Project

Hollystown - Kilmartin SHD

Dublin 15

Report Title

Construction & Environmental Management Plan

Client

Glenveagh Homes Limited

INFRASTRUCTURE

DBFL CONSULTING ENGINEERS

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1.0 INTRODUCTION

1.1 This document is an initial Preliminary Construction & Environmental Management Plan for the proposed works to associated with the construction of the proposed development as described in Section 2 below and as indicated in Figure 1 below. It includes an outline description of the proposed works and how these works will be managed for their duration. It includes details of the Preliminary Construction Management Traffic Plan.

1.2 This project is currently at planning stage. At construction stage, this preliminary document will be issued to the contractor to be further developed into their final construction and environmental management plan for the project.

1.3 The outline plan seeks to demonstrate how works can be delivered in a logical, sensible and safe sequence with the incorporation of specific measures to mitigate the potential impact on people and the surrounding environment.

1.4 The construction & environmental management issues addressed in this plan include noise and vibration, traffic management, working hours, pollution control, archaeology, arboriculture, dust control, road cleaning, compound / public health facilities and staff parking.

2.0 BACKGROUND

The proposed development relates to at a site of c. 25.3 ha at the townlands of Hollystown, Kilmartin, Hollywoodrath, Cruiserath, Yellow Walls, Powerstown, and Tyrrelstown, Dublin 15, which includes lands in the former Hollystown Golf Course and lands identified under the Kilmartin Local Area Plan 2013 (as extended). The lands are bound by the R121 and Hollywoodrath residential development to the east, the under construction Bellingsmore residential development to the south and north, the former Hollystown Golf Course to the north, Tyrrellstown Educate Together National School, St.Luke's National School and Tyrellstown Community Centre to the west and south and the existing Tyrrellstown Local Centre to the south.

The proposed development will consist of the development of 548 no. residential units, consisting of 147 apartments/duplexes and 401 houses, ranging in height from 2 to 5 storeys and including retail/café unit, 2 no. crèches, 1 no. Montessori, 1 no. community hub, car and bicycle parking, open space, public realm and site infrastructure over a site area of c. 25.3 ha. On lands to the north of the application site (referred to as Hollystown Sites 2 & 3) the proposed development includes for 428 units consisting of 401 no. 2 and 3 storey houses and 27 no. apartments set out in 9 no. 3-storey blocks. On lands to the south of the application site and north of the Tyrellstown Local Centre (referred to as Kilmartin Local Centre) the proposed development includes 120 no. apartment/duplex units in 4 no. blocks ranging in height from 3 to 5 storeys. The local centre includes 2 no. crèches (including 1 standalone 2 storey crèche), 1 no. Montessori, a retail/café unit, and 1 no. community hub. The scheme also proposes a new vehicular access onto the R121 and an extension of the existing partially constructed Link Street which currently serves the Le Chéile Secondary School. A pedestrian / cycle linkage has also been provided from Site 2 &3 to Rathoath Road to the north which is zoned as Open Space. Refer to Figure 1 below.

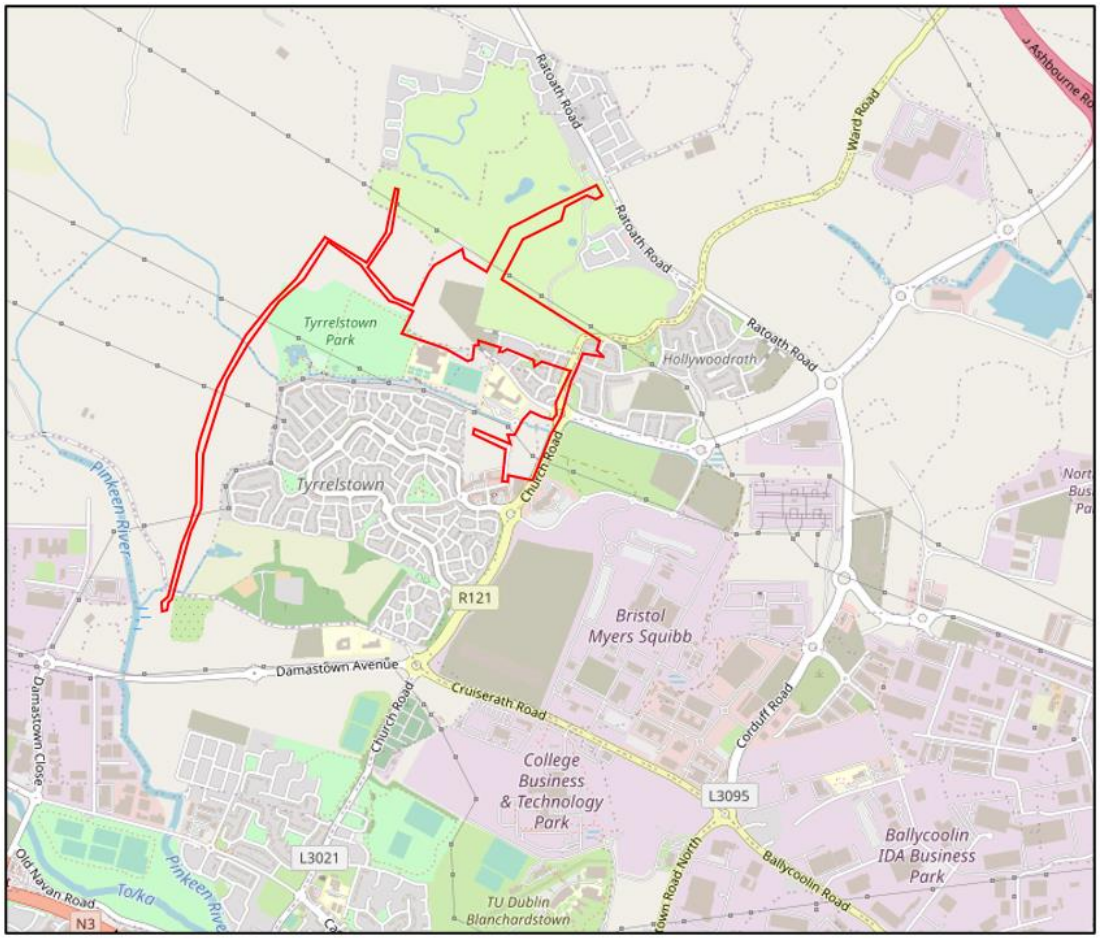

Figure 1: Site Location Plan (Source: EPA Maps)

The subject site is located on an undeveloped greenfield site with limited hardstanding areas that has an approximate site area of c.25.3 hectares. The site which is located within the administrative area of Fingal County Council and is zoned under 'Zoning Objectives RA – Residential Area' which is described within the Fingal Development Plan 2017 - 2023 as to "Provide for new residential communities subject to the provision of the necessary social and physical infrastructure". The lands which form the northern link towards Ratoath Road are zoned OS-Open Space to "Preserve and provide for open space and recreational amenities". The lands which form the proposed Kilmartin Local Centre are zoned LC-Local Centre to "Protect, provide for and/or improve local centre facilities".

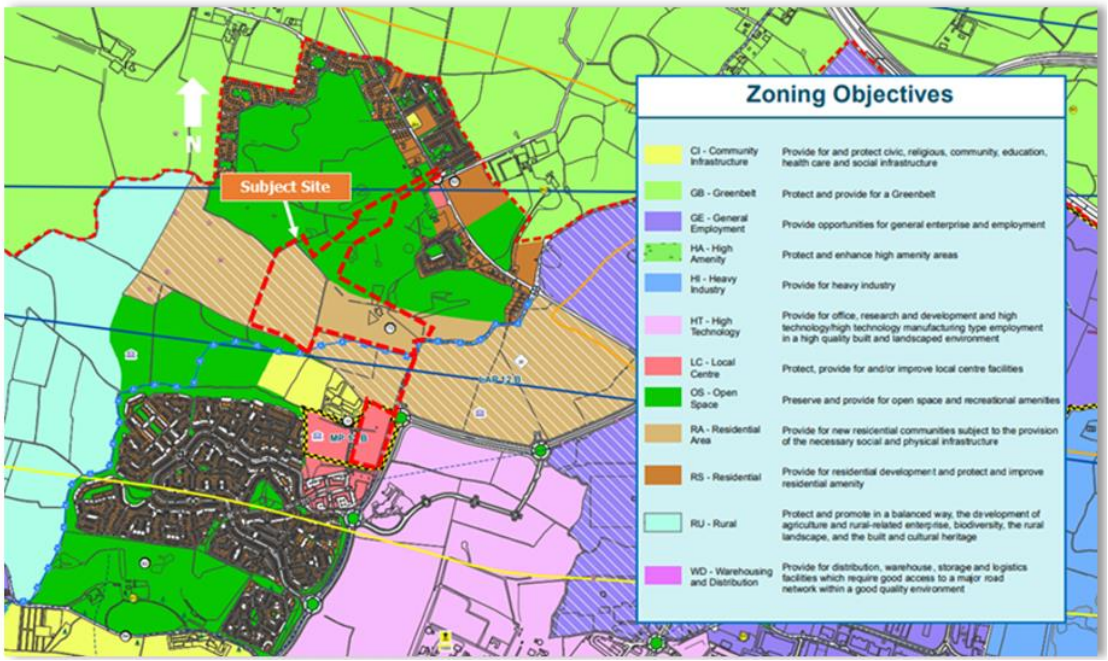

Figure 2: Extract from the Fingal Development Plan 2017-2023 Proposed Development

Site 2&3

Part of the subject lands form the southern part of the grounds of the former Hollystown Golf Club, in the Tyrrelstown area of north west Dublin. The site is circa 5.5km north-west of the M50, and circa 3km west of the N2 and is located to the north of the existing Tyrellstown Local Centre. It is bounded to the north by the former Golf Club lands, to the east by Hollywoodrath Road (R121), to the south by "*Bellingsmore" Development* (constructed by the applicant) and to the west by undeveloped lands.

The development will comprise 428 no. residential units as follows:

- 27 no. apartments
- 97 no. 2 bed houses
- 267 no. 3 bed houses
- 37 no. 4 bed houses

Local Centre

The site is bound by residential developments to the west and by Tyrrelstown Local Centre, which comprises a mix of retail and commercial units with office and residential above, to the south. The Local centre part of the development will comprise 120 no. residential units ranging from 3 to 5 levels high

The development includes 2 no. crèches (including 1 standalone 2 storey crèche), 1 no. Montessori, a retail/café unit, and 1 no. community hub and associated infrastructure including streets, footpaths, cycle paths and water services infrastructure (watermain and below and above ground drainage infrastructure).

2.1 Existing Site Conditions

Site 2&3

The majority of Site 2 is located within the former golf course lands, which has natural undulations and landscaping features typical of a golf course, including an internal network of open drains which are culverted locally to provide crossing points between the series of Golfcourse Holes and maintenance structures, such as the structure shown in Figure 3 below:

Figure 3: Existing Maintenance Shed within Hollystown Golfcourse / Site 2

There is an existing surface water network within the site which is a combination of constructed open drains within Site 2 (Golf Course Drain) which are piped and culverted to facilitate crossing points and natural open drains along the eastern, and north eastern and north western boundaries of Site 3.

Existing flow paths are *indicated* in Figure 4 with existing open drains heading in a westerly direction towards the Pinkeen River further west.

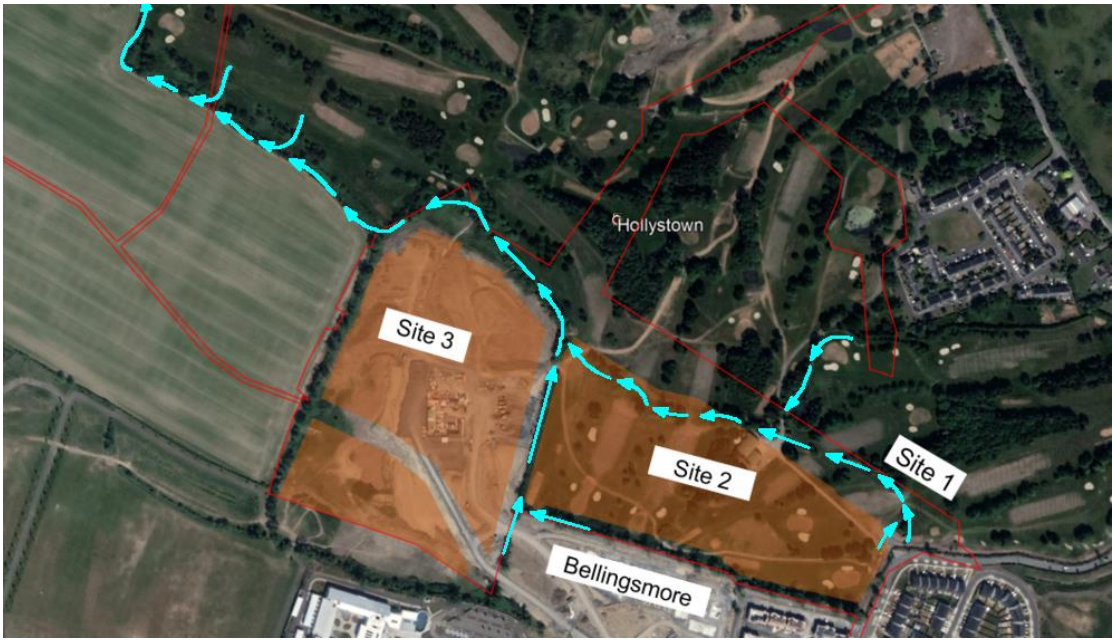

Figure 4: Existing Surface Water Flow Paths

Within Site 2, the existing golf course open drain shown in Figure 5, collects surface water runoff from the golf course lands and from a section of Hollywoodrath Road (via road gullies at the existing gated maintenance entrance to the former golf club). The open drain also accommodates attenuated surface water .

Figure 5: Existing Golf Course Drain – Site 2

An open drain forms the boundary between site 2 and 3 and continues in a northerly direction where it connects to an open drain along the north eastern and north western boundary of Site 3. This open drain continues westwards before connecting to the Pinkeen East Stream circa 1200m to the west (Refer to Figure 1). The is a dry drain along the western boundary of site 3.

The existing detention basin for Bellingsmore Residential Development is also located within Site 3.

There are overhead ESB cables traversing the northern portion of the site, with an associated sterilisation zone of 40m. Buildings or usable open space cannot be located within the sterilisation zone.

Local Centre

There is an existing ditch that meanders from east to west through the site which appears to take road drainage from the R121. The ditch is currently culverted before entering the site from the east and is also culverted under the existing school access roundabout. The ditch flows to the west of the site and connects to field drainage that discharges to the Pinkeen River to the west of the site location as shown in Figure 6 below. It is proposed to culvert an additional section of the ditch to provide a regularised development and the ditch is expected to provide a suitable surface water discharge point for the proposed development.

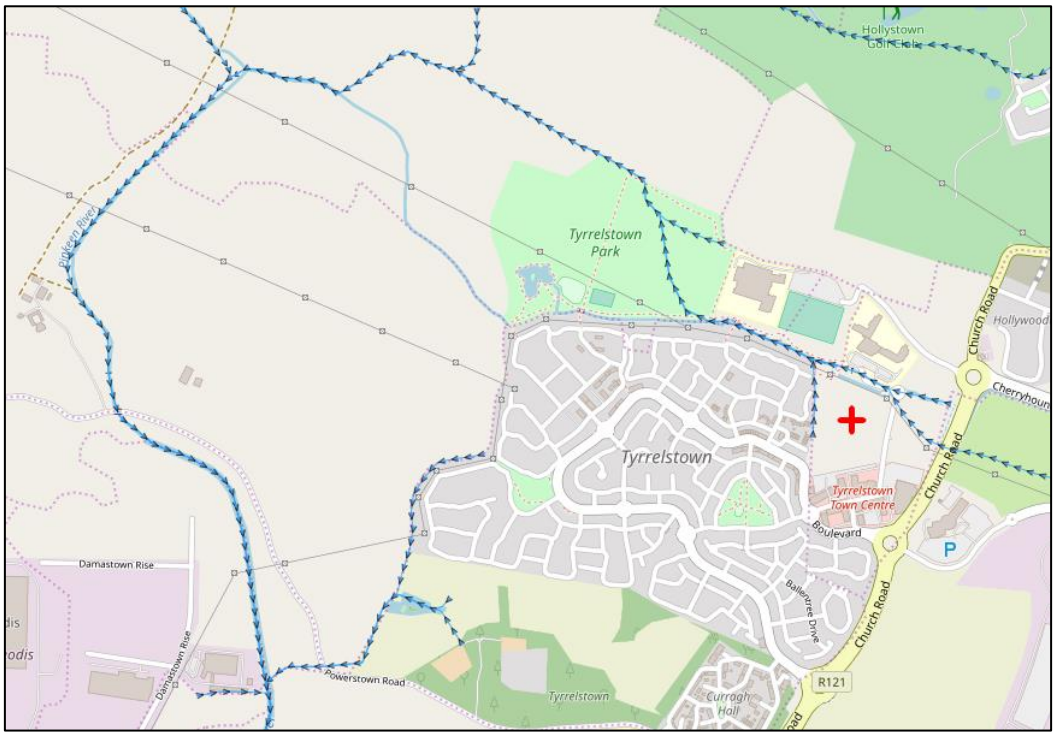

Figure 6: Existing Surface Water Systems (EPA)

3.0 Works Proposal

3.1 Proposed Development

Construction will include the provision of typical infrastructure of a residential development of this nature, detailed further within DBFL drawings no. 170182-DBFL-CS-SP-DR-C-1004 to 1011 and the *'Infrastructure Design Report' (170182-DBFL-XX-XX-RP-C-007),* also prepared by DBFL and included in the planning application, which details the provision of services including:

- Access and Roads
- Surface Water Drainage
- Foul Drainage
- Water Supply and Distribution

The proposed treatment of existing open surface water drains which will enable optimal site potentials of the development include:

- Re-routing of the existing open channel Golf Course Drain to the north within the ESB sterilisation zone, as indicated on DBFL drawings no. 170182-DBFL-CS-SP-DR-C-1004 to 1007. Sections of this re-routed drain will be piped and culverted to facilitate crossing points.
- Culverting of the existing open channel traversing Local Centre site from the east to the west, as indicated on DBFL drawing no. 170182-DBFL-CS-SP-DR-C-1011.
- Interception and re-routing of the open drain to the north of the subject site within the ESB sterilisation zone. This drain will be culverted locally to provide crossing points. The characteristics of the rerouted open drain will match the existing arrangement.
- Interception and the culverting of the existing open drain to the east of Site 3 locally to provide crossing points.
- Incorporating the surface water storage requirements for Bellingsmore Residential Development into the scheme design for Site 3 which including an amended surface water outfall

4.0 CONSTRUCTION METHODS

4.1 Site Enabling Works

Site enabling works will include but will not be confined to the following

- Securing of site boundary and erecting of fencing or hoarding as required.
- Service terminations and positive identification of any services on the site by the utility providers.
- Provision of temporary power, lighting and water services.
- There are overhead 110kv lines to the south west of the subject site (residential element), within the public open space area. Work in the vicinity of these overhead lines will be in accordance with ESB Networks, “Code of Practice for Avoiding Danger from Overhead Electricity Lines”.
- Set up of site accommodation and welfare facilities.
- Archaeological monitoring in accordance with the recommendations of the Archaeological Assessment.
- Identification of the trees that are required to be removed and the removal of these along with scrub and vegetation, in consultation with the appointed Arborist and the recommendations of the tree survey report.
- Identification of the trees that are required to be protected and the protection of these in consultation with the appointed Arborist and the recommendations of the tree survey report.
- Identification of any hazardous materials on site or in the structures that are required to be demolished during the course of the construction.

4.2 Indicative Enabling Works Methodology

The outline of methodology is as follows:

Live services will be terminated and where possible will be removed off site, with the cooperation of the utility providers.

Temporary power and water services will be arranged for the site accommodation and welfare facilities. The site accommodation and welfare facilities will be set up in a location as not to be in the way of the construction, and at a point close to the site entrance.

On the set up of the site accommodation, the identification and survey of areas of archaeological concern will commence in consultation with the appointed Archaeologist.

Any protected trees will be secured, and the subsequent hard fencing will be placed to protect the trees and the root zone below the tree. This will be carried out in consultation with the appointed Arborist. Following the fencing of any protected trees, the remaining trees that are required to be removed will have to be identified and removed along with the scrub on site.

During any demolition works, where practical, materials will be segregated, considering the constraints of safety and space on site. Dust suppression will be carefully monitored and controlled with the careful use of water.

Noise levels will be controlled and works undertaken in such a way as to minimise the detrimental impact on adjoining property and local residents.

4.3 Indicative Sub-Structure / Superstructure Works

- Excavate foundations;
- Excavate, lay and test underground drainage;
- Coordinate and install all incoming services;
- Construction of floor slabs;
- Construction of superstructures and roofs;
- Fit out of the residential units will use traditional fit out techniques and finishing trades.
- Gardens and public open space areas will be landscaped and planted in accordance with the landscaping proposals for the scheme.

4.4 Infrastructure Works

The site infrastructure works include the provision of the permanent entrance to the site and the permanent connection of all the utilities and services required for the site, including the foul outfall sewer and haul roads for the site.

4.4.1 Surface Water

The construction required from the proposed treatment of the existing drain network will possibly be done on sections where the open drains are effectively ‘live’ and actively discharging surface water.

Methodology of construction will have the emphasis of ensuring downstream water quality is not compromised, including reducing effects of downstream soil erosion/scour.

The implementation of biodegradable woven bio-rolls such as ‘Coirlogs’ can be placed downstream of all construction works such as the placement of culverts to collect washed sediment downstream. Once open drains have been constructed, the bio-rolls

can be repurposed with the addition of biodegradable erosion control blankets such as Soil-Saver which is an open weave, pure geo-jute mesh. The combination of erosion control blankets and coirlogs ensure that topsoil placed on the open earth drains is not washed away and natural vegetation can start to grow. Typical application of coirlogs and erosion blankets are shown in the Figure 7 below:

Figure 7: Typical Application of coirlogs and errosion control blankets

4.4.2 Foul Outfall Sewer

The works include the construction of a circa 3km foul outfall sewer (225mm to 450mm diameter) to the west and south west (through lands owned by the applicant) to connect to the existing public 750mm diameter foul sewer to the south of Powerstown Road. We note this foul sewer outfall is already permitted under FCC Ref FW21A/0042. The works for the Local Centre foul outfall include the construction of the outfall to the 225mm foul sewer located at the west of the Local Centre.

The construction of the foul sewer (including the connection to the existing Irish Water 750mm diameter foul sewer) will be in accordance with the Irish Water “Code of Practice for Wastewater Infrastructure” and “Wastewater Infrastructure Standard Details” and will be subject to a connection agreement with Irish Water.

The method of construction may comprise open cut excavation or trenchless techniques and will be included in the construction stage management plan.

Crossings of Streams / Ditches

Where the outfall sewer is crossing under existing ditches and streams, works shall be carried out in accordance with Irish Water Standard Details drawing number STD-WW-21.

In the case of pipelines crossing under fisheries water, as recommended in the Inland Fisheries Ireland (IFI), "Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters", the preferred method of construction will be by way of trenchless crossings using techniques such as horizontal directional drilling, auger boring or micro tunnelling. The following specific requirements will be complied with:

- Locations of drill rig positions and pipeline pull areas shall be chosen or engineered such that the fall is away from the waters in question, to facilitate installation of pollution containment and control facilities.
- Where drilling fluids are being returned for cleaning and re-use or recirculation through a temporary fluid return line, pneumatic leak testing shall be carried out to confirm the integrity of the return line.
- Where circumstances necessitate the running of a return fluid line across the bed of the waters being under bored, the pipeline shall be sunken and weighted down by means of a prefabricated concrete collars or by sand bags attached using web construction straps, or in such other means as appropriate and securely anchored. Marker buoys and on-land marker posts will be required, and all such fluid return pipelines and markers shall not interfere with or constitute a fouling risk to licensed and legally used fishing equipment.
- Spent drilling fluids including separated drill materials shall be contained in secure bunded areas for off-site disposal at a licensed disposal facility.

As required by the IFI, contact will be established and maintained between senior representatives of the developer, designer and contractor with responsibility for earthworks, structures and environmental management issues and relevant river basin district personnel in advance of commencement and for the duration of the specified construction period.

All construction method statements shall be developed in consultation with Inland Fisheries Ireland and in accordance with the aforementioned document and in consultation with Irish Water.

4.4.3 Utility Infrastructure

Engagement with the service and utility providers will be entered into early in the design stage to allow for adequate planning of utility infrastructure. Provision of the permanent infrastructure to the site will be carried out as early as possible in the programmed works to incorporate the temporary site requirements with the permanent requirements.

It is the aspiration of the applicant to minimise disruption of existing services and public roads and pathways in the providing of services to the site, this will be done in consultation with the service providers and Fingal County Council.

There are overhead 110kv lines to the south west of the subject site (residential element), within the public open space area. Work in the vicinity of these overhead lines will be in accordance with ESB Networks, “Code of Practice for Avoiding Danger from Overhead Electricity Lines”.

5.0 CONSTRUCTION TRAFFIC

5.1 General Site access / Egress

5.1.1 All traffic for required works will enter the site 2 & 3 via the existing site access road south of the existing Bellingsmore Development. The Site compound as detailed within Section 13, will enable all vehicles to enter / exit the property at the southern boundary of Site 3 via the Primary Link Street connecting to the R121 through the Bellingsmore Development. Proposed access points are shown in Figure 8 below.

All traffic for required works for Local Centre will enter the site via extension to the existing Primary Link Street from the Avenue. This primary link street is proposed to extend through Hollystown Site 3, up to the western boundary, enabling future onward connections to the westernmost LAP lands. The third site access (priority-controlled) will serve the Kilmartin Local Centre site and will be accessed from the Avenue.

Warning signage will be provided for pedestrians and other road users on all approaches in accordance with Chapter 8 of the Traffic Signs Manual and the Contractor's Traffic Management Plan. Methods of mitigating dust generation, in sensitive areas in close vicinity are discussed in chapter 10.

Figure 8: Access Points to Site 2&3 and Local Centre

5.1.2 As part of Construction Stage Safety Plan for the works, a Traffic Management Plan (TMP) will be prepared in accordance with the principles outlined below, and shall 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;
- Any additional requirements detailed in the Design Manual for Roads and Bridges & Design Manual for Urban Roads & Streets (DMURS);

5.1.3 All major deliveries/removals that may affect access for emergency vehicles or cause blockage to the existing road system shall be undertaken outside normal working hours and shall be agreed in advance. Trucks will turn around within established site areas.

5.1.4 Construction traffic will include the following categories:

- Private vehicles owned and driven by site construction and supervisory staff.
- Excavation plant and dumper trucks involved in site development works and materials delivery vehicles.
- Mobile crane for lifting of prefabricated units.

5.1.5 Appropriate Traffic Management Procedures will be put in place to have a safe and coordinated access and egress of construction vehicles to the site as they pass by the adjacent schools and local residential areas. Speed limit signs will be posted as well as warning signs to notify construction vehicles of nearby schools and residential areas and alert these people of the construction site.

5.2 Staff and Parking

On-site employees will generally arrive before 08:00, thus avoiding the morning peak hour traffic, and will generally depart after 18:00.

Construction traffic will not be permitted to park on the public roads or within the general area outside the main site.

In general, the impact of the construction period will be temporary in nature.

5.3 On Site Accommodation

Facilities will be provided by the contractor within the confines of the site hoarding as follows;

- Adequate materials drop-off and storage area;
- Set down areas for trucks;
- Dedicated staff parking and visitor parking;
- Staff welfare facilities i.e. toilets etc.

5.4 Minimisation of Movement and Impact

Construction vehicle movements and their impact will be minimised through;

- Consolidation of delivery loads to / from the site and management of large deliveries on site to occur outside of peak periods;
- Use of precast / prefabricated materials where possible;
- “Cut” materials generated by the construction works to be re-used onsite where possible, through various works;
- Adequate storage space on site to be provided;
- Scheduling of movements to outside peak traffic times and school pick-up / drop-off times.

5.5 Public Roads

The following measures will be taken to ensure that the site and surroundings are kept clean and tidy;

- A regular programme of site tidying to be established to ensure a safe and orderly site;
- Mud spillages on roads and footpaths outside the site to be cleaned regularly and will not be allowed to accumulate;

- Wheel-wash facilities or similar will be provided for vehicles exiting the site if deemed appropriate or when significant vehicle movements are planned (e.g. disposal of topsoil from site);

- Dedicated road sweeper will be put in place if site conditions require.

6.0 WORKING HOURS

Working hours will be strictly in accordance with the granted planning conditions with no works on Sundays or Bank Holidays. If work is required outside of these hours, written approval will be sought by the contractor from the Local Authority.

It is anticipated that normal working hours may be 7am to 7pm Monday to Friday and Saturdays from 8am to 2pm. Working outside these hours will be subject to agreement with the Local Authority.

Deliveries of material to site will be planned to avoid high volume periods to avoid clashing with school activities. There may be occasions where it is necessary to have deliveries within these times. The Contractor will develop, agree and submit a detailed Traffic Management Plan for the project prior to commencement.

7.0 NOISE AND VIBRATION

During the construction works the Contactor shall comply with:

- BS 5228: 2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites, Part 1, and Part 2.
- Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRS, Revision 1, 2004)
- Safety, Health and Welfare at Work (General Application) Regulations 2007, Part 5 Noise and Vibration.

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

- Night (23:00-07:00) = 50dB
- Evening (19:00-23:00) = 60dB
- Day (07:00-19:00) = 70dB

The total noise (LAeq) which should not be exceeded during daytime is therefore 70dB.

Vibration limits to be applied for the works are those specified in the NRA document Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRA, Revision 1, 2004). These limits are outlined below:

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

Less than 11Hz	11 to 50 Hz	50 to 110 Hz (and above)
3mm/s	3 to 8mm/s	8 to 11mm/s

In general, the contractor shall implement the following mitigation measures during the proposed works:

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Keep internal haul roads well maintained and avoid steep gradients.
- Minimise drop height of materials.
- Start-up plant sequentially rather than all together
- All vehicles and mechanical plant used for the Works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order. In addition, all diesel engine powered plant shall be fitted with effective air intake silencers. All compressors shall be “sound reduced” models fitted with properly lined and sealed acoustic covers which shall be kept closed

whenever the machines are in use. 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.

- All ancillary plant, such as generators and pumps, shall be positioned to ensure minimum noise disturbance. If operating outside the normal working week, acoustic enclosures shall be provided.

More specifically the Contractor shall ensure that:

- In accordance with Best Practicable Means, plant and activities to be employed on site are reviewed to ensure that they are the quietest available for the required purpose.

- Where required, improved sound reduction methods are used e.g. enclosures.

- Site equipment is located away from noise sensitive areas, as much as physically possible.

- Regular and effective maintenance by trained personnel is carried out to reduce noise and / or vibration from plant and machinery.

- Hours are limited during which site activities likely to create high levels of noise and vibration are carried out.

A site representative responsible for matters relating to noise and vibration will be appointed as part of the Construction & Environmental Management Plan (construction stage).

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. It is proposed that noise and vibration levels be maintained below those outlined above as part of these infrastructure works.

8.0 POLLUTION CONTROL

All works carried out as part of these infrastructure works will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor will be required to co-operate fully with the Environmental Section of Fingal County Council.

As part of the overall construction methodology, the following issues have been identified as being of risk and/or concern to pollution and will be addressed:

- Contamination of Groundwater

There is a risk that ground water could become contaminated with lime from cement which could subsequently finds its way into the local adjacent watercourses. The measures proposed to be put in place to mitigate any potential damage from the effluent of contaminated ground water would be to create an exclusion zone, as far as reasonably practicable.

- Sediment & Erosion

Similar to the above, groundwater needs to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase. To prevent this from occurring, surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanent surface water drainage system (including attenuation and storage) for the proposed site is complete.

A temporary positive drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction. This includes series of geotextile lined cascading, high level outfall, settling basins installed upstream of the agreed discharge point. This temporary surface water management facility will throttle runoff and allow suspended solids to be settled out and removed before being discharged in a controlled manner to the agreed outfall. All inlets to the cascading settling basins will be riprapped to prevent scour and erosion near the inlet.

Surface water discharge from site will be managed and controlled for the duration of the construction works until the permanent surface water drainage system is complete.

- Discharge Licences

It will not be permitted to discharge into any newly constructed storm water systems without adhering to the conditions of the discharge licence and agreeing the same with the Site Manager and Local Authority Area Engineer.

- Over Ground Oil / Diesel Storage

Only approved storage system for oil / diesel within the site will be permitted, (i.e. all oil / diesel storage to be located within a designated area placed furthest away from adjacent watercourses and contained within constructed bunded areas e.g. placed on 150mm concrete slab with the perimeter constructed with 225mm solid blockwork rendered internally). The bunded area will accommodate the relevant oil / diesel storage capacity in case of accidental spillage. Any accidental spillages will be dealt with immediately on site by containment /removal from site.

Accidental Spills and Leaks

All oils, fuels, paints and other chemicals will be stored in a secure bunded construction hardstand area. Refueling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any surface water features (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.

- Disposal of Wastewater off Site

The Site Management Team will maintain a record of all receipts for the removal of toilet or interceptor waste off site to insure its disposal in a traceable manner. These will be available for inspection by the Environmental Section of Fingal County Council.

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

- Road Sweepers / Cleaning

The cleaning of public roads in and around the subject site will be undertaken to reduce environmental impacts and care will be taken to prevent any pollution of watercourses from this activity.

- Refuse Removal

During the phases of demolition of existing structures such as the maintenance shed within Site 2, large amounts of refuse is produced, predominantly from the soft strip of the buildings scheduled for demolition. All furniture, fixings, trimmings, and waste rubbish which remaining inside the buildings will be segregated and sorted.

It is expected that landscaping features within the existing golf course such as tee-offs and sand pits will also be demolished and removed in their entirety,

Any items or material wished to be retained by the client is to be pointed out to the contractor prior to commencement of the works. Any deleterious materials will be identified prior to the commencement of the works and removed in accordance with the statutory regulations. Refuse produced during demolition between floor levels will be lowered by teleporters or similar.

During phases of the construction of infrastructure, refuse is produced predominantly by delivery package material such as protective timber pallets, polymer straps and plastic covers. Additional refuse may include discarded construction materials, material containers, contractor's sundries, hoarding/shutter boards, and tools.

Waste skips will be provided in designated skip drop zones will be dropped into skip storage zones during both demolition and construction.

All relevant refuse from both demolition and construction is to be disposed off-site to licensed disposal facilities for processing and recycling where possible.

9.0 ECOLOGY

An ecological assessment has been carried out for the subject site by Matthew Hague of Brady Shipman Martin.

Reference should be made to this specialist report and all construction works proposed shall take account of any recommendations included in the ecological assessment, including the appointment of an ecological clerk of works.

Mitigation measures include routing the foul outfall through existing field gates and gaps in vegetation / trees where possible to minimise the ecological impact. In relation to lighting it is noted I the Ecological Assessment that the public lighting for the proposed development has been sensitively designed by IN2 Engineering Design Partnership and where practicable includes dark areas and dark corridors to facilitate bat passage throughout the develoment area and to and from the wider countryside. No flood lighting will be used, and the light fittings will use LEDs, with a warm white spectrum to reduce the blue light component - which can affect bat commuting behaviour.

10.0 ABOROCULTURE

A tree survey planning report was prepared by Independent Tree Surveys and should be read in tandem with this Construction & Environmental Management Plan.

Section 8 of the report includes a Aboricultural Method Statement and includes the following:

All of the trees listed in the tree removal schedule and indicated on the Protection Plan drawing 21064_TPP submitted with the Tree Survey Report will be felled to stump and the stumps removed. Trees adjacent to those being retained will be felled by professional tree contractors working to *BS3998 (2010) Tree Work – Recommendations*, those set within the footprint of the development will be felled by tree contractors or by machine. The stumps of trees felled adjacent to retained trees will be removed by stump grinder rather than removed by excavator. Wood will be processed into firewood or pulpwood and removed, brash will be chipped for recycling on-site.

The felling of trees in the parts of woodlands will be carried out by professional tree contractors using directional felling techniques and will minimise any damage to retained trees. Stumps will be left in situ where practicable and will removed by stump grinder if adjacent to retained trees where removal is essential.

Sturdy tree protection fencing or suitable site hoarding will be erected along the lines shown on the Tree Protection Plan Drawing 21064_TPP to prevent construction work encroaching into the root protection areas of the trees to be retained. The tree protection measures will be put in place *before* the initial ground works or construction work commences and should remain in place until their removal or re-location during the project is authorised by a qualified arborist. The areas subject to hard and soft landscaping to the northeast of the site will be carefully managed as the works progress beyond the main construction phase to ensure temporary fencing and ground protection systems are moved into place around each group of trees and woodland areas, whilst allowing access into the root zones of the trees to facilitate the path building etc. These protection systems will be overseen by a qualified arborist.

All new underground services such as water, foul water and electricity will be routed away from the RPAs of trees to be retained; where this is not practical the services will be installed under any significant tree roots into trenches excavated by compressed air lance (*Airspade*) or other approved tree root friendly system such as Air-Vacuum truck, Mole drilling etc. This should include the works required to facilitate theconnection of the new foul water pipe across Powerstown Road.

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All exposed roots and/or soil profiles containing roots of trees to be retained will be kept damp in dry conditions by regular watering and be covered with a double layer of hessian fabric to prevent desiccation.

Backfill should be of good quality topsoil, structural soil or clean sand. Where machinery or construction works have to access ground inside the RPAs of the trees to be retained for unavoidable reasons suitable ground protection will be put in place to prevent any significant soil compaction or root damage near the trees; this should take the form of suitable strength ground protection mats or cellular confinement system capable of supporting the appropriate weight.

All site offices, materials storage, staff parking etc. will be located outside of the RPAs of the trees.

The tree protection measures and specialist work methods will be overseen and directed on-site by a dedicated site arborist. The arborist should also make regular visits to the site during the construction process to ensure compliance and be available to provide advice and guidance where necessary.

The report includes the following general recommendations for Tree Protection on Construction Sites:

- Trees being retained should be protected from unnecessary damage during the construction process by effective construction-proof barriers that will define the limits for machinery drivers and other construction staff. Ground protected by the fencing will be known as the Construction Exclusion Zone (CEZ). Sturdy protective fencing will be erected along the points identified in the Tree Protection Plan **prior** to any soil disturbance and excavation work starting; this is essential to prevent any root or branch damage to the retained trees. The British Standard BS5837: *Trees in relation to design, demolition, and construction (2012)* specifies appropriate fencing.

- For light access works within the CEZ the installation of suitable ground protection in the form of scaffold boards, woodchip mulch or specialist ground protection mats/plates may be acceptable.

- All weather notices will be erected on the fence with words such as: "Tree Protection Fence — Keep Out". When the fencing has been erected, the construction work can commence. The fencing will be inspected on a regular basis during the duration of the construction process and shall remain in place until heavy building and landscaping work has finished and its removal is authorised by a qualified arborist.

- Trench digging or other excavation works for services etc. will not be permitted in the CEZ unless approved and supervised by a qualified arborist using methods outlined in BS5837: *Trees in relation to design, demolition and construction (2012)*.

- Care will be taken when planning site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible.

- Materials, which can contaminate the soil, e.g., concrete mixings, diesel oil and vehicle washings, will not be discharged within 10 m of a tree stem.

- Fires will not be lit in a position where their flames can extend to within 5 m of foliage, branches, or trunk. This will depend on the size of the fire and the wind direction.

- Notice boards, wires and such like will not be attached to any trees. Site offices, materials storage and contractor parking will all be outside the CEZ.

10.0 ARCHAEOLOGY

An Archaeology report has been completed for the site by IAC Archaeology in Chapter 8 of the EIAR. Any information relating to Archaeology and associated items can be found in Chapter 8 of the EIAR. Any items highlighted in Chapter 8 will be addressed prior to and during the construction phase of the development.

11.0 DUST CONTROL

10.1 The Contractor shall put in place a regime for monitoring dust levels in the vicinity of the site during the works. The level of monitoring and adoptions of mitigation measures will vary throughout the construction works depending on the type of activities being undertaken and the prevailing weather conditions at the time.

10.2 The Construction team will monitor the construction regime on an ongoing basis throughout the project to endeavour to minimise impact on a surrounding community.

10.3 During the proposed infrastructure works the following mitigation measures shall be implemented to minimise dust emissions:

- Construction techniques shall minimise dust release into the air.
- Spray exposed site haul roads during dry and / or windy weather.
- Provide wheel washing facilities at all exit points.
- Provide tarpaulins over all unacceptable excavated materials being carted off site.
- Control vehicle speeds and impose speed restrictions, (speed can mobilise dust).
- Sweep hard surface roads, inside and outside the site, to ensure roads are kept clear of debris, soil or other material.

10.4 During dry spells and if deemed necessary, monitoring of dust levels shall be carried out using the Bergerhoff Method i.e. analysis of dust collecting jars left on-site (German Standard VDI 2119, 1972). Results will be compared to the TA Luft guidelines (TA Luft, 1972). Should an exceedance of the TA Luft limit occur during, additional mitigation measures, for example more regular spraying of water, shall be implemented.

10.5. Vulnerable areas which are in close vicinity include the Tyrellstown Community Centre and St. Lukes National School to the south east of Site 3. It is recommended that dust barriers such as windbreak netting is erected along the exit road through Bellingsmore to limit the spread of dust to these areas, the extent of windbreak netting is shown in the figure 9. Typically, the height of the windbreak netting should be around 1.5m, matching the top of the majority of expected heavy earthmoving construction vehicles tyre walls.

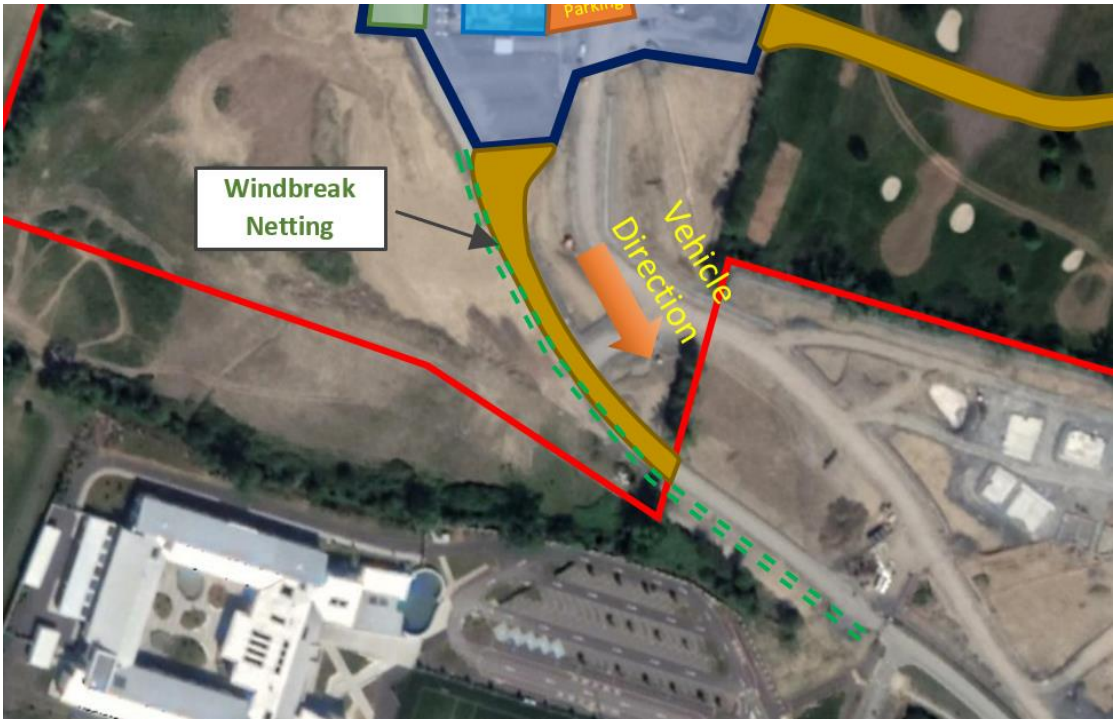

Figure 9: Recommended extent of windbreak netting

10.6 A complaints log shall be maintained by the construction site manager and in the event of a complaint relating to dust nuisance, an investigation shall be initiated.

12.0 ROAD CLEANING / WHEEL WASHING

Provision will be made for the cleaning by a road sweeper etc. of all access routes to and from the site, during the works. The cleaning of public roads in and around the subject site will be undertaken to reduce environmental impacts and care will be taken to prevent any pollution of watercourses from this activity.

Wastewater generated by this activity will be suitably treated on site and all settled silts will be disposed offsite to a licensed landfill.

All road sweeping vacuum vehicles will be emptied off site at a suitably licensed facility.

13.0 COMPOUND FACILITIES AND PARKING

Site 2 & 3

The construction compound for the infrastructure works shall be generally located within Site 3. The compound for the site will both be approximately 60m long and 50m wide. The area is currently designated for the construction of the Bellingsmore Development, once construction of Bellingsmore is complete, the site compound area will be repurposed for Hollystown. It is expected that completion of works for Bellingsmore will be reached by the time for site establishment for Hollystown is required. A recommended layout for the site compound for is illustrated as per Figure 10 below with the same access road being used.

Local Centre

There will be 1Nr construction compound. The compound for the site will both be approximately 60m long and 50m wide. The compound, as per Figure 11 below, is considered a suitable location as it will provide easy access from The Avenue to the site.

Figure 10: Indicative Site Compound Location for Site 2&3

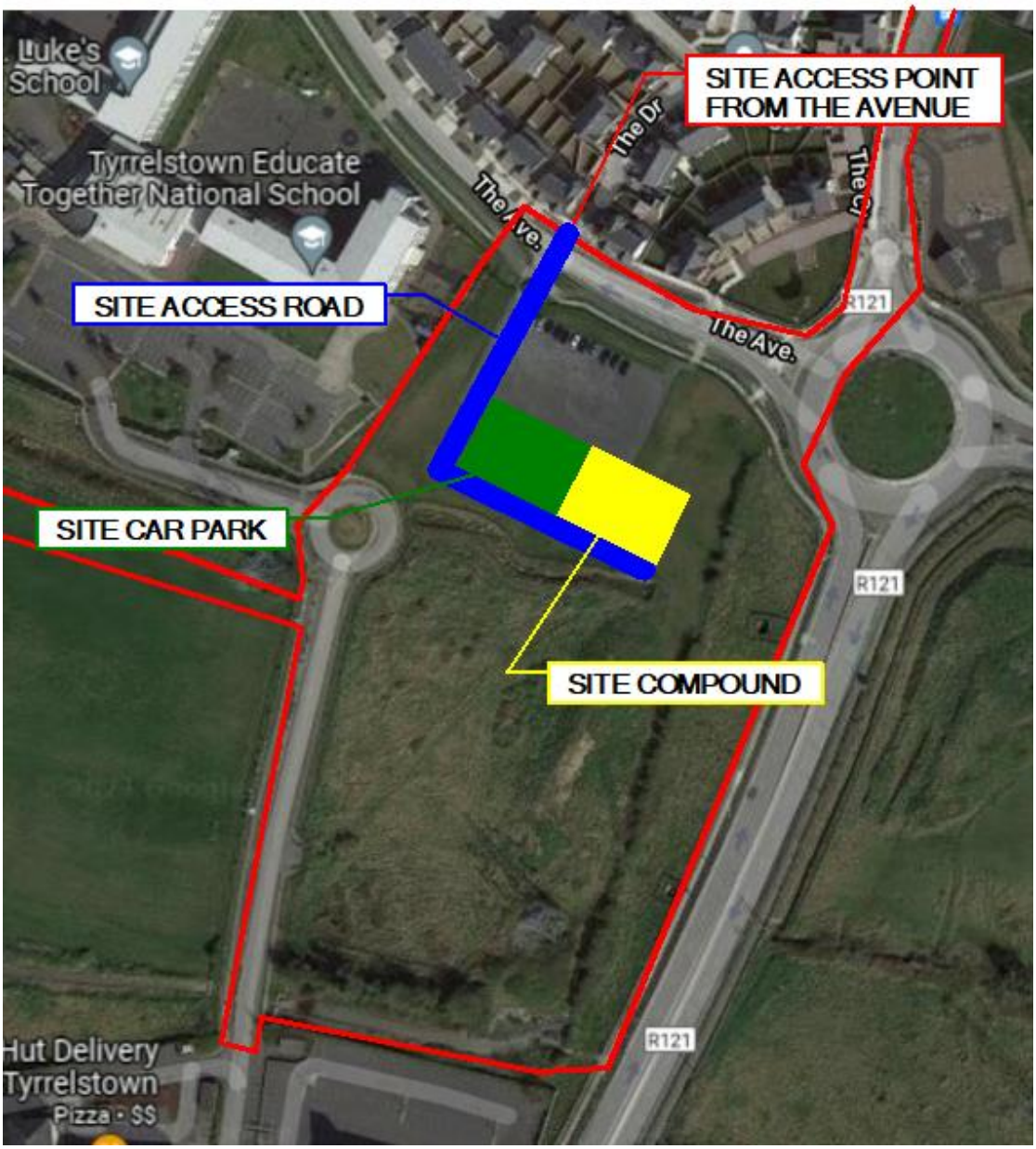

Figure 11: Indicative Site Compound Location for Local Centre

The contractor will ensure that the site compound's surface is still in a relative good condition state, typically constructed with clean permeable stone finish and will be enclosed with security fencing. The contractor may provide their own layout, which will be subject to approval from both the client and the resident engineer. It is expected that the layout will adapt over the construction period.

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. All vehicles will be positioned on the site in designated parking spaces, with large delivery and construction vehicles entering, leaving, or manoeuvring within the site be accompanied by a trained and competent banksman provided by the contractor.

The delivery and storage zone will provide an area for delivery vehicles to offload goods, and the storage of both construction and demolition plant and materials. The area will also provide designated zones for refuelling of plant and processing required materials for construction such as mixing of concrete mortar. If necessary, the area can be used for temporary storage of excavated material that is intended to be disposed of, however, measures of mitigating pollution including dust control need to be implemented.

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.

Recommended security protocols should ensure that entrance gates always remain closed whilst the entrance is not in use. The opening and closing of the security gates will be the responsibility of a designated gate man provided by the contractor, whole role involves controlling the vehicles entering and exiting of the site. All site visitors will be required to sign in on arrival and sign out on departure, recorded details of visitors will be made by the designated by the gate man at kept at the site office.

Skip storage areas will be used for the temporary storage of refuse. Any reusable materials will be set aside in a designated area of the site for transport to licensed recycling facilities. The area is located to allow for easier collection and disposal of refuse to off-site licensed disposal facilities for processing and recycling.

Processed materials may be segregated on site into recommended categories such as:

- Mixed C&D Waste
- Recycling
- Timber
- Scrap Metal
- Clean Rubble

Teleporters will be used for general unloading during the structural and envelope works, unloading over the public roadway and path will be avoided, however if required, all relevant contact, procedures and authorisation will be made with the relevant local authority.

All works carried out within the skip storage areas, delivery and storage zones will need to comply with overall construction methodology, especially with reference to mitigating issues identified as being of risk and/or concern of contributing to pollution, including dust control.

Glenveagh Homes will strive to maintain a tidy site and to operate a “just in time” policy for the delivery and the supply of materials for the works, particularly the final phase of the works when on site storage will be at a minimum. A material storage zone will also be provided in the compound area. This storage zone will include material recycling areas and facilities.

14.0 SAFETY, HEALTH AND ENVIORNMENT

14.1 General Health, Safety and Environmental Consideration

Construction and demolition works will be carried out in such a way as to limit, as far as practicable, adverse environmental impact.
Works will be carried out in accordance with the following general provisions:

- Planning approvals from Fingal County Council.
- Requirements of Fingal County Council.

As part of the Construction Method Statement, the process will ensure that construction techniques and materials used are a fundamental consideration of the design and intended long-term use, the aim below is achieved:

- Design for durability and low maintenance.
- Design for flexibility and adaptability.
- Use of materials from sustainable sources
- Use of local materials where possible.

Safety, health and environmental issues on the Development are a primary consideration in the construction methods adopted. The construction team will develop detailed health and safety plans, specific environmental, fire and accident procedures to suit the construction sequence of the Development.

Contractors involved in the Development will ensure that all non-English speaking employees are provided with relevant Health and Safety information in their national language.
All contractors will be required to adopt the relevant skills certification required for that element of the works.

A site-specific Safety Statement and a detailed Construction Stage Safety & Health Plan will be compiled prior to any works on site and will be in accordance with the Health & Safety Authority and Fingal County Council guidelines.

15.0 COVID-19 PROTOCOL

The Contractor shall implement a Covid-19 Management Plan for all site activities to mitigate the spread of Covid-19 onsite and off-site.

The following mitigation measures are to be implemented during the construction phase:

- All site personnel must complete the 'CIF Online C-19 Induction'.
- All persons returning to site must complete a COVID-19 Questionnaire / self-declaration.
- All persons on site must adhere to good hygiene guidance issued by the HSE.
- Where a worker exhibits any symptoms of COVID-19 or has been exposed to a confirmed case, they should not travel to work.
- Social distancing is advised when travelling in vehicles to/from work and when in site vehicles and operating mobile plant. Single occupancy of vehicles is preferable.
- In order to slow the transmission rate of COVID-19, a social distancing of minimum 2m is recommended by the HSE.
- Enhanced cleaning procedures should be in place across all sites to prevent cross contamination, particularly in communal areas and at touch points.
- Risk assessments and method statements for all work on site should be reviewed to address the risk of COVID-19 and the associated control measures required.

16.0 CONCLUSION

A Construction & Environmental Management Plan (construction stage) will be prepared and agreed with Fingal County Council prior to commencement on site and will incorporate the recommendations of this planning report, recommendations of all specialist reports, and any planning conditions relating to construction activity.