

**202122 - Proposed Residential
Development at Swords Road, Whitehall,
Dublin 9**

**Construction Environmental Management
Plan**

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1 Introduction

This CEMP seeks to outline clearly the mitigation measures and monitoring proposals that are required to be adhered to in order to complete the works in an appropriate manner at the proposed SHD development at a site located at Swords Road, Whitehall, Dublin 9. The construction phase works will be designed to approved standards, which include specified materials, standards, specifications and codes of practice. The design of the project has considered environmental issues and this is enhanced by the works proposals. The key site targets / objectives are as follows:

1. Ensure construction works and activities are completed in accordance with any planning conditions for the development.
2. Ensure construction works and activities have minimal impact/disturbance to the local community and businesses.
3. Adopt a sustainable approach to construction and, ensure sustainable sources for materials supply where possible.
4. Correct fuel storage and refuelling procedures to be followed.
5. Air and noise pollution prevention to be implemented.
6. Good waste management and house-keeping to be implemented.
7. Provide adequate environmental training and awareness for all project personnel.

It is noted that at this planning stage that a Main Contractor has not yet been appointed to carry out the proposed works. Once appointed, it will be the responsibility of the Main Contractor to prepare and submit a detailed construction management plan for the Client's submission to the local authority for approval. The construction management plan will be a live document that will be updated throughout the project lifecycle by the Main Contractor as required.

The CEMP due to its structure and nature will also require updating and revision throughout the construction period as set out below. Therefore, this is a working document and will be developed further prior to and during construction. Triggers for amendments to the CEMP will include:

- When there is a perceived need to improve performance in an area of environmental impact;
- As a result of changes in environmental legislation applicable and relevant to the project;
- Where the outcomes from auditing establish a need for change;
- Where Work Method Statements identify changes to a construction methodology to address high environmental risk; and
- As a result of an incident or complaint occurring that necessitates an amendment.

This report provides the Construction and Environmental management framework to be adhered to during the pre-commencement and construction phases of the proposed development and it incorporates the mitigating principles to ensure that the work is carried out in a way that minimises the potential for any environmental impacts to occur.

Regardless of the form of contract, the Contractor will be contractually bound by any conditions arising from the site constraints identified and specified, all Statutory Regulations governing the works, and any additional measures or modifications that may be imposed on the proposed development by the local authority or An Bord Pleanála.

2 Description of the Works

The proposed strategic housing development is located on a c. 2.73 ha site at Swords Road, Whitehall, Dublin 9. The site is bounded to the west by Swords Road, to the south by Highfield Hospital, to the north by vacant lands and GAA pitches and to the east by Beechlawm Nursing Home with residential development beyond.

The proposed development will consist of the construction of 7 no. blocks in heights up to 8 storeys (over single level basement) comprising 472 no. apartment units, a creche, café unit, and internal residential amenity space. The proposal also includes car, cycle, and motorcycle parking, public and communal open spaces, landscaping, bin stores, plant areas, substations, switch rooms, and all associated site development works and services provision. Access is provided from the development from Swords Road with associated upgrades to the existing public road and footpaths. A full description of the development is provided in the statutory notices and in Chapter 3 of the EIAR submitted with the application.



Figure 2-1: Proposed Construction Route © Google Maps

3 Indicative Construction Programme

It is estimated that the construction programme for the works associated with the proposed works will last approx. 36 months from the date of commencement. This estimation is based on the typical construction programmes for other similar developments that are currently underway. It is envisaged that construction of the proposed building and external works will be carried out over a single phase.

The Main Contractor will be required to prepare a detailed construction programme as part of their tender proposal.

4 Site Set Up and Security

The Main Contractor will be required to submit a site layout plan that will detail the proposed location of the site compound. The Contractor will ensure that the site compound will be serviced as required and will be secured with appropriate fencing/hoarding. The site compound will be used as the primary location for the storage of materials, plant and equipment, site offices, and worker welfare facilities. As Project Supervisor Construction Stage (PSCS), the Contractor will be responsible for site security and they are to ensure that the site and site compound are adequately secured at all times.

As with the other construction activities that are being carried out within the DCC's remit, activities associated with the construction compounds will be subject to restrictions to the nature and timing of operations so that they do not cause undue disturbance to neighbouring areas and communities.

The site layout plan will also include the site perimeter and the proposed detail with regards the hoarding and gate system.

5 Site Access

To minimise construction impacts upon the surrounding road network, it is recommended that all construction traffic access and exits the site from the M50 Junction 2 joining Swords Road at the Santry Roundabout. From exiting the M50, this route is approximately 1.9km to / from the site.

All contractor vehicles will park within the development site area, it is recommended that as part of the construction management plan the contractor designates an area within the confines of the site dedicated to operative car parking. There will be no parking permitted on the surrounding road network or estate roads by the contractor or site operatives.

A Construction Traffic Management Plan (CTMP) will be developed by the contractor prior to the commencement of work on site and will be prepared in consultation with DCC.

Construction debris particularly site clearance, spoil removal and dirty water run off can have a significant impact on footpaths and roads adjoining a construction site, if not adequately dealt with and these matters will require to be fully addressed in the contractors CTMP.

The Main Contractor will be responsible for all site access and works activity and must ensure the continued operation of the roads within the established urbanised setting.

6 Material Storage and Delivery

The Contractor will ensure that the delivery of materials is coordinated to minimise impacts to adjacent properties. The Contractor will ensure that all materials are adequately stored and secured in their site compound.

For more details please refer to the 'Resource & Waste Management Plan' prepared and included in the planning submission.

The Contractor will ensure the roads adjacent to the site are kept clean and free of debris.

7 Construction Traffic Management Plan

The Contractor will be required to prepare and submit a detailed Construction Traffic Management Plan (CTMP) as part of their tender submission. Once appointed, the Contractor will further develop the traffic management plan as required and submit to the local authority for approval in advance of works

commencing onsite. The Contractor will ensure that advanced warning signs are erected on approaches to the site as required by the PSCS. The Contractor will use a competent sign provider and all signage that meets the requirements of the Safety, Health & Welfare at Work (General Applications) Regulations 2007 and Chapter 8 Traffic Signs Manual. Any proposed temporary road markings must also confirm to the requirements of Chapter 8 of the Traffic Signs Manual.

The Main Contractor will be responsible for all site access and works activity and must ensure the continued operation of surrounding local road network as a result of its construction traffic. Note: The Contractor must ensure on-site car parking facilities for site workers. The use of parking on neighbouring residential streets is strictly prohibited

The Contractor must submit a Construction Traffic Management Plan to the Local Authority for approval. Haulage vehicle movements should be fully coordinated to comply with the requirements of the agreed plan:

- Construction vehicles must not stop or park along the routes at any time;
- Haulage vehicles must not travel in convoys greater than two vehicles at any time;
- Site entrance to remain free of parked or stationary vehicles at all times;
- All loading of demolition material will occur within the site boundary;
- All off-loading of deliveries will take place within the site, remote from the public road and will access via the agreed construction access point.
- The Contractor will be required to provide wheel cleaning facilities, and regular cleaning of the main access road.
- Temporary car parking facilities for the construction workforce will be provided within the site. These car parking spaces will be located adjacent to the site compound. The surface of this car park will be prepared and finished to a standard sufficient to avoid mud spillage onto adjoining roads.
- Monitoring and control of construction traffic will be ongoing during construction works. Construction traffic will minimise movements during peak hours.
- Construction Traffic routes minimising traffic impact on surrounding residential development will be used by construction vehicles.

The site is located in a suburban area where the roads and junctions are shared with public road users. Therefore, the flow of construction traffic will need to be marshalled and controlled to ensure that potential conflicts are avoided as much as possible.

There are no proposals to introduce temporary road closures or temporary traffic light signals to facilitate construction of the proposed development. There are also no proposals to amend the existing local access arrangements to the surrounding areas.

For further details please refer to the 'Resource & Waste Management Plan' prepared and included in the planning submission.

8 Potential Interface with Other Projects

Given the development activity associated within the environs of the site, the proposed works will likely have an interface with other projects within the locality. The appointed Contractor will need to coordinate with other Contractors as required to ensure a smooth interface between projects.

There may be a number of PSCS's operating in the urban locality at any one time on individual sites. It will be responsibility of the appointed Contractor as PSCS to ensure that delivery and haul routes, site access and egress points and potential crossing points associated with the site are fully coordinated and agreed with other Contractors in advance of the works commencing.

9 Dublin Port Tunnels

Prior to the works, the Contractor shall submit a detailed risk assessment method statement (RAMS) outlining how they propose to carry out the works on the site. The Contractor shall liaise with Transport Infrastructure Ireland (TII) throughout the works. The procedure of communication with TII shall be outlined in the RAMS and agreed with TII prior to commencement of the works on site.

The Contractor shall submit temporary work designs and temporary works design certificates for all temporary works being carried out on the site and shall include an assessment of the impact of the works on the Dublin Port Tunnels, where necessary. The designs shall demonstrate that the works do not adversely impact the Dublin Tunnels that underly the site. These temporary works designs shall be given to TII for review and approval prior to carrying out the works.

9.1 Construction Sequence

The Contractor shall follow the construction sequence outlined in the Tunnel Impact Assessment Report for the scheme (Report No. 19-196-R05 Rev 2). The table below presents the construction sequences that must be adopted by the Contractor during the works, as outlined in the Tunnel Impact Assessment Report. No other construction sequences shall be permitted. In the case of this development Sequence B will be the adopted construction sequence.

Step	Sequence A	Sequence B	Sequence C	Sequence D
1	Excavation for Foundations of Block F and Block G ²		Excavation for basement, foundations for Blocks F and G ² and basement access ramp	
2	Construction of Block F and G ²	Excavation of basement and basement access ramp	Construction of Block F and G ²	Construction of Blocks A, D, E, F & G
3	Excavation of Basement carpark below Blocks A, D & E, access ramp	Construction of Blocks F and G ²	Construction of Blocks A, D & E	
4	Construction of Blocks A, D & E			

10 General Construction Approach

10.1 Construction Working Space

Construction working space will be set out in the detailed construction management plan at compliance stage.

Construction access routes, haul routes and delivery routes to the site are to be agreed with the Engineer/Employer's Representative in advance of works commencing onsite.

Any road closures required (none anticipated) will be submitted and approved in advance with the local authority. It is the responsibility of the Main Contractor to prepare and submit the road closure application to the local authority in advance of works commencing onsite.



Figure 10-1: Proposed Site Plan

10.2 Outline Strategy

It is currently envisaged that the proposed development will be completed in a single phase as outlined below. For further details relating to the works, please refer to the more detailed planning drawings (architectural, engineering, landscape, etc.). The strategy is outlined as follows:

1. Establish secure site perimeter (fencing/hoarding) and establishment of the construction compound(s).
2. Topsoil removal and stockpiling or disposal as required throughout development lands.
3. Construction of Haul Road.
4. Northern boundary wall erection.
5. Installation of attenuation tanks.
6. The proposed development consists of 472 No. apartments in seven blocks, A, B, C, D, E, F & G. Blocks A-E are constructed over a single storey basement. The superstructure ranges in heights up to 8 storeys over the basement. Block F and G are standalone buildings towards the east of the site. There is no basement below blocks F or G.

- a. Construction of the basement car park and associated bulk excavation. Stockpiling of excavated material, testing and re-use as required.
- b. Construction of residential units in defined sequence.
7. Installation of drainage/SuDS elements throughout the site.
8. Completion of internal road network to permanent status, including associated private realm SuDS measures.
9. Delivery of landscaping and parks/recreation elements throughout the development extents.

10.3 Outline Works Description

The construction works will involve an indicative sequence of works, as described in short below. The Contractor will outline works which impact public spaces within the Construction Management Plan that shall be subject to submission and agreement with DCC.

10.3.1 Hoarding, Site Set-up and Formation of Site Access/Egress

The site area will be enclosed with hoarding details of which are to be agreed with DCC. Hoarding panels will be maintained and kept clean for the duration of the works. This will involve erecting hoarding around the proposed site perimeter in line with the finished development extents.

The available site footprint will enable the Contractor to set up the site compound within the site boundary.

The Contractor will be responsible for the security of the site. The Contractor will be required to:

- Operate a Site Induction Process for all site staff;
- Ensure all site staff shall have current 'Safe Pass' cards and appropriate PPE;
- Install adequate site hoarding to the site boundary;
- Maintain site security at all times;
- Install access security in the form of turn-styles and gates for staff;
- Separate public pedestrian access from construction vehicular traffic.

10.3.2 Site Clearance and Demolition

The location is a brownfield site and will require minimal site clearance. It is noted that enabling works were previously commenced on site consisting of the following:

- Topsoil strip site and dispose
- Minor Drainage works

These works will be progressed further subject to receipt of granted planning as required to facilitate the construction works.

It is noted that the proposed development consists of the excavation and construction of a single level basement under Blocks A, B, C, D and E, the subsequent construction of multiple storeys of residential apartments and the associated site landscaping and ancillary development.

10.3.3 Construction Sequence of Development

The construction methodology and programme of these activities will be dictated by the Contractor.

However, due to sensitivities arising from the Tunnel Impact Assessment (as outlined in the AGL report), a prescriptive construction sequence is required as per Section 9. In the case of this development Sequence B will be the adopted construction sequence. As repeated below:

Step	Sequence A	Sequence B	Sequence C	Sequence D
1	Excavation for Foundations of Block F and Block G		Excavation for basement, foundations for Blocks F and G and basement access ramp	
2	Construction of Block F and G	Excavation of basement and basement access ramp	Construction of Block F and G	Construction of Blocks A, D, E, F & G
3	Excavation of Basement carpark below Blocks A, D & E, access ramp	Construction of Blocks F and G	Construction of Blocks A, D & E	
4	Construction of Blocks A, D & E			

The construction of Blocks A, B, C, D and E will follow completion of the excavation/grading works and associated establishment of the basement formation levels, substructure and permanent basement structure. The subsequent superstructure will consist of construction of RC framed structures on ground floor transfer slabs where coincident with the basement footprint.

The construction of Blocks F and G will consist of construction of RC framed structures on ground bearing substructure.

The construction methodology and programme of these activities will be dictated by the Contractor but the construction sequence outlined above is a specific requirement, No other construction sequence shall be permitted in accordance with the Tunnel Impact Assessment.

Site Grading

The single level basement structure will involve the excavation of approximately 58,100m³ of material. The site investigation has highlighted the following typical ground conditions:

- Approx. 1m to 3m of Made Ground or a firm/firm to stiff (locally soft to firm) sandy gravelly clay (Upper Brown Boulder Clay).
- A very stiff to hard Upper Black, Lower Black and Lower Brown Boulder Clay under lies these materials at a depth of between 0.3m and 3mbgl (39.1m and 37.0mOD). The stratum is between 17.7m and > 27.2m thick.
- A weathered rock zone sometimes lies below the Boulder Clay at a depth of between 18.6m and 25.5mbgl (14.6m and 20.8mOD). The weathered rock is described as weak to medium strong dark grey decomposed Limestone or a Fractured Limestone.
- The depth to top of rock within the site varies. Rock is encountered towards the southern part of the site. The rock is encountered at a depth of between 18m and 28.6mbgl (21.4m and 111.5mO). However, the top of rock is variable.
- The rock is described as a strong to very strong fresh to slightly weathered dark grey LIMESTONE with interbedded layers of calcareous mudstone or a light grey Calcisiltite with frequent thin beds of black argillaceous shale.

The basement formation level is at c38.030mOD, so excavation into the underlying granite rock is not anticipated during excavation.

The Contractor must prepare a Resource & Waste Management Plan 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, 2006) and ensure that all material is disposed of at an appropriately licensed land fill site. The Contractor must also outline detailed proposals within the Construction Management Plan to accommodate construction traffic.

Basement Level Construction

The construction of the basement level will involve the excavation of the basement footprint and immediate surrounds to enable construction of a concrete raft and/or foundation pads with an integral in-situ concrete slab will form the base of the basement. The perimeter of the basement will be formed using in-situ concrete walls. Internal columns will provide support to a podium slab and transfer beams that would support the superstructures of Blocks A-E. The spoil generated from the basement level construction will be recycled and re-used (in accordance with the Resource & Waste Management Plan) and, where necessary, disposed at an appropriate licensed land fill site. The concrete operations associated with the basement structure will require concrete deliveries to site.

The groundwater level is to be confirmed by on-site testing by Causeway Geotech. To prevent any potential risk of groundwater intrusion into the lower structure the basement car park will be constructed as a water-tight box, the proposed grade for the basement is a mix of Grades 1, 2 and 3, as per BS 8102:2009, depending on usage. The proposed structural integrity of the basement perimeter walls and their ability to prevent groundwater intrusion into the site is deemed sufficient to mitigate the potential risk to acceptable limits. The concrete works will involve concrete deliveries to site and adequate wash-down and wheel wash facilities must be provided for the concrete wagons.

Construction Sequence of Superstructure

The construction of the various superstructures will involve complex sequencing of activities and various construction methodologies could be adopted to deliver the Contract. The nature of the buildings throughout the development, the column grids and economic factors, among other issues, would suggest that the buildings will be constructed utilising reinforced concrete frames.

As noted, the construction methodology and therefore the programme of the construction activities will be dictated by the Contractor.

Building Structure - Blocks, A, B, C, D and E:

- Construction of the single level basement structure (including substructure elements and permanent basement structures);
- Construction of rising elements to Level 0 and construction of Level 0 floor slab and transfer structure;
- Similar sequence of construction of rising elements and floor slabs for Blocks A, B, C, D and E.

Building Structures - Blocks F and G:

- Construction of the ground floor foundation slabs and substructure;
- Construction of rising elements to Level 1 and construction of Level 1 floor slab;
- Similar sequence of construction of rising elements and floor slabs.

Envelope / Cladding - All Blocks:

- Commencement of envelope works to Level 1 when structure has progressed to approximately Level 2/3;
- Advancing of Cladding two levels behind the structure.

Envelope / Cladding - All Blocks:

- The structural blockwork will also act as the envelope for the structure, and cladding will follow completion of the blockwork.

Mechanical & Electrical Fit-Out:

- First fix will commence from ground floor level upwards;
- This will be followed by the second fix and final connections.

Fit-Out:

- Initial installation of stud work when cladding completed and floor is weather tight;
- Installation of equipment and associated connection to services;
- Completion of finishes.

Commissioning:

- The final commissioning period will commence during fit-out.

The above represents a high-level indicative construction sequence only. The actual sequence will be dictated by the Contractor. The Contractor will issue a detailed construction programme outlining the various stages prior to commencement of works.

It is envisaged that multiple tower cranes will be temporarily erected to accommodate the apartment block construction works for the distribution of building materials and plant. The Contractor is required to obtain all necessary licences from DCC.

The above represents a high-level indicative construction sequence only. The actual sequence will be dictated by the Contractor. The Contractor will issue a detailed construction programme outlining the various stages prior to commencement of works.

11 Waste Management Plan

The Main Contractor will be required to prepare a detailed waste management plan for the project. This will be included in the overall construction management plan that will be submitted to the local authority.

For further details please refer to the 'Resource & Waste Management Plan' prepared and included in the planning submission.

12 Communications and Local Stakeholder Management

The Contractor will, as required, liaise with owners of the local properties in advance of works commencing onsite. The Contractor will use a competent sign provider and all signage used will meet the requirements of the Safety, Health & Welfare at Work (General Applications) Regulations 2007 and Chapter 8 Traffic Signs Manual (2019).

13 Construction Noise, Dust and Vibration

The Main Contractor will be required to monitor noise, dust and vibration as will be outlined in the planning conditions. The Contractor will establish baselines for noise, dust and vibration in advance of works commencing onsite. As part of their detailed construction management plan, the Contractor will be required to clearly indicate how they plan on monitoring noise, dust and vibration throughout the course of the project. The Contractor will also be required to clearly outline the mitigation measures they plan on putting in place to ensure any breaches in the baselines are mitigated.

The contractor shall arrange for maintaining site tidiness/cleanliness, including measures to minimise the movement of wind-blown material building materials and dust.

Noise and vibration monitoring to be in accordance with the following standards:

- BS 5228
- BS 6472
- BS 7385

For more details please refer to the 'Resource & Waste Management Plan' and EIAR Chapter 8 'Noise and Vibration' prepared and included in the planning submission.

14 Working Hours

The proposed hours of work on site will be 08:00 hrs to 19:00 hrs Monday to Friday and 08:00 hrs to 14:00 hrs Saturday unless otherwise specified by planning conditions. It is anticipated that construction working hours will be stipulated in the planning conditions attached to the planning grant. Any working hours outside the normal construction working hours will be agreed with DCC. The planning of such works will take consideration of sensitive receptors, in particular any nearby businesses.

For further details please refer to the 'Resource & Waste Management Plan' prepared and included in the planning submission.

15 Lighting

There are no proposals to alter the existing lighting arrangements in the area. It is not envisaged that any existing public lighting will need to be disconnected as a result of the proposed works. Appropriate lighting will be provided as necessary at construction compounds. All lighting will be installed so as to minimise light spillage from the site and to adhere to the mitigation measures outlined in Section 16.1 below.

16 Construction Employment

Construction employment numbers will vary depending on the construction stage of the project and the actual approach adopted by the Contractor. However, it is anticipated that at the peak of construction there may be a workforce of approximately 200 people employed (maximum).

17 Environmental Impact Mitigation Measures

In order to protect the existing environmental features on site and surrounding area, the following mitigation measures must be adhered to as part of the Construction Environmental Management Plan for the proposed development. These measures have also been included as part of the Environmental Impact Assessment Report (EIAR). The appointed Contractor will be required to adhere to the mitigation contained in the EIAR. Monitoring of the effectiveness of mitigation measures put forward in the EIAR document by the competent authorities is also integral to the process.

17.1 Habitats and Biodiversity

a) Hedgehog, Pygmy Shrew and Badger

Although disturbance to wildlife during the construction work will be temporary, general avoidance measures should be undertaken to protect wildlife while the works are being carried out.

General avoidance measures that should be incorporated by the contractors working on site include:

- Limit the hours of working to daylight hours, where possible, to limit disturbance to nocturnal and crepuscular animals;
- Due to the potential presence of Badger; Hedgehog; and Pygmy Shrew, the use of lighting at night should be avoided. If the use of lighting is essential, then a directional cowl should be fitted to all lights to prevent light spill and to be directed away from retained vegetation;
- Contractors must ensure that no harm comes to wildlife by maintaining the site efficiently and clearing away materials which are not in use, such as wire or bags in which animals can become entangled; and
- Any pipes should be capped when not in use (especially at night) to prevent animals becoming trapped. Any excavations should be covered overnight to prevent animals from falling and getting trapped. If that is not possible, a strategically placed plank should be placed to allow animals to escape.

b) Breeding Birds

Removal of trees and scrub will be conducted outside of the bird nesting season (March to August inclusive). If this is not possible, a breeding bird survey by an appropriately qualified ecologist will be undertaken in advance of the works to ensure that there will be no impacts on nesting birds. If nests are found, they will be safeguarded, with an appropriate buffer, until the chicks have successfully fledged.

- c) Vegetation cutting will be carried out only outside the bird-nesting season March 1st-August 31st in order to avoid impacts on nesting birds.
- d) Tree removal must only occur under guidance of a consultant arborist. Refer to Section 16.2 below.
- e) A suitably qualified ecologist will be employed to review the Construction Environmental Management Plan and will visit the site during site preparation and during the construction works to meet the contractor and review how the plan measures are being implemented.
- f) It is likely gull species will utilise the tops of the buildings as a breeding habitat. Should this occur these species should not be interfered with.
- g) Site preparation and construction must be confined to the development site only and it must adhere to all the mitigation measures outlined in the CEMP, EIAR and the accompanying Bird Survey Report, Badger Survey Report and Bat Survey Report. Work areas should be kept to the minimum area required to carry out the proposed works and the area should be clearly marked out in advance of the proposed works. On foot of the ecological reports and the iterative process involved in the preparation of these reports, the applicant is aware of the ecological sensitivity of the location. Upon appointment of the construction contractor, this team will also be made aware of the sensitivity of the site and the mitigation measures required to protect groundwater and surface water quality. All measures will be undertaken from initial site works until the completion of all construction works on site.
- h) Prior to the commencement of developments on site, the site engineer and the contractors must be made aware of the ecological sensitivity of the site and its connection to any relevant European Sites. They must be made familiar with the mitigation measures outlined in this CEMP report, the NIS and other ecological reports. The applicant will be responsible for alerting the engineers and contractors to the sensitivity of the habitats and water receptors surrounding the site. This will be done prior to the commencement of any site works.
- i) It is recommended that the measures outlined in this report and in the EIAR, along with any other reports containing environmental mitigation measures, are incorporated into a Construction and Environmental Management Plan to be developed further and adopted by the eventual Contractor.

- j) The design and management recommendations as set out in “BS5837:2012” are considered as “best practice” regarding the selection, retention, protection, and management of tree within the scope of the new development.
- k) In respect of tree protection, whether vertical or horizontal, all must conform or equate to the recommendations of Section 6, BS5837: 2012, must be fit for purpose and commensurate with the nature of development and the expected day-to-day activities of the site works.
- l) The Arboricultural Report prepared by J M McConville + Associates Arboricultural Consultants provides a ‘Arboricultural Method Statement’ as part of the report, as well as the associated ‘Tree Survey Plan’ drawing. All recommended protection measures will be installed before the commencement of any site works and must remain in situ (unless under the guidance of the site Arborist) until the completion of all site works.
- m) Any development related loss of trees can result in exposure and shelter loss issues. Therefore, all retained trees must be reviewed immediately after the primary site clearance works. This will allow for the updating and amending the “preliminary management recommendations” of the primary survey. Such amendments would address such issues as may arise and may include additional structural pruning works. Regular reviews of all retained trees must be maintained, so that early and prompt intervention and action can be applied as required.
- n) All the mature trees within the site that must be removed for safety issues should be examined for the presence of bats prior to felling by a bat specialist in the 48 hours prior to felling. Should bats be noted in any tree, it is a protected structure and a derogation license must be sought from National Parks and Wildlife Service.
- o) In order to preserve the commuting and foraging potential of the treelines remaining and new trees planted, and to minimise disturbance to bats utilising the site in general, the lighting and layout of the proposed development should be designed to minimise light-spill onto habitats used by the local bat population foraging or commuting. Therefore, where possible, the lighting scheme should include the following:
- The avoidance of direct lighting of existing trees to be retained or proposed areas of habitat creation / landscape planting.
 - Unnecessary light spill controlled through a combination of directional lighting and hooded / shielded luminaires or strategic planting to provide screening vegetation.
 - Lights should be of low intensity. It is better to use several low intensity lights than one strong light spilling light across the entire area.
 - Narrow spectrum lighting should be used with a low UV component. Glass also helps reduce the UV component emitted by lights.
 - The colour rendering of the selected light fitting should consist of the use of LED luminaires with a warm white spectrum (2700-3000K), column heights restricted to 6m and the provision of a dark corridor within the site., helping to further minimize the impact on the local wildlife.

The use of lighting at night during construction should be avoided. If the use of lighting is essential, there will be no lighting of the two mature trees with bat roost potential in the north west corner outside of the site boundary by the use of directional lighting.

- p) Regarding potential bat roosts in trees, for the affected Trees of ‘Moderate’ or ‘High’ bat potential, the following should take place:
- A pre-felling bat survey the night before felling, along with the felling methodology outlined below.
 - If bats are found to be using the trees with ‘Moderate’ or ‘High’ bat potential as a roost, a derogation licence from the National Parks and Wildlife and Services (NPWS) will be required and any felling postponed until a licence is acquired.

For all felling of other trees and mature hedgerows (with ‘Low/No’ bat Potential, or used for commuting and foraging bats), the following methodology should be undertaken:

- Tree-felling should be undertaken in the period late August to late October/early November. During this period bats are capable of flight and this may avoid risks associated with tree-felling.
 - Felling during the winter months should be avoided as this creates the additional risk that bats may be in hibernation and thus unable to escape from a tree that is being felled. Additionally, disturbance during winter may reduce the likelihood of survival as the bats' body temperature is too low and they may have to consume too much body fat to survive.
 - Tree-felling should be undertaken using heavy plant and chainsaw. There is a wide range of machinery available with the weight and stability to safely fell a tree. Normally trees are pushed over, with a need to excavate and sever roots in some cases. In order to ensure the optimum warning for any roosting bats that may still be present, an affected tree should be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. Any affected trees should then be pushed to the ground slowly and should remain in place for a period of at least 48 hours to allow bats if present to escape.
 - Trees felled should NEVER be sawn up or mulched immediately in case protected wildlife is present.
- q) During the construction phase it is recommended that all trenches, pits and settling ponds etc., be covered at the end of each working day, or include a means of escape for any animal should they fall in (Badgers will continue to use their traditional foraging routes even when construction has commenced). Chemicals should also be stored as far away from the badger foraging area in the north as possible, and suitably sealed to prevent spills etc.
- r) All construction waste must be removed from site by a registered contractor to a registered site. Evidence of the movement and safe disposal of the construction waste must be retained and presented to Local Authority upon request. The applicants and construction contractors will be responsible for the safe removal of any construction waste generated on site. Removal of the construction waste should occur as soon as possible after demolition / construction works.
- s) All topsoil generated from site works should be stored within the application site until it is required for landscaping. It must not be stored outside the site boundary, and it must not be used for the infilling of any area outside of the site. It must be stored at appropriate locations within the site, away from the stream. If there is more topsoil than is needed for landscaping, it must be removed from site by a registered contractor for appropriate use elsewhere. The end location of the topsoil must be identified, and records presented to the local authority if requested.
- t) **Invasive Non-native Species**
As Winter Heliotrope occur extensively along the western boundary, it should be managed prior to clearance of vegetation and works commence in the area. Winter Heliotrope should be removed and appropriately disposed to avoid further dispersal of the species. Removal of Winter Heliotrope can be done by either physical control or chemical control. Due to an extensive rhizome network, physical removal is only practical on a limited scale. The Winter Heliotrope is extensive on the present site and as such chemical control is the preferred option.
Chemical control: Application of a glyphosate-based herbicide will be carried out after flowering in February to March, or in mid to late summer before the foliage begins to die back. All Plant Protection Products will be used in accordance with the product label and with Good Plant Protection Practice as prescribed in the European Communities (Authorization, Placing on the Market, Use and Control of Plant Protection Products) Regulations, 2003 (S.I. No. 83 of 2003). It is an offence to use Plant Protection Products in a manner other than that specified on the label (NRA, 2010). Follow-up will be carried out with foliar spray, wiper applicator or spot treatment. Control measures are based on "Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads" (NRA, 2010).

17.2 Land, Soil and Geology

a) Stripping Topsoil

Full topsoil removal will be required to implement the required works. Topsoil that can be reused for landscaping works will be stockpiled on site. The remaining topsoil will be removed from site.

b) Excavation of Subsoil Layers

Minor subsoil removal will be required where works require excavation to install foundations and services and other works. The impact of this is expected to be minimal.

c) Construction Traffic

Construction traffic will be in operation during the proposed works. This will comprise construction workers, temporary special construction vehicles, cranes, and excavation machinery. Their impact on the land and soil is expected to be limited to their operations related to the construction works, and therefore is expected to be short term in nature. Construction traffic management is outlined in the Construction Management Plan (CMP) included in the planning application. A Construction Traffic Management Plan (CTMP) will be developed by the contractor prior to the commencement of work on site and will be prepared in consultation with DCC. Construction debris particularly site clearance, spoil removal and dirty water run off can have a significant impact on footpaths and roads adjoining a construction site, if not adequately dealt with and these matters will require to be fully addressed in the contractor's CTMP.

Below is a list of the proposed traffic management measures to be adopted during the construction works. Please note that this is not an exhaustive list, and that it will be the appointed contractor's responsibility to prepare a detailed CTMP.

- Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction access locations
- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes.
- Consideration will be given to reduce the volume of construction traffic accessing the site through reduce - reuse and recycle methods. Delivery control will also be adopted to reduce potential heavy vehicle convoys.
- Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on trucks carrying dust producing material.
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds within the site;
- Parking of site vehicles will be managed and will not be permitted on the public road, unless proposed within a designated area that is subject to traffic management measures and agreed with DCC.
- A road sweeper will be employed to clean the public roads adjacent to the site of any residual debris that may be deposited on the public roads leading away from the construction works.
- On site wheel washing will be undertaken for construction trucks and vehicles to remove any debris prior to leaving the site, to remove any potential debris on the local roads.
- All vehicles will be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol, or diesel. Spill kits will be available on site. All scheduled maintenance carried out off-site will not be carried out on the public highway; and
- Safe and secure pedestrian facilities are to be provided where construction works obscure any existing pedestrian footways. Alternative pedestrian facilities will be provided in these instances, supported by physical barriers to segregate traffic and pedestrian movements, and to be identified by appropriate signage. Pedestrian facilities will cater for vulnerable users including mobility impaired persons.

- d) In order to provide fuel to the relevant items of plant on site, a certified double skinned metal fuel tank with integrated pump, delivery hose, meter, filter and locking mechanism will be situated in a secure area on the construction site. It will be situated within a bund. This tank will be certified for lifting when full. Sand piles and emergency clean up spill kits will be readily available in the event of a fuel spill. A hazardous bin will also be available to contain any spent sand or soak pads. New metal gerry cans with proper pouring nozzles will be used to move fuel around the site for the purposes of refuelling items of small plant on site. Drip trays will be used under items of small plant at all times. Any waste oils etc. contained in the drip trays or the bunded area will be emptied into a waste oil drum, which will be stored within the bund. Metal gerry cans and any other items of fuel containers will be stored in certified metal bunded cabinets. Any gas bottles will be stored in a caged area at a secure location on the site. All will be properly secured at point of work to mitigate accidental spills and leaks.
- e) **Waste Management**
Waste should be stored on site in a designated area and removed from site regularly. Contaminated materials are to be bunded prior to removal from site so as not to have damaging effects on the soils and geology underneath.
- f) **Noise and Vibration**
The mitigation measures for construction phase noise and vibration are outlined in Chapter 8. The measures relevant to land, soil and geology is the application/implementation of Best Practicable Means (BPM) from BS 5228 during construction including:
- Unnecessary revving of engines will be avoided and equipment will be switched off when not in use;
 - Internal haul routes will be kept well maintained;
 - Rubber linings in, for example, chutes and dumpers will be used to reduce impact noise;
 - Drop heights of materials will be minimised;
 - Plant and vehicles will be sequentially started up rather than all together;
 - Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise-sensitive areas. Where possible, loading and unloading will also be carried out away from such areas; and
 - Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturer's specifications.

17.3 Hydrology

- a) Throughout the construction works, all surface water (water from excavations etc.) will be pumped to a holding and settlement tank on site for treatment. The discharge water from the final tank will be routed to the existing surface water system with approval from the local authority. Visual checks of the settlement system will be carried out on a routine basis. Please refer to the Resource & Waste Management Plan by AWN Consulting for further information including the use of silt and petrochemical interception on runoff and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed offsite.
- b) In order to provide fuel to the relevant items of plant on site, a certified double skinned metal fuel tank with integrated pump, delivery hose, meter, filter and locking mechanism will be situated in a secure area on the construction site. It will be situated within a bund. This tank will be certified for lifting when full. Sand piles and emergency clean up spill kits will be readily available in the event of a fuel spill. A hazardous bin will also be available to contain any spent sand or soak pads. New metal gerry cans with proper pouring nozzles will be used to move fuel around the site for the purposes of refuelling items of small plant on site. Drip trays will be used under items of small plant at all times. Any waste oils etc. contained in the drip trays or the bunded area will be emptied into a waste oil drum, which will be stored within the bund. Metal gerry cans and any other items of fuel containers will be stored in certified metal bunded

cabinets. Any gas bottles will be stored in a caged area at a secure location on the site. All will be properly secured at point of work.

- c) Surveys will be undertaken to ascertain the exact location of all infrastructure. The material assets are to be constructed in accordance with all relevant Dublin City Council and Irish Water standards.
- d) These measures will be addressed within the Contractors method statements for the works. The contractor is to conduct the works in accordance with all relevant local authority requirements, and health and safety legislation.

17.4 Noise and Vibration

- a) Examples of Best Practicable Means (BPM) from BS 5228 are to be implemented during construction works are presented below:
 - o Unnecessary revving of engines will be avoided and equipment will be switched off when not in use;
 - o Internal haul routes will be kept well maintained;
 - o Rubber linings in, for example, chutes and dumpers will be used to reduce impact noise;
 - o Drop heights of materials will be minimised;
 - o Plant and vehicles will be sequentially started up rather than all together;
 - o Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise-sensitive areas. Where possible, loading and unloading will also be carried out away from such areas; and
 - o Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturer's specifications.

The effectiveness of the application of mitigation measures is dependent on the construction methodology and the appointed construction contractor.

- b) Selection of Quiet Plant: This practice will be implemented in relation to static plant such as compressors and generators. These units will be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item should be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether or not said item can be replaced with a quieter alternative.
- c) Noise Control at Source: If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

Referring to the potential noise generating sources for the works under consideration, the following best practice mitigation measures will be applied:

- i. Site compounds will be located in excess of 30m from noise sensitive receptors within the site constraints. The use lifting bulky items, dropping, and loading of materials within these areas will be restricted to normal working hours.
- ii. For mobile plant items such as dump trucks, excavators and loaders, the installation of an acoustic exhaust and/or maintaining enclosure panels closed during operation can reduce noise levels by up to 10dB. Mobile plant will be switched off when not in use and not left idling.
- iii. For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover. For concrete mixers,

- control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- iv. For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
 - v. For compressors, generators, and pumps, these can be surrounded by acoustic lagging or enclosed with in acoustic enclosures providing air ventilation.
 - vi. Demountable enclosures can also be used to screen operatives using hand tools and will be moved around site as necessary.
 - vii. All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.
- d) **Screening:** Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Construction site hoarding will be constructed around the site boundaries as standard. The hoarding will be constructed use standard plywood material to provide adequate sound insulation.
- In addition, careful planning of the site layout will also be implemented. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.
- e) **Monitoring:** Construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion. Noise monitoring will be conducted in accordance with the International Standard ISO 1996: 2017: Acoustics - Description, measurement, and assessment of environmental noise.
- f) **Project Programme:** The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. During excavation or when other high noise generating works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time. An outline phasing strategy is set out in the CEMP but this is subject to detailed development following appointment of a Contractor.
- g) The vibration from construction activities will be limited to the values set out in Tables 8.4 of the EIAR. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Limit values have been provided for soundly constructed residential and commercial properties.
- The best practice mitigation measures set out below:
- Liaison with the public
 - Monitoring
 - Vibration Control at Source
- h) **Liaison with the Public:** A designated environmental liaison officer will be appointed to site during construction works. Any vibration complaints will be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particular vibration construction activity is planned or other works with the potential to generate high levels of vibration, or where vibration works are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the vibration works.
- i) **Vibration Control at Source:** If replacing a vibration item of plant is not a viable or practical option, consideration will be given to control "at source". This refers to the modification of an item of plant or the application of improved vibration reduction methods in consultation with the supplier.

j) Monitoring

The need for noise and vibration monitoring and potential monitoring locations will be the subject of discussion and agreement between the contractor and Dublin City Council (DCC) . Noise and vibration monitoring would allow periods where elevated noise and vibration levels arise be identified and allow works to be halted or alternative working practices to be explored. The contractor will need to adhere to any site-specific noise monitoring related conditions imposed by DCC. Any incidents of noise limits being exceeded will be reported by the contractor to the Applicant to forward to the DCC as soon as is practical.

17.5 Air and Climate

- a) In order to minimise dust emissions during construction, a series of mitigation measures have been prepared in the form of a Dust Management Plan (see EIAR Appendix 9.3). Provided the dust management measures outlined in the plan (see EIAR Appendix 9.3) are adhered to, the air quality impacts during the construction phase will not be significant. Regard has also been taken for the import of infill materials from off-site locations and potential dust impacts as a result of this will also be mitigated.
- b) Climate: Construction traffic and embodied energy of construction materials are expected to be the dominant source of greenhouse gas emissions as a result of the construction phase of the development. Construction vehicles, generators etc., may give rise to some CO₂ and N₂O emissions. However, due to short-term and temporary nature of these works, the impact on climate will not be significant. However, due to short-term and temporary nature of these works, the impact causes noticeable changes in the character of the environment but without significant consequences. Nevertheless, some site-specific mitigation measures will be implemented during the construction phase of the proposed development to ensure emissions are reduced further. In particular the prevention of on-site or delivery vehicles from leaving engines idling, even over short periods. Minimising delivery vehicles due to poor timing or ordering on site will aid to minimise the embodied carbon footprint of the site.
- c) Mitigation Measures (Construction):
- i. Avoid unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust.
 - ii. Manual Stripping of buildings of internal fixings, metals, glass and asbestos.
 - iii. A 3m high solid wooden hoarding with a 3m high dust net shall be erected around the entire construction site perimeter giving a total dust barrier height of 6m.
 - iv. Use of rubble chutes and receptor skips during construction activities.
 - v. All buildings in which asbestos has been identified (none anticipated) shall be sealed during the asbestos removal process. Asbestos shall only be removed by an appropriately permitted company. All asbestos waste shall be double bagged, stored in a dedicated sealed waste container/skip prior to removal off-site for disposal at an appropriately permitted/licenced facility. Records of all asbestos waste removed from site shall be maintained by the site manager and certificates of destruction shall be provided by the asbestos removal contractor. Asbestos surveys shall be conducted by an appropriately HSE approved contractor.
 - vi. During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water and wetting agents.
 - vii. Hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads will be restricted to essential site traffic only.
 - viii. A road sweeper vehicle shall be on-site at all times to clean soiled public roads in the vicinity of the site.
 - ix. A mobile wheel wash unit shall be installed at the site exit to wash down the wheels of all trucks exiting the site.

- x. An independent environmental consultant shall be appointed by the contractor to prepare a dust control and monitoring method statement prior to the commencement of site activities.
 - xi. A weekly inspection of each dust gauge will ensure that the site manager identifies at the earliest instance if dust suppression techniques shall be implemented at the project site areas.
 - xii. Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10kmh and by use of a mechanical road sweeper.
 - xiii. The overloading of tipper trucks exiting the site shall not be permitted.
 - xiv. Aggregates will be transported to and from the site in covered trucks.
 - xv. Where the likelihood of windblown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.
 - xvi. Wetting agents shall be utilised to provide a more effective surface wetting procedure.
 - xvii. Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels.
 - xviii. All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.
 - xix. Material handling systems and site stockpiling of materials will be designed and laid out 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.
 - xx. Material stockpiles containing fine or dusty elements including top soils shall be covered with tarpaulins.
 - xxi. Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening system.
 - xxii. A programme of air quality monitoring shall be implemented at the site boundaries for the duration of construction phase activities to ensure that the air quality standards relating to dust deposition and PM10 are not exceeded. Where levels exceed specified air quality limit values, dust generating activities shall immediately cease and alternative working methods shall be implemented.
 - xxiii. A complaints log shall be maintained by the construction site manager and in the event of a complaint relating to dust nuisance, an investigation shall be initiated.
- d) Refer to EIAR Table 9.22 (reproduced below) for a summary of dust control techniques which will be implemented at the site during activities.

SUMMARY OF DUST CONTROL TECHNIQUES	
Sources of Particular Matter	Control Technique
Loading and unloading processes	Containment / Suppression
	Reducing drop heights
	Use of variable height conveyors
	Use of chutes

Double handling transfer points	Site and process design
	Reduction of vehicle movements
Aggregate stockpiles	Appropriate siting
	Away from closest receptors/site boundaries
	Use of enclosures and bunding
	Reduced drop heights
	Water suppression
	Sprays
	Bowsers
	Covering
	Covered stock bins
	Dust covers
Mobile Crushing of site generated C&D Waste (if applicable)	Appropriate siting
	Away from closest receptors/site boundaries
	Use of enclosures and bunding
	Reduced drop heights
	Water suppression
	Sprays
	Bowsers
Conveyors / transfer points	Containment
	Wind boards
	Housings
	Suppression
	Water sprays
	Housekeeping
	Clean up of spilled materials

	Appropriate siting
	Away from closest receptors/site boundaries
Concrete Cutting Plant	Suppression
	Water sprays fitted to equipment/plant
Roadways including site yard area	Suppression
	Water sprays and bowsers
	Wheel wash at site compounds
Vehicles	Washing / Covering
	Wheel wash to be installed at site exit
	Vehicles exiting the site with C&D loads shall be covered with tarpaulin

17.6 Landscape and Visual Impact

- a) Consideration of the impact on landscape and visual aspects has been integral in the design and layout of the scheme. A number of mitigation measures have been proposed including:
 - i. Reference to DCC Green Infrastructure Policies and Objectives for development sites with the inclusion of Sustainable Urban Drainage proposals integrated into the landscape.
 - ii. Provision of open spaces for future interaction of the said and adjoining developments
 - iii. The use of high quality hard and soft landscape materials befitting of a new residential scheme and suitable to the existing landscape
 - iv. Integrating the landscape elements of this extensive development into the surrounding built environment and connecting pathways and cycleways.
 - v. Retention of existing trees on, and adjoining, the site and their landscape and screening value and integration into the landscape design with additional planting.

17.7 Traffic and Transportation

- a) The appointed Contractor shall prepare a Construction Transport Management Plan prior to the commencement of development. The preparation of the CTMP will entail an assessment of existing nearby employment, educational, recreational and commercial facilities to establish the peak times for vehicles, cyclists and pedestrians. This information would be used to develop the optimum start/finish/delivery times to minimise impact on these existing facilities. The CTMP issued at construction stage will identify haulage routes and restrictions as appropriate in discussion with the Local Authority. There will also be a requirement for comprehensive measures as part of the construction management.
- b) A Construction Management Plan shall be prepared and implemented by the appointed Contractor prior to commencement of development to include:
 - i. Provision of temporary warning signs and Banksmen controlling access and egress from the site;

- ii. All marshalling areas and site offices will be contained within the site boundary and will therefore have little impact on external roads;
 - iii. Wheel washers/judder bars to clean off vehicles exiting the site during spoil removal;
 - iv. All loads to be properly stowed and secured with a tarpaulin, where appropriate;
 - v. Routine sweeping/cleaning of the road and footpaths in front of the site;
 - vi. No uncontrolled runoff to the public road from dewatering/pumping carried out during construction activity.
 - vii. Hoarding will be provided along the site frontage to protect pedestrians using the footpaths.
 - viii. Existing public lighting will be maintained.
- c) Construction vehicle movements to be minimised through:
- i. Consolidation of delivery loads to/from the site and manage large deliveries on site to occur outside of peak traffic periods;
 - ii. 'Cut' material generated by the construction works will be re-used on site where possible, through various accommodation works;
 - iii. Adequate storage space on site will be provided;
 - iv. A strategy will be developed to minimize construction material quantities as much as possible, such as the use of precast/prefabricated materials, where possible;
 - v. Construction staff vehicle movements will also be minimized by promoting the use of public transport, shared use of vehicles, cycling and walking.

17.8 Material Assets

- a) Connections to the existing electricity, water services, gas and telecommunications networks will be coordinated with the relevant utility provider and carried out by approved contractors.

17.9 Waste

- a) A project specific RWMP has been prepared in line with the requirements of the guidance document issued by the DoEHLG. The site-specific RWMP will be updated and submitted prior to commencement of the construction phase which may refine the above waste estimates. Adherence to the high-level strategy presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the construction phase of the proposed development.
- b) In addition, the following mitigation measures will be implemented:
 - Building materials will be chosen with an aim to 'design out waste'.
 - On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery - it is anticipated that the following waste types, at a minimum, will be segregated:
 - a. Concrete rubble (including ceramics, tiles and bricks).
 - b. Plasterboard
 - c. Metals
 - d. Glass
 - e. Timber
 - Left over materials (e.g. timber off-cuts, broken concrete blocks/bricks) and any suitable construction materials shall be re-used on-site, where possible.
 - All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.
 - Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).
 - A waste manager will be appointed by the main contractor(s) to ensure effective management of waste during the excavation and construction works.

- All construction staff will be provided with training regarding the waste management procedures.
 - All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal.
 - All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licenced facilities; and
 - All waste leaving the site will be recorded and copies of relevant documentation maintained.
- c) Mitigation measures to ensure that the waste arising from the construction phase of the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997 and the EMR Waste Management Plan (2015 - 2021). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

17.10 Cultural Heritage

All areas of the site have been extensively excavated. The archaeological potential for the area is negligible as a result of this no further archaeological input is recommended.

17.11 Arboricultural Impact and Tree Protection Strategy

The overall objectives are to retain the maximum number of good quality trees whilst also achieving densities of housing compliant with current standards and planning recommendations. In the case of this development, the retained trees are in locations peripheral to the site extents where they will not be affected by the proposed buildings.

There are no Tree Preservation Orders on the site. There is no objective in the City Development plan to protect and preserve trees and Woodlands on the site. As outlined in the arboricultural impact assessment, no trees are impacted by the proposals.

An arboricultural method statement is provided as part of the arboricultural element of the submission with the aim of ensuring retained trees are maintained for the duration of the construction stage of the development free of negative construction related impacts.

A Site Arborist shall be appointed prior to the commencement of site construction works and will be responsible for the setting up and monitoring of tree protection, liaising with local authority tree / planning officers and providing feedback and advice to the design construction teams on issues relevant to trees. The Site Arborist shall be appointed to carry out a post-construction tree survey/assessment.

17.12 Protection of Water Quality

Construction management measures including specific measures to prevent pollution of watercourses will be incorporated into the CEMP, which will ensure that there are no likely effects on the receiving environment of the River Tolka from surface water runoff.

Fuel/Lubricant spillage from equipment

- Chemicals used will be stored in sealed containers.
- Chemicals shall be applied in such a way as to avoid any spillage or leakage.
- All refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses and away from drains and watercourses as far as reasonably practicable. Vehicles will not be left unattended during refuelling.
- It is proposed that the construction compound will be located within the site boundary.
- Storage areas, machinery depots and site offices will be located within the site boundary.
- Spill kits will be made available and all staff will be properly trained on correct use.

- All fuels, lubricants and hydraulic fluids required to be stored on site will be kept in secure bunded areas. The bunded area will accommodate 110% of the total capacity of the containers within it.
- Containers will be properly secured to prevent unauthorised access and misuse. An effective spillage procedure will be put in place with all staff properly briefed. Any waste oils or hydraulic fluids will be collected, stored in appropriate containers and disposed of offsite in an appropriate manner.
- All plant shall be well maintained with any fuel or oil drips attended to on an ongoing basis.
- Any minor spillage during this process will be cleaned up immediately.
- Should any incident occur, the situation will be dealt with and coordinated by the nearest supervisor who will be responsible for instructions by the Local Authority.

Concrete

- Wet concrete and cement are very alkaline and corrosive and can cause serious pollution to watercourses. Disposal of raw or uncured waste concrete will be controlled during delivery or by removal by the contractor.
- Careful management of bulk-liquid concrete will be implemented during the construction phase, including careful and controlled pouring and handling, secure shuttering / form-work and adequate curing times.
- Wash water from cleaning ready mix concrete lorries and mixers may be contaminated with cement and is therefore highly alkaline, therefore, washing will not be permitted on site.

Mitigation measures out in the CEMP in accordance with CIRIA Good Practice Guidelines (C532 - Control of Water Pollution from Construction Sites) will be implemented during the construction phase of the proposed development.

Guidelines in the following best practice documents should also be adhered to:

- Construction Industry Research and Information Association (CIRIA) (2005) Environmental Good Practice on Site (C692)
- Construction Industry Research and Information Association (2001) Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532)
- Construction Industry Research and Information Association (2000) Environmental Handbook for Building and Civil Engineering Projects (C512)
- Environmental Protection Agency (2015) List of Waste and Determining if Waste is Hazardous or Non-Hazardous
- Environment Agency et al. (2015) Guidance on the Classification and Assessment of Waste, Technical Guidance WM3
- Environmental Protection Agency (2013) Guidance (and Templates) on the Management of Contaminated Land and Groundwater at EPA Licensed Site
- Environment Agency (2004) Model Procedures for the Management of Land Contamination (CLR11)

The construction team must implement the following specific mitigation measures as part of the Construction Environmental Management Plan to prevent the release of hydrocarbons, aggregates, polluting chemicals, sediment and silt and contaminated waters into water course on site.

- i. Surface waters from the construction site should be managed using a system of temporary on-site attenuation features, and these should be fitted with silt barrier devices such as silt fences or silt busters.
- ii. Discharge water generated during laying on concrete should be removed off site for treatment and disposal.

The following pollution control measures must also be employed on site:

- i. A dedicated re-fuelling location must be established on site, and this must be situated away from any watercourse on site.
- ii. Spill kits stations must be provided at the fuelling location for the duration of the works.
- iii. Staff must be provided with training on spill control and the use of spill kits.
- iv. All fuel storage containers must be appropriately bunded, roofed and protected from vehicle movements. These bunds will provide added protection in the event of a flood event on site.
- v. All chemicals must be stored as per manufacturer's instructions. A dedicated chemical bund will be provided on site.
- vi. Storage of fuel, and servicing and refuelling of equipment or machinery must be at least 20m from ground clearance or rock-breaking activities.
- vii. The dedicated refuelling area must be underlain by concrete hard standing. All fuel and oil tank should be inspected on a regular basis for signs of spillages, leaks and damage during use. A record of these inspections must be kept, and any improvements needed be carried out immediately.
- viii. The risk of fuel spillages on a construction site is at its greatest when refuelling plant. Therefore, only designated trained and competent operatives should be authorised to refuel plant on site. Plant and equipment should be brought to a designated refuelling area rather than refuelling at numerous locations about the site.
- ix. Chemicals used on site must be returned to the site compound and secured in a lockable and sealed container overnight in proximity to the fuel storage area.
- x. Drip trays must be utilised on site for all pumps situated within 20m away from ground clearance areas.
- xi. Procedures and contingency plans must be established on site to address cleaning up small spillages as well as dealing with an emergency incident. A stock of absorbent materials such as sand, spill granules, absorbent pads and booms must be kept on site, on plant working near the river and at the refuelling area.
- xii. Daily plant inspections must be completed by all plant operators on site to ensure that all plant is maintained in good working order. Where leaks are noted on these inspection sheets, the plant must be removed from operations for repairs.
- xiii. All personnel should observe standard precautions for handling of materials as outlined in the Safety Data Sheets (SDS) for each material, including the use of PPE. Where conditions warrant, emergency spill containment supplies should be available for immediate use.

Best practice concrete / aggregate management measures must be employed on site. These will include:

- i. A designated concrete wash out area should be set up on site; typically, this will involve washing the chutes, pumps into a designated IBC before removing the wastewater off site for disposal. These procedures should be covered during a Site Safety & Environmental Induction session.
- ii. Best practice in bulk-liquid concrete management should be employed on site addressing pouring and handling, secure shuttering, adequate curing times etc.
- iii. Stockpile areas for sands and gravel must be kept to a minimum size, well away from the drains and watercourses (minimum 50m).
- iv. Where concrete shuttering is used, measures must be put in place to prevent against shutter failure and control storage, handling and disposal of shutter oils.
- v. Activities which result in the creation of cement dust must be controlled by dampening down the areas.
- vi. Raw and uncured waste concrete must be disposed of by removal from the site.
- vii. Stockpile areas for sands and gravel will be kept to a minimum size, well away from the watercourse on site.

The proposed development will be fully serviced with [separate] foul and storm sewers which will have adequate capacity for the facility likely discharge, as required by Irish Water licencing.

The design of the proposed development will incorporate Sustainable urban Drainage Systems (SuDS) features in order to improve water quality and reduce the quantity of surface water discharging into the receiving system. The water supply network will include low flow devices with the aim of minimising water usage.

It is noted that the design of the proposed development will also include a proposed oil/ petrol interceptor on the stormwater drainage infrastructure. All silt and oil interceptors must be serviced regularly to ensure continued performance.

The design of the proposed development will also incorporate a foul drainage system which, as per other urban developments in Dublin region, will outfall to the public sewer and will be treated at the Irish Water Ringsend WWTP prior to subsequent discharge following treatment to Dublin Bay. This WWTP is required to operate under an EPA licence and must meet environmental legislative requirements as set out in such licence.

17.13 Biodiversity Enhancement

The landscaping of the site offers the potential for biodiversity enhancements within the site. Future landscaping of the site will adhere to the following recommendations:

- i. The natural verges along the treelines and hedgerows that are to be retained should be retained and managed appropriately for the benefit of wildlife. They should not be sprayed with herbicide and a low intensity mowing or strimming regime should be incorporated. This will benefit local pollinators.
- ii. Native trees and shrubs will preferably be used in the landscaping, followed by ornamental species that are of benefit to pollinators.
- iii. A proportion of the grassland / parkland habitats within the site should be managed through methods that mimic traditional grassland management (low level mowing regimes). This will benefit local pollinators. Locally sourced wildflower seed would also be beneficial.
- iv. Where possible the importation of topsoil from outside the area should be avoided.
- v. Garden plants that have the potential to become invasive must be avoided.
- vi. Wherever possible semi-natural grassland/meadow verge and native hedgerow habitats should be incorporated into the proposed landscaping plan. The margins of the Site are likely to be the most appropriate areas for this type of less-managed habitat and will provide connectivity and a means of getting around the Site for badger and other small mammals such as hedgehog, while also providing foraging opportunities for these species. No or minimal chemical plant/pest control products should be used within these areas to encourage beetles and other badger food species (this will also benefit biodiversity at the site in general).

18 Environmental Impact Monitoring Measures

Monitoring is generally required where there may be significant residual impacts despite the implementation of the mitigation measures. The following monitoring measures are recommended:

- Follow up bat surveys will be carried out 1-2 years post construction to evaluate implemented measures to provide commuting and foraging habitat along a dark corridor for bats. The monitoring should be carried out by a qualified Ecologist and take place in the summer months May - September in the form of activity surveys including transects and automatic static detectors.

The Arboricultural Consultant will:

- Liaise with the relevant authorities during the project.

- Constantly monitor the project with regard to tree health to ensure that no damage is caused to the subject trees during the operational works.
- Report any negligent damage to trees, which will prejudice their health.
- Monitor works carried out by the Arboricultural Contractor and Main Contractor within the 'Root Protection Area'.

19 Conclusion

This document has provided an outline construction management plan the proposed residential development of lands at Swords Road, Whitehall, Dublin 9 for planning application purposes.

The proposed development will consist of the construction of 7 no. blocks in heights up to 8 storeys (over single level basement) comprising 472 no. apartment units, a creche, café unit, and internal residential amenity space. The proposal also includes car, cycle, and motorcycle parking, public and communal open spaces, landscaping, bin stores, plant areas, substations, switch rooms, and all associated site development works and services provision. Access is provided from the development from Swords Road with associated upgrades to the existing public road and footpaths. A full description of the development is provided in the statutory notices and in Chapter 3 of the EIAR submitted with the application.

The construction programme for the works will take an estimated 36 months.

To minimise construction impacts upon the surrounding road network, all construction traffic access and exits the site from the M50 Junction 2 joining Swords Road at the Santry Roundabout. From exiting the M50, this route is approximately 1.9km to / from the site. Refer to Figure 2-1 for illustration.

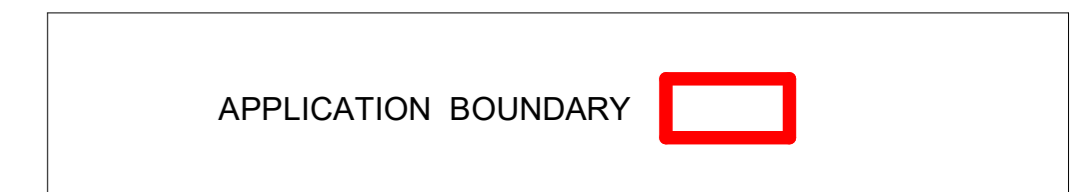
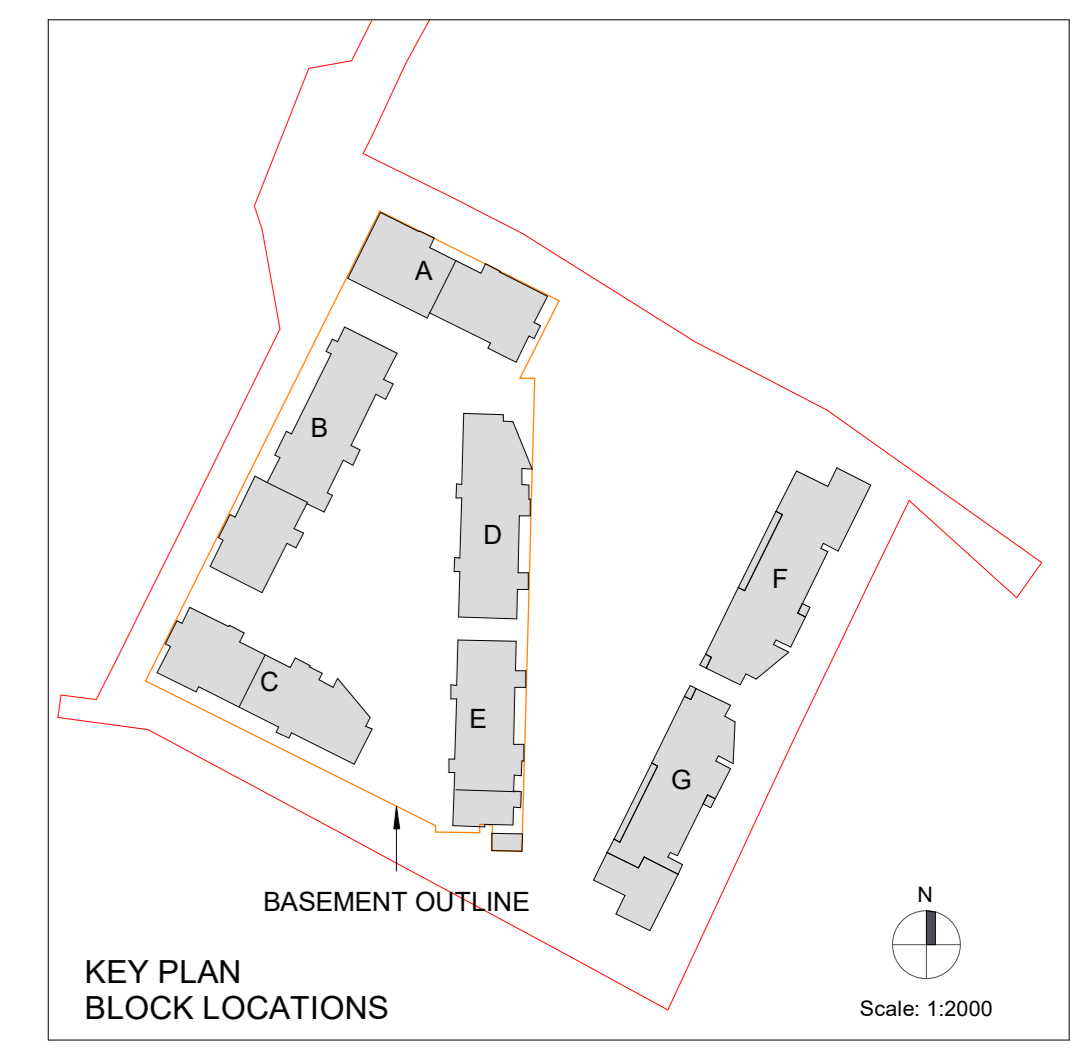
It is anticipated that construction working hours will be stipulated in the planning conditions attached to the planning grant. Any working hours outside the normal construction working hours will be agreed with DCC. It is anticipated that at the peak of construction there will be a workforce varying in a range of approximately 300 people employed depending on phasing and stage of construction.

The Main Contractor will be required to prepare a detailed construction management plan for the project, taking into account the requirements of this Construction Environmental Management Plan and with due regard to the Environmental Impact Assessment Report (EIAR) and associated reports.

Appendix A Site Layout Drawing

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 FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING. DO NOT SCALE.
 ALL CONTRACTORS MUST VISIT THE SITE AND BE RESPONSIBLE FOR CHECKING ALL SETTING OUT DIMENSIONS AND NOTIFYING THE ARCHITECT OF ANY DISCREPANCIES PRIOR TO ANY MANUFACTURE OR CONSTRUCTION WORK.
 NOTES:

DESIGN INTENT DRAWING



TOTAL PROPOSED CAR PARKING SPACES

BASEMENT:

- no. 249 RESIDENTS PARKING (5 of them are for electric vehicles)
- no. 5 CRECHE STAFF
- no. 18 ACCESSIBLE PARKING
- no. 5 CAR SHARE / CAR CLUB

SURFACE LEVEL:

- no. 37 RESIDENTS PARKING
- no. 4 ACCESSIBLE PARKING
- no. 19 VISITORS PARKING (5 of them are drop-off parking)

**A TOTAL OF 317 CAR PARKING SPACES PROVIDED
313 OF WHICH FOR RESIDENTS**

- no. 14 MOTORCYCLE PARKING
- no. 732 SECURE CYCLE SPACES
- no. 238 VISITOR CYCLE SPACES
- no. 14 CARGO BIKE SPACES

A TOTAL OF 962 CYCLE SPACES PROVIDED



1 SITE PLAN
1:500

Rev	Date	Description	Issued By

Project Stage: **PLANNING**

Client: Eastwise Construction Swords Limited

Project: Hartfield Place, Swords Road, Whitehall, Dublin 9, D09 C7F8

Drawing Title: **SITE PLAN**

Drawn	Checked	Paper Size	Scale	Date
DP	CM	A0	As Indicated	Mar. 2022

Project No: HARTPL 000502

File Name: HARTPL-CWO-SM-00-DR-A-000502

Status: **S2-Suitable For Information**