Construction and Environmental Management Plan

Proposed Residential Development at Ballycullen, Dublin 16, Co. Dublin

April 2025

Waterman Moylan Consulting Engineers Limited

Block S, East Point Business Park, Alfie Byrne Road, Dublin D03 H3F4

www.waterman-moylan.ie

Client Name:	Lagan Homes Ballycullen Limited
Document Reference:	24-007r.005 Construction and Environmental Management Plan
Project Number:	24-007

Quality Assurance – Approval Status

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015)

Issue	Date	Prepared by	Checked by	Approved by
1	15 April 2025	F J. De Maio/ L. Mugo	Emma Caulwell	Emma Caulwell

Comments

Disclaimer

This report has been prepared by Waterman Moylan, with all reasonable skill, care and diligence within the terms of the Contract with the Client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the Client.

We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above.

This report is confidential to the Client, and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

Content

Tables

Figures

1. Introduction

1.1 Context

This Construction and Environmental Management Plan (CEMP) has been prepared by Waterman Moylan on behalf of Lagan Homes Ballycullen Limited intend to make a planning application for planning permission for a Large-Scale Residential Development (LRD) in the townland of Woodtown, Ballycullen, Dublin 16. The lands are located to the east of Abbots Grove Park, south-east of Abbots Grove Avenue, south of Stocking Avenue and Stocking Wood estate, and west of White Pines Park.

The proposed development will consist of 502 no. residential units (108no. 1-bed, 170no. 2-bed, 162 no. 3-bed; 62 no. 4-bed) comprising 197no. 2 storey houses (terraced/semi-detached/detached) (19no. 2-bed, 116no. 3-bed; 62no. 4-bed) and 28no. 3 and 4 storey simplex/duplex apartment blocks providing 305no. apartments (108no. 1-bed apartments, 151no. 2-bed apartments, 46no. 3-bed apartments). The proposed development also includes a crèche (c.475sq.m), public open space, car parking (surface/undercroft), bicycle parking, bicycle storage structures and lockers, bin stores, and 8no. ESB substations. Vehicular access to be provided from the existing spur road connection to Stocking Avenue to the west of the site, and via Stocking Wood Drive to the east of the site (with relocation of existing ESB substation and associated works to the existing hammerhead). Additional pedestrian only routes will be provided into Abbot's Grove Park and Stocking Wood Copse with future connections provided for into Stocking Wood Manor, White Pines Park and the future school site to the north of the application site. The proposed development includes all associated site development works (including site reprofiling, retaining structures and downing of ESB overhead lines), landscaping, boundary treatments and services provision.

The accommodation schedule is shown in **Table 1** below:

Description	1-bed	2-bed	3-bed	4-bed	Total	GFA (Sqm)
Houses		19	116	62	197	
Apartments	108	151	46		305	
Childcare Facility						474.8
Total	**108**	**170**	**162**	**62**	**502**	**474.8**

Table 1 | *Schedule of Accommodation*

The project also encompasses the construction of roads, footpaths, car parking spaces, bicycle parking areas, storage facilities, and utility infrastructure. Furthermore, it includes the implementation of landscaping, boundary treatments, and public lighting.

1.2 Scope

The plan sets out typical arrangements and measures which may be undertaken during the construction phase of the project to mitigate and minimise disruption/disturbance to the area around the site. The purpose of this report is to summarise the possible impacts and measures to be implemented and to guide the Contractor who will be required to develop and implement the Construction and Environmental Management Plan on site.

Additionally, the report sets out to demonstrate how pollution of watercourses on the environment and surrounding area during the construction period will be prevented and/or mitigated. This plan details the implementation of measures in accordance with Environmental plans and Statements specified in **Section 2.2** and **Section 5** below.

This Construction and Environmental Management Plan (CEMP) is indicative only and should not be construed as representing the exact method or sequence in which the construction works shall be carried out.

As is normal practice, the Main Contractor for the project is responsible for the method in which the construction works are carried out and to ensure that best practices and all legal obligations including Local Authority requirements and Health and Safety legislation are complied with. The main contractor is also responsible for the design and installation of all temporary works required to complete the permanent works. This plan can be used by the Main Contractor to develop their final Construction and Environmental Management Plan. The Applicant reserves the right to deviate from the contents of this report, while still complying with all relevant Local Authority requirements and legislation.

1.3 Site Location

The subject site is situated in Woodtown, in the South Dublin County Council Area, to the south-west of junction number 12 of the M50 motorway.

The site is currently a greenfield site, bounded to the east, north and west by existing residential areas and to the south by greenfield lands.

Figure 1 | *Site Location*

1.4 Site Description

The site is currently a greenfield site, bounded to the east, north and west by existing residential areas and to the south by greenfield lands. The overall site area is approximately 10.35 ha.

The subject development site is to be accessed by way of the established existing road infrastructure, with two road accesses off Stocking Avenue: one via an existing spur road from Stocking Avenue and the other via Stocking Wood Drive. These roads have footpaths on both side of the streets. **Section 4.4** below details the accessibility of the site.

The location of the subject development is shown in the **Figure 2** below.

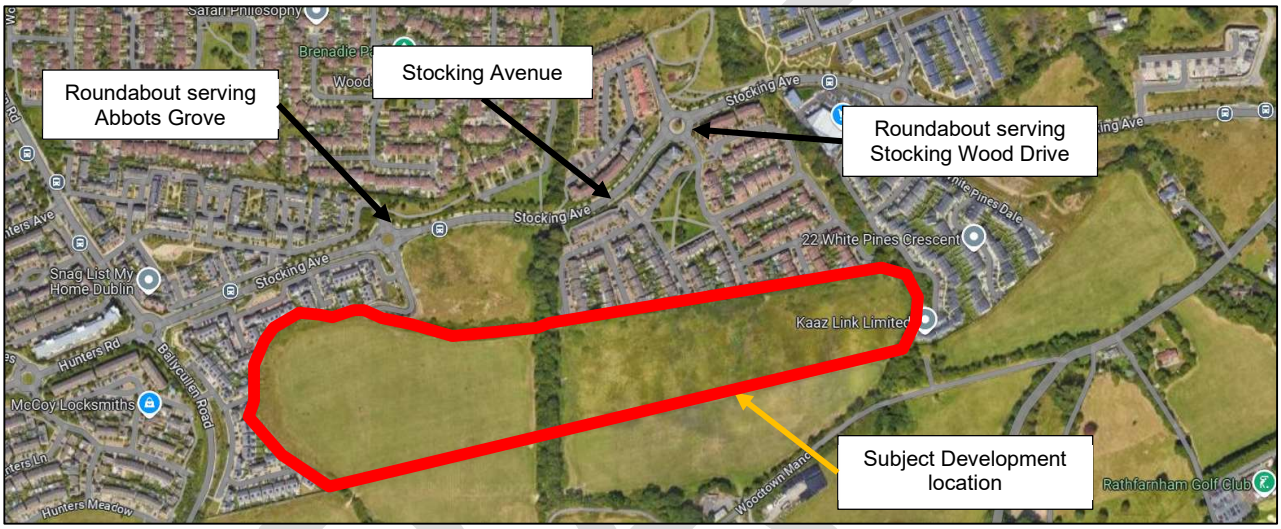

Figure 2 | *Site Description*

The site is very challenging in term of topography and slopes steeply from south to north. It is divided by a hedgerow and watercourse which run south to north through the middle of the site.

The contours on the west side of the site fall from a high point of 119.5m to 115.5m. The east side of the site is steeper with the contours falling from a high point of 125.5m to 108m. There are also existing overhead cables crossing the site. **Figure 3** below shows the existing ground contours.

Figure 3 | *Existing Ground Contours*

1.5 Local Road Network

The subject site is located to the south of the Stocking Avenue and east of Ballycullen Road, as seen in **Figure 4** below. Driving via Ballycullen Road northbound provides access to Kilinniny Road, which eastbound provides access to the M50 motorway via junction 12.

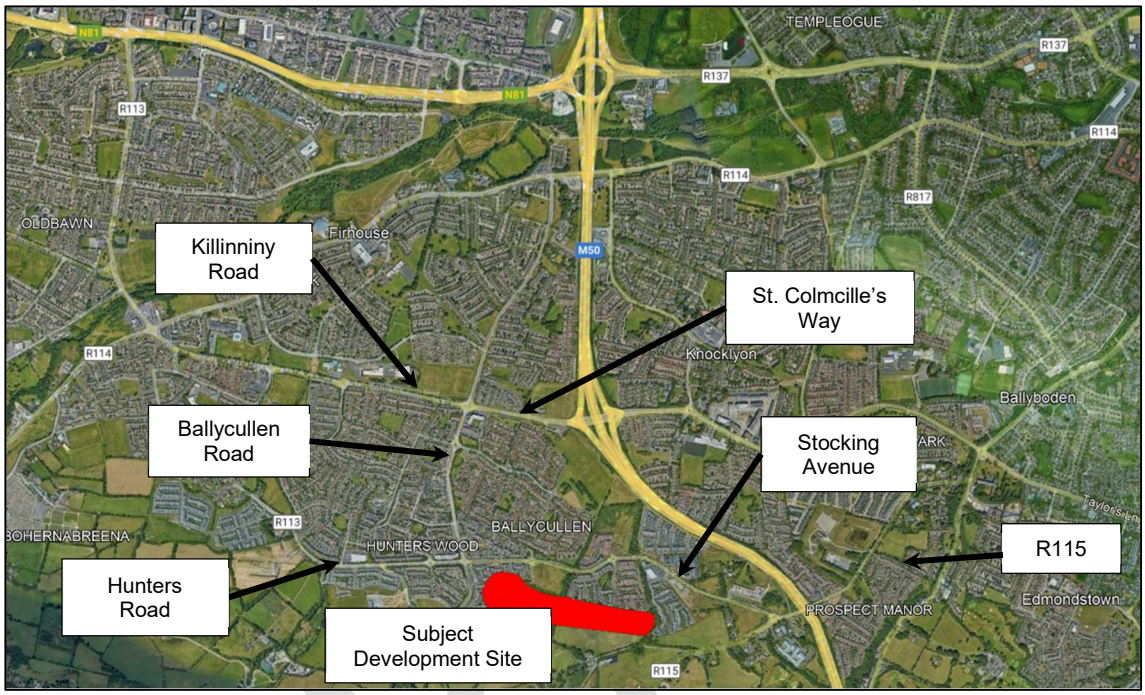

Figure 4 | *Existing Local Roads*

Stocking Avenue is a two-way single carriageway road which starts at a three-arm roundabout, and runs in the east direction c. 1.5km to end at a four-arm roundabout. Stoking Avenue has a speed limit of 50km/h, a width of 7.5m and includes footpaths and cycle lanes either side of the road. The avenue also has bus stops in both directions.

Hunters Road is the continuation of the Stocking Av. to the west of the junction 3. The road continues in a westerly direction for c. 300m, and it terminates at a priority T-Junction with the R113 to the west of the site. The road has a speed limit of 50km/h, a width of 7m and includes footpaths and cycle lanes on both sides of the road. However, there are no bus routes using the road.

Ballycullen Road is a two-way single carriageway road which starts at a priority T-Junction on the R113 to the south of the site and runs with north direction for c. 2.3km to end at a priority T-Junction with the R114 to the north of the site. Ballycullen Rd. has a speed limit of 50km/h, a width of 10m, and, from the junction with Stocking Av., has a footpath on both sides and a cycle lane on the northbound side. In addition, the road has a priority bus lane on northbound and bus stops in both directions.

Killinniny Road is a two-way single carriageway road. It starts at signalised crossroad with Ballycullen Road and runs westerly direction for c. 1.3km to ends at a priority T-Junction with the R113. Ballycullen Rd. has a speed limit of 50km/h, a width of 10m, and includes footpaths either side of the road. In addition, the road has bus stops in both directions.

St. Colmcille's Way is a is a two-way single carriageway road which starts at the interchange with the M50 motorway at its Junction 12 and runs with west direction for c. 1.0km to ends at a signalised crossroad with Ballycullen Road. St. Colmcille's Way has a speed limit of 50km/h, a width of 10m and 15m, and includes footpaths and cycle lanes either side of the road. In addition, the road has bus stops in both directions.

The **R113** road is a regional road which forms a semi-orbital route around the south of the city. It starts at the N31 at Temple Hill in Blackrock and ends at a junction with the N4 at Palmerstown.

The **R114** road is a regional road which runs from the city centre to Brittas in southwest County Dublin via Rathmines, Rathgar, Rathfarnham, Knocklyon, Firhouse and the mountainous area of Boharnabreena. The final stretch of the road runs just north of the border between County Dublin and County Wicklow, parallel to the Brittas River and a canal to the River Camac, which rises just to the north.

The **R115** road is a regional road in counties Dublin and Wicklow. It follows the Military Road. The R115 is 40.5 km long. The road runs between its junction with R114 at Butterfield Avenue Rathfarnham in the county of Dublin and its junction with R755 at Laragh in the county of Wicklow via Grange Road, Willbrook Road, Ballyboden Road, Scholarstown Road, Stocking Lane and Military Road in the county of Dublin: Glencree, Liffey Head Bridge, Sally Gap and Drummin in the county of Wicklow.

The **M50 Motorway** is an important orbital motorway around Dublin which is subject to a speed limit of 100kph. It is a 40km, C-shaped ring around Dublin that connects all the National Primary Roads and carries more than 115,000 vehicles per day.

The **N81** road is a national secondary road in Ireland, from the M50 motorway to Tullow, County Carlow, north to south. The N81 continues past Tullow for another 8 km to terminate at the village of Closh, County Carlow, where it intersects the N80. The road is a dual carriageway between M50 motorway and west of Tallaght, known as the Tallaght Bypass or Blessington Road. It intersects with the M50 motorway at Junction 11.

1.6 Access Road and Internal Layout

The development will be served by the existing road infrastructure with two access points from Stocking Avenue, a link road. One at an existing spur road onto Stocking Avenue and the other along Stocking Wood Drive. The access roads are shown in detail in **Figure 6** below.

The internal road layout consists of two circular roads, one in the western half of the development and one in the eastern half. Both are linked by a single road which crosses a wooded area dividing the development in two.

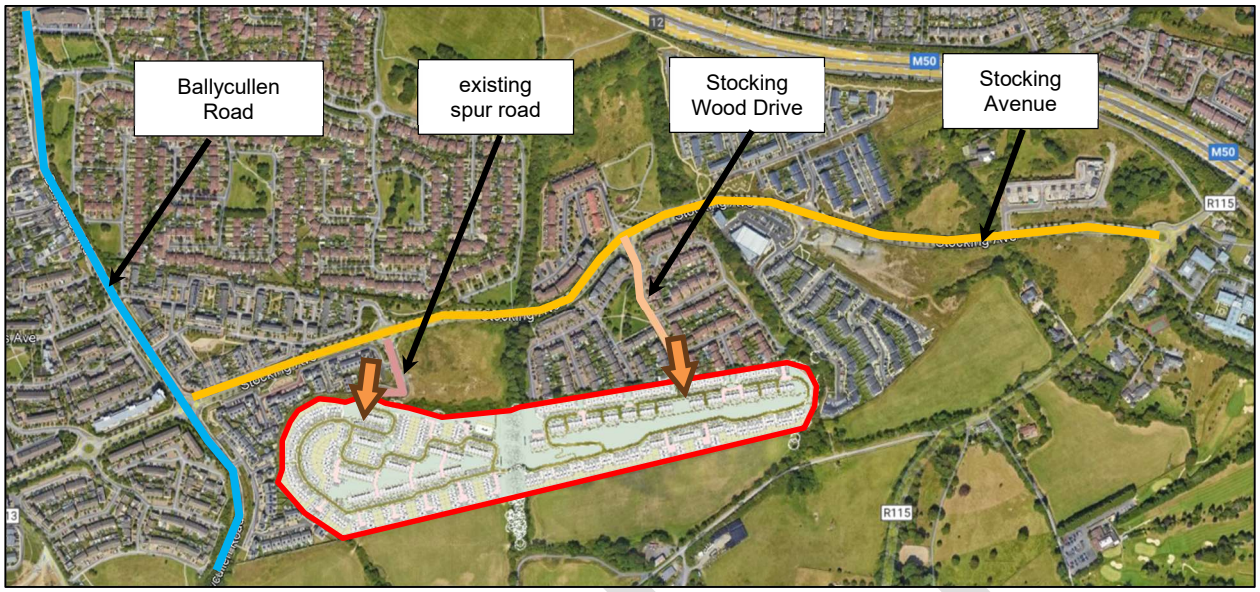

Figure 5 | *Subject Development – Access roads*

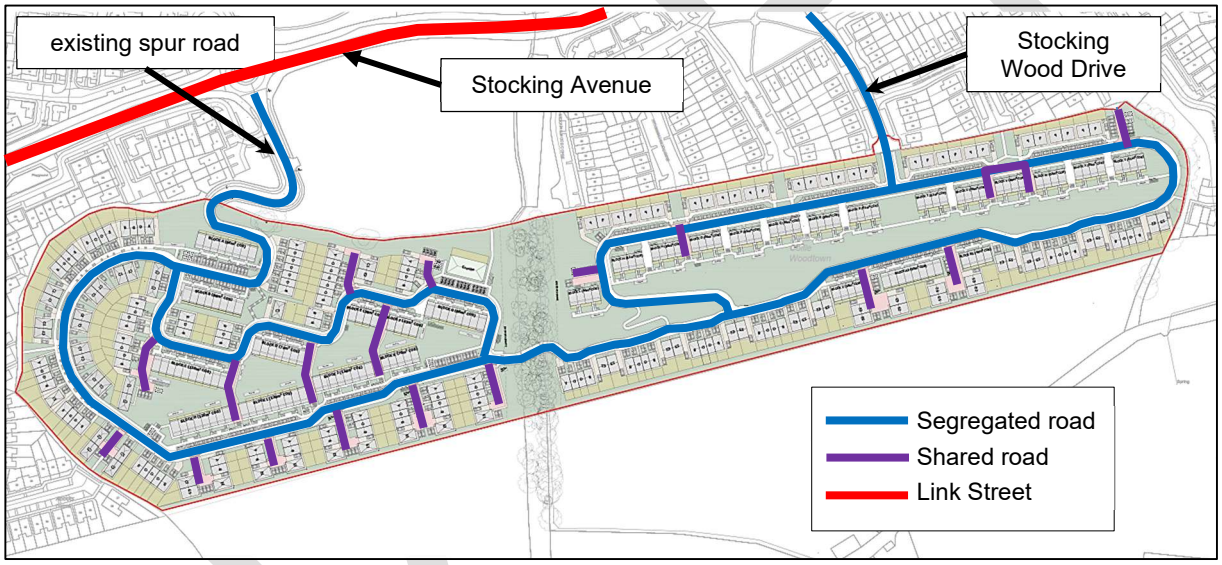

Figure 6 | *Subject Development – Internal Layout*

The figure above shows the internal roads of the Subject Development. The figure shows the segregated roads and the shared roads. In general, the internal roads are designated as Local Street. These have been further categorised into Primary Local and Secondary Local, reflecting the different levels of segregation between motorised and non-motorised traffic.

1.7 Proposed Construction Phasing and Programme

A detailed construction programme has not been developed at this stage. However, it is anticipated that the total construction period for the development will be approximately 5 years.

The project is planned to be developed in two distinct phases. Phase 1 is programmed to be fully constructed by mid-2028 and Phase 2 in 2029.

Each phase will include:

- Site clearance, earthworks and construction of associated infrastructure including drainage, water supply, utilities and roads.
- Construction and subsequent fitting out of the residential units.

Whilst the construction programme is yet to be developed, there are a series of elements to be built within/close to sensitive areas, and specific mitigation measures will be incorporated in this regard.

1.8 Proposed Construction Works

The proposed work will consist of the following:

- Site preparation.
- Erection of security fencing/perimeter fencing.
- Setting up a secure site compound including wash down area.
- Site clearance including topsoil stripping and rock excavation.
- Earthworks to bring the ground to the proposed formation level
- Construction of infrastructure including access road, cycle paths, footpaths, drainage and services.
- Construction of SuDS components including retaining walls to support detention basins and tree pit attenuation area.
- Construction of 502 No. residential units comprising 197 No. houses and 305 No. apartment units.

2. Surface Water Assessment

2.1 Potential Impacts

The proposed development at Ballycullen is connected hydrologically to five Natura 2000 sites in Inner Dublin Bay: South Dublin Bay / River Tolka Estuary SPA, South Dublin Bay SAC, North Bull Island SPA, and North Dublin Bay SAC. This connection occurs via on-site watercourses leading to the River Dodder, which flows into Dublin Bay near Ringsend, approximately 16 km downstream. While the distance reduces the likelihood of significant effects, the potential for accidental pollution during construction or operation cannot be fully ruled out.

Surface water run-off from construction activities has the potential to become contaminated. The main contaminants arising from construction activities include:

- Suspended solids: arising from ground disturbance and excavation.
- Hydrocarbons: accidental spillage from construction plant and storage depots.
- Faecal coliforms: contamination from coliforms can arise if there is inadequate containment and treatment of onsite toilet and washing facilities.
- Concrete/cementitious products: arising from construction materials.
- Sediment-laden run-off: Small streams on-site (centre and eastern perimeter of the site) feed into the Orlagh Stream, a tributary of the River Dodder. Increased sedimentation could further degrade their moderate ecological status.
- Hydrocarbon pollution: Road run-off and equipment operation pose risks to local streams without proper petrol interceptor systems.
- Chemical spills and materials: Improper storage of materials like paints, oils, and solvents risks leaching into tributaries.

These pollutants, if not properly contained and managed, pose a temporary but significant risk to downstream water quality, including the Orlagh Stream and River Dodder, potentially affecting their compliance with the Water Framework Directive's requirements to achieve "good" ecological status.

2.2 Mitigation Measures

The following Mitigation Measures are to address potential impacts to water quality and are required to protect the watercourse in and around the site. All works will be undertaken with reference to the following guidelines:

- CIRIA C532: Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al., 2001).
- CIRIA C692: Environmental Good Practice on Site, (Audus et al., 2010).
- BPGCS005: Oil Storage Guidelines.
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Technical Guidance (Murnane et al., 2006a).
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Site Guide (Murnane et al., 2006a).
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016).

- Guidelines for Planning Authorities – Architectural Heritage Protection – Guidance on Part IV of the Planning and Development Act 2000. (Part 2, Chapter 7) and ICOMOS Principles.
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Water, Inland Fisheries Ireland (IFI, 2016).
- Natural Based Management of Urban Rainwater and Urban Surface Water Discharges (Department of Housing, Local Government and Heritage, 2024).

The mitigation measures outlined in the report are in keeping with those outlined in the biodiversity chapter of the EIAR and NIS, however, any additional measures identified as necessary in either of these reports shall be incorporated into the CEMP by the contractor before commencing work on site. Emergency contact numbers for the Local Authority Environment Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.

The schedule of mitigation presented within **Table 2** below summarises measures that will be undertaken to reduce impacts on ecological receptors within the zone of influence of the proposed development.

No.	Risk	Possible Impact	Mitigation	Result of Mitigation
1	Hydrocarbons from carparking area entering the watercourse.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Designated parking at least 50m from any watercourse.	Ensures no soil disturbance or hydrocarbons leak near aquatic zone
2	Pollutants from site compound areas entering the watercourse.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	The site compound will be located at least 50m from any watercourse.	Prevents pollution of the aquatic zone from toxic pollutants

3	Pollutants from material storage areas entering the watercourse.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Fuels, oils, greases and other potentially polluting chemicals will be stored in bunded compounds at the Contractor's compound or a location at least 50m from any body of water. Bunds are to be provided with 110% capacity of the storage container. Spill kits will be kept on-site at all times and all staff trained in their appropriate use. Method statements for dealing with accidental spillages will be provided by the Contractor for review by the Employer's Representative.	Prevents contamination of aquatic zone by toxic pollutants
4	Concrete/cementitious materials entering the watercourse from washdown.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	A designated wash down area within the Contractor's compound will be used for cleaning of any equipment or plant, with the safe disposal of any contaminated water.	Prevents contamination of aquatic zone by suspended solids or pollutants, ensures invasive species material is not transported off-site
4	Concrete/cementitious materials entering the watercourse from concrete pours.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Pouring of cementitious materials will be carried out in the dry.	Prevents contamination of aquatic zone by suspended solids or pollutants, ensures invasive species material is not transported off-site
5	Leaching of contaminated soil into groundwater.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Spill kits will contain 10 hr terrestrial oil booms (80mm diameter x 1000mm) and a plastic sheet, upon which contaminated soil can be placed to prevent leaching to groundwater	Prevents contamination of aquatic zone by petrochemicals
6	Pollutants from equipment storage/refuelling area entering the watercourse.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Any refuelling and maintenance of equipment will be done at designated bunded areas with full attendance of plant operative(s) within contained areas at least 50m from any watercourse	Prevents contamination of aquatic zone by petrochemicals

7	Runoff from exposed work areas and excavated material storage areas entering the watercourse.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Contractor to prepare a site plan showing the location of all surface water drainage lines and proposed discharge points to the sewer. The plan will include the location of all surface water protection measures, including monitoring points and treatment facilities.	Prevents contamination of aquatic zone by suspended solids or pollutants.

Table 2 | *Schedule of Surface Water Mitigation Measures*

3. Construction & Demolition Waste Management Plan

An Operational Waste & Recycling Management Plan (OWRMP) and a Resource & Waste Management Plan (RWMP) has been prepared by Traynor Environmental as part of the stage 3 planning submission and are available under a separate cover.

4. Construction Transport Assessment

4.1 Construction phases and site compound

The project is planned to be developed in two distinct phases. Phase 1 is programmed to be fully constructed by mid-2028 and Phase 2 by 2030. Therefore, it is anticipated that the total construction period for the development will be approximately 5 years.

The construction phases and the proposed site compound is shown in figure below.

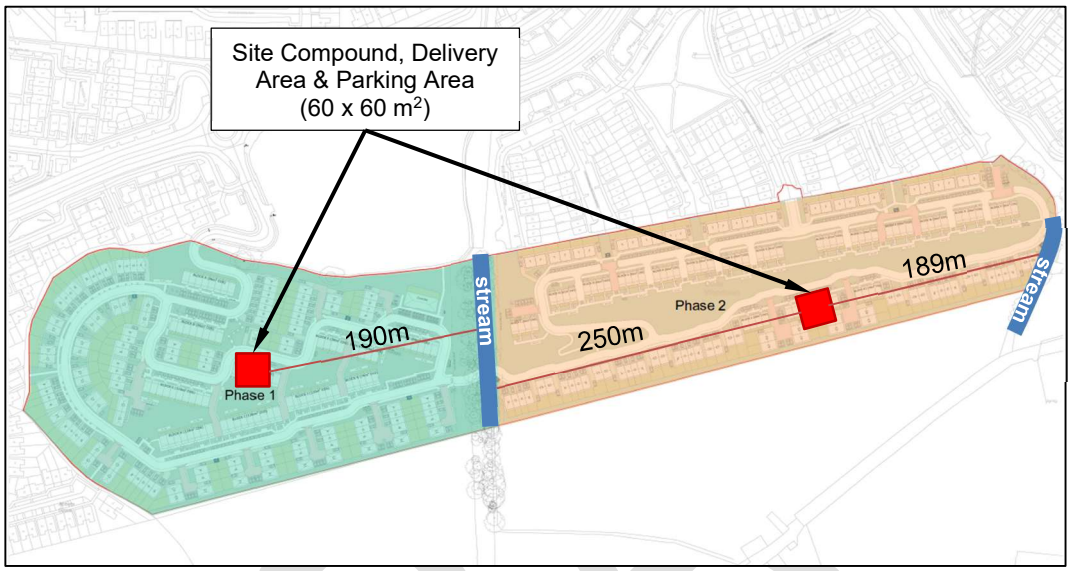

Figure 7 | *Subject Development – Internal Layout*

4.2 Predicted Construction Traffic Flows

The objective of this section is to estimate the number of trips to and from the construction site and their impact on the surrounding road network. It is important to note that during the construction phase, some traffic movements will be undertaken by heavy goods vehicles, while others will involve vehicle movements associated with the designated construction activities and personnel.

Regarding heavy goods vehicles, an estimate of the daily traffic movements associated with construction activities has been made based on experience of similar sites. This estimate is based on the assumption that the worst-case scenario for construction traffic will be during the excavation phase. The determination of construction traffic movements is based on the assumptions set out below:

- The work schedule is based on a 9-hour day between 08:00 - 17:00. Workers should therefore arrive on site before 08:00 and leave after 17:00.
- 20 working days per month.
- Conservatively assuming removal trucks will only operate Monday to Friday and between 8:30-12:00 and 13:00-16:30. This means that they will be working for 7 hours a day.
- Preliminary excavation volume calculations indicate that approximately 57,117 m^3 of soil will need to be removed during the excavation phase. This estimate includes the removal of the topsoil, and the balancing of cut and fill volumes within the site. To provide a robust estimation, it is assumed that an

additional 10% of soil to be remove from the site. Therefore, a total of 63,000 m^3 of soil will be removed during the excavation phase.

- It is assumed that a Rigid HGV carries up to 20 tonnes in terms of payload. Considering a typical soil bulk density of 1.3 this would equate to approx. 15 m3 per load.
- Excavation works for both phases will be carried out during the first 6 months of construction.

Based on the above, it is estimated that the movements will be some 4,200 No. trips over a 120-day period (6 months). This equates to an average of 35 No. trips to/from the site per working day during the peak 6-month period. Considering the schedule of the removal trucks (7 hours a day), the 35 No. trips per day will be 5 No. trips per hour. In addition, considering the supplementary trips for construction materials, ranging from 10 No. to 20 No. trips per day, it is anticipated that HGV movements during the excavation phase will vary between 45 No. and 55 No. trips per day during the excavation phase. As indicated above, it is assumed that the HGV trips will occur between 8:30 and 16:30.

The general workforce is expected to be approximately 120 No. people per day, rising to 150 No. people at peak times. Given the location of the subject site and considering the worst-case scenario, it is estimated that approximately 50% of the workforce will travel to/from the site by private car. This 50% includes people who travel alone, people who share their car with other co-workers, and company vans. As a result, it is estimated that the site will attract/generate between 60-75 No. car trips to the construction site during the morning, and the same number from the construction site during the evening. It is assumed that the workforces will arrive to the site before 8:00 AM and will leave the construction site after 17:00.

According to the Surveyed Traffic Flow, the peak hours on the existing road network are between 7:30-8:30 AM during the morning and between 5:30-6:30 PM during the evening. In addition, it has been estimated that the subject development when completed and fully occupied, will generate a total of 185 vehicular movements during the AM peak hour (48 inbound and 137 outbound) and a total of 190 vehicular movements during the PM peak hour (126 inbound and 64 outbound). The junction assessment results carried out in the Traffic and Transport Assessment for the subject site, indicate that all junctions would operate within their respective capacities for all scenarios assessed. Further information can be found in the Waterman Moylan report No. *24-007r.003 Traffic and Transport Assessment*, which is included in the documentation package.

Considering the above, it is expected that the traffic generated by the general workforce will occur during the peak hours, while the HGV trips will be generated outside the peak hours. In addition, the number of trips during the construction phase will be less than the number of trips during the operational phase and these trips are not expected to cause congestion problems on the surrounding road network. Therefore, no junction assessment is required for the construction phase.

4.3 Routes for Heavy Goods Vehicles

Deliveries and access to the construction site will typically be made via the R113, Ballycullen Road, and Stocking Avenue, as shown in ***Figure 8*** below. All construction traffic flows to/from the site during both phases will be off Stocking Avenue via an existing spur road. It will not be permitted to use Stocking Wood Drive to access the site.

A restriction on using any of the surrounding residential roads for Construction traffic will be put in place. The route for heavy goods vehicles is shown in the figure below. The figure shows the allowed and the not allowed HGV's routes.

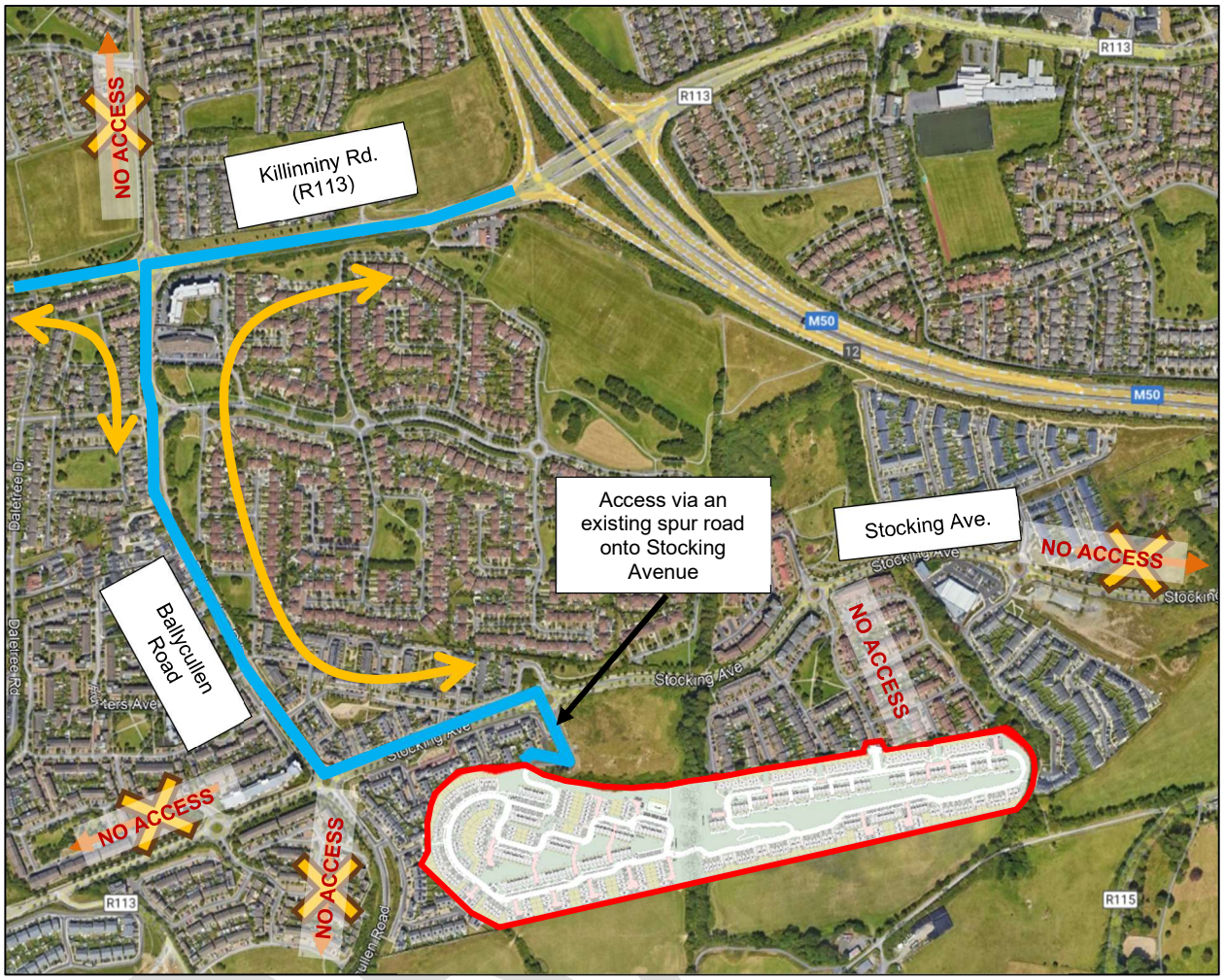

Figure 8 | *Primary Transport Route (Source: Google Earth)*

Due regard will be paid to minimising any impacts by construction vehicles on the existing developments in the area. Should routes become an issue, then the position will be reviewed by the Project Team and changes made.

Particular emphasis will be placed on the following:

- The issue of instructions and maps on getting to site to each supplier sub-contractor to avoid 'lost' construction traffic travelling on unapproved routes.
- Ongoing assessment of the most appropriate routes for construction traffic to and from the site.
- Interface with the operation of local traffic.
- Use of a banksman and/or traffic lights to control the exit of construction vehicles.
- No construction traffic waiting on the public roads.

A detailed Construction Management Plan will be prepared by the contractor before construction which will outline site logistics and indicate the following:

- Site Access Locations.
- Site Boundary Lines.

- Tower Crane Locations.
- Vehicle Entry and exit routes from the site.
- Unloading areas.
- Site Offices and welfare facilities.
- Material Storage areas.
- Banksmen Locations.

Materials will be ordered and delivered to site on an “as needed” basis to prevent oversupply to site. Deliveries will be managed upon arrival to the site and systems should be provided to avoid any queuing of delivery vehicles.

In the event that large concrete pours are required which may result in congestion at the entrance to the site the deliveries will be organised such that concrete trucks will queue at a pre-determined staging point (such that they do not cause an obstruction to general traffic in the area) and will then be called in by radio as appropriate to the site, via a pre-determined route and to the required access gate.

Set procedures and designated wash-out areas will be provided.

All delivery vehicles will be coordinated as required at the relevant access point.

Set procedures and designated wash-out areas will be provided, or vehicle wash-out will be prohibited if a suitable wash-out area is not identified, refer to **Section 5.4.7** below for more details. The Main Contractor will ensure that surface and ground waters are adequately protected from contamination by stored materials.

All delivery vehicles will be coordinated as required by a flagman on duty at the relevant access point.

All large pours will be carefully coordinated with the roads department at SDCC.

The main contractor will be required to schedule the delivery of materials daily. If necessary, the main contractor will be required to provide a secure material staging compound on the site.

4.4 Parking During Construction

A construction car park will be established at the commencement of the construction phase to serve as a parking area for vehicles of the workforce. This will be located within the construction site to avoid any impact on the surrounding development.

No parking of construction-related vehicles will be permitted on the adjoining road network (The Stocking Wood development or Abbots Grove) and adequate parking facilities will be made available within the Construction Compound for all site workers during construction.

For those who wish to cycle to and from the development, dedicated cycle parking area will be provided for the duration of the works within the site.

A Construction Stage Mobility Plan will be prepared by the contractor alongside the Construction Management Plan and agreed with South Dublin County Council prior to construction before starting on site.

4.5 Site Accessibility

The construction site is well served by public transport, which is detailed in this section.

4.5.1 Bus Network

The proposed development is well served in terms of public transport provision as can be seen in **Figure 9** below, which shows the bus stops in the surrounding area of the subject development.

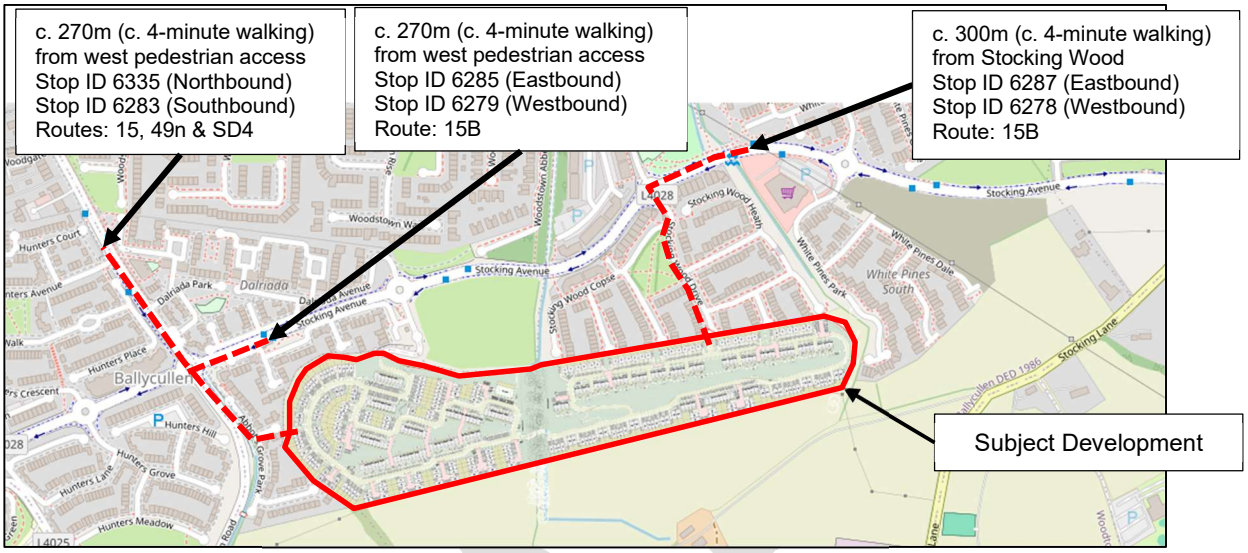

Figure 9 | *Location of the Closest Bus Stops (Source: Open Street Map)*

Route 15 and Route 49 are operated by Dublin Bus while Route SD4 is operated by Local Link Kildare South Dublin.

The details of the bus server at each stop are shown in **Table 3** the table below. Full timetables for each route in the surrounding area are included in **Appendix A**, in the Waterman Moylan Report No. *24-007r.008 Traffic & Transport Assessment - Appendices*, which is included in the documentation package.

Route	Stop ID Route Name	Frequency
15	Ballycullen Rd. - Clongriffin	**Weekday:** Every 10 minutes between 6:00 and 7:00, and between 17:10 and 19:00 Every 5-12 minutes between 7:00 and 17:10 Every 15 minutes between 19:00 and 0:00 Every 30 minutes between 0:00 and 6:00 **Saturday:** Every 15 minutes between 6:00 and 0:00 Every 30 minutes between 0:00 and 6:00 **Sunday:** Every 20 minutes between 8:00 and 12:00 Every 15 minutes between 12:00 and 0:00 Every 30 minutes between 0:00 and 8:00
15B	Stocking Avenue to Merrion Square	**Weekday:** Every 15 minutes between 6:00 and 7:00, and between 8:00 and 19:00 Every 10 minutes between 7:00 and 8:00 Every 20 minutes between 19:00 and 23:20 **Saturday:** Every 15 minutes between 6:30 and 19:00 Every 20 minutes between 19:00 and 23:30

		Sunday: Every 30 minutes between 8:15 and 23:15
SD4	Tibradden Wood to Tallaght (Northbound) - **Weekday**: No Service - **Saturday**: 4 services: 8:38, 10:58, 14:18 & 16:53 - **Sunday**: No Service Tallaght to Tibradden Wood (Southbound) - **Weekday**: No Service - **Saturday**: 4 services: 8:11, 10:31, 13:51 & 16:26 - **Sunday**: No Service	
49n	D'Olier Street - Kilnamanagah - **Weekday**: No Service - **Friday - Saturday**: 3 services: 0:29, 2:29. & 4:29 - **Sunday**: No Service	

Table 3 | *Existing bus services (Source: Transport for Ireland)*

4.5.2 Existing Pedestrian Facilities and Walking accessibility

The surrounding area has a well-connected pedestrian facility, which comprises of an inter-connected network of footpaths linking the various neighbourhoods to the surrounding services/amenities.

The network of footpaths in the immediate vicinity of the site is currently identified as safe and comfortable for all users, with dedicated pedestrian crossings, dropped kerbs and tactile pavement provided.

Figure 10 below details the site accessibility by foot for 10-minute, 15-minute and 25-minute walking catchments areas.

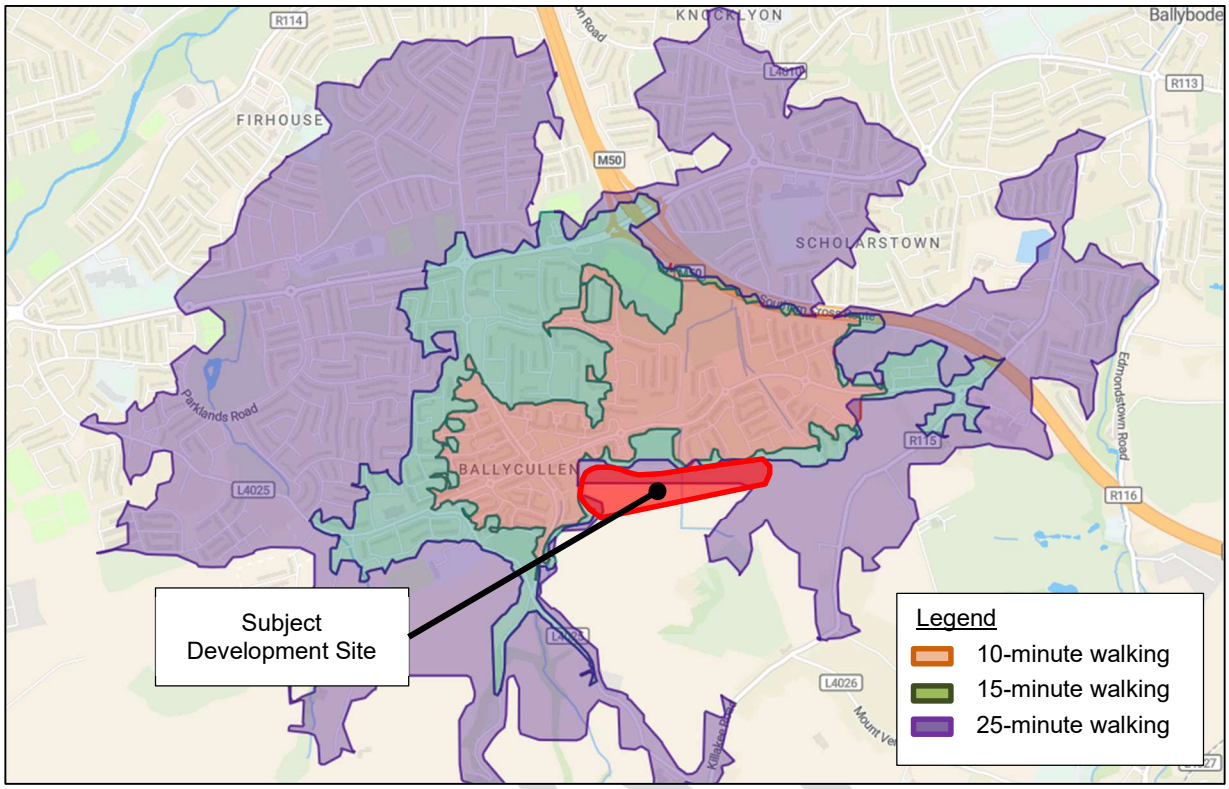

Figure 10 | *Walking Catchment areas*

4.5.3 Cycling Infrastructure and Cycling Accessibility

Figure 11 below indicates that the area surrounding the Subject Development is characterised by the presence of a well-interconnected cycling infrastructure.

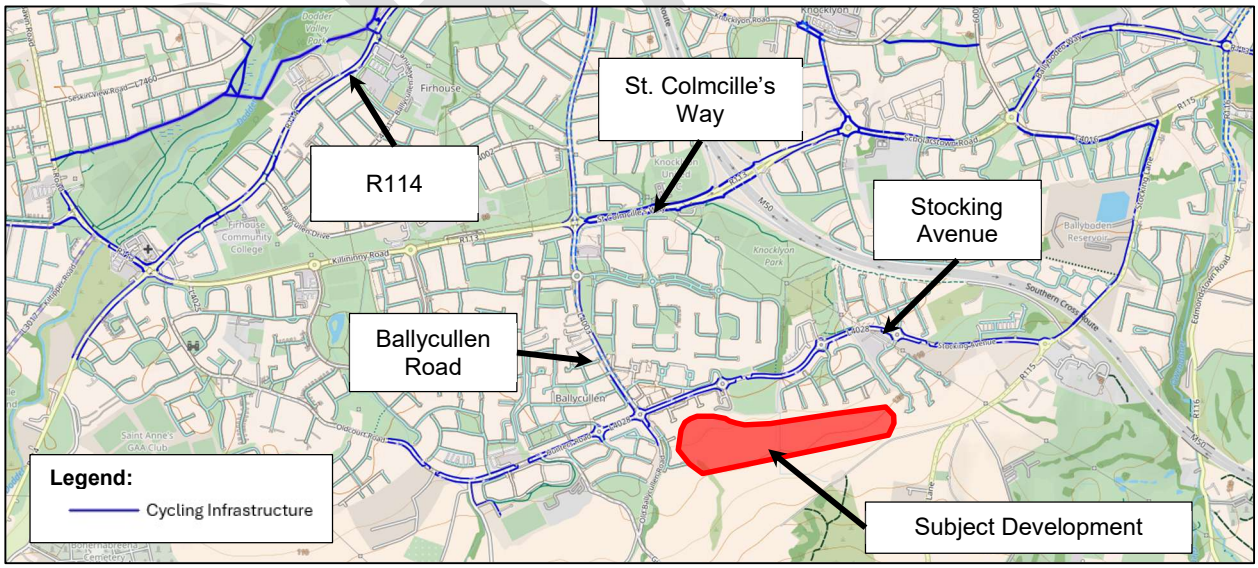

Figure 11 | *Existing Cycling infrastructure (Source: Open Street Map)*

The figure above shows the presence of cycling infrastructure on both sides of Stocking Avenue to the north of the subject site, which runs east-west. In addition, there is cycling infrastructure on Ballycullen Road to the west of the site, which runs northwards. Further north, cycling infrastructure exists on St. Colmcille's Way and on the R114.

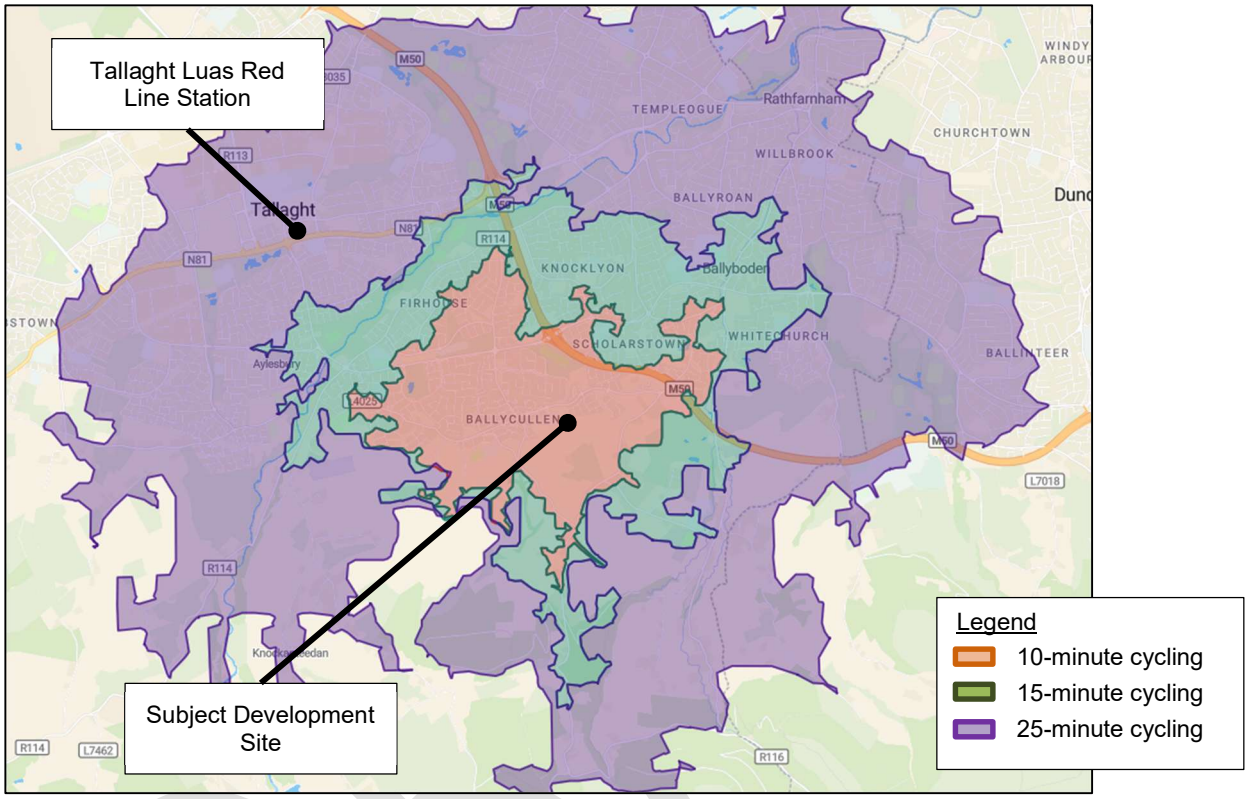

Figure 12 | *Cycling Catchment areas (Source: Smappen)*

As presented for walking, a similar catchment exercise has also been undertaken for the cycling mode of transport. **Figure 12** below shows the site's cycle accessibility for 10-, 15-, and 25-minute cycling catchments area based on an average cycling speed of 3.3m/sec (15 km/h). A 15-minute cycling time equates to approximately 3.0km.

In addition, Tallaght Luas Red Line Station (see **Figure 12** above) is a 17-minute cycle from the subject site.

5. Management of Environmental Impacts

5.1 Roles and Responsibilities

5.1.1 Main Contractor

The main Contractor will have overall responsibility for the implementation of the project Construction Environmental Management (CEMP) during the construction phase. The appointed person from the Main Contractors team will be appropriately trained and assigned the authority to instruct all site personnel to comply with the specific provisions of the CEMP. At the operational level, a designated person from each subcontractor on the site shall be assigned the direct responsibility to ensure that the operations stated in the CEMP are performed on an ongoing basis.

Copies of the CEMP will be made available to all relevant personnel on-site. All site personnel and sub-contractors will be instructed about the objectives of the CEMP and informed of the responsibilities which fall upon them because of its provisions.

The responsibilities of the appointed person will be as follows:

- Updating the CEMP as necessary to reflect activities on site.
- Advise site management (including, but not limited to, the site Construction Manager) on environmental matters.
- Ensure pre-construction checks for protected species, if any, are undertaken.
- Review method statement of the sub-contractors to ensure that it incorporates all aspects of CEMP.
- Provide toolbox talks and other training and ensure understanding by all involved of all mitigation measures.
- Assess the effectiveness of mitigation, check the weather forecast and site conditions where trigger levels are required.
- Ensure adherence to the specific measures listed in the Planning Conditions.
- Provide advice on the production of written method statements and site environmental rules and on the arrangements to bring these to the attention of the workforce.
- Investigate incidents of significant, potential or actual environmental damage, ensure corrective actions are carried out and recommend means to prevent recurrence.
- Be responsible for maintaining all environmental-related documentation.
- Ensure plant suggested is environmentally suited to the task in hand.
- Coordinate environmental planning of the construction activities to comply with environmental authorities' requirements and with minimal risk to the environment. Give contractors precise instructions as to their responsibility to ensure correct working methods where the risk of environmental damage exists.

5.1.2 Construction Waste Manager

A Construction Waste Manager shall be appointed from the Contractor's Staff and have overall responsibility for the implementation of the project Waste Management Plan (WMP) during the construction phase. The Construction Waste Manager will be appropriately trained and assigned the authority to instruct all site personnel to comply with the specific provisions of the WMP. At the operational level, a designated

person from the main contractor and each subcontractor on the site shall be assigned the direct responsibility to ensure that the operations stated in the WMP are performed on an ongoing basis.

Copies of the Waste Management Plan will be made available to all relevant personnel on-site. All site personnel and sub-contractors will be instructed about the objectives of the Waste Management Plan and informed of the responsibilities which fall upon them as a consequence of its provisions. Where source segregation, selective demolition and material reuse techniques apply, each member of staff will be given instructions on how to comply with the Waste Management Plan. Posters will be designed to reinforce the key messages within the Waste Management Plan and will be displayed prominently for the benefit of site staff.

5.1.3 Construction Mobility Manager

The main contractor as part of their site set up arrangements, shall appoint a Coordinator responsible for the implementation of a Construction Mobility Management Plan, which must describe the following (but not limited to):

- Encourage employees to avoid using their cars and choose alternative modes of transport to reduce the number of cars on the road and the need for car parking.
- Provide an extensive information service for public transport options and routes at a public location(s) within the development for construction workers. An example is provided in **Section 4.4** above.
- Update the public transport information adjacent to the development on an ongoing basis.
- Advise company staff of tax incentives for public transport and bicycles. For those wishing to cycle to and from the site, dedicated cycle parking will be provided for the duration of the works within the site. Shower facilities and lockers will also be provided.
- A shuttle service to/from the parking will be provided if required.Tallaght Luas line station can be provided if there is sufficient interest.
- If private car use cannot be avoided , incentivise employees to car share / pool where possible.

5.1.4 Environmental Officer

The Environmental Officer will be responsible for, but not limited to, the following activities:

- Ensuring that the requirements of the CEMP are developed and environmental system elements (including procedures, method statements and work instructions) are implemented and adhered to with respect to environmental requirements.
- Reviewing the Environmental responsibilities of other managed Contractors in scoping their work and during Contract execution,
- To ensure that advice, guidance and instruction on all CEMP matters are provided to all their managers, employees, construction contractors and visitors on-site.
- Report to the Construction manager on the environmental performance of the Line Management, Supervisory Staff, Employees and Contractors.
- Advise site management (including, but not limited to, the site Construction Manager) on environmental matters.

5.1.5 Project Environmental Consultant

The Project Environmental Consultant will be responsible for, but not limited to, the following activities:

- Preparation of the CEMP, environmental control plans, supporting procedures.
- Advise site management (including, but not limited to, the site Construction Manager) on environmental matters.
- Ensure adherence to the specific measures listed in the Planning Conditions and in the Natura Impact Statement (NIS) Mitigation matters.
- Provide advice on the production of written method statements and site environmental rules and on the arrangements to bring these to the attention of the workforce.
- Investigate incidents of significant, potential or actual environmental damage, ensure corrective actions are carried out and recommend means to prevent recurrence.
- Be responsible for maintaining all environmental-related documentation.

5.1.6 Project Ecologist

The Project Ecologist is required to:

- Undertake pre-construction checks for protected species and invasive species.
- Review method statement of the contractor to ensure that it incorporates all aspects of CEMP.
- Provide toolbox talks and other training and ensure understanding by all involved of all mitigation measures.
- Assess the effectiveness of mitigation, check the weather forecast and site conditions where trigger levels are required.
- Check for adequacy of infiltration where water is being pumped.

5.1.7 Site Supervisor

Site Supervisors are required to:

- Read, understand and implement the CEMP.
- Know the broad requirements of the relevant law in environmental matters and take whatever action is necessary to achieve compliance. Where necessary seek the advice of the Environmental Officer.
- Ensure that the environmental matters are taken into account when considering contractors' construction methods and materials at all stages.
- Be aware of any potential environmental risks relating to the site, plant or materials to be used on the premises and bring these to the notice of the appropriate management.
- Ensure plant suggested is environmentally suited to the task in hand.
- Coordinate environmental planning of the construction activities to comply with environmental authorities' requirements and with minimal risk to the environment. Give contractors precise instructions as to their responsibility to ensure correct working methods where the risk of environmental damage exists.
- Where appropriate, ensure Contractor's method statements include correct waste disposal methods.

- Be aware of any potential environmental risks relating to the Contractors and bring these to the notice of the appropriate management.

5.1.8 Project Team

It shall be the duty of the Project Team to provide the main Contractor in good time with all necessary designs, details, drawings, and specifications so that the Contractors can, in conjunction with the Project Team, prepare detailed proposals and programmes for the execution of the works.

The proposals shall be submitted to South Dublin County Council and shall incorporate any requirements included in the conditions of the planning permission for the development.

It shall also be the duty of the Project Team to ensure that the Contractors proposals are reasonable and that they are implemented in a safe and competent manner.

5.1.9 Site Personnel

All Contractors, and other site personnel, on the project, will adhere to the following principal duties and responsibilities:

- To co-operate with the construction management team and the Environmental Officer in the implementation and development of the CEMP at the site.
- To conduct all their activities in a manner consistent with regulatory and best environmental practice.
- To participate in the environmental training programme and provide management with any necessary feedback to ensure effective environmental management at the site.
- Adhere to the requirements of the site environmental rules.

5.2 Hours of Working

Typical working hours for the site would be 08:00 to 17:00 Monday to Friday and 08.00 to 13.00 Saturday. No Sundays, Bank holidays and Public holidays work will generally be permitted. The above working hours are typical; however, special construction operations may need to be carried out outside these hours to minimise disruption to the surrounding area.

Weather restrictions may apply, i.e. no cement pouring during heavy rainfall. To be determined by the project ecologist.

5.3 Pre-Construction Plan

5.3.1 General Set up and Pre-Commencement Measures

The following measures will be carried out by the Main Contractor:

- A full condition survey of the public infrastructure that will be utilised or affected by construction traffic, before the commencement of any work on the site, will be carried out. This condition survey to include an inventory of the road network intended to be used by vehicles, weight restrictions to be imposed on vehicles, a full colour photographic record of the road network intended to be used, a full written account of the existing condition and structural integrity of the infrastructure detailing all existing defects and features. Copies of these survey reports would be provided to the third-party owners.

- Prior to any site works commencing, the main contractor will investigate/identify the exact location of and tag all existing services and utilities around and through the site with the assistance of the relevant South Dublin County Council technical divisions and utility companies.
- The developer will appoint a Project Manager to manage the construction process on-site.
- No waste, dirt, debris or other material shall be deposited on the public road or verge by machinery or vehicles travelling to or from the site during the construction phase. The contractor to arrange vehicles leaving the site to be kept clean.
- Site security lighting will be located and designed so as not to result in glare on the public road or to impact negatively on any nearby dwellings.
- Prior to any site works commencing, the contractor shall carry out a Site Investigation (SI). The Site Investigation report shall include detailed information on groundwater levels to allow for a risk assessment of potential adverse impacts of stabilised soils and/or recycle aggregates to groundwater. Additionally, the SI report should also include an evaluation of the re-use properties of the soils including laboratory trial mixes to evaluate the performance of the soils following the addition of lime and/or cement. Site investigation should include WAC testing as well as Irish EPA suite to evaluate the soil suitability for off-site disposal at a Soil Recovery Facility.

5.3.2 Site Security and Hoarding Lines

Hoarding lines and site security will be set up within the development site as required.

Hoarding and security fencing will be required on the public roads during the construction works and for the construction of the new realigned entrance to the site. Before construction commencing, a detailed construction traffic management plan will be prepared and submitted by the appointed contractor to South Dublin County Council.

The traffic management plan will identify staging areas, delivery of materials, strategy for large concrete pours, removal of demolition waste, traffic routes etc.

Access gates will be operated by a flagman who will divert incoming/outgoing vehicles/pedestrians and general traffic as necessary.

5.3.3 Designated Storage Area & Site Compound

A site compound(s) including offices and welfare facilities will be set up by the main contractor in locations to be decided within the subject site.

The main contractor will be required to schedule the delivery of materials daily. The main contractor will be required to provide a site compound on the site for the secure storage of materials.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and surrounding watercourses from oil and petrol leakages and significant siltation. Suitable bunded areas will be installed for oil and petrol storage tanks. Designated fuel filling points will be put in place with appropriate oil and petrol interceptors to protect from accidental spills. Spill kits will be provided by the Contractor to cater for any other spills.

5.3.4 Parking

A site compound including offices and welfare facilities as well as a small amount of parking will be available on-site for contractors and site visitors. The site is well served by public transport including Dublin Bus with a stop adjacent to the development.

5.4 Construction Plan

5.4.1 Standards

Insofar as the construction of this development may impact on the surrounding road network, the development and associated roadworks shall be undertaken in compliance with the requirements of South Dublin County Council and any other requirements that the Council may impose during the course of the works.

5.4.2 Protection of Habitats

To ensure the protection of habitats during site preparation and construction, the following measures must be implemented:

- Minimized Work Areas: All construction activities must be confined to the designated development site. Work areas should be kept to the minimum necessary and clearly marked in advance. The ecological sensitivity of the location has been highlighted during this ecological study, and the construction team will be briefed on the site's valued ecological receptors. These measures must be maintained from the start of site works until the project's completion.
- Incorporation of Mitigation Measures: The mitigation measures outlined in the NIA, the Biodiversity Chapter of the EIAR, and other relevant environmental reports must be included in a comprehensive Construction and Environmental Management Plan.
- Retention of Green Infrastructure: In line with the South Dublin County Council Development Plan policies, the site’s existing green infrastructure, including woodlands and hedgerows, should be preserved as much as possible. The proposed development retains the central woodland portion, except for a small section required for a road and pathway (resulting in the removal of approx.10 trees). The eastern woodland will also be retained. A detailed landscape plan has been prepared to mitigate the loss of any woodland habitats.
- Protective Barriers: Protective fencing must be installed at least 10 meters from the root zones of retained woodlands, treelines, and hedgerows before site clearance begins. Dumping or storage of waste or machinery is prohibited in these areas, and the understorey and ground flora of woodlands must be protected throughout the construction phase.
- Tree Removal Restrictions: Tree removal should occur outside the bird nesting season. Prior to felling, a bat ecologist must inspect the trees within 48 hours to confirm no roosts are present. Soft felling techniques are recommended.
- Adherence to Arborist Recommendations: Any additional tree protection measures outlined in the arborist's report must be strictly followed.
- Enhancement of Natural Verges: Natural verges along woodlands and hedgerows should be preserved, managed, or enhanced with suitable planting to benefit wildlife. Herbicide spraying is prohibited, and low intensity mowing or strimming regimes should be adopted to support local pollinators.

5.4.3 Mitigation for Bats

The bat survey prepared for this proposed development contains a number of recommendations to minimise potential construction impacts upon the bat species recorded from the site. These mitigation measures include:

- All trees within the site should be examined for the presence of bats prior to felling by a bat specialist.
- Should bats be noted in any tree that is earmarked for removal, a derogation license from NPWS must be sought. This can be done with the assistance of a bat ecologist.

5.4.4 Protection of Water Quality

It is vital that there is no deterioration in water quality in the streams that occur within the application site. This will protect both habitats and species that are sensitive to pollution. Therefore, strict controls of erosion, sediment generation and other pollutants associated with the construction process should be implemented, including the provision of attenuation measures, silt traps or geotextile curtains to reduce and intercept sediment release into any local watercourses. Guidelines in the following best practice documents should be adhered to:

- Construction Industry Research and Information Association (CIRIA) (2005) Environmental Good Practice on Site (C692)
- Construction Industry Research and Information Association (2001) Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532)
- Construction Industry Research and Information Association (2000) Environmental Handbook for Building and Civil Engineering Projects (C512)
- Environmental Protection Agency (2015) List of Waste and Determining if Waste is Hazardous or Non-Hazardous
- Environment Agency et al. (2015) Guidance on the Classification and Assessment of Waste, Technical Guidance WM3
- Environmental Protection Agency (2013) Guidance (and Templates) on the Management of Contaminated Land and Groundwater at EPA Licensed Site
- Environment Agency (2004) Model Procedures for the Management of Land Contamination (CLR11).
- All relevant guidelines within the document Inland Fisheries Ireland Requirements for the Protection of Fisheries Habitats during Construction and Development Works and River Sites (www.fisheriesireland.ie) and the updated guidelines entitled Guidelines on Protection of Fisheries During Construction Works in And Adjacent to Waters (2016) should also be adhered to and they include.

The construction team must implement the following specific mitigation measures;

- Surface waters from the construction site should be managed using a system of temporary on-site attenuation features, and these should be fitted with silt barrier devices such as silt fences or silt busters.
- Silt fences and berms should be installed prior to the commencement of construction on site. These should be set back at a minimum of 10m from the streams on site. As the streams within the application site are associated with existing treelines and woodland habitats, the silt fences could be incorporated into the protective fencing that is required for the woodland habitats. The silt fences should be sturdy and constructed of a suitable geotextile membrane to ensure that water can pass through, but that silt

will be retained. An interceptor trench will be required in front of this interceptor fence. The silt fence must be capable of preventing particles of 425μm from passing though.

- The silt fences should be monitored daily to ensure that they remain functional throughout the construction of the proposed development. Maintenance of the fences should be carried out regularly. Fences should be inspected thoroughly after periods of heavy rainfall.

Discharge water generated during laying of concrete should be removed off site for treatment and disposal.

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

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

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

- A designated concrete wash out area should be set up on site; typically, this will involve washing the chutes, pumps into a designated IBC before removing the wastewater off site for disposal. These procedures should be covered during a Site Safety & Environmental Induction session.

- Best practice in bulk-liquid concrete management should be employed on site addressing pouring and handling, secure shuttering, adequate curing times etc.
- Stockpile areas for sands and gravel must be kept to a minimum size, well away from the drains and watercourses (minimum 50m).
- Where concrete shuttering is used, measures must be put in place to prevent against shutter failure and control storage, handling and disposal of shutter oils.
- Activities which result in the creation of cement dust must be controlled by dampening down the areas.
- Raw and uncured waste concrete must be disposed of by removal from the site.
- Stockpile areas for sands and gravel will be kept to a minimum size, well away from the watercourse on site.

There should be no disturbances of the habitats along the watercourses within the application site. All vegetation within the 10m buffer zone of the stream must be protected, outside of the point where the box culvert bridge is to be installed. Vegetation within these buffer zone should be retained and enhanced using suitable species and in accordance with any landscaping plan that has been produced for the site.

A separate surface water pipe will cross the central woodland area. This will be situated in a tunnel that is bored under the stream.

5.4.5 Surface Water Monitoring Parameters

In addition to daily visual inspections, a surface water monitoring programme, as outlined in table below must be followed during construction to ensure maintenance of water quality protection. This is in line with Transport Infrastructure Ireland (TII)'s 'Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan'. It is considered that the parameter limit values (Guide/Mandatory) defined in the Fresh Water Quality Regulations (EU Directive 2006/44/EEC) should act as a trigger value for the monitoring of Surface Water.

Parameter	Guide limit	Mandatory Limit	Frequency and Manner of Samplings
Temperature		1.5 ^{0}C	Weekly, and at appropriate intervals where the works activities associated with the scheme have the potential to alter the temperature of the waters.
Dissolved oxygen	50% of Samples ≥ 9 (mg/l O_2) 100% of Samples ≥ 7 (mg/l O_2)		Weekly, a minimum of one sample representative of flow oxygen conditions of the day of sampling
pH		6-9	Weekly
Nitrites	≤0.01 (mg/l $N0_2$)		Monthly
Suspended Solids	≤25 (mg/l)		Monthly
BOD5	≤3 (mg/l)		Monthly
Phenolic Compounds			Monthly where the presence of phenolic compounds is presumed (An examination by test)

Petroleum Hydrocarbons	5 (mg/l)		Monthly (visual)
Non-Ionized Ammonia	≤ 0.005 (mg/l NH_3)		Monthly
Total Ammonium	≤ 0.004 (mg/l NH_4)		Monthly
Total Residual Chlorine		≤ 0.005 (mg/l HOCl)	At appropriate intervals where works activities associated with the scheme have the potential to alter the Total residual Chlorine of the waters
Electrical Conductivity			Weekly

Table 4 | *Monitoring Guidelines (Fresh Water Quality Regulations)*

5.4.6 Construction Traffic Management Plan

A detailed Construction Traffic Management Plan will be prepared and agreed with South Dublin County Council before commencing works on site, which must describe the following (but not limited to):

- Dedicated construction transport routes, which will be identified and agreed upon with South Dublin County Council before the commencement of construction activities on site, following the indication in **Section 4.2** above.
- A dedicated "construction site"' access/egress system to be implemented during the construction phases, in agree with the **Section 4.2** above.
- Manage the entry and exit of heavy vehicles to and from the site, with a detailed description of operations during this time, including the assignment of staff to assist pedestrians and traffic flow during heavy vehicle movements on the roads.
- Define schedules for the entry and exit of materials and machinery to limit the generation of noise on the network to specific time slots.

The contractor will be obliged to ensure that any sub-contractors engaged on the site are made fully aware of the required mitigation measures and that they are properly implemented as part of any works that they undertake

The Contractor shall ensure that all HGVs drivers serving the site receive a toolbox talk, outlining the preferred haul routes and outlining the importance that drivers to adhere to the posted speed limits. Construction workers and other site staff should also receive a toolbox talk, noting that site staff car use should be minimised.

The Main Contractor may elect to provide a shuttle service to and from site, if deemed necessary.

The Main Contractor will be responsible for applying for road opening licences. Any excavation on the public road, including for drainage, water supply and other utility connections, will require a separate Traffic Management Plan.

Special HGVs require an Abnormal Load Permit. The Main Contractor will be responsible for applying for any required Abnormal Load Permit throw South Dublin County Council's Traffic Division.

The Main Contractor will inform local residents and commercial outlets of any traffic disruptions in advance, including prior to road opening for service connections or any dates with an increased number of deliveries scheduled.

5.4.7 Vehicle Washdown

Where possible the permanent connection to the public foul sewer will be used temporarily for the construction phase. Vehicle wash down water will discharge directly, via suitable pollution control and attenuation, to the foul sewer system.

5.4.8 Dust and Dirt Control

Nuisance dust emissions from construction activities are a common and well recognised problem. Fine particles from these sources are recognised as a potentially significant cause of pollution.

The main contractor will be required to demonstrate that both nuisance dust and fine particle emissions from the site are adequately controlled and are within acceptable limits.

Dust and fine particle generation from construction and demolition activities on the site will be substantially reduced through carefully selected mitigation techniques and effective management. Once particles are airborne it is very difficult to prevent them from dispersing into the surrounding area. The most effective technique is to control dust at the source and prevent it from becoming airborne since suppression is virtually impossible once it has become airborne.

The following are techniques and methods which are widely used currently throughout the construction industry, and which may be used in the proposed development.

- The public roads around the site are all surfaced, and no dust is anticipated arising from unsealed surfaces.
- Vehicles travelling on any unsurfaced site roads should have their speed restricted to 20 kph.
- Access gates to the site shall be located at least 10m from sensitive receptors where possible.
- A regime of ‘wet’ road sweeping will be set up to ensure the roads around the immediate site areas are clean and free from dirt/dust arising from the site, as is reasonably practicable. This cleaning will be carried out by approved mechanical sweepers.
- 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 periods of very high winds (gales), activities likely to generate significant dust emissions should be postponed until the gale has subsided.
- Footpaths immediately around the site will be cleaned by hand regularly, with damping as necessary.
- High-level walkways and surfaces such as scaffolding will be clean-up regularly using safe ‘wet’ methods, as opposed to dry methods.
- Vehicle waiting areas or hard standings will be regularly inspected and kept clean by brushing or vacuum sweeping and will be regularly sprayed to keep moist, if necessary.
- Vehicle and wheel washing facilities will be provided at site exit(s) where practicable. If necessary, vehicles will be washed down before exiting the site.
- Netting will be provided to enclose scaffolding to mitigate the escape of airborne dust from the existing and new buildings.

- Vehicles and equipment shall not emit black smoke from the exhaust system, except during ignition at startup.
- Engines and exhaust systems should be maintained so that exhaust emissions do not breach stationary emission limits set for the vehicle/equipment type and mode of operation.
- Servicing of vehicles and plant should be carried out regularly, rather than just following breakdowns.
- Internal combustion plant should not be left running unnecessarily.
- Exhaust direction and heights should be such as not to disturb dust on the ground and to ensure adequate local dispersal of emissions.
- Where possible fixed plant such as generators should be located away from residential areas.
- The number of handling operations for materials will be kept to a minimum in order to ensure that dusty material is not moved or handled unnecessarily.
- The transport of dusty materials and aggregates will be carried out using covered/sheeted lorries. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.
- Material handling areas should be clean, tidy and free from dust.
- Vehicle loading should be dampened down and drop heights for material to be kept to a minimum.
- Drop heights for chutes/skips should be kept to a minimum.
- Dust dispersal over the site boundary should be minimised using static sprinklers or other watering methods as necessary.
- Stockpiles of materials should be kept to a minimum and if necessary, they should be kept away from sensitive receptors such as residential areas etc.
- Stockpiles were necessary, should be sheeted or watered down.
- Methods and equipment should be in place for immediate clean-up of spillages of dusty material.
- No burning of materials will be permitted on site.
- Earthworks excavations should be kept damp where necessary and where reasonably practicable.
- Cutting on-site should be avoided where possible by using prefabrication methods.
- Equipment and techniques for cutting/grinding/drilling/sawing/sanding etc, which minimise dust emissions and which have the best available dust suppression measures, should be employed.
- Hoarding will be erected around site boundaries to reduce visual impact. This will also have the added benefit of preventing larger particles from impacting nearby sensitive receptors.
- Where scabbling is to be employed, tools should be fitted with dust bags, residual dust should be vacuumed up rather than swept away, and areas to be scabbled should be screened off.
- Wet processes should be used to clean building facades if possible. If dry grit blasting is unavoidable then ensure areas of work are sealed off and dust extraction systems used.
- Where possible pre-mixed plasters and masonry compounds should be used to minimise dust arising from on-site mixing.
- Before commencement, the main contractor should identify the construction operations which are likely to generate dust and draw up action plans to minimise emissions, utilising the methods highlighted above. Furthermore, the main contractor should prepare environmental risk assessments for all dust-generating processes, which are envisaged.

- The main contractor should allocate suitably qualified personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
- The name and contact details of a person to contact regarding air quality and dust issues should be displayed on the site boundary, this notice board should also include head/regional office contact details.

The contractor will be obliged to implement the mitigation measures outlined in the EIAR in respect of dust/dirt control, as detailed in the dust mitigation measures set out in the Air and Climate chapter of the EIAR.

5.4.9 Noise Control

The main contractor will deal with the immediate dangers to hearing etc. associated with high noise levels and the impact of same on construction operatives, using risk assessment and mitigation/precautionary measures and equipment, all pursuant to the current health and safety legislation.

The main contractor will carry out a noise assessment in relation to the proposed works at the construction stage. This noise assessment will be carried out by a competent person (or a specialist firm) with specialist training in this area.

The noise assessment should include the following steps:

- Identify and list all construction work activities where there is likely to be a significant noise hazard.
- Determine the hazards/nuisance.
- Identify all third parties likely to be exposed to the nuisance.
- Measuring the risk: The level of noise in dBs
- Considering and Implementing Control Measures.
- Control exposure to noise.
- Record the findings of the noise assessment.
- Review and revise.

The contractor will be obliged to implement the noise mitigation measures set out in EIAR accompanying the application.

5.4.10 Protection of Soils and Groundwater

To preserve the topsoil on the site, topsoil will be removed to stockpiles and protected during the construction period for reuse on completion of the works. Topsoil will be stored in mounds and suitably protected to prevent waterlogging during wet weather. The stripping of topsoil will be undertaken on a phased basis so that no area is stripped until works are imminent in that area. All topsoil stripping associated with the proposed development will be monitored by a suitably qualified archaeologist. During topsoil stripping a written and photographic record describing the form of the townland boundaries to be impacted upon should be included in the monitoring report.

Levels of the proposed roads will be established to minimise the quantity of fill material to be imported to the site. Surplus subsoil will be used for landscaping where possible.

The provision of wheel wash facilities at the construction entrance to the development will minimise the amount of soil deposited on the surrounding road network. The adjoining road network will be cleaned

regularly, if required, to prevent the build-up of soils from the development site on the existing blacktop roads.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages and significant siltation. Suitable bunded areas will be installed for oil and petrol storage tanks. Designated fuel filling points will be put in place with appropriate oil and petrol interceptors to protect from accidental spills. Spill kits will be provided by the Contractor to cater for any other spills.

Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

After implementation of the above measures the proposed development will not give rise to any significant long term adverse impact. Negative impacts during the construction phase will be short term only in duration.

5.4.11 Refuelling

Construction plant and equipment will only be parked overnight within the site compound. Construction plant and equipment will be checked daily for any visual signs of oil or fuel leakage, as well as wear and tear.

Fuel will not be stored on-site for the duration of the construction phase. Fuel will only be brought to the site via mobile fuel bowser. For any liquid other than water, this will include storage in suitable tanks and containers which will be housed in the designated area surrounded by a bund wall of sufficient height and construction to contain 110 percent (110%) of the total contents of all containers and associated pipework. The floor and walls of the bunded areas will be impervious of all containers and associated pipework. The floor and walls of the bunded area will be impervious to both water and oil. The pipes will vent downwards into the bund.

Where Contractors are required to refuel vehicles, this will only be carried out at the designated refuelling location within the site storage compound, which must employ pollution control mechanisms to prevent the escape of fluids to the river. No refuelling is permitted on-site, i.e. within the river or adjacent due to risk of spillage.

The local authority will be informed immediately of any spillage or pollution incident that may occur on-site during the construction phase.

All small plant such as generators and pumps bunded and stood in drip trays capable of holding 110% of their tank contents,

Waste oils, empty oil containers and other hazardous wastes will be disposed of in accordance with the requirements of the Waste Management Act, 1996.

5.4.12 Site Tidiness and Housekeeping

Construction works will be carried out according to a defined schedule agreed with the client and the relevant contractors, with regard to the hours of work outlined above. Any delays or extensions required will be notified at the earliest opportuning to the client and Contractors.

Contractors will ensure that road edges and footpaths are swept regularly.

Any and all waste materials arising during the works will either be immediately taken to a location from which discharge to the existing watercourse or public sewer cannot take place or temporarily stored/covered to prevent washout thereto.

All Contractors will be responsible for the clearance of their plant, equipment and any temporary buildings upon completion of construction. The site will be left in a safe condition.

5.4.13 Monitoring, Inspection and Record Keeping

The Project Ecologist will supervise the sampling of suspended solids downstream prior to commencement of works, and weekly during remediation works. Samples will be analysed on-site. Should results show a 10% increase in suspended solids downstream of the site this will be brought to the attention of the contractor by the Project Ecologist and any suitable contingency measures will be instigated.

Routine inspections of construction activities will be carried out daily by the contractor staff to ensure all controls to prevent environmental impact, relevant to the construction activities taking place at the time, are in place. Environmental inspections will ensure that the works are undertaken in compliance with the Project CEMP and that the requirements of the Conditions of Planning, the NIS and associated documentation are being adhered to during construction.

The Contractor will develop their site inspection programme, which will include an inspection procedure and relevant forms to record any issues.

Only suitably trained staff will undertake environmental site inspections.

The Project Ecologist will keep records of works undertaken.

6. Conclusion

This Construction and Environmental Management Plan (CEMP) has been prepared by Waterman Moylan on behalf of Lagan Homes Ballycullen Limited, who intend to submit a planning application for planning permission for a Large-Scale Residential Development (LRD) in the townland of Woodtown, Ballycullen, Dublin 16.

The report presents a comprehensive evaluation of the various aspects pertaining to the environment impact, including a management of environmental impacts, which sets out typical arrangements and measures to be undertaken during the construction phase of the project to mitigate and minimise disruption/disturbance to the area around the site.

It is important to note that, as is normal practice, the Main Contractor for the project is responsible for the method in which the demolition and construction works are carried out and to ensure that best practices and all legal obligations including Local Authority requirements and Health and Safety legislation are complied with. The main contractor is also responsible for the design and installation of all temporary works required to complete the permanent works. This plan can be used by the Main Contractor to develop their final Construction and Environmental Management Plan. The Applicant reserves the right to deviate from the contents of this report, while still complying with all relevant Local Authority requirements and legislation.

UK and Ireland Office Locations