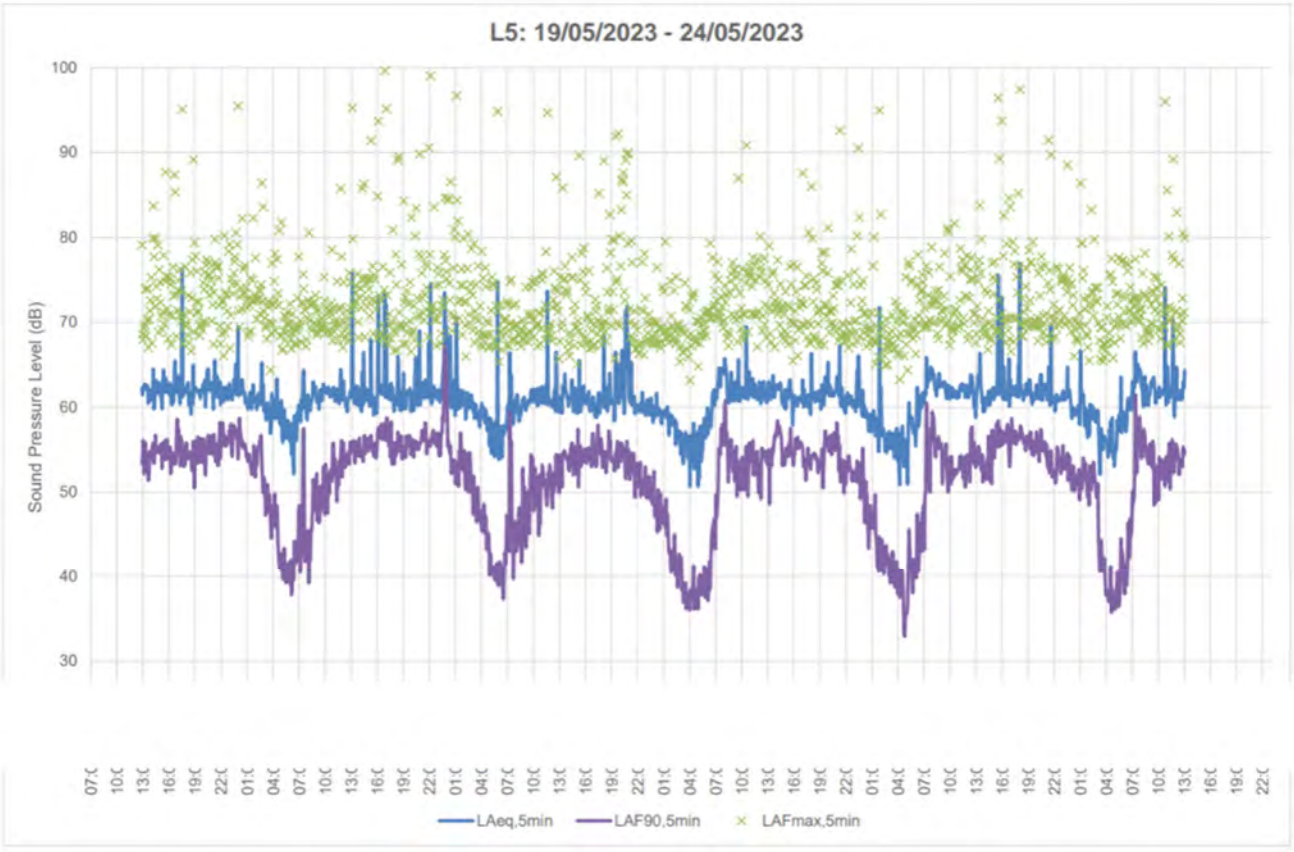


- L2, L3 and L5 were continuous unattended monitoring
- L1 was a short-term attended noise monitoring during the morning of Friday 19th May 2023.
- L4 was found to be dominated by noise from local fixed plant, which is to be removed as part of the works, and therefore was not used to measure noise levels
- During the noise survey, it was observed that the noise dominated by road traffic noise, with the A6010 Wilmslow Road dominant on the north and west sides of the site, the B5093 Mosely Road at the south of the site, and contributions from both roads at the east of the site.
- Other noise sources noted included occasional aircraft overhead and fixed plant noise.

The results of the baseline noise measurements are presented overleaf:

Baseline noise measurements:





Details of noise and vibration receptors

- The site has existing residential accommodation in proximity to the boundary on all sides, both private dwellings and student residences.

Receptor	Distance to site boundary/works	Representative of properties including
North	15 m	Sheavyn House
East/South	40 m	Richmond Park, Utterly House / Properties on Mosely Road
West	45 m	Properties on Wilmslow Road
On-site (north/south)	20 m	Maple Court (southern half of site), new accommodation buildings (north half of site)

Details of possible noise and vibration impacts and assessment

The Main Noise and Vibration sources relevant to the works are:

- Building soft strip
- Demolition of building and foundations
- Crushing of arisings
- Filling of voids and site levelling
- Construction Noise
- Construction Traffic Noise
- Construction Vibration
- Construction Dust

According to baseline noise survey the Noise effects during demolition are likely to result in significant adverse effects at the closet receptors to the site

3. **Noise, Dust and Vibration Control Measures (General & Equipment)**

No part of the works will be carried out in such a manner as to cause unnecessary noise and dust except in cases of an emergency when the work is necessary for the saving of life or property or the safety of the works.

All operatives will receive training and advice on noise and dust minimisation and general good site practice through site-specific training and briefings.

Noise Monitors will be straigically located around the site and be similar to the types of Equipmentt as shown below.



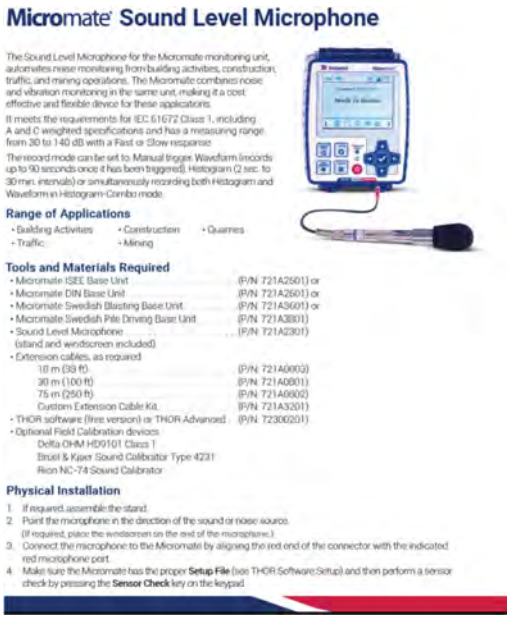


Noise monitering types or simliar used depending on location

The snapshots overleaf show how the equipment could be placed onto building and site hoardings or secured to poles, with the intention to position following the principles of BS4142 for noise, in that they could be located 10m from source to 10m to structure/ locality being impacted.

Data is presented to a 24/7 dedicated platform to any web enabled device. Daily/Weekly/Monthly reports will be created to provide stakeholders with information on current and historic trends. Alerts will be active to inform site management if a threshold level has been breached.

To supplement the above measures, site monitoring will be undertaken as deemed appropriate and undertaken by using similar equipment to that as advised below.



Micromate Sound Level Microphone

The Sound Level Microphone for the Micromate monitoring unit, automates noise monitoring from building activities, construction, traffic, and mining operations. The Micromate combines noise and vibration monitoring in the same unit, making it a cost effective and flexible device for these applications.

It meets the requirements for IEC 61672 Class 1, including A and C weighted specifications and has a measuring range from 30 to 140 dB with a Fast or Slow response.

The record mode can be set to Manual trigger. Waveform (records up to 90 seconds once it has been triggered), Histogram (2 sec. to 30 min. intervals) or simultaneously recording both Histogram and Waveform in Histogram-Combo mode.

Range of Applications

- Building Activities
- Construction
- Quarries
- Traffic
- Mining

Tools and Materials Required

- Micromate ISEE Base Unit (P/N 721A2501) or
- Micromate DIN Base Unit (P/N 721A2601) or
- Micromate Swedish Blasting Base Unit (P/N 721A3601) or
- Micromate Swedish Pile Driving Base Unit (P/N 721A3801)
- Sound Level Microphone (P/N 721A2301) (stand and windscreen included)
- Extension cables, as required
  - 10 m (33 ft) (P/N 721A0003)
  - 30 m (100 ft) (P/N 721A0801)
  - 75 m (250 ft) (P/N 721A0802)
  - Custom Extension Cable Kit (P/N 721A3201)
- THOR software (free version) or THOR Advanced (P/N 72300201)
- Optional Field Calibration devices
  - Delta OHM HD9101 Class 1
  - Brüel & Kjær Sound Calibrator Type 4231
  - Rion NC-74 Sound Calibrator

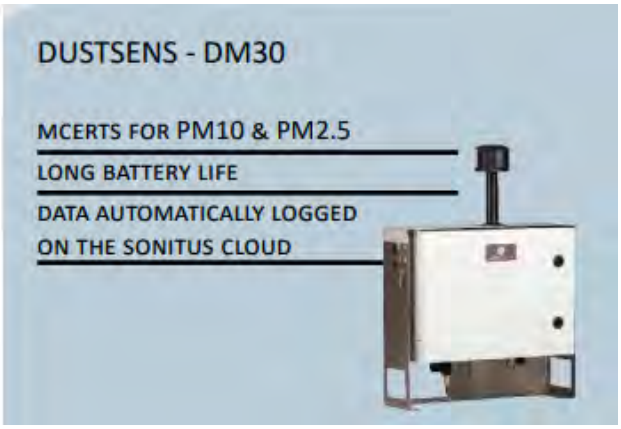
Physical Installation

1. If required, assemble the stand.
2. Point the microphone in the direction of the sound or noise source. (If required, place the windscreen on the end of the microphone.)
3. Connect the microphone to the Micromate by aligning the red end of the connector with the indicated red microphone port.
4. Make sure the Micromate has the proper **Setup File** (see THOR Software Setup) and then perform a sensor check by pressing the **Sensor Check** key on the keypad.

In addition, Dust and Vibration sensors will be installed at key positions around the site and will consist of similar equipment to that shown below.



Vibration units simliar type base units



Dust monitering units simlair type



Zephyr® Air Quality Monitor
Specification Sheet

EARTHSENSE

Key

Mechanical	
Size	230mm (h) x 160mm (w) x 114mm (d)
Weight	1750g - 2000g (dependent on cartridge)
Operating Parameters	Operating Range: -20°C to +45°C ambient Relative Humidity range: 15 - 85% continuous* *prolonged exposure outside of this range may irreparably damage the gas sensors
Construction	Extruded aluminium body hard anodised with ASA/PC end mouldings Stainless steel mounting brackets for 80-140mm diameter poles
Electrical	
Power Inputs	12-32V DC (~13.8V for cars and LCV, ~27.6V for HGV) or solar powered applications (~18-22V)
IP Rated Zephyr® Monitor	IP64
IP Rated Power Supply Unit (Optional)	IP67
IP Rated Power Supply Unit (Indoor use only)	IP20
Solar Panel (Optional)	50WP output Bracket, mount and straps included Dimensions: 581mm (h) x 509mm (w) x 30mm (d) (22.9 x 20 x 1.18in) Weight: 3.5kg / 7.72lbs Weight including bracket: 4.75kg / 10.472lbs
External Battery Connector (Optional)	Connect to an IP rated external 12V battery with 120Ah capacity (recommended). Based on a normal sample* rate of 10s, this should enable operation for up to 50 days and on low power mode 100 days. *operational duration will be affected with changes to sample rate and cartridge configuration.
Power Draw	Max: 19W at 19V Nominal: ~ 0.2W at 19V Eikon charge code: E30020302100* *Standard cartridge configuration only
Internal Battery	Li-ion ~55 Whr. Charged by MPPT battery charging controller to maximise solar panel output. Increase battery capacity option available
Battery Run Time	Normal mode: 3 days, 17 hours* / Low Power/Winter Mode: 7 days, 18 hours* *with 1 standard cartridge / *with a standard cartridge

www.earthsense.co.uk

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The site will clearly display the posters below as part of the plan in communicating the proposals in managing the likely noise issues to be encountered on the site.



Figure 13 - Noise Control Poster

4.0 Operating Hours

The working hours on this project are restricted to:

08.30-18.00 Mon-Fri and
08.00-13.00 Saturday
No working on Sundays or Bank Holidays

These hours are set out within planning requirements and will be strictly adhered to.
Prior agreement will be sought from both the Local Authority and the client if occasions arise where it is necessary to work beyond these times however, should site Emergencies arise, then all works deemed to be require din making the situation safe will take priority, with relevant bodies being informed and updated accordingly.

Working hours and contact details will be displayed on external site hoarding using the environmental noise information poster.

5. Establishment of Baseline Conditions

Prior to work commencing the site team will ensure that baseline noise measurements have been taken to understand the dominant noise sources and extent in the vicinity of the site area. The location of key noise and vibration sensitive residential receptors will also be identified.

6. Noise Monitoring Plan

A Noise Monitoring Plan has been drawn up prior to construction commencing and is provided in Appendix H of this DMP. This plan provides details of the predicted noise levels because of construction activities and advises of the typical noise levels for construction plant intended to be used. These are set against appropriate construction noise impact criteria. Anticipated noise monitoring positions will also be set out. Mitigation measures will be undertaken if the results of noise monitoring indicate that excessive noise impacts are arising from the activities associated with the works.

7. Liaison with the Local Community during the Contract

The effect of noise and vibration on nearby sensitive receptors will be minimised through a good communication strategy. Prior to works being undertaken, consultation with occupiers of sensitive receptors that may be adversely affected by construction noise and vibration will be undertaken. We will provide information of construction works and notice of when high noise and/or vibration generating activities are taking place. It is intended that this will increase the tolerance of receptors and thus minimising adverse effects. All communications will contain contact details to direct any questions or complaints to.

8. Establishment of working relationship with the Local Authority

The site team will contact the local authority at the earliest opportunity. Agreement with the local authority will be sought on appropriate controls for undertaking significantly noisy works close to receptors.

9. Section 61 of the Control of Pollution Act (COPA), 1974

Consideration will be given to the merit in applying to the local authority for a section 61 prior consent. Section 61 is in effect an agreement between the developer and the local authority which allows a reasonable level of noise to occur. This offers protection from any subsequent action by the local authority under section 60 or 66 of COPA or under the Environmental Protection Act to impose further controls on noise from the site. It also allows the local authority to (a) Attach any conditions (b) Limit or qualify a consent to allow for any change in circumstances (c) Limit the duration of a consent. Any person who knowingly carries out the works, or permits the works to be carried out, in contravention of any conditions attached to the Prior Consent will be guilty of an offence.

10. Programming of Works

Information will be sought from the community concerning sensitive periods so works can be planned to occur outside these times.

11. **Distancing from Sensitive Receptors**

- Noisy work activities will be planned to maximise the distance from the noise source to sensitive receptors
- Work compounds will be laid out so that access and loading areas are located as far away from sensitive neighbours as practicably possible
- Shouting and raised voices will be kept to a minimum. The use of Tannoy's and radios will be prohibited within proximity of sensitive residential receptors.
-

12. **Plant and Equipment**

- Modern installation techniques will be adopted that utilise high frequency pile drivers which significantly limit noise and vibration. Pile dampers will also be utilised where deemed necessary.
- Selection of equipment will be carried out with the objective of reducing noise and vibration wherever possible. Only equipment conforming to relevant national or international standards, directives and recommendations on noise and vibration emissions will be used
- Plant and equipment will be maintained and operated following manufacturer's instructions to run efficiently generating minimal noise
- Where possible plant producing less noise will be used.
- Pneumatic tools will be fitted with silencers or mufflers.
- Plant will be switched off when not in use.
- Mobile compressors and generators will be fitted with appropriate silencers and/ or proprietary acoustic enclosures
- Plant and equipment supplied with acoustic enclosures will be operated with all panels closed
- Site staff will enforce a policy whereby all plant is shut down when not in use
- All stationary equipment with significant noise outfall will be sited to minimise noise nuisance to residents
- As far as possible generation of power will be via a permanent power supply as opposed to generators
- Using electrically powered equipment run from the mains supply where available is preferred to using generators to power plant and equipment
- Care will be taken when erecting or striking scaffolds to avoid impact noise from banging steel. Scaffold deliveries will be programmed to arrive during normal working hours only.
- Crane spindles, pulley wheels, telescopic sections and moving parts of mobile working platforms will be adequately lubricated to prevent undue screeching.

13. **Traffic Noise during Construction**

- Delivery vehicles will, where reasonably practicable, be fitted with effective exhaust silencers
  and will be maintained in good working order and operated in a manner such that noise emissions are controlled and limited as far as reasonably practicable
- Time slots will be adopted for deliveries to ensure that convoys of vehicles do not arrive simultaneously and to avoid unnecessary idling on-site
- Strict controls will be implemented to prevent temporary parking on kerbside in the vicinity of noise sensitive receptors near the site
- Sufficient clear signage will be utilised to ensure that demolition and construction vehicles use only designated routes.
- Care will be taken when unloading vehicles to minimise noise.

14. **Noise Screening**

- Where appropriate, screenings will be utilized to reduce noise levels between the source and the receiver.
- Materials used for screening may include earth bunds, existing buildings, site security hoarding or purpose-built noise screens. Holes/ openings in the screen material will be kept to a strict minimum, and the density of the material will also be given due consideration to be as effective as possible.

15. **Vibration**

- The projects "Environmental Risk and Opportunities Register" has concluded the vibration

risk upon site wide elements such as, underground utilities, buildings and related structures surrounding the works is not significant with a minor adverse effect and therefore protection from damage is deemed not required at this stage.

- Should operations or activities on site change or inform of such a like / potential risk, then the activities will be re-assed with appropriate measures put in place as deemed to be required.

- A copy of the projects "Environmental Risk and Opportunities Register" along with the outputs of the references Environmental Statement can be found in Appendix F and G respectively.

4.5 SURFACE WATER / POLLUTION PREVENTION MEASURES

LOCAL SENSITIVE RECEPTORS

4.5.1. There are no watercourses within the site boundary. The closest watercourse is 60m to the south of the site (Fallowfield Brook) which is culverted. A small artificial lined pond is present approximately 70m north of the site boundary. There are another two streams within 500m of the site, one 160m to the north (Platt Brook) and the other approximately 500m south of the site (Cringle Brook). The site is in the Platt Brook water body catchment. The overall water quality rating is moderate with a failed chemical rating and moderate ecological rating.

4.5.2. The superficial till deposits are classified as a Secondary Undifferentiated Aquifer. This classification is given because it is not possible to define it as either a Secondary A or Secondary B Aquifer due to the variable nature of the till. The underlying Chester Pebble Beds Formation is classified as a Principal Aquifer, however, the Environment Agency rating for the groundwater body quality (in the sandstone principal aquifer) is poor. The groundwater vulnerability to pollutants discharged at the surface for both the superficial and bedrock aquifers is low.

MITIGATION AND SITE MANAGEMENT

4.5.3. The construction phase has the potential to impact upon the water environment through contaminated run-off, vehicular movements and / or because of potentially polluting substances such as fuel, oil, chemicals or wastewater. The following mitigation measures will be included within the DEMP and implemented during the construction phase.

- Sequence and method of working will be planned to minimize impact on environmentally sensitive areas. The methods of working will be clearly outlined during specific operational method statement inductions.
- Material stockpiles and spoiled heaps will be located and constructed to minimize any potential run-off. All work will be managed to minimize any harm to the environment. All adjacent water courses will be monitored to check for any changes in water quality. If any significant changes are identified, the cause will be investigated and clean up measures will be implemented.
- To protect drainage systems, they will be drawn up on the Site Plan showing the nature and course of the drainage on site. Surface water drainage will be marked BLUE and foul water drainage will be marked RED. Measures will also be taken to prevent silting of such water and pollution spill kits made available on site in case of emergencies or accidental spillage. Discharges will only be made to drains and sewers with appropriate consents providers and regulators.
- Areas with a greater risk of spillage e.g. vehicle maintenance and storage areas for

hazardous materials will be carefully sited e.g. away from drains or areas where surface waters may pond.

- Measures will be put in place to prevent pollution from construction plants, vehicles and machinery including refueling in designated areas, on an impermeable surface, away from drains and watercourses and supervised.
- Plant,& machinery and vehicles will be maintained in good condition, to reduce the risk of hydrocarbon leaks and spills.
- Washing and dust suppression measures will be managed to ensure that contaminants from the plant washing down do not reach surface waters (particularly in relation to works using concrete and with areas where dust and mud can build up).
- The movement of plants, machinery and vehicles and the storage of materials during the construction works will be at least 10 m from any surface or groundwater features.
- All drains within the site will be identified and labelled and measured to prevent polluting substances from entering them.
- Stockpiles / excavated materials will be stored in such a way to minimize silt laden runoff and / or wind-blown particles e.g. by covering or seeding.
- All loose materials would be covered so as not to give rise to a significant increase in sediment load to the drainage network.
- Always providing and maintaining spill clean-up kits on site and training staff in their use.
- Work sites to be adequately protected from intruders to prevent vandalism resulting in a pollution incident; and,
- If an unexpected source of pollution is identified on site during work, demolition should cease immediately. The area around the pollution should be sealed off to prevent further spread / exposure of contaminants to workers. An appropriate environmental regulator (Natural England/ Environment Agency (EA) should be contacted for further advice.

FLOOD RISK

4.5.4. The site is not considered to be in an area of flood risk. Notwithstanding this, localised surface water flooding may occur after periods of heavy rainfall which may cause a nuisance to work.

4.5.5. To minimize disruption the following mitigation measures will be implemented:

- Location of high-risk activities such as stockpiling materials, on higher ground where possible.
- All chemicals, fuels or materials that could cause pollution will be stored in such a way that they can be moved easily in the event of a flood.
- Detailed procedures for securing the site and plant equipment before a flood event; and,
- Checking the Met Office Flood Warning service to ensure no equipment is stored or located within the flood channel during flood events.

4.6 WASTE AND MATERIALS MANAGEMENT PLAN

WASTE MANAGEMENT PLAN

4.6.1. The Site Waste Representative(s) is the Coordinator of the Site Waste Management Plan

(SWMP) for this contract and is responsible for ensuring implementation of the plan and that all employees are aware of this plan. The Site Waste Representative(s) will ensure the effectiveness of the SWMP on site and will update the plan with waste movements, manage site waste transfer notes and copy the data to the Head Office Document Controller. The Technical Manager collects all the data received to monitor waste movements against waste reduction targets for the company and contract specific targets.

4.6.2. The Site Waste Representative(s) will carry out a site induction of all employees including method of handling, segregation, re-use, recycling and disposal of waste. Induction will also include details of checking waste transfer notes, spill response plan and maintenance of records. Toolbox talks on Waste management will be held at regular intervals on site to update and ensure all employees are aware of waste management issues and waste targets.

Surplus or Waste Materials arise from:

- Materials delivered to site:
  - Those generally intended for inclusion into permanent or temporary work.
- Those generated on site:
  - Those which exist on the site such as topsoil, subsoil, trees, demolition arising's etc.
- Other considerations in relation to waste management on this site include:
  - Reduction of waste where possible (see waste hierarchy information in Figure 4-1).
  - Segregation of waste.
  - Waste disposal.
  - Monitoring and recording waste movements.
  - Legal compliance; and
  - Informing the workforce.

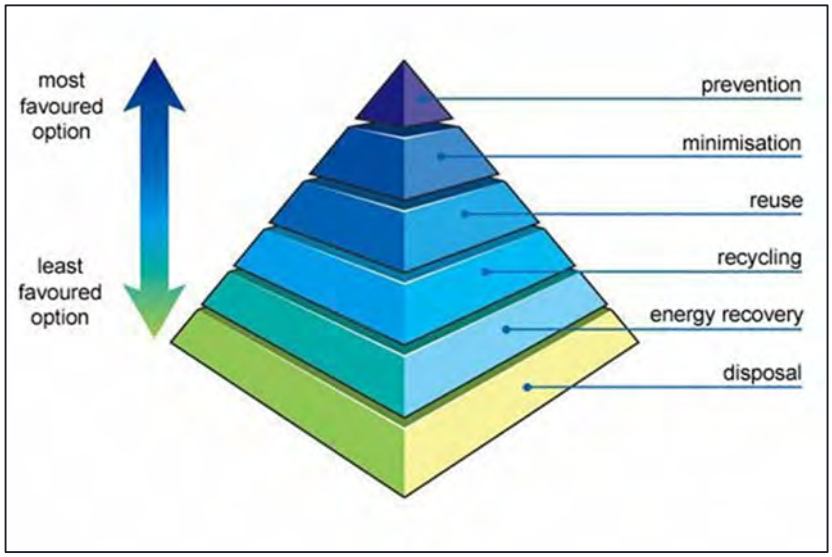


FIGURE 4-1 - WASTE HIERARCHY

SEGREGATION

4.6.3. A specific area shall be laid out and labelled to facilitate the separation of materials for potential recycling, salvage, reuse and return. Recycling and waste bins are to be kept clean and clearly

marked to avoid contamination of materials. The contractor will look at adopting a Waste Color Coding Scheme. If the skips are clearly identified the bulk of the workforce will deposit the correct materials into the correct skip. Skips for segregation of waste identified currently are:

- Wood.
- Metal.
- Paper/cardboard; and,
- Canteen waste / general construction waste.

4.6.4. A specific Waste Management Toolbox Talk will be held on this issue to ensure the workforce are aware of the waste management requirements on this project.

MANAGEMENT

4.6.5. Waste materials fall into three categories for management, these are:

- Re-use.
- Recycle; and,
- Landfill.

➢ **RE-USE**

4.6.6. If surplus materials can be used in permanent work, they are classified as materials which have been re-used. If they are surplus to requirements and need to be removed from site and they can be removed and used in their present form, they can be removed from site for reuse.

➢ **RECYCLING**

4.6.7. If the surplus material cannot be re-used in its present form but could be used in a different form, it is sent for recycling such as 50x50 timber to make chipboard.

➢ **LANDFILL**

4.6.8. If either of the above cannot be satisfied, then the only option left is to send the surplus materials to landfill.

4.7 Fuel And Chemical Storage

4.7.1. Fuel / oil is to be stored at least 10 m from any watercourse in suitable tanks and bunded to at least 110% of capacity. These bunds are to be protected from rainwater to prevent spillage. All refueling points will have drip trays and spill kits adjacent. A site-specific emergency spill response plan will be developed, and site personnel are inducted in its use to ensure any spills are acted upon immediately and correctly. The emergency spill response plan will be tested to ensure its effectiveness. Regular inspections will ensure the plant is properly maintained and locked when not in use.

4.7.2. Fuel / oil will be located away from access routes, drains and watercourses on flat areas of ground. COSHH data will be available for all Hazardous Substances, which will all be appropriately labelled. All COSHH materials will be stored within a suitable locked chest within the site compound.

4.7.3. Environmental Toolbox talks will be given to the workforce when required.

4.8 Ecology

4.8.1. Previous survey works 1 & 2 completed at the site have identified the below constraints:

[1] University of Manchester, Fallowfield – Ecological Constraints and Opportunities Report, Buro Happold, 7th February 2023.
[2] Bat Dusk Emergence and Dawn Re-entry Surveys – Interim Report, Thomson Environmental, 2nd June 2023.

- A total of 22 buildings were identified to have potential to support roosting bats and therefore, further surveys are to be undertaken in accordance with best practice (Collins, 2016). Bat activity surveys, known as presence/absence surveys, can only be undertaken from May to September. Buildings that have been identified to have high potential to support roosting bats will need three surveys, moderate two surveys and low one survey. The surveys are to be spaced at least two weeks apart in suitable weather. Further information in relation to bats is provided below.

- A total of six trees were identified to have low potential to support roosting bats. These trees should be retained and protected. Any development proposals will need to have a suitable offset from the trees to ensure that they are not adversely affected. Where trees require removal that have not currently been identified as having potential for bats, a precautionary inspection should be undertaken to ensure no opportunities have developed.

Further information in relation to Bat roost's is provided below.

- The off-site pond that lies within Ashbourne Hall area of the wider Fallowfield campus, outside of the red line to the north of the site boundary, was assessed as being of 'below average' suitability through the Habitat Suitability Index (HSI). The suitability of the surrounding habitat for great crested newts is poor due to the open regularly maintained other neutral grassland. The off-site areas of woodland and scrub to the north-east may offer some shelter but this is isolated from the wider landscape by A and B roads to the west and south respectively, streets to the north and east, and hard standing that form a partial barrier to dispersal. An eDNA test was undertaken by the waterbody to identify whether they support great crested newts. The results were negative, indicating that great crested newts were not present in the pond. Due to the habitats surrounding the pond and the physical barriers, it is unlikely that the pond is used by any species of amphibian.

- The woodland areas on site are designated as the most valuable habitat and should be retained and protected through future development of the site. The mature tree line between the Ashbourne Hall and Owen's Park areas is also likely to offer a green link across the site and to the wider area. Development will need to be set back from the woodland edge, and tree lines, to ensure that it does not impact on the root protection area and affect the longevity of the trees on site, in line with arboriculture recommendations and best practice.

- A habitat condition assessment site visit carried out on 7th June 2023 in accordance with the UK Habitat Classification System (Butcher *et al.*, 2020) and, in line with the Biodiversity Metric requirements, to assess each habitat parcel against the respective habitat condition criteria presented within the Condition Sheets in the Biodiversity Metric 4.0 Technical Supplement document (Natural England, 2023). This information

is required to carry out baseline biodiversity net gain calculations.

- Areas of soft landscaping should be protected from potential artificial lighting impacts from the other phases undergoing construction. Additionally, during site clearance, demolition of buildings there is potential for creation of additional lighting which could disturb bats that root in retained buildings on site during that phase of work, the mitigation and roosting in trees or near to the site or use the site to commute to a suitable adjacent habitat. Any night-time security lighting required on site will be positioned to not illuminate the features and allow for a flight route with lighting levels no higher than currently found on site. A Construction Environmental Management Plan (CEMP) should detail how lighting will be managed during the demolition phase to limit any potential effects.

- The demolition of the proposed development will remove suitable habitats on site for nesting birds such as hedgerows and trees. Additionally, vegetation removal during the nesting bird season, March – August, inclusive, could result in the destruction of active nests and the loss of eggs or chicks if mitigation measures and sensitive working practices are not applied. Therefore, any vegetation clearance required to facilitate the demolition of the proposed development should be undertaken outside the bird nesting season (March – August, inclusive). Where avoidance of the bird nesting season is not possible, a suitably experienced ecologist must carry out a nesting bird check no more than 48 hours prior to vegetation removal. If an active nest is found, this would need to be protected throughout the works, with a suitable buffer area of semi- natural habitat as defined by the ecologist, until the chicks have fledged, and the nest is no longer in use.

BAT ROOSTS

4.8.2. Following the results of the building assessment for bats, additional emergence/ return to roost surveys is being undertaken previously through June and July 2023 on the 22 buildings that were identified to have bat roost potential, in accordance with best practice guidance (Collins, 2016). During the bat activity surveys carried out between 17th May and 16th June 2023, roosts were identified over the site with Further surveys undertaken in September and October 2024 and for phases 2 and 3 are sumarised below.

TABLE 4-1 – SUMMARY OF BAT ROOSTS RECORDED

Building	Location within campus	No. total bats recorded (visits 1 and 2)	Confirmed roost features	Location and aspect of confirmed roost features	Bat roosts
B19	Oak House	14-16 common pipistrelle	TBC	TBC	Common pipistrelle day roosts (considered linked/ potential satellite roost to the B11 maternity roost
B25	Woolton Hall	1 common pipistrelle	1 roost feature	South side of building into ornate vent	Common pipistrelle transitional/ occasional day roost

4.8.3. Previous bat surveys identified use of buildings B18, B19 and B25 as confirmed bat roosts, including a bachelor's/maternity roost of higher conservation value within B19. The PRA survey confirmed that B14 has negligible potential to support roosting bats. This is due to a lack of PRFs and a loft void. No further surveys are recommended for this building.

4.8.4. The internal roost assessment did not identify any evidence of roosting bats, although some loft voids could not be thoroughly searched due to the access restrictions or health and safety concerns. The internal inspections also reported that none of the buildings surveyed at Oak House or Woolton Hall were likely to support hibernating bats. This was due to the noise and heat that will result from the residents of the building during the hibernation period.

4.8.5. The GLTA survey identified three trees (T177, T191 and T201) as PRF, with the PRFs estimated to be PRF-I (potential to support individual or small numbers of bat). It is recommended that a PRF inspection survey is carried out on these three trees whereby a licensed bat surveyor will closely inspect each PRF, either by use of tree-climbing or a MEWP.

GENERAL MITIGATION MEASURES

4.8.6. Following the completion of requisite surveys in advance of demolition, specific mitigation measures will be designed to ensure there are no adverse impact on the identified receptors associated with the demolition works.

4.8.7. In addition to specific measures, good general construction site management practices should be implemented to minimize the impacts to nature conservation. The following mitigation measures will be carried out throughout the demolition process:

- Generally good construction site management practices will be implemented to minimize the generation of excessive litter, dust, noise and vibration, and the risk of accidental spills.
- Construction personnel would be made aware of the potential presence of protected species (bats and breeding birds) located within the site and surrounding area. They will be shown how to identify signs/evidence of each species during their induction to site and through toolbox talks. Protocol and measures that should be implemented should such species, or evidence of species, be discovered during construction will also be set out appropriately during the induction and toolbox talks.
- Sensitive site and vegetation clearance methodologies would be followed to minimize the risk of incidental mortality of small mammals and widespread amphibian species.
- To ensure legal compliance if a bird nest is found, no work will be undertaken in that area (approximately 10m in all directions for most bird species) until the young birds are no longer dependent on the nest site.
- Plant movements across semi-natural habitats will be minimized.

4.8.8. Where invasive plant species are known or found and will be directly affected by the works, special measures must be put in place, in the first instance this means avoiding disturbing all stands. Invasive species should be mapped prior to demolition and a specialist contractor engaged.

4.8.9. In the unlikely event that new protected species establish in the construction area during construction, works will cease, and the Environmental Clerk of the Works [ECOW] consulted for advice on how to proceed.

BAT ROOSTS

4.8.10. Natural England license to be sought and approved before any demolition works on, or in proximity to confirmed bat roosts. License applications will be separate for each phase of demolition due to the timing delays and updated surveys being required to support Woolton Hall and Oak House demolition starting in Q3 2027. This will fully detail the mitigation measures required during the demolition process, but these are anticipated to be:

- As part of the license application process, impacts on the roosts need to be defined and adequate mitigation for the loss of the roosts provided where required.
- An Ecological Clerk of Works is to be appointed for the project due to the bat roosts present on site.
- Working methods to ensure the roosts are empty before they are lost and/or obstructed by the demolition works, and/or soft strip methods employed under the guidance of a licensed Ecological Clerk of Works will also need to be detailed to ensure that no bats are harmed or killed during the demolition works.
- Internal inspection by a licensed ecologist of roof voids in B19 and B25 to assess potential roosting locations within the buildings prior to demolition commencing.
- Mitigation roosts to be placed on trees near by roosts to be destroyed prior to any demolition work commencing (under supervision of licensed ecologist). Mitigation roosts will be placed on mature trees in proximity to the buildings with existing roosts and will be protected from plant, material storage and demolition lighting throughout the works.
- Following provision of temporary mitigation bat roosts, and endoscope inspection of identified bat roosting features is to be undertaken by a licensed ecologist prior to their removal is to be undertaken to assess if bats are present in the features. Where possible, features can then be blocked.
- Toolbox talk to be given by the licensed ecologist to all contractor's prior demolition on bat roost buildings, the potential constraints posed by bats, and actions to be taken should a roosting bat be identified during the works. This may need to be amended once the EPSL mitigation measures have been agreed with Natural England.
- Soft demolition technique removal of bat roosting features under the supervision of licensed ecologists to ensure that bats are unharmed by the demolition process. Any bats found during the work will be handled and moved to the mitigation bat roosts by the licensed ecologist only. No contractors are to handle a bat.

4.9 Trees

4.9.1. It's currently all trees will be retained as part of the demolition works. The removal of trees does not form part of the scope of the demolition, and tree removal will only be considered should there be a legitimate requirement to facilitate the demolition works and must be approved by the Client or their representative prior. The removal of trees will only be considered following a review of available options and confirmation that there are no ecological constraints. The pruning of trees to facilitate access will be permitted only with express written permission of the Client or their representative.

GENERAL MITIGATION MEASURES

4.9.2. All works will be completed in general accordance with *BS5837:2012 Trees in relation to*

design, demolition and construction – Recommendations.

4.9.3. The planning of demolition sequencing, work areas and methodology will all consider the potential impact on nearby trees and the requirement for retention.

4.9.4. Care should be taken when planning site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without encountering retained trees. Any transit or traverse of plant near trees should be conducted under the supervision of a banksman to ensure that adequate clearance from trees is always maintained.

4.9.5. Tree protection fencing will be installed on trees identified at particular risk by the client, their representatives or the contractor; and to any tree that is located within 2m of the boundary of a building scheduled for demolition. Once erected tree protection fencing shall remain in-situ until demolition activities are complete in the proximal buildings and will only be removed following confirmation of the client or their representatives.

4.9.6. Ground protection shall be used within any area where access is required within the root protection area (RPA) of any retained tree.

4.9.7. The contractor shall provide a toolbox talk relating to tree protection measures for all staff completing work in close proximities to trees.

4.10 Topsoil

4.10.1. Where the Contractor's logistics plan requires the construction of a temporary haul road across soft ground, any topsoil stripped from the surface should be handled appropriately in accordance with best practice.

4.10.2. All soil handling and storage procedures should conform to the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (DEFRA, 2009). This includes no soil handling being carried out when the soil moisture content is above the lower plastic limit; storing soil in designated soil storage areas; and stockpiles being no higher than 2m (CIRIA, 2006). Stockpile seeding is advised if soil is to be kept for over six months or over winter and stockpiles should be kept weed free for the duration of the contract. In these events stockpiles should be seeded with a suitable grass mix to protect against soil erosion, minimize nutrient loss and maintain its biological activity. The grass should be cut two to three times a year and removed completely before reinstatement of soil.

4.11 Archaeology

4.11.1. Works associated with the proposed demolition are considered unlikely to have a significant impact on archaeology at the site. The demolition works are effectively constrained to areas of current development (buildings, external hard standing areas) and excavations within 'virgin ground' which have the potential to potentially damage archaeological items is not part of the scope.

4.11.2. Notwithstanding the above, the contractor will be provided with an archaeological toolbox to highlight potential constraints, best practice and what to do if a possible item of interest is identified.

4.12 Energy Consumption

4.12.1. The contractor shall monitor, record and reduce our carbon footprint. A weekly record of each site's utility usage is recorded and then reported monthly, this includes water, electricity and

diesel.

4.12.2. Electricity will be provided by a super-silent diesel generator supplied by a reputable hire company ensuring compliance with emissions regulations. All equipment is to be regularly maintained and kept in good order to ensure efficiency. Where feasible, the contractor's operatives will van-share to reduce the number of vehicles on the road. Cabins are to display posters to remind operatives to be energy conscious - turning water taps and lights off when not in use. Lights with PIR (Passive Infrared) sensors should be installed in the cabins.

4.13 Lighting

4.13.1. The construction works are expected to be undertaken during daytime hours; therefore, no additional artificial lighting will be required. However, some low-level lighting may be required for the security of the site. This should be effectively controlled, and it is recommended the lighting is on a motion & time detector or ensure the lighting is not being used for long periods of time.

4.13.2. All lighting, including security lighting, needs to be faced away from semi-natural habitats and to ensure dark corridors are retained. Security lighting should not adversely impact neighboring occupied student halls of residence; and any perimeter lighting will be agreed with the Client prior to use.

4.14 Additional Constraints

4.14.1. In addition, it is likely that the following constraints will be applied during demolition works:

- Easements around statutory or other services that cross the site and are not affected by the demolition works.
- The contractor will liaise with on-site security to establish a protocol for signing in and out of the work site and for the safe vehicular and pedestrian movements to and from the works area; and,

5 EMERGENCY PREPAREDNESS

5.1.1. Environmental Incidents and non-conformances will be dealt with in accordance with the following sections.

5.2 Control Measures

5.2.1. All site staff are encouraged to draw attention to any environmental risk or potential environmental risk as it may arise on site. In the event of an incident the following actions will be taken:

- Stop working in the affected area.
- Identify the cause of the hazard or incident and act to prevent it from getting worse if safe to do so.
- Use appropriate PPE where necessary.
- Communicate the incident immediately to the Contractor's Construction Manager / ECoW, detailing the nature, cause and location (without putting the health and safety of yourself or others at risk); and,
- The Contractor's Construction Manager will coordinate the emergency response and inform the relevant authorities as necessary.

5.2.2. Any lessons learnt from the incident will be communicated to all relevant staff and action taken elsewhere on site if necessary.

5.2.3. The following sections provide specific guidance on potential environmental incidents.

5.3 Spillage Of Potentially Polluting Substance

5.3.1. A procedure for a general response shall be included in the Contractor's Health and Safety Plan, stating the chain of command and standby operatives, and clearly advised by all staff.

5.4 Discovery Of Unidentified Protected Species

5.4.1. Where protected species are discovered after construction work has begun, the Responsible Person will carry out the following:

- Stop working immediately in the area.
- Demarcate the area and restrict access to ensure that there is no disturbance to the habitat or species.
- Do not attempt to disturb or remove protected species.
- Contact the Contractor's Construction Manager / Environmental Clerk of the Works [ECoW] who will seek guidance on how to proceed; and,
- Details of the incident, including photos and relevant information on the environmental Incident will be recorded and reported.

5.5 Discovery Of Unidentified Artefacts, Archaeological Or Historical Features

5.5.1. If archaeological remains are found after construction work has begun, the Responsible Person will carry out the following:

- Stop working immediately in the area.
- Mark the area to avoid further disturbance.

- Protect the find by fencing/blocking it off.
- Contact the Contractor's Construction Manager / Environmental Clerk of the works [ECoW] immediately; and,
- The Contractor's Construction Manager will contact the Employers archaeological representative, so that the findings can be inspected, and recording can be undertaken if necessary.

5.6 Discovery Of Unexpected Contamination

5.6.1. During excavation the exposed ground will be observed for visual signs of contamination e.g. noxious fumes, petrol, oils, solvents, chemical residues, odors e.g. smell of rotten eggs indicates the presence of hydrogen sulfide.

5.6.2. If previously unidentified contamination is suspected the Responsible Person will carry out the following:

- Stop working immediately.
- Report on the discovery to the Contractor's Construction Manager / Environmental Clerk of the Works [ECoW];
- Seal off the area to contain the spread of contaminants, if it is safe to do so.
- Contaminated spoil/materials shall be stored to prevent escape e.g. lined skip with material covered, covered skip or container.
- The Contractor's Construction Manager will contact the Employer if it is confirmed that contamination has been found.
- Details of the incident, including photos and relevant information on the environmental Incident will be recorded and reported as per the procedure described in Section 5.8 below; and,
- The Contractor or nominated person will contact the local planning authority in writing to inform of the discovery of previously unidentified contamination, and a strategy for remedial and verification works will be agreed.

5.7 Discovery Of Unexploded Ordnance (UXO)

5.7.1. Demolition works are confined to areas of current development which limit the likelihood of previously unidentified UXO being encountered, however the contractor should assess the risk and identify appropriate control measures based on the available information.

5.7.2. During the demolition phase, risk assessments will be undertaken for the possibility of Unexploded Ordnance being found within work areas. Ongoing vigilance by the Appointed Contractor will be ensured to mitigate against potential discovery of unexploded ordnance. If any suspected Unexploded Ordnance is revealed works should immediately cease and a procedure will need to be in place to ensure that advice is sought from an appropriate specialist prior to recommencement.

5.8 Emergency Response Plan

5.8.1. The emergency contact details for the work should be clearly displayed at the site where the public can see them.

5.8.2. The DEMP will include an Emergency Response Plan which details the processes and methods to be followed in the event of an accidental release of potentially polluting materials. The Emergency Response Plan will contain the following information:

- The names and 24-hour contact details of all emergency response personnel and emergency services.
- The procedures for reporting and documenting an emergency incident.
- Personnel responsibilities during an emergency incident.
- The location of on-site information on potentially polluting materials and spill containment materials; and,
- A list of all nearby residential properties, downstream abstractors and other sensitive receptors that could be affected by an environmental incident will be compiled and maintained by the Contractor.

5.8.3. The Emergency Response Plan will be clearly communicated to all site staff.

5.8.4. Emergency procedures will be tested on a regular basis by the Construction Manager / Environmental Manager/Co-Ordinator and results reported to the Project Manager.

5.9 Incident Reporting

5.9.1. The Employer's Project Manager will be notified within 30 minutes of the occurrence, or detection of, an environmental incident. Incidents will be reported to the relevant statutory authorities where appropriate.

5.9.2. Environmental incidents will be recorded by the Contractor including:

- Nature of spill/leak/incident.
- Time/date.
- Exact location and extent.
- Type of material released.
- Approximate amount/volume released.
- Actions taken to prevent contamination.
- Individuals reported to; and
- Lessons learnt.

5.9.3. Lessons learnt will be fed back to site staff through safety and environment briefings and used by the Environmental Manager/Co-Ordinator to amend procedures and update the DEMP accordingly.

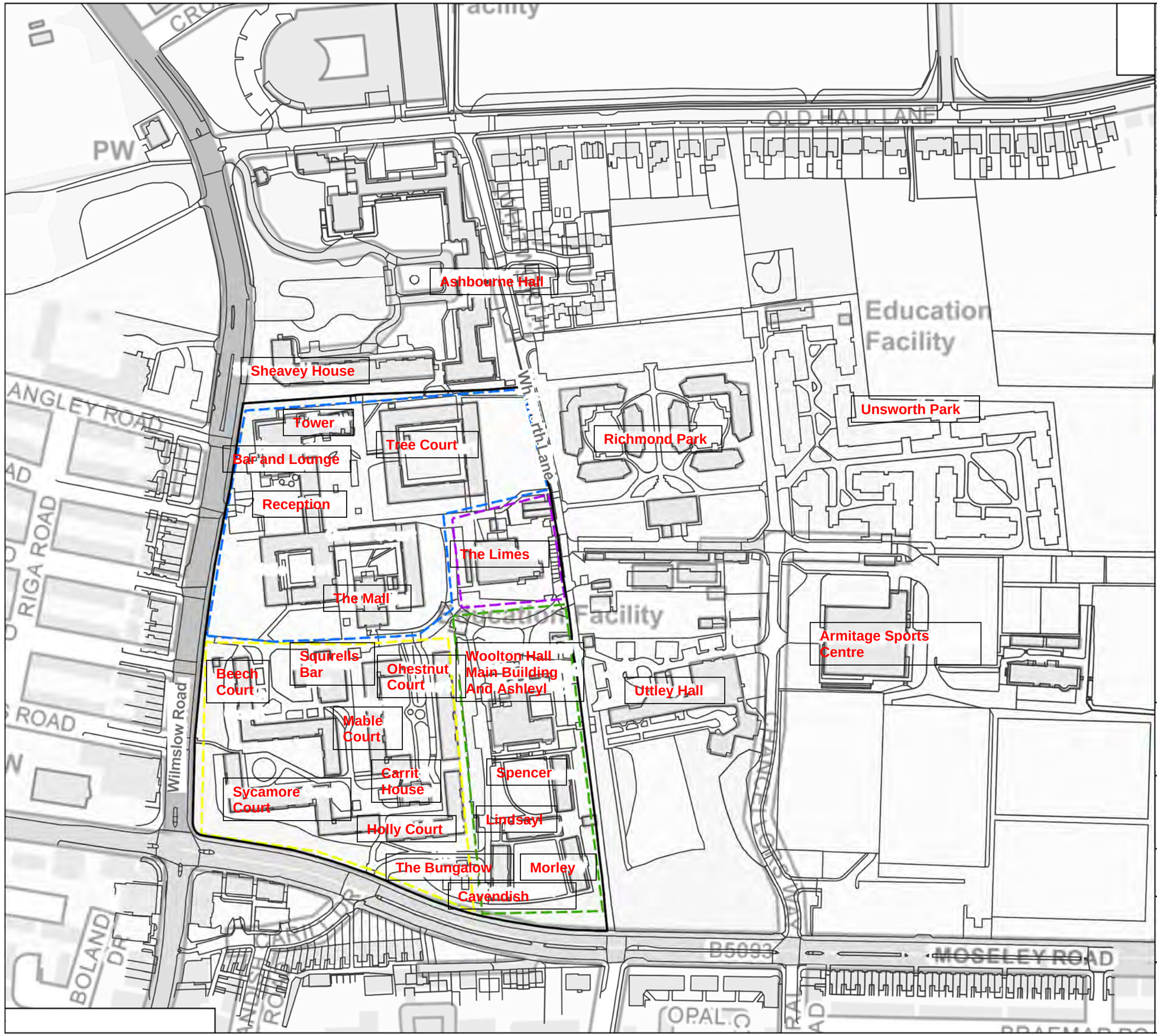
5.9.4. The Local Planning Authority will be notified in writing regarding the discovery of unexpected contamination, and a suitable course of action will be taken following agreement with the regulators.

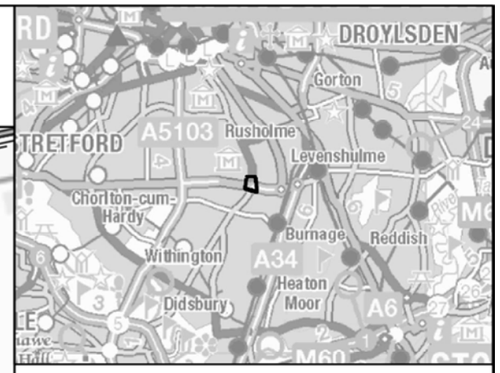
5.10 Responsible Persons

5.10.1. Responsible people will be identified following appointment of the demolition contractor.

Appendix A

Location Plans of buildings





Legend

- Site Boundary
- Owens Park
- Oak House
- Woolton Hall
- Limes

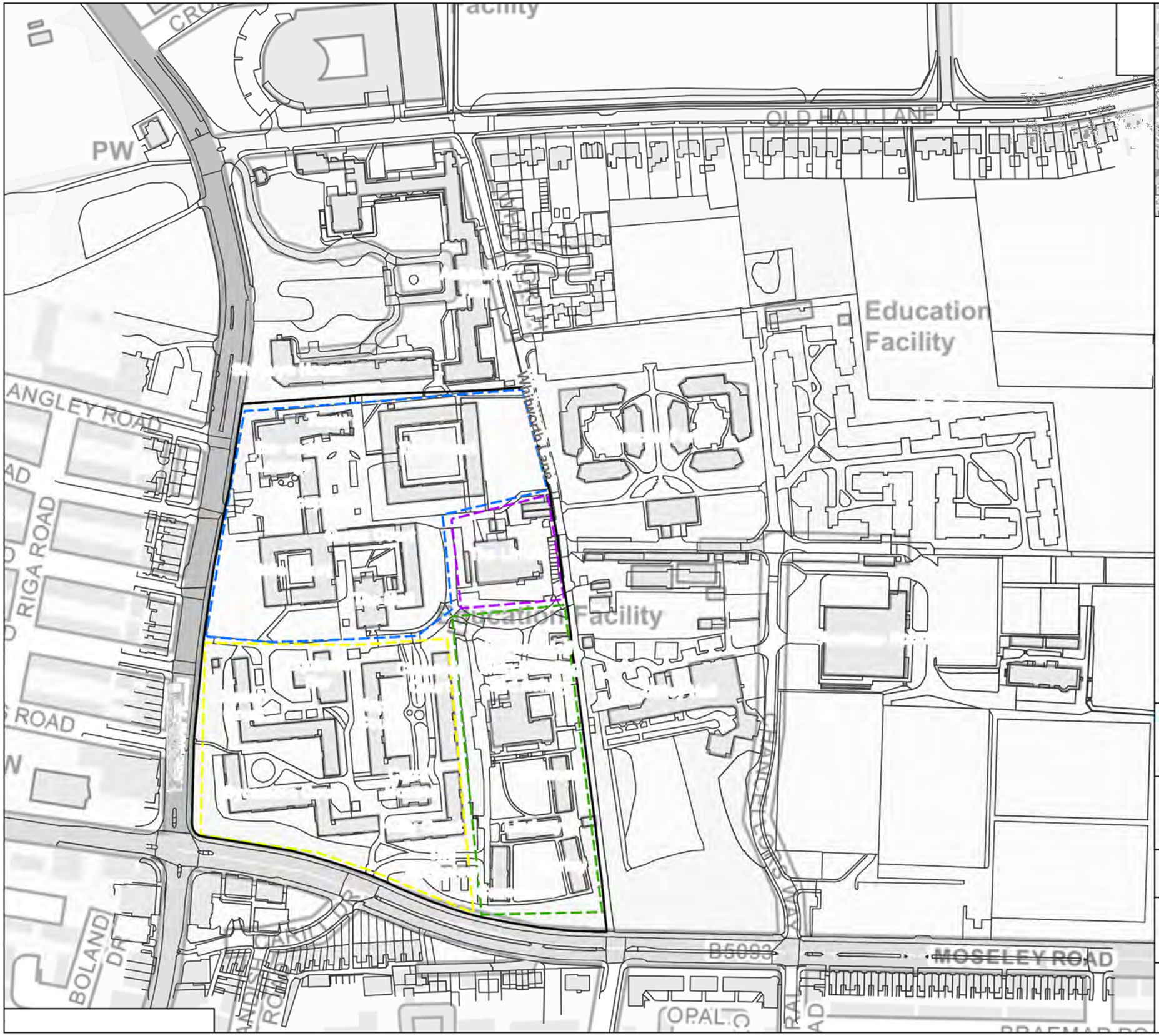
GRAHAM

Client: University of Manchester

Project: Fallowfield Campus

Title: Demolition Plan

Drawing No: Figure 1 Site Boundary





Legend

- Site Boundary
- Owens Park
- Oak House
- Woolton Hall
- Limes

GRAHAM

Client: University of Manchester

Project: Fallowfield Campus

Title: Fallowfield Demolition Plan

Drawing No: Figure 2 Site Plan



Demolition Phase Sequence Plan

Gatemen & Traffic Marshal's operate a traffic light system to get Construction vehicles off Moseley Road onto the Demolition site and will also to be used to control the release of site traffic back onto the highway from the demolition site.

Demolition Traffic will Access and Egress the site directly from Moseley Road Only

A detailed site logistics drawing has been provided in Appendix D of this DEMP

A Swept Path Analysis and a selection of construction vehicles are contained in Appendix E

Appendix B

Local labour agreement

5.10.2. Local Labor Agreement

Effective and meaningful community engagement is at the heart of Graham operations. We work in partnership with communities to deliver real and measurable social value to residents, schools, businesses and all stakeholders.

Graham does take community engagement seriously, when we undertake a scheme, we are effectively a visitor to a community, with the potential of causing disruption to a community's daily lives. This is something we are mindful and respectful of and work strenuously hard to be appreciative of.

We are recognized within the industry for the reputation of safe delivery projects; we are passionate about forging lasting relationships with our clients and their consultants. Our desire for 100% customer satisfaction is driven by the whole organization from the top down.

Social Value KPI's:

Jobs: Promote Local Skills and Employment:
More Local people in employment, More opportunities for disadvantaged people, Improved skills for local people, Improved employability of young people.

Growth: Supporting Growth of Responsible Local and Regional Business:
A workforce and culture that reflects the diversity of the local community, Ethical procurement is promoted, Social Value embedded in the supply chain, more opportunities for SMEs and VCSEs, Improving staff wellbeing.

Social: Healthier, Safer and More Resilient Communities:
Vulnerable people are helped to live independently, more working with the Community, Crime is reduced, Creating a healthier community.

Environment: Protecting and Improving Our Environment:
Air pollution is reduced, better places to live, Sustainable Procurement is promoted, Climate impacts are reduced.

Planning Community Engagement and Measuring:

Graham will evaluate the Social Value and Sustainability requirements on commencement of site operations to deliver real social value objectives throughout the duration of the project and identify local stakeholders to the scheme.

To deliver this plan, the following points need to be considered and evaluated.

- What level of participation is hoped to be achieved?
- Identify the Stakeholders
- Stages of engagement processes within the project program
- Resources to deliver community engagement and social value objectives
- Are there any limitations?
- Feedback and next steps
- Tools to choose and method of community engagement

Reporting

Graham is committed to continual improvement of its Social Value performance. Actively managing targets and action plans is key to achieving progress in this area.

Targets have been set with reference to the most significant impacts, Graham's key priorities and Key Performance Indicators. Progress against the action plan and targets is monitored by HR, SHEQ and the Directors and discussed at least once a month in the Directors meetings.

Appendix C

Highway Dilapidation Survey

Due to the file size the survey can be accessed via the link below:

https://download.4projects.com?LinkID=0ebfc3d5-c289-4cb9-b4e8-394791664297

Appendix D

Detailed Site Logistics Plan



GRAHAM

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Vehicle Key

A) 4.6t Light Van

B) 12m Rigid

C) 19m Low Loader

D) Large Tipper

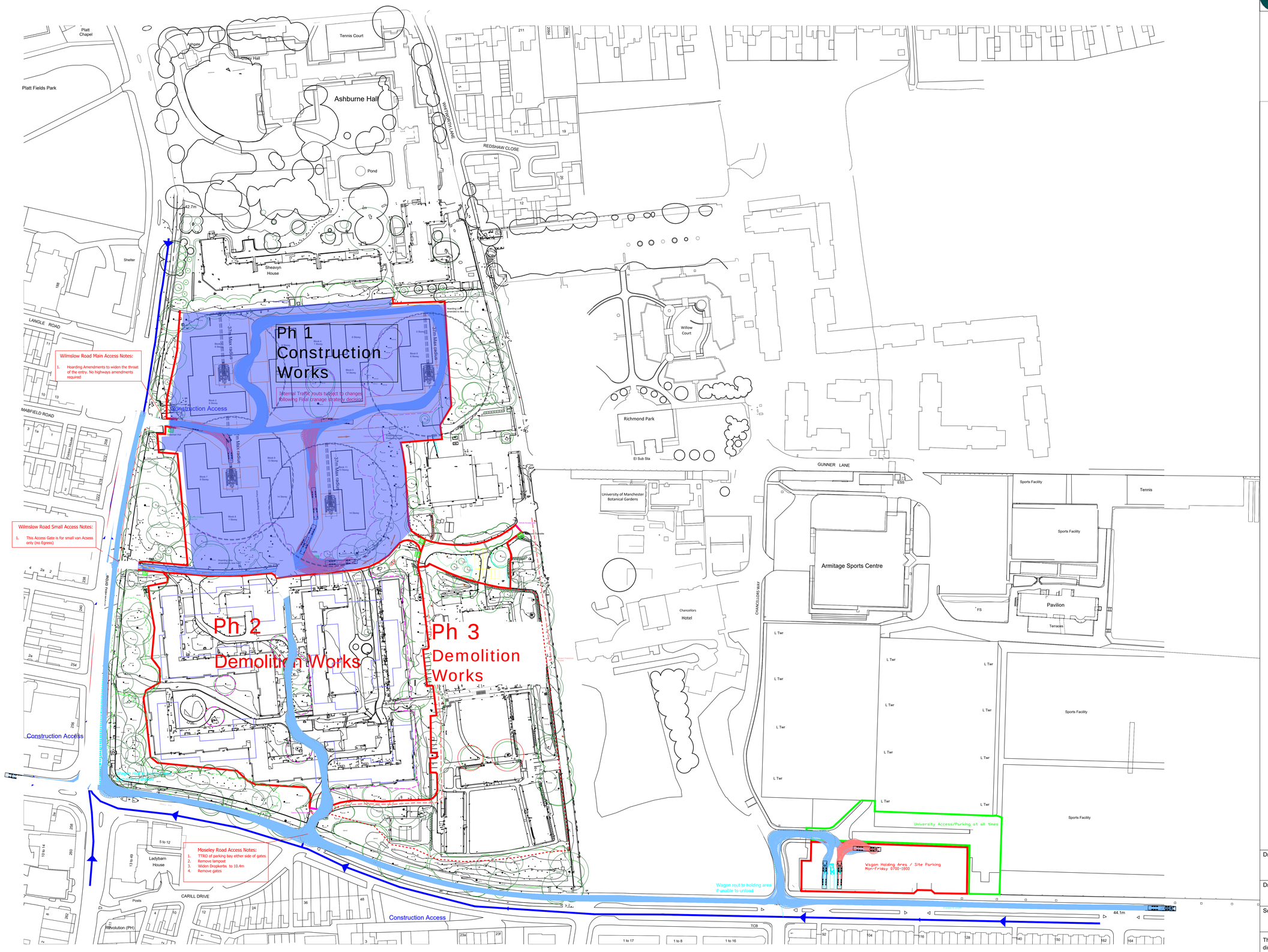
E) Max Legal Artic

Drawing title	UOM Fallowfield - SPA Delivery Drawing with Notes P1
Drawn by	H.ROGERS (GRAHAM)
Scale	A0
Date	May 2025

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Appendix E

Swept Path Analysis and Vehicle Types
(For Demolition Traffic)



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Vehicle Key

A) 4.6t Light Van

B) 12m Rigid

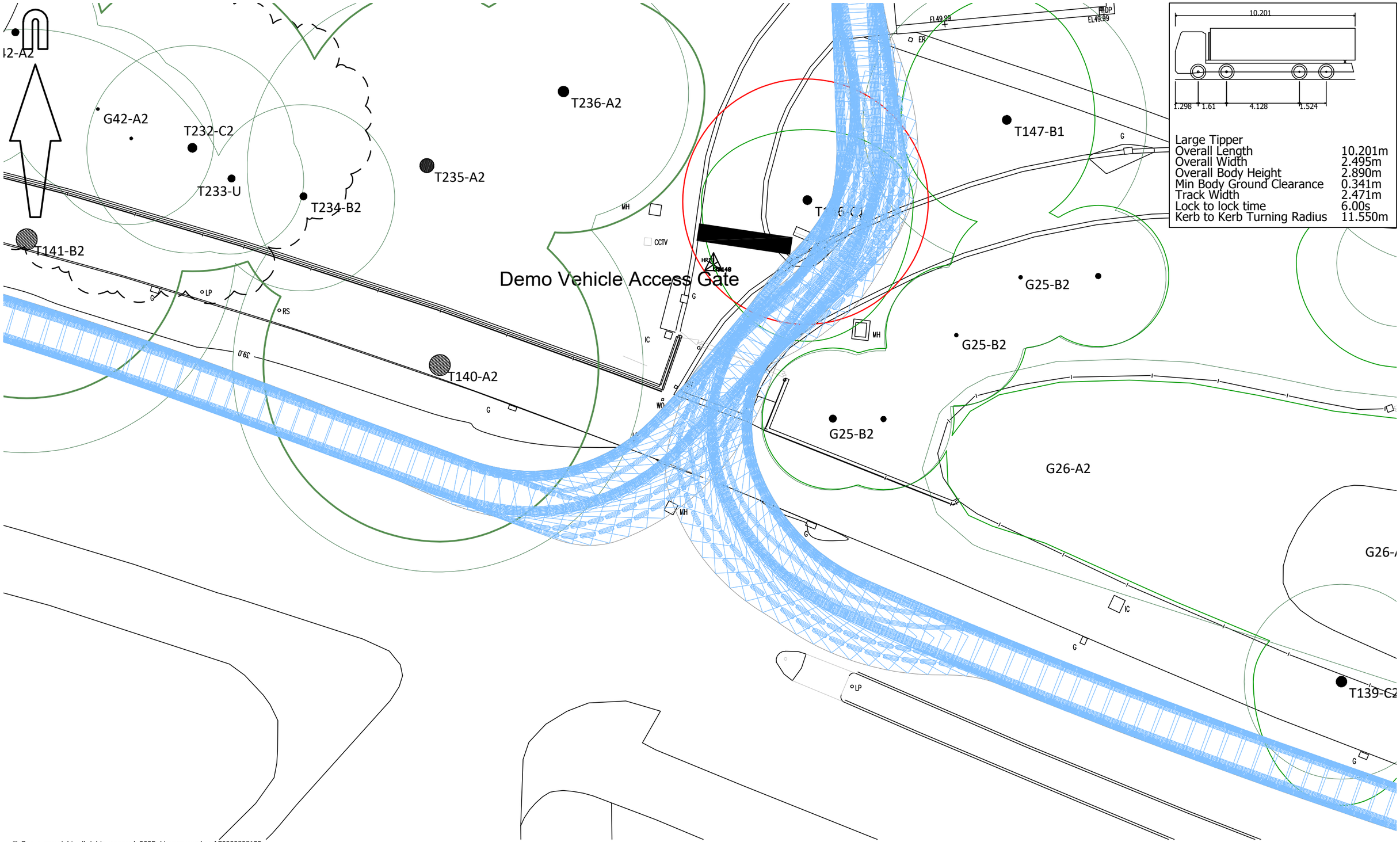
C) 19m Low Loader

D) Large Tipper

E) Max Legal Artic

Drawing title	UOM Fallowfield - SPA Delivery Drawing with Notes P1
Drawn by	H.ROGERS (GRAHAM)
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client

JOHN GRAHAM CONSTRUCTION LIMITED

project

UoM STUDENT RESIDENCES
FALLOWFIELDS CAMPUS

title

SWEPT PATH ANALYSIS
LARGE TIPPER
ENTERING AND EXITING SITE
VIA MOSELEY ROAD

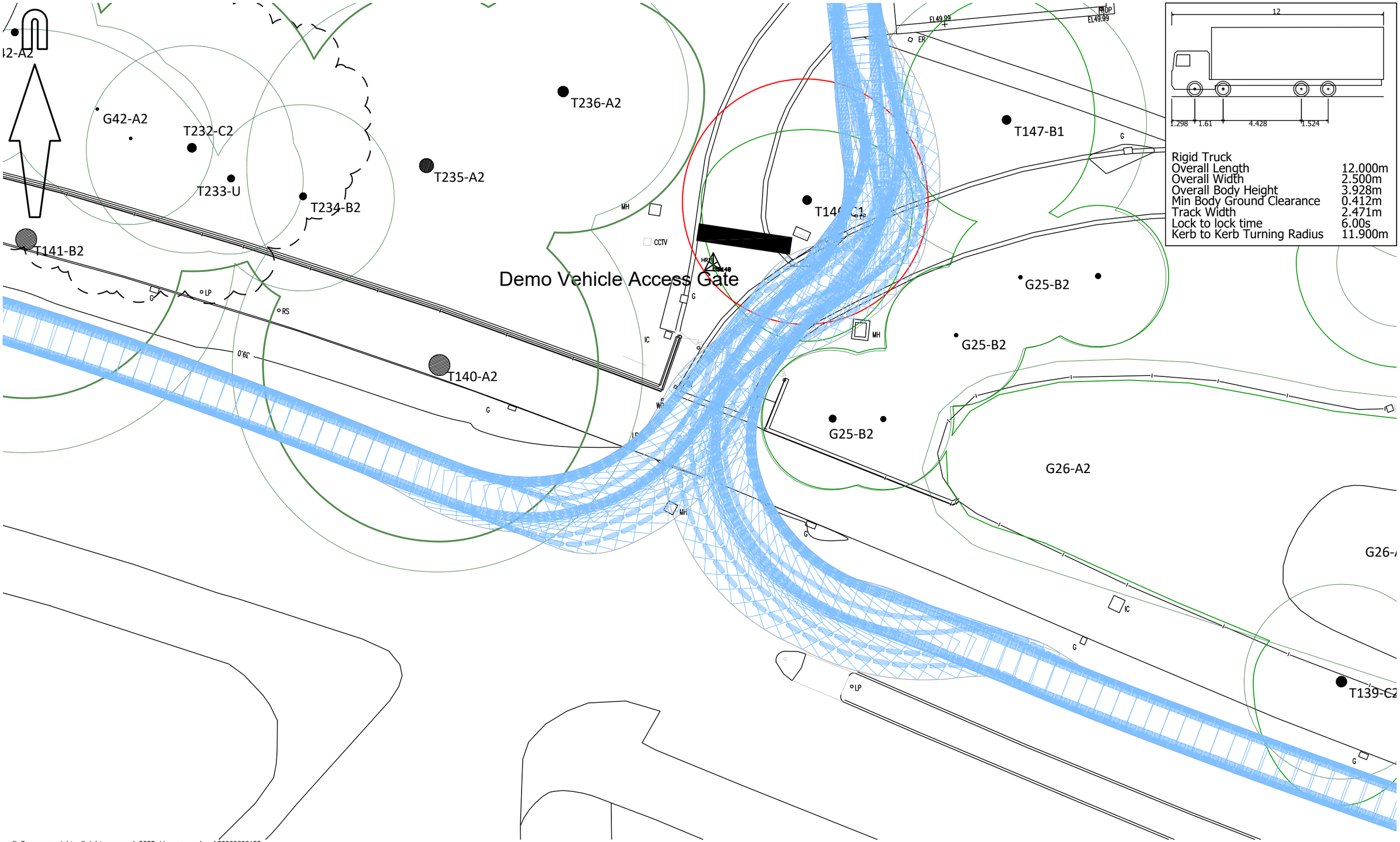
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drawing number

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JOHN GRAHAM CONSTRUCTION LIMITED

project

UoM STUDENT RESIDENCES
FALLOWFIELDS CAMPUS

title

SWEPT PATH ANALYSIS
12M RIGID
ENTERING AND EXITING SITE
VIA MOSELEY ROAD

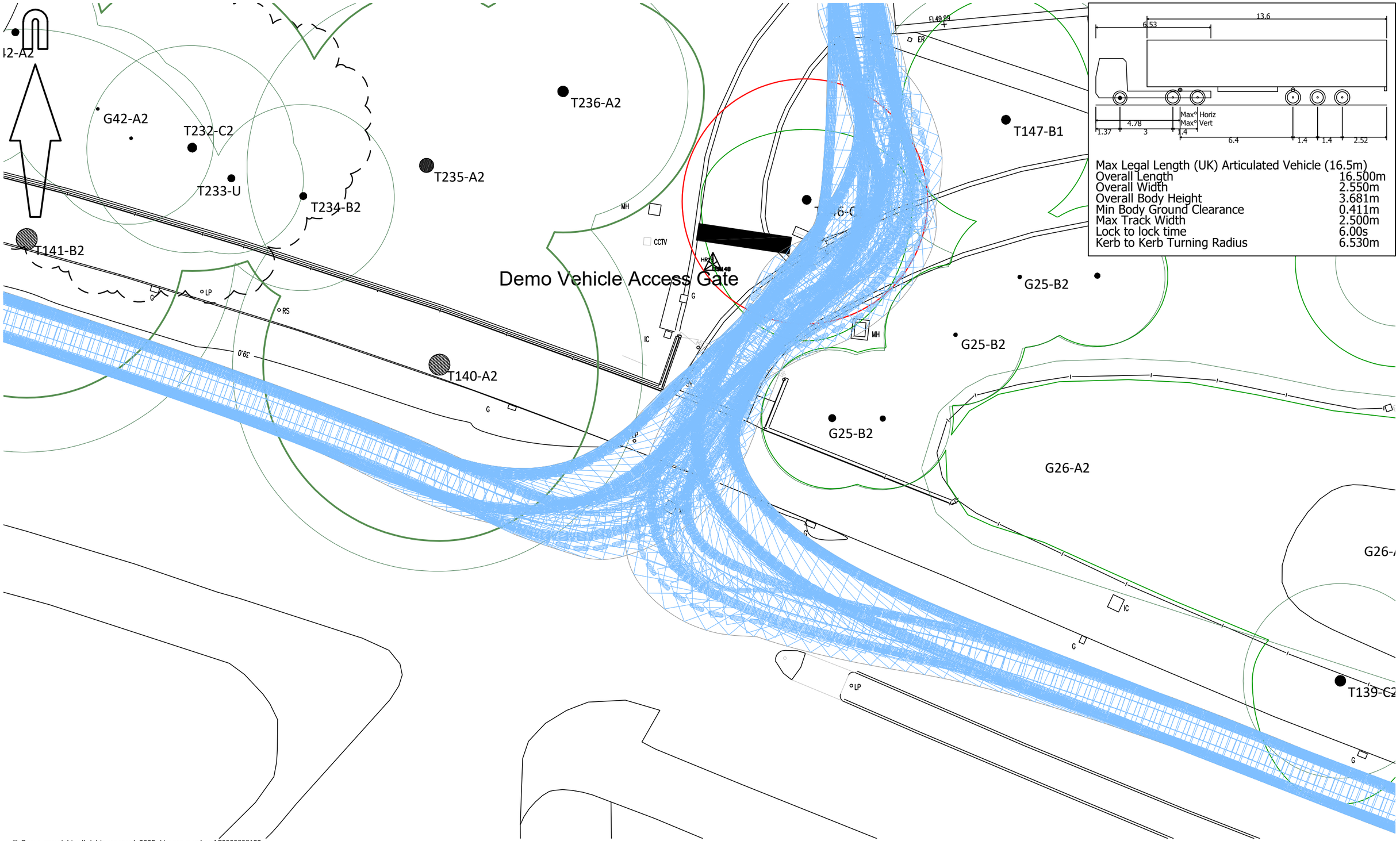
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MAY 2025	-	GUOMFALLOWFIELD_TK01-TK08	08	P1

drawing number

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client

JOHN GRAHAM CONSTRUCTION LIMITED

project

UoM STUDENT RESIDENCES
FALLOWFIELDS CAMPUS

title

SWEPT PATH ANALYSIS
16.5M ARTIC
ENTERING AND EXITING SITE
VIA MOSELEY ROAD

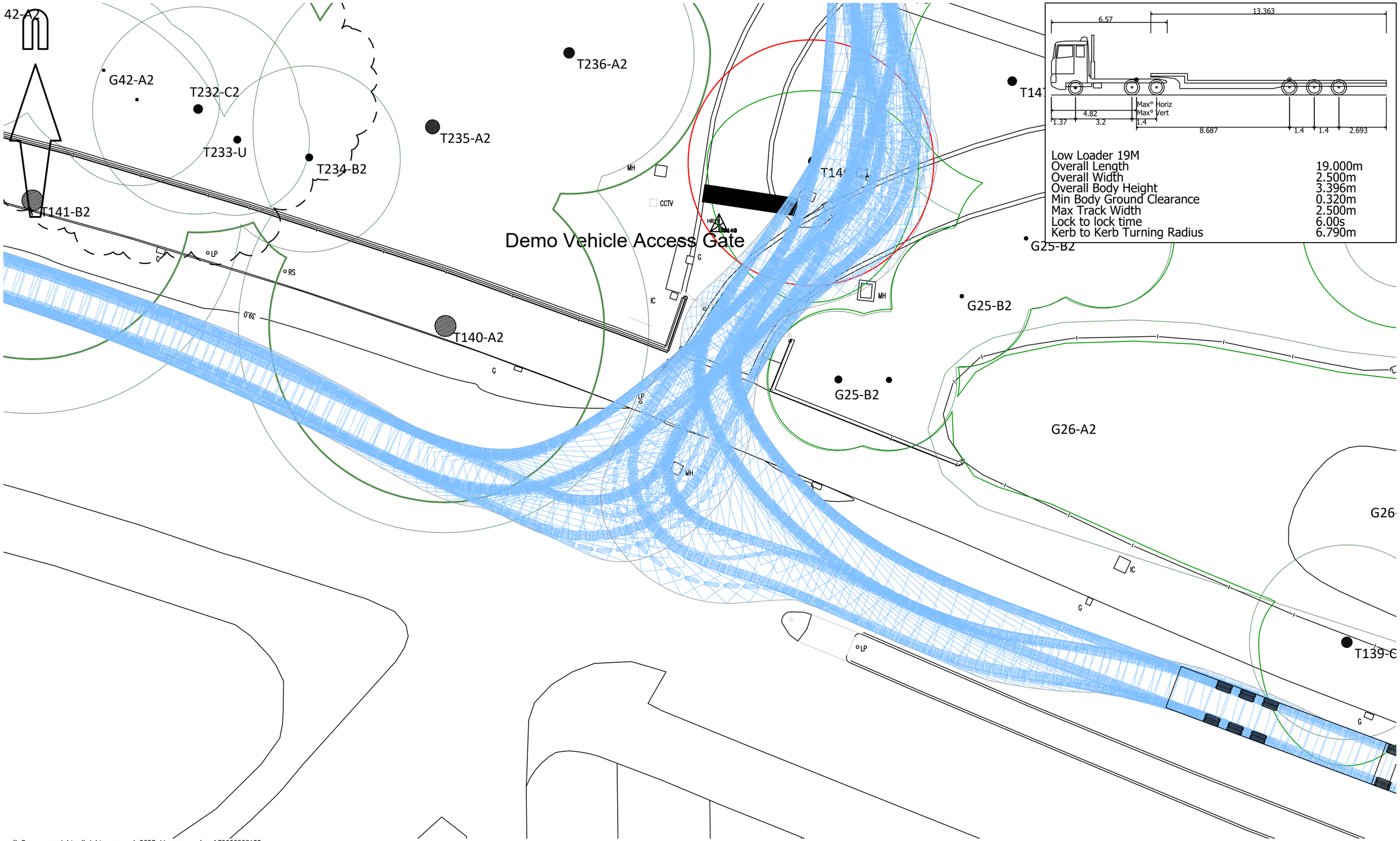
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drawing number

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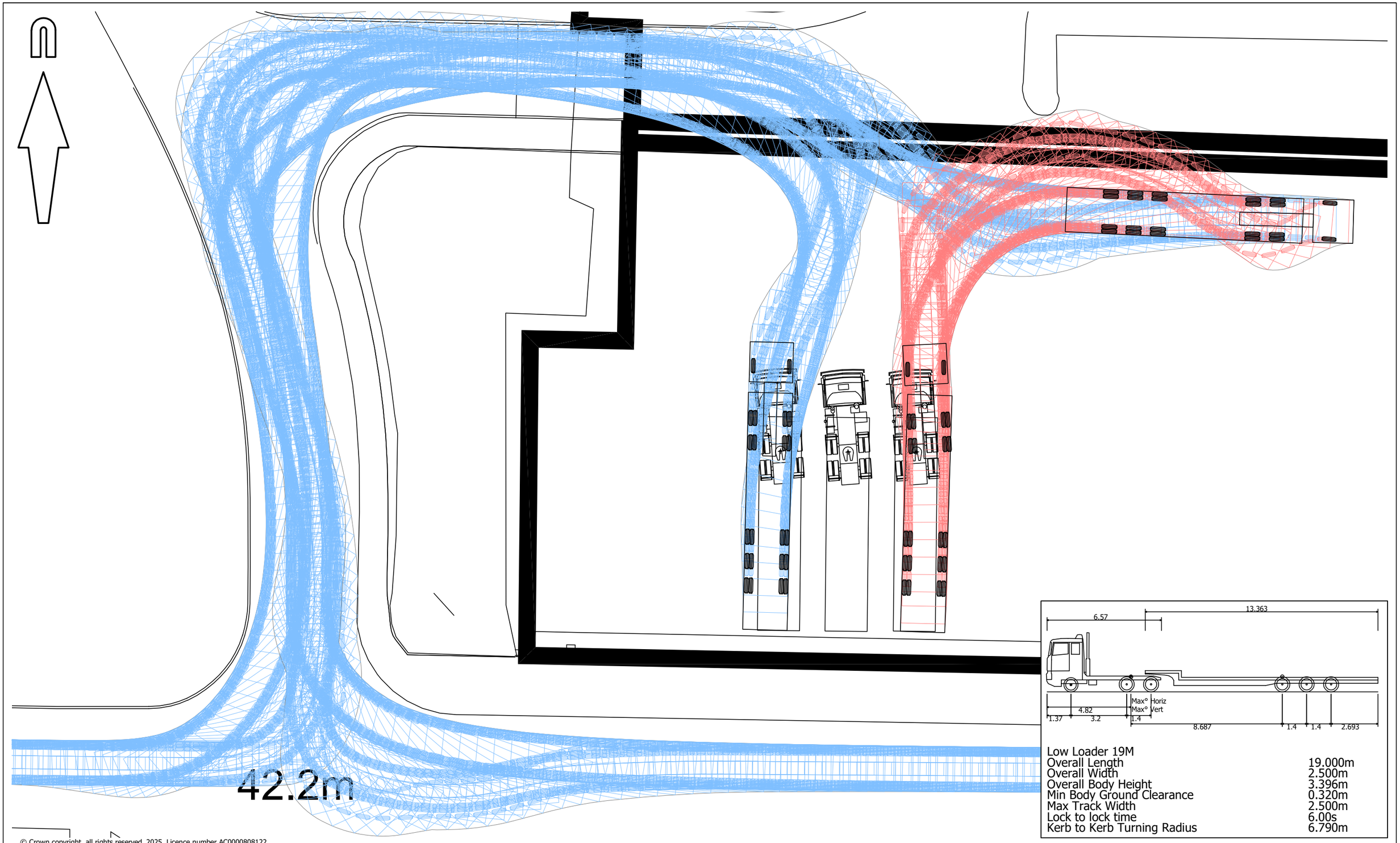
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SWEPT PATH ANALYSIS
19M LOW LOADER
ENTERING AND EXITING SITE
VIA MOSSLEY ROAD

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drawing number
B/GUoMFALLOWFIELD.1/TK09

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Low Loader 19M	
Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	3.396m
Min Body Ground Clearance	0.320m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.790m

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JOHN GRAHAM CONSTRUCTION LIMITED

project

UoM STUDENT RESIDENCES
FALLOWFIELDS CAMPUS

title

SWEPT PATH ANALYSIS
16.5M ARTIC
ENTERING AND EXITING HOLDING AREA
VIA MOSELEY ROAD

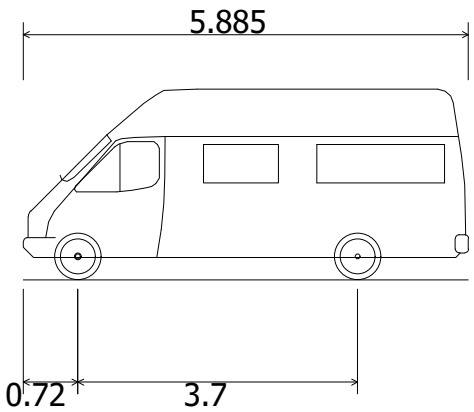
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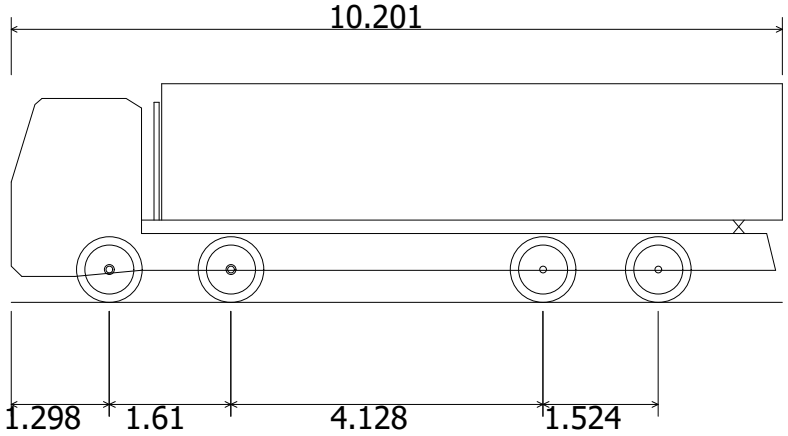
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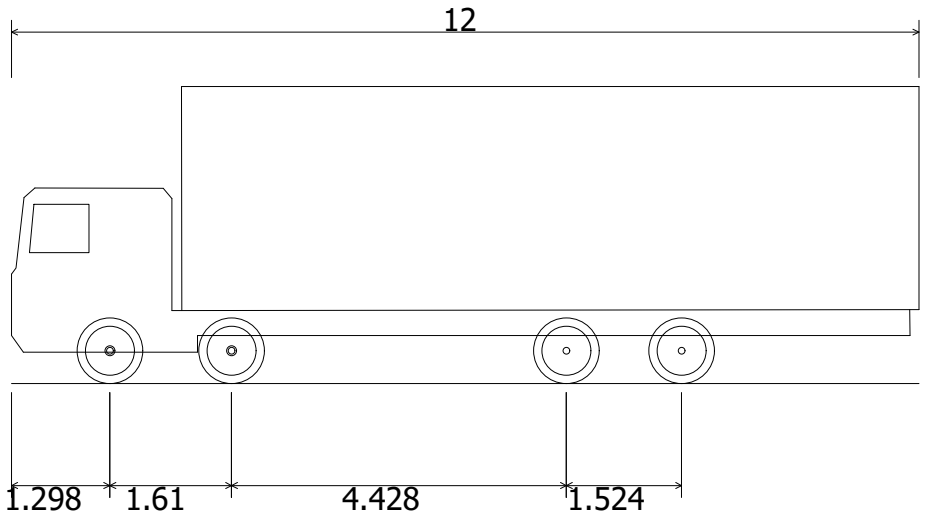
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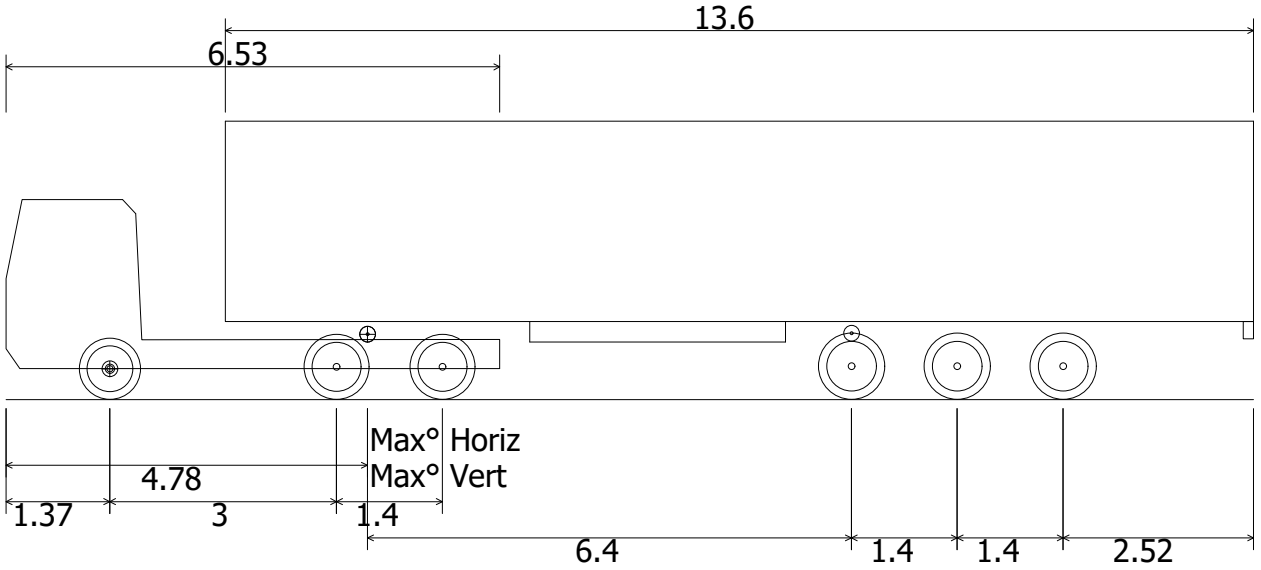
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Overall Length	5.885m
Overall Width	2.000m
Overall Body Height	2.526m
Min Body Ground Clearance	0.299m
Track Width	1.765m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	6.000m



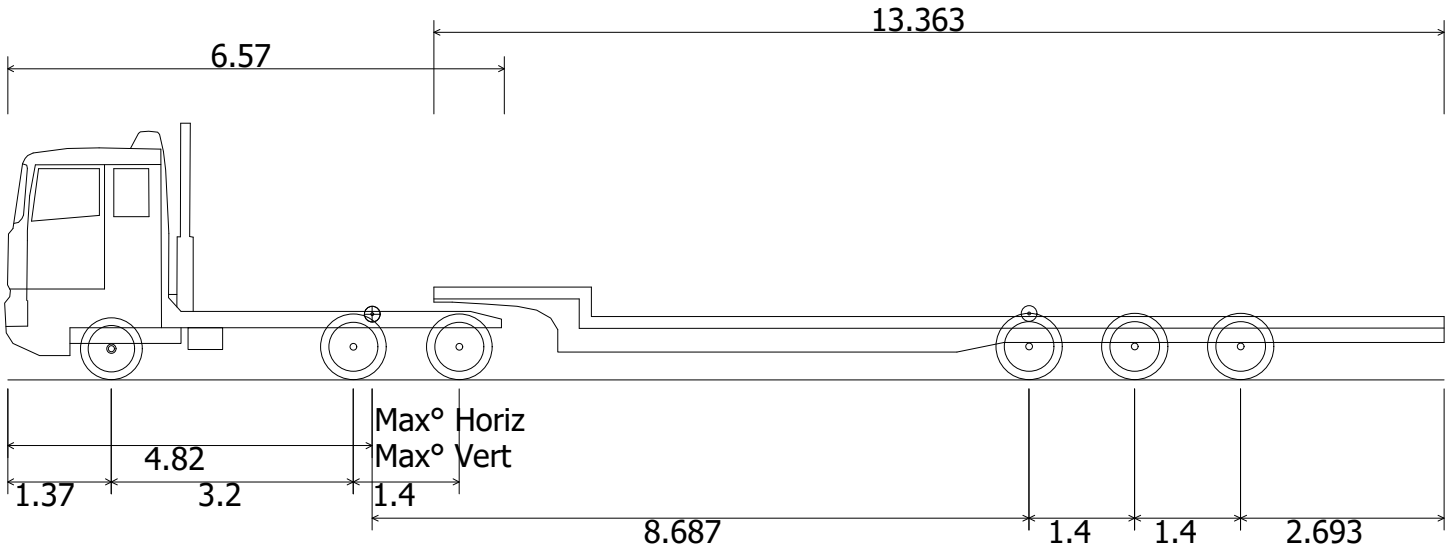
Large Tipper	
Overall Length	10.201m
Overall Width	2.495m
Overall Body Height	2.890m
Min Body Ground Clearance	0.341m
Track Width	2.471m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	11.550m



Rigid Truck	
Overall Length	12.000m
Overall Width	2.500m
Overall Body Height	3.928m
Min Body Ground Clearance	0.412m
Track Width	2.471m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	11.900m



Max Legal Length (UK) Articulated Vehicle (16.5m)	
Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m



Low Loader 19M	
Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	3.396m
Min Body Ground Clearance	0.320m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.790m

Appendix F

Environmental Risk and Opportunities Register

Project Environmental Risk and Opportunities Register

PF10-PR10-43-F003

Project: University of Manchester, Fallowfields Campus

Brief description of the project

The University of Manchester would like to procure a Student Housing Partner ("SHP") to design, build, finance and operate new-build student accommodation at the Fallowfield Campus which should have minimal impact on the University's balance sheet.
The University envisages that, as a minimum, the first 2 phases at Fallowfield, a total of c. 2,300 – 2,500 beds, will be procured as a single transaction. The University intends to carry out some demolition while procuring the SHP (and prior to Financial Close) in order to create a first-phase development site. The University's preference is that once the first phase is operational, either the University or the SHP will demolish further buildings and commence subsequent phases, in order to maximise the number of beds that remain available before new ones are built. Total number of beds c 3,300.
The University will grant long-term property interests to the relevant project party (being either the SHP or its funder). The SHP will be entitled to earn rental income under the terms of a Project Agreement for an expected operation period of c. 50 years. The SHP will be required to finance and deliver the relevant facilities

INFORMATION:

- This Project Environmental Risk and Opportunities Register (PEROR) has been completed by the Regional Environmental Manager in cooperation with the Project Manager.
- This PEROR lists the Noise & Vibration Aspect and identifies the significant Environment Impacts created as a result of the construction activities, specific to this project. In determining the Noise and Vibration aspect, we have considered a life cycle perspective and we have identified those lifecycle stages over which we have greatest control and/ or influence. We have also considered whether these aspects occur in normal, abnormal or emergency conditions. In addition, this document describes the environmental control measures that are to be used to eliminate or minimise these Impacts.

- This PEROR is the first phase of the assessment of environmental risk on this project. Additional construction activity Environmental Risk Assessments will be completed throughout the duration of the project.

DETERMINING SIGNIFICANT NOISE & VIBRATION ASPECTS AND ASSOCIATED ENVIRONMENTAL IMPACTS:

- Significance assessment score or scale of impact, is determined by the product of **"Likelihood of the environmental impact"** and **"severity of consequences"** to give a maximum possible score of 9.

- Risk Rating Values are grouped into three broad classes: 4 - 9: HIGH RISK; 2 - 3: MODERATE RISK; 1: LOW RISK

- The Likelihood of the Environmental Impact is grouped into the following categories (Unlikely; Likely; Near Certain). The scoring for each category is as listed within table 1 below.

- The Severity of Consequences is grouped into the following categories: Minor- (Should not result in serious environmental damage); Serious - (Could result in serious environmental damage); Extreme- (Could cause serious environmental damage). The scoring for each category is as listed within table 1 below.

Table 1	LIKELIHOOD OF ENVIRONMENTAL IMPACT (L)			
SEVERITY OF ENVIRONMENTAL IMPACT (S)		1. (Unlikely)	2. (Likely)	3. (Near certain)
	1. Minor	1	2	3
	2. Serious	2	4	6
	3. Extreme	3	6	9

- Risk control measures are listed for environmental hazards graded 2 and above
- Residual risk is the level of risk that remains after suitable and sufficient control measures are introduced.

Source of Aspect	Aspect	Actual and Potential Environmental Impacts	Actual and Potential Risks	Actual and Potential Opportunities	Risk			Risk Controls and Opportunities	Residual Risk		
					L	S	L*S		L	S	L*S
• Building soft strip • Demolition of building and foundations • Crushing of arisings • Filling of voids and site levelling • Construction Noise • Construction Traffic Noise • Construction Vibration	Noise	Nuisance noise impacts on the local residential community, both private dwellings and student residences, and wildlife Health problems linked to noise exposure	Potential for non-compliance to relevant legislation and requirements	Reputation enhancement as an environmentally focused organisation	3	3	9	According to the Environmental Statement for the Fallowfield Campus Redevelopment Project, noise affects during construction are likely to have a significant; major adverse effect. Implement a site-specific Noise Management Plan in order to outline the steps required in order to ensure best practice with regard to the minimisation of noise. This will include details of measures to mitigate and manage noise from the demolition and construction works based on the concept of best practicable means (BPM) Mitigation measures will include the selection of plant and methods producing lower levels of noise, and the use of localised screening and enclosures around noisy plant and activities. It is anticipated that implementation of such measures would reduce noise levels by up to 10 dB.	2	2	4
• Vibratory rolling associated with the filing of voids • Site levelling activity • Construction Vibration associated with vehicle movement	Vibration	Nuisance vibration impacts on the local residential community, both private dwellings and student residences and wildlife Health problems linked to vibration exposure Damage to buildings and retained services from excessive vibration	Potential for non-compliance to relevant legislation and requirements	Reputation enhancement as an environmentally focused organisation	2	2	4	The Environmental Statement provided for the Fallowfield Campus Redevelopment confirms that any project vibration affects during construction are likely not to have significant but minor adverse effect. Works with a vibration risk will be undertaken inline with best practice for vibration control. E.g. Piling will be CFA hydraulic piling instead of impact piling Speeds of site levelling will be reduced	1		1

Appendix G

Environmental Statement

7 NOISE AND VIBRATION

7.1 INTRODUCTION

7.1.1 This chapter of the ES assesses the likely environmental effects of the proposed development with respect to noise and vibration. This chapter also describes the methods used to assess the effects; the baseline conditions currently existing at the site and surrounding area; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been adopted.

7.1.2 An assessment of the suitability of the site for the proposed noise sensitive uses, including consideration of glazing, ventilation and overheating strategies with respect to noise, is provided in Appendix 7-F.

7.1.3 Interactive effects associated with noise and vibration have additionally been considered within the ES and can be found in Chapter 10 Interactive Effects.

7.1.4 A short glossary of acoustic terms is provided at the end of this chapter in section 7.9, with further details provided in Appendix 7-A.

7.2 METHODOLOGY AND ASSESSMENT CRITERIA

EIA Scoping

7.2.1 An Environmental Impact Assessment (EIA) Scoping report was submitted for comment to Manchester City Council (MCC) including the proposed approach to the assessment of potential noise and vibration effects from the proposed development. In summary, the proposed scope covered the undertaking of a baseline noise survey and the consideration of the potential effects of construction noise and vibration, as well as the definition of target noise levels for fixed plant installations (e.g., for ventilation or heating/cooling) and entertainment premises.

7.2.2 The Scoping opinion issued by MCC in response contained several comments relating to noise and vibration. These are presented in Table 7—1 together with responses on how these have been addressed, if required at this stage of the scheme.

Table 7—1 Summary of scoping opinion and responses relating to noise and vibration

Scoping opinion comment	Response
The applicant/consultant will need to provide a noise assessment for residential sound insulation, based on MCC criteria. The applicant and consultant will need to be aware that any plant associated with the residential properties as part of the development such as ASHP / GSHP/ ventilation etc will also need to be considered within these noise sources as well as any other fixed plant. In addition, other buildings such as commercial or office will also need to be considered as sensitive receptors with regard to the criteria and not just existing and proposed residential uses.	This chapter is accompanied by a site suitability assessment that includes indicative sound insulation requirements for the proposed student accommodation based on existing noise levels. As this is an outline planning application, the sound insulation requirements are not detailed/final, and do not factor in noise from proposed fixed plant as details of this are not yet known. Should consent be granted, it is proposed a planning condition is included requiring that final details of the sound insulation scheme are submitted prior to construction. Furthermore, as details of proposed fixed plant are not yet available, noise from this source has not been assessed in this chapter. Target noise levels for fixed plant have been defined at the nearest noise-sensitive receptors based on the results of the noise survey and MCC guidance. Should consent be granted, it is proposed that a planning condition is included requiring a noise assessment of the final fixed plant selections is submitted prior to construction.
The applicant/consultant will need to be aware that an AVO overheating assessment will be required and assessment / recommendations will be required to ensure the internal noise criteria will be met without residents relying on openable windows for ventilation. Assessment of any alterative scheme of ventilation will also be required and also assessment and recommendations with regard to insulation of any façade penetrations for air intake / extract for example.	This chapter is accompanied by a site suitability assessment that includes consideration of the requirements of ventilation and overheating with respect to noise. As this is an outline planning application, this will provide potential design solutions. Should consent be granted, it is proposed that a planning condition is included requiring that final details of the approach to ventilation/overheating are submitted prior to construction (it is expected that this would be part of the submission of sound insulation requirements discussed in the previous response).

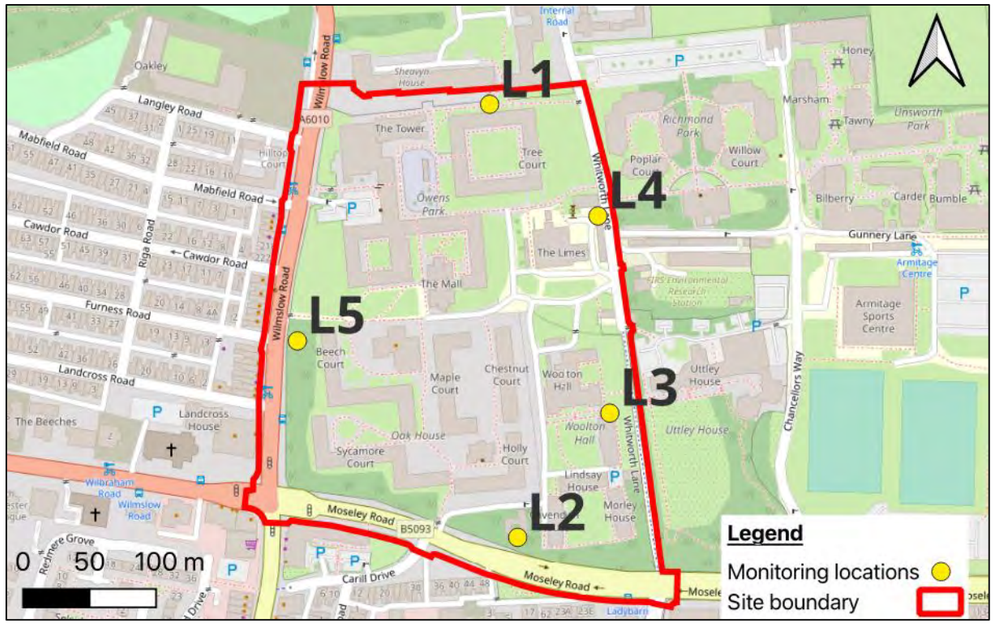
7.2.3 In addition, the relevant officer from the MCC Environmental Protection Section was contacted by email on Thursday 11th May 2023 to request comments on the proposed baseline noise survey methodology as well as the overall approach to the assessment. Comments were received on 19th May 2023 requesting confirmation of the length of the noise survey, following which it clarified that it would be conducted between Friday 19th and Wednesday 24th May 2023.

Baseline study methodology

7.2.4 To characterise and quantify the existing noise environment around the site, a baseline noise survey was undertaken at locations selected to be representative of both the closest noise sensitive receptors to the site, and the proposed buildings within the site that will be most exposed to existing sources of noise, which are primarily the adjacent roads. Consequently, all monitoring locations are close to the boundary of the site where the interface with noise sensitive receptors and existing noise sources is located.

7.2.5 The noise monitoring locations are shown in Figure 7—1 together with the site boundary. It is noted there were technical problems at some locations which are discussed further below.

Figure 7—1 Baseline noise survey monitoring locations



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7.2.6 The noise survey was conducted between Friday 19th and Wednesday 24th May 2023 and comprised three locations where continuous unattended monitoring was undertaken (L2, L3 and L5), supplemented by short-term attended monitoring during the morning of Friday 19th May 2023 at the L1 position. Note that originally there was a position L4 on the eastern side of the boundary between L1 and L3; however, this was found to be dominated by noise from local fixed plant, which would be removed as part of the proposed development, and therefore this measurement location was not used. Measurements were made at 5 minute intervals.

7.2.7 Monitoring was undertaken using Class 1 monitoring equipment at a height of 1.5 m above local ground level under free-field conditions (i.e., measuring free-field levels), except at L3 which was at a height of 6 m under façade conditions (i.e., measuring façade levels). All sound level meters were field calibrated prior to and following the measurements using a Class 1 acoustic calibrator. No significant change in sensitivity was noted. All microphones were fitted with a windshield. Further details of the equipment used for positions L3 and L5[1] together with the relevant laboratory calibration certificates are provided in Appendix 7-B.

7.2.8 Regarding weather during the survey period, following a review of local weather stations[2], there were relatively low winds (below 5 m/s) and minimal rainfall. On this basis, no noise data has been excluded due to adverse weather conditions.

7.2.9 As mentioned above, technical problems with the monitoring equipment occurred at the L1 position on the northern boundary, and the L2 position on the southern boundary. Upon review, the data from these locations was found to be potentially unreliable, and therefore was excluded from further consideration.

7.2.10 With respect to the southern boundary of the site, following a review of observations from the survey, traffic data published by the government[3] and noise measurements undertaken for a previous application at the site[4], it was confirmed that noise at both the western and southern boundaries are dominated by similar levels of road traffic noise. Therefore, the noise levels measured at L5 are also considered representative of the southern boundary. Regarding the northern boundary, a similar review exercise indicated that noise levels measured at L3 can be considered representative of those experienced at the northern boundary. Therefore, for the purpose of the assessment, the monitored levels from L5 and L3 have been referenced when considering the noise exposure at the southern and northern boundaries of the site respectively.

7.2.11 Due to the high volumes of road traffic using the roads surrounding the site, it is considered unlikely that the measured baseline noise levels will materially change prior to completion of the proposed development.

Assessment approach

7.2.12 As discussed at the beginning of section 7.2, the scope of the assessment includes consideration of the potential effects of construction noise and vibration, as well as the definition of target noise levels to be used in the design of fixed plant installations and entertainment premises within the proposed development.

Construction noise and vibration

7.2.13 Regarding temporary noise and vibration arising from the construction of the proposed development, following a review of the information available at the time of writing, there is only sufficient detail to assess the demolition works as the construction programme and methodologies are not sufficiently developed. It is anticipated that the assessment of demolition will represent the worst-case in terms of the potential effects of noise and vibration from the overall construction process, and that any further assessment, if required, can be addressed in a Construction Environmental Management Plan (CEMP).

7.2.14 It is understood that the demolition of the existing buildings will be phased. The indicative phasing plan states that the northern half of the site will be demolished as part of Phase A between Q4 2023 and Q4 2024, while the southern half of the site remains occupied. The indicative plan then shows the subsequent construction works on the northern half of the site being completed by Q3 2027. Demolition of the southern half of the site is indicated as taking place as part of Phases B & C between Q3 2027 and Q1 2028. This means that the new accommodation in the northern half of the site may be occupied while demolition works on the southern half take place. See Chapter 4 of the ES for further details of the indicative construction phasing and programme, which would be updated as part of a future reserved matters stage.

7.2.15 Noise and vibration associated with the demolition works has been predicted at the relevant sensitive receptors (see section 7.4 of this chapter) based on the data and methods described in BS 5228 Parts 1[5] and 2[6] together with information provided in Chapter 4 of the ES and from further correspondence with the demolition consultant. Noise has been predicted for the following demolition activities:

- Building soft strip;
- Demolition of buildings and foundations, crushing of arisings; and
- Filling of voids and site levelling.

7.2.16 The predictions have been based on the shortest distance between the activity and the sensitive receptors to provide a worst-case assessment.

7.2.17 Vibration has been predicted for the vibratory rolling associated with the filling of voids and site levelling activity. Of the plant assumed for the demolition activities, vibratory rolling is the only one for which a prediction methodology is included in BS 5228 Part 2; this has been used together with industry guidance[7] to convert the result to the vibration dose value (VDV) metric, as well as estimate vibration levels on the upper floors of buildings. Compaction has been assumed to take place across an area of approximately 1,000 m^2, with the sensitive receptors adjacent to the centre of one of the sides of this area of work at the stated distance to provide a worst-case assessment.

7.2.18 Further details of the plant assumptions for the prediction of noise and vibration from the demolition activities, including their usage per day, is included in Appendix 7-C.

Target noise levels for fixed plant noise and entertainment noise

7.2.19 In terms of noise from fixed plant installations and entertainment venues that may be part of the proposed development, there is not sufficient detail with which to undertake predictions of noise at the time of writing.

7.1.1 ———————————————

[1] other locations were affected by technical problems and therefore the data was disregarded.
[2] IMANCH115 (https://www.wunderground.com/dashboard/pws/IMANCH115); IMANCH125 (https://www.wunderground.com/dashboard/pws/IMANCH125); IMANCHES66 (https://www.wunderground.com/dashboard/pws/IMANCHES66)
[3] Department for Transport Road traffic statistics: https://www.gov.uk/government/collections/road-traffic-statistics
[4] MCC planning application reference 110184/FO/2015/S1
[5] BSI Standards Limited (2014), BS 5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites, Part 1 Noise
[6] BSI Standards Limited (2014), BS 5228-2:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites, Part 2 Vibration
[7] The Association of Noise Consultants (2012), ANC Guidelines: Measurement & Assessment of Groundborne Noise & Vibration

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7.2.20 Therefore, target noise levels have been defined at the relevant sensitive receptors based on the relevant policy and guidance (see section 7.3 of this chapter) and the results of the baseline noise survey. These will be referenced during the detailed design of the proposed development to ensure that any significant noise effects from fixed plant or entertainment noise will be avoided. As such, no further assessment is required at this outline planning stage.

7.2.21 Target noise levels have been defined for the relevant periods of interest, i.e., the periods during which the fixed plant and the entertainment premises are anticipated to be in operation. It has been assumed that fixed plant installations could be in operation at any time of the day, and therefore the results of the baseline noise survey have been analysed to identify a typical background sound level (dB $L_{A90,5min}$) for the standard day (07:00-23:00) and night (23:00-07:00) periods, with the target noise levels derived from these values.

7.2.22 For entertainment premises, it is understood that (based on the hours of use of the existing premises on the site) this would be likely to operate on weekdays between 13:00 and 00:00, and on weekends between 12:00 and 00:00. The results of the baseline noise survey have been analysed to identify a typical background sound level for these periods in each 1/1 octave band between 63 Hz and 4000 Hz (dB $L_{90,5mins}$), with the target noise levels derived from these values.

Assessment of effects

7.2.23 The potential effects of noise and vibration are assessed using different methods based on the type of source being considered and the relevant standards and guidance, as advised by national noise policy (see section 7.3 of this chapter). However, it typically involves the definition of a level above which adverse effects are expected, termed the lowest observed adverse effect level (LOAEL), and a level above which significant adverse effects are possible, referred to as the significant observed adverse effect level (SOAEL). These terms are discussed further in section 7.3 of this chapter. Indication of a significant effect usually involves the exceedance of the relevant SOAEL together with other factors, such as the duration of the effect or the change in noise level, depending on the source being considered.

Construction noise and vibration

7.2.24 The potential significance of construction noise and vibration at the relevant sensitive receptors has been assessed based on the method described in Annex E of BS 5228 Part 1 for noise and the current industry best practice for vibration[8], expressed in terms of LOAEL and SOAEL thresholds, together with the duration of any SOAEL exceedance. These details are presented in Table 7—2 for noise and Table 7—3 for vibration.

Table 7—2 Effect level thresholds and significance criteria for construction noise

Effect level	Time period	Threshold value (dB $L_{Aeq,T}$ dB)[2]
LOAEL	Working day	65
SOAEL[1]	Working day	75
Identification of effect significance and other notes: [1] A significant effect is indicated if the programme of works indicates that the SOAEL threshold value is likely to be exceeded for a period of at least one month. [2] Values apply to a location one metre from a residential building façade containing a window, including the effect of the acoustic reflection from that façade. Usually referred to as a façade level.		

Table 7—3 Effect level thresholds and significance criteria for construction vibration

Effect level	Time period	Threshold value (VDV $m/s^{1.75}$)[2]
LOAEL	Working day	0.2
SOAEL[1]	Working day	0.8
Identification of effect significance and other notes: [1] A significant effect is indicated if the programme of works indicates that the SOAEL threshold value is likely to be exceeded for two or more consecutive days. [2] Values apply to a location on the floor inside a building, near but not at the centre of any habitable room.		

7.2.25 The criteria defined in Table 7—2 and Table 7—3 relate primarily to residential receptors, which are of high sensitivity. Therefore, they have also been used when assessing the potential effects of construction noise and vibration on any other types of sensitive receptors, which is considered to be a cautious approach. Where predicted construction noise or vibration levels are above the LOAEL but below the SOAEL, then adverse (non-significant) effects are indicated.

7.2.26 To maintain consistency with the standard descriptors of effect significance typically used in EIA, the effect level thresholds and significance criteria have been equated to the "level" of significance in Table 7—4 for noise and Table 7—5 for vibration. Note that for construction noise and vibration, all effects are considered to be adverse.

Table 7—4 EIA descriptors significance level for construction noise

Relationship of predicted construction noise level to effect level	Duration of construction noise	Level of significance (EIA)	Indication of significant effect
≤ LOAEL	N/A	Negligible	No
Between LOAEL and SOAEL	N/A	Minor	No
> SOAEL	< One month	Moderate	No
> SOAEL	≥ One month	Major	**Yes**

Table 7—5 EIA descriptors of significance level for construction vibration

Relationship of predicted construction vibration level to effect level	Duration of construction vibration	Level of significance (EIA)	Indication of significant effect
≤ LOAEL	N/A	Negligible	No
Between LOAEL and SOAEL	N/A	Minor	No
> SOAEL	< 2 or more consecutive days	Moderate	No
> SOAEL	≥ 2 or more consecutive days	Major	**Yes**

7.3 Legislation and policy which has influenced assessment or mitigation

National policy and guidance

National Planning Policy Framework (2021)[9]

7.3.2 The potential impacts of noise are addressed in the following paragraphs of the National Planning Policy Framework (NPPF):

7.1.1

[8] High Speed Two (HS2) Limited (2017), High Speed Two Phase One Information Paper E23: Control of construction noise and vibration

[9] Ministry of Housing, Communities & Local Government (2021), National Planning Policy Framework.

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- Paragraph 174e: '*Planning policies and decisions should contribute to and enhance the natural and local environment by: …*

  e) 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. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.'

- Paragraph 185: '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 the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

  a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life; and

  b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason'.

7.3.3 Paragraph 185a includes a direct reference to the Noise Policy Statement for England for further information regarding the potentially adverse and significant adverse effects of noise.

Noise Policy Statement for England (2010)[10]

7.3.4 The overarching Government policy on noise is set out in the NPSE. It seeks to clarify the underlying principles and aims in past and existing policy documents, legislation and guidance in relation to all forms of noise including environmental noise, neighbour noise and neighbourhood noise (but not noise in the workplace).

7.3.5 It uses the established concepts from toxicology of the No Observed Effect Level (NOEL) and the Lowest Observed Adverse Effect Level (LOAEL). As set out in the explanatory notes, the NPSE extends these by introducing Significant Observed Adverse Effect Level (SOAEL). This is the level above which significant adverse effects on health and quality of life occur.

7.3.6 The explanatory note to the NPSE states that it is not possible to identify a single objective value to define SOAEL for noise that is applicable to all sources of noise in all situations. It is likely to be different for different noise sources, for different receptors and at different times. The NPSE recognises that *'further research is required to increase understanding of what may constitute a significant adverse impact on health and quality of life from noise. However not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.'* Consequently, the practitioner must determine the appropriate threshold values to be adopted for the sources and situations being assessed, based on the available evidence.

7.3.7 The NPSE's vision is 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.

This long-term vision is supported by the following aims:

- *Avoid*[11] *significant adverse impacts on health and quality of life;*
- *Mitigate and minimise adverse impacts on health and quality of life; and*
- *Where possible, contribute to the improvement of health and quality of life.*

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.'

7.3.8 Within the NPSE, the phrase '*within the context of Government policy on sustainable developmen*t' is used. This means that noise must not be treated in isolation. Instead, when implementing the aims of the policy, consideration should be given to the economic and social benefit of the activity causing the noise as well as the other environmental effects of the development.

7.3.9 The second aim of the NPSE refers to noise impacts that lie somewhere between LOAEL and SOAEL. The NPSE asserts that, while this means that all reasonable steps should be taken to mitigate and minimise adverse effects, this does not mean that such adverse effects cannot occur.

Planning Practice Guidance for Noise (2019)[12]

7.3.10 Further government guidance on the consideration of noise for planning has been published as the Planning Practice Guidance for Noise (PPG:N), last revised in July 2019. The PPG:N supports the NPPF by providing a range of advice and includes a noise exposure hierarchy table, and again makes reference to the NPSE.

7.3.11 The hierarchy table (reproduced in Appendix 7-D), provides descriptive (i.e., non-numerical) guidance on the potential effects of various degrees of noise exposure with reference to the effect levels referred to in the NPSE, i.e., where noise is above or below the NOEL, LOAEL and SOAEL, as well as featuring the additional effect level of No Observed Adverse Effect Level (NOAEL) and a description of unacceptable adverse effects that should be prevented. The table confirms that adverse effects (between LOAEL and SOAEL, where noise starts to cause small changes in behaviour or attitude) should be mitigated and reduced to a minimum. Increasing noise exposure will cause the SOAEL boundary to be crossed, with there being two levels of adverse effect above it:

- A significant observed adverse effect – noise causes a material change in behaviour, e.g., keeping windows closed or avoiding certain activities at certain times. The planning process should be used to avoid this effect occurring, for example through choice of sites and use of appropriate mitigation. It is undesirable for such exposure to be caused, but as mentioned in footnote 11, there are circumstances when such effects can occur. Decisions must take account of the economic and social benefit of the activity causing or affected by the noise caused; and

- An unacceptable adverse effect – noise exposure would cause extensive and sustained adverse changes in behaviour and / or health without the ability to mitigate the effects of the noise. Under these circumstances, the impacts on health and quality of life are such that regardless of the benefits of the activity causing the noise this situation must be prevented from occurring.

Local policy and guidance

Manchester Core Strategy 2012 to 2027 (MCC, 2012)[13]

7.3.12 MCC's local policies regarding planning are defined within the Core Strategy. In relation to noise, Policy DM 1 of the Core Strategy which deals with development management, states the following:

7.1.1

[10] Department for Environment, Food & Rural Affairs (DEFRA) (2010), Noise Policy Statement for England.

[11] "Avoid" here does not mean a significant adverse effect cannot ever exist. Instead, it means make every effort so that significant adverse impacts do not occur. The hierarchy set out in the PPG:N confirms this to be the case – see Table 12.1 of this Chapter. The reason is that the NPSE covers all sources and for historical legal reasons, there are certain circumstances (e.g., statutory nuisance legislation) where a significant adverse impact is lawfully allowed to occur.

[12] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (2019), Planning Practice Guidance: Noise. https://www.gov.uk/guidance/noise--2

[13] Manchester City Council, 2012, Manchester's Local Development Framework – Core Strategy and Development Plan Document

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

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

7.3.13 In relation to 'Leisure and the Evening Economy', Policy C 10 states the following:

"New development and redevelopment that supports the evening economy, contributes to the vitality of district centres and supports a balanced and socially inclusive evening/night-time economy will be permitted, subject to the following considerations:

- *Residential amenity – the proposed use should not create an unacceptable impact on neighbouring uses in terms of noise, traffic and disturbance".*

7.3.14 Regarding 'Purpose Building Student Accommodation', Policy H 12 states the following:

"The provision of new purpose built student accommodation will be supported where the development satisfies the criteria below

- *Consideration should be given to the design and layout of the student accommodation and siting of individual uses within the overall development in relation to adjacent neighbouring uses. The aim is to ensure that there is no unacceptable effect on residential amenity in the surrounding area through increased noise, disturbance or impact on the streetscene either from the proposed development itself or when combined with existing accommodation."*

Planning and Noise: Technical Guidance (MCC, 2022)[14]

7.3.15 Further guidance on MCC's approach to the consideration of noise in a planning context is provided within its technical guidance document "Planning and Noise". Regarding construction noise and vibration, the guidance contains no specific requirements, but suggests that any assessment should be based on BS 5228 Parts 1 and 2.

7.3.16 Regarding noise from fixed plant and equipment, the guidance states in section 3.7.1.5 that:

'Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location'.

7.3.17 In relation to planning applications for new entertainment venues that are structurally detached from other building uses, the guidance states in section 3.7.1.2 that:

'Entertainment noise (LAeq,5min) should be controlled to 5dB below the typical background noise level (LA90) in each octave band at the nearest noise sensitive location'.

7.3.18 Appendix A of the guidance includes a method for calculating the "typical" background sound level referred to in the previous paragraphs.

Other relevant policy and guidance

7.3.19 Other guidance, such as British Standards, has been referred to primarily in terms of suitable methods for the prediction of noise and vibration and the definition of suitable thresholds to indicate significant effects. These are referenced where required in section 7.2 of this chapter.

7.1.1

[14]Manchester City Council, 2022, Planning and Noise Technical Guidance

Assessment limitations (technical deficiencies or lack of knowledge)

7.3.20 Demolition noise and vibration has not been predicted and assessed at every potential sensitive receptor (i.e., every individual property). The assessment has been based on the receptors nearest to each of the four sides of the site, therefore representing a worst-case.

7.3.21 The assumptions used for demolition plant and methodology are estimates and are subject to modification, but they are considered to allow assessment of the reasonable worst-case demolition effects.

7.3.22 As previously discussed, sufficient detail with which to undertake predictions of noise from fixed plant installations and entertainment premises is not available. Therefore, conservative target noise levels have been defined that will be referenced in the detailed design of the proposed development to ensure that any significant noise effects from these elements are avoided.

7.4 BASELINE CONDITIONS

Current baseline

7.4.1 The baseline noise environment, as observed during the noise survey, was dominated by road traffic noise, with the A6010 Wimslow Road dominant on the north and west sides of the site, the B5093 Mosely Road at the south of the site, and contributions from both roads at the east of the site. Other noise sources noted included occasional aircraft overhead and fixed plant noise.

7.4.2 The results of the noise measurements at locations L3 and L5 are presented as time history graphs in Appendix 7-E. The data has also been analysed to identify the typical background levels for the relevant periods discussed in section 7.2 of this chapter based on the method detailed in Appendix A of the MCC Planning and Noise Technical Guidance document. The typical background noise levels relating to the assumed operating hours of any fixed plant are presented in Table 7—6.

Table 7—6 Typical background sound levels at monitoring locations for day and night periods

Location	Period	Typical background sound level[1](dB $L_{A90,5min}$ free-field)
L3	Day	37
	Night	33
L5	Day	46
	Night	38
Note: [1] Derived based on method detailed in Appendix A of the MCC Planning and Noise Technical Guidance		

7.4.3 The typical background noise levels relating to the likely operating hours of any entertainment premises are presented in Table 7—7.

Table 7—7 Typical background sound levels at monitoring locations for entertainment premises opening hours period

Location	Typical background sound level at 1/1 octave band centre frequency, Hz (dB $L_{90,5min}$ free-field)							
	63	125	250	500	1000	2000	4000	8000
L3	46	37	35	33	33	30	29	32
L5	61	51	49	47	47	45	43	46

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Future baseline

7.4.4 In the absence of the proposed development, it is expected that the baseline noise environment would continue to be dominated by road traffic noise from the A6010 Wimslow Road and B5094 Mosely Road.

Identified receptors

7.4.5 The site has existing residential accommodation in proximity to the boundary on all sides, both private dwellings and student residences. Rather than identify specific addresses, the distance between the site boundary and the closest sensitive receptor on each of the four sides of the site has been calculated and referenced in the assessment, on the basis that they represent the worst-affected receptors opposite the site on each side. In addition, the distance for an on-site receptor has been calculated to take account of the southern half of the site remaining occupied while the northern half is demolished, and the new accommodation on the northern half of the site being occupied while the southern half is demolished, as discussed in section 7.2 of this chapter. These receptors are listed in Table 7—8.

Table 7—8 Identified receptors

Receptor	Distance to site boundary/works	Representative of properties including
North	15 m	Sheavyn House
East/South	40 m	Richmond Park, Utterly House / Properties on Mosely Road
West	45 m	Properties on Wilmslow Road
On-site (north/south)	20 m	Maple Court (southern half of site), new accommodation buildings (north half of site)

7.5 CONSTRUCTION EFFECTS

Relevant aspects of the scheme

7.5.1 As discussed in section 7.2 of this chapter, the assessment considers the following activities with respect to noise from the demolition works associated with the overall construction process:

- Building soft strip;
- Demolition of building and foundations, crushing of arisings; and
- Filling of voids and site levelling.

7.5.2 Regarding vibration, the assessment considers vibratory rolling associated with the filling of voids and site levelling activity.

Potential effects of the development and their significance

Construction noise (demolition works only)

7.5.3 The predicted noise levels for the demolition works at each receptor and the subsequent assessment against the relevant LOAEL and SOAEL thresholds detailed in section 7.2 of this chapter are presented in Table 7—9.

Table 7—9 Predictions of demolition noise and comparison to LOAEL/SOAEL thresholds

Receptor	Predicted noise level for demolition activity (dB $L_{Aeq,T}$ façade)			Exceedances of LOAEL?	Exceedances of SOAEL?
	Soft strip	Demolition	Filling & levelling		
North	73	**85**	**84**	Yes	Yes (in bold)
East/South	64	**77**	75	Yes	Yes (in bold)
West	63	**76**	74	Yes	Yes (in bold)
On-site (north/south)	70	**83**	**82**	Yes	Yes (in bold)

7.5.4 As can be seen in Table 7—9, several of the predicted worst-case demolition noise levels exceed the SOAEL, particularly in the case of the demolition activity itself. As discussed in section 7.2 of this chapter, the final assessment of significance is based on the SOAEL being exceeded for a period of at least one month. At the time of writing, the works programme is not sufficiently developed to calculate this.

7.5.5 As the noise levels represent the worst-case in terms of distance to receptors, it is reasonable to assume that they would occur for a relatively short time and be lower for most of the time when the works are further away. However, based on the available information, it is considered likely that demolition noise will result in significant adverse effects at the closest receptors to the site. This equates to a major adverse level of significance (see Table 7—4).

Construction vibration (demolition works only)

7.5.6 The predicted vibration levels arising from the use of a vibratory roller at each receptor and the subsequent assessment against the relevant LOAEL and SOAEL thresholds detailed in section 7.2 of this chapter are presented in Table 7—10.

Table 7—10 Predictions of vibration from vibratory compaction and comparison to LOAEL/SOAEL thresholds

Receptor	Predicted vibration level for vibratory roller (VDV m/s$^{1.75}$)		Exceedances of LOAEL?	Exceedances of SOAEL?
	Ground floor	Upper floors*		
North	0.19	0.47	Yes (upper only)	No
East/South	0.14	0.35	Yes (upper only)	No
West	0.13	0.32	Yes (upper only)	No
On-site (north/south)	0.11	0.28	Yes (upper only)	No

* values include a multiplication factor of 2.5 to account for possible amplification of vibration on upper floors of buildings.

7.5.7 As can be seen in Table 7—10, none of the predicted worst-case vibration levels exceed the SOAEL, although the upper floor values do exceed the LOAEL. This indicates that, while some adverse effects from use of a vibratory roller may occur at the closest receptors, no significant effects are likely, although vibration may be perceptible from time to time. This equates to a minor adverse level of significance (see Table 7—5).

Climate change and adaptation

7.5.8 Climate change has minimal direct effects on noise and vibration as a physical property; however, it can affect those things that generate noise and vibration.

7.5.9 Demolition works associated with the proposed development are expected to take until Q1 2028 to complete. Although climate forecasts show that Manchester is expected to experience slightly increased temperatures, wetter winters and drier summers, no significant changes would be likely during the period of demolition and therefore the current conditions are considered representative of those during the demolition works.

7.5.10 On this basis, it is considered unlikely that climate change would lead to any changes in the demolition methodology or duration that would result in any significant changes to the likely effects of demolition noise and vibration identified previously.

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Summary of effects

Table 7—11 Summary of effects during construction (demolition works only)

Receptor	Description of effect	Effect significance
North	Noise from demolition activities, temporary.	Significant: major adverse.
East/South		
West		
On-site (south)		
North	Vibration from demolition activities, temporary.	Not significant: minor adverse.
East/South		
West		
On-site (south)		

Intermediate year construction effects

7.5.11 As discussed previously, the predictions and assessment of demolition noise and vibration include an on-site receptor to both that the southern half of the site will continue to be occupied while demolition takes place on the northern half, and that the new accommodation on the northern half of the site may be occupied while demolition takes place on the southern half, and therefore take intermediate year construction effects into account.

Supplementary mitigation measures

7.5.12 Table 7—12 describes the mitigation measures which will be adopted to avoid significant adverse effects and any additional measures which will be employed that will further reduce non-significant effects.

Table 7—12 Summary of demolition and construction supplementary mitigation measures for proposed development.

Adverse effect	Mitigation measure	Responsibility / Mechanism for implementation	Timing
Construction: noise and vibration from demolition works	An Outline Demolition Environmental Management Plan (ODEMP) has been produced as part of the outline planning documentation which includes details of measures to mitigate and manage noise from the demolition works based on the concept of best practicable means (BPM). Mitigation measures are to include the selection of plant and methods producing lower levels of noise, and the use of localised screening and enclosures around noisy plant and activities. It is anticipated that implementation of such measures would reduce noise levels by up to 10 dB. An overarching Construction Environmental Management Plan (CEMP) will also be produced containing similar details on the other elements of the construction process.	Applicant to submit ODEMP and CEMP to MCC for approval. Demolition Contractor to implement mitigation measures detailed in ODEMP.	ODEMP issued with outline planning application. CEMP will be prepared and agreed with MCC prior to commencement of the construction (new build) works on site.

7.6 OPERATIONAL EFFECTS

Target noise levels for fixed plant and entertainment premises

7.6.1 As discussed in section 7.2 of this chapter, predictions of noise from fixed plant installations and entertainment venues cannot be undertaken at this time due to limited information being available at the outline planning stage. Instead, target noise levels have been defined at the relevant sensitive receptors based on MCC guidance (i.e., 5 dB below the typical background sound levels for plant) and the results of the baseline noise survey as presented in Table 7—6 and Table 7—7. As for the consideration of demolition noise, the relevant receptors are those closest to the site on each of the four sides (see section 7.4 of this chapter).

7.6.2 Target noise levels for fixed plant installations are presented in Table 7—13.

Table 7—13 Target noise levels for fixed plant installations at receptors

Receptor	Period	Target noise level for fixed plant installations (dB $L_{A90,5min}$ free-field)
North/East	Day	32
	Night	28
South/West	Day	41
	Night	33

7.6.3 Target noise levels for entertainment premises are presented in Table 7—14.

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Table 7—14 Target noise levels for entertainment premises at receptors

Receptor	Target noise level for entertainment premises at 1/1 octave band centre frequency, Hz (dB $L_{90,5min}$ free-field)							
	63	125	250	500	1000	2000	4000	8000
North/East	41	32	30	28	28	25	24	27
South/West	56	46	44	42	42	40	38	41

7.6.4 The target noise levels will be referenced in the detailed design of the proposed development to confirm that any significant noise effects from fixed plant or entertainment noise will be avoided through appropriate mitigation measures.

7.7 RESIDUAL EFFECTS AND CONCLUSIONS

7.7.1 Table 7—14 summarises the likely residual effects of the proposed development.

Table 7—15 Summary of residual effects during demolition and construction

Receptor	Effect	Significance before mitigation	Supplementary mitigation	Residual effect significance
North	Construction: noise from demolition works, temporary.	Significant: major adverse.	Production of ODEMP and implementation of mitigation measures during works.	Not significant: minor adverse.
East/South				
West				
On-site (south)				
North	Construction: vibration from demolition works, temporary.	Not significant.: minor adverse.	Production of ODEMP and implementation of mitigation measures during works.	Not significant: minor adverse.
East/South				
West				
On-site (south)				

7.7.2 Whilst there is insufficient information to permit an assessment of noise levels arising from fixed plant and entertainment noise, information has been used to determine target levels for these sources which will be considered during the detailed design (reserved matters) phase, when further details are available. Achievement of the relevant target noise levels at the receptors would avoid any significant adverse effects arising from these sources.

7.8 REFERENCES

- BSI Standards Limited (2014), BS 5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites, Part 1 Noise;
- BSI Standards Limited (2014), BS 5228-2:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites, Part 2 Vibration; and
- Department for Environment, Food & Rural Affairs (DEFRA) (2010), Noise Policy Statement for England.
- Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019), Planning Practice Guidance: Noise.
- High Speed Two (HS2) Limited (2017), High Speed Two Phase One Information Paper E23: Control of construction noise and vibration.
- Manchester City Council, 2012, Manchester's Local Development Framework – Core Strategy and Development Plan Document
- Manchester City Council, 2022, Planning and Noise Technical Guidance
- Ministry of Housing, Communities & Local Government (2021), National Planning Policy Framework.
- The Association of Noise Consultants (2012), ANC Guidelines: Measurement & Assessment of Groundborne Noise & Vibration;

7.9 GLOSSARY

Term	Definition
Background sound level	The A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval. Expressed as LA90,T and generally considered to be the average minimum noise level.
Façade Level	The sound level at a position 1 m in front of a reflecting façade of a building. The façade noise level is assumed to be 3 dB(A) higher than the level measured or predicted at the same position but without the influence of the reflecting façade.
Free-field Level	The sound level in an open area well away from any buildings or other sound reflecting surfaces other than the ground. Generally, the minimum distance from building facades required for free-field measurements is 3.5 m.
$L_{Aeq,T}$	The equivalent continuous A-weighted sound or noise level over the time period (T). This is the A-weighted sound pressure level of a continuous, steady sound that, over the given time period (T), contains the same sound energy as the actual fluctuating sound over the same time period.
$L_{A90,T}$	This is the 'A' weighted noise level exceeded for 90% of the measurement period, T. This is often described the background sound or noise level, and used to quantify the underlying level of sound which is usually governed by continuous or semi-continuous sounds.
Vibration dose value (VDV)	A measure of the amount of vibration that is experienced over a specified period. It is used to determine the likelihood of adverse comments regarding vibration. Mathematically it is defined as the integral over time of the fourth power of the frequency-weighted, time varying vibration acceleration magnitude multiplied by the duration, all to the fourth root. Its units are $mm^{-1.75}$.

7.10 LIST OF APPENDICES (ES VOLUME III)

Reference	Title
Appendix 7-A	Glossary of Acoustic Terms
Appendix 7-B	Noise Survey Equipment Details
Appendix 7-C	Construction Noise and Vibration Prediction Data
Appendix 7-D	PPG:N Noise Exposure Hierarchy Table
Appendix 7-E	Noise Survey Results
Appendix 7-F	Site Suitability Assessment

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7.11 NON-TECHNICAL SUMMARY

Introduction

7.11.1 The noise and vibration chapter has predicted and assessed the potential effects of the demolition works associated with the proposed development, which are anticipated to represent the worst-case in terms of the potential effects of noise and vibration from the overall construction process. It also sets out target noise levels for fixed plant installations and entertainment premises to be referenced in the design to avoid significant adverse effects.

7.11.2 As well as comments received via the EIA Scoping opinion, direct liaison with the MCC Environmental Protection Section was undertaken to confirm the approach to the baseline noise survey and assessment methodology.

7.11.3 A baseline noise survey was undertaken at the site in May 2023 in order to obtain noise data to inform the assessment and derive the target levels for fixed plant and entertainment noise.

Demolition and construction effects and mitigation

7.11.4 While based on preliminary data, significant effects from the noise associated with the demolition works have been predicted at the nearest noise sensitive receptors around the site, with a major adverse level of significance being indicated. Mitigation measures will be confirmed via an Outline Demolition Environmental Management Plan (ODEMP) and an overarching Construction Environmental Management Plan (CEMP). Measures will include the selection of quieter plant and methods as far as is practicable, and the use of screening and enclosures to reduce noise levels at the receptors.

7.11.5 Vibration arising from vibratory ground compaction has also been predicted, but no significant effects have been identified with a minor adverse level of significance being indicated.

Operational effects and mitigation

7.11.6 Target noise levels have been defined for fixed plant installations and entertainment premises that will be part of the proposed development. Achievement of these target levels would avoid significant adverse effects.

Residual effects and conclusions

7.11.7 With the mitigation measures to be included in the ODEMP and CEMP in place, no significant residual effects from construction noise and vibration associated with the demolition works are expected, with only a minor adverse level of significance being indicated for both.

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Appendix H

Noise Monitoring Plan

Noise Monitoring Plan

PF10-PR10-10-F026

Project: University of Manchester, Fallowfield Campus

This Noise Monitoring Plan should be utilised for the purpose of streamlining Noise Monitoring on site, with the ultimate objective of achieving effective management of nuisance noise. The Plan should be completed by a member of the Site Management Team, with advice and assistance obtained from the Project Environmental Manager.

1.0 NOISE RISK CLASSIFICATION: MEDIUM RISK

Insert a noise risk classification, based on the risk classification diagram detailed below

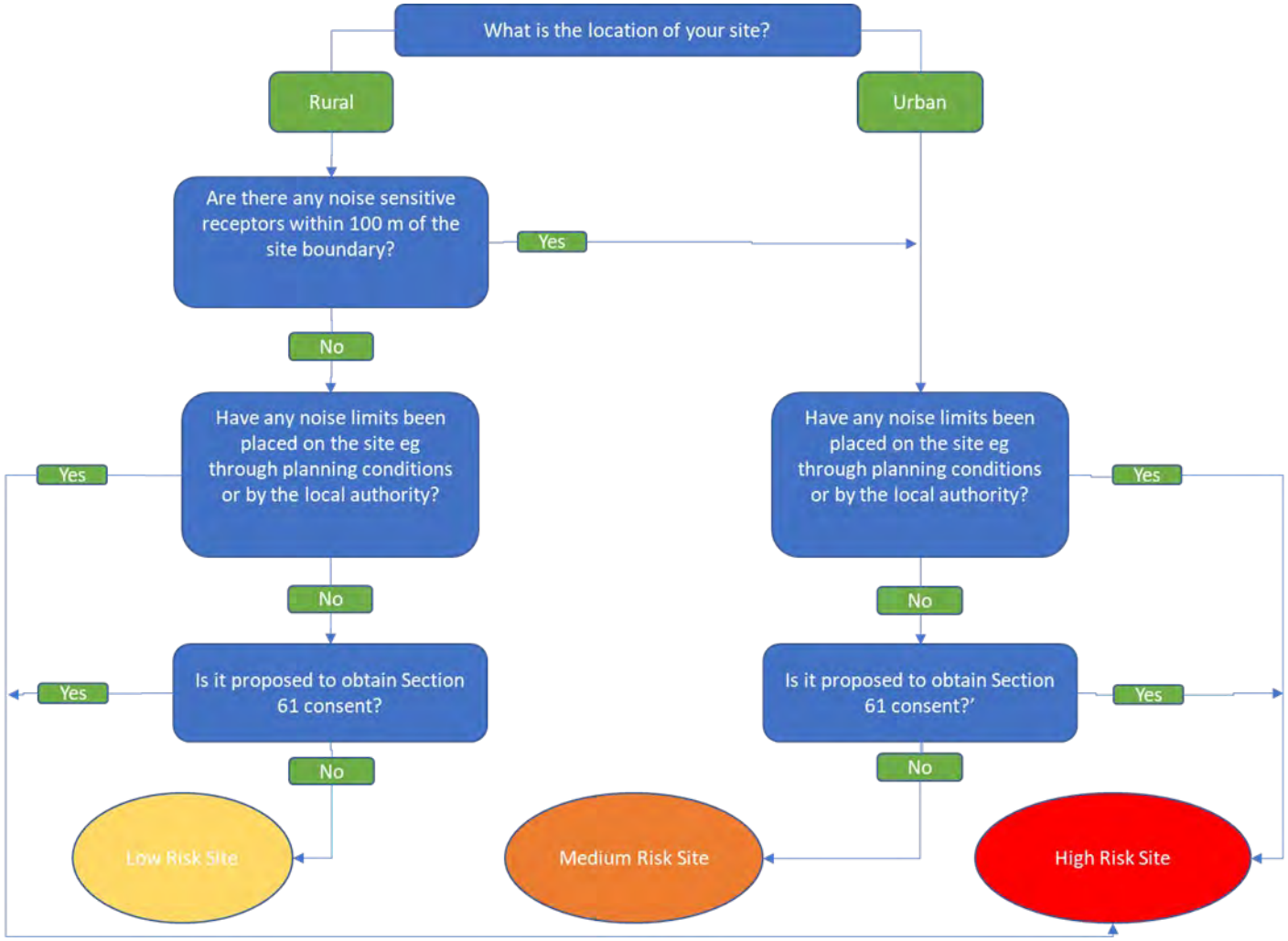


Figure 1 - Noise risk classification diagram

2.0 NOISE FORECAST:

Construction noise can have effects on the surrounding neighbourhood. The effects are varied and are complicated further by the nature of the Site works. Activities on site which could give rise to construction related noise impacts include (but are not limited to).

- Site preparation i.e. ground excavation, levelling of ground, trenching, trench filling, unloading and levelling of hardcore and compacting filling
- Construction of the Proposed Development including piling, construction of access roads, fabrication processes e.g. planning, sanding, routing, cutting, frilling and laying foundations

The predicted noise levels for the demolition works at each receptor and the subsequent assessment against the relevant LOAEL and SOAEL thresholds were presented within the Environmental Statement for Fallowfield's Campus Redevelopment Project (Buro Happold).
LOAEL is defined as the lowest observed adverse effect level, where as SOAEL is defined as the significant observed adverse effect level. The effect level thresholds and significance criteria for construction noise are;

Effect Level	Time Period	Threshold value (dB $L_{Aeq,T}$ dB)[2]
LOAEL	Working day	65
SOAEL	Working day	75

The noise predictions for works at each receptor and the subsequent assessment against the LOAEL and SOAEL are outlined below.

Receptor	Predicted Noise level for demolition activity (dB $L_{Aeq.T}$ façade)			Exceedances of LOAEL?	Exceedances of SOAEL?
	Soft Strip	Demolition	Filling & Leveling		
North	73	85	84	Yes	Yes
East/South	64	77	75	Yes	Yes
West	63	76	74	Yes	Yes
On-Site (North/South)	70	83	82	Yes	Yes

Several of the predicted worst-case demolition noise levels exceed the SOAEL, particularly in the case of the demolition activity itself.
As the noise levels represent the worst-case in terms of distance to receptors, it is reasonable to assume that they would occur for a relatively short time and be lower for most of the time when the works are further away.
However, based on the available information, it is considered likely that demolition noise will result in significant adverse effects at the closest receptors to the site.

3.0 PRE-CONSTRUCTION BASELINE NOISE MONITORING:

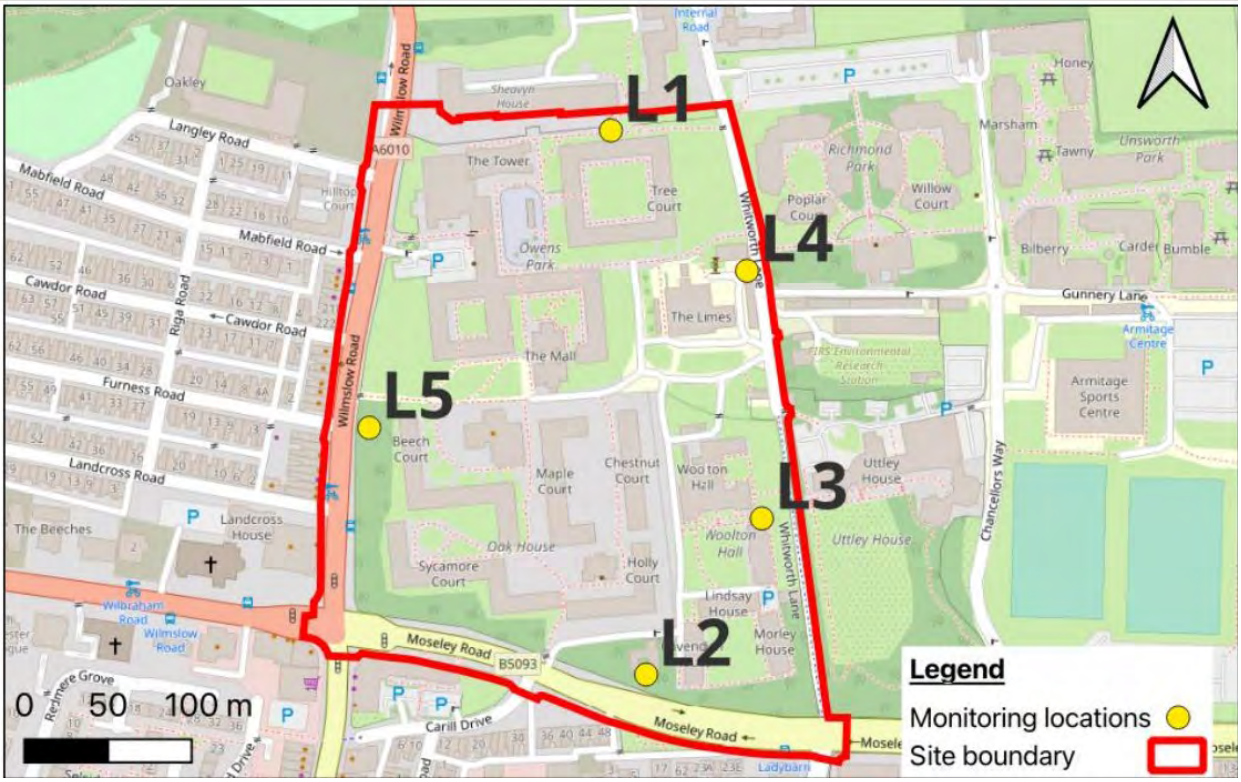
In order to provide a baseline from which to determine the impact of construction related noise, pre-construction noise monitoring should be undertaken at the site boundary and any other relevant locations i.e., closest noise sensitive receptors.

Should a Noise Impact Assessment or Environmental Impact Assessment have been completed as part of the planning process, baseline data may be available within this documentation.

Details of baseline surveys

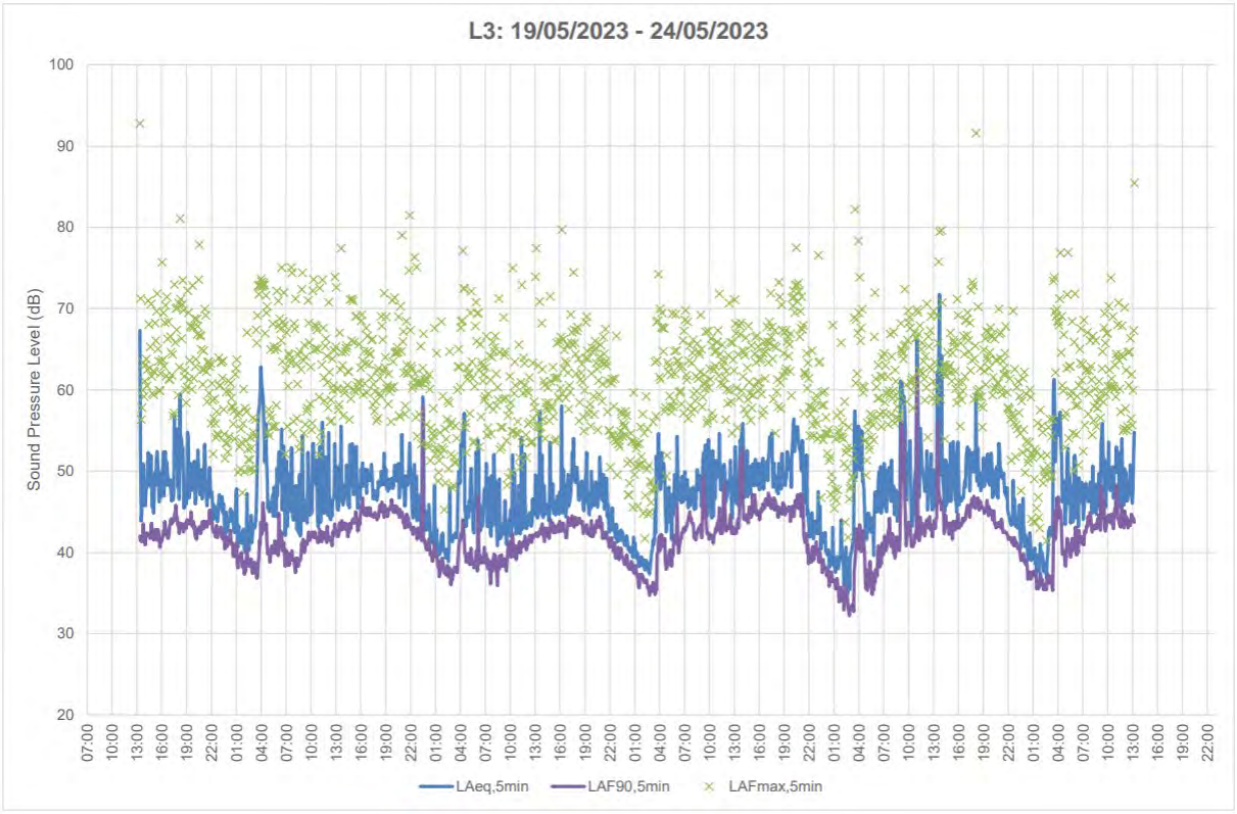
- Baseline noise surveys were undertaken between Friday 19th and Wednesday 24th May 2023 by Buro Happold and between Wednesday 10th and Friday 11th September 2024 by Cundall.

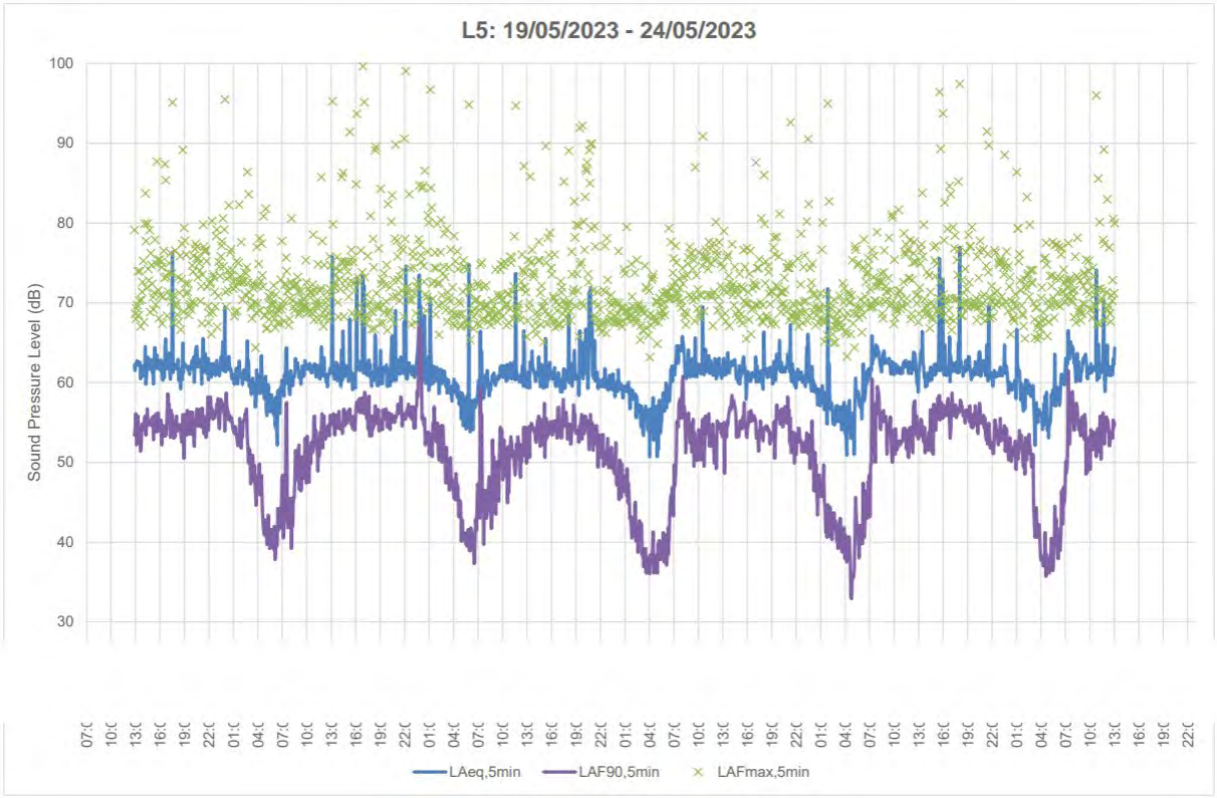
- The noise monitoring locations for the Buro Happold Survey are presented below



- L2, L3 and L5 were continuous unattended monitoring
- L1 was a short-term attended noise monitoring during the morning of Friday 19th May 2023.
- L4 was found to be dominated by noise from local fixed plant, which is to be removed as part of the works, and therefore was not used to measure noise levels
- During the noise survey, it was observed that the noise dominated by road traffic noise, with the A6010 Wimslow Road dominant on the north and west sides of the site, the B5093 Mosely Road at the south of the site, and contributions from both roads at the east of the site. Other noise sources noted included occasional aircraft overhead and fixed plant noise.

- The results of the baseline noise measurements are presented below

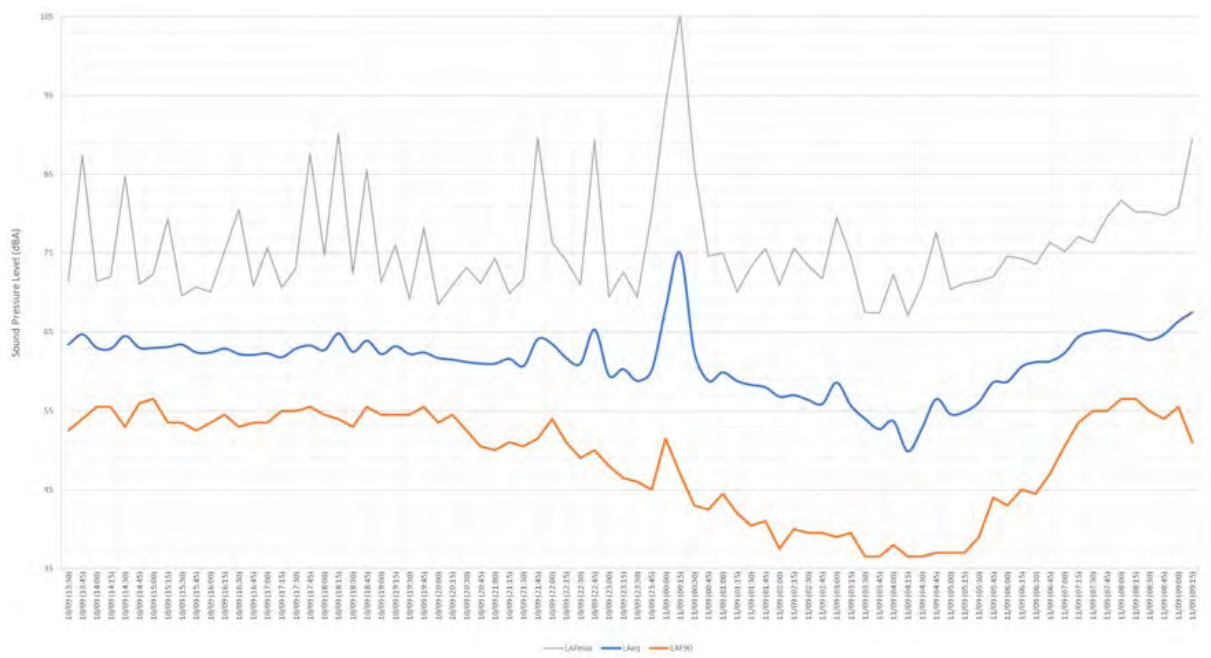

L3: 19/05/2023 - 24/05/2023
Sound Pressure Level (dB)
LAeq,5min
LAF90,5min
LAFmax,5min

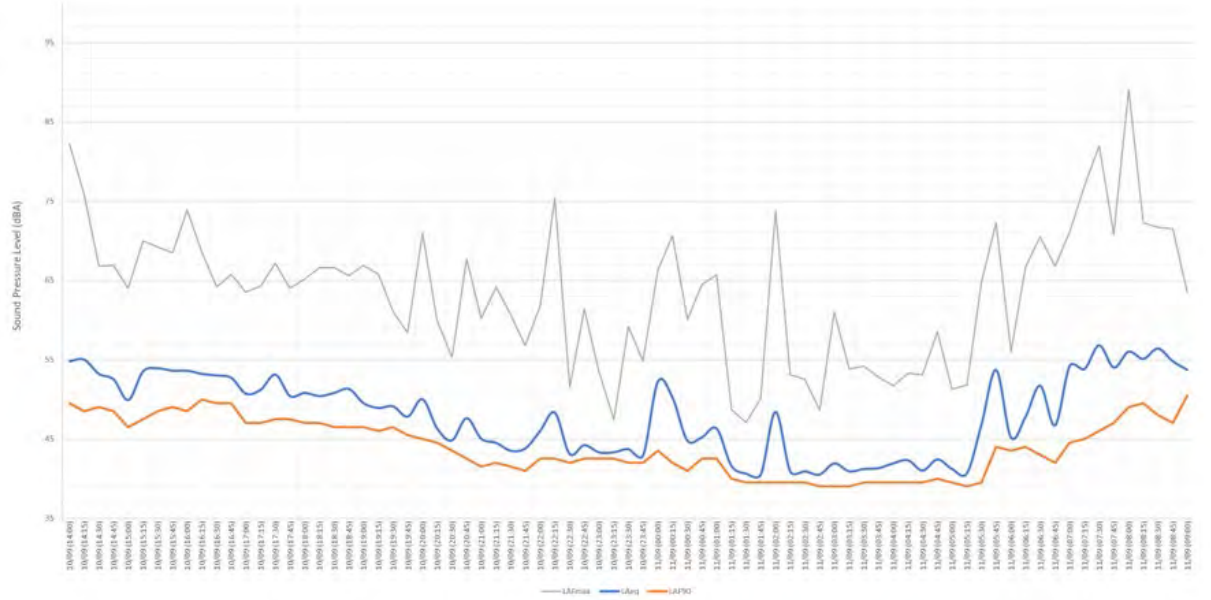

L5: 19/05/2023 - 24/05/2023
Sound Pressure Level (dB)
LAeq,5min
LAF90,5min
LAFmax,5min

- The noise monitoring locations for the Cundall Survey are presented below



- Both position MP1 and MP2 were continuous unattended monitoring
- Position MP1 was positioned out of a first floor window of Woolton Hall, overlooking Mosley Road. Road traffic along Mosley Road was noted to be the dominant noise source at this position.
- Position MP2 was positioned out of a first floor window of Richmond Park to the north east of the proposed development boundary. Distant road traffic from the surrounding network, primarily Wilmslow Road and Mosley Road was noted to be the dominant noise source at this position.
- The results of the baseline noise measurements are presented below





Details of noise and vibration receptors

- The site has existing residential accommodation in proximity to the boundary on all sides, both private dwellings and student residences.

Receptor	Distance to site boundary/works	Representative of properties including
North	15 m	Sheavyn House
East/South	40 m	Richmond Park, Utterly House / Properties on Mosely Road
West	45 m	Properties on Wilmslow Road
On-site (north/south)	20 m	Maple Court (southern half of site), new accommodation buildings (north half of site)

Details of possible noise and vibration impacts and assessment

The Main Noise and Vibration sources relevant to the works are:

- Building soft strip
- Demolition of building and foundations
- Crushing of arisings
- Filling of voids and site levelling
- Construction Noise
- Construction Traffic Noise
- Construction Vibration

According to baseline noise survey the Noise effects during demolition are likely to result in significant adverse effects at the closet receptors to the site

4.0 CONSTRUCTION NOISE LIMIT THRESHOLD LEVELS:

There are no construction noise limit threshold levels specified within the contract documents or included within the planning conditions provided by Manchester City Council

In the absence of any contractual or consented noise limits, BS5228-1 provides guidance on significance criteria for assessing the potential noise impacts associated with the construction phase of large projects (for daytime works only). Where no other significance criteria has been set by the local authority, the BS5228-1 ABC Method (outlined below) can be utilised.

The ABC Method for determining significance criteria requires the ambient noise levels at existing sensitive receptors to be determined. The ambient noise levels at each existing receptor location are then rounded to the nearest 5dB(A) to determine the appropriate threshold value in accordance with the category value, A, B or C as detailed below.

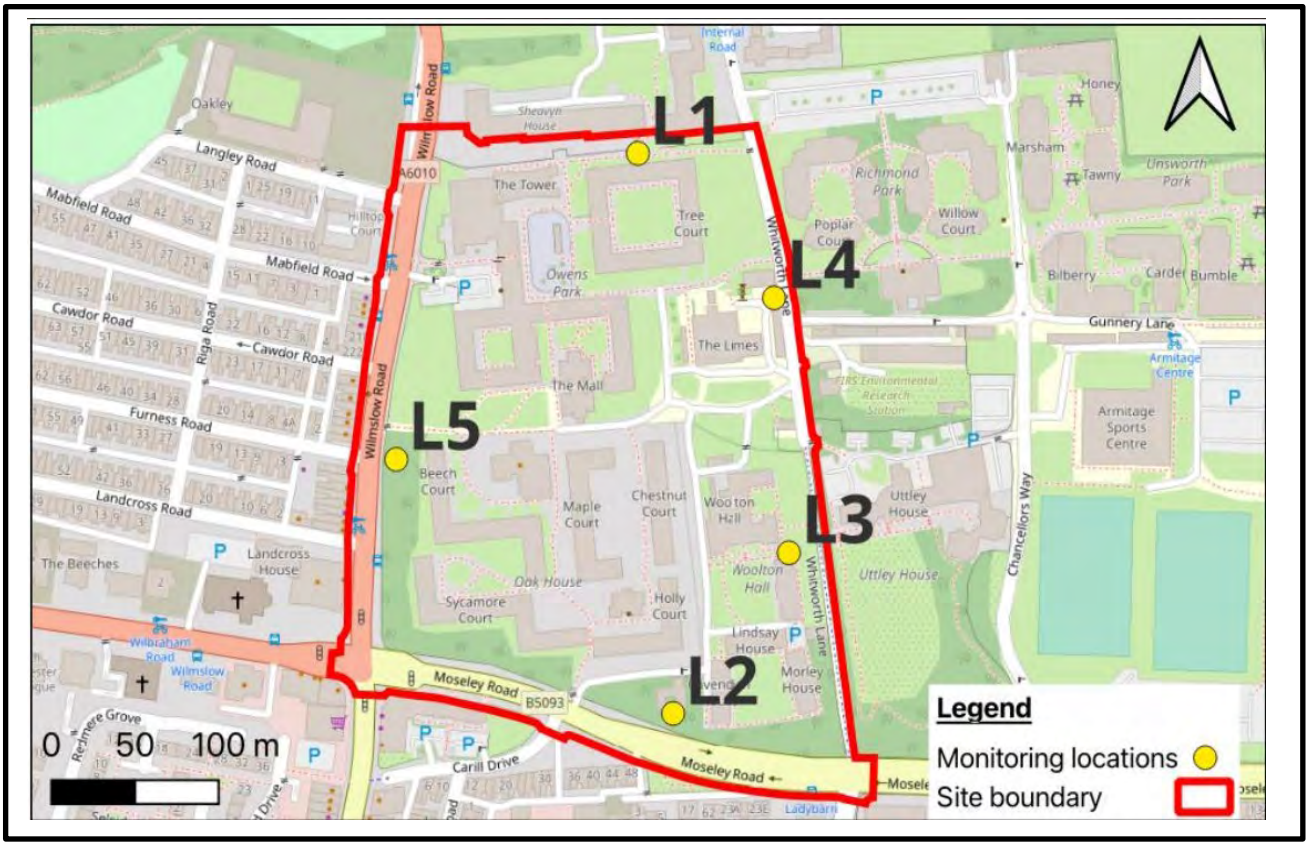
Assessment Category and Threshold Value Period (LAeq)	Threshold Value, in decibels (dB)		
	Category A *1	Category B *2	Category C *3
Daytime (0700 to 1900 hours) and Saturdays (0700 to 1300 hours)	65	70	75
*1 Category A: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than this value.			
*2 Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as Category A values.			
*3 Category C: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than Category B values.			

The above noise threshold values are intended as a guide to indicate when construction related noise has potential to cause a nuisance to local noise sensitive receptors.

Where predicted or monitored construction noise levels are in exceedance of the noise threshold levels above, enhanced noise mitigation must be considered for implementation on site.

5.0 CONSTRUCTION PHASE NOISE MONITORING:

No site is completely without risk of complaint of nuisance arising from construction activities, particularly if there are noisy or night time works taking place. Implementation of Best Practicable Means as detailed in the Construction Environmental Management Plan will help to minimise the risk. However we must also undertake noise monitoring in order to be in a position to robustly defend ourselves against any enforcement action.



5.1 Low risk sites

For sites that have been classified as low risk, site teams can opt to undertake noise monitoring internally. Noise monitoring should be undertaken periodically during noisy and night time works. Results should be recorded on the Noise Monitoring Report and records retained on site.

5.2 Medium risk sites

For sites that have been classified as medium risk, site teams can opt to undertake noise monitoring internally. Noise monitoring should be undertaken regularly throughout normal construction activities and during noisy and night time works. It is recommended that daily noise monitoring is undertaken at identified noise sensitive receptors and this frequency should be increased during noisy and night time works. Results should be recorded on the Noise Monitoring Report (IMS Ref: PF10-PR10-43-F030 Noise Monitoring Report Form) and records retained on site.

5.3 High risk sites

High risk sites are defined by a contractual or legal requirement to abide by specific noise conditions at all times unless stated as an exemption. As such the risk of prosecution or enforcement action at these sites is greatest and for that reason sites must have a robust monitoring system in place should a defence to any alleged breach of condition be required.

It is recommended that noise monitoring at high risk sites is continuous and outsourced. Monitoring equipment should be setup at pre-defined locations that are representative of the closest noise sensitive receptors. Should a Noise Impact Assessment or Environmental Impact Assessment have been completed at planning stage this may be used as a guide to identify relevant locations. Alternatively monitoring locations may be pre-determined by planning condition or as a condition of Section 61 consent.

6.0 ENVIRONMENTAL NOISE MONITORING GUIDELINES (For monitoring undertaken by site or SHE teams)

- Follow manufacturer's instructions for the correct use of the noise meter
- Ensure the site is operating under normal conditions during monitoring e.g. not during meal breaks.
- Use the Fast time weighting on the Noise meter
- Noise meter should be mounted on a tripod at a height of approximately 1.5 m from the ground.
- The microphone of the noise meter should be directed towards the noise source i.e the construction works.
- Where possible the noise meter should be placed at least 3 meters from any hard surface eg a wall or façade of a building. If this is not possible this should be recorded on the record proforma as façade (as opposed to free-field)
- Noise measurements should be undertaken for a time period of 20 minutes per location. At the end of the measurement period the LAeq, LA Max and LA01 parameters should be recorded in the GRAHAM Noise Monitoring Report Form (IMS Ref: PF10-PR10-43-F030 Noise Monitoring Report Form)
- The portable calibrator should be used to check the calibration of the meter prior to and after each measurement. The noise level from the calibrator should be recorded in the proforma. If the reading from the portable calibrator is +/- 1.0 dB difference from the specified level (usually 94dB or 104 dB – specific to the calibrator model) then the sound level meter should be manually calibrated following the instructions in the user manual.

7.0 MINIMUM STANDARDS FOR NOISE MONITORING EQUIPMENT

7.1 Minimum Standard Noise Monitoring Equipment (Low and Medium Risk Sites)

- Class 1 or class 2 integrating sound level meter (Lab calibrated every 2 years)
- Compatible portable calibrator (Lab calibrated every year)
- Tripod

7.2 Minimum Standard Noise Monitoring Equipment (High Risk Sites)

- 1 or more permanent unmanned noise meter erected in appropriate locations
- The capability for text or email alerts of breaches of specific noise limits to allow for immediate intervention.
- Data collated on an online portal such as Sonitus Cloud or equivalent. Any equivalent system should be comparable to the Sonitus system and allow for:
  - Viewing real-time data
  - The processing of hourly and daily averages
  - Customizable data output in line with the noise limit requirements of the site
  - The ability to generate reports
  - A user-friendly interface.

8.0 SUPPLIERS

Suppliers of Suppliers of Noise Monitoring Services include (GB): RVT, SRL, Campbell Associates, John F Hunt (London only): (NI/ROI) Sonitis, NVM Ltd. In addition, a small number of Class 1 Noise Monitors are available from GRAHAM Small Tools. These are suitable for use on high-risk sites when utilised in co-ordination with an online web-based platform providing suitable data analysis.


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