



Construction Management Plan

Proposed Residential Development Site at Knockrabo Phase 2,
Mount Anville Road, Goatstown

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1. Introduction

Waterman Moylan in conjunction with the applicant have prepared the following Construction Management Plan for the implementation of the construction phase of the proposed SHD development of 227 No. residential apartment units, Phase 2 of the overall Knockrabo Lands development.

The plan sets out typical arrangements and measures which may be undertaken during the construction phase of the project in order 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 Management Plan on site. Separately, AWN consulting has prepared “Operational” and “Construction and Demolition” Waste Management Plans. We refer you to these separate documents with respect to site waste management. We also refer you to AWN consulting’s “Hydrological and Hydrogeological Qualitative Risk Assessment” which has been prepared to assess the potential for any likely significant impacts on receiving waters within protected areas during construction or post development. We also refer you to Arborist Associates Ltd. Arboriculture Report and the required pre-commencement, construction and post construction measures contained within (Stages 1-3, pages 20-25).

This Construction Management Plan is a working document 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 demolition (none projected) 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 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.

2. The Site

The site is in Goatstown, Dublin 14. In this regard, we refer you to the accompanying site location plan 20-086-P100 and *Figure 1* below. It is bounded to the south by Mount Anville Road, to the east by Phase 1 of the overall Knockrabo development, to the southwest by existing allotments including Cedar Mount (a protected structure) and to the north by the reservation corridor for the Dublin Eastern By-Pass (DEBP).

Refer to *Figure 1* for the location of the proposed development.



Figure 1 | Site Location (Google Maps)

The site is a greenfield site that forms part of a broader site on which the construction of Phase 1 has already taken place. Phase 1 to the east of the subject lands comprises a mix of houses and apartments and was granted under Reg. Ref. D13A/0689. The subject lands occupy the western side of this broader Knockrabo site, and as which has an existing grant of planning (D17A/1124) for the development of 93 No. Residential Units and Childcare Facility along with community/leisure facilities and all associated infrastructure. The Knockrabo Way entrance road previously permitted under Reg Ref D17A/1124 is proposed to remain as previously granted.

A topographic survey (OD Malin) of the area indicates that the site naturally falls sharply from south to north. The road level of Mount Anville Road at the entrance to the development is at a level of 76.93m. At the northern end of the proposed site, the low point is at a level of c. 59.60m.

The subject site area is approximately 1.8 hectares. There are several well-established trees and foliage on site.

3. The Proposed Development

The development will consist of:

- Construction of 227 no. residential units in 4 no. separate apartment blocks ranging in height from 2 – 8 storeys including semi-basement podium, comprising of 76 no. 1 bed units, 145 no. 2 bed units and 6 no. 3 bed units.
- Balconies/Wintergardens are provided on all elevations at all levels for the 4 no. apartment blocks, with (Private) Terraces provided at top floor levels and a communal Roof Terrace of c. 198 sq m to be provided on Block F.
- Provision of 389 no. private residential bicycle parking spaces and 130 no. visitor bicycle parking spaces.
- A total of 178 no. residential car parking spaces, which comprises 125 no. residential podium parking spaces and 35 no. residential on-street parking spaces, as well as 16 no. visitor/drop off parking and 2 no. car sharing on-street parking spaces.
- Provision of 537.2 sqm internal tenant amenity space.
- The main vehicular entrance to the scheme will be from Knockrabo Way off Mount Anville Road.
- All other ancillary site development works to facilitate site services, piped infrastructure, 2 no. sub-stations, public lighting, plant, bin stores, bike stores, boundary treatments and hard and soft landscaping.
- The application does not impact on the future access to the Reservation for the Dublin Eastern Bypass.

4. General Site Set Up and Pre-Commencement Measures

A detailed condition survey (including photographs) may be carried out on the roads and footpaths surrounding the site. The purpose of the survey would be to record the condition of the streets and footpaths around the site prior to the works commencing.

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

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 DLRCC technical divisions and utility companies.

Similarly, prior to any works taking place, the contractor must take note of the Arboriculture Report and the associated necessary pre-commencement measures contained within.

Typical working hours for the site would be 08.00 to 19.00 Monday to Friday and 08.00 to 14.00 Saturday. No Sunday work will generally be permitted. The above working hours are typical; however, special construction operations may need to be carried out outside these hours in order to minimise disruption to the surrounding area.

5. Site Security and Hoarding Lines

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

Prior to construction commencing on site, a detailed traffic management plan will be prepared and submitted by the appointed contractor to Dun Laoghaire-Rathdown County Council.

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

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

6. Construction Traffic Routes

The site is located adjacent to Mount Anville Road, a regional route (R112). This regional route links with the Drummartin Link Road, approximately 400m to the west of the development entrance. To the east (c. 1.5km), Mount Anville Road links with the National Primary Route, the N11 Stillorgan Road which is the main route from Dublin to the southeast. The Drummartin Link Road connects with junction 14 of the M50, c 2.5km to the south.

Proposed Construction Access routes No. 1 to the proposed development is from the M50 via the Drummartin Link Road, turning left into the site off Mount Anville Road. Proposed Construction Access No. 2 is via the N11 and the R112, turning right into the site off Mount Anville Road. All construction traffic will exit the site turning left or right onto Mount Anville Road and then subsequently onto the N11 or the M50.

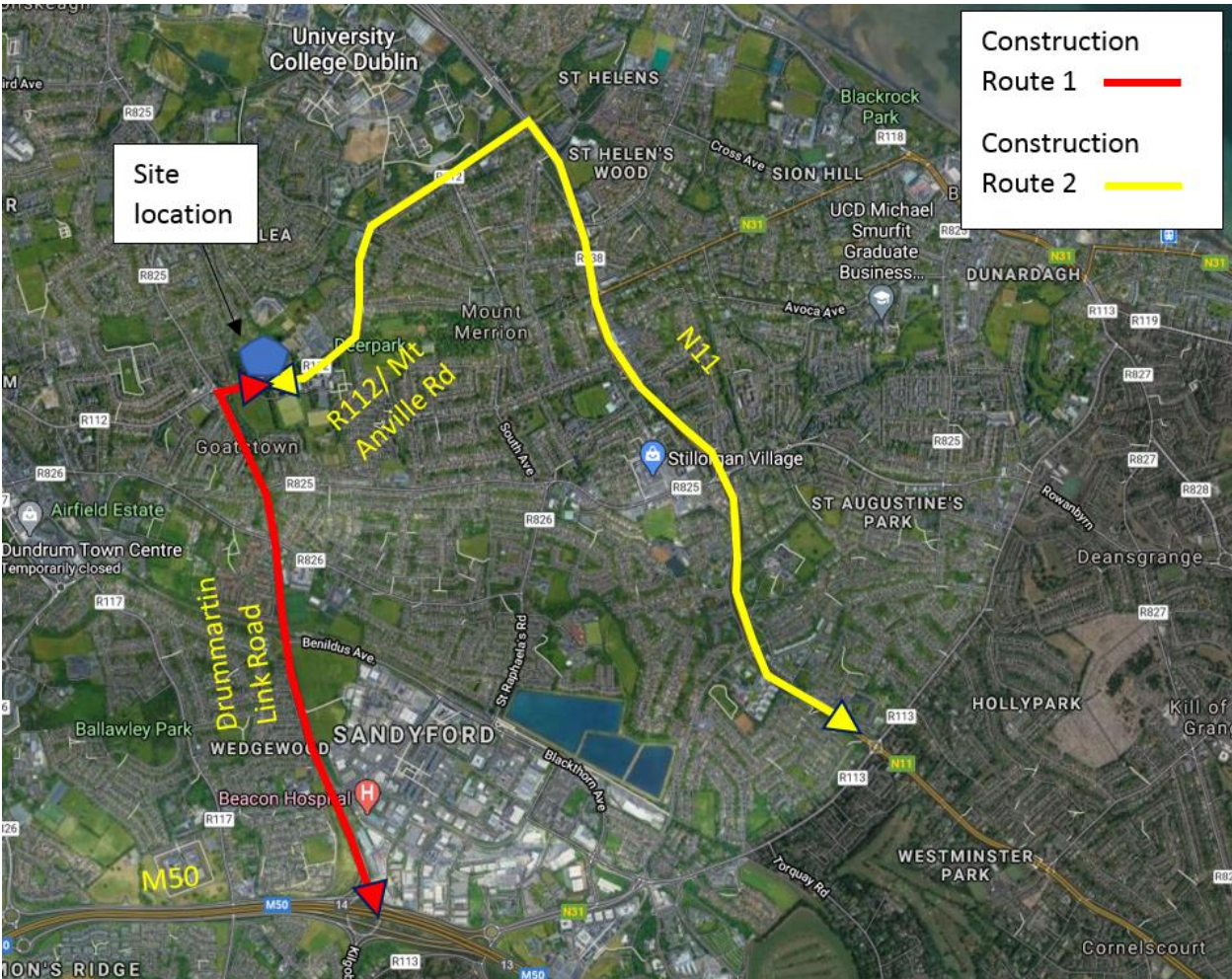


Figure 2 | Traffic Management Plan

A restriction on using any of the surrounding residential roads will be put in place.

Construction access to the site will be through the entrance road Knockrabo Way, off Mount Anville Road. 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 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 operation of local traffic.
- Use of banksman and / or traffic lights to control exit of construction vehicles; and
- No construction traffic waiting on the public roads.

7. Deliveries

Deliveries and access to the construction site as described in section 6 above.

If 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 and will then be called in by radio as appropriate to the site, via a pre-determined route and to the required access gate.

The number of construction vehicle movements is low compared to the number of trips expected to be generated by the proposed development during the operational phase. It should be noted that most of such vehicle movements would be undertaken outside of the traditional peak hours, and it is not considered that this level of traffic would result in any operational problems.

Care will be taken to ensure existing pedestrian routes are suitably maintained as necessary during the construction period, and temporary car parking is provided within the site for contractor's vehicles.

It is proposed that a Construction Management Plan (CMP) would be prepared by the appointed contractor to minimise the potential impact of the construction phase of the proposed development on the safety and amenity of other users of the public road. The CMP will consider the following aspects:

- Wheel wash to be provided for vehicles leaving the site when earthworks are being carried out during winter periods.
- Ensure that deliveries to the site and removal of spoil material from this site are restricted to off peak periods where possible and practicable.
- Optimise routes to be used by heavy vehicles and detail construction traffic forecast.
- Determine the working hours of the site.
- Facilities for loading and unloading and;
- Facilities to parking cars and other vehicles.

Set procedures and designated wash-out areas will be provided, or alternatively vehicle wash-out will be prohibited if a suitable wash-out area is not identified.

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

All large pours will be carefully co-ordinated with the roads department at Dun Laoghaire-Rathdown County Council.

8. Parking and Storage

A small amount of parking will be available on site. These will be managed by the contractor to ensure access to the existing Phase 1 of the development always remains clear. The site is served by public transport including Dublin Bus, as well as the LUAS Dundrum stop approximately 1.6km from the site. Site management will organise additional off-site parking and shared car arrangements if required.

For those who wish to cycle to and from the development, dedicated cycle parking will be provided for the duration of the works within the site. Shower facilities and lockers will also be provided, and cycle links will be always maintained.

A Construction Stage Mobility Plan will be prepared by the contractor alongside the Construction Management Plan before starting on site.

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

9. Hours of Operation

9.1 County Development Plan

9.1.1 Construction Management Plans

Section 8.2.4.14: *Construction Management Plans* of the DLRCC County Development Plan, 2016 – 2022 refers to Construction Management Plans as follows:

The CMP will address issues such as traffic management, hours of working, delivery times, prevention of noise and dust, reinstatement of roadway lining and signing, repair of damage to footways and grass verges and the accommodation of worker parking within the development curtilage. Hours of construction and deliveries should normally be in accordance with the guidance set out in Section 8.2.9.5.

9.1.2 Hours of Construction

In the absence of a Construction Management Plan approved by the Planning Authority, Section 8.2.9.5 of the DLRCC County Development Plan, 2016 – 2022 sets out policy in relation to Hours of Construction as follows:

- Site development and building works shall be restricted to 8.00am to 7.00pm Monday to Friday and 8.00am to 2.00pm Saturday. Deviations from these times will only be allowed in exceptional circumstances and should be sought at the time of making a planning application.
- No works shall take place on site on Sundays or Bank Holidays.
- No activity, which would reasonably be expected to cause annoyance to residents in the vicinity, taking place on site between the hours of 7.00pm to 8.00am.
- No deliveries of materials, plant or machinery taking place before 8.00am in the morning or after 7.00pm in the evening.

It will be noted that these times are guidelines only and in certain circumstances, it may be necessary for construction works to take place outside these hours.

9.2 Proposed Working Hours

The proposed working hours for the development of the site are set out below: -

- Monday - Friday : 08h00 – 19h00
- Saturday : 08h00 – 14h00

9.3 Mitigation Measures

In order to mitigate the impact of construction activities both during and after trading hours, the following measures are proposed:

- Scheduling of deliveries to avoid interference with the peak hour of traffic movement from the Knockrabo development and Mount Anville school opposite;
- Co-ordination of deliveries to site with adjoining developments;
- Scheduling of noisier activities as early as possible;
- Noise mitigation measures as Section 10.3 of this Plan; and
- Vibration mitigation measures as per Section 10.4 of this Plan.

In addition, the management at the Knockrabo site will implement a program of consultation for businesses and the community including advance notification of works.

10. Control of Noise & Vibration

10.1 County Development Plan 2016 – 2022

Section 8.2.9.2: *Noise Pollution* of the County Development Plan 2016 – 2022 notes that

The Planning Authority will use the Development Management process for larger developments;

To require developers to produce a Sound Impact Assessment and Mitigation Plan where deemed necessary, for any new development that the Planning Authority considers will impact negatively on pre-existing environmental sound levels.

10.2 Existing Noise Sources

During daytime periods, the dominant source of noise in the area of Knockrabo is traffic on the adjacent road network and local construction activity.

The night-time noise levels are predominantly attributed to traffic noise on the local road network.

10.3 Construction Noise Management

In the absence of any statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project, it is proposed that the construction works will incorporate:

- Best practice measures relating to the control and minimisation of as set out in BS 5228 (2009) Parts 1 and 2 noise during all phases of the work.;
- Selection of quiet plant including proprietary acoustic enclosures to compressors and generators;
- Control of noise sources including reduction of resonance effects by stiffening and / or the application of damping compounds to panels and / or cover plates;
- Control of rattling and grinding noises by fixing resilient materials between the contact surfaces.
- Screening by demountable enclosures;
- The siting of mechanical plant as far away from residential areas as possible; and
- Regular maintenance of all plant;

Ref: British Standard BS 5228 (2009): Code of Practice for Control of Noise and Vibration on Construction and Open Sites Part 1: Noise.

10.4 Construction Vibration Management

In the absence of any statutory Irish guidance relating to the maximum permissible vibration level that may be generated during the construction phase of a project, it is proposed that the construction works will incorporate:

- Selection of quiet plant with low vibration emissions;
- Provision of anti-vibration mounts on reciprocating plant;
- Limitation of vibration from construction activities to the levels recommended in BS 5228;
- Strip and pad foundations in lieu of piling;
- Materials to be lowered rather than dropped; and
- Resilient materials to be provided on surfaces onto which materials are being lowered.

Ref: British Standard BS 5228 (2009): Code of Practice for Control of Noise and Vibration on Construction and Open Sites Part 2: Vibration.

11. Development Control Measures for Developments Adjacent to DEBP Route Corridor

11.1 Introduction

The Corridor Protection Study for Dublin Eastern Bypass was prepared to assist Local Authorities in their deliberations on planning applications by establishing guidelines for developments near or adjacent to the proposed route corridors. These guidelines have been prepared with a view to permitting certain development of the adjacent lands without undermining the future deliverability of the motorway scheme.

11.2 Principal Issues

The Dublin Eastern Bypass Corridor Protection Study discusses several principal issues and suggested control measures for developments adjacent. The principal issues are outlined below:

- (a) Possible noise, vibration, and air impacts to be mitigated during construction and operational phases. This will take account of exceptional activities that will arise on the Eastern Bypass project such as rock breaking in granite.
- (b) Appropriate access provision to the Eastern Bypass construction site for haulage vehicles, especially in the context of large volumes of excavated material to be removed. Provisions to minimise segregation by the route in future.
- (c) Proximity to mainline alignment, allowing some flexibility for future optimisation to the mainline design.
- (d) Specific considerations where retaining walls are proposed along the Eastern Bypass route.
- (e) Service diversions to be included in development proposals to remove future obstacles to construction of the Eastern Bypass.
- (f) Open Space Provision
- (g) Visual impact
- (h) Soil Disturbance
- (i) Groundwater Considerations
- (j) Public Awareness

11.3 Proposed Development Measures

The following proposed development measures addresses each of the above suggested control measure items (a)-(j).

- (a) To address the above referenced noise and vibration, air impacts of the DEBP on the proposed development site, we refer to AWN's accompanying "Noise and vibration assessment of the development site", supplied under separate cover.
- (b) There exists an extent of lands immediately east of the proposed subject site, that is subject to future licence agreement with Dun Laoghaire Rathdown County Council to facilitate the provision of a Construction Access Road to the Dublin Eastern Bypass. This construction access road reservation is to remain. It is not proposed to alter this reservation as part of this subject application. We refer you to the road layout drawings that accompany this submission and identify this reservation. The construction access way follows the alignment of the previously permitted (D17A/1124) 'Knockrabo Way' entrance road the Knockrabo development.

(c) The subject lands abut the southern side of the reservation corridor. Public Open space is proposed at the northern end of the subject proposed development, adjacent the DEBP corridor. In this regard, this affords some space between the proposed Bypass corridor and the proposed development structures. The corridor adjacent the development is free of structure and greenfield, so it can be reasonably assumed that this section is particularly defined in route due to its greenfield nature, and will not be subject to revision.

The route reservation and DEBP site access route as discussed in item b) above are defined on the road layout drawings that accompany this submission

(d) The proposed development does not impinge upon the cut slopes as defined in the corridor route map, that range in width from c. 14m – 17m adjacent the subject lands. The development design follows the natural terrain of the subject lands with lands falling north to south to tie in with existing levels on the boundary adjoining the DEBP corridor. Given the available cut slope space adjacent the development and the design intent, retaining walls are not proposed adjacent the Eastern Bypass route in this location, consistent with adjacent Phase 1 of the Knockrabo site.

(e) The infrastructure servicing of the proposed development does not propose to encroach on the corridor of the Dublin Eastern Bypass. We refer to you to the accompanying infrastructure drawings that are included as part of this submission.

(f) Open space provision for the development is afforded within the proposed development site boundary and outside of the route corridor. In this regard, we refer you to the Landscape Architect proposals that accompany this submission

(g) We refer you to the architectural and landscape architect layout, submission and contextual elevations in this regard. It is noted that Winter Gardens have been provided to the facades most exposed to noise from the proposed DEBP

(h) The subject development is adjacent a proposed open cut section of DEBP and given the available space for cut slopes as described in section d) above and the proposals to tie in with existing ground levels at the boundary, soil disturbance to the Eastern Bypass scheme is not proposed to be impacted by the proposed development.

(i) The proposed development consists of apartment blocks and infrastructure installed to match existing topography as much as is reasonably practical. The ground floor of each apartment block will provide podium level parking that has the potential to locally interact with the groundwater table. It is not considered at this stage that the development will have any significant impact upon local groundwater levels.

(j) Owners and occupiers of the subject development adjacent the proposed route corridor shall be made aware of the possible future provision of the Eastern Bypass Motorway Scheme, including advice relating to the possible noise, vibration and air impacts associated with the Dublin Eastern Bypass motorway. The above recommendation shall be actioned as appropriate by the developer.

12. Environmental Effects

12.1 County Development Plan 2016 – 2022

Section 8.2.9.7: *New Developments – Environmental Impacts* of the Dun Laoghaire Rathdown County Development Plan 2016 – 2022 requires that:

Applications for developments of greater than 50+ residential units shall:

- Make provision for composting and recycling;
 - Incorporate, where appropriate, local 'Bring Centres' into development layouts for recyclable materials into development layouts;
 - Include an assessment of the impacts of climate change on their development and make provision for these impacts in particular relating to drainage design;
 - Be generally designed and constructed in accordance with the provisions of the Greater Dublin Strategic Drainage study policy document entitled 'New Development'; and
 - Applications for developments with a roof area greater than 300 sqm shall make use of 'Green Roofs' (and/or living walls) in accordance with Dun Laoghaire Rathdown County Council Green Roofs Guidance document (2014).
- Applications for all developments shall incorporate:
 - An integrated approach to waste management – to include wastes generated during the construction phase of development as well as the operation and maintenance phases – having particular regard to 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects' (2006).
 - Designs and layouts for basements and underground car parks that do not result in any potential for them to flood from within or without with particular emphasis on venting arrangements and access ramps.
 - Sustainable Drainage Systems (Suds) that balances the impact of urban drainage through the achievement of control of run-off quantity and quality and enhances amenity and habitat. The requirements of the UK's Construction Industry Research and Information Association (CIRIA) 'SuDS Manual' shall be followed unless specifically exempted by the Planning Authority
 - Waste storage facilities that are suitably located and designed and shall meet accessibility requirements in accordance with Part M of the Building Regulations.
 - Waste storage facilities that can be easily accessed by waste collection providers and not located in areas where they cannot be serviced i.e. where height restrictions may pose difficulties for service vehicles.
 - Commercial waste storage areas/bins that are securely locked and allocated on a tenant-by-tenant basis to avoid contamination.
 - Access to private waste storage areas

12.2 Measures to Minimise Nuisance

The measures to be operational at this site will include:

- Use of properly designed access and egress points to minimise impact on both external traffic and amenity of residents;
- Check on each departing vehicle at exit from site to public road;

- Use of banksman and/or traffic lights to control exit of construction vehicles onto public road;
- Contractor to explore possibility of controlled off-site HGV holding area where deliveries are called up as required, to ensure HGV's are not waiting outside site;
- Issue of instructions and maps on getting to site to each sub-contractor to avoid 'lost' HGV's disrupting traffic;
- Establishment and maintenance of HGV holding areas within the site;
- Ongoing assessment of the most appropriate routes for construction traffic to and from the site;
- Interface with operation of HGV traffic from adjacent railway and port terminals; and
- Restriction of work hours to industry standard working hour.

12.3 Site Control Measures

The designated and operational on-site control measures, which will be established and maintained at this site, will include:

- Designated hard routes through site;
- Each departing vehicle to be checked by banksman;
- Wheel wash facility at egress point;
- Provision and facilities to cover lorry contents as necessary;
- Controlled loading of excavated material to minimise risk of spillage of contents;
- Spraying/damping down of excavated material on site by dedicated crews;
- Use of known routes for lorries to monitor impact on local area; and
- Facility to clean local roads if mud or spillage occurs.
- Hazardous materials to be stored in a designated area on site with appropriate drip trays/bunding and fire extinguishers to contain any spillages.

12.4 Control of Dirt and Dust

The main consideration will be to combat dirt and dust at source so as not to let it adversely affect the surrounding areas. The objective will be to contain any dirt or dust within the site, which is large enough for comprehensive control measures.

The main problems, which may arise during the early part of construction, will be controlled by the measures described above and by the following measures:

- The use of hardcore access route to work front;
- A regime of 'wet' road sweeping can be set up to ensure the roads around the immediate site are as clean and free from dirt / dust arising from the site, as is reasonably practicable. This cleaning will be carried out by approved mechanical sweepers.
- Footpaths immediately around the site can be cleaned by hand regularly, with damping as necessary.
- High level walkways and surfaces such as scaffolding can be cleaned regularly using safe 'wet' methods, as opposed to dry methods.
- Vehicle waiting areas or hard standings can 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 can be provided at site exit(s) where practicable. If necessary, vehicles can be washed down before exiting the site.

- Netting can be provided to enclose scaffolding in order to mitigate escape of air borne dust from the demolition (none projected).
- Vehicles and equipment shall not emit black smoke from exhaust system, except during ignition at start up.
- 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 should be carried out using covered / sheeted lorries.
- 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 where 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 pre-fabrication methods to facilitate any temporary works that may be required to enable the demolition (none projected).
- Equipment and techniques for cutting / grinding / drilling / sawing etc, which minimise dust emissions and which have the best available dust suppression measures, should be employed.
- Prior to commencement, the main contractor should identify the demolition operations (none projected) which are likely to generate dust and to 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.
- Demolition works (none projected) to incorporate water spray to reduce dust.

12.5 Water

The excavations for the podium level parking, drainage pipes, water supply, utilities and foundations do have potential to impact the ground water in the site.

Should groundwater be encountered, the contractor shall develop an appropriate dewatering scheme to keep the podium/excavations free from water and ensure the quality of water leaving site is high.

During any discharge of surface water from the basement/excavations, the quality of the water will be improved through the provision of settlement tanks and will be regularly monitored visually for hydrocarbon sheen and suspended solids. Periodic laboratory testing of discharge water samples will be carried out in accordance with the requirements of Dun Laoghaire-Rathdown County Council before discharge to the surrounding drainage network.

Appropriate discharge licenses will be acquired from Dun Laoghaire-Rathdown County Council in respect of discharges from dewatering operations.

We also refer you to AWN consulting's "Hydrological and Hydrogeological Qualitative Risk Assessment" prepared under separate cover which concludes the following with respect to the potential for any likely significant impacts on receiving waters within protected areas during construction or post development:

"A conceptual site model (CSM) has been prepared following a desk top review of the site and surrounding environs. Based on this CSM, plausible Source-Pathway-Receptor linkages have been assessed assuming an absence of any measures intended to avoid or reduce harmful effects of the proposed project (i.e. mitigation measures) in place at the proposed development site.

There is no direct source pathway linkages between the proposed development site and open water (i.e. South Dublin Bay SAC/pNHA and South Dublin Bay and River Tolka SPA). There are indirect source pathway linkage from the proposed development through public sewers which discharge to the Elm Park Stream which ultimately outfalls into Dublin Bay (2.7 km downgradient of the site). There is also an indirect connection through the foul sewer which will eventually discharge to the Ringsend WWTP and ultimately discharges to Dublin Bay. The future development has a peak foul discharge that would equate to 0.063% of the licensed discharge at Ringsend WWTP (peak hydraulic capacity).

It is concluded that there are no pollutant linkages as a result of the construction or operation (without mitigation) of the proposed development which could result in a water quality impact which could alter the habitat requirements of the Natura sites within Dublin Bay.

Finally, in line with good practice, measures are included during construction to minimise the potential for any accidental releases off site. During operation, the potential for an impact to ground or storm water is negligible and there are design measures incorporated within the proposed development to manage stormwater run-off quality. These specific measures will provide further protection to the receiving soil and water environments. However, the protection of downstream European sites is in no way reliant on these measures."

13. Proposed Construction and Phasing Programme

13.1 Construction Program

At the time of preparing this edition of this Plan in October 2021, the planning application for the proposed redevelopment is being prepared for a formal SHD submission to An Bord Pleanála.

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 24 months, commencing in 2022 with completion in 2024.

14. Construction Surface Waste Management Plan

The following Construction Surface Waste Management Plan for the proposed development has been prepared to ensure all significant elements of the construction works with potential to cause significant environmental effects particularly in relation to surface water runoff will be managed in accordance with relevant environmental requirements and best practice. The CSWMP shall detail how all significant elements of the construction works with potential to cause significant environmental effects will be managed. The scope of the CSWMP shall include but not be limited to:

i. surface water runoff management measures

ii. monitoring - including appropriate trigger levels and remedial actions

iii. reporting proposals.”

The report sets out to demonstrate how pollution of watercourses during and after the construction period will be prevented and/or mitigated.

14.1 Surface Water Impacts

Surface water run-off from surface 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; and
- Concrete/cementitious products: arising from construction materials.

These pollutants pose a temporary risk to surface water quality for the duration of the project if not properly contained and managed.

14.2 Mitigation Measures

The following Mitigation Measures are to address potential impacts to water quality and are required to protect the downstream existing surface water network within Phase 1 of this development. 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.

The schedule of mitigation presented within *Table 1* summarises measures that will be undertaken in order 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 at a location at least 50m from any body of water. Bunds are to be provided with 110% capacity of 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 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 ground water	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 banded 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 1 | Schedule of Surface Water Mitigation Measures

14.3 Management of Environmental Impacts

Construction is envisaged to commence once final planning permission has been obtained. It is anticipated that the development will be constructed over a period of 24 months.

The proposed potential pollution mitigation measures outlined below will be implemented in accordance with 'CIRIA C532 – Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors' – CIRIA-2001.

14.4 Roles and Responsibilities

14.4.1 Main Contractor

The main Contractor will have overall responsibility for the implementation of the project Construction Surface Water Management Plan (CSWMP) 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 CSWMP. At the operational level, a designated person from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the operations stated in the CSWMP are performed on an on-going basis.

Copies of the Construction Surface Water 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 CSWMP 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 CSWMP 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 CSWMP
- Provide toolbox talks and other training, and ensure understanding by all involved of all mitigation measures;
- Assess effectiveness of mitigation, check weather forecast and site conditions where trigger levels are required;
- Ensure adherence to the specific measures listed in the Planning Conditions;
- Advise upon 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; and,
- Be responsible for maintaining all environmental related documentation.
- Ensure plant suggested in environmentally suited to the task in hand;
- Co-ordinate 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 risk of environmental damage exists;

14.5 Pre-Construction Plan

14.5.1 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 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 provide protection from accidental spills. Spill kits will be provided by the Contractor to cater for any other spills.

14.6 Construction Plan

14.6.1 Vehicle Washdown

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

14.6.2 Surface Water Run-off

On-site treatment measures will be installed to treat surface water run-off from the site prior to discharge to the receiving surface water sewer. This treatment will be achieved by the construction of cut off trenches along the lowest parts of the site. Cut off trenches will incorporate straw bales to reduce sediment loading, settlement tanks/ponds, the installation of proprietary surface water treatment systems including class 1 full retention petrol interceptors and spill protection control measures. Settlement tanks/ponds will be sized to deal with surface run-off and any groundwater encountered. All measures will be approved prior to commencement with the Pollution Section of DLRCC.

A sampling chamber with shut down valve will be installed downstream of the settlement pond/tank and water quality monitoring will be carried out here prior to discharge to the surface water sewer within adjacent constructed Phase 1 and subsequently to the nearby watercourse.

14.6.3 Surface Water Monitoring Parameters.

In addition to daily visual inspections, a surface water monitoring programme, as outlined in *Table 2* must be followed during construction in order 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 °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 \geq 9 (mg/l O ₂) 100% of Samples \geq 7 (mg/l O ₂)		Weekly, minimum one sample representative of flow oxygen conditions of the day of sampling
pH		6-9	Weekly
Nitrites	\leq 0.01 (mg/l NO ₂)		Monthly
Suspended Solids	\leq 25 (mg/l)		Monthly
BOD5	\leq 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	\leq 0.005 (mg/l NH ₃)		Monthly
Total Ammonium	\leq 0.004 (mg/l NH ₄)		Monthly
Total Residual Chlorine		\leq 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 2 | Monitoring Guidelines (Fresh Water Quality Regulations)

UK and Ireland Office Locations

