THORNTON O'CONNOR
TOWN PLANNING

Outline Construction and Environmental Management Plan

Outline Construction and Environmental Management Plan (CEMP)

In respect of a Residential Development at

Milltown Park, Sandford Road, Dublin 6

Submitted on Behalf of
Sandford Living Limited

September 2021

1.0 INTRODUCTION

This Outline Construction and Environmental Management Plan ("CEMP") has been collated by Thornton O'Connor Town Planning on behalf of Sandford Living Limited for the proposed Strategic Housing Development at Milltown Park, Sandford Road, Dublin 6. This Outline CEMP details the proposed works and defines the environmental measures that shall be implemented for the construction works in order to manage, minimise or mitigate any potential environmental impacts that may arise as a result of the proposed development.

1.1 Site Location and Description

The subject site is situated at the corner of Sandford Road and Milltown Road, Dublin 6. The developable lands are bounded to the north by Norwood Park and Sandford Road, to the east by the Milltown Road, to the south by a carpark associated with the Milltown Park Institutional and Community premises (buildings retained by the Jesuits after the disposal of the 'developable lands') and to the west by 2 No. storey existing residential dwellings located on Cherryfield Avenue Upper and Cherryfield Avenue Lower.

Figure 1.1: Aerial View of Subject Site, Indicative Application Site Boundary in Red

(Source: Google Maps, annotated by Thornton O'Connor Town Planning, 2021)

The total red line application site boundary is c. 4.74 Ha (c. 47,335 sq m) and is broken down as follows:

1. The developable site of c. 4.26 Ha (c. 42,547 sq m) at Milltown Park, Sandford Road;

2. Road works to Milltown Road and Sandford Road adjacent to the 2 No. entrances to the site (1 No. existing and 1 No. newly proposed): c. 0.16 Ha (c. 1,597 sq m); and

3. Drainage works from Milltown Road to Eglinton Road: c. 0.32 Ha (c. 3,191 sq m).

The current building range at the subject site comprises the original Milltown Park House building with 5 No. extensions attached to the original structure. The buildings are positioned in the south-eastern corner of the subject site which formed part of the Jesuit Campus at Milltown Park and which is no longer in use at the site. Tabor House and The Chapel will be reused and refurbished as part of the proposed development.

1.2 Description of the Proposed Development

Sandford Living Limited intend to apply to An Bord Pleanála for permission for a strategic housing development at this c. 4.26 hectare site at Milltown Park, Sandford Road, Dublin 6, D06 V9K7. Works are also proposed on Milltown Road and Sandford Road to facilitate access to the development including improvements to pedestrian facilities on an area of c. 0.16 hectares. The development's surface water drainage network shall discharge from the site via a proposed 300mm diameter pipe along Milltown Road through the junction of Milltown Road / Sandford Road prior to outfalling to the existing drainage network on Eglinton Road (approximately 200 metres from the Sandford Road / Eglinton Road junction), with these works incorporating an area of c. 0.32 hectares. The development site area, road works and drainage works areas will provide a total application site area of c. 4.74 hectares.

The development will principally consist of: the demolition of c. 4,883.9 sq m of existing structures on site including Milltown Park House (880 sq m); Milltown Park House Rear Extension (2,031 sq m); the Finlay Wing (622 sq m); the Archive (1,240 sq m); the link building between Tabor House and Milltown Park House rear extension to the front of the Chapel (74.5 sq m); and 36.4 sq m of the 'red brick link building' (single storey over basement) towards the south-western boundary; the refurbishment and reuse of Tabor House (1,575 sq m) and the Chapel (768 sq m), and the provision of a single storey glass entrance lobby to the front and side of the Chapel; and the provision of a 671 No. unit residential development comprising 604 No. Build-to-Rent apartment and duplex units (88 No. studios, 262 No. one bed units, 242 No. two bed units and 12 No. three bed units) and 67 No. Build-to Sell apartment and duplex units (11 No. studios, 9 No. one bed units, 32 No. two bed units and 15 No. three bed units).

Block A1 will range in height from part 5 No. storeys to part 10 No. storeys and will comprise 94 No. Build-to-Rent apartments; Block A2 will range in height from part 6 No. storeys to part 8 No. storeys (including part double height at ground floor level) and will comprise 140 No. Build to-Rent apartments and duplex units; Block B will range in height from part 3 No. to part 7 No. storeys and will comprise 91 No. Build-to-Rent apartments; Block C will range in height from part 2 No. storeys to part 8 No. storeys (including part double height at ground floor level) and will comprise 163 No. Build-to-Rent apartments; Block D will range in height from 3 No. storeys to 5 No. storeys and will comprise 39 No. Build-to-Sell apartments; Block E will be 3 No. storeys in height and will comprise 28 No. Build-to-Sell duplex units and apartments; Block F will range in height from 5 No. storeys to part 7 No. storeys and will comprise 92 No. Build-to-Rent apartments; and the refurbished Tabor House (4 No. storeys including lower ground floor level) will comprise 24 No. Build-to-Rent apartments.

The development also includes a creche within Block F (400 sq m) with outdoor play area; and the provision of communal internal amenities (c. 1,248.8 sq m) and facilities (c. 158.3 sq m) throughout the residential blocks, Tabor House and the converted Chapel building including co-working space, gym, lounges, reading rooms, games room, multi-purpose space, concierge, mail rooms and staff facilities.

The proposed works also include a new 2.4 metre high boundary wall across the site from east to west (towards the southern boundary) requiring the demolition of a portion of the red brick link building that lies within the subject site towards the south-western boundary (36.4 sq m) and the making good of the façade at the boundary. The existing Link Building is the subject of a separate application for permission (DCC Reg. Ref. No. 3866/20) that includes a request for permission to demolish that Link Building, including the part of the building on the lands the subject of this application for SHD permission. If that application is granted and first implemented, no demolition works to the Link Building will be required under this application for SHD permission. If that application is refused permission or not first implemented, permission is here sought to demolish only that part of the Link Building now existing on the lands the subject of this application for permission and to make good the balance at the red line with a blank wall.

The development also provides a new access from Milltown Road (which will be the principal vehicular entrance to the site) in addition to utilising and upgrading the existing access from Sandford Road as a secondary access principally for deliveries, emergencies and taxis; new pedestrian access points; pedestrian/bicycle connections through the site; 344 No. car parking spaces (295 No. at basement level and 49 No. at surface level) which includes 18 No. mobility impaired spaces, 10 No. car share spaces, 4 No. collection/drop-off spaces and 2 No. taxi spaces; bicycle parking; 14 No. motorcycle spaces; bin storage; boundary treatments; private balconies and terraces facing all directions; external gantry access in sections of Blocks A1, A2 and C; hard and soft landscaping including public open space and communal open space (including upper level communal terraces in Block A1, Block B and Block C which will face all directions); sedum roofs; PV panels; substations; lighting; plant; lift cores; and all other associated site works above and below ground. The proposed development has a gross floor space of c. 54,871 sq m above ground level over a partial basement (under part of Block A1 and under Blocks A2, B and C) measuring c. 10,607 sq m, which includes parking spaces, bin storage, bike storage and plant.

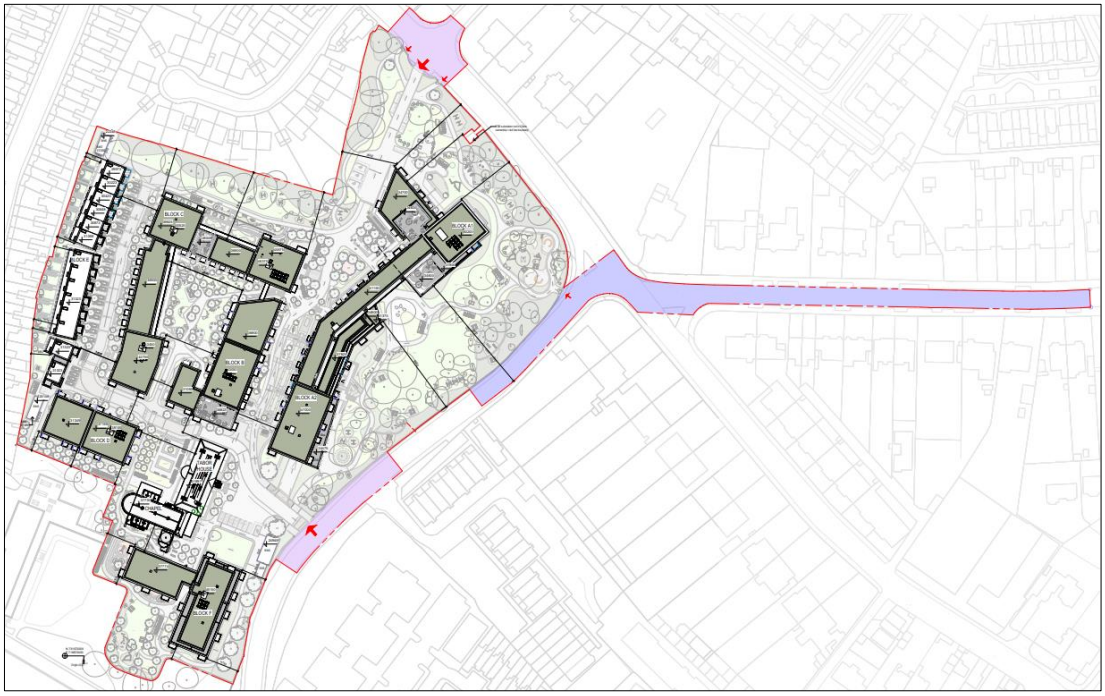

Figure 1.2: Proposed Site Layout

(Source: O' Mahony Pike Architects, 2021)

2.0 RESPONSIBILITIES FOR IMPLEMENTING THIS OUTLINE CEMP

The Contractor shall be responsible for overall management of the site for the duration of the proposed works and must progress their works with reasonable skill, care, diligence and to proactively manage the works in a manner most likely to ensure the safety and welfare of those carrying out construction works. The Contractor appointed to undertake the construction works shall be responsible for ensuring that this Outline CEMP is fully implemented.

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

These Statutory requirements will include:

- Contractor to ensure that a competent project supervisor/manager for the design process and a competent project supervisor/manager for the construction stage are appointed.
- Contractor to ensure that all staff have received site-specific safety induction instruction.
- Appointment of a safety officer.
- Safe means of access to and egress from site are provided and maintained.

In addition, the Contractor shall comply with all the reasonable safety requirements of the Client, the Project Supervisor for the Design Process and the Project Supervisor for the Construction Stage. A Preliminary Construction Management Plan (PCMP) prepared by DBFL Consulting Engineers and enclosed separately has also been reviewed during the preparation of this Outline CEMP, with relevant sections extracted where necessary into this Outline CEMP.

3.0 CONSTRUCTION PHASING

3.1 Proposed Phasing Details

The proposed development is planned to be constructed on a phased basis over 34 No. months. It is estimated that there will be c. 4 No. phases during the construction stage as detailed below:

Phase	Works	Estimated Time	Outline Works

Phase 1	Site Set Up, Enabling Works and Demolitions	Months 1-5	*Site Set Up for all Blocks.*
			
			• Site cabin delivery and placement;
			• Completion of all outstanding required surveys;
			• Contractor temporary service installations etc.;
			• Construction of appropriate hoarding to neighbouring properties;
			• Installation of CCTV coverage or other agreed security means;
			• Set up of required noise, dust, vibration monitoring stations, receptors in predetermined areas closest to sensitive locations as defined by the grant of planning;
			• Review environmental controls defined within the EIAR;
			• Tree protection installed;
			• Connection to new main temporary power board to feed the following:
			  ○ site security load | requirements; and
			  ○ all storage area requirements.
			
			Demolition and Enabling Phase
			
			• Remove all debris and rubbish from the site area to licensed tips;
			• Disposal or re-use of demolition materials will be carried out in accordance with the Development Construction and Demolition Waste Management Plan as prepared by AWN Consulting
			• Ensure, following the demolition of the buildings (or part thereof), the site shall be left in a tidy and safe condition in agreement with the client project manager;
			• Ensure measures shall be taken to ensure that the existing services in the vicinity of each structure are not affected by the demolition works;
			• Protection measures for all retained Buildings to be agreed and installed in advance of any works commencing onsite;
			• Review of temporary work to site boundaries with adjoining houses and liaison protocol with owners;

			• Forming of opening in boundary wall onto Milltown Road for construction access and protection of existing boundary walls; • Installation of haul road through site onto Milltown Road;
Phase 2	Basement Box	Months 2-10	*Basement Works Phase* • The development will include a single level basement under Blocks A,B & C to accommodate car parking spaces, bicycle parking, storage, services and plant areas. • Substructure works i.e., groundworks, formwork, basement creation (up to ground floor podium), rising concrete elements attenuation and drainage etc. will be completed during this phase.
Phase 3	Block D & F Apartment Blocks, Tabor House, Chapel and Duplexes (Block E)	Months 5-24 → Tabor House and Chapel Months 5-20 → Blocks D and E (duplexes) Months 6-19 → Block F Months 6-24	*Tabor House & The Chapel Refurbishment* • Isolation of all power and services to the existing building; • Soft strip areas deemed to be safe and not contaminated within each structure; • Ensuring primary elements of building structures not to be disturbed during soft strip works; • Appropriate temporary works as required will be installed to stabilise external walls prior to any internal remodelling taking place, beyond those needed during the initial demolition phase; • Construction materials will be loaded out by crane and will follow in accordance with the construction programme; • Replacement windows and roof elements (as required) will be fixed as the phase progresses to maintain water tightness; • Internal Works – Services, Carpentry, Fit Out, Painting, Joinery etc; • Landscaping; • Handover; *Residential Block Construction* • Blocks D,E,F Substructure; • Blocks D,E,F Construction of superstructure and vertical elements; • Blocks D,E,F Construction of façade elements. This phase will be erected as soon as possible to commence waterproofing to the floors so fit out works can commence; • Block D,E, F Fit Out;

			• Snagging / Commissioning / BCAR / Handover; • Landscaping and External Works;
Phase 4	Block A1, A2, B, C	Months 7-35 → Blocks A1 and A2 Months 7-35 → Block B Months 7-35 → Block C Months 11-35	*Residential Block Construction* • Mobilisation; • Block A substructure (outside of basement footprint); • Block A Construction of superstructure and vertical elements; • Block A Construction of façade elements. This phase will be erected as soon as possible to commence waterproofing to the floors so fit out works can commence; • Block A Fit Out; • Snagging / Commissioning / BCAR / Handover; • Block B & C substructure (outside of basement footprint); • Block A & C Construction of superstructure and vertical elements; • Block B & C Construction of façade elements. This phase will be erected as soon as possible to commence waterproofing to the floors so fit out works can commence; • Block B & C Fit Out; • Snagging / Commissioning / BCAR / Handover; • Basement Fit Out; • Landscaping and External Works

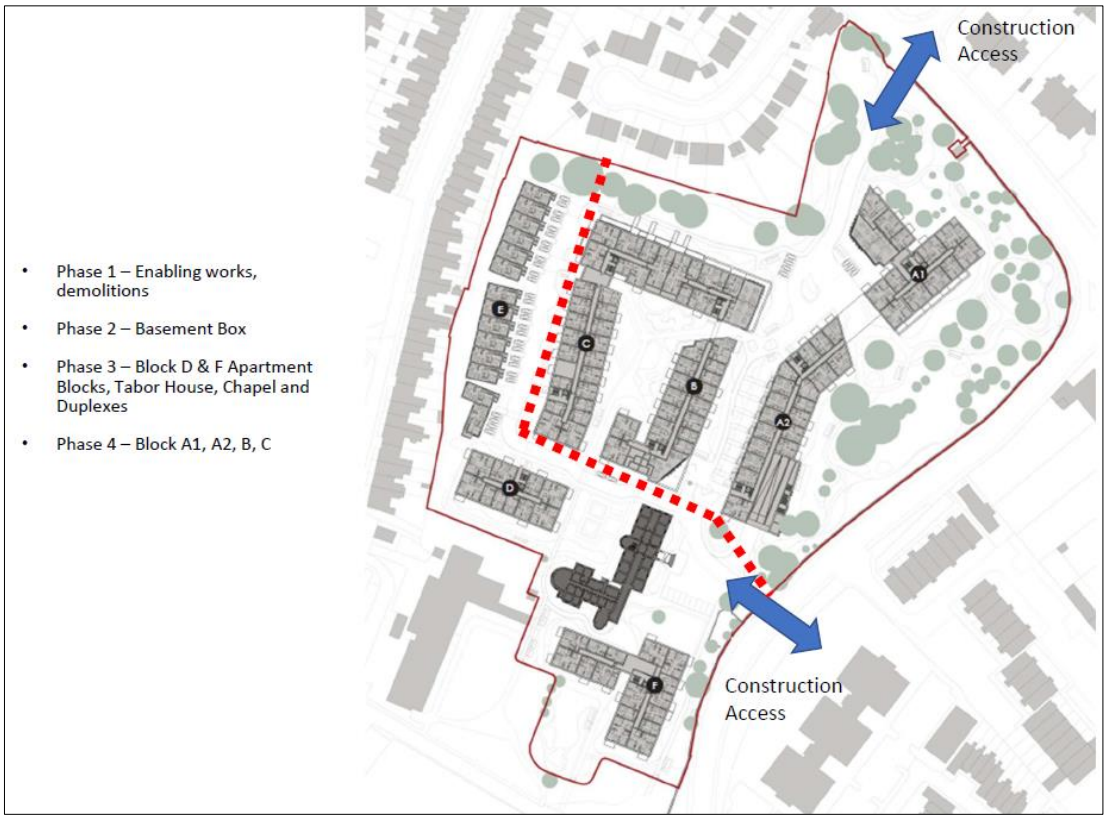

Figure 3.1: Proposed Phasing Plan Layout demonstrating Construction Accesses (Dashed Red Line Demonstrates the Divide Between Phases 3 and 4)

(Source: Lafferty Project Managers, 2021)

The indicative compound location (proposed near the Sandford Road access) is shown below, which will be confirmed in advance of commencement of the works (and agreed with Dublin City Council). The compound will include the following:

- The construction compound will include adequate welfare facilities such as wash rooms, drying rooms, canteen and first aid room as well as foul drainage and potable water supply;
- Foul drainage discharge from the construction compound will be tankered off site to a licensed facility until a connection to the public foul drainage network has been established;
- The construction compound's potable water supply shall be protected from contamination by any construction activities or materials;
- 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 construction machinery and plant;
- The construction compound will include a designated Construction material recycling area;

- A series of way finding signage will be provided to direct staff, visitors and deliveries as required;

- All construction materials, debris, temporary hardstands etc. in the vicinity of the site compound will be removed off-site on completion of the works; and

- Limited onsite parking will be provided during the construction phase as a large proportion of construction workers will arrive via public transport or shared transport.

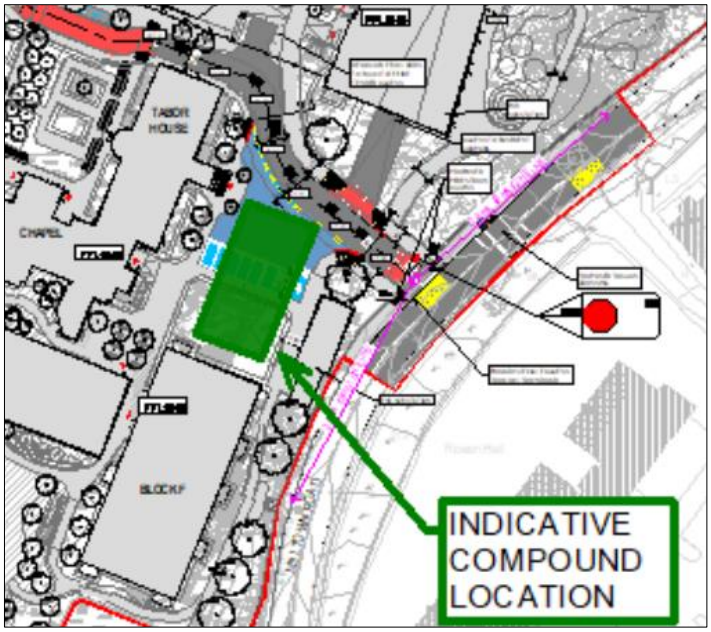

Figure 3.2: Indicative Compound Location

(Source: DBFL Consulting Engineers, 2021)

3.2 Working Hours

For the duration of the proposed infrastructure works, typical working hours shall be 07:00 to 19:00 Monday to Friday (excluding bank holidays) and 09:00 to 13:00 Saturdays, subject to the restrictions imposed by the local authority. No working will be allowed on Sundays and Public Holidays. Subject to the agreement of the local authority, out of hours working may be required for water main connections, foul drainage connections etc.

4.0 OUTLINE TRAFFIC AND TRANSPORT PLAN

Chapter 15 (Transportation) of the Environmental Impact Assessment Report ("EIAR") sets that an Outline Construction and Environmental Management Plan (CEMP) has been prepared as part of the planning application with an associated Preliminary Construction Management Plan (PCMP). The PCMP includes an Outline Traffic Management Plan as well as incorporating a range of integrated control measures and associated management activities with the objective of minimising the potential impacts of construction activities associated with the development. The following initiatives will be implemented to avoid, minimise and/or mitigate against the anticipated construction period impacts:

- During the pre-construction phase, the site will be securely fenced off/hoarded off from adjacent properties, public footpaths and roads;
- Appropriate on-site parking (temporary parking for the duration of construction works) and compound area will be provided to prevent overflow onto the local network;
- A large proportion of construction workers are anticipated to arrive in shared transport. It is likely that some numbers of the construction team will be brought to/from the site in vans/minibuses, which will serve to reduce the trip generation potential;
- Delivery vehicles to and from the site will be spread across the course of the working day, therefore, the number of HGVs travelling during the peak hours will be relatively low;
- Truck wheel washes will be installed at construction entrances;
- Any specific recommendations with regard to construction traffic management made by Dublin City Council will be adhered to;
- Potential localised traffic disruptions during the construction phase will be mitigated through the implementation of industry standard traffic management measures such as the use of traffic signage. These traffic management measures shall be designed and implemented in accordance with the Department of Transport's Traffic Signs Manual "*Chapter 8 Temporary Traffic Measures and Signs for Roadworks"* and "*Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition*" (2010);
- Site entrance point/s from the public road will be constructed with a bound, durable surface capable of withstanding heavy loads and with a sealed joint between the access and public highway. This durable bound surface will be constructed for a distance of 10m from the public road;
- Material storage zones will be established in the compound area and will include material recycling areas and facilities;
- 'Way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas;

- Dedicated construction haul routes will be identified and agreed with Dublin City Council prior to commencement of activities on-site; and

- 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.

It is stated in Chapter 15 that a detailed Construction Traffic Management Plan (CTMP) will be prepared and agreed with the Planning Authority prior to commencement of construction of the development. 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) workers environments, are fully considered and proactively managed / programmed respecting key stakeholders 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. The impact of the construction period will be temporary in nature.

The Preliminary CMP prepared by DBFL Consulting Engineers provides an Outline Traffic and Transportation Plan in Section 6 as follows:

Comply at all times with the requirements of:

- Department of Transport Traffic Signs Manual 2010 – Chapter 8 Temporary Traffic Measures and Signs for Roadworks

- Department of Transport Guidance for the Control and Management of Traffic at Road Works (2010)

- Any additional requirements detailed in the Design Manual for Roads and Bridges (DMRB) & Design Manual for Urban Roads & Streets (DMURS)

The main construction access will be off Milltown Road at the location of the proposed primary vehicle access for the development. A secondary construction access is proposed at the existing entrance from Sandford Road. The location of the primary and secondary access points noted above is identified on DBFL Roads Layout Drawing. The access points are also shown on Figure 3.1 above.

The use of both / either entrance will be coordinated with the phasing of the development. Traffic impact from the construction period will be temporary in nature. Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site staff and management;

- Construction vehicles e.g. excavation plant, dump trucks; and

- Materials delivery vehicles involved in site development works.

It should be noted that a large proportion of construction workers will arrive via public transport. The site is ideally located to avail of multiple bus routes on Milltown Road, Sandford Road and the Stillorgan Road. The Beechwood Luas stop is 1 km walking distance from the site.

According to Chapter 15 of the EIAR (Transportation), based upon the experience of similar developments, a development of this type and scale would at a maximum necessitate approximately 40 No. staff on site at any one time, subsequently generating no more than 30 No. two-way vehicle trips during the peak AM and PM periods over the period of the phased construction works. Although the number of staff and light goods vehicles, transporting staff, will fluctuate over the period of construction works, the consideration of the worst-case scenario (40 No. staff members, 30 No. large goods vehicles) provides a conservative assessment of the resultant traffic and transportation impacts of the subject development during the construction phase.

It is anticipated that the proposed development would be constructed over a period of approximately 34 No. months. Following the completion of the initial site clearance works, the generation of HGV movements during the build period will be evenly spread throughout the day and as such will not impact significantly during the peak traffic periods. For this scale of development, we do not expect HGV two-way vehicle movements to exceed 16 No. vehicles per hour during the busiest period of construction 'build' works.

It is anticipated that the proposed development would be constructed over a period of approximately 34 No. months in accordance with the preliminary construction programme. Following the completion of the initial site clearance works, the generation of HGV movements during the build period will be evenly spread throughout the day and as such will not impact significantly during the peak traffic periods. For this scale of development, we do not expect HGV two-way vehicle movements to exceed 16 vehicles per hour during the busiest period of construction 'build' works (see table below).

	HGV	LGV	Total (vehs)	Total (pcus)
Daily	64	60	124	207
AM Peak Hour	16	3	19	40
Afternoon Peak	16	0	16	37
PM Peak Hour	16	3	19	40

Based on a preliminary review of the existing survey data and proposed site levels we estimate that approximately 80,000 m^3 of material will require excavation. Whilst an element of the material will be reused on-site (c. 10,000 m^3) it is still predicted that approx. 70,000 m^3 of material will require removal during the construction phase earthworks. This equates to 4,375 No. truckloads based on a tipper truck capacity of 16m^3. At 8 No. loads removed per hour, 16 No. two-way HGV movements per hour and 64 loads removed per day this equates to 68 No. days of earthmoving works as part of the adopted worst-case assessment to clear the entire site in one single construction activity.

For the proposed Sandford Road development 3 No. foundation options have been considered. The transportation assessment in Chapter 15 of the EIAR has assumed the worst-case option for the above listed volume of material requiring removal and therefore HGV truckloads generating a traffic impact. Furthermore, the level of development assumed in the opening year would result in a greater traffic impact than that generated as a result of the most onerous of the 3 No. foundation options thereby providing a conservative and comprehensive assessment of the traffic impacts resulting from the subject site.

The table below compares the quantum of soil requiring removal per foundation option considered and the resulting number of HGV loads and inbound and outbound trips required to remove this quantum of soil. As shown below, Option No. 3 results in the highest number of inbound and outbound trips and this has been the construction traffic scenario adopted within this assessment.

Foundation Option No.	Description	Quantum of Soil Removal (incl. road and civils works)	Quantum of Trip Generation to Remove Soil
1	Standard Pad & Strip Foundations to All Blocks incl. Basement	70,000m³	4,375 loads 8,750 trips inbound & outbound
2	Pads & Strips to All Blocks except Bored Piles to Block D & F	64,000m³	4,000 loads 8,000 trips inbound & outbound
3	Pads & Strips to All Blocks except Ground Improvement to Block E	70,000m³	4,375 loads 8,800 trips inbound & outbound

An appropriate control and routing strategy for HGVs can also be implemented for the duration of site works as part of the CTMP. It is not proposed to utilise any roads with weight/height restrictions as part of the routing of HGVs during the construction phase.

A significant benefit of the subject development site's characteristics is that all construction traffic vehicle parking demands can be accommodated on-site thereby minimising the impact upon the operational performance and safety levels of the adjacent public road network.

Considering the site's proximity to the strategic road network, it is concluded that construction traffic will not give rise to any significant traffic concerns or impede the operational performance of the local road network and its surrounding junctions.

During the construction stage it is anticipated that the proposed development would result in a temporary negative impact on the traffic environment in the immediate vicinity of the subject site. The vehicle trips would be generated from LGVs used by construction staff to travel to the site and by HGVs transporting materials to and from the site. Mitigation measures to be taken at construction stage are outlined earlier in this section to lower the number of vehicle trips to and from the site during construction stage and the measures to minimise the impact of the generated traffic on the surrounding road environment.

5.0 NOISE AND VIBRATION

Chapter 13 (Noise and Vibration) of the Environmental Impact Assessment Report (EIAR) includes a description of the receiving ambient noise climate in the vicinity of the subject site and an assessment of the potential noise and vibration impact associated with the proposed development during both the short-term construction phase (in addition to the long-term operational phase) on its surrounding environment. The assessment of cumulative noise and vibration impacts on the surrounding environment have been considered as part of the assessment.

The construction phase will involve demolition of existing structures, site clearance, excavation over the development site, the formation of the basement levels, construction of the new buildings and landscaping.

For residential properties close to the proposed development, it is deemed appropriate to adopt a construction noise threshold of 70 dB(A) during the daytime period. Construction noise levels above this will generate a potentially significant impact at adjacent residential properties. It is understood that no construction work will take place at night-time.

The recommended vibration limits in order to avoid cosmetic damage to buildings, as set out in BS7385 and BS5228-2, are reproduced below. The documents note that minor structural damage can occur at vibration magnitudes which are greater than twice those presented below. Major damage to a building structure is possible at vibration magnitudes greater than four times the values set out in the table. It should be noted that these values refer to the base of the building.

Transient Vibration Guide Values for Cosmetic Damage			
Building Category	Vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of		
	4 to 15 Hz	15 to 40Hz	40Hz and above
Structurally sound and non-protected buildings	15 mm/s	20 mm/s	50 mm/s
Protected and /or potentially vulnerable buildings	6 mm/s	10 mm/s	25 mm/s

Human response to vibration stimuli occurs at orders of magnitudes below those associated with any form of building damage, hence vibration levels lower than those indicated in the table below can lead to concern. BS5228-2 also provides a useful guide relating to the assessment of human response to vibration in terms of PPV (Peak Particle Velocity). Whilst the guide values are commonly used to compare typical human response to construction works, they tend to relate closely to general levels of vibration perception from other general sources.

Guidance on effects of human response to PPV magnitudes	
Vibration Level, PPV	Effect
0.14 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies. At lower frequencies people are less sensitive to vibration.
0.3 mm/s	Vibration might be just perceptible in residential environments.

Guidance on effects of human response to PPV magnitudes	
Vibration Level, PPV	Effect
1 mm/s	It is likely that a vibration level of this magnitude in residential environments will cause complaint.

The standards notes that single or infrequent occurrences of these levels do not necessarily correspond to the stated effect in every case. Where these values are routinely measured or expected then an assessment in accordance with BS 6472-1 is more appropriate to determine whether time varying exposure is likely to give rise to any degree of adverse comment.

Noise surveys were carried out from 27th February to the 3rd March 2020, which gives an indication to quantify the existing noise environment. To account for the varying noise environment across the proposed site and at the nearest noise sensitive receivers, 5 No. survey locations were chosen in order to capture representative prevailing noise levels.

Descriptions of the measurement locations are as follows:

NM1 Located in the southwest of the site close to houses at Upper Cherryfield Avenue.
NM2 Located in the north of the site, inside the gate onto Sandford Road.
NM3 Located in front of apartments at Mound Sanford, off the Milltown Road.
NM4 Located close to houses at Garrynure, to the south of the site.
UN1 Unattended monitoring location positioned at a location representative of the proposed building façade.

Figure 5.1 Site Layout and Survey Locations

(Source: Chapter 13 of the EIAR [Noise and Vibration] Prepared by AWN Consulting)

Attended measurement periods were 15 minutes long. The results were saved to the instrument memory for later analysis where appropriate. Survey personnel noted all primary noise sources contributing to noise build-up. The unattended monitor was configured to log noise levels continuously in 15 minute samples.

With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228 (2009 +A1 2014) *Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2*. Whilst construction noise and vibration impacts are expected to vary during the construction phase depending on the distance between the activities and noise sensitive buildings, the contractor will ensure that all best practice noise and vibration control methods will be used, as necessary in order to ensure impacts at off-site Noise Sensitive Locations are minimised.

The best practice measures set out in BS 5228-1 and BS 5228-2 includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- selection of quiet plant;
- noise control at source;

- screening; and,
- liaison with the public.

Construction activities will vary depending on the phase of construction. The following matrix identifies which mitigation measures are applicable to the various phases.

Construction Phase		Mitigation Measure			
		Selection of quiet plant	**Noise control at source**	**Piling**	**Screening**
Site Preparation		X	X		X
Demolition		X	X		X
Foundations	Option A	X	X		X
	Option B	X	X	X	X
	Option C	X	X		X
General Construction		X	X		X
Landscaping		X	X		X
		Liaison with Public	**Project Programme**	**Monitoring**	**General Measures**
Site Preparation		X	X	X	X
Demolition		X	X	X	X
Foundations	Option A	X	X	X	X
	Option B	X	X	X	X
	Option C	X	X	X	X
General Construction		X	X	X	X
Landscaping		X	X		X

Selection of Quiet Plant

The potential for any item of plant to generate noise should be assessed prior to the item being brought onto the site. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative.

Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates will be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

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

- The lifting of bulky items, dropping and loading of materials will be restricted to normal working hours.

- Mobile plant should be switched off when not in use and not left idling.

- For piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud.

- 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.

- 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.

Piling

Piling is the construction activity which is most likely to cause disturbance. General guidance in relation to piling is outlined in the following paragraphs.

Piling programmes will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on a site at the same time as other works of construction or demolition that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.

Prior to construction the planner, developer, architect and engineer, as well as the local authority, will be made aware of the proposed method of working of the piling contractor. The piling contractor will in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results.

On typical piling sites the major sources of noise are essentially mobile and the noise received at any control points will therefore vary from day to day as work proceeds. The duration of piling works is typically relatively short in relation to the length of construction work as a whole, and the amount of time spent working near to noise sensitive areas can represent only a part of the piling period.

Noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover. Impact noise when piling is being driven can be reduced by introducing a non-metallic dolly between the hammer and the driving helmet.

Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either to the source of noise (as with stationary plant) or to the listener. Removal of a direct

line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in location, having due regard also for access routes. When appropriate, screens or enclosures should be provided for such equipment.

Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. It is understood that the existing concrete perimeter wall will remain during the construction process and provide a degree of screening.

In addition, careful planning of the site layout will also be considered. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.

Liaison with the Public

A designated environmental liaison officer will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particularly noisy construction activity is planned or other works with the potential to generate high levels of noise, or where noisy works are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. During excavation/ piling or other high noise generating works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.

Monitoring

Construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion. Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise.*

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

General Good Practice

General good practice measures include:

- The contractor will appoint a site representative responsible for matters relating to noise.

- A noise and vibration monitoring specialist will be appointed to periodically carry out independent monitoring of noise and vibration during random intervals and at sensitive locations for comparison with limits and background levels.

- All ancillary pneumatic percussive tools shall be fitted with mufflers or silences of the type recommended by the manufacturers, and where commercially available, dampened tools and accessories shall be used.

The assessment of construction noise and vibration and has been conducted in accordance best practice guidance contained in BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration. Subject to good working practice as recommended in the EIAR Chapter, noise associated with the construction phase is not expected to exceed the recommended limit values for noise-sensitive locations beyond 40 metres from the site boundary and therefore no significant effects are expected.

At distances less than 40 metres from the boundary, construction noise has the potential to exceed the recommended limit values depending on the construction activity occurring. A variety of standard proven best practice noise & vibration mitigation is proposed together with noise & vibration monitoring to ensure that limit values are adhered to.

6.0 AIR QUALITY AND CLIMATE

Air Quality

Chapter 12 of the EIAR (Air Quality and Climate) assesses the likely air quality and climate impacts associated with the proposed development. The chapter notes that the major dust generating activities are divided into four types to reflect their different potential impacts:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (movement of heavy vehicles).

Overall, in order to ensure that no dust nuisance occurs during the earthworks, construction and trackout activities, a range of dust mitigation measures associated with a high risk of dust impacts must be implemented. When the dust mitigation measures detailed in the mitigation section of the chapter (Section 12.7 of Chapter 12) and Appendix 12.2 are implemented, fugitive emissions of dust from the site will be insignificant and pose no nuisance at nearby receptors. With regard to the variable foundation options proposed, there will be no difference in impact related to air quality once mitigation measures have been implemented, dust related impacts remain at a medium risk for all 3 No. options with human health impacts being low risk.

The pro-active control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the Dust Management Plan. 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 key aspects of controlling dust are listed below. Full details of the Dust Management Plan can be found in Appendix 12.2 to the EIAR.

The Dust Management Plan notes the following measures in summary:

- Prior to demolition blocks will be soft stripped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- During the demolition process, water suppression will be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction will be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment will be minimised, if necessary fine water sprays should be employed.

In addition, a Preliminary Construction Management Plan has been prepared by DBFL Consulting Engineers and is enclosed. In summary, the measures that will be implemented will include:

- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.

- Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.

- Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly (on any un-surfaced site road, this will be 20 kph and on hard surfaced roads as site management dictates).

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

- Public roads outside the site will be inspected on a daily basis for cleanliness and cleaned as necessary.

- Debris, sediment, grit etc. captured by road sweeping vehicles is to be disposed off-site at a licensed facility.

- Vehicles exiting the site shall make use of a wheel wash facility where appropriate prior to entering onto public roads.

- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.

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

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

Climate

Construction stage traffic and embodied energy of construction materials are expected to be the dominant source of greenhouse gas emissions as a result of the construction phase of the development. Construction vehicles, generators etc., may give rise to some CO_2 and N_2O emissions. However, due to short-term nature of these works, the impact on climate will not be significant.

Nevertheless, some site-specific mitigation measures will be implemented during the construction phase of the proposed development to ensure emissions are reduced further. In particular, the prevention of on-site or delivery vehicles from leaving engines idling, even over short periods, and minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.

7.0 WASTE MANAGEMENT

Chapter 14 of the EIAR ("Material Assets-Waste Management") comprises an assessment of the likely impact of the proposed development on the waste generated from the development as well as identifying proposed mitigation measures to minimise any impacts

A site-specific Construction and Demolition Waste Management Plan (C&D WMP) has been prepared in line with the requirements of the requirements of the guidance document issued by the Department of Environment Heritage, Local Government (DoEHLG) and is included as Appendix 14.1. Adherence to the high-level strategy presented in this C&D WMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction phases of the proposed development. Prior to commencement, the contractor(s) will be required to refine/update the C&D WMP or submit an addendum to C&D WMP to Dublin City Council to detail specific measures to minimise waste generation and resource consumption and provide details of the proposed waste contractors and destinations of each waste stream.

A quantity of soil, stone and made ground which will need to be excavated to facilitate the proposed development. Project Engineers have estimated that between c. 64,000m^3 and c. 70,000m^3 of excavated material will need to be removed offsite, however it is envisaged that c. 10,000m^3 excavated material will be reused on site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented:

- Building materials will be chosen with an aim to 'design out waste';
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery – it is anticipated that the following waste types, at a minimum, will be segregated:
    - Concrete rubble (including ceramics, tiles and bricks);
    - Plasterboard;
    - Metals;
    - Glass; and
    - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks/bricks) and any suitable construction materials shall be re-used on-site, where possible;
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A waste manager will be appointed by the main contractor(s) to ensure effective

management of waste during the excavation and construction works;

- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal;
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, the EMR Waste Management Plan (2015-2021). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

The C&D WMP specifies the need for a waste manager to be appointed who will have responsibility to monitor the actual waste volumes being generated and to ensure that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the waste manager should identify the reasons for targets not being achieved and work to resolve any issues. Recording of waste generation during the project will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future projects.

The management of waste during the construction phase should be monitored to ensure compliance with relevant local authority requirements, and effective implementation of the C&D WMP including maintenance of waste documentation.

8.0 WATER-HYDROLOGY

Chapter 11 of the EIAR (Water-Hydrology) comprises of an assessment of the likely impact of the proposed development on the surrounding surface water and hydrogeological environments (including flood risk, surface water drainage, foul drainage and water supply) as well as identifying proposed mitigation measures to minimise any impacts. The following measures are proposed during the construction phase to mitigate against risks to the surrounding hydrological environment:

- A Preliminary Construction Management Plan has been prepared as part of this application and is to be implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the Preliminary Construction Management Plan. [Chapter 11 notes that this Outline Construction and Environmental Management Plan (CEMP) has been prepared and will be implemented during the construction phase].

- Weather conditions and typical seasonal weather variations will also be taken account of when planning stripping of topsoil and excavations with an objective of minimizing soil erosion.

- In order to mitigate against spillages contaminating the surrounding surface water and hydrogeological environments, all oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area. Refuelling and servicing of construction machinery will take place in a designated hardstand area (where not possible to carry out such activities off site).

- Concrete batching (for use in in situ concrete pours) will take place off site and wash down and wash out of concrete trucks will take place off site (at authorized concrete batching plant in full compliance with relevant planning and environmental consents).

- The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tankered off site to a licensed facility until a connection to the public foul drainage network has been established.

- The construction compound's potable water supply shall be protected from contamination by any construction activities or materials. The contractor shall obtain a temporary connection from the existing water supply network along Milltown Road / Sandford Road in accordance with Irish water requirements for same.

Proposed monitoring during the construction phase in relation to the water and hydrogeological environment are as follows:

- Implementation of measures included in the Preliminary Construction Management Plan and Outline Construction and Environment Management Plan.

- Inspection of fuel / oil storage areas.

- Monitoring cleanliness of adjacent road network, implementation of dust suppression and vehicle wheel wash facilities.

9.0 BIODIVERSITY

Chapter 8 (Biodiversity) of the EIAR sets out the following construction mitigation measures in relation to biodiversity:

Dodder Valley pNHA

The woodland on the proposed development site will be planted with native shrubs as groundcover and native tree species will be incorporated into the planting regime. This will secure the sites function as a connecting wildlife corridor with River Dodder and the Dodder Valley pNHA. Details on measures in place to strengthen the biodiversity on the site are provided in the following section.

Habitats

Mixed broadleaved/conifer woodland / treelines / scrub / grassland

During removal of vegetation and construction works, trees to be retained will be protected by the erection of protective fencing under supervision of Site Arborist prior to construction and no works are to be undertaken within the tree root protection zone, as specified in the Arborist Report (CMK Horticulture & Arboriculture Ltd, 2021). The Site Arborist shall monitor the tree protection during construction. Further, the regeneration of young trees needs to be safe guarded and young/early mature trees of high quality will be retained.

Planting of new vegetation will take place during construction in tandem with the construction of buildings. To compensate for the removal of 283 trees there will be 238 new large multi-stem trees and large shrubs planted across the site. Native species of scrub will be planted in the mixed broadleaved/conifer woodland and have been specifically selected to provide nesting habitat for birds and safe cover for mammals. This will enhance the field layer in the woodland as it is currently dominated by non-native species. Species to be planted include: Hawthorn Crataegus monogyna, Dogwood Cornus sanguinea, Elder, Holly and Guelder Rose Viburnum opulus.

The proposed tree planting includes native and non-native (ornamental) species. The native species have been chosen primarily based on species currently present on the site. Native tree species to be planted include: Holly, Wild Cherry, Downy Birch Betula pubescens, Pedunculate Oak Quercus robur, Rowan Sorbus aucuparia and Hazel.

There are six elm trees present on site (five English Elm Ulmus Procera and one Wych Elm Ulmus glabra). One English Elm (Arborist Tag No. 220) and the Wych Elm (Arborist Tag No. 214) will be retained on the site. Elms have a limited long-term potential due to Dutch Elm disease. Therefore, the Elms to be removed will be replaced with tree species with better long-term prospects, as specified above.

The grassland west of Tabor House, which at present is used for foraging by bats, will be planted with wildflower meadow from native wildflower seed mix and an orchard (Malus spp.) which will provide valuable resource for pollinators and thus continue to provide foraging resource for bats. Insect hotels will be installed in this area and in the green space east of the northern entrance of the site which has a mix of heritage lawn and wildflower planting. The insect hotels will be placed in a sunny location facing south, south-east. These will provide nesting habitat for solitary bees.

All the above are incorporated into the Landscape Design Statement (Sandford DAS) accompanying this application. Planting of new vegetation will take place during construction in tandem with the construction of buildings. Planting of native scrub will enhance the woodland habitat and strengthen it as a connecting habitat for wildlife in the wider area. The incorporation of native tree species in the planting scheme will further provide for green connecting corridors within the site.

Green roofs are proposed on the new buildings (refer to Cameo and Partners 'Illustrative Landscape Masterplan Green Roofs…') which will compensate for the loss of grassland habitat and enhance biodiversity of the developed site and further connecting the green corridors within the site. Native species (e.g. those associated with native dry grasslands) will be planted on the roofs. Suitably planted green roofs can also provide important foraging habitats for birds and bats.

Terrestrial Mammals

General avoidance measures that should be incorporated to minimise disturbance to mammals during construction:

- The hours of working will be limited to daylight hours where possible, to limit disturbance to nocturnal and crepuscular animals;
- Contractors must ensure that no harm comes to wildlife by maintaining the site efficiently and clearing away materials which are not in use, such as wire or bags in which animals can become entangled;
- Any pipes should be capped when not in use (especially at night) to prevent animals becoming trapped. Any excavations should be covered overnight to prevent animals from falling and getting trapped. If that is not possible, a strategically placed plank should be placed to allow animals to escape; and
- During vegetation removal, caution is needed in case of nesting Hedgehogs within the woodland. The site will be visually checked by an Ecological Clerk of Works (ECoW) prior to bringing in any machinery and be cleared on a rotational basis with scrubby patches left to provide nesting habitat and cover for Hedgehog. In addition, piles of dead wood and brash piles shall be created in undisturbed areas of the site during construction.

The woodland in the north and east part of the site will be retained and enhanced by planting of groundcover with native scrub thus securing habitat for mammals habiting the site. There will be removal of low quality trees and scrub. However, high quality trees (mature and young) and Ivy will be retained. Planting of native species of trees and scrub will strengthen the woodland as a connecting habitat and will compensate for loss of foraging and commuting habitat.

Bats

Lighting

Lighting will be switched off during non-working hours where possible and directional lighting will be used during the construction phase. This will minimise spill to any other area forming part of the bats commute. The specification and colour temperature of light

treatments is chosen based on their tolerability by bats. LED luminaires are ideal due to their sharp cut-off, lower intensity, and dimming capability. A warm white spectrum (2700 K – 3000 K) will be used to reduce the blue light component.

Vegetation removal

Three trees on site were identified to have bat roost potential. One of these trees (Arboricultural Tag Number 311) is destined for removal. The following tree felling procedure will be adhered to when felling trees identified as suitable to provide potential bat roosts:

All bats, and any trees that are identified as bat roosts, are legally protected by the Wildlife Acts and the EU Habitats Directive.

The tree with Arboricultural Tag Number 311, which is destined for removal, will be re-examined by an experienced bat specialist before tree felling starts. The examination will be carried out at height under derogation licence using torch and/or endoscope. If features are confirmed as not being suitable for use as roosts, then work can continue. If bats/evidence of bats/or suspected roosts are found, then these will be legally protected, and an application for a derogation licence will be made before moving forward with the works with appropriate mitigation in place, involving soft felling, lowering sections to the ground and then leaving in place overnight (to allow any bats to make their way out).

Demolition of buildings

A pre-construction bat survey of the roof space of Milltown Park House should be conducted prior to any demolition works in case conditions change over the timeframe of the planning application until construction starts. The survey should be conducted by a suitably qualified and licensed bat ecologist. If bats are present, demolition will have to be postponed and a derogation licence will be required before carrying out any works. Prior to works commencing, bats must have safely left the roost which can be done by an exclusion procedure involving installation of one-way valves over access points for bats following instructions from a bat ecologist. The majority of roosts are only used seasonally and demolition works should be adapted to this.

Enhancement measures

Three bat boxes will be installed on mature trees present within the woodland. The following trees have been identified as suitable, referring to Arboricultural Tag Number: 297, 352 and 324. These trees are selected due to being mature and in suitable location for bat boxes. Before the bat boxes are installed, Ivy will be removed from the area surrounding the placement of each Bat box (1m radius). Large multi chambered bat boxes will be used (e.g. https://www.nhbs.com/large-multi-chamber-woodstone-bat-box or similar) as they are likely to benefit species identified on site, including Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Leisler's Bat *Nyctalus leisleri* and potentially some Myotis Bat species.

Birds

Seasonality

Any clearance of trees and scrub will be conducted outside of the bird nesting season (March to September inclusive).

Demolition or reroofing of buildings must take place outside of the bird nesting season (March to September included) as Jackdaw and Herring Gull are nesting in the chimneys. If works are to take place in 2022, or years thereafter, it should take place outside of the bird nesting season or the chimneys should be bird proofed by a specialist contractor prior to nest building/egg laying and a new breeding bird survey by a qualified ecologist should take place before any demolition works start.

Enhancement measures

Some 4 No. bird boxes will be installed in the woodland along the eastern boundary. Trees identified to install the bird boxes on have the Arboricultural Tag Numbers 11, 175, 191 and 269.

Planting

Planting of native species of trees and scrub will compensate for loss of foraging, commuting and nesting habitat. The planting of native shrubs in the ground layer of woodland will provide cover and nesting opportunities for birds and the mixed planting of wildflowers, heritage lawn, fruit trees and green roofs will attract insects which is a food resource for many bird species.

Biosecurity

Invasive Plant Solutions have carried out an invasive alien plant species survey and prepared a report including a management plan for the construction phase of the development (provided in Appendix 8.4 to the EIAR). The management plan includes a management programme for Three-cornered Garlic and Spanish Bluebell, and ongoing monitoring of the site to screen for the future risk of the introduction of INNS onto the lands from outside the property and biosecurity measures. The management plan includes a multi annual herbicide control programme with a targeted application of a glyphosate based herbicide (Roundup Biactive XL in solution, at a dilution rate of 1:40, or similar).

Prior to clearance of vegetation and works commence in the area, Winter Heliotrope should be removed and appropriately disposed to avoid further dispersal of the species. Removal of Winter Heliotrope can be done by either physical control or chemical control. Due to an extensive rhizome network, physical removal is only practical on a limited scale. The Winter Heliotrope is extensive on the present site and as such chemical control is the preferred option.

10.0 LANDSCAPE AND VISUAL IMPACT

The Preliminary Construction Management Plan outlines the following mitigation measures for construction stage in relation to landscape and visual impact:

- Site hoarding will be erected to restrict views of the construction activity e.g. standard 2.4 metre high construction hoarding;
- Establishment of tree protection measures as required (no-dig construction zones, tree protection fencing and existing hedgerow retention). Any trees which are not to be taken down shall remain undisturbed and undamaged. This includes the use of sheet piling as necessary to protect existing trees roots which would otherwise be encroached upon by the basement excavation;
- Tree protection fences are to be constructed in accordance with BS 5837:2012 "Trees in Relation to Design, Demolition and Construction -Recommendations";
- A 'Construction Exclusion Zone' notice shall be placed on tree protection fencing at regular intervals;
- Tree Protection Zones are not to be used for car parking, storage of plant, equipment or materials; and
- A post construction re-assessment of any retained trees shall be carried out.

Chapter 9 of the EIAR (Landscape and Visual Impact Assessment) follows these measures and sets out the following:

> *'Apart from (a) the measures incorporated in the proposed design, (b) the measures for tree protection (as recommended in the Tree Protection Strategy prepared by CMK Horticulture & Arboriculture Ltd) and biodiversity protection (as recommended in Chapter 8), and (c) standard best practice construction site management (e.g. erection and maintenance of site hoarding, orderly storage of materials and vehicles, etc.), no additional mitigation measures are proposed for townscape and visual effects.'*

11.0 LAND, SOILS AND GEOLOGY

Chapter 10 (Land, Soils and Geology) comprises of an assessment of the likely impact of the proposed development on the soils and the geological environment as well as identifying proposed mitigation measures to minimise any impacts.

Stripping of Topsoil

Stripping of topsoil will be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development. As noted previously, approximately 40% of stripped topsoil will be reused on site (incorporated into landscaping) with remaining topsoil reused on another site as a by-product in accordance with Article 27 of the EC (Waste Directive) Regulations (2011) or disposed of at a licenced waste receiving facility (subject to the approval of the facility operator in accordance with their facility permit or licence).

At any given time, the extent of topsoil strip (and consequent exposure of subsoil) will be limited to the immediate vicinity of active work areas.

Topsoil stockpiles will be protected for the duration of the works and not located in areas where sediment laden runoff may enter existing surface water drains.

Topsoil stockpiles will also be located so as not to necessitate double handling.

Excavation of Subsoil Layers

The need to excavate existing subsoil layers has been minimised as the proposed ground floor levels and external pavement levels have been designed to follow the natural topography of the site. The basement excavation has also been minimized in as far as the structural and functional constraints will allow.

Disturbed subsoil layers will be stabilized as soon as practicable (e.g. backfill of service trenches, construction of road capping layers, concrete blinding of the basement excavation, construction of building foundations and completion of landscaping). The duration that subsoil layers are exposed is to be minimised in order to mitigate against weather effects.

Similar to comments regarding stripped topsoil, stockpiles of excavated subsoil material will be protected for the duration of the works. Stockpiles of subsoil material will be located separately from topsoil stockpiles.

Measures will be implemented to capture and treat sediment laden surface water runoff (e.g. surface water inlet protection and earth bunding adjacent to open drainage ditches).

Imported Fill

Importation of fill to site will be required. Materials imported to site for use as fill will be natural stones sourced from locally available quarries or materials that have been approved as by-products by the EPA in accordance with the EPA's criteria for determining a material is a by-product, per the provisions of article 27(1) of the European Communities (Waste Directive) Regulations, 2011.

No large or long-term stockpiles of fill material will be held on the site. At any time, the extent of fill material held on site will be limited to that needed in the immediate vicinity of the active work area.

Smaller stockpiles of fill, where required, will be suitably protected to ensure no sediment laden runoff enters existing surface water drains. Such stockpiles are to be located in order to avoid double handling.

Construction Traffic

Earthworks plant and vehicles delivering construction materials to site will be confined to predetermined haul routes around the site and designated delivery areas. This mitigates the risk of rutting and deterioration of the topsoil layer and any exposed subsoil layers.

Vehicle wheel wash facilities will be installed in the vicinity of any site entrances and road sweeping implemented as necessary in order to maintain the road network in the immediate vicinity of the site.

Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry weather periods.

Accidental Spills and Leaks

In order to mitigate against spillages contaminating underlying soils, all oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area.

Refueling and servicing of construction machinery will take place in a designated hardstand area (when not possible to carry out such activities off site).

A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available and construction staff will be familiar with the emergency procedures and use of the equipment.

Proposed monitoring during the construction phase in relation to the soil and geological environment are as follows:

- Adherence to Construction Management Plan and Construction and Environment Management Plan (Outline reports are enclosed separately which must be adhered to).

- Construction monitoring of the works (e.g. inspection of existing ground conditions on completion of cut to road formation level in advance of placing capping material, stability of excavations etc.).

- Inspection of fuel / oil storage areas.

- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities.

- Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill, protection of soils for removal from site from contamination).

12.0 ARCHAEOLOGY AND CULTURAL HERITAGE

Chapter 6 (Archaeological and Cultural Heritage) of the EIAR was prepared to identify and record the location, nature and dimensions of archaeological or cultural heritage features, fabric or artefacts that may be impacted by proposed development, gauge the level of impact and include recommendations for potential mitigations necessary.

The study included an examination of existing documentary sources, which was completed in tandem with non-intrusive walkover, geophysical survey and licensed archaeological test trench assessment.

There are currently no archaeological remains identified within the site. However, it has been established as an area of moderate archaeological potential. In particular, the discovery of human remains adjacent to the site in an adjoining property is significant. The following recommendations are made subject to the approval of the Department of Housing, Local Government and Heritage (DHLGH). As the statutory body responsible for the protection of Ireland's archaeological and cultural heritage resource, they may issue alternative or additional recommendations.

Pre-construction assessments (desktop study, walkover survey, geophysical survey and test trench assessment) have been undertaken at the site. No further pre-construction assessment is proposed at this stage.

All ground disturbance works across the development site should be monitored by a suitably qualified archaeologist. In the event that archaeological material is recorded during monitoring, further discussion/consultation with the DHLGH should be sought in order to ascertain the appropriate treatment (i.e. preservation by record/preservation in situ) of any additional archaeological remains. Should the DHLGH recommend preservation by record/full archaeological excavation, this work should be undertaken under the appropriate licence. The DHLGH may recommend preservation in situ, should avoidance of any newly discovered archaeological remains be possible.

13.0 CONCLUSION

This Outline CEMP describes the environmental measures that are specific to the subject development, and which are to be implemented for the proposed development at Milltown Park, Sandford Road, Dublin 6. As noted earlier in the report, this is a 'live' document which will be continuously updated throughout the construction stage where relevant.

NO. 1 KILMACUD ROAD UPPER, DUNDRUM, DUBLIN 14, D14 EA89
+353.1.205.1490 INFO@TOCTOWNPLANNING.IE **WWW.TOCTOWNPLANNING.IE**