

**CONSTRUCTION
ENVIRONMENTAL
MANAGEMENT PLAN FOR A
PROPOSED STRATEGIC
HOUSING DEVELOPMENT**

‘BARRINGTON TOWER’

**BRENNANSTOWN ROAD,
CABINTEELY,
CO. DUBLIN**

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1.0 INTRODUCTION

This Construction Environmental Management Plan (CEMP) has been prepared by AWN Consulting (AWN) on behalf of Cairn Homes Property Limited. The development will include the demolition of Winterbrook, an existing dwelling and partial demolition of the modern extension dwelling to Barrington Tower. The protected structure 'Barrington Tower' will be retained, restored and reused. The proposed 'Build-to-Rent' (BTR) development will consist of the construction of 8 no. blocks in heights up to 10 storeys comprising 534 residential units, a creche, a retail unit, residential support facilities and residential services and amenities. The proposal also includes car and cycle parking, public and communal open spaces, landscaping, bin stores, plant areas, substations, switch rooms, and all associated site development works and services provision.

This CEMP explains the construction techniques and methodologies which will be implemented during construction of the proposed development.

The CEMP mitigation measures will be implemented to ensure that pollution and nuisances arising from site clearance and construction activities is prevented where possible and managed in accordance with best practice environmental protection.

The CEMP will be implemented and adhered to by the construction contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures.

The construction contractor will provide a further detailed CEMP to include any subsequent planning conditions relevant to the proposed development and set out further detail of the overarching vision of how the construction contractor of the proposed development manage the site in a safe and organised manner.

This CEMP has been prepared to account for activities at the site during the excavation and construction phase of the project.

The main issues that have been considered within this document are as follows;

- Description of works;
- Construction programme and phasing;
- Site logistics;
- Workforce;
- Public relations and community liaison;
- Construction traffic and access; and
- Safety, health and environmental management.

2.0 DESCRIPTION OF THE PROJECT

Figure 2.1 presents a site location plan showing the location at Brennanstown Road, Cabinteely, Co. Dublin.

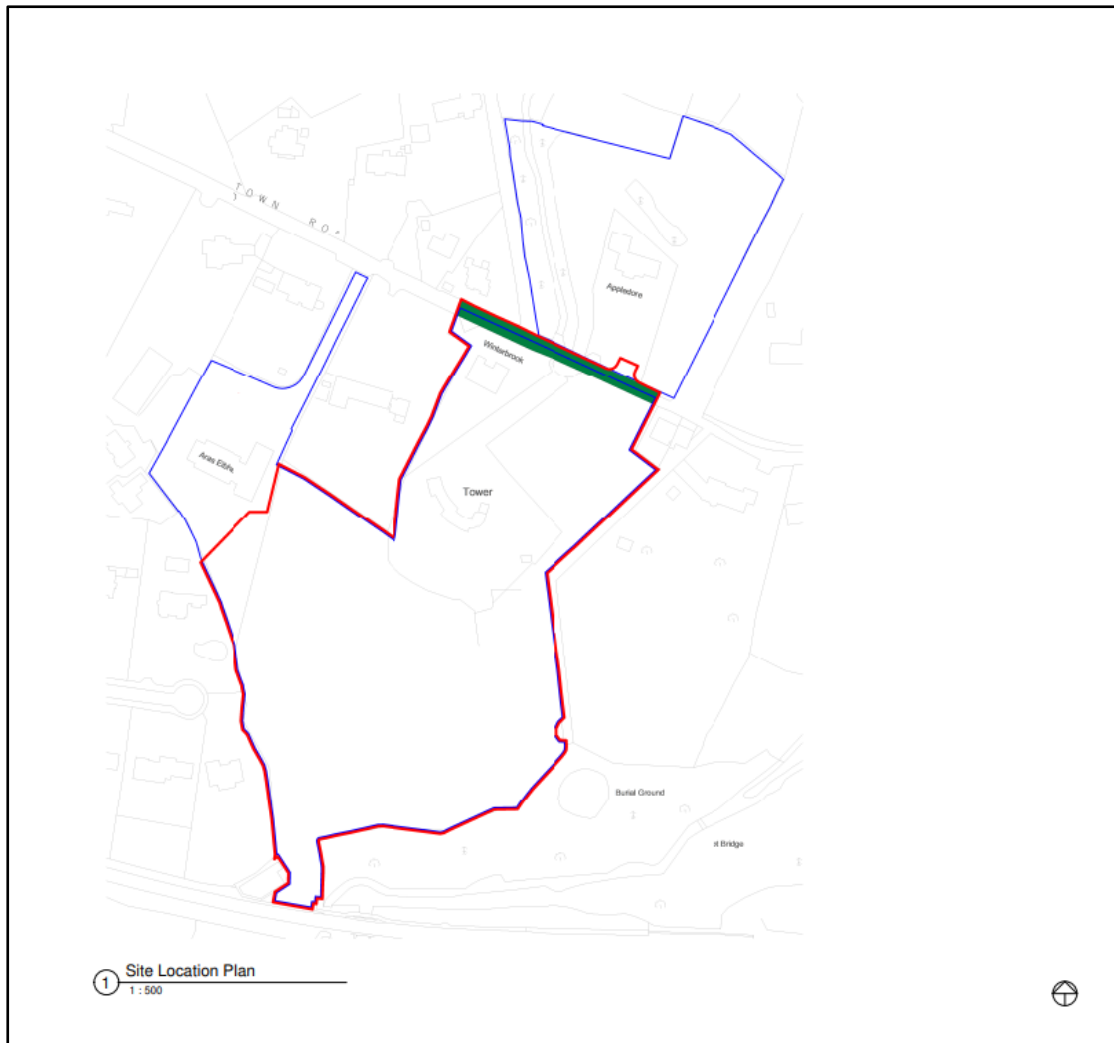


Figure 2.1 Proposed location of site (illustrated by red line boundary)

The proposed development consists of a strategic housing development.

Residential

The proposed development provides 534 no. residential units as follows:

- 30 no. studios (5.6%)
- 135 no. 1 beds (25.3%)
- 318 no. 2 beds (59.6%)
- 51 no. 3 beds (9.5%)

The 534 no. units provide a residential density of 140 uph.

The units will be provided in 8 blocks ranging up to 10 storeys in height. All of these units have associate private space in the form of terraces or balconies which will look east/west/ north/ south. 50.7% of the proposed units are dual aspect.

Block AB provides 40 no. units and is 5 storeys. Block CD provides 32 no. units and is 5 storeys in height. Block E provides 68 no. units and ranges in height from 5 – 8 storeys (including the lower ground floor). Block F provides 96 no. units and ranges in height from 9 – 10 storeys (including the lower ground floor). Block G provides 89 no. units and ranges in height from 7 -8 storeys (including the lower ground floor). Block H provides 99 no. units and is 9 storeys in height. Block I provides 48 no. units and

ranges in height from 5 to 6 storeys (including lower ground floor). Block J provides 62 no. units and ranges in height from 5 to 6 storeys (including lower ground floor).

Additional Facilities

In addition to residential units, the proposed development also provides a retail unit and a creche. The convenience retail unit, measuring 366.8sqm, and the creche, measuring 356.5 sqm, is located on the ground floor of Block CD.

Communal Facilities

Two residential amenity spaces will be provided. One on the ground floor of Block E, measuring 646sqm, and the second on the ground floor of Block I, measuring 850sqm. The residential amenities will include flexible spaces including entertainment rooms, meeting rooms, parcel rooms, media rooms, lounge and workspaces, gyms and studio, chef's kitchen and dining area.

Communal open space is provided for each of the blocks and will be distinguishable from the private and public open spaces as demonstrated by the landscape drawings.

Site Development Works

As part of the planning application, it is proposed to demolish the existing habitable dwelling "Winterbrook", and the derelict, former dwelling attached to Barrington Tower on the site.

All associated site development works, open spaces, bat house, landscaping, boundary treatments, plant areas, waste management areas, cycle parking areas, and services provision (including ESB substations).

Layout and Design

The proposed development is set out in 8 residential blocks. The materials and finishes of the proposed blocks will be designed to a high architectural standard. The materials and finishes have also been considered with regard to the surrounding existing pattern of development and in the context of the protected structure Barrington Tower.

Blocks AB and CD are located at the northern portion of the site along the Brennanstown Road. Blocks E – J are consolidated to the south of the site.

The existing Barrington Tower will be preserved, restored and made a focal point within the heart of the new development.

Blocks AB and Blocks CD are located to the north of the site along the Brennanstown Road. These blocks are both 5 storeys in height and their positioning on the site will exploit views into the site and its main focal point of the development, Barrington Tower. The creche and retail space located at the ground floor of Blocks CD will create an active use at the schemes entrance.

Block E is located to the east of the site and to the southeast of Barrington Tower. This Block steps from 5 – 8 storeys in height (including the lower ground floor). The northern part of Block E steps down in height, enhancing the protected structure and the main area of public open space. Block E also contains c.646 sqm of communal amenity space at ground and first floor levels which will contribute to the public plaza surrounding their protected structure with their active uses.

Block F is located to the southeast of the site and steps down from 10 storeys (including the lower ground floor) to 9 storeys in height towards the north of the site. This Block takes advantage of the site's rising topography from south to the north of the site.

Block G is located at the centre of the site and steps down in height from 8 (including the lower ground floor) to 7 storeys. This Block also takes advantage of the site's rising topography from south to the north of the site.

Block H is the most southern Block and is 9 storeys in height (including the lower ground floor).

Block I is located to the southwest of the site and is 5 – 6 storeys in height (including the lower ground floor). This block contains c.850 sqm of communal amenity space.

Block J is located to the west of the site and is 5- 6 storeys in height (including the lower ground floor).

The buildings have been located to sensitively reflect the existing neighbouring properties and Barrington Tower. The buildings have been consolidated, to ensure that the built site coverage is minimised. The building footprints enable the provision of open space between the blocks within this predominantly car free development. These gaps between the buildings enables visibility throughout the development, while also ensure that the impact in terms of scale and visual impact is minimised. This provides positive views both from within the scheme to Barrington Tower and when viewed from outside the boundaries of the development site.

Access and Parking

The site is a highly accessible site, which, as set out in Chapter 11 of this EIAR 'Traffic and Transportation' can accommodate a reduced level of car parking in favour of increased levels of cycle parking and pedestrian mobility. The landscaping plan, along with various residential amenities have been located to ensure ease of pedestrian movement through the site following desire lines and enabling clear legibility within the site.

The proposed development includes a total of 419 no car parking spaces Car parking spaces for the residential units is provided at an average rate of 1.3 no. spaces per unit. These are provided within the basement and some surface level spaces. The proposal includes a total of 1,266 no. cycle parking spaces. There are 1058 for the residents in the basement, a ratio of 2 cycle spaces per unit. In addition to this, there is a further 208no. cycle parking space at surface level for residential visitors, the creche and other users.

3.0 CONSTRUCTION PROGRAMME AND PHASING

The construction works associated with the development will be undertaken in a single phase. Blocks A-D will be completed first (weeks 10-60), followed by Blocks E,F and G (weeks 15-145). Blocks H, I and J will be completed last (weeks 45-170).

The construction programme is intended to commence in the fourth quarter of 2022 / first quarter of 2023, with a 39-month programme.

Subject to detailed planning at the construction stage, it is currently envisaged that the construction compound, offices, staff parking, waste storage and collection area and storage areas will be located at the locations in Figure 3.1, and in Appendix 1 of this report.

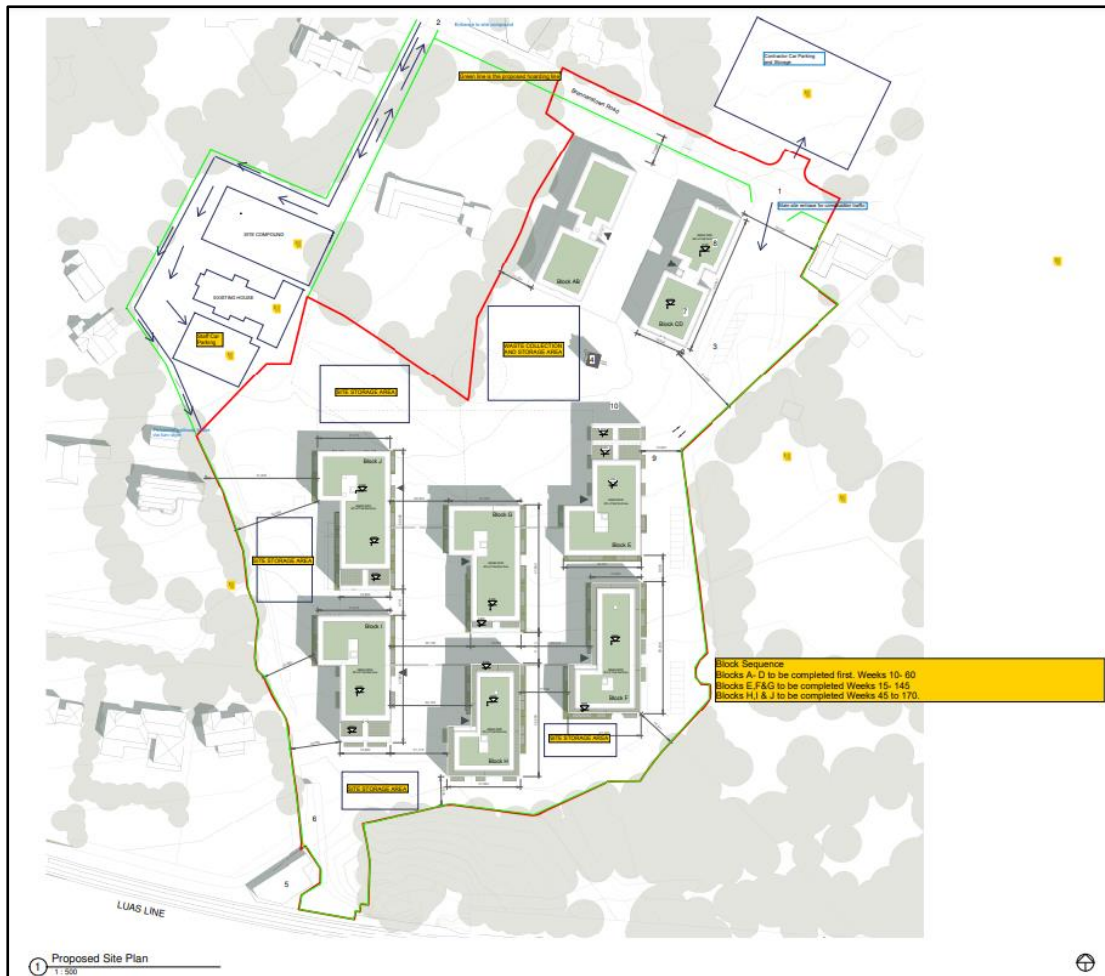


Figure 3.1 Site construction compound locations (larger image included as Appendix 1 of this report)

3.1 Demolition Phase

The development will include the demolition of Winterbrook, an existing dwelling and partial demolition of the modern extension dwelling to Barrington Tower. The existing wall along Brennanstown Road will also be demolished, with stone from the wall to be reused in the landscape proposal at the front of the proposed development. The protected structure 'Barrington Tower' will be retained, restored and reused.

The demolition shall be in full compliance with BS 6187 "*Demolition in Buildings*"¹ and all measures necessary will be taken to protect the adjoining buildings from damage and persons from injury. Prior to the demolition works a Construction and Demolition Waste Resource Management Plan in accordance with The Environmental Protection Agency (EPA) of Ireland issued guidelines the '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*' (2021)² will be updated and prepared by the appointed demolition contractor to include any subsequent planning conditions.

The demolition will commence with the removal of any hazardous materials by an appropriately qualified contractor for disposal at an appropriate licensed waste collection facility. All non-structural items will then be removed and segregated for re-use or re-cycling where possible. The remainder of the building structure will be removed in an approved sequence outlined in a Method Statement prepared by the yet to be selected demolition contractor's structural engineer.

3.2 Excavation & Construction Phase

The project excavations will involve excavations for new foundations, site levelling and excavations for roads and services. The Resource and Waste Management Plan (RWMP) prepared by AWN (NK/217501.0623WMR02) for the development will be updated by the main contractor and will be in compliance with the requirements of the 'Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects'² published by the Environmental Protection Agency (November 2021), which will identify and categorise any waste arising from the development.

The plan contains the proposals for the minimisation, re-use and re-cycling of site generated waste. As part of this plan separate storage areas will be designated on the site for various types of material in order to maximise the re-use and re-cycling potential. Procedure will also be put in place to ensure that all sub-contractors fulfil the requirements of the Waste Management Plan.

The project involves the construction of 534 no. residential units and residential amenities along with all associated site works.

The works will include:

- Site set up, welfare facilities and compound establishment, decommissioning and movement of site compound and facilities as needed.
- Set up of hoarding around compound and the site boundary.
- Erection of safety signage to all areas and implementation of traffic/pedestrian management plan.

4.0 EXCAVATIONS

4.1 Archaeological and Architectural Heritage

Archaeological testing of the site has been undertaken by IAC Archaeology. IAC Archaeology noted that the northern half of the site contains the Recorded Protected Structure – Barrington Tower (RPS 1729) which is adjoined to an abandoned 1970s house. The grounds to the north and northeast of the house have been laid with hardcore and the surrounding garden is overgrown and partially enclosed by hoarding. The southern half of the site comprises overgrown grass in the south, bisected by a modern trackway which leads from a compound towards the Luas line in the southwest corner of site.

IAC Archaeology (EIAR Chapter 14 Cultural Heritage – Archaeology (Section 14.6)) note that *'although geophysical survey and archaeological testing failed to identify any features of archaeological significance, it remains possible that small-scale archaeological features survive within the proposed development area outside of the footprint of the excavated trenches'*.

In terms of mitigation measures, IAC Archaeology (EIAR Chapter 14 Cultural Heritage – Archaeology (Section 14.8)) note that all topsoil stripping associated with the development will be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the Department of Housing, Local Government and Heritage.

4.2 Ground Conditions

Site investigations and environmental soil testing was undertaken by Site Investigations Limited between August and November 2020.

Environmental testing was carried out on three samples from the site. For material to be removed from site, Suite I testing was carried out to determine if the material is hazardous or non-hazardous and then the leachate results were compared with the published waste acceptance limits of BS EN 12457-2³ to determine whether the material on the site could be accepted as 'inert material' by an Irish landfill.

The Waste Classification report created using HazWasteOnline™ software shows that the material tested can be classified as non-hazardous material. Following this analysis of the solid test results, TP18S recorded an elevated Total Organic Carbon value whilst the rest of the results indicate that the soils tested would be able to be treated as Inert Waste.

Site Investigations Limited note that while three samples were tested for analysis, it cannot be discounted that any localised contamination may have been missed. Any made ground excavated on site should be stockpiled separately to natural soils to avoid any potential cross contamination of the soils. Additional testing of these soils may be requested by the individual landfill before acceptance and a testing regime designed by an environmental engineer would be recommended to satisfy the landfill.

If any contaminated material is found on site, this material will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled '*Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous*'⁴ using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*⁵, which establishes the criteria for the acceptance of waste at landfills.

In the event that ACMs are found, the removal will only be carried out by a suitably permitted waste contractor, in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*. All asbestos will be taken to a suitably licensed or permitted facility.

In the event that hazardous soil, or historically deposited waste is encountered during the construction phase, the contractor will notify DLRCC and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s).

5.0 SITE LOGISTICS

5.1 Site Safety Compliance

The contractor shall be responsible for overall management of the site for the duration of the proposed works and will progress their works with reasonable skill, care, diligence and to proactively manage the works in a manner most likely to ensure the safety and welfare of those carrying out construction works.

The contractor shall comply with all relevant Statutory requirements such as the 2005 Safety Health and Welfare at Work Act, The Construction Regulations (SI 291 of 2013), the General Application Regulations (SI 299 of 2007), etc. (and any amendments thereof).

In addition, the contractor shall comply with all the reasonable safety requirements of the Client, the Project Supervisor for the Design Process and the Project Supervisor for the Construction Stage.

5.2 Site Establishment and Security

The first activity to be carried out at the site will be the establishment of site facilities and security. It is anticipated that site establishment works will take approximately four weeks. The site office and welfare facilities will be confirmed in advance of the commencement of site works and agreed with DLRCC. Figure 3.1 shows the proposed locations of the site compound and staff parking.

All of the sub-contractors as well as the main contractor and project managers will occupy offices within the construction compounds. The site parking for all staff, contractors and visitors will also be located in this area.

5.3 Consents and Licenses

All statutory consents and licences required to commence on-site construction activities will be obtained ahead of works commencing, allowing for the appropriate notice period. These will include, but are not limited to:

- Site notices;
- Construction commencement notices; and
- Licence to connect to existing utilities and mains sewers, where required;

5.4 Services and Utilities

Welfare facilities (canteens, toilets etc.) will be available within the construction compound and this will remain in place for the construction of the proposed development. The offices and site amenities will initially need to have their own power supply (generator), water deliveries and foul water collection until connections are made to the mains networks.

Electrical connections will be made by suitably qualified personnel following consultation with the relevant authorities and will be cognisant of subsequent construction works. High voltage connections will be established for heavy duty equipment and site facilities, as required.

The current electricity facilities on the site of the proposed development are supplied by the ESB through a ring network. All electrical works, including connection to the ESB network will be carried out by a suitably qualified contractor.

Water supply required for welfare facilities, dust suppression and general construction activities will be sourced from the existing public piped supplies running into the site.

Although before connections are established to the water supply it may need to be trucked onto site. As with electrical works, this will be carried out by a suitably qualified contractor. It will be necessary to service the site with a reliable and safe water supply.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the offices and welfare facilities on the site will discharge into the existing sewer on site (the cabins may initially need to have the foul water collected by a licensed waste sewerage contractor before connection to the sewer line can be made).

5.5 Material Handling and Storage

Key materials which will be ordered by specific order for the project, a 'Just in Time' delivery system will operate to minimise storage of materials, the quantities of which are unknown at this stage.

Where possible it is proposed to source general construction materials from the Dún Laoghaire Rathdown area to minimise transportation distances.

Aggregate materials such as sands and gravels will be stored in clearly marked receptacles in the compound area within the site. Liquid materials will be stored within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications – BS EN 1992-3:2006 ⁶⁾) to prevent spillage.

Construction materials will be brought to site by road. Construction materials will be transported in clean vehicles. Lorries/trucks will be properly enclosed or covered during transportation of friable construction materials and spoil to prevent the escape material along the public roadway.

The majority of construction waste materials generated will be soil from excavation works. Material will be removed from site regularly to ensure there is minimal need for stockpiling.

5.6 Visitor Management

Visitors will only be allowed to enter the main site compound via the designated pedestrian access gate. A dedicated, secured footpath to the site office is established at the gate for registration and obtaining PPE prior to entering the site. A log will be maintained by security to control access to the site. Visitors will be required to attend a site-specific induction to allow access to the compound and/or construction site unless being accompanied by an inducted member of the site team.

Visitors will then be taken by an inducted member of the construction team to the required area of the site.

5.7 Site Working Hours

Site development and building works will only be carried out between the hours of 0800 to 1800 Mondays to Fridays inclusive and between 0800 and 1400 hours on Saturdays. There will be no construction works carried out on Sundays or public holidays. Deviation from these times will only take place when written approval is granted by DLRCC in exceptional circumstances.

5.8 Employment and Management Workforce

It is estimated that there will initially be 60-70 staff on site on a typical day, however during peak construction periods this is expected to fluctuate up to 400 staff and contractors on site per day.

It is anticipated that the key project managers and main contractor representatives will maintain a presence on site for the whole duration of the project and the labour workforce will be determined by the specialist contractors required on site.

All employees working on the site will be required to have a SafePass Card (or similar approved Construction Health & Safety card), manual handling training, CIF COVID-19 training and the necessary certificates to operate machinery as required. The details

of training required, records maintained, and induction procedures will be outlined in the main contractor's Health and Safety Plan(s).

6.0 CONSTRUCTION TRAFFIC AND SITE ACCESS

The proposed construction vehicle routes for the site will require a traffic management plan to be agreed upon with DLRCC and TII prior to site workings beginning. Two-way traffic will be maintained throughout the project. Advanced warning signs will be placed at sufficient distances to taper off the entry and exit points. Pedestrian marshals will be used as and when required. Traffic management will be undertaken for the site works in accordance with the principles outlined below and shall comply at all times with the requirements of:

- Department of Transport Traffic Signs Manual 2010 – Chapter 8 Temporary Traffic Measures and Signs for Roadworks ⁷
- Department of Transport Guidance for the Control and Management of Traffic at Road Works (2010) ⁸
- Any additional requirements detailed in Design Manual for Urban Roads & Streets (DMURS) ⁹

Construction traffic operation would be limited to 0800 to 1800 from Monday to Friday and 0800 to 1400 on Saturday for the off-road construction. These times may vary to facilitate specific site requirements and/or construction activities associated with the site. Any variation will be discussed and agreed in advance with DLRCC.

It should be noted that construction traffic generated during the Construction Phase tends to be outside of peak hours. All construction activities will be agreed with DLRCC'S Roads Department prior to the commencement of the Construction Phase.

In general, the impact of the construction period will be temporary in nature. HGV vehicle movements per hour during the busiest period of construction works are estimated at a peak of 2 HGVs per hour arriving and leaving, but the exact figure will be confirmed by the contractor.

Excavated material will be reused as part of the site development works where possible to minimise truck movements to and from the site (e.g. use as non-structural fill under green areas).

Approved traffic mitigation measures requested by DLRCC will be submitted with the updated CEMP submitted as part of compliance, prior to the commencement of works.

6.1 Traffic Queuing

Material deliveries and collections from site will be planned, scheduled and staggered to avoid any unnecessary build-up of construction works related traffic.

Deliveries to site shall be booked in advance using a delivery schedule, so as to prevent lorry congestion on the road networks surrounding the site. Alternative safe routeways shall be established for traffic and pedestrians where existing routeways have to be altered, removed or worked on during the project.

6.2 Site Hoarding and Security Fencing

All areas of construction will be fenced / hoarded off to prevent unauthorized access. This fencing shall remain closed at all times during construction works and closed and locked after construction work hours / break times.

This fencing shall be erected in accordance with good practice and the Construction Regulations 2013. Fencing arrangements shall be reviewed as the life of the project progresses.

Access/Egress to site for site operatives and visitors shall be via biometric gates. Site security fencing/ Hoarding up to a height of 2.4 M will be erected in line with the Construction Regulations 2013 that will clearly separate the work site from the surrounding public. It is not envisaged that the fencing will impinge upon the safe passage of pedestrians during the construction phase

7.0 SAFETY, HEALTH AND ENVIRONMENTAL CONSIDERATIONS DURING CONSTRUCTION WORKS

The appointed main contractor will implement a Construction, Health and Safety Plan during the life of the project which contains Health and Safety measures covering the below items at a minimum :

- Construction Health & Safety training requirements;
- COVID-19 guidelines;
- Induction procedures;
- Emergency protocols; and
- Details of welfare facilities.

7.1 Construction Lighting

Construction work will generally be confined to daylight hours and lighting will generally not be required for the construction phase. There will however be occasions where the provision of portable lighting will be required (works on roadways and power floating floors as examples). Where possible and without jeopardising site safety lights will be pointed down at a 45-degree angle and away from sensitive receptors. The site compound will have external lights for safety and security. These lights will be pointed down at a 45-degree angle and away from sensitive receptors where possible.

7.2 Air Quality

This section describes the site policy with regard to dust management and the specific mitigation measures which will be put in place during construction works. The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the measures set out below have been formulated by drawing on best practice guidance from Ireland, the UK and the US, such as:

- Department of Environment, Heritage and Local Government (DOEHLG), *Quarries and Ancillary Activities, Guidelines for Planning Authorities* (2004) ¹⁰;
- US Environment Protection Agency (USEPA), *Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition* (periodically updated) (1986) ¹¹;
- The Scottish Office – Development Department, *Planning Advice Note PAN50 Controlling the Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings* (1996) ¹²; and
- Institute of Air Quality Management (IAQM), *Guidance on the Assessment of Dust from Demolition and Construction* (2014) ¹³.

7.2.1 Site Management

The site activities will be undertaken with due consideration of the surrounding environment and the close proximity of sensitive receptors such as residents and pedestrians. Dust management during the construction phase will be the most

important aspect in terms of minimising the impacts of the project on the surrounding air quality. The following measures will also be implemented to ensure impacts are minimised:

- Complaint registers will be kept detailing all telephone calls and letters of complaint received in connection with construction activities, together with details of any remedial actions carried out;
- Equipment and vehicles used on site will be in good condition such that emissions from diesel engines etc. are not excessive; and
- Pre-start checks will be carried out on equipment to ensure they are operating efficiently and that emission controls installed as part of the equipment are functional.

Dust deposition levels will be monitored on a regular basis in order to assess the impact that site activities may have on the local ambient air quality. The following procedure will be implemented:

- The dust deposition rate will be measured by positioning Bergerhoff Dust Deposit Gauges at strategic locations near the boundaries of the site for a period of 30 (+/- 2) days if required. Monitoring should be conducted as required during periods when the highest levels of dust are expected to be generated i.e., during site preparation works and soil stripping activities.
- The exact locations will be determined after consideration of the requirements of Method VDI 2119 with respect to the location of the samplers relative to obstructions, height above ground and sample collection and analysis procedures.
- After each 30 (+/- 2 days) exposure period, the gauges will be removed from the sampling location, sealed and the dust deposits in each gauge will be determined gravimetrically by an accredited laboratory and expressed as a dust deposition rate in mg/m²/day in accordance with the relevant standards.
- Technical monitoring reports detailing all measurement results, methodologies and assessment of results shall be subsequently prepared and maintained by the Site Manager.

A limit value of 350 mg/m²/day will be used in comparison with recorded values.

7.2.2 Dust Control Measures

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design, planning and effective control strategies. The siting of construction activities and the limiting of stockpiling will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance. In addition, good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or using effective control measures quickly before the potential for nuisance occurs.

- During working hours, technical staff will be available to monitor dust levels as appropriate; and
- At all times, the dust management procedures put in place will be strictly monitored and assessed.

The dust minimisation measures should be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust generation. In the event of dust nuisance occurring outside the site boundary, site activities should be reviewed, and procedures implemented to rectify the problem. Specific dust control measures to be employed are presented below.

Site Routes

Site access routes (particularly unpaved areas) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25% to 80% ¹⁴.

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles or delivery vehicles within the vicinity of the site;
- Bowsers will be available during periods of dry weather throughout the construction period. Research shown found that the effect of surface watering is to reduce dust emissions by 50%. The bowser will operate during dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use; and
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced areas shall be restricted to essential site traffic only.

Excavation

Excavation works during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust;
- During periods of very high winds (gales), activities likely to generate significant dust emissions will be postponed until the gale has subsided.

The movement of truck containing materials with a potential for dust generation to an off-site location will be enclosed or covered.

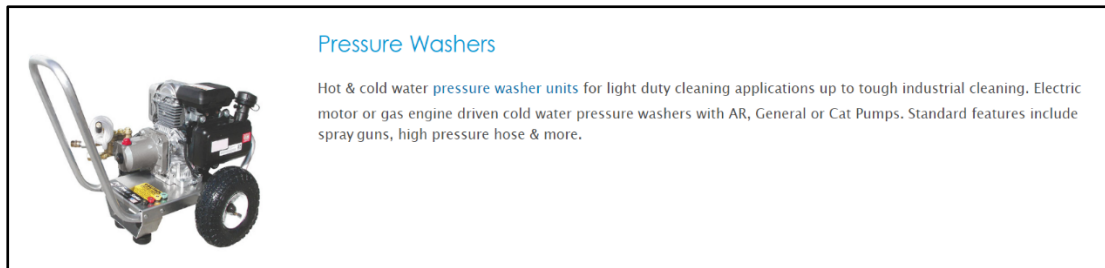
Stockpiling

The location and moisture content of stockpiles are important factors which determine their potential for dust emissions. The following measures will be put in place:

- Overburden material will be protected from exposure to wind by storing the material in sheltered parts of the site, where possible;
- Regular watering will take place during dry/windy periods to ensure the moisture content is high enough to increase the stability of the soil and suppress dust

Site Traffic on Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads will be reduced to a minimum by employing the following measures:



Insert 7.1 Example of Proposed wheel cleaning equipment example

- Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered at all times to restrict the escape of dust;
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate, and an example of the washing equipment can be seen in Insert 7.1; and
- Road sweepers will be employed to clean the site access route as required.

General

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory management of dust by the construction contractor.

7.3 Ecology

The key strategies to be undertaken to minimise impact on the local flora and fauna during site clearing and construction are as follows.

- All site clearance works will comply with current legislative requirements and best practice;
- Taking measures to limit the working area during the construction phase will reduce the impacts of the development on adjacent areas. The construction area will be clearly delimited by the site boundary and machinery should operate only within this allocated site area;
- All re-fuelling of plant, equipment and vehicles will be carried out at the construction site boundary. All fuels, chemicals, liquid and solid waste will be stored in areas bunded in accordance with established best practice guidelines at the construction compound also; and Provision of spill kits;
- Provision of a water and sediment management plan, providing for means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local water courses or drains; and
- The measures outlined in Section 7.6 will ensure that silt run-off and potential flooding risks are minimised which will protect any ecological receptors associated with the site.
- Construction lighting will be designed so as to be sensitive to the potential presence of bats and should adhere to the following guidance:
 - Bats & Lighting: Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Trust, 2010) ¹⁵;
 - Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011) ¹⁶;
 - Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2018) ¹⁷.

- As outlined in the Bat Assessment prepared by Bat Eco Services¹⁸, an NPWS Derogation License will be required to allow the disturbance to bat roosting as a result of the conservation works on Barrington Tower.
- To ensure that there is a roosting resource available during conservation works of Barrington Tower, a “Bat House” constructed to accommodate the three bat species recorded roosting in Barrington Tower. This will be constructed prior to proposed works on Barrington Tower and it will be located close to woodland and the Loughlinstown River (Ticknick Stream) in order to provide connectivity to suitable foraging and commuting routes. Landscaping and lighting plans adjacent to the proposed location of the “Bat House” has also been sensitively designed to prevent disturbance to roosting bats during the operation of the proposed development site (Bat Assessment, Bat Eco Services 2022).
- A bat scheme will be erected to mitigate the removal of trees. These will be erected prior 6 months to tree felling to allow local bat populations to become aware of it prior to removal of the structure (Bat Assessment, Bat Eco Services 2022).
- An ecologist will be appointed to oversee site clearance, reprofiling, construction and landscaping of the proposed project.
- Tree retention will be carried out as outlined in the arborist report.
- A specific site clearance, reprofiling and phasing plan will be provided to the arborist and project ecologist for approval prior to any site clearance or works commencing on site. No site clearance works will commence on site until approval has been provided by the arborist and project ecologist for the works to commence.
- All site clearance, reprofiling and enabling works will be approved and monitored by the arborist and project ecologist to ensure that the integrity of the remaining habitats on site are maintained.
- All works in the riparian corridor will be carried out in consultation with and to the satisfaction of Inland Fisheries Ireland and the project ecologist, following the best practice guidelines for construction in the vicinity of watercourses. All works on site and in the riparian corridor will include mitigation measures to prevent silt from runoff during works as set out below.
- Abstraction of water from the watercourse will not be permitted.
- Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation the removal of woody vegetation to outside bird nesting season will be carried out. Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent. If bird nests are present the woody vegetation will not be removed unless a derogation licence has been provided by NPWS and the conditions applied.
- 60 nest boxes placed on site during landscaping to compensate for resource loss.
- Light falling upon any areas of benefit to birds such as hedgerow will not exceed 3 lux to ensure that resting and nesting species are not unnecessarily disrupted.
- A pre construction survey for invasive species, bats and terrestrial mammals will be carried out. This will include an inspection for resting and breeding places for both terrestrial mammals and bats. Should resting or breeding places be found a derogation licence will be acquired from NPWS and conditions followed prior to works commencing in the vicinity of the resting or breeding place.
- Lighting at all stages should be done sensitively on site as directed by the project ecologist, with no direct lighting of hedgerows and treelines.

7.4 Noise and Vibration

Noise impacts arising from earthworks and construction activities have the potential to cause annoyance or nuisance to local residents and businesses in the area.

The earthworks will generate typical construction activity related noise and vibration sources from use of a variety of plant and machinery such as rock breakers (unlikely to be required based on underlying boulder clay), excavators, lifting equipment, dumper trucks, compressors and generators.

The noise limits to be applied for the duration of the infrastructure works are those specified in the B Category of BS 5228. These limits are summarised below and will be applied at the nearest sensitive receptors to the works.

- Night (23:00-07:00) = 55dB $L_{Aeq,1hr}$
- Evening (19:00-23:00) = 65dB $L_{Aeq,1hr}$
- Day (07:00-19:00) = 70dB $L_{Aeq,1hr}$

The total construction noise ($L_{Aeq,1hr}$) which should not be exceeded during daytime is therefore 70dB.

General Noise Mitigation

The earthworks will generate typical construction activity related noise and vibration sources from use of a variety of plant and machinery such as rock breakers (if required), excavators, lifting equipment, dumper trucks, compressors and generators.

The noise limits to be applied for the duration of the infrastructure works are those specified in the B Category of BS 5228. These limits are summarised below and will be applied at the nearest sensitive receptors to the works.

- Night (23:00-07:00) = 55dB $L_{Aeq,1hr}$
- Evening (19:00-23:00) = 65dB $L_{Aeq,1hr}$
- Day (07:00-19:00) = 70dB $L_{Aeq,1hr}$

The total construction noise ($L_{Aeq,1hr}$) which should not be exceeded during daytime is therefore 70dB.

Following the same approach, BS 5228-2:2009+A1:2014¹⁹ Code of practice for noise and vibration control on construction and open sites. Vibration recommends that, for soundly constructed residential property and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above.

The standard also notes that below 12.5 mm/s PPV the risk of damage tends to zero. The recommended construction vibration criteria;

- Less than 15Hz - 15mm/s
- 15 to 40 Hz - 20mm/s
- 40 Hz and above - 50mm/s

Any noise complaints related to activities at the site will be logged and investigated and, where required, measures taken to ameliorate the source of the noise complaint.

A designated noise liaison should be appointed to site during construction works. Any complaints should be logged and followed up in a prompt fashion. In addition, prior to particularly noisy construction activity, e.g. excavation close to a property, etc., the site

contact should inform the nearest noise sensitive locations of the time and expected duration of the works.

All works on site shall comply with BS 5228 2009+ A1 2014 (Parts 1 & 2) which gives detailed guidance on the control of noise and vibration from construction activities. In general, the contractor shall implement the following mitigation measures during the proposed infrastructure works:

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Keep internal haul roads well maintained and avoid steep gradients.
- Minimise drop height of materials.
- Start-up plant sequentially rather than all together

More specifically the contractor shall ensure that:

- In accordance with “Best Practicable Means”, plant and activities to be employed on site are reviewed to ensure that they are the quietest available for the required purpose.
- Where required, improved sound reduction methods are used e.g. enclosures.
- Site equipment is located away from noise sensitive areas, as much as physically possible.
- Regular and effective maintenance by trained personnel is carried out to reduce noise and / or vibration from plant and machinery.
- Hours are limited during which site activities likely to create high levels of noise and vibration are carried out.
- A site representative responsible for matters relating to noise and vibration will be appointed prior to construction on site.

External noise and vibration monitoring will be undertaken at locations on the site boundary closest to sensitive locations. It is considered that it will be appropriate to amend the monitoring program as the works progress. Accordingly, monitors may be added, removed or relocated as necessary.

The noise monitoring terminals should provide the following at minimum:

- Logging at hourly intervals; and
- Daily CIC automated calibrations.

Vibration monitoring terminals should continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with BS ISO 4866: 2010 ²⁰: *Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures*.

The mounting of the transducer to the vibrating structure, by way of resin fixings only, will need to comply with BS EN ISO 5348: 1998 ²¹: *Mechanical vibration and shock – Mechanical mounting of accelerometers*. In summary, the following ideal mounting conditions apply:

- The transducer and its mountings should be as rigid as possible;
- The mounting surfaces should be as clean and flat as possible;
- Simple symmetric mountings are best, and;
- The mass of the mounting should be small in comparison to that of the structure under test.

7.5 Waste Management

This section outlines the measures that will be undertaken to minimise the quantity of waste produced at the site and the measures to handle the waste in such a manner as to minimise the effects on the environment. A site-specific RWMP has been prepared by AWN and will be employed to ensure sustainable and effective waste management throughout the demolition, excavation and construction phases of the project.

Adherence to the RWMP prepared for the construction works will ensure that the management of waste arising is dealt with in compliance with the provisions of the *Waste Management Act 1996* as amended ²², associated Regulations, the *Litter Pollution Act of 1997* as amended ²³ and the *Eastern-Midlands Region Waste Management Plan 2015 – 2021* ²⁴, and that it will achieve optimum levels of waste reduction, re-use and recycling.

Typical waste materials that will be generated from the construction works will include:

- Soil and stones;
- Concrete, bricks, tiles and ceramics;
- Wood, glass and plastics;
- Metals;
- Gypsum-based construction material;
- Paper and cardboard;
- Mixed C&D waste;
- Chemicals (solvents, paints, adhesives, detergents etc.); and

The management of all hazardous waste arisings, if they occur, shall be coordinated in liaison with Health and Safety Management.

7.5.1 Waste Minimisation

Waste minimisation measures proposed are summarised as follows (and are described in more detail in the RWMP):

- Materials will be ordered on an 'as needed' basis to prevent over supply;
- Materials will be correctly stored and handled to minimise the generation of damaged materials;
- Materials will be ordered in appropriate sequence to minimise materials stored on site;
- A waste tracking log will be established;
- Sub-contractors will be responsible for similarly managing their wastes; and
- All wood waste generated by site works will be inspected and examined and will be segregated as re-useable wood and scrap wood waste.

7.5.2 Waste Storage

The main waste storage area will be adjacent to Block AB. A dedicated and secure area containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the development see Figure 3.1.

Waste materials generated will be segregated on-site at waste collection and storage area where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source. All waste receptacles leaving the site will be covered or enclosed. The appointed waste contractor will collect and transfer the

wastes as receptacles are filled. There are numerous waste contractors in the Dún Laoghaire Rathdown Region that provide this service.

The site construction manager will ensure that all staff are informed of the requirements for segregation of waste materials by means of clear signage and verbal instruction. Appointed employees will be made responsible for ensuring good site housekeeping.

7.5.3 Pest Management

A pest control operator will be appointed as required to manage pest onsite during the construction phase of the project. Organic and food wastes generated by staff will not be stored in open skips, but in closed waste receptacles. Any waste receptacles will be carefully managed to prevent leaks, odours and pest problems.

7.5.4 Responsibility

It will be the responsibility of the construction manager to ensure that a written record of all quantities and natures of wastes removed from the site are maintained on-site in a waste file (in hardcopy or electronically).

It is the responsibility of the project manager or his/her delegate that all contracted waste haulage drivers hold an appropriate waste collection permit for the transport of waste loads and that all waste materials are delivered to an appropriately licensed or permitted waste facility in compliance with the relevant Regulations as outlined in the RWMP.

The contractor, as part of regular site inspection audits, will determine the effectiveness of the waste management strategy and will assist the project manager in implementing the measures under the RWMP and in determining the best methods for waste minimisation, reduction, re-use, recycling and disposal as the construction phase progresses and waste materials are generated.

Prior to commencement of the demolition, excavation and construction activity and removal of any waste off-site, details of the proposed destination of each waste stream will be provided to DLRCC, along with waste collection permit numbers.

7.6 **Surface Water Management**

Run-off into excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions.

Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. All run-off will be prevented from directly entering into any water courses as no construction will be undertaken directly adjacent to open water.

No significant dewatering will be required during the construction phase which would result in the localised lowering of the water table. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavation is kept relatively dry.

The following measures will be put in place during the construction phase to ensure protection of surface waterbodies. Construction works are informed by best practice guidance from Inland Fisheries Ireland on the prevention of pollution during development projects:

- Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532); and
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016).
- Environmental Good Practice on Site (3rd edition) (C692).

Surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction.

It is envisaged that a number of geotextile lined settling basins and temporary mounding's and/or silt fences will be installed to ensure silts do not flow off site during the construction stage. This temporary surface water management facility will throttle runoff and allow suspended solids to be settled out and removed. All inlets to the settling basins will be 'riprapped' to prevent scour and erosion in the vicinity of the inlet.

7.6.1 Pollution Control

Management of Suspended solids in run-off

Any temporary storage of spoil, hardcore, crushed concrete or similar material will be stored as far as possible from any surface water drains and also stored in receptacles where possible. In order to minimise the risk of contamination, the stockpiled material will be removed off-site as soon as possible. Surface water drain gratings in areas near or close to where stockpiles are located will be covered by appropriate durable polyurethane covers or similar.

There will be no direct pumping of silty water from the works to any watercourse. Sediment entrapment facilities will be installed to reduce sediment discharges to downstream properties and receiving waters. All run-off leaving a disturbed area should pass through a sediment entrapment facility before it exits the site and flows downstream such as straw bales, silt fencing, silt barriers and diversion dams.

Concrete Run-off

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Wash-outs will only be allowed to take place in designated areas with an impervious surface.

Accidental Spills and Leaks

No bulk chemicals will be stored within the active construction areas. Temporary oil and fuel storage tanks will be kept in the material storage area in suitable containers and will be appropriately banded as required. Refuelling of vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in designated areas of the site, where possible, which will be kept away from surface water drains.

Spill protection equipment such as absorbent mats, socks and sand will be available to be used in the event of an accidental release during refuelling. Training will be given to appropriate site workers in how to manage a spill event.

The following mitigation measures will be taken at the construction site in order to prevent any spillages to ground of fuels during machinery activities and prevent any resulting soil and/or groundwater quality impacts:

- Refuelling will be undertaken off site where possible;
- Where mobile fuel bowzers are used the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowzers must carry a spill kit;
 - Operatives must have spill response training; and
 - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

Monitoring

Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 10m from surface water receptors. A regular log of inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

8.0 SUMMARY

This CEMP sets out the overall management strategy for excavation and construction works for the proposed development. The CEMP aims to ensure the management of construction activity is carried out in a planned, structured and considerate manner which minimises the impacts of the works on the local environment, residents and commercial activities in the vicinity of the site. Due to the nature of construction works, there may be unforeseen events which occur at the site and the project team will actively manage any changes and discuss with the relevant authorities, where required. The CEMP should be viewed as a live document that will be updated as the development progress and circumstances change.

The project team are committed to ensuring that the construction activities to be carried out are pro-actively managed so as to minimise potential impacts.

9.0 REFERENCES

1. British Standards Institution (BSI), *BS 6187: 2011 Code of Practice for full and partial demolition* (2011).
2. Environmental Protection Agency (EPA) '*Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects*' (2021).
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5. Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
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7. Department of Transport, *Traffic Signs Manual 2010 – Chapter 8 Temporary Traffic Measures and Signs for Roadworks* (2010).
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9. Department of Transport, Tourism and Sport and Department of Housing, Planning and Local Government, *Design Manual for Urban Roads and Streets* (2019).
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12. The Scottish Office – Development Department, *Planning Advice Note PAN50 Controlling the Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings* (1996).
13. Institute of Air Quality Management (IAQM), *Guidance on the Assessment of Dust from Demolition and Construction* (2014).
14. USEPA, *Fugitive Dust Technical Information Document for the Best Available Control Measures* (1997).
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18. Bat Eco Services, *Bat Assessment: Barrington Tower, Brennanstown Road, Dublin 18* (2022).
19. British Standards Institution (BSI), *BS 5228-2:2009 Code of practice for noise and vibration control on construction and open sites. Vibration (+A1:2014)* (2009).
20. British Standards Institution (BSI), *BS ISO 4866: 2010: Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures* (2010).
21. British Standards Institution (BSI), *BS EN ISO 5348: 1998: Mechanical vibration and shock – Mechanical mounting of accelerometers* (1998).
22. *Waste Management Act 1996* (No. 10 of 1996) as amended, including sub-ordinate and associated legislation.
23. *Litter Pollution Act 1997* (No. 12 of 1997) as amended

24. Eastern Midlands Waste Region, *Eastern-Midlands Region Waste Management Plan 2015 – 2021 (2015)*.

10.0 APPENDIX 1: SITE CONSTRUCTION COMPOUND LOCATIONS

