Preliminary Construction & Waste Management Plan

East Wall Road, Dublin 3

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# TABLE OF CONTENTS:

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 INTRODUCTION &amp; BACKGROUND</td>
<td>3</td>
</tr>
<tr>
<td>2.0 SCOPE</td>
<td>4</td>
</tr>
<tr>
<td>3.0 GENERAL SITE SET-UP</td>
<td>5</td>
</tr>
<tr>
<td>4.0 DEMOLITION AND CONSTRUCTION</td>
<td>6</td>
</tr>
<tr>
<td>4.1 SITE HOARDING</td>
<td>6</td>
</tr>
<tr>
<td>4.2 DEMOLITION</td>
<td>6</td>
</tr>
<tr>
<td>4.3 TEMPORARY WORKS</td>
<td>7</td>
</tr>
<tr>
<td>4.3 CONSTRUCTION</td>
<td>7</td>
</tr>
<tr>
<td>4.4 SURFACE WATER RUN-OFF</td>
<td>7</td>
</tr>
<tr>
<td>5.0 CONSTRUCTION WASTE MANAGEMENT PLAN</td>
<td>10</td>
</tr>
<tr>
<td>5.1 LEGAL REQUIREMENTS</td>
<td>10</td>
</tr>
<tr>
<td>5.2 WASTE HANDLING</td>
<td>11</td>
</tr>
<tr>
<td>5.3 PRIMARY WASTE STREAMS</td>
<td>12</td>
</tr>
<tr>
<td>5.4 ASSIGNMENT OF RESPONSIBILITIES AND TRAINING</td>
<td>13</td>
</tr>
<tr>
<td>5.5 WASTE RECORDING &amp; AUDITING</td>
<td>14</td>
</tr>
<tr>
<td>6.0 ENVIRONMENTAL MANAGEMENT</td>
<td>15</td>
</tr>
<tr>
<td>6.1 NOISE IMPACT ON SITE WORKERS &amp; STAFF</td>
<td>15</td>
</tr>
<tr>
<td>6.2 NOISE IMPACT ON THE SURROUNDING ENVIRONMENT</td>
<td>16</td>
</tr>
<tr>
<td>6.3 VIBRATION</td>
<td>19</td>
</tr>
<tr>
<td>6.4 DUST CONTROL</td>
<td>19</td>
</tr>
<tr>
<td>6.5 ROAD CLEANING / WHEEL WASHING</td>
<td>22</td>
</tr>
<tr>
<td>6.6 ODOUR CONTROL &amp; LIGHTING</td>
<td>24</td>
</tr>
<tr>
<td>6.7 ENERGY EFFICIENCY</td>
<td>25</td>
</tr>
<tr>
<td>6.8 TREES &amp; TOPSOIL SCREENING</td>
<td>25</td>
</tr>
<tr>
<td>7.0 TRAFFIC MANAGEMENT</td>
<td>26</td>
</tr>
<tr>
<td>7.1 SITE ACCESS</td>
<td>26</td>
</tr>
<tr>
<td>7.2 SITE PARKING, COMPOUND &amp; ACCESS CONTROL</td>
<td>27</td>
</tr>
<tr>
<td>7.3 SITE TRAFFIC</td>
<td>28</td>
</tr>
<tr>
<td>8.0 APPENDIX A</td>
<td>29</td>
</tr>
</tbody>
</table>
1.0 INTRODUCTION & BACKGROUND

This report has been prepared by POGA Consulting Engineers on behalf of EWR Innovating Park Ltd as part of Strategic Housing Development (SHD) planning application to An Bord Pleanála for a site at East Wall Road, Dublin 3.

This Construction Management Plan is for the works associated with the proposed development at the IDA Business Park, East Wall Road, Dublin 3.

The proposed development comprises of the demolition of the existing buildings on site (excluding Unit 11, 15 and 16) and the construction of 336 no. residential apartment units. The proposed development also includes the provision of a retail unit, creche, café/restaurant and office accommodation, as well as resident amenity spaces such as concierge, gym and roof terraces. The proposed development will also include public open space, hard and soft landscaping, basement car and bicycle parking and all other ancillary works necessary to facilitate the development.

The proposed development includes for the demolition of a number of the existing blocks.
2.0 SCOPE

The construction management issues dealt with in this plan include noise and vibration, site traffic management, working hours, pollution control, dust control, road cleaning, compound / public health facilities and staff parking.

This EW CMP is a “live” document and should be updated and developed by the developer and their main contractor as the scheme progresses.

This plan has been prepared in accordance with the “Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects” (Department of Environment, Heritage and Local Government, July 2006).

It is likely that the proposed development will be constructed over a 2 year period; however, market conditions and sales at the time will likely dictate the construction programme.

Part of the scheme involves the demolition of some of the existing commercial blocks.

Road opening licence will be sought from DCC where the works front onto or cross the existing public road network. In consultation with DCC Roads Department, the building line has been set back to accommodate future road widening and the introduction of a cycle lane on East Wall Road.

The report should be read in conjunction with other consultants’ reports and drawings.
3.0 GENERAL SITE SET-UP

The Contractor’s shall provide to DCC a Final Construction Management Plan & Waste Management Plan and these plans shall ensure the findings and recommendations of this plan, planning conditions, all Environmental and Ecological impact assessment are taken into account.

No parking of construction related vehicles will be allowed on the adjoining road network. Adequate parking facilities will be made available within the Construction Compound for all site staff and workers during the construction.

No muck, dirt, debris or other material shall be deposited on the public road or verge by machinery or vehicles travelling to or from the site during the construction phase. The contractor is to arrange for vehicles leaving the site to be kept clean and muck shifting shall be done in dry weather where possible.

The contractor shall provide a condition survey of the public infrastructure that could be affected by construction activities on the site.

Controlled access to the site will be in the form off gates of the existing internal roads on the site. These gates will be monitored by site personal, separate pedestrian gates will be provided. Site access to the existing commercial unit will be maintained during the works. Roads will be monitored for muck, dust and debris and road sweepers will be used as appropriate.

During the demolition phase, temporary Heras fencing will be installed along the site perimeter. The Heras fencing in additional to site workers acting as “spotters” will provide protection to the public from debris and dust. The Heras fencing will be dismantled in a phasing sequence as the demolition is carried out & the hoarding is being erected.
4.0 DEMOLITION AND CONSTRUCTION

4.1 SITE HOARDING

The site will be secured with a solid 2.4m high hoarding erected along the site boundary. The hoarding will be used to secure the site and will assist with the control of dust and debris containment throughout the main structural works. The hoarding around the site will ensure the construction works are contained within the site boundary and cause no disruption to any adjacent properties, traffic or passing pedestrians.

4.2 DEMOLITION

The Contractor will deploy a demolition permit system to ensure that all control measures are in place prior to commencing the demolition works. A service detection survey will be carried out to confirm the presence of any live services along the perimeter structure. All services will be removed during the soft strip works following their disconnection and capping. Mechanical protection will be placed over permanent electrical assets.

The demolition works will commence with the removal of vegetation and the soft strip of gates and loose structural components.

Demolition Contractor will provide a detailed Risk Assessment Method Statements (RAMS) for the scope of works. High reach “Cherry pickers” will be used for access at height and complete a saw cut at all the separation line of the concrete structure in small manageable sections.

Excavators will be used to push the perimeter wall internally towards the construction site. Protection will be placed on the public surfaces for protection. Dust will be controlled with water spray. All demolition waste will be transported inside the construction site for segregation and disposed off-site to licensed disposal facilities for processing and recycling where possible. All materials will be loaded into specific waste skips which will be allocated to certain waste streams for recycling purposes. The waste materials will be segregated on site into four different categories:

- Clean rubble
- Scrap metal
- Mixed C&D waste

Refer to the Section 5.0 for Construction Waste Management Plan for details of the waste handling and waste streams. As there is significant fill to be provided to bring up the levels to above the 1 in 200 year flood event, where possible the clean rubble and concrete will be reused as general site fill.

4.3 TEMPORARY WORKS

Prior to commencing demolition works, a structural survey will be conducted to ensure that the public road, and adjacent school and residential properties, are not at risk of being undermined.

The temporary works coordinator will ensure that structural support works are designed and installed on adjoining structures prior to commencing demolition. Full height perimeter hoarding / scaffolding / structural ground supports will be installed along the party walls as required. Once all required temporary works are installed demolition will commence using ‘work down’ methods i.e. small plant and machinery demolishing.

4.4 CONSTRUCTION

The proposed development consists the construction of 336 residential units in six blocks. The proposed development also includes the provision of a retail unit, crèche, and café/restaurant and office accommodation. The development also includes resident amenity spaces such as concierge, gym and roof terraces.

The development will also include significant landscaping works comprising of hard and soft landscaping, provision of public and communal open spaces, new internal roads and new boundary treatments.

As part of the development a single storey basement is proposed over part of the site. This basement will accommodate 195 parking spaces to service the apartments and retained units.
The topography of existing site slopes away from the East Wall Road on the northern elevation from a level of approximately 3.4mOD to a level of 1.4mOD at the southern side of the site. This represents a slope of 1 in 64 across the site. The proposed finished floor levels (FFL) for the Block adjacent East Wall Road is 3.6mOD, while the remaining blocks have a FFL of 3.3mOD to ensure the blocks remain above the 1 in 200 year flooding event. The FFL of 3.3mOD is significantly above the existing site levels and therefore the proposed basement will be only part buried in the original ground, with approximately 1-1.5m located above current ground levels at the southern end of the site. This will reduce the amount of material to be removed from the site.

It is proposed that the basement will be constructed using a waterproofed concrete retaining walls and basement slab with deepening at the edges and under internal columns and walls to support the building above. Design to be undertaken to IS EN 1992-1. The building will be supported on Continuous Flight Auger (CFA) piles extending around and under the basement footprint. The design will be undertaken to IS EN 1997-1:2004 (EC7) and the Irish National Annex.

In order to complete the excavation it will be necessary to first provide a Cantilever Secant Pile Wall around the perimeter to prevent water and fines seeping into the excavation. Secant pile wall consists of an alternative soft and hard pile drilled around the full perimeter of the excavation. The primary (or soft) pile is drilled first on a hit a miss basis and extends to below the basement excavation line and are normally unreinforced, the secondary (or hard) pipe is then drilled between the soft piles and removes part of this pile forming a continuous wall. The hard piles are normally reinforced for their full length, or as required by the design and provide the cantilever requirement for the temporary excavation.

The proposed method of construction will not affect neighbouring structures as adequate support is maintained at all times. This construction methods means that the secant piled wall is installed and concreted without any excavation or loss of support to neighbouring structures. This piled wall will be designed to accommodate all horizontal forces in the permanent condition as construction is carried out in a ‘top down’ basis.

The use of a cantilever temporary wall will allow the basement to be excavated safely and avoid the need for any diagonal ground anchor installation into the site or third
party private or public lands. Therefore, no Ground Anchor Installation License (GAIL) will be required.

Above basement level the buildings will be constructed from insitu or precast concrete floors and walls, and clad in brick, render and/or as noted on the Architects drawings.

For the duration of the proposed building works the maximum working hours shall be 07:00 to 18:00 Monday to Friday (excluding bank holidays) and 08:00 to 14:00 Saturdays, subject to the restrictions imposed by the local authorities. No working will be allowed on Sundays and Public Holidays. Subject to the agreement of the Local Authority. Out of hours working may be required for the watermain and drainage connections and final junction/road upgrades.

4.5 SURFACE WATER RUN-OFF

All surface water runoff during the construction phase will be managed by collecting such runoff in a closed pipe system and diverting it toward a settlement tank. Only clean water taken from the top of the settlement tank, after passing through a series of baffles, and allowing for sufficient time for the sediments to drop to the bottom of the tank, will be allowed discharge to the public piped network. Surface water run-off from wheel washing and dust suppression will also be directed towards this tank.

The the discharge point and volumes will be done by agreement with DCC.
5.0 CONSTRUCTION WASTE MANAGEMENT PLAN

EWR Innovation Park Ltd will appoint an approved certified and licensed carrier to remove waste from the East Wall Road Site, Dublin 1. POGA Consulting Engineers have prepared the Construction Waste Management Plan (CWMP) at planning stage for the overall framework for the management of all the waste arising on construction phase. Operational waste management from the end use will be provided by the management company when appointed.

The purpose of this plan is to ensure that:

1. Where practicable, the company segregates, re-uses and maximises the level of waste which is recovered.
2. Waste disposal costs are reduced and that the company’s target reduction in waste.

Disposal is achieved by:

1. Hazardous waste is managed safely and in accordance with legislation regarding disposal, transportation, records and reporting.
2. All waste is handled by licensed contractors.
3. Full records of waste (including hazardous waste) consignments are maintained.
4. Waste management practices of the Client will be in compliance with applicable legislation.

This procedure applies to the management, disposal and recording all wastes generated whether hazardous or not. It also applies to the approved waste contractors used by the Client.

5.1 LEGAL REQUIREMENTS

No. 73 of 2000).

5.2 WASTE HANDLING

The primary aim of this CWMP is to ensure that the wastes generated during the course of the project are managed in accordance with the governing Waste Management Legislation and the principles of Waste Hierarchy i.e. prevention, minimization, reuse, recovery and recycling.

Under the Waste Management (collection Permit) Regulations 2007 a waste collection permit, for the appropriate code(s) and destinations, is required by a waste hauler to transport waste from one site to another. Compliance with the Waste Management (Movement of Hazardous Waste) Regulations, 1998 is also required for the transportation of hazardous waste by road. The export of waste from Ireland is subject to the requirements of the Waste Management (Shipment of Waste) Regulations, 2007. The Contractor will ensure that the transport and movements of all wastes are carried out in compliance with these requirements.

Waste will only be treated or disposed of at facilities that are licensed to carry out that specific activity (e.g. recycling, landfill, incineration etc.) for a specific waste type. Records of all waste movements and documentation should be held on site.

In order to prevent and minimize the generation of wastes, the Contractor will ensure that raw materials are ordered so that the timing of the delivery, the quantity delivered and the storage is not conducive to the creation of unnecessary waste. By following a “just in time” approach, this decreases waste, utilises storage space better, reduces potential losses and damage as well as making the site safer.

The construction work planning will be carried out closely with the waste management contractors, in order to determine the best techniques for managing waste and ensure a high level of recovery of materials for recycling. The Contractor will continuously seek to improve the waste management process on site during all stages of construction and maximize opportunities for reuse or recycling where they exist.
5.3 PRIMARY WASTE STREAMS

A brief overview of the methods to manage the primary waste streams expected is presented below. The main types of construction waste produced will be:

**Concrete, Blocks and Bricks**

Waste concrete, blocks and brick will arise during the construction phase. Where possible, this waste will be removed off site to a remote facility and recycled for reuse. Where this cannot be achieved the waste may be crushed and screened and used as fill within the project area where appropriate to do so.

**Metals**

Where possible all steel and non-ferrous metals will be transported to a metal processing facility for recycling. Skips will be provided for the storage of scrap metal on site and once full will be removed by the waste storage contractor and transported to a metal recycling processing facility located in Newry, County Down.

**Timber**

Timber waste will be stored separately as it is readily contaminated by other wastes and if it is allowed to rot will reduce the recyclability of the other stored wastes. Any pallets will be returned to the supplier for reuse. Offcuts and trimmings will be used in the formwork where possible. The waste wood will be collected by a waste contractor who will transport it to a wood recycling facility for chipping.

**Plasterboard**

Waste plasterboard from the construction phase will be segregated and stored on site prior to transportation to a recycling facility. The plaster board waste will be processed to produce a recycled gypsum product.

**Other wastes (Residual)**

Waste materials other than those outlined above can constitute a significant proportion of the total waste generated by a construction site. This waste is normally made up of residual non-recyclable waste such as soiled paper, cloth, cardboard or plastics as well
as canteen waste including food. This material will be stored in dedicated waste containers. Container size and collection frequency will be assessed as works proceed.

5.4 ASSIGNMENT OF RESPONSIBILITIES AND TRAINING

C&D Waste Manager

A Construction and Demolition Waste Manager (CDWM) will be appointed. The CDWM will have overall responsibility for the management of waste on site. The CDWM will have experience in all aspects of site logistics including waste and materials management. Project goals will include:

- Distinguish reusable materials from materials suitable for recycling
- Ensure maximum segregation at source;
- Co-operate with site manager on best locations for stockpiling reusable materials;
- Separate materials for recovery; and
- Identify and liaise with operators of recovery outlets

The CDWM will be responsible for educating all site staff, sub-contractors and suppliers about the available alternatives to conventional waste disposal. The CDWM will continually identify waste minimization actions on site and these will be updated in the plan.

Training

Copies of the Waste Management Plan will be made available to all personnel on site. All site personnel and subcontractors will be instructed about the objectives of the Waste Management Plan and informed of the responsibilities which fall upon them. This will typically be carried out during the induction process for all new site staff and subcontractors. Where source segregation and material reuse techniques apply, each member of staff will be given instructions on how to comply with the Waste Management Plan. Site notices will be in place to reinforce the key messages of the Waste Management Plan and will be displayed prominently for the benefit of all site staff.
5.5 WASTE RECORDING & AUDITING

Waste Records

Full details of all construction waste discarded from site will be recorded during all stages of the project. Each consignment of C&D waste removed from the site will be documented in the form of a Waste Movement Records which will ensure full traceability of the material to its final destination. Printed documents/records from waste disposal companies quantifying exact amount of waste materials removed from site will also be received. This sheet from the disposal company will also identify how much material went to landfill and how much went for recycling. All such records will be retained in a designated location on site and made available for auditing of the waste management plan. All waste logs will be available in up to date digital formats for inspection.

Waste Auditing

To ensure quality, effectiveness and efficiency, the Contractor implement a Quality Environmental Management System (QEMS) (ISO 14001 approved) on all projects. Key implements of this QEMS include:

- A regime of internal and external audits, consisting of a systematic study of all waste management practices which have been adopted on-site.
- Monthly environmental audit, which will highlight corrective actions that will be taken in relation to management polices of site practices in order to bring about further waste reductions.
- Waste walks, part of our “Lean Approach” to the project, will be carried out to identify opportunities for waste reduction.
6.0 ENVIROMENTAL MANAGEMENT

6.1 NOISE IMPACT ON SITE WORKERS & STAFF

The developer and their main contractor are responsible for dangers associated with high noise levels and the impact of the noise levels on the construction workers and site staff.

During the construction works the Contactor shall comply with:

- BS 5228: 2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites, Part 1 and Part 2. 1
- Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRS, Revision 1, 2004)

It is not foreseen that any excessively noisy activities will be carried out over the entire construction duration. However, due to the nature of the construction, exposure to noise levels in excess of 80 dBA (Safe Working Limit) can sometimes occur. The Main Contractor will carry out a noise assessment in relation to each element of the proposed works at construction stage and control measure will be implemented, these control measures shall include the following:

- The site management team shall assess risk arising from noise prior to each construction activity taking place and describe the action needed to be done. The purpose of this is to minimise the exposure of all workers and site staff to excessive noise levels.
- The site management team shall ensure the proposed control measures are put in place and that their effectiveness and suitability is evaluated on regular a basis.
- The site management team will look at the method of works and selected constructed techniques that will make the work quieter, an example would be using off site construction.
• If the noise exposure surpasses 80 dBA $L_{E,A}$, 135 dB peak, then hearing protection is mandatory.
• If it is likely that the noise exposure surpasses 85 dBA $L_{E,A}$, 137 dB peak, then hearing protection is mandatory.
• Avoid unnecessary revving of engines and switch off equipment, generators, etc when not required.
• Minimise drop height of materials.
• Start-up plant sequentially rather than all together and use silencers where possible.
• Make sure all workers use hearing protection where it is mandatory to do so.

6.2 NOISE IMPACT ON THE SURROUNDING ENVIRONMENT

Construction Phase
The contractor will installed a monitoring scheme for noise, vibration and dust as part of the construction works. Baseline levels will be monitored for noise and vibration prior to any works commencing on site and will continue through demolition phase to completion. Noise monitors (M1, M2, M3 & M4) will be continuous throughout the process. Refer to Figure 6.1 below for approximate locations.

![Figure 6.1 Proposed Noise and Vibration monitoring locations](image-url)
Overall acceptable levels of Construction noise for large construction projects are set out in the Transport Infrastructure Ireland (TII) publication Guidelines for the Treatment of Noise and Vibrations in National Road Schemes. The levels should not be exceeded at noise sensitive locations during the construction phase of the development. Table 6.1 below sets out these levels.

<table>
<thead>
<tr>
<th>Days and Times</th>
<th>Noise Levels (dB re. $2 \times 10^{-5}$ Pa)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$L_{Aeq,hr}$</td>
</tr>
<tr>
<td>Monday to Friday 07.00 to 19.00hrs</td>
<td>70</td>
</tr>
<tr>
<td>Monday to Friday 19.00 to 22.00hrs</td>
<td>60*</td>
</tr>
<tr>
<td>Saturdays 08.00 to 16.30hrs</td>
<td>65</td>
</tr>
<tr>
<td>Sundays &amp; Bank Holidays 08.00 to 16.30hrs</td>
<td>60*</td>
</tr>
</tbody>
</table>

Table 6.1 Maximum Permissible noise levels at the façade of dwelling during construction

*Note* Construction activity at these times, other than that required for emergency works, will normally require the explicit permission.

Belfast City Council Pollution Control Division’s document “Advise Note for Construction and Demolition Sites (2000) provides some suggestion target values for construction noise. These are set out in table 6.2 below.

<table>
<thead>
<tr>
<th>Days and Times</th>
<th>Noise Levels (dB re. $2 \times 10^{-5}$ Pa)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$L_{Aeq,hr}$</td>
</tr>
<tr>
<td>Monday to Friday 07.00 to 19.00hrs</td>
<td>75</td>
</tr>
<tr>
<td>Monday to Friday 19.00 to 22.00hrs</td>
<td>85</td>
</tr>
<tr>
<td>Saturdays 08.00 to 13.00hrs</td>
<td>75</td>
</tr>
<tr>
<td>Saturdays 13.00 to 22.00hrs</td>
<td>60</td>
</tr>
<tr>
<td>Night-time</td>
<td>40</td>
</tr>
</tbody>
</table>

Table 6.2 Maximum Permissible Noise Levels at the Façade of Dwellings during Construction (Belfast City Council)

Suggested threshold alert levels taking in the above in account are applicable at the nearest noise sensitive locations. These are noted in Table 6.3 below.

<table>
<thead>
<tr>
<th>Location</th>
<th>Alert Level</th>
<th>Noise Levels, $L_{Aeq,hr}$ (dB re. $2 \times 10^{-5}$ Pa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boundary with School</td>
<td>Amber</td>
<td>65</td>
</tr>
<tr>
<td>Boundary with Residents</td>
<td>Red</td>
<td>70</td>
</tr>
<tr>
<td>Boundary with School</td>
<td>Amber</td>
<td>70</td>
</tr>
<tr>
<td>Boundary with Residents</td>
<td>Red</td>
<td>75</td>
</tr>
</tbody>
</table>

Table 6.3 Proposed Noise Trigger levels.
Whenever an alert threshold level is exceeded, weather in respect of noise or vibration, the monitor in question will issue alerts by way of test message to designated recipients as follows:

- The company responsible for the monitoring;
- The main Contractor; and
- Any Sub-contractor nominated by the main contractor.

In the event of an alert being received, the following actions are to be taken:

- "Amber" - the contractor should assess activities currently taking place on the site and shall take steps to limit emissions where practicable; and
- "Red" - the contractor should conduct a detailed review of activities on the site, in particular those deemed responsible for the exceedance of the alert threshold level. In particular, it should be verified that noise & vibration control measures have been implemented in accordance with BS5228 and BAT. Additional measures should be considered and introduced as required. This may include possible plant replacement or alternative methods of working;

Where deemed necessary, supplemental information relating to measured levels of noise & vibration should be obtained through remote interrogation of the monitors by the company responsible for the monitoring programme. The contractor should maintain a log of alert threshold level exceedances along with details of subsequent investigations and any actions taken. Note that it is not incumbent upon the contractor to notify any other party of any alert threshold level exceedances unless they coincide with a disturbance being caused.

Comparison of the proposed plans with the surrounding area indicates that the closest area where significant works are to take place is approximately 25m from the nearest residential properties with the remainder of works taking place across the site at varying distances.

In order to assess a worst-case scenario to residential receptors, construction noise levels at distances of 25m have been used although a prediction to 10m distance is also provided as a reference. The calculations also assume that the equipment will operate for 66% of the 12-hour working day (i.e. 8 hours) and that a standard site hoarding,
typically 2.4m height, will be erected around the perimeter of the construction site for the duration of works.

The Contractor will make every effort to position noise plant where possible away from sensitive receptors, such as the neighbouring school on the western boundary and residential developments to the south and east. The Contractor will adhere to the working hours as set out in the grant of planning permission, unless a particular activity can only be done after hours and in agreement with DCC. All plant to be serviced and maintained in good working order to ensure noise production is kept to a minimum.

6.3 VIBRATION

Vibration limits to be applied for the construction works are those specified in Transport Infrastructure Ireland (TII) publication Guidelines for the Treatment of Noise and Vibrations in National Road Schemes. These limits are outlined below:

Allowable Vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:

- Less than 11HZ: 3mm/s
- 11 to 50 HZ: 3 to 8mm/s
- 50 to 110 HZ (and above): 8 to 11mm/s
- 110 HZ (and above): 11mm/s

All works on site shall comply with BS 5228 2009 which gives detailed guidance on the control of noise and vibration from construction activities. In general the contractor shall implement the following measures during the proposed infrastructure works:

A vibration monitoring scheme will be deployed for the duration of the works. Baseline levels will be monitored for vibration prior to any works commencing on site and will continue through demolition phase to completion. Vibrations monitors (M1, M2, M3 & M4) will be continuous throughout the process, refer to Figure 6.1 above for approximate locations.

The contractor shall closely monitor the vibration readings and stop work immediately when the above limits are exceeded. If the limits are exceeded on a continuous basis, the contractor shall evaluate and modify their methods of work to prevent exceeding the limits. In addition, complaints by neighbours or their representatives shall be
thoroughly investigated and appropriate measures put in place to ensure no reoccurrence takes place. The Engineer shall be informed immediately when the limits have been exceeded.

An independent firm specialist firm shall be employed by the contractor to monitor vibrations and the results of the monitoring shall be sent directly to the Engineer. The contractor shall be alerted by siren and/or text message if the limit is exceeded.

6.4 DUST CONTROL

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the possibility for nuisance dust. The proposed development is moderate in scale and thus the potential for dust soiling 50m from the source is possible. Table 6.4 contains an extract from the TII, Guidelines for the Treatment of Air quality During the Planning and Construction of National Road Schemes (2011).

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
<th>Potential Distance for Significant Effects (Distance from source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
<td></td>
<td>Soiling</td>
</tr>
<tr>
<td>Major</td>
<td>Large construction sites, with high use of haul routes</td>
<td>100 m</td>
</tr>
<tr>
<td>Moderate</td>
<td>Moderate sized construction sites, with moderate use of haul routes</td>
<td>50 m</td>
</tr>
<tr>
<td>Minor</td>
<td>Minor construction sites, with limited use of haul routes</td>
<td>25 m</td>
</tr>
</tbody>
</table>

*Significance based on the 2005 standard, which allows 35 daily exceedences/year of 50 µg/m³*

Table 6.4 - TII Assessment criterial for the impact of Dust Emissions from construction activities.

The critical values are concentrating on particles of dust which are less than 10 microns (PM10) and less than 2.5 microns (PM2.5). The EU ambient air quality standard sets out ambient air quality limit values for PM<sub>10</sub> and PM<sub>2.5</sub> values and these limits are noted below in Table 6.5.
Table 4.1  Air quality standards for the protection of health, as given in the EU Ambient Air Quality Directives

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging period</th>
<th>Legal nature and concentration</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM$_{2.5}$</td>
<td>1 day</td>
<td>Limit value: 50 μg/m$^3$</td>
<td>Not to be exceeded on more than 35 days per year</td>
</tr>
<tr>
<td>PM$_{10}$</td>
<td>Calendar year</td>
<td>Limit value: 40 μg/m$^3$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calendar year</td>
<td>Exposure concentration obligation:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 μg/m$^3$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average Exposure Indicator (AEI) ($^*$) in 2015</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2013-2015 average)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>National Exposure reduction target:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0-20% reduction in exposure</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AEI ($^*$) in 2020, the percentage reduction depends on the initial AEI</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.5 – From EU report “Air quality in Europe – 2017 Report”

Construction dust tends to be deposited within 200m of a construction site, but the majority of the deposition occurs within the first 50m. There are a number of sensitive receptors, there are predominantly the neighbouring School to the west and Residential properties to the south and east. In order to minimise dust emissions through construction, a series of mitigation measures are proposed below.

Measures to control dust will include:

- During the demolition of the existing blocks, a soft strip of the building material (Ceiling tiles, carpets, plasterboard, electrical equipment and installations, etc.) inside the buildings will occur first, leaving the roof, walls and windows in place to screen against dust.
- During the demolition process explosive blasting should be avoided and water suppression is to be employed to prevent dust. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction should be used.
- Drop heights from loading equipment should be minimised, if required fine water sprays should be employed at drop locations.
- Hard surface roads should be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Furthermore, any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and windy conditions.
- Vehicles exiting the site shall make use of a wheel wash facility, prior to entering onto public roads. Refer to section 6.5 of this report for details.
• Vehicles using site roads will have their speed restricted, and this speed restriction will be compulsory for all site traffic. On any un-surfaced site road, this will be 10 kph, and on hard surfaced roads it will be 15kph.

• Vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with tarpaulin at all times to restrict the escape of dust.

• Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary. Refer to section 6.5 of this report for details.

• Wind breaks and barriers to be provided on sensitive receptors sites such as the boundary with the School.

• Gravel will be provided at site exit points to remove caked on dirt from tyres and tracks.

• No on-site burning of material will be permitted.

• Material handling systems and site stockpiling of materials will be located in sheltered areas to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods. Covering stockpile material may also be required.

• During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.

Provided the dust minimisation measures outlined are followed, in our opinion the air quality impacts during the construction phase will not be significant.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

All works carried out as part of these infrastructure works will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor will co-operate in full with the Environmental Section of Dublin City Council.

Dust monitoring points will be provided as noted in Figure 6.1. Refer to Figure 6.2 for typical, Dust, Noise and Vibration Monitor stations.
Dust monitoring should be conducted using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m2*day) during the monitoring period between 28-32 days.

All surface water runoff used as part of the site dust suppression activities will be managed by collecting such runoff in settlement tank. Only clean water taken from the top of the settlement tank, after passing through a series of baffles, and allowing for sufficient time for the sediments to drop to the bottom of the tank, will be allowed discharge to the public piped network.

6.5 ROAD CLEANING / WHEEL WASHING

On this site in a prominent city centre location, the main source of any potential environmental problem will be the visibility of debris or dust on public roads. Wheel washing will be implemented and road sweeping will be carried out as required. Power washing of wheels will be carried out as required. As traffic increases, an automated wheel washer may be installed.
Figure 6.3 – Example of wheel washing of truck as it leave site

Discharge from any vehicle wheel wash areas is to be directed to on-site settlement area, debris and sediment captured by vehicle wheel washes are to be disposed off-site at a licensed facility.

Provision will be made for the cleaning of all access routes to and from the site during the course of the works, particularly East Wall Road within 500m of the site access in both directions. Road cleaning can be adjusted as necessary to take account of high intensive phases of the works and in particular during the “Earth Shifting” phase of the project (i.e. foundation and basement construction) is being carried out. This will be carried out using a mechanical road sweeper, an example of which is shown in Figure 6.4 below.

Figure 6.4 – Typical Road Sweeper
Truck loads per day off site will be kept at a minimum. Where possible, trucks will be unutilised to on both legs of their visit, i.e. delivering construction materials to site such as stone, and removing demolition waste for recycling.

Deliveries to site will be managed such that they arrive during off peak hours. Special consideration will be given to minimise disruption to surrounding residential roads and avoiding school start and finish times.

6.6 ODOUR CONTROL & LIGHTING

The demolition of the existing buildings is not expected to omit any odours as the buildings are constructed largely from natural occurring material.

A power supply will be obtained from ESB Networks to power both the compound and the construction site to avoid the use of diesel generators to prevent noise and odour pollution. Temporary site lighting will be installed to provide safe and well lighted walkways around the site compound and task lighting to the construction site.

6.7 ENERGY EFFICIENCY

Energy efficiency simply means using less energy to perform the same task – that is, eliminating energy waste. Energy efficiency brings a variety of benefits: reducing greenhouse gas emissions, reducing demand for energy imports, and lowering costs of construction, this will be achieved by:-

- Electrical equipment to be will be switched off when not in use.
- Non-essential lighting will also be turned off when not in use
- Office equipment to be switched off nightly and at weekends
- All electrical equipment to be kept in good order by a qualified electrician.
- Ensure that water is not wasted; taps will be turned off, leaks repaired
- All plant and machinery turned off when not in use to conserve fuel
- plant such as generators, lighting towers not to be used unnecessarily
6.8 TREES & TOPSOIL SCREENING

Please refer to landscape Architects drawings for any tree protection locations and protection details. All topsoil used for landscape works will be recovered for the site where possible. Any imported topsoil will be screened for invasive species and sourced from reputable landscape suppliers.
7.0 TRAFFIC MANAGEMENT

The traffic management plan for the site will be developed prior to commencement and the provisions of this plan including erection of signage on public roads will be agreed with Dublin City Council in advance of commencement on site. The traffic management plan shall be updated appropriately to ensure coordinated and effective traffic management practices and arrangements are in place throughout the construction period.

7.1 SITE ACCESS

External to the site, traffic will include construction workers travelling to site and materials deliveries which will include small delivery vans, large rigid trucks, articulated trucks and trailers, and concrete trucks. Excavated material will be removed off site during the first few months of the project as bulk excavation.

![Site Plan](image)

**Figure 7.1 – Site Plan**

The Contractor will organise deliveries to minimise congestion on public roads by avoiding peak traffic periods where possible. During particularly busy periods such as during concrete pours, trucks will be queued up inside the site.

Deliveries will be on a “just in time” basis and this system will be strictly controlled between our Site Supervisors and our Purchasing Manager who will organise the deliveries. The Purchasing Manager will provide the Site Supervisors with contact...
details for suppliers who will make contact to ensure drivers are made aware of the site location and the correct route to site in accordance with the Dublin City Council heavy goods vehicles cordon restrictions. It is expected that HGV’s will approach from the M50 through Dublin Port Tunnel and from here directly to the site via East Wall Road. Refer to Figure 7.1 above. The site is on the outer edge of the DCC Heavy Goods Cordon Restriction zone. Refer to Map in Figure 7.2 below.

![Map of Heavy Goods Vehicles - Cordon Restrictions - Dublin City from 19th February 2007](image)

Figure 7.2 - DCC Heavy Goods Cordon Restriction zone

### 7.2 SITE PARKING, COMPOUND & ACCESS CONTROL

While parking will be available in the compound area of the site, workers will be encouraged use public transport where possible to reduce congestion on public roads. Public transport options include LUAS and bus services are readily available.

Controlled access to the site, in the form of gates will be monitored by site personnel, Site access to the existing commercial unit will be maintained during the works. These will be locked and secured to prevent unauthorised access during periods when these are not monitored by site personnel. (e.g. outside working hours). CCTV will also be used for periods outside working hours to prevent unauthorised site access.
The compound shall be constructed using a clean permeable stone finish. Site accommodation to be provided will include suitable-washing / dry room facilities for construction staff, sanitary facilities, office accommodation etc. Refer to Figure Appendix A for proposed location.

The compound will contain an area containment of all construction-related fuel and oils, it is proposed to use specially bunded HDPE tanks for all fuel stored on site.

On completion of the works all construction materials, debris, temporary hardstanding’s, etc. from the Site Compound will be removed off site and the site compound area reinstated in full.

### 7.3 SITE TRAFFIC

To avoid unnecessary traffic, during the site clearance works, all demolition and excavated suitable material will be reused for construction and filling where possible and appropriate. Any unsuitable material will be put in the appropriate waste stream and sent for recycling or disposed of off-site as outlined in Section 6.0.

Construction vehicle movements will be minimised through;

- Consolidation of delivery loads to/from the site and managing larger deliveries to occur outside peak periods,
- Use of precast/prefabricated materials where feasible,
- Adequate storage space on site,
- A strategy to minimise construction material quantities.

Deliveries and the removal of material off site will avoid peak traffic hours where possible (8.00am-9.00am an 4.30pm-5.30pm) to minimise disruption to the local residences and schools.

Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site construction and supervisory staff.
- Excavation plant and dumper trucks involved in the construction and site development works and arterials delivery vehicles.
APPENDIX A

Site Plan showing initial site set up & Waste Management Area