Development of Land at Monkstown Road, Dublin,

Construction & Environmental Management Plan

GEDV Monkstown Owner Limited

June 2023
Revision 03

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Contents

1 Introduction

ByrneLooby (BLA), in conjunction with Roughan & O'Donovan, has been commissioned by GEDV Monkstown Owner Limited to prepare a Construction & Environmental Management Plan (CEMP) for the proposed residential development at Dalguise House, Monkstown Road, Co. Dublin. This document should be read in conjunction with the AWN Consulting Ltd report *Resource & Waste Management Plan* (RWMP) and *Noise Impact Assessment*, which form part of this planning submission.

This CEMP aims to address issues that can arise during construction including noise and vibration, traffic management, working hours, pollution control, dust control, road cleaning, compound / public health facilities and staff parking, all associated with the construction works. This plan will be updated by the appointed Contractor and agreed upon with Dun Laoghaire Rathdown County Council in advance of the construction phase. This document has been prepared in accordance with the Dun Laoghaire Rathdown County Council document "*Good Practice Guide for Construction and Demolition Environmental Management*".

This CEMP has been prepared to give an overview of the processes to be employed during the construction of this project and should be read in conjunction with other documents prepared as part of this planning submission. Prior to the on-site activities commencing, this plan will be further expanded in detail by the appointed Lead Contractor and agreed upon with Dun Laoghaire Rathdown County Council.

The CEMP will be integrated into and implemented throughout the construction phases of the project to ensure the following:

- All site activities are effectively managed to minimise the generation of waste and to maximise the opportunities for on-site reuse and recycling of waste materials.
- All waste materials generated by site activities, that cannot be reused on-site, are removed from the site by appropriately permitted waste haulage contractors and that all wastes are disposed of at approved waste licensed/permitted facilities in compliance with the Waste Management Acts 1996 to 2005.

- Any environmental impacts (noise, vibration, dust, water) of project construction work activities on receptors and properties located adjacent to the project work areas, and on the local receiving environment, are managed and controlled.

2 Site Location

The subject site consists of Dalguise House and its associated lands and extends to c3.58 hectares. The site is located off Monkstown Road, which provides the primary vehicular access. The site is currently laid out with the main house to the south centre, ancillary buildings, and a large area of landscaped gardens. The site is bound by existing, established housing estates to the north, south, east and west (see Figure 1). The Stradbrook Stream runs along the northern boundary of the site, and the site level general falls towards the stream. Dalguise House is at the high point of the site, with a ground floor level of c29.14mOD. The level along the northern boundary of the site, at the bank of the stream, varies from 15.26mOD to 16.16mOD. The southwestern corner of the site is at 22.4mOD, and the ground profile rises to the south-eastern corner at 27.24mOD. The level of Monkstown Road at the existing site entrance is c19.2mOD.

Figure 1 – Location of proposed development site (*Source Google*)

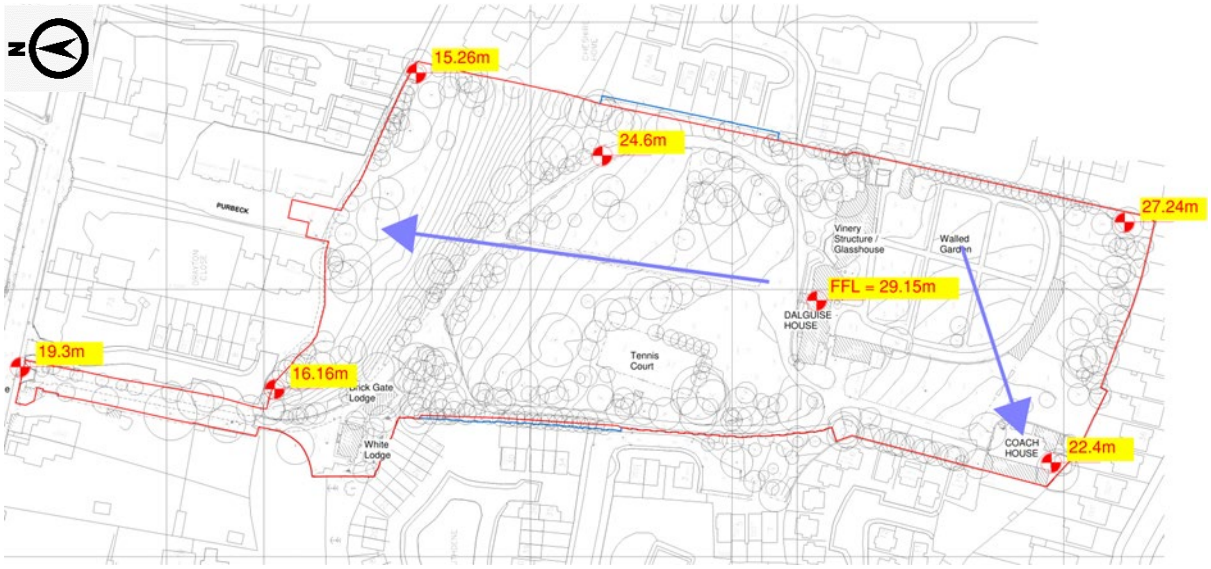

Figure 2 – Topographical Survey with key levels highlighted (falls on site indicated)

3 Development Description

GEDV Monkstown Owner Limited intends to apply for a seven year permission for development on a site of c. 3.58 hectares at Dalguise House (Protected Structure RPS No. 870), Monkstown Road, Monkstown, County Dublin, A94 D7D1 (the lands include the following structures identified as Garage (A94 N3A1); Gate Lodge (aka Brick Lodge) (A94 R9T1); Dalguise Lodge (aka Entrance Lodge) (No. 71 Monkstown Rd, A94 TP46); White Lodge (A94 V6V9)); and on-street car parking in front of Nos. 6 and 7 Purbeck (A94 C586 and A94 HT99, respectively), with the provision of vehicular and pedestrian access and egress at two points on Monkstown Road: the existing entrance to Dalguise; and at Purbeck.

Alterations will be made at Purbeck including the relocation of 4 No. existing car parking spaces to facilitate the construction of a new vehicular and pedestrian bridge over the Stradbrook Stream.

The development, with a total gross floor area of approximately 47,382 sq m (including a basement of 5,396 sq m and undercroft parking of 1,403 sq m) (of which some 46,154 sq m is new build, and 1,228 sq m retained existing buildings), will consist of the construction of 493 No. residential units, consisting of 486 No. new build and 7 No. residential units (the latter within existing structures (repurposed from Dalguise House, Gate Lodge (Brick Lodge) and Coach House)).

The residential provision will comprise: 3 No. three storey 3-bed terraced houses (GFA 569 sq m), and 490 No. Build-to-Rent units (consisting of 2 No. studio units; 289 No. 1-beds; 20 No. 2-beds/3 persons; 166 No. 2-beds/4-persons; and 13 No. 3-beds) (with an option for the use of 4 No. of the BTR Units to cater for short-term stays of up to 14 days at any one time to cater inter alia for visitors and short-term visits to residents of the overall scheme) residential amenities and residential support facilities; a childcare facility; and restaurant/café.

The development will consist of: the demolition and partial demolition of existing structures (total demolition area 967 sq m, comprising: two residential properties (White Lodge (A94 V6V9), a 2 storey house (192 sq m); and a residential garage (A94 N3A1) and shed to the southwest of Dalguise House (285 sq m)); swimming pool

extension to the southeast of Dalguise House (250 sq m); lean-to structures to the south of the walled garden (142 sq m); part-demolition of Lower Ground Floor at Dalguise House (9 sq m); single storey extension to the south of the Coach House (29 sq m) and three ancillary single-storey structures (8 sq m, 8 sq m, and 31 sq m) within the yard; potting shed (13 sq m); removal of 2 No. glasshouses; and alterations to, including the creation of 3 No. opes and the removal of a 12.4 m section of the walled garden wall to the east); the construction of: 11 No. residential blocks (identified as: Block A (total GFA 2,015 sq m) 7 storey, comprising 19 No. apartment units (15 No. 1-beds, 4 No. 2-beds/4-persons) and a childcare facility (540 sq m over Ground and First Floor Levels); Block B (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment units (33 No. 1-beds, 1 No. 2-beds/3 persons, 14 No. 2-beds/4-persons); Block C (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment units (33 No. 1-beds, 1 No. 2-beds/3 persons, 14 No. 2-beds/4-persons); Block D (total GFA 4,325 sq m) 7 storey over basement level car park, comprising 52 No. apartment units (25 No. 1-beds, 26 No. 2-beds/4-persons, 1 No. 3-bed); Block E (total GFA 5,946 sq m) 9 storey over basement level car park, comprising 66 No. apartment units (40 No. 1-beds, 26 No. 2-beds/4-persons), with residents' support facilities (75 sq m) and residents' amenities (gym, yoga studio, residents' lounge/co-working space; lobby 485 sq m) at Ground Floor Level, residents' amenities (bookable rooms 42 sq m) at First Floor, and residents' amenities (residents' lounge; games room; screen room; private lounge; kitchen 350 sq m) with roof terrace (106 sq m) at Eighth Floor Level; Block F (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units (46 No. 1-beds, 5 No. 2-beds/3-persons, 23 No. 2-beds/4-persons, 2 No. 3-beds); Block G (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units (46 No. 1-beds, 5 No. 2-beds/3-persons, 23 No. 2-beds/4-persons, 2 No. 3-beds); Block H (total GFA 4,252 sq m) 5 storey over Lower Ground Floor, comprising 54 No. apartment units (30 No. 1-beds, 1 No. 2-beds/3-persons, 21 No. 2-beds/4-persons, 2 No. 3-beds); Block I1 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units (3 No. 1-beds, 3 No. 2-beds/3-persons, 6 No. 2-beds/4-persons); Block I2 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units (3 No. 1-beds, 3 No. 2-beds/3-persons, 6 No. 2-beds/4-persons); and Block J (total GFA 1,844 sq m) 4 storey, comprising 20 No. apartment units (13 No. 1-beds; 1 No. 2-bed/4-persons, 6 No. 3-beds));the refurbishment, adaptation and reuse

of: two storey Dalguise Lodge (Entrance Lodge) (GFA 55 sq m) comprising residential support facilities; a single storey Gate Lodge (GFA 55 sq m) comprising 1 No. 1-bed unit; and two storey Coach House and single storey Stableman's House (GFA 319 sq m) to provide 3 No. apartment units (1 No. 1-bed, 2 No. 2-bed/4 persons); the refurbishment, adaptation and change of use of Dalguise House (GFA 799 sq m) from a single residential dwelling to provide: 3 No. apartment units (2 No. studios and 1 No. 2-bed/3 person) at First Floor Level; a restaurant/cafe at Lower Ground Floor Level (GFA 273 sq m); and residents' amenities at Ground Floor Level (library, residents' lounge, events space, bar/bookable room, 157 sq m); works to the existing structures include: removal of existing internal partitions and doors, alterations to internal layout including provision of new partitions and doors to Dalguise Lodge (Entrance Lodge); removal of existing internal partitions and doors, and alterations to internal layout including provision of new partitions and doors to Gate Lodge (Brick Lodge); replacement of existing roof, windows and doors, non-original mezzanine floor and stairs of Coach House, creation of new internal and external opes, reconstruction of chimney, construction of new stairs, provision of new internal partitions and doors, replacement of the demolished single storey structure to south of Coach House with a 42 sq m single storey extension, including construction of a link between Coach House and Stableman's House; replacement of existing roofs, windows, doors, creation of new external opes and provision of new internal partitions and doors to Stableman's House; restoration of Coach House yard walls; removal of security bars from windows, internal partitions, doors, two secondary staircases, non-original fireplaces; and the reconfiguration of internal layout including introduction of new partitions, doors and fireplaces, in-fill of former secondary staircases; removal of an existing window at rear facade of Lower Ground Level, alterations to ope and replacement with a new external door; reinstatement of external wall fabric in place of demolished lean-to at the rear facade; and removal of external door to swimming pool on eastern facade and closure of ope; and creation of new external ope at Lower Ground Floor rear façade, provision of external plant (connected to the new ope by ducting), waste storage area, water tank at surface level adjoining the western façade, enclosed within a screen at Dalguise House).

The development will also consist of: the construction of a garden pavilion; the provision of balconies and terraces, communal open space including roof gardens,

public open spaces, hard and soft landscaping, landscaping works including the removal of trees, alterations to boundaries; the provision of: 228 No. car parking spaces (148 No. at basement level; 19 No. at undercroft; and 61 No. at surface level); motorbike spaces; level changes; ESB Substations (at Block D and Block H); plant areas; waste storage areas; provision of cycle parking (including cargo bike spaces) at basement and surface level; signage/wayfinding; and all ancillary site development works above and below ground.

Provision is made in the landscaping proposals for potential future pedestrian and cycle connections that would facilitate permeability through the site boundaries with the residential estates of Arundel and Richmond Park, respectively, and the former Cheshire Home site, subject to agreement with those parties and/or Dún Laoghaire-Rathdown County Council, as appropriate.

3.1 Construction Phasing

The construction of the project is planned to take between 36 to 42 months. The current phasing suggests that the project will be split into three phases, with the accompanying infrastructure and green spaces being constructed with each phase (see indicative phasing below).

Phase 1

- Block D (total GFA 4,325 sq m) 7 storey over basement level car park, comprising 52 No. apartment units;
- Block E (total GFA 5,946 sq m) 9 storey over basement level car park, comprising 66 No. apartment units, with residents' support facilities and residents' amenities;
- Block F (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units;
- Block G (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units;
- Basement car park for carparking (148no.), bicycle parking, and motor cycle parking, plant and waste storage areas;
- Refurbishment and alteration works works to Dalguise House and the Coach House Buildings;
- Proposed new bridge crossing of the Stradbrook Stream and emergency access road;
- Access roadways, surface bicycle and car parking and associated landscaping.

Phase 2

- Block H (total GFA 4,252 sq m) 5 storey over Lower Ground Floor, comprising 54 No. apartment units;

- Block I1 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units;
- Block I2 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units;
- Block J (total GFA 1,844 sq m) 4 storey, comprising 20 No. apartment units;
- Access roadways, surface bicycle and car parking and associated landscaping.

Phase 3

- Block A (total GFA 2,015 sq m) 7 storey, comprising 19 No. apartment units;
- Block B (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment;
- Block C (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment units;
- Undercroft carparking level carparking (19no.), bicycle parking and motor cycle parking, plant and waste storage areas. Tunnel to link undercroft area with main central basement.
- Alterations to Gate Lodge (Brick Lodge) and Dalguise Lodge (Entrance Lodge);
- Remaining landscaping works.

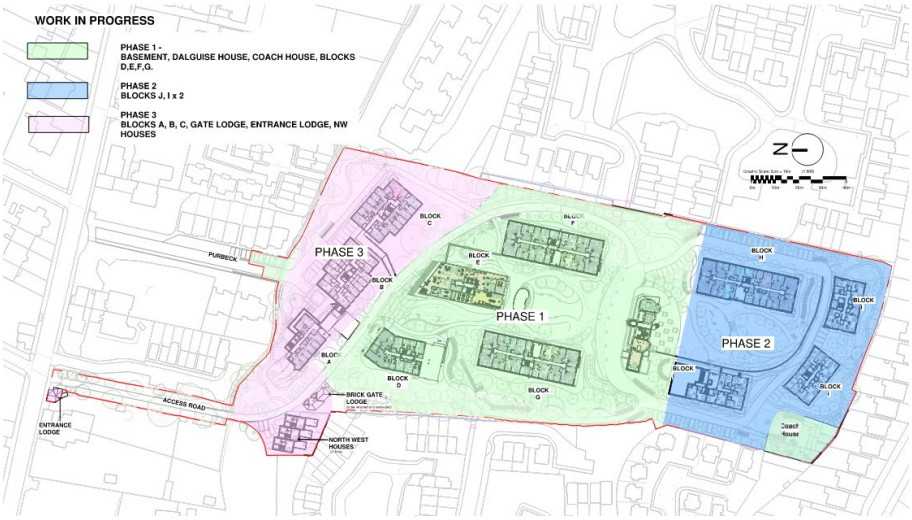

Figure 3 – Indicative Construction Phasing

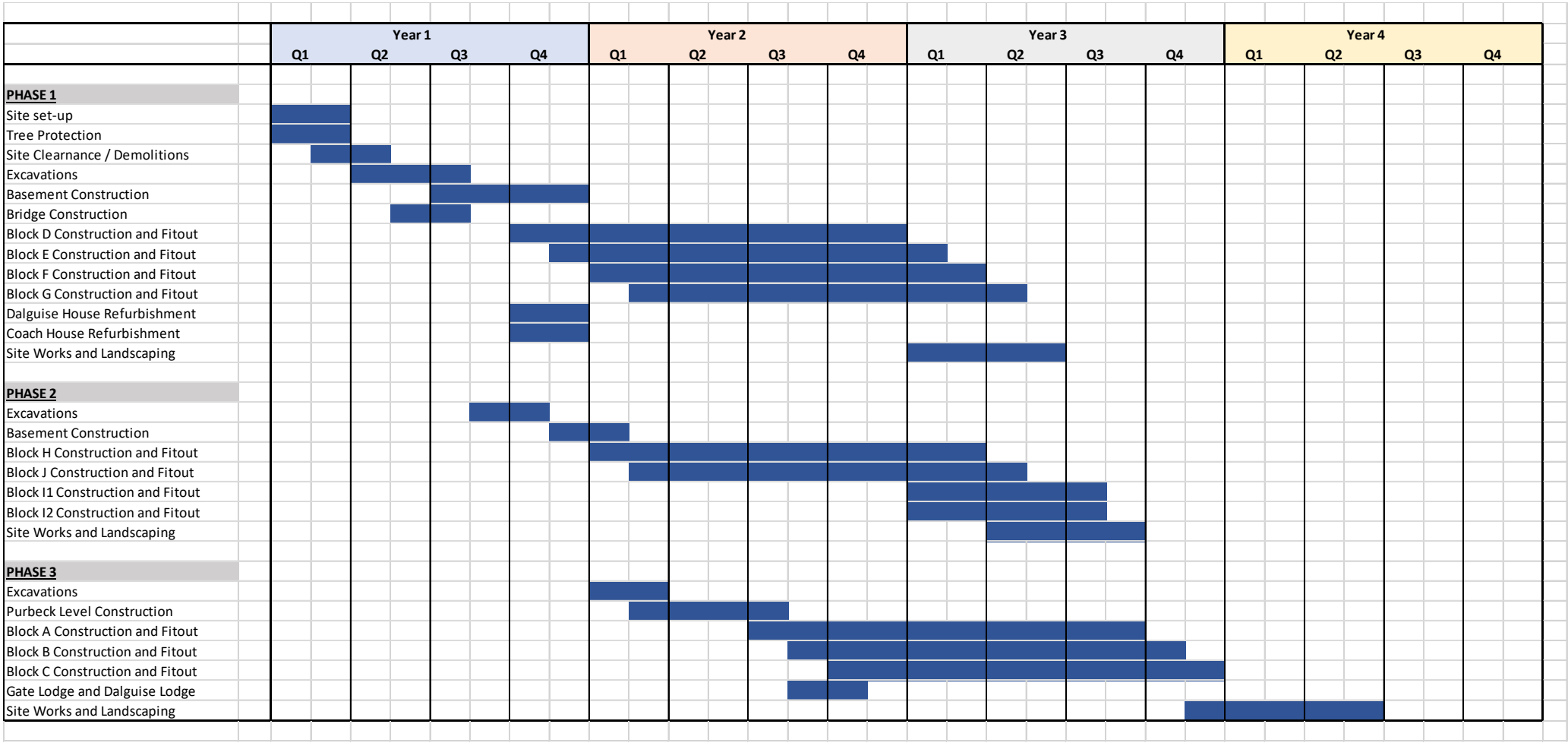

Table 1 – Indicative Construction Programme

3.1.1 Phase 1

The proposed bridge at Purbeck shall be constructed during Phase 1. The refurbishment works to Dalguise House and the Coach House buildings will be in Phase 1, with the works in parallel by a specialist contractor with suitable experience working on Protected / Historic structures. The removal of the existing swimming pool and vinery will occur at the early stages to facilitate the construction compound (see Figure 7). The installation of buried services and landscaping works shall be coordinated with the building substructure works, and the programming of the works shall be scheduled depending on the dismantling of scaffolds to buildings, the suitable planting period etc.

The final phasing and associated Construction Traffic Management Plans shall be submitted by the appointed Contractor to Dun Laoghaire Rathdown County Council for approval.

Phase 1 will incorporate the basement, with the image below (Figure 4) identifying approximate formation levels. A second and more comprehensive site investigation was carried out in early 2022. A total of eight rotary cores were carried out across the site and the bedrock was identified at 10.5m to 14.0m below ground level. This is well in excess of any basement excavations, and as such, it is not envisaged that any rock breaking will be required as part of the works. The majority of the excavations can utilise battered excavations (see the purple line in Figure 4 and drawing W3683-DR-1040-05), but some vertical temporary retaining walls will be required along the northern and western boundaries in close proximity to existing trees to be retained (see green line in Figure 4 and drawing W3683-DR-1040-05). The temporary retaining walls will include bored piles. All excavation banks shall be protected and inspected regularly. The accompanying drawing W3683-DR-1040-05 identifies the basement / undercroft excavation extent and the proximity to the site boundaries

The foundations in the basement area will be integral to the basement slab. Some anti-floatation anchors will be necessary at basement level, below podium areas, and the set-out of the anchors will be subject to further monitoring of the groundwater levels over the coming period (refer to Section 5.9). The superstructure will then be constructed from the podium level, as outlined in the following sections. Access to this phase will be via the existing roadway (see Figure 7), with a cellweb build-up provided on areas of the roadway that overlay with the tree Root Protection Zone (RPZ). The bridge crossing at the Stradbrook Stream will also be constructed in this initial phase (see Section 9.10).

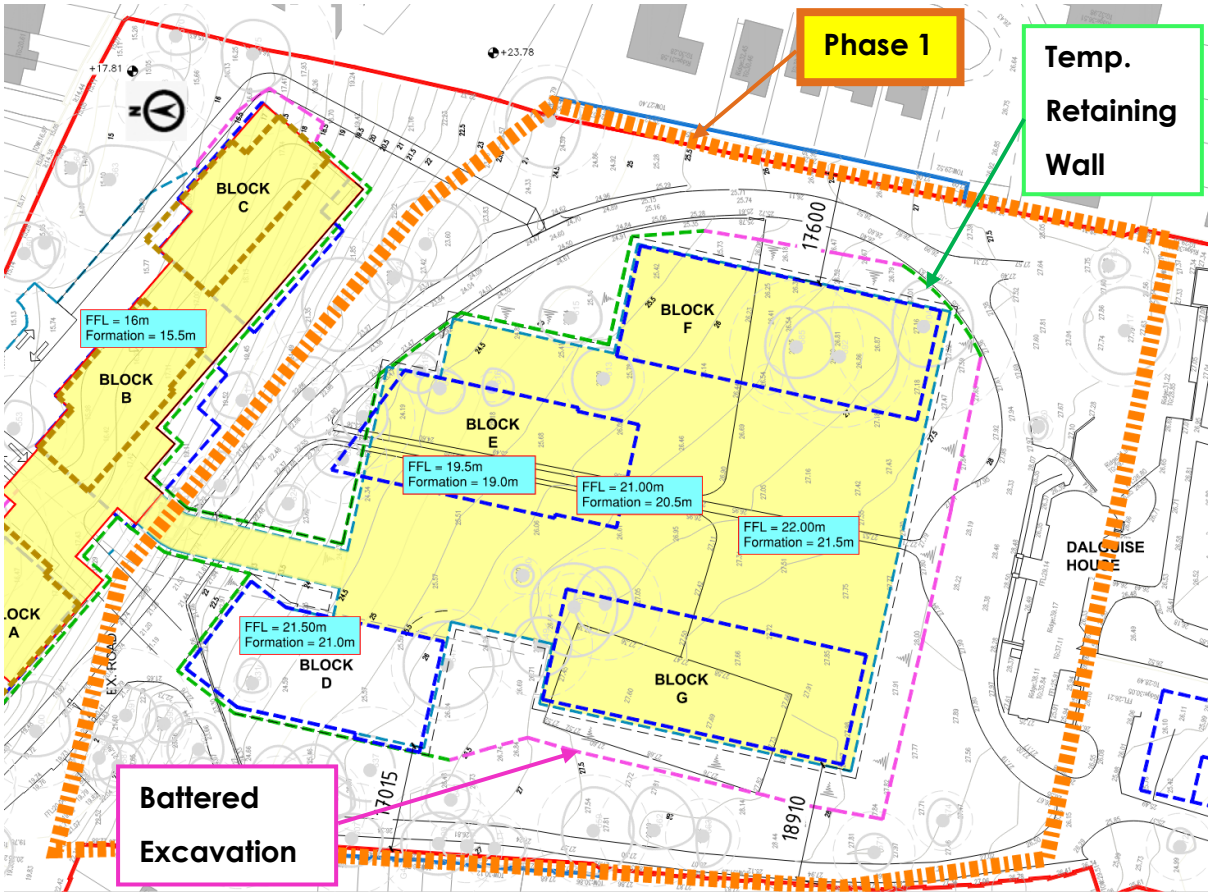

Figure 4 – Indicative Construction Phase 1 (plus Coach House see Figure 5)

3.1.2 Phase 2

The image below (Figure 5) shows the outline of Phase 2 and the approximate formation level at each block. The excavations at Phase 2 will overlap with the completion of excavations at Phase 1. As noted in the site investigation, bedrock

should not be encountered during excavations, and the bulk dig in Phase 1 shall be achieved using battered slopes to a safe angle of repose. All excavation banks shall be protected and inspected regularly. Excavations near trees to be retained shall incorporate specific construction techniques as outlined by the Arborist. The foundations in Phase 2 shall consist of shallow reinforced concrete strips or pad foundations. The superstructure will then be constructed from the foundation, as outlined in the following sections. Access to this phase will be via the existing roadway (see Figure 7). An existing septic tank serving Dalguise House will be removed at the footprint of Block J. The site investigations to date do not indicate any contamination in the area, however, a Remediation Plan as set out in the Engineering Services Report shall be implemented for the removal of the tank and backfill.

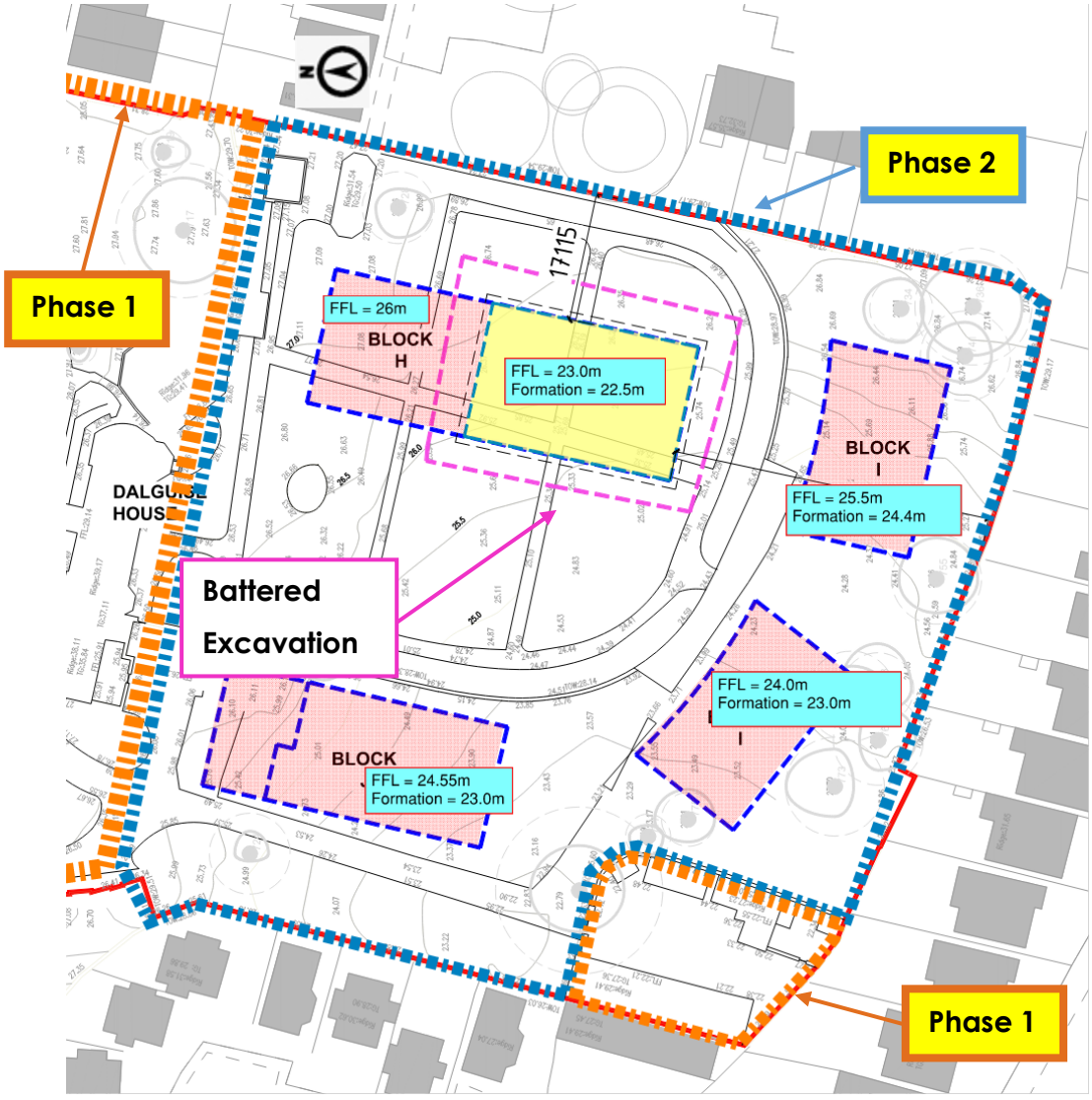

Figure 5 – Indicative Construction Phase 2

3.1.3 Phase 3

The third phase will include the construction of the final blocks. As with Phase 1, some of the excavations are adjacent to existing trees to be retained, and as a result, a temporary retaining wall shall be employed along the southern boundary of Block A, B and C (see green line in Figure 6 and accompanying drawing W3683-DR-1040-05). The foundations in the basement area will be integral with the basement slab. Some anti-floatation anchors will be necessary at the undercroft level, below podium areas, and the set-out of the anchors will be subject to further monitoring of the groundwater levels over the coming period (refer to Section 5.9). The superstructure will then be constructed from the podium level, as outlined in the following sections. Access to this phase shall be via a new temporary roadway constructed with a CellWeb buildup over RPZs. Finally, any temporary piling platforms will be agreed in advance with the Arborist.

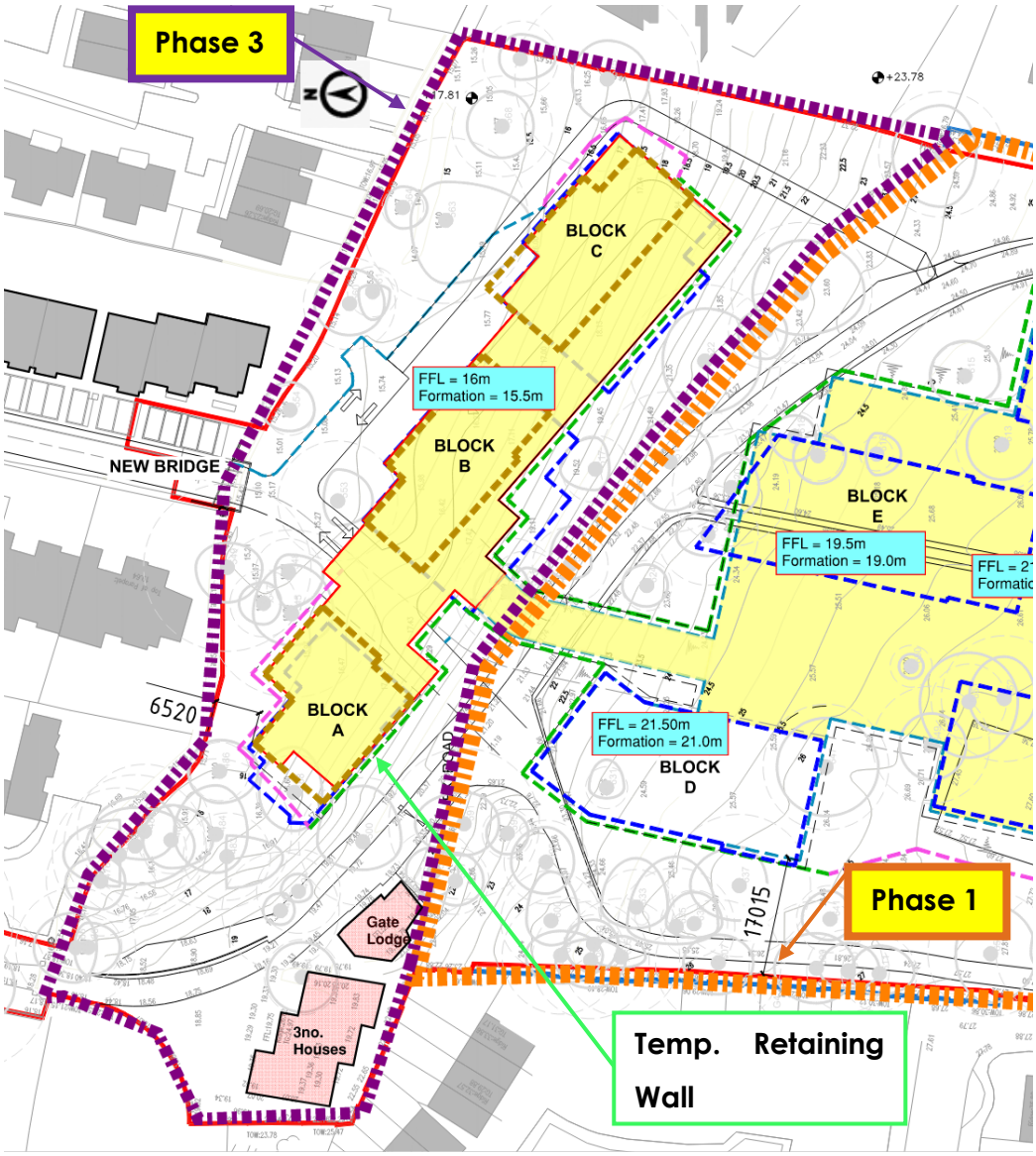

Figure 6 – Indicative Construction Phase 3 (plus Entrance Lodge, not shown for clarity)

4 Site Management

4.1 Site Establishment

The contractor shall provide all necessary accommodation, material handling and secure storage for their operations. The Contractor's compound and storage area shall be located on the Dalguise lands, within the wall garden area, with construction access from the existing site entrance at the Entrance Lodge.

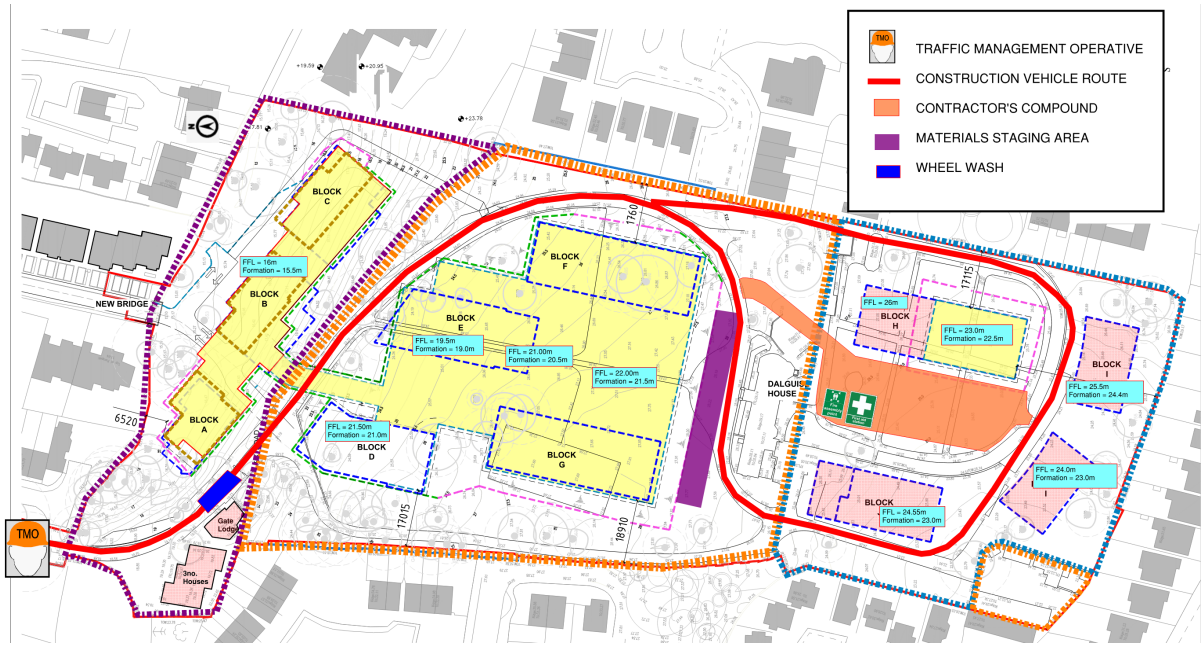

Figure 7 – Indicative Site Compound (Phase 1 & 2, plus Entrance Lodge, not shown for clarity)

The facilities to be provided and maintained by the Contractor shall include:

- Construction plant;
- Hoisting equipment and cranes;
- Scaffolding, platforms, access ladders, barriers, handrails;
- Barricades and hoardings;
- Temporary driveways, road crossovers and construction zone;

- 24/7 emergency vehicle access;
- On-site hardstand areas for vehicle loading and unloading;
- Storage sheds and compounds;
- Rubbish sorting areas;
- Site amenities with all required equipment and facilities;
- Construction worker accommodation;
- First aid facilities;
- Site administration accommodation.

Construction plant and site amenities shall comply with the requirements of all relevant authorities and be wholly contained within the hoarded site. All construction plant and equipment will be progressively removed when no longer required.

First Aid facilities for the use of all construction staff in the form of a fully provisioned first aid area within the site office with lifesaving and safety equipment as required by relevant statutes, authorities and awards will be maintained at all times by the contractor.

The Contractor shall obtain all required permits, pay the applicable fees and comply with all conditions.

As requested by DLR, the issue of maintaining flood storage and flood paths during construction was addressed by the applicant. The existing flood extent for a 1-in-1000-year flood event is indicated in Figure 8 below (refer to McCloy Consulting SSFRA and appended maps). The proposed buildings and the main construction works are located outside of the flood plain. It is proposed to locate the Contractor's Compound at the podium and basement level between Blocks F and G, which will be constructed in advance as part of Phase 1. A construction access route will link this area to the Phase 3 works as indicated below in Figure 8. No materials or machinery will remain in the floodplain outside of working hours.

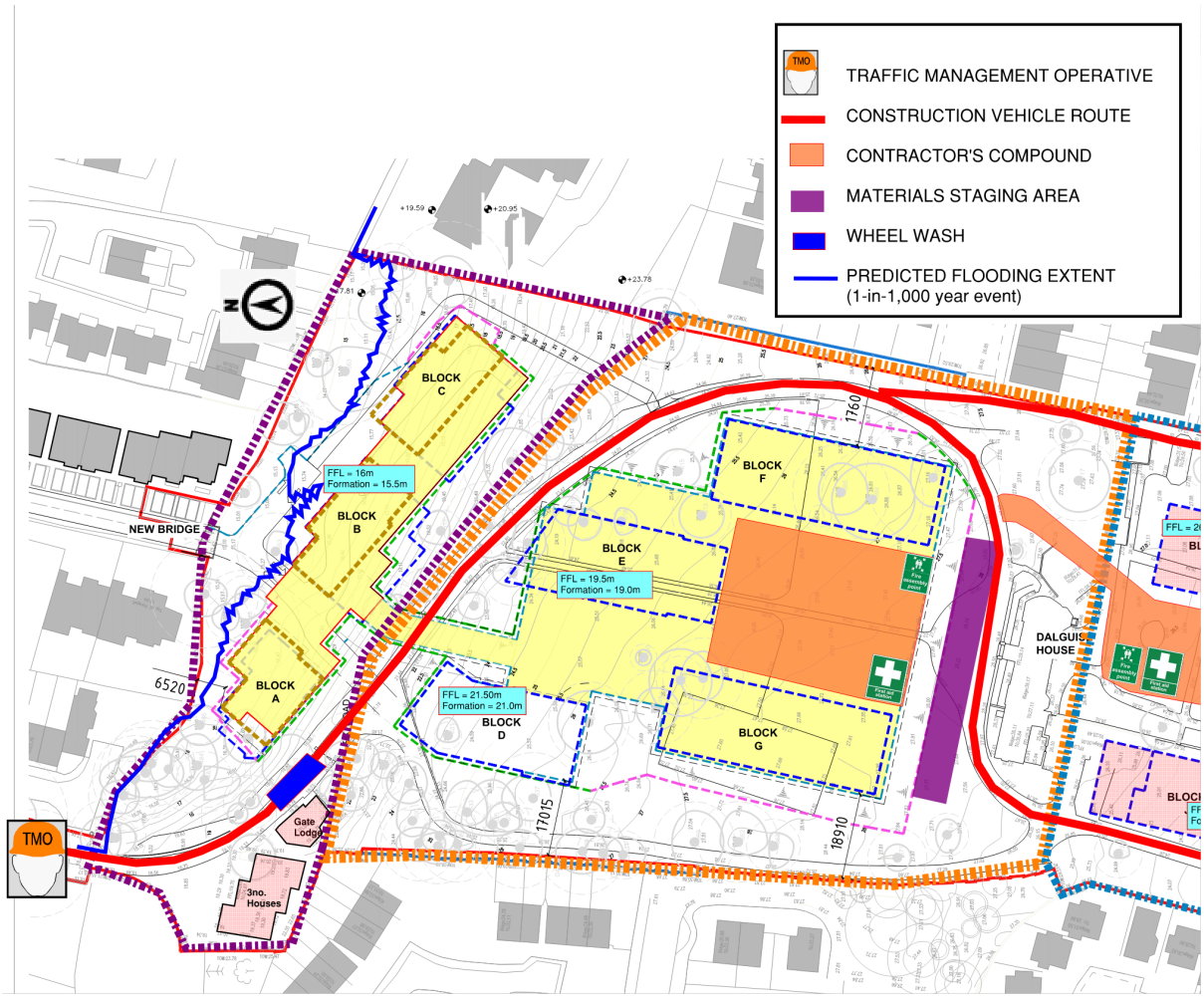

Figure 8 – Indicative Site Compound (Phase 3, plus Entrance Lodge, not shown for clarity)

4.2 Hoarding and Fences

Prevention of unauthorised access to the site is a very high priority and will be vigorously managed throughout the construction period. When the Contractor is appointed, the site shall be secured with site palisade fencing until a 2.4m high hoarding is erected in accordance with the final Construction Management Plan. Any hoardings and signboards on the perimeter of the site will comply with the requirements of the relevant authorities and the relevant Health and Safety Acts.

The Contractor shall be required to erect a single project signboard at the existing Dalguise and new Purbeck entrances to Monkstown Road to identify the site.

4.3 Temporary Protection of Public Domain

Prior to any works commencing on site, detailed dilapidation reports shall be carried out to properties and buildings adjoining the site.

Further dilapidation reports shall be carried out for footpaths, kerbs, road pavements and utility infrastructure features of the main access routes in the immediate vicinity to the site, both the Purbeck road and the junction with the Monkstown Road.

The Contractor shall provide protection to existing surrounding building elements potentially impacted by the works. Protection may be in the form of screened 2.4m high hoardings, scaffolding and fencing, taped drop sheets and the like. Similarly, suitable existing building materials to be re-used shall be suitably stored and protected from the elements.

The type of required hoardings, scaffolding and fencing will vary over the duration of the works, depending on how the site activities potentially impact on the adjoining public domain and neighbourhood.

"Dial-before-you-dig" enquiries and detailed services location investigations shall be carried out to identify any need for temporary protection of elements of existing utility infrastructure that are not to be diverted as part of the works.

All temporary protection is to be installed and maintained during the duration of the works until they are no longer required.

4.4 Major Plant and Equipment

Plant and equipment used during the entire work are:

- Articulated and rigid trucks;
- Pilling-rigs, bulldozers, excavators, and backhoes, with ancillary equipment;
- Tower and Mobile cranes;
- Concrete delivery trucks and Concrete pumps;

- Man, and material hoists;
- Scissor, boom and forklifts.

All plants and equipment will be operated by experienced and qualified personnel with the appropriate registrations.

4.5 Vehicular Access to Site

The primary access routes to the site shall be determined by the Contractor in their **Construction Traffic Management Plan (CTMP).** Primary vehicle movements shall be limited to access/egress via the existing access to the Dalguise House lands off Monkstown Road. The Contractor will identify primary access routes that provide the most direct access to the M50 and limit access along local roads. Based on the quantities of excavation and fill to be moved to or from the site, construction waste removal, and general site deliveries for the intended construction works, HGV traffic is estimated to be a maximum of 13no. two-way movements per hour (see Section 9.6). The figures below identify two routes to/from the site to the M50.

- **Route 1** (Accessing the site, same return trip): Via the M50 onto the N31 at Leopardstown, left onto the N11 (Stillorgan Road), right onto N31 (Mount Merrion Avenue), right onto Frascati Road, left on to R119 (Monkstown Road).

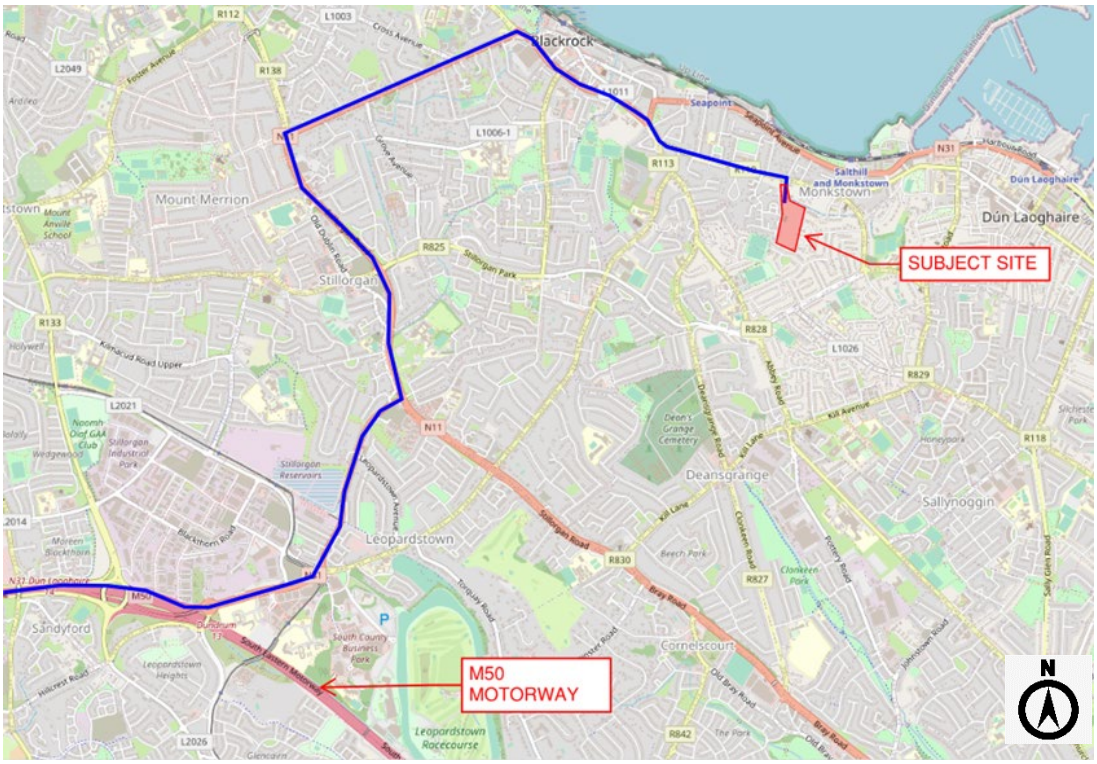

Figure 9 – Construction Route 1 (*Source EPA Maps*)

- **Route 2** (Accessing the site, same return trip): Via M11/M50 to the south, onto the N11 (Bray Road) through Cherrywood / Cornelscourt onto the Stillorgan Road, right onto N31 (Mount Merrion Avenue), right on to Frascati Road, left on to R119 (Monkstown Road).

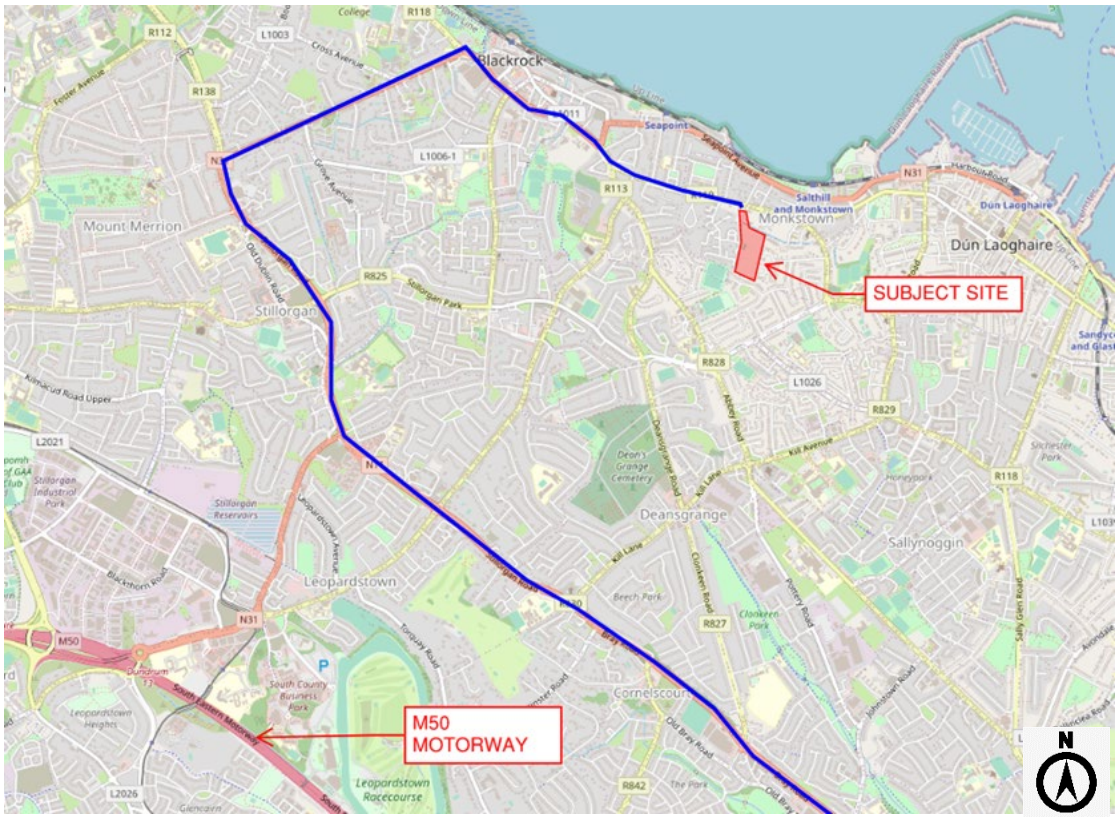

Figure 10 – Construction Route 2 (*Source EPA Maps*)

The following are some measures that will be implemented to accommodate smooth traffic flows:

- At the entrance, suitable laybys with a temporary one-lane traffic light system shall be provided, with priority to vehicles entering the site.
- Site entrance gate will be set back a minimum of 18m from the footpath edge to ensure all vehicles leave the road before stopping.
- Appropriate sight lines will be provided;
- Advanced warning provided to all users on the road and directional signage for site traffic.

In addition to construction vehicles, It is projected that the works will result in approximately 150 to 200 construction workers on site during typical construction period, with a maximum of 400 construction personnel on site concurrently during short period of peak activity. Given typical construction working hours the majority of these personnel are expected to arrive to site in advance of the 08:00 – 09:00 morning peak hour and to depart before or after the 17:00 – 18:00 evening peak hour depending on the shift working pattern.

Some construction workers will arrive on foot, cycle or use public transport. In addition, many construction workers come to site in groups by car or van. Vehicular movements carrying construction personnel can be broken down as follows:

- 400 peak staff working on site (Max) ;
- 40% arrive during AM or PM Peak Hours = 160no., 30% arrive via public transport, walk or cycle = 48no., Total arrive via car/van 112, (Average Car Occupancy = 2.2 (including driver)). Maximum additional movements AM/PM Peak (400 staff) 51 cars/vans
- With up to 200 staff normally on site
- Normal additional movements AM Peak 26 cars/vans

This volume of construction traffic estimated to be generated during peak traffic hours is lower than the peak volumes of non-construction traffic projected for the operational phase of the development. Beyond the bulk earthworks stage, other stages during construction are estimated to have lower HGV volumes and lower traffic volumes overall. The projected peak volume of construction traffic, including both truck and staff movements, is lower than the peak traffic volumes projected for the fully occupied development during the operational stage.

Detailed measures shall be developed further as part of the CTMP developed by the Contractor in consultation with the Design Team and Dun Laoghaire Rathdown County Council prior to commencement of works.

The principal objective of the CTMP is to ensure that the impacts of all building activities generated during the construction of the proposed development upon both

the public (off-site) and internal (on-site) worker's environments, are fully considered and proactively managed/programmed respecting key stakeholders requirements thereby ensuring that both the public's and construction workers safety is maintained at all times, disruptions minimised and undertaken within a controlled hazard free / minimised environment. It is noted that the impact of the construction works will be temporary in nature.

The CTMP shall be prepared in accordance with the principles outlined below and shall always comply with the requirements of:

- Chapter 8 of the Department of the Environment Traffic Signs Manual, current edition, published by The Stationery Office, and available from the Government Publications Office, Sun Alliance House, Molesworth Street, Dublin 2;
- Guidance for the Control and Management of Traffic at Road Works (June 2010) prepared by the Local Government Management Services Board; and
- Any additional requirements detailed in the Design Manual for Roads and Bridges & Design Manual for Urban Roads & Streets (DMURS).

In order to ensure satisfactory operation of the construction stage the following is proposed:

- Provision of sufficient on-site parking and compounding to ensure no potential overflow onto the local network.

As referenced previously, site offices and compound shall be located within the green space area just south of Dalguise House. The site will be able to accommodate employee and visitor parking throughout the construction period with construction of temporary hardstanding areas.

Finally, truck wheel washes will be installed and any specific recommendations regarding construction traffic management made by the Local Authority will be adhered to.

The following mitigation measures shall be incorporated into the CTMP:

- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
- The surrounding road network will be signed to define the access and egress routes for the development.
- The traffic generated by the construction phase of the development will be strictly controlled in order to minimise the impact of this traffic on the surrounding road network.
- All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel.
- All employees' and visitors' vehicle parking demands will be accommodated on-site.
- A programme of street cleaning if/when required.
- Any associated directional signage
- Any proposals to facilitate the delivery of abnormal loads to the site
- Measures to obviate queuing of construction traffic on the adjoining road network.

4.6 Site Security

Access to the site shall be controlled by means of an electronic access control system and camera remote monitoring system for out-of-hours use.

All personnel working on site shall be required to have a valid Safe Pass card.

4.7 Material Hoisting & Movement Throughout the Site

All lifting activities will have to be coordinated on-site by the appointed person on site. All lifts will have to have a proper lift plan in place prior to commencement. No loads will be lifted over the public domain or adjacent properties.

4.8 Deliveries & Storage Facilities

All deliveries to the site shall be scheduled to ensure their timely arrival and avoid the need for storing large quantities of materials on site. Deliveries shall be scheduled outside of rush hour traffic to avoid disturbance to pedestrian and vehicular traffic in the vicinity of the site.

4.9 Site Accommodation

On-site facilities shall include:

- a materials and equipment storage area;
- site offices and staff welfare facilities (e.g. toilets, drying room, canteen, etc.).

Electricity will be provided to the site via the national grid. Water supply to the site during construction works will be provided by means of a temporary connection to a public water main. Similarly, a temporary connection for foul water drainage will be made to the public network.

4.10 Site Parking

Vehicle parking for construction personnel shall be accommodated within the development site. To the extent possible, personnel will also be encouraged to use public transport, and information on local transportation will be published on-site (see Section 4.5).

4.11 Site Working Hours

Subject to the agreement of the Planning Authority, the following site operation hours are proposed:

- Monday to Friday: 07:00 to 19:00
- Saturdays: 08:00 to 14:00
- Sundays & Bank Holidays: Works not permitted

It may be necessary for some construction operations to be undertaken outside these times, for example, service diversions and connections; concrete finishing and fit-out works; etc. There may also be occasions where it is necessary to make certain deliveries outside these times, for example, where large loads are limited to road usage outside peak times. Any proposed works outside of normal working hours will be identified in advance, and the Local Authority and local neighbours will be notified of the likely affects (see Section 10). This update will be from the designated Community Liaison Officer who will issue a monthly Community Liaison Plan which will be circulated to the relevant stakeholders. Works outside of normal working hours shall not progress without written approval from the Local Authority.

Any lighting being used at night on site during construction should be considerate of the impacts it might have on nocturnal species in the area and adjoining neighbours. The lights will not be left on overnight. If lighting is required during construction the lights will only be illuminating work areas when necessary and will avoid illuminating any woodland habitats, trees and adjoining properties.

5 Environmental Management

During construction, cognisance will have to be taken of the following guidance documents for construction work on, over or near water:

- Inland Fisheries Ireland (2016) Guidelines for the protection of fisheries in and adjacent to waters.
- CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors.
- CIRIA C648 Control of Water Pollution from Constructional Sites.
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (TII, 2008).
- The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII, 2020).

5.1 Preconstruction Surveys

A pre-construction bat suitability assessment will be carried out prior to site clearance. Any moderate or high potential features will be examined by a suitably qualified bat specialist to ensure no bats are present.

5.2 Timing of Works

Site clearance during construction and tree and shrub maintenance during operation will take place outside the nesting bird season (1st March - 31st August inclusive). If site clearance is required during the nesting bird season, the area will be checked by a suitably qualified ecologist. If nesting birds are found to be present, the site clearance works will cease until the chicks have fledged, or, until the NPWS have been consulted to determine the course of action.

The felling of trees and demolition of outbuildings will take place in the months of September to November inclusive, or in February and March in order to avoid the months when bats are most sensitive to disturbance. Note that this programme must also consider the presence of nesting birds.

In order to protect the heronry from disturbance which could lead to nest abandonment, no site clearance works will commence during the pre-nesting and nesting season (February- July). The absence of active nests will be confirmed by the Ecological Clerk of Works (ECoW).

5.3 Lighting

Any lighting being used at night on site during construction will be considerate of the impacts it might have on nocturnal species in the area. The lights will not be left on overnight. If lighting is required during construction, the lights will only be illuminating work areas when necessary and will avoid illuminating any woodland habitats and trees.

5.4 Protection of Trees

An Arborist be retained as required by the principal contractor to monitor and advise on any works within the RPA of retained trees to ensure successful tree retention and planning compliance. All recommendations contained in the Tree Survey Report and the Tree Protection Plan submitted with this application shall be followed. Fencing shall be erected around trees which are to be retained and will include the Root Protection Area, as defined and directed by a professionally qualified Arborist.

5.5 Protection of the Heronry

Fencing will be erected around the trees containing the heronry within the site as part of the tree protection plan. These will also serve to reduce disturbance close to the trees. The tree protection fencing will be retained for the duration of the construction phase.

5.6 Cementitious Materials

The use and management of concrete in or close to watercourses must be carefully controlled to avoid spillage which has a deleterious effect on water chemistry and aquatic habitats and species. Alternate construction methods have been proposed where possible, e.g. use of pre-cast units, use of cofferdams to place concrete in the dry, and permanent formwork will reduce the risks associated with concreting works. Where the use of in-situ concrete near and in watercourses cannot be avoided the following control measures will be employed:

- When working in or near the surface water and the application of in-situ materials cannot be avoided, the use of alternative materials such as biodegradable shutter oils shall be used;
- Any plant operating close to the water will require special consideration on the transport of concrete from the point of discharge from the mixer to the final discharge into the delivery pipe (tremie). Care will be exercised when slewing concrete skips or mobile concrete pumps over or near the watercourses;
- A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. This will include temporary bunds adjacent to concrete pours, dedicated piped temporary surface water drainage which will discharge to a public sewer (under of licence). Placing of concrete in or near the watercourses will be carried out only under the supervision of a suitably qualified independent Environmental Manager who will issue updates and action items to the Design Team. There will be no hosing into surface water drains of spills of concrete, cement, grout or similar materials. Such spills shall be contained immediately, and runoff prevented from entering watercourses;
- On-site concrete batching and mixing activities will only be allowed at the identified construction compound;

- Washout from concrete lorries, with the exception of the chute, will not be permitted on site and will only take place at the construction compound (or other appropriate facility designated by the supplier).;
- Chute washout locations will be provided with appropriate designated, contained impermeable areas and treatment facilities including adequately sized settlement tanks. The clear water from the settlement tanks shall be pH corrected prior to discharge (which shall be by means of one of the construction stage settlement facilities) or alternatively disposed of as waste in accordance with the Contractor's Waste Management Plan.
- Method statements that are prepared for the works will be reviewed/approved by the Client Project Manager and where necessary the relevant Environmental Specialist. All method statements for works in, near or liable to impact on a waterway must have prior agreement with IFI and NPWS.

5.7 Surface Water Run-off

Surface runoff from the compound will be minimised by ensuring that the paved/ impervious area is minimised. All surface water runoff will be intercepted and directed to appropriate treatment systems (settlement facilities and oil traps) for the removal of pollutants and/or silt prior to discharge under licence to the adjoining public sewer. Direct, uncontrolled run-off from the site to the adjacent Stradbrook Stream during construction will not be permitted.

5.8 Works adjacent to the Stradbrook Stream

Prior to commencement on site, as part of the overall Construction Management Plan for the works, consultation will be conducted between the relevant members of the appointed Design team, the Main Contractor for the project and DLRCC so that site parameters can be agreed regarding the protection of the Stradbrook Stream for construction spillages including soil runoff, silts and general pollutants resulting from construction activities.

The "*Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters*" 2016 produced by Inland Fisheries Ireland must be used as a baseline publication in the protection of the Stradbrook Stream and its surrounds and the detailed recommendations contained within should be adhered to where applicable.

Pre-construction, the Contractor must establish, with the assistance of an approved testing consultant, a series of recommended baseline levels in the stream such as existing pollution levels, water quality etc, During the construction works, continuous monitoring must be carried out to confirm that established water quality levels have not dropped below specified/agreed levels set in conjunction with the OPW/ Inland Fisheries and the local Authority.

The existing Irish Water/ DLRCC main foul line running adjacent to the Stradbrook Stream must be protected at all times from excessive discharge. Agreement regarding such discharges, if permitted, will be confirmed with the relevant Statutory bodies prior to commencement on site. Direct, uncontrolled run-off from the site to the adjacent Stradbrook Stream during construction will not be permitted.

The requirements of the DLRCC document "Special Requirements for the protection of Water Quality in the Management of Civil Engineering Contacts" must be adhered to during the construction phase of the development particularly in proximity to the Stradbrook Stream, subject to agreed adjustments, were permissible, with the Local Authority.

Some baseline considerations to be taken during the proposed works are:

- Direct, uncontrolled run-off from the site to the adjacent Stradbrook Stream during construction will not be permitted. As a further mitigation measure, double silt fences will be installed along the extent of works adjacent to the Stradbrook Stream to contain any potential accidental silt or sediment run-off.
- Stockpiling, temporary or otherwise, of construction material or topsoil will be prohibited within 10m of the watercourse, in order to minimize sources of sediment runoff.

- Site compounds shall not be located within 5m of the Stradbrook Stream, if required in that location, fuel storage, temporary or otherwise, shall be permitted within site compounds areas and not within 10m of the watercourse at these locations.

- In order to limit the potential for pollution due to run-off from construction, all runoff waters must be directed through sedimentation ponds prior to discharge under licence to the adjoining public sewer. These ponds must be in place prior to the main construction works. The purpose of a temporary sedimentation basin/pond is to provide an area where sediment laden runoff is allowed to the pond and suspended solids are allowed to settle. Regular inspection of the settlement tanks shall be carried out and additional treatment used if settlement is not adequate.

- Any existing surface water or land-drains uncovered on site which discharge to the Stradbrook Stream shall be inspected and sealed to ensure no uncontrolled surface water or ground water ingress.

5.9 Groundwater and Temporary De-Watering

The proposed works will involve excavations for foundations, buried services and the basement / lower ground floor areas. The construction of the basement at Phase 1 (see Section 3.1.1) will involve excavations of up to 5-6m into the subsoil.

A Site Investigation was undertaken by Ground Investigations Ireland Ltd in 2018 including the installation of no. 1 groundwater monitoring well (Ground Investigations Ireland, 2018). Groundwater strikes were noted for Boreholes No. 1 and 2, at 2.4m and 3.7m, rising to 2.10m and 2.70m in 20 minutes.

Further investigations were undertaken by IGSL Limited in February 2022, with standpipes installed into four of the boreholes. No groundwater ingress was observed to the bored depths during installation. However, water was present in the boreholes at the end of the drilling. While this was mostly at depths greater than 10m BGL, two of the boreholes recorded standing water at depths of 3.1 and 3.2m BGL at the end of drilling (IGSL Ltd, 2022).

IGSL Limited have continued to carry out ground monitoring at the four standpipes, and the results are summarised in Table 2 below, to allow the groundwater level to be assessed with the seasonal variations.

Borehole / Rotary Location	**Groundwater Level (mBGL)**						
	08.08.22	**24.10.22**	**16.12.22**	**20.01.23**	**14.02.23**	**06.03.23**	**01.06.23**
RC03*	7.63m	7.05m	6.82m	6.83m	7.13m	7.09m	11.96m**
RC05*	3.49m	2.82m	1.32m	1.2m	1.83m	2.14m	2.14m
RC07*	7.46m	7.27m	6.9m	6.78m	6.97m	7.01m	6.96m
RC09*	2.32m	1.89m	1.75m	1.71m	2.12m	2.17m	2.21m

* Denotes 2022 IGSL Limited borehole. ** possible outlier (further investigation required July 2023)

Table 2 – Ongoing groundwater monitoring 2022-2023

Based on the water table levels noted at the boreholes in the site investigation, it is expected that groundwater will be encountered during the construction works. The relatively impervious clays noted in the site investigation will limit the ingress during the temporary excavations, however, a dewatering system shall be put in place to control groundwater. The extent of groundwater pumping will be negligible and temporary in nature, and will have no determential affect on the local area.

A series of localised sumps shall be provided below formation level, and duty & standby submersible pumps shall pump any groundwater ingress to a series of settlement tanks. The groundwater quality shall be tested by a specialist third party sub-contractor, and the water shall discharge, under licence to the adjoining Public Sewer. The licence submitted to the Local Authority and Irish Water shall outline the poposed volumes of water, settlement tank provision, testing regime etc, and shall comply with the Water Pollution Act (Section 4 licence).

The discharge of groundwater from the site to the adjacent Stradbrook Stream during construction will not be permitted.

Monitoring wells shall be installed by the contractor adjacent to the Phase 1 basement excavation and Phase 3 undercroft excavation. A live data logger will record any groundwater level changes, and this will be monitored during any temporary dewatering of the excavations. Should the loggers identify significant changes in groundwater level (in excess of seasonal variations), the level of groundwater pumping will be reduced and the sequence of excavation amended accordingly.

5.10 Wastewater

Wastewater drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent water pollution and in accordance with the relevant statutory requirements.

5.11 Fuel/Hydrocarbons

The storage of all fuels, other hydrocarbons and other chemicals shall be within the construction compound only and shall be in accordance with relevant legislation and best practice. In particular:

- Fuel storage tanks shall have secondary containment provided by means of an above ground bund to capture any oil leakage.
- Storage tanks and associated provisions, including bunds, will conform to the current best practice for oil storage and will be undertaken in accordance with Best Practice Guide BPGCS005 – Oil Storage Guidelines (Enterprise Ireland).

5.12 Noise

During the construction works the Contractor shall comply with the Safety, Health and Welfare at Work (General Application) Regulations 2007, Part 5 Noise and Vibration.

In addition, BS 5228-1: 2009 +A1 2014: "*Code of practice for noise and vibration control on construction and open sites, Part 1: Noise*" presents some guidance as how

appropriate target values for noise emissions may be derived through the consideration of various factors.

The AWN Consulting report "*Noise Impact Assessment*" which forms part of this submission, provides a detailed assessment of baseline noise levels and predicted construction noise levels at the subject site. Taking this into account and the guidance set out in BS 5228-1: 2009, AWN Consulting have proposed the following initial values for alert trigger levels at the boundary of the site (in proximity to the nearest noise sensitive locations located offsite).

Location	Day	Period	Alert Level	Noise Levels, $L_{Aeq,1hr}$ (dB re. $2x10^{-5}$ Pa)
Boundary with Private Residences	Monday to Friday	07:00 – 19:00hrs	Amber	65
			Red	70
	Saturdays	08:00 – 14:00hrs	Amber	65
			Red	70

Table 3 – Suggested Alert Trigger Levels for Noise (Source: AWN Consulting "Noise Impact Assessment)

Refer to the comprehensive Noise Impact Assessment and the Noise and Vibration chapter of the Environmental Impact Assessment Report which form part of this planning submission.

5.13 Vibrations

BS5228-1:2009+A1:2014 recommends that for soundly constructed residential properties 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 a frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above. Below these values minor damage is unlikely. Where continuous vibration is such as to give rise to dynamic

magnification due to resonance, the guide values may need to be reduced by up to 50%. BS 5228-2:2009+A1:2014 also comments that important buildings which are difficult to repair might require special consideration on a case-by-case basis.

It is not envisaged that the construction works will result in significant sources of vibration at the site boundary. Notwithstanding, all works on site shall comply with BS5228-1:2009+A1:2014 Part1 Noise & Part 2 Vibration 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.

5.14 Noise Control & Mitigation Measures

A noise and vibration monitoring specialist will be appointed to carry out independent monitoring of noise and vibration during critical periods at sensitive locations for comparison with limits and background levels. It is proposed that noise and vibration levels be maintained below those outlined above as part of these infrastructure works.

The Contractor's **Community Liaison Officer**' will be appointed and charged with the responsibility of keeping people informed of progress and by setting down procedures for dealing with complaints (see Section 10).

- No plant used on-site will be permitted to cause an ongoing public nuisance due to noise;
- The best means practicable will be employed to minimise the noise produced by on-site operations;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract;
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers;
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;

- During construction, the appointed Contractor will manage the works to comply with noise limits outlined in BS 5228-1:2009+A1 2014. Part 1 – Noise;
- 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;
- Limiting the hours during which Site activities which are likely to create high levels of noise or vibration are permitted; and
- Monitoring levels of noise and vibration during critical periods and at sensitive locations.

Furthermore, it is envisaged that a variety of practicable noise control measures will be employed. These may include:

- Selection of plant with low inherent potential for generation of noise and/or vibration;
- Erection of good quality site hoarding to the site perimeters which will act as a noise barrier to general construction activity at ground level;
- Erection of noise screens as necessary around items such as generators or high duty compressors. For piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud.
- Situate any noisy plant as far away from sensitive properties as permitted by site constraints.
- The lifting of bulky items, dropping and loading of materials will be restricted to normal working hours.
- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.

- Demountable enclosures can also be used to screen operatives using hand tools and will be moved around site as necessary.

5.15 Vibration Control & Mitigation Measures

The following specific vibration mitigation and control measures shall be considered during the construction phase:

- Breaking out concrete elements using low vibration tools.
- Choosing an alternative, lower-impact equipment or methods wherever possible.
- Scheduling the use of vibration-causing equipment, such as jackhammers, at the least sensitive time of day.
- Routing, operating or locating high vibration sources as far away from sensitive areas as possible.
- Sequencing operations so that vibration causing activities do not occur simultaneously
- Isolating the equipment causing the vibration on resilient mounts
- Keeping equipment well maintained.
- Confining vibration-generating operations to the least vibration-sensitive part of the day which could be when the background disturbance is highest.

5.16 Noise and Vibration Monitoring

The Contractor will be required to ensure construction activities operate within the noise and vibration limits. The contractor will be required to undertake regular noise and vibration monitoring at locations representative of the closest sensitive locations to ensure the relevant criteria are not exceeded (see Figure 11).

5.16.1 Noise Monitoring

As noted in Section 5.12 (Table 3), appropriate alert trigger levels have been proposed by AWN Consulting in their report "*Noise Impact Assessment*", which accompanies this submission (see monitoring locations in Figure 11).

Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise. Noise Monitoring Terminals (NMT) to be installed with the following specifications (or similar approved):

- Logging of two concurrent periods, e.g. 15-minute & hourly;
- Daily CIC automated calibrations;
- E-mail alert on threshold exceedance;
- E-mail alert on low battery and low memory;
- Remote access to measured data, and;
- Live display of noise levels.

Whenever an alert threshold level is exceeded the monitor in question will issue an alert by way of text or email message to designated recipients as follows:

- The company responsible for the monitoring;
- The Main Contractor;
- Any parties nominated by the main contractor or developer;
- The Contractor's Community Liaison Officer.

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

- "Amber" – the Contractor should assess activities currently taking place on the site and may take steps to limit emissions where practicable; and
- "Red" – the Contractor should conduct a detailed review of activities on the site, in particular those deemed responsible for the exceedance

of the alert threshold level. In particular, it should be verified that noise control measures have been implemented in accordance with BS5228 and Best Practicable Means (BPM). Additional measures should be considered and introduced as required. This may include possible plant replacement or alternative methods of working.

5.16.2 Vibration Monitoring

Vibration monitoring should be conducted in accordance with BS 6472:2008 Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting (human disturbance) and 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 (building damage).

The mounting of the transducer to the vibrating structure will need to comply with BS ISO 5348: 1998: 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.

The monitoring equipment should be set to monitor vibration in 5 minute periods. Noise and vibration data should be downloaded and reviewed on a fortnightly basis.

In addition, it is recommended that spot check noise & vibration measurements are conducted on a monthly basis. These spot checks can be organized to coincide with works that have potential to generate high levels of noise or vibration on site in order to confirm the potential extent of impact.

A monthly noise & vibration monitoring report should be prepared by the contractor. Reports should identify any exceedances above nominal limit values and attempts to

clarify the causes etc. Where remedial measures are required and identifiable these should also be clearly stated.

Indicative noise and vibration monitoring positions include but are not limited to those illustrated in Figure 11. Residential buildings adjacent to the site boundaries will be considered. One noise monitor should be positioned to address noise levels experienced at the nearest apartments or residential units. Subject to constraints on site and the location of construction works, additional noise monitors should be considered and/or moved to address monitoring requirements.

Figure 11 – Noise and Vibration Monitoring Locations

5.17 Air Quality Monitoring

An air quality monitoring (Air Quality and Dust monitoring) specialist will be appointed to carry out independent monitoring during critical periods at sensitive locations for comparison with limits and background levels. Central to this is the implementation of a Dust Management Plan.

5.18 Dust Management Plan

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 following steps have been formulated by drawing on best practice guidance from Ireland (DCC, 2018), the UK (IAQM (2014), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997).

Proposed monitoring locations have been outlined by AWN Consulting Ltd in Figure 12 below. These monitoring locations are indicative only and can be modified based on specific constraints on the site once works commence. Monitoring locations should have regard for the sensitive receptors within close proximity to the site; these include the numerous residential properties borderin the site. Specifically the residential properties in Arundel and the Orchard to the west; Brook Court to the south; Richmond Park to the east; and Purbeck and Dayton Close to the north.

Figure 12 – AWN Consulting Ltd Proposed Construction Dust Monitoring Locations

5.18.1 Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies. At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust. As the prevailing wind is predominantly westerly to south-westerly, locating construction compounds and storage piles downwind of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (IAQM, 2014; UK ODPM, 2002). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions in the vicinity of the site are favourable in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods were care will be needed to ensure that dust nuisance does not occur. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details;
- Community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;

- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out;

The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described below.

5.18.2 Preparing and Maintaining the Site

- The site layout shall be planned so that machinery and dust causing activities are located away from receptors, as far as is possible. Site compounds and storage facilities are to the centre of the site.
- Solid screens or barriers shall be erected around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Specific operations where there is a high potential for dust production shall be fully enclosed;
- Site fencing, barriers and scaffolding shall be kept clean using wetting methods.
- Materials that have a potential to produce dust shall be removed from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Seed or fence stockpiles shall be covered to prevent wind whipping.

5.18.3 Operating Vehicles / Machinery and Sustainable Travel

- All vehicles shall switch off engines when stationary - no idling vehicles.
- The use of diesel or petrol powered generators shall be minimized and mains electricity or battery powered equipment shall be used where practicable.

- A maximum-speed-limit of 20 kph shall be implemented on haul roads and work areas;
- A plan shall be applied to manage the sustainable delivery of goods and materials.
- A Travel Plan shall be implemented that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

5.18.4 Operations

- Only cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction shall be used, e.g. suitable local exhaust ventilation systems.
- An adequate water supply shall be provided on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Only enclosed chutes and conveyors and covered skips shall be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment shall be limited and fine water sprays on such equipment will be implemented wherever appropriate.
- Equipment shall be readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

5.18.5 Waste Management

- Bonfires and burning of waste materials will be prohibited.

5.18.6 Measures Specific to Earthworks

- Earthworks and exposed areas/soil stockpiles shall be re-vegitated to stabilise surfaces as soon as practicable.

- Hessian, mulches or trackifiers will be used where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- The cover in small areas shall only be removed during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser shall operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

5.18.7 Measures Specific to Construction

- Sand and other aggregates shall be stored in bunded areas and will not be allowed to dry out, unless this is required for a particular process, in which case appropriate additional control measures will be put in place.
- Bulk cement and other fine powder materials shall be delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials, bags shall be sealed after use and stored appropriately to prevent dust.

5.18.8 Measures Specific to Trackout

Site roads (particularly unpaved) 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% (UK ODPM, 2002).

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles.
- Water-assisted dust sweeper(s) will operate on the access and local roads, to remove, as necessary, any material tracked out of the site.
- All vehicles entering and leaving sites shall be covered to prevent escape of materials during transport.

- An ongoing inspection of on-site haul routes shall be implemented for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- All inspections of haul routes and any subsequent action shall be recorded in a site log book.
- A temporary surface shall be applied to the existing avenue, which shall be regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- A wheel washing system shall be provided inside the site entrance, see Figure 8 (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- An adequate area of hard surfaced road shall be provided between the wheel wash facility and the site exit, wherever site size and layout permits.
- The access gates shall be located at least 10 m from receptors where possible.

5.19 Harmful Materials

Harmful material will be stored on site for use in connection with the construction works only. These materials will be stored in controlled manner. Where on site facilities are used, there will be a bunded filling area using double bunded steel tank at a minimum.

5.20 Biosecurity

In order to minimise the risk of the introduction or spread of invasive alien plant species (IAPS) during construction, all works shall be executed in accordance with best practice for biosecurity in construction. In particular, prior to commencement, the Contractor shall prepare a detailed Biosecurity Protocol describing his/her proposed approach to ensuring that IAPS are not imported or spread during the construction of the proposed development. The Contractor's Biosecurity Protocol shall be in accordance with The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII, 2020) and subject to approval by the Ecological Clerk of

Works (ECoW) prior to its acceptance and implementation. The Biosecurity Protocol shall include, as a minimum, the following measures to prevent the spread of invasive species:

- Good construction site hygiene will be employed to prevent the introduction and spread of problematic IAPS by thoroughly washing vehicles prior to leaving any site.
- All plant and equipment employed on the construction site (e.g. excavators) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of IAPS.
- All washing must be undertaken in areas with no potential to result in the spread of IAPS.
- Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any IAPS and where it is confirmed that none are present.

The known infestation of Three-cornered Garlic should be eradicated prior to commencement of construction. The measures outlined below shall be followed in order to eradicate this species from the site:

- In advance of the works, the extent of Three-cornered Garlic established will be fenced off. Under the direction of the ECoW, the bulbs will be excavated by hand to avoid damaging the roots of nearby trees.
- The bulbs will be broken up using a spade and buried on site to a minimum depth of 1m.
- The site will be resurveyed the following year to check if any plants have re-established. If Three-cornered Garlic is found, the process will be repeated until none re-appear.

If the infestation of Three-cornered Garlic cannot be eradicated prior to construction, it should be fenced off at the outset and the access prohibited except for monitoring for treatment purposes. All site staff shall be made aware of the Contractor's Biosecurity Protocol and receive training in the importance of good site biosecurity.

6 Waste Management

AWN Consulting Ltd have developed a Resource & Waste Management Plan (RWMP) which accompanies this document as part of the planning submission. This RWMP includes information on the legal and policy framework for Construction and Demolition (C&D) waste management in Ireland, estimates of the type and quantity of waste to be generated by the proposed development and makes recommendations for management of different waste streams. The RWMP should be viewed as a live document and should be regularly revisited throughout a project's lifecycle.

6.1 Responsibility for Construction Phase Waste Management

Prior to construction commencing, the Contractor shall nominate a suitably competent and experienced representative as Construction Waste Manager for the project. The function of the Waste Manager is to communicate effectively the aims and objectives of the Waste Management programme for the project to all relevant parties and contractors involved in the project, for the duration of construction works on site.

6.2 Construction Waste Genrated by the Proposed Development

Waste generated during construction typically includes the following:

- Concrete, bricks, tiles, and cement
- Glass and composite cladding systems
- Wood
- Plastics
- Bituminous mixtures, coal tar, and tarred products
- Metals (including their alloys)
- Soil and stones

- PCB-containing materials (e.g. sealants, resin-based floorings, capacitors, etc.)
- Oil wastes and waste of liquid fuels
- Batteries and accumulators
- Packaging (paper/cardboard, plastic, wood, metal, glass, textile, etc.)

The RWMP outlines an approximate estimate of waste generated during demolition and construction stages, and identifies targets in terms of material re-use/recovery, recycle and disposal.

6.3 Waste Management and Mitigation Measures

The following measures are proposed to ensure effective management of construction waste at the development site, to maximise recycling of construction waste, and to minimise the environmental impact of construction waste.

A waste storage compound shall be set up on-site from the commencement of site activities. The compound shall include the following:

- Separate waste skips labelled with signage stating the nature of waste materials that can only be placed in the skips.
- Waste oils / containers shall be placed in dedicated mobile bunds units.
- Soils contaminated by accidental on-site spillages of oils / construction hydrocarbons shall be stored in clearly identified hazardous waste storage containers.
- Spill kits with instructions shall be located in the waste storage compound.
- On-site segregation of all waste materials into appropriate categories, including:
    - Top-soil, sub-soil;
    - Concrete, bricks;
    - Asphalt, tar, and tar products;

- Metals;
- Dry recyclables (e.g. Cardboard, plastic, timber).

- All waste material will be stored in skips or other suitable receptacles in a designated waste storage area on the site.
- Wherever possible, left-over material (e.g. timber cut-offs) and any suitable demolition materials shall be reused on or off site.
- Uncontaminated excavated material (top-soil, sub-soil) will be reused on site in preference to the importation of clean fill, as soil to be reused or removed from site must be tested to confirm its contamination status and subsequent management requirements.
- All waste leaving the site will be transported by a suitably licensed/permitted contractor and taken to a licensed/permitted facility.
- All waste leaving the site will be recorded and copies of relevant documentation retained.

These measures are intended to ensure that the waste arising from construction of the proposed development is dealt with in compliance with the provisions of the Waste Management Acts 1996 to 2013, the Litter Act of 1997, and the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021, achieving optimum levels of waste reduction, re-use and recycling.

The excavation of the basement will generate a large volume of spoil which will need to be removed off site. This inert material could be reused as a by-product (and not as a waste) in accordance with Regulation 15 (By-products) (previously Article 27) of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2020, which requires that certain conditions are met and that by-product notifications are made to the EPA via their online notification form. The potential to reuse material as a by-product will be confirmed during the course of the excavation works, with the objective of eliminating any unnecessary disposal of useful construction material.

6.4 Predicted Impacts of the Proposed Development

Waste materials will be generated during the construction of the proposed development. Careful management of these, including segregation at source, will help to ensure maximum recycling, reuse and recovery is achieved, in accordance with current local and national waste targets. It is expected, however, that a certain amount of waste will still need to be disposed of at landfill.

Given the provision of appropriate facilities, environmental impacts (e.g. litter, contamination of soil or water, etc.) arising from waste storage are expected to be minimal. Particular attention must be given to the appropriate management of any construction waste containing contaminated or hazardous materials. The use of suitably licensed waste contractors will ensure compliance with relevant legal requirements and appropriate off-site management of waste.

In summary, with a high level of due diligence carried out at the site, it is envisaged that the environmental impact of the construction phase of the proposed development will be of small scale and short duration, with respect to waste management.

7 Traffic Management

7.1 Site Traffic, Traffic and Pedestrian Management

The anticipated truck movements from and to the site in relation to the preliminary programme for the works will be nominated in the construction methodology by the Contractor. It is anticipated that all truck movements to and from the site will utilise the M50, which is c6km due south west of the site – See Section 4.5.

The construction site will be delineated by means of hoardings and lockable gates with screened fencing at the entry and exit points. The Contractor will pay particular attention to pedestrian traffic and safety at the entrance onto Monkstown Road. All vehicles will enter and exit the site in a forward direction.

Pedestrians will have right of way. If required, alternate pedestrian routes around the site will be created and clearly signed.

7.2 Minimization of Construction Vehicle Movements

Construction-related vehicle movements will be minimized through:

- Consolidation of delivery loads to/from the site and scheduling of large deliveries to occur outside of peak periods;
- Use of precast/prefabricated materials where possible;
- Provision of adequate storage space on site;
- Development of a strategy to minimise construction material quantities as much as possible;
- Promotion of public transport use by construction personnel, in order to minimise staff vehicle movements

The following headings identify some of the measures to be encouraged (see also Section 4.5).

7.2.1 Cycling

Cycle parking spaces will be provided on the site for construction personnel. In addition, lockers will be provided to allow cyclists to store their cycling clothes.

7.2.2 Car Sharing

Car sharing among construction personnel will be encouraged, especially from areas where construction personnel may be clustered. The Contractor shall aim to organize shifts in accordance with personnel origins, hence enabling higher levels of car sharing. Such a measure offers a significant opportunity to reduce the proportion of construction personnel driving to the site and will minimise the potential traffic impact on the surrounding road network.

7.2.3 Public Transport

Construction personnel will be encouraged to use public transport as means to travel to and from the site. An information leaflet shall be provided to all personnel as part of their induction on site, highlighting the location of the various public transport services in the vicinity of the construction site.

7.3 Public Roads

A Visual Condition Survey (VCS) will be carried out the Purbeck Cul-de-Sac and the local area of the Monkstown Road prior to commencement of works. The Contractor will liaise with the Transportation and Infrastructure department of Dun Laoghaire Rathdown County Council to agree any changes to load restrictions and construction access routes for the site. Measures will be put in place as required to facilitate construction traffic whilst simultaneously protecting the built environment.

The following measures will be taken to ensure that the site, public roads and surroundings are kept clean and tidy:

- a regular program of site tidying will be established to ensure a safe and orderly site;
- scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind;
- food waste will be strictly controlled on all parts of the site;
- mud spillages on roads and footpaths outside the site will be cleaned regularly and will not be allowed to accumulate;
- wheel wash facilities will be provided for vehicles exiting the site;
- in the event of any fugitive solid waste escaping the site, it will be collected immediately and removed.

8 Compounds Facilities

The construction compound shall be to the south of Dalguise House, please see Figure 7, which identifies the indicative site compound. The compound shall be constructed using a clean permeable stone finish and will be enclosed with security fencing. Site accommodation to be provided will include suitable washing / dry room facilities for construction staff, canteen, sanitary facilities, first aid room, office accommodation etc. Access to the compound will be security controlled and all site visitors will be required to sign in on arrival and sign out on departure.

A permeable hardstand area will be provided for staff parking and these areas will be separate from designated machinery / plant parking.

A material storage zone will also be provided in the compound area. This storage zone will include material recycling areas and facilities .A series of 'way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.

On completion of the works all construction materials, debris, temporary hardstands etc. from the site compound will be removed off site and the site compound area reinstated in full on completion of the works.

8.1 Coronavirus Policy

COVID-19 is an infectious disease caused by coronavirus that can affect an individual's lungs and airways and is potentially fatal. It has been declared a pandemic by the World Health Organisation (WHO). The appointed contractor shall incorporate site specific protection measures within their Construction Stage Safety & Health Plan. This shall include guidance such as displayed poster style information from the WHO, hand sanitizing units and regular cleaning etc.

9 Provisions for Construction

9.1 Hoarding, Set-up of Site & Access/Egress Points

The site area will be enclosed with 2.4m high hoarding details as previously mentioned. The primary public interface in terms of access is at the southern end of the Purbeck Lane, and suitable hoarding shall be provided at this location. Hoarding panels shall be maintained and kept clean for the duration of the project.

9.2 Removal/Diversion of Services

Prior to site clearance, a utility survey will be carried out by the Contractor to identify existing services. It is not anticipated that there will be any services, however if unchartered services are encountered, all services will be disconnected, diverted or removed as agreed with service providers.

9.3 Site Clearance & Demolitions

The existing land has been laid as open gardens, which have been maintained to a high standard up to recent years. An initial Invasives Species Survey has been carried out. Prior to any excavations or site clearance, the Contractor shall carry out an updated invasive species survey using a qualified and approved surveyor.

Some minor buildings will be demolished as part of the development works. In advance of any works. An Asbestos Survey has been carried out. Prior to any demolitions, the Contractor shall carry out an updated asbestos survey using a qualified and approved surveyor. Any existing slabs or hardstanding and concrete foundations will be broken by excavators. All reinforced concrete will be partially processed on site to separate the steel from the concrete. All materials will either be fully separated on site and disposed of to the applicable landfills / processing facility or failing that material will be sent to a processing facility for separation. Relevant certification and documentation confirming the final separation and most environmentally friendly disposal will be available.

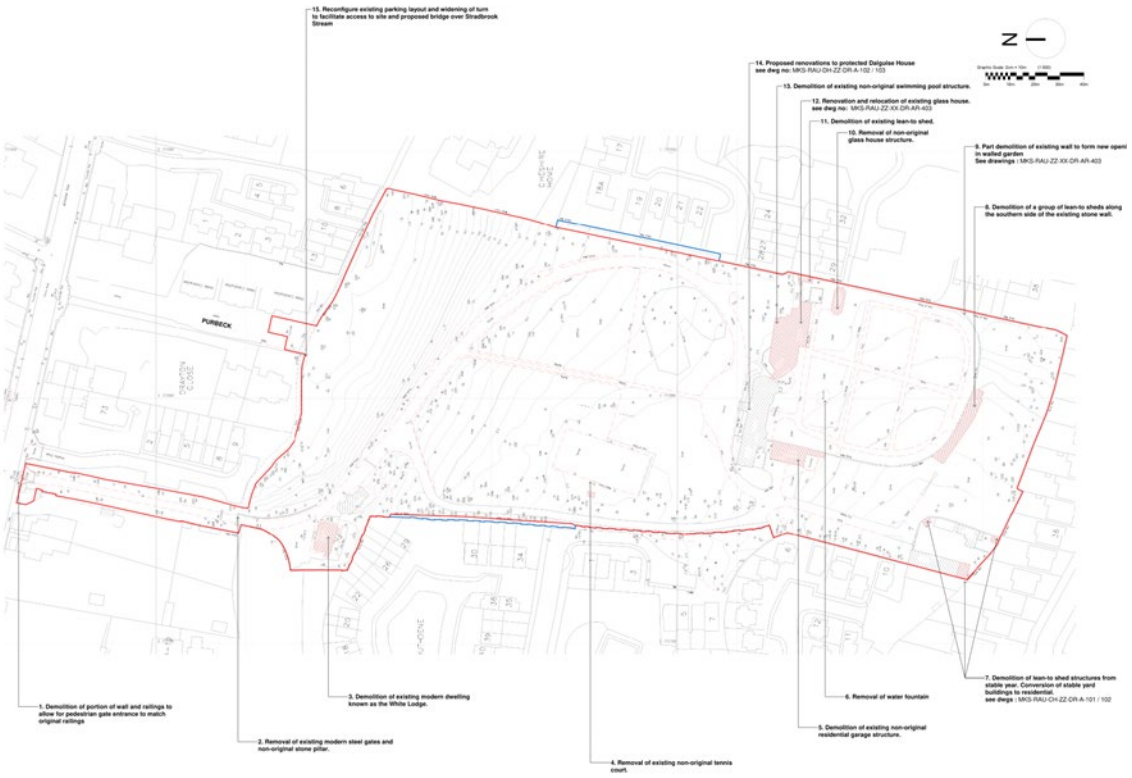

Figure 13 – Extent of Demolition (Existing Site Plan)

9.4 Tree Protection

The presence of many high value Category A and Category B mature trees on the site is a very unique highlight, and as such, very specific measures shall be taken by the contractor to protect the trees during the construction works. Please refer to the Tree Survey Report and associated drawings which accompany this document. The Contractor shall engage an Arborist, and the Root Protection Zone (RPZ) of all trees to be retained shall be carefully marked out on site. A heras fence shall be erected to prevent any access to the enclosed areas of the RPZ during the construction works.

A number of the trees to be retained are located along the existing Avenue. It is intended that this Avenue shall be retained, and as construction vehicles will traverse this roadway, it will be necessary to construct a temporary road build-up to protect the roots below. The temporary road build-up shall incorporate a "Cellweb" system (or similar). This polymer cellular confinement system into which specified crush stone is placed will spread axle loads of vehicles, thus reducing the loading by the time it

reaches the soil and root area underneath. This system shall also be used on other areas where construction vehicles travel adjacent to retained trees.

9.5 Installation of Services

The drainage strategy incorporates gravity outfalls for foul and surface water sewage on the northern site boundary (refer to the drainage drawings). The internal site drainage predominantly operates by gravity. The high point of the site is at Dalguise House, and as such, to achieve a gravity flow northwards from Phase 1, this results in some deep areas of drainage to the north of Dalguise House. The Contractor shall assess the form of construction for the services, as excavations shall also be necessary to the centre of the site for the basement structure. To limit excessively deep narrow foundations, and to minimize disruption of adjacent trees, the Contractor may choose to use micro-boring techniques for services installation. This trenchless form of installing services utilises a horizontal auger which traverses between excavated pits.

9.6 Excavation

The proposed site levels are determined by a combination of factors such as tie-ins with existing roads, existing topography, TGD Part M compliant access to ground floor levels etc. The profiling of the site to accommodate the proposed site levels, construction of foundations, forming of landscaping features etc will result in a surplus of "cut" material which will be exported off site to suitably licensed landfill facilities.

A 3D computer model was created of the site based on the topographical survey, and the following are the estimated nett volumes of material which will be excavated and exported off site in order to construct the foundations / basements:

- Phase 1: 41,885m^3
- Phase 2: 3,508m^3
- Phase 3: 3,355m^3
- **TOTAL: 48,748m^3**

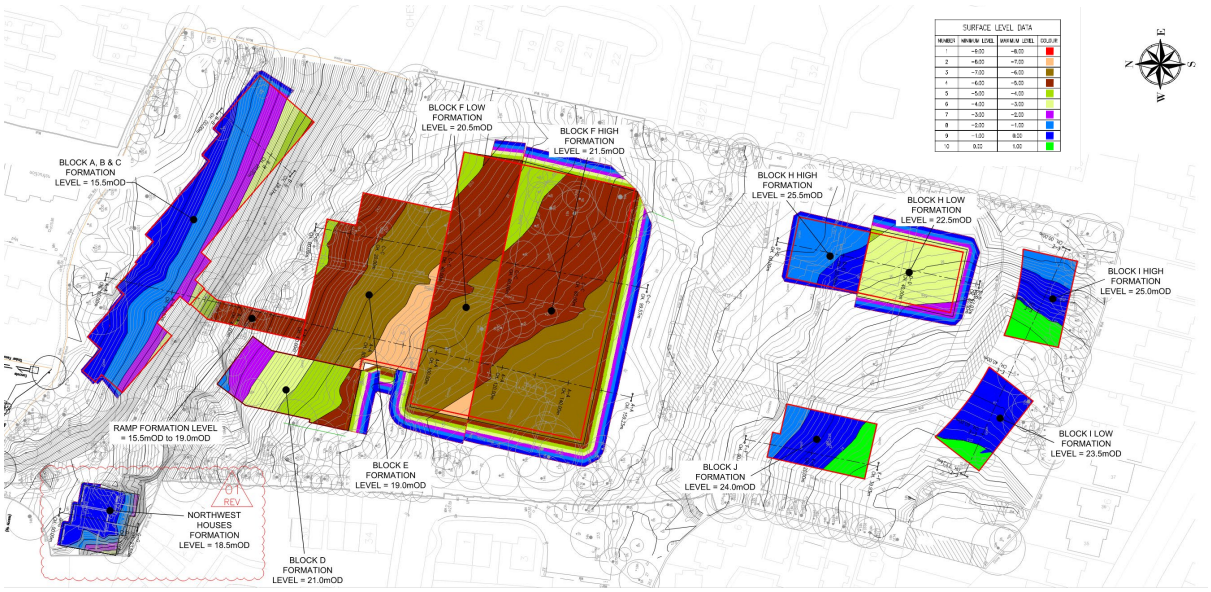

Figure 14 – Extract from Civils 3D software of approx. excavation depths

A 20% bulking factor has been included in the volumes above. Some topsoil material maybe retained on site for use in landscaped areas. During the excavations, HGV traffic is estimated to be a maximum of 13no. two-way movements per hour. The excavations at Phase 1 will generate the highest number of truck movements. This is assessed over an approximate three month period, where it is estimated that there will be 5,236no two-way truck movements or approximately 375no two-way movements per week.

The overlap of excavations at each Phase will be determined by the Contractor, but it is envisaged that the excavation period and associated truck movements would be over a two to three month period.

The majority of the excavations can utilise battered excavations, but some vertical temporary retaining walls will be required at localised areas along the existing avenue and near existing trees to be retained. The temporary retaining walls will include bored piles. All excavation banks shall be protected and inspected regularly. The accompanying drawing W3683-DR-1040-05 identifies the basement / undercroft excavation extent and the proximity to the site boundaries. A second and more comprehensive site investigation was carried out in early 2022. A total of eight rotary cores were carried out across the site and the bedrock was identified at 10.5m to

14.0m below ground level. This is well in excess of any basement excavations, and as such, it is not envisaged that any rock breaking will be required as part of the works.

The Contractor must prepare a Construction 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.

9.7 Foundation Works

It is likely that the foundations to apartment blocks will consist of shallow foundations on the underlying stiff glacial clays. The excavation and preparation of the foundation works will generate spoil that must be disposed of at an appropriate licensed land fill site. The concrete operations associated with the foundation will require concrete deliveries to site. The frequency of construction movements to site shall be outlined by the Contractor in their CTMP.

9.8 Superstructure

The construction of the superstructure will involve complex sequencing of activities and various construction methodologies could be adopted to deliver the Contract. As noted the construction methodology and therefore the programme of the construction activities will be dictated by the Contractor.

The following are potential options for the superstructure design:

- RC Column & Flat Slab
- RC/Masonry Cross Wall & Precast Slab
- Precast Concrete Twin Wall & Precast Slab

The following outlines a general construction sequence for the superstructure:

9.8.1 Building Structure:

- Construction of the foundations/substructure.
- Construction of rising elements to 1st floor and 1st floor slabs.
- Similar sequence of construction of rising elements and floor slabs.
- Note allowance for service construction concurrently or before superstructure.

9.8.2 Envelope / Cladding:

- Envelope works will follow in a sequential manner.

9.8.3 Mechanical & Electrical fit-out:

- First fix will commence at each level behind structure.
- This will be followed by the second fix and the final connections.

9.8.4 Fit-out:

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

9.8.5 Commissioning:

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

The above is an indicative construction sequence. The final sequence shall be dictated by the Contractor. The Contractor must issue a detailed construction programme as part of their Construction Management Plan outlining the various stages prior to commencement of works.

9.9 Erection and Operation of Cranes

It is envisaged that two to four tower cranes will be temporarily erected in each phase to accommodate the construction works for the distribution of reinforcing steel, concrete skips, concrete formwork element and general building materials. The Contractor will need to obtain all necessary licences from the Local Authority. A "mast climber" may be installed at some local areas to facilitate façade features. The mast climber is essentially a climbing platform that allows the user to safely access any level without the requirement for a full scaffold tower.

9.10 Construction of Bridge at the Stradbrook Stream

The abutments to the bridge shall be supported by mini piles installed using augering techniques to the south of the Stream. The pile shall be sleeved to prevent any grout loss to the sub-soil. Following installation of the piles, a reinforced concrete ground beam shall be cast in order to form the southern bridge support. The northern support shall be via the existing reinforced concrete retaining wall forming the northern bank of the stream.

The bridge deck shall be constructed using a series of precast concrete planks which will span from the existing northern retaining wall to the new southern abutment noted above. An insitu topping shall be provided in order to achieve the necessary structural ties and falls to the deck etc. Proprietary barriers shall be provided to the bridge sides.

The works will included localized regrading of the existing surfacing of the Purbeck road at the interface with the new bridge deck.

It is envisaged that mobile cranes shall be required to accommodate the construction works for the distribution of reinforcing steel, concrete skips, concrete formwork element, precast planks and general building materials.

The flood plain extent is indicated in Figure 8 above (refer to McCloy SSFRA document). The proposed construction works of the bridge will occur during Phase 1 and the temporary Contractor's compound, welfare facilities, set-down areas will not be located within the flood plain (see Figure 15). The construction works will progress, at all times ensure that the cross section of the stream or the flood plain lands are not

compromised for an extended period. During the works, the weather forecast shall be closely monitored to identify any significant rainfall events which could pose a risk to the works or surrounding areas.

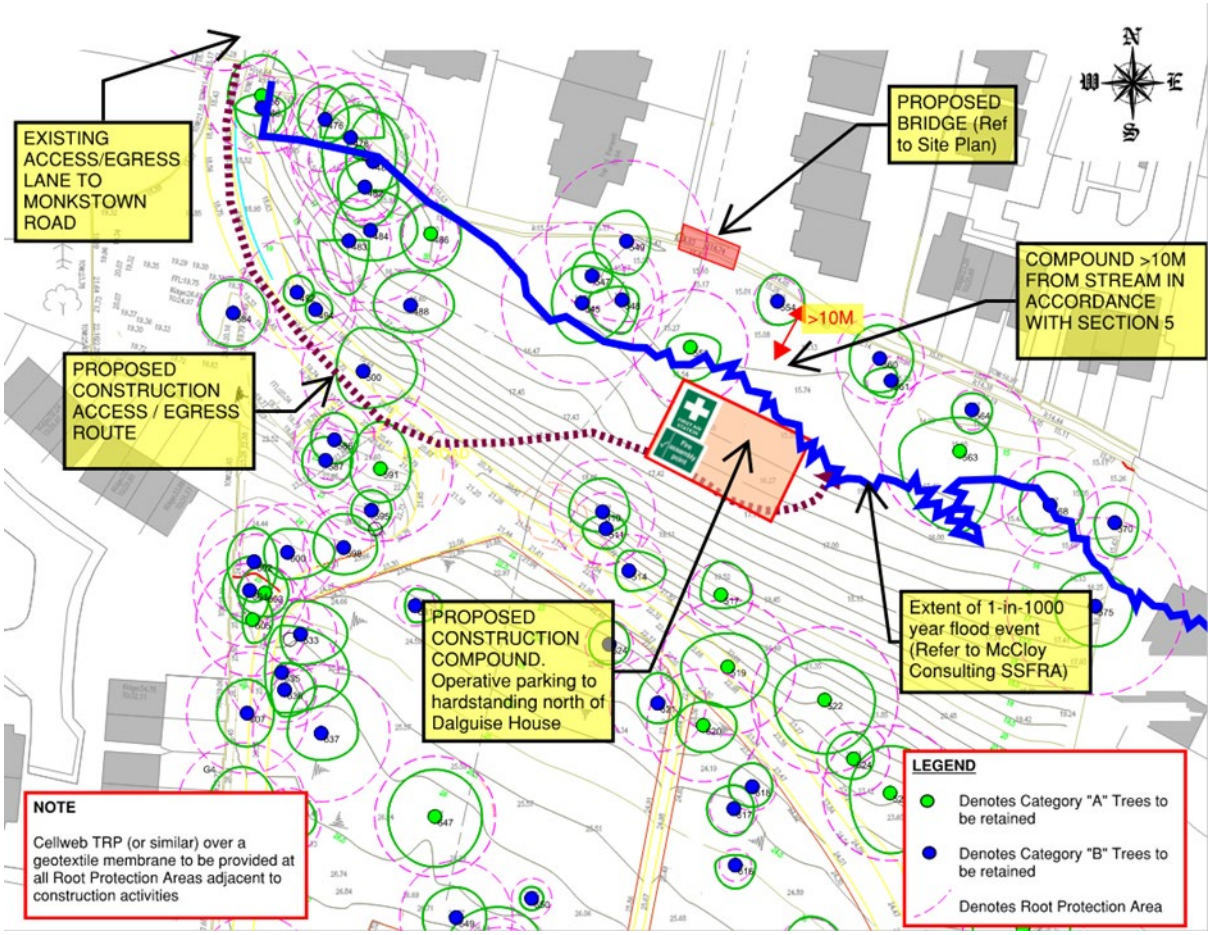

Figure 15 – Construction of Bridge over Stradbrook Stream

9.11 Works to Existing Buildings

The existing Dalguise House, Coach House, Entrance Lodge and Brick Gate Lodge buildings will be retained and remedial works carried out to ensure the fabric of the buildings is improved, and necessary alterations to suit the proposed layouts. All works to the buildings will be sympathetic to the original construction, and incorporate suitable mortar, protective treatments and adequate ventilation to concealed elements. Following extensive opening-up to inspect the structural elements, a detailed schedule of works shall be agreed with the Conservation Architect.

10 Stakeholder Management and Community Engagement

The proposed development is in close proximity to neighbouring residential properties, and as such, the management of stakeholders will a key consideration for all site logistics, planning, programming and works sequencing decisions. The project will also involve interfacing with other key parties including Dun Laoghaire Rathdown Council, Dublin Bus and An Garda Siochana.

A Site Manager will be appointed as the designated '**Community Liaison Officer**' (CLO) for the duration of the project with a focus on day-to-day issues affecting the adjoining properties including the site establishment, access, major deliveries, tower crane erection/dismantling operations, noisy work activities etc.

A detailed **Community Liaison Plan** will be developed identifying the key stakeholders, methods of communication, key requirements and timelines, project contacts and level of reporting required. The objective of plan will be to manage the expectation of the adjoining properties and minimize the impact of the construction works.

Prior to commencing works on site, the CLO will meet each stakeholder individually, where they will be provided with information on the project including the plans for the site setup/logistics and early stages of the project. The CLO shall advise on the procedures for contacting the site team with any queries or issues which may arise, with out-of-hours phone and email contact details. These meetings will be the starter meeting for the future monthly meetings to be held with the key stakeholders to review any construction issues on a regular basis in a managed and agreed forum. The Community Liaison Plan will be updated each month, taking on board issues raised, and circulated to the relevant stakeholders.

The CLO will also identify where conditional surveys are required of any properties and the requirement for temporary works, protections, scaffolding, building monitoring or alterations to existing boundaries or access routes. Finally, the CLO will receive all noise/vibration monitoring alerts, and they will actively engage with the Contractor to mitigate repeat accurances.

Other forms of regular contact will be made including monthly newsletters, letter drops, text alerts for site notifications, etc providing the stakeholders with regular updates on the project and advising of any changes to logistics plans, access routes and any upcoming works which may affect them including lane or road closures, services diversions or planned or of hours activities completed under licence from DLRCC.

Information noticeboards will be placed at the site access point and a communications log will be maintained with every contact/complaint made recorded and responded to within an agreed time period. The log will have a **Green** (Initial) / **Amber** (Repeat) / **Red** (Major) 'traffic light' rating system which will be shared and reviewed with the Client at the project progress meetings and will be made available to DLRCC upon request.

11 Conclusion

This Construction & Environmental Management Plan (CEMP) has been prepared in conjunction with Roughan & O'Donovan for the proposed development at Dalguise House, Monkstown to give an overview of the processes to be employed during construction of this element. This document should be read in conjunction with the AWN Consulting Ltd report *Resource & Waste Management Plan* (RWMP) and *Noise Impact Assessment*, which form part of this planning submission.

The aim of this CEMP is to address the following issues that can arise during construction;

- Noise and Vibration
- Traffic management
- Working hours
- Pollution control
- Dust control
- Road cleaning
- Compound / public health facilities and staff parking
- Indicative construction methodology
- Stakeholder management and community engagement

This plan will be revised by the appointed Contractor and expanded to produce a Detailed Construction Management Plan which will be agreed with Dun Laoghaire Rathdown County Council in advance of the construction phase.