Waterman Moylan
Engineering Consultants

Preliminary Construction Management Plan

Phase 2 Proposed Development at Tandy's Lane Village, Adamstown, Co. Dublin

April 2022

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Comments

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1. Introduction

Waterman Moylan in conjunction with the applicant have prepared the following preliminary Construction Management Plan for the implementation of the construction phase for **Phase 2** of a proposed residential development at Tandy's Lane Village, located within the Adamstown Strategic Development Zone (**ASDZ**), Co. Dublin.

This report has been prepared as part of a planning application for the development that comprises of 352 No. residential units (terraced and detached). This application is being made in accordance with the Adamstown Planning Scheme 2014, (as amended) and relates to a proposed development within the Adamstown Strategic Development Zone Planning Scheme.

No previous planning permission has been granted for this site.

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 Management Plan on site.

This Construction Management Plan 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 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 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. Site Location and Description

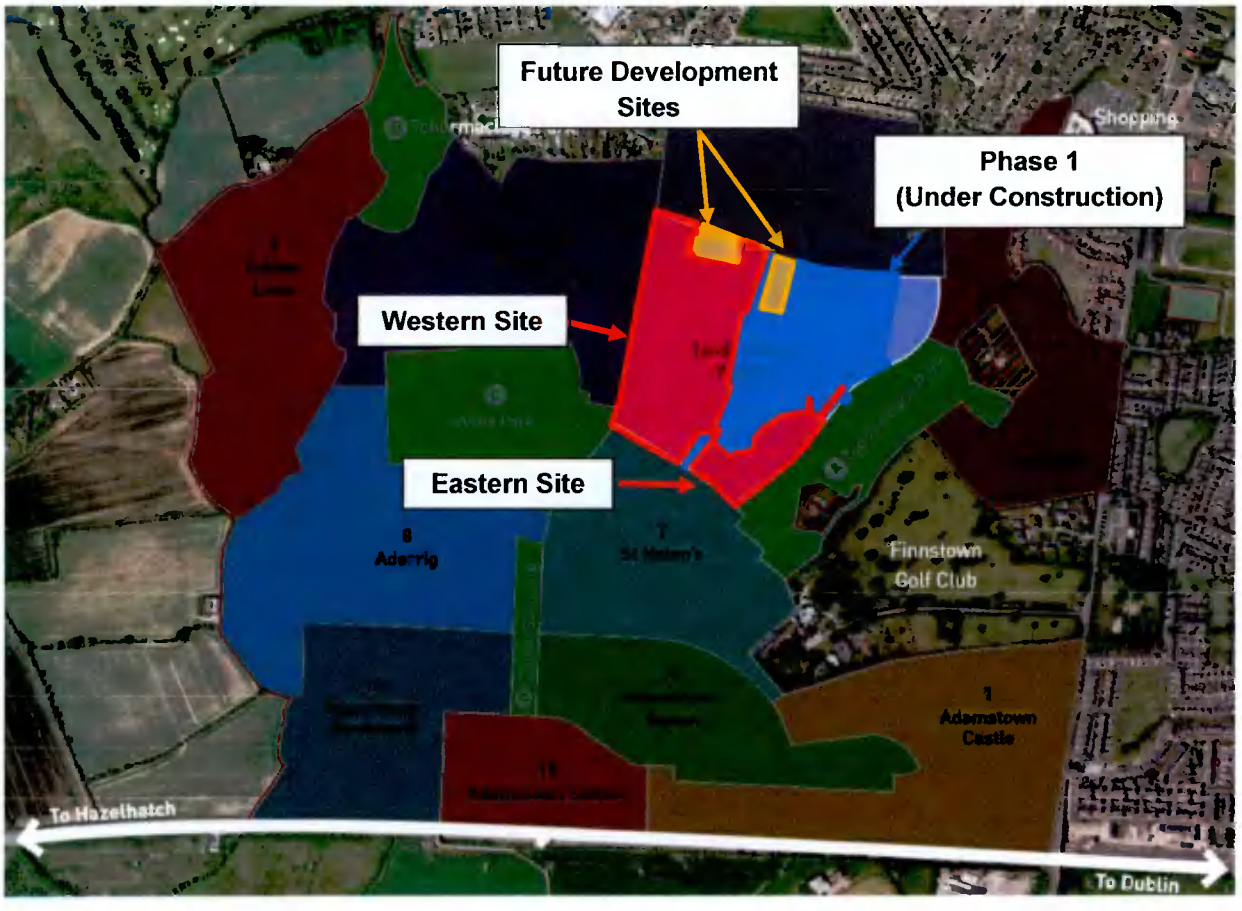
2.1 Site Location

The development lands are located within the Tandy's Lane Village Development Area 6 of the Adamstown Strategic Development Zone (ASDZ) and is situated 2 No. sites separated by the permitted Tandy's Lane Phase 1 Development (SDCC Reg. Ref. SDZ19A/0011) with a total site area of c. 10.24 hectares at Tandy's Lane, in the townlands of Doddsborough and Finnstown, Adamstown, Lucan, Co. Dublin.

The western site (8.06 hectares) is generally bounded to the west by Adamstown Boulevard, to the north by Adamstown Drive (L1030), to the east by the Tandy's Lane Phase 1 Development which is currently under construction (SDCC Reg. Ref. SDZ19A/0011) and undeveloped lands, and to the south by Tandy's Lane which links Adamstown Boulevard with Adamstown Park Road.

The eastern site (2.18 hectares) is generally bounded to the west / north-west by the permitted Tandy's Lane Phase 1 Development, to the east by Adamstown Park Road and to the south by Tandy's Lane.

Figure 1: Tandy's Lane Village Development Location



2.2 Existing Development

The total surfaced area of the proposed development, including roads, roofs, and other paved areas is approximately 10.24 Ha.

The site is currently green field with a site compound located in the northwest corner that was used during the construction of the surrounding roads. The lands generally slope from south to northwest with ground levels of between +48.00m and +55.50m OD Malin.

2.3 Proposed Construction Works

The development will principally consist of: the construction of 352 No. residential units (terraced, semi-detached and detached) comprising 253 No. two storey houses (15 No. two bed units and 238 No. three bed units ranging in size from c. 87 sq m to c. 118 sq m) and 99 No. three storey houses (18 No. three bed units and 81 No. four bed units and ranging in size from c. 147 sq m to c. 171 sq m). The total gross floor area of the development is c. 43,272 sq m.

The development will also comprise the provision of 2 No. vehicular accesses from Adamstown Boulevard, 1 No. vehicular access from Adamstown Drive (L1030), 2 No. vehicular accesses from Adamstown Park Road and 2 No. vehicular accesses from Tandy's Lane; vehicular connections will also be provided to permitted roads in Tandy's Lane Phase 1; internal routes; 535 No. car parking spaces including on-curtilage and off-curtilage spaces; bicycle parking; bin storage; plant; ESB Substations; boundary treatments; lighting; hard and soft landscaping; and all other associated site 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.
- Construction of infrastructure including access road, footpaths, drainage, and services.
- Provision of road upgrades and pedestrian links.
- The proposed development comprises of 352 No residential units located on 10.24 hectares. The proposed development includes for all associated infrastructure necessary to service these units. This includes a network of foul water and storm water pipes, watermains, services and a network of roads and footpaths.

3. General Set up and Pre-Commencement Measures

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

1. A full condition survey of the public infrastructure that will be utilised or affected by construction traffic, prior to 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.

2. 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 (SDCC) technical divisions and utility companies.
3. The developer will appoint a Project Manager to manage the construction process on site.
4. 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.
5. 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.

3.1 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 construction of the new realigned entrance to the site. Prior to construction commencing on site, a detailed construction traffic management plan will be prepared and submitted by the appointed contractor to SDCC.

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.

3.2 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.

3.3 Hours of Working

Working hours for the site will be in accordance with the planning permission conditions. Typically, 07:00 to 19:00 Monday to Friday and 09:00 to 13:00 Saturday. No Sunday or Bank Holiday work is generally permitted. Special construction operations may need to be carried out outside these hours to minimise disruption to the surrounding area, which will be subject to agreement with the Planning authority.

Weather restrictions may apply, i.e., no cement pouring during heavy rainfall.

4. Deliveries, Site Access, and Construction Routes

Access to the construction site of the western portion of the site will be provided by Adamstown Drive/L1030. Access to the construction site of the eastern portion of the site will be provided by Adamstown Park which is accessible from Adamstown Drive/L1030. Adamstown Drive/L1030 linked the site to the R120/Newcastle Road to the east and ultimately the N4 to the north. Figure 2 on the following page illustrates the proposed construction traffic routes.

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

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.

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.

A detailed Construction Management Plan will be prepared by the contractor prior to 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 site.
- Unloading areas.
- Site Offices and welfare facilities.
- Material Storage areas; and
- Banksmen Locations.

Materials will be ordered and delivered to site on an "as needed" basis to prevent over supply 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 co-ordinated as required at the relevant access point.

Figure 2: Construction Traffic Routes

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, refer to section 4.5 for more details.

The Main Contractor will ensure that surface and ground waters are protected from contamination by stored materials.

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 South Dublin County Council.

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.

4.1 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 also served by public transport with a Dublin Bus stop at the north-western corner to the development.

No parking of construction related vehicles will be permitted on the adjoining road network (Adamstown Park, Tandy's Lane, L1030/Adamstown Drive).

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.

5. Construction and Demolition Waste Management

5.1 Policy and Legislation

The principles and objectives to deliver sustainable waste management for this project have been incorporated in the preparation of this report and are based on the following strategic objectives: -

- National Policy: The Waste Management Acts 1996 to 2005
- Local Policy: Waste Management Plan for the Dublin Region 2005 – 2010, November 2005.

This Waste Management Plan is also in accordance with the following guidance note published by the Department of the Environment, Heritage, and Local Government in July 2006: -

- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition (C&D) Projects.

The hierarchy of waste management sets out the guiding principles in order of importance as follows: -

1. Reduction of the amount of waste generated by the construction process.
2. Segregation of waste is a key concept that will be implemented during the construction phase of the development to enable ease in re-use and recycling, wherever appropriate.
3. Recycle waste material where feasible, including the use of excess excavations as fill material, recycling of various waste fractions such as metals and packaging etc.

This framework is the guide by which we will manage waste generated on this project. The concept ranges from the 'Most favoured to the least favoured options, as follows:

- **Prevention** - This proposes the prevention of generation of waste. This entails an efficient method of management of the construction processes to prevent, where possible, the generation of waste in the first instance.
- **Minimisation** - Reducing the quantities of waste generated where prevention is not fully possible.
- **Re-use of materials** where that may be possible. Example would be the re-use of excavated materials as fill materials elsewhere within the Adamstown SDZ Project.
- **Recycling** - There will be some timber waste generated on this project and such material will be segregated so that it can be removed and recycled by licenced operators.
- **Energy Recovery** - Waste generated will be segregated for licenced operators to utilise this method in keeping with the characteristics of the material in question.
- **Disposal** - By following the hierarchy noted above we will ensure that any disposal will be minimised and managed in a controlled way.

5.2 Typical Construction Waste

Typical construction waste which will be generated by the development is as follows; -

- General site clearance waste including tree stumps etc.

- There is no known contaminated soil present on the site but if the contamination is discovered during construction the excavated material will be required to be disposed of in a licensed landfill site.
- Surface water runoff.
- Packaging and waste construction materials generated during the construction activities.

5.3 On-Site Construction Waste Management

It is estimated that all cut, and fill operations and any other excavation will be balanced in terms of quantities. All arisings and surplus materials generated will be utilised elsewhere in the ASDZ and disposal of off-site (to permitted/licensed facilities) will be kept to a minimum, please refer to section 5.4 below.

All waste concrete and masonry will be stored and if appropriate will be crushed on site and used for site haul roads in later stages of the project.

Skips will be provided for the disposal of wood from the site. It is envisaged that most of the wood for disposal will come from pallets used for the transport of construction materials.

Other non-hazardous waste generated by the site (packaging and running of site offices) will be collected in separate roll-on skips.

Any hazardous material encountered will be disposed of to a suitably licenced tip.

The Purchasing Manager will ensure that materials are ordered so that the quantity delivered, the timing of the delivery and the storage is not conducive to the creation of unnecessary waste.

C & D Waste Material	Quantity (tonnes)
Clay and stones	*Minimum anticipated. Arisings will be used as fill and landscaping on the site.*
Concrete & Masonry	*Minimum anticipated. Arisings will be crushed and used as site haul roads.*
Masonry	*Minimum anticipated. All arisings will be crushed and used as site haul roads.*
Wood	*To be Completed by C&D Waste Manager*
Packaging & Other Waste Materials	*To be Completed by C&D Waste Manager*
Hazardous Materials	*To be Completed by C&D Waste Manager*
TOTAL ARISINGS OFF-SITE	*To be Completed by C&D Waste Manager*

Table 1: Estimated C&D Waste Arisings on Site

5.4 Off-Site Waste Management Licensing/Permitting

All waste materials (where necessary, after in-situ reuse and recycling options have been fully considered) will be disposed of off-site, under the appropriate Duty of Care and subject to approvals/consents from the relevant statutory bodies. It is the responsibility of the Main Contractor to ensure that any company to whom waste is transferred is legally permitted to do so and that the facility they bring the waste to is licensed to

handle that type of waste as outlined in the Waste Management Acts 1996-2005. The Waste Collection Permit Register, in accordance with the Waste Management (Collection Permit) Regulations 2001 will be consulted to ensure that waste carriers hold the appropriate permit.

The relevant waste collection permits and waste licences will be provided by the Main Contractor.

An inspection of the site will be made by the Main Contractor for hazardous substances, gas cylinders and the like. If such substances are encountered during construction, then works must be halted.

The **Project Supervisor for Construction Stage** (PSCS) and the responsible Statutory Authority will be informed immediately.

The Main Contractor will prepare a detailed inventory of construction based hazardous waste generated, such as tars, adhesives, sealants, and other dangerous substances, and these will be kept segregated from other non-hazardous waste to prevent contamination. Arrangements will be made for such substances for disposal in a safe manner to an authorized disposal site or by means acceptable to the relevant Authority.

The Main Contractor will ensure that the excavation works are conducted in accordance with best standard practice and excavation materials are well segregated to minimize any potential cross-contamination.

The Main Contractor will conduct appropriate environmental chemistry testing to determine the waste classification of the soils that are to be excavated and that will include Waste Acceptance Criteria testing. The test regime will be agreed with the receiving landfill operator and the testing will be conducted by an accredited laboratory.

Should excavation materials be assessed to be hazardous, the Main Contractor will conduct pretreatment of the waste soils to a methodology that is agreed with the receiving landfill operator and in accordance with **Environmental Protection Agency** (EPA) guidance.

The Main Contractor is encouraged to reuse and recycle any waste materials as far as is reasonably practicable.

In respect of any liquid disposal including underground water, The Main Contractor will conduct appropriate environmental chemistry testing to determine whether the liquid is contaminated or not. The test regime will be agreed with the receiving disposal facility and the testing will be conducted by an accredited laboratory.

The Main Contractor will manage and conduct the works in accordance with best environmental practice and in accordance with the requirements of Local Authority, EPA and all requirements as specified in this document.

5.5 Appointment of C&D Waste Manager

The Main Contractor will appoint a **Construction & Demolition** (C&D) Waste Manager. The C&D Waste Manager will have overall responsibility for the implementation of the project **Waste Management Plan** (WMP) during the construction phase.

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 because 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.

5.6 C&D Record Keeping

It is the duty of the C&D Waste Manager to ensure that necessary licenses have been obtained as needed. Each consignment of C&D waste taken from the site will be subject to documentation which will conform with the table below along with Transportation Dockets to ensure full traceability of the material to its destination.

Detail	Particulars
Project of Origin	Tandy's Lane Village Phase 2, Adamstown, Co. Dublin
Material being Transported	*To be completed by C&D Waste Manager*
Quantity of Material	*To be completed by C&D Waste Manager*
Date of Material Movement	*To be completed by C&D Waste Manager*
Name of Carrier	*To be completed by C&D Waste Manager*
Destination of Material	*To be completed by C&D Waste Manager*
Proposed Use	*To be completed by C&D Waste Manager*

Table 2: Details of Materials Taken from Site

5.7 Topsoil

In the case of topsoil, careful planning and on-site storage can ensure that this resource is reused on-site as much as possible within Tandy's Lane Village Phase 2 or other areas within ASDZ. However, topsoil is quite sensitive and can be rendered useless if not stored and cared for properly.

- It is important that topsoil is kept separate from all other construction waste as any cross-contamination of the topsoil can render it useless for reuse as topsoil.
- It is important to ensure that topsoil is protected from all kinds of vehicle damage and kept away from site-track, delivery vehicle turning areas and site plant and vehicle storage areas.

If topsoil is stored in piles of greater than two metres in height for prolonged period, the soil matrix (internal structure) can be damaged beyond repair. It should be sealed and be kept as dry as possible and reused as soon as possible to reduce any deterioration through lengthy storage and excess moving around the site.

Records of topsoil storage, movements and transfer from site will be kept by the C&D Waste Manager.

5.8 Earthworks – Cut and Fill Policy

Earthworks for road and structure foundation forms a major part of the quantity of waste that will be generated by the construction phase of this project. To optimise the impact of the generation of surplus material due to excavation the following principles has been considered during the detail design and construction phase: -

- The quantity of excavated materials to be removed from or imported into the site has been reduced by establishing levels of the proposed buildings which optimise the volume of cut and fill.
- Unsuitable sub-soils generated by excavations on site will be reviewed for reuse as landscaping or non-engineering fills on adjoining or other construction sites within the region in accordance with SDZ planning guidelines.
- Careful separation of builder's rubble packaging and contaminated waste from re-usable material will result in the minimisation of the disposal of material to landfill.

Refer to the Construction Demolition and Waste Management Report which accompanies this planning submission, and for which outlines the volumes of soil stockpiles within the site and discusses the re-use and/or waste management there of.

6. 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 potential 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 source and prevent it from becoming air borne, since suppression is virtually impossible once it has become air borne.

6.1 Mitigation Measures

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 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 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.
- 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 cleaned 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 escape of air borne dust from the existing and new buildings.
- 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 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 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.
- Earthwork's excavations should be kept damp where necessary and where reasonably practicable.
- Cutting on site should be avoided where possible by using pre-fabrication 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 an added benefit of preventing larger particles from impacting on 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 onsite mixing.

- Prior to commencement, the main contractor should identify the construction operations 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.
- 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.

7. Water

Following completion of any required initial dewatering of excavations for the drainage pipes, water supply, utilities, and foundations, it is expected that flows of water into the excavation will be relatively small. These flows will be managed by sump pumping as required.

During any discharge of surface water from the excavations, the quality of the water 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 the discharge licence obtained from the Local Authority.

7.1 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.

8. Noise Assessment and Control Measures

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, by means of risk assessment and mitigation/precautionary measures and equipment, all pursuant to the current health and safety legislation and B.S.5228 Noise Control on Construction and Open sites.

Current legislation limits, assessment period of 8 hours of one week (noisiest 8 hours likely to experience):

- Lower Action Value (LAV) – 80 dBA LEX,8, 135 dB Peak – Hearing Protection will be made available, and information will be provided.
- Upper Action Value (UAV) – 85 dBA LEX,8, 137 dB Peak – Use of Hearing Protection is mandatory, measures to eliminate the noise as much as possible will be applied.
- Exposure Limit Value (ELV) – 87 dBA LEX,8, 140 dB Peak – Not to be exceeded
- Protection by ear plugs/muffs given by their Signal-to-Noise Ratio (SRN) or Noise Reduction Rating (NRR) is typically 20 – 30 db.
- Exposure = LEX,8 – (SNR - 10)

As a guide, if it is difficult to hear a normal conversation at 2m or a workplace is consistently noisier than a busy street, it is likely that the noise levels in the area are above 80 dBA.

8.1 Potential Noise Sources

It is not envisaged that any excessively noisy activities to be carried out over extended periods of time during the construction stage. However, due to the nature of the construction works, exposure to noise levels more than 80 dBA (Safe Working Limit) may occur occasionally. The Main Contractor will carry out a noise assessment in relation to the proposed works at construction stage. The noise assessment will identify, but not limited to, the following steps in its analysis; -

1. Potentially Hazardous Activities
2. Potential Hazards
3. Persons as Risk
4. Risk of Exposure to the Potential Hazard
5. Risk Assessment before the Implementation of Control Measures
6. Risk Assessment after the Implementation of Control Measures
7. Control Measures Implemented by: Site Manager / Works Supervisor

9. Erosion and Sediment Control

9.1 Surface Water Run-off

Significant quantities of waste and potential pollutants can be generated during construction. Controls must be put in place to prevent these pollutants from washing into the local storm water system.

The subject site drains into the existing surface water infrastructure constructed during Phase 1 which discharges via the Griffeen Tributary (Northeast Catchment via Loop Road 1/Adamstown Drive) and the Tobermaclugg Stream (North and Western Catchment) to the river Liffey.

Downstream Defenders will be installed as part of Tandy's Lane Phase 1 surface water network. Downstream Defenders act as a Class 2 Separator. Pollutants arising from construction works pose a temporary risk to surface water quality for the duration of the project if not properly contained and managed.

The recommendations as outlined in the Inland Fisheries Ireland document, 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016)', outline the following items to be considered for the protection of adjacent water courses during the construction stage:

1. Fuels, oils, greases, and hydraulic fluids must be stored in bunded compounds well away from the watercourse. Refuelling of machinery, etc., will be carried out in bunded areas.
2. Runoff from machine service and concrete mixing areas must not enter the watercourse.
3. Stockpile areas for sands and gravel will be kept to minimum size, well away from the watercourse.
4. Runoff from the above will only be routed to the watercourse via suitably designed and sited settlement ponds/filter channels.
5. Settlement ponds will be inspected daily and maintained regularly.
6. Temporary crossings will be designed to the criteria laid down for permanent works.
7. Watercourse banks will be left intact as much as possible. If they must be disturbed, all practicable measures will be taken to prevent soils from entering the watercourses.

The main pollutants of site water are silt, fuel/oil, concrete, and chemicals. See Table 3 for a list and brief description of pollution prevention measures.

Table 3: Pollution Prevention Measures

Source	Action
Detergents	Use of detergents will be carried out in designated areas draining to the foul sewer.
Fuel/Oil	Fuel/oil stores must be located away from the site drainage system and the edge of watercourses.
	Ensure adequate measures are identified to prevent or contain any spillage such as creating a fall away from any drainage grid or blocking drainage points.
	Prevent oil pollution by: • Suitable bunded storage of fuel/oil, and use of drip trays under plant, and • An oil separator, and/or • On-site spill-kit • Commercially available absorbent granules, pads, or booms.
Material Storage	Store drums, oil, and chemicals on an impervious base and within a secured bund.
	Ensure topsoil and/or spoil heaps are located at least 10m away from water courses. Consider seeding them or covering with a tarpaulin to prevent silty runoff and losses due to wind.
Leaks and Spills	Storage facilities are to be checked on a regular basis to ensure any leaks or drips are fixed to prevent loss and pollution.
	Ensure appropriate spill response equipment is located near to the material in case of containment failure or material spills and ensure site staff know how to use it.
	Adequate stocks of absorbent materials, such as sand or commercially available spill kits and booms should be always available.
Litter	Provide waste bins on-site as appropriate.
Construction Vehicles	Provide vehicle wheel washing.
Concrete, Cement and Bentonite	Washout of these materials will be carried out in a designated, impermeable contained area. The washout water itself will be disposed of off-site or discharged to the foul sewer if authorised.

9.2 Sediment Control

Construction runoff is heavily laden with silt which can block road gullies and reduce the hydraulic capacity in pipes and rivers, contributing to ponding and flooding. Continued development without appropriate controls will ultimately keep maintenance costs elevated, whether that be in cleaning gullies, jetting pipes or dredging. Sediment control plans will be implanted on site to mitigate these issues.

Sediment basins and traps will be installed before any major site grading takes place. Additional sediment traps and silt fences will be installed as grading takes place to keep sediment contained on site at appropriate locations.

Key runoff-control measures will be in conjunction with sediment traps to divert water from planned undisturbed areas away from the traps and sediment-laden water into the traps. Diversions will be installed above the areas to be disturbed before any grading operations. Any perimeter drains will be installed with stable outlets before opening major areas for development. Any additional facilities needed for runoff control will be installed as grading takes place.

During grading operations, temporary diversions, slope drains, and inlet and outlet protection installed in a timely manner will be very effective in controlling erosion and sediment build up.

The main run-off conveyance system with inlet and outlet protection measures will be installed early and used to convey stormwater run-off through the development site without creating gullies or channels. Install inlet protection for storm drains as soon as the drain is functional to trap sediment on site in willow pools and to allow the flood flows to enter the storm drainage system safely. Install outlet protection at the same time as the conveyance system to prevent damage to the receiving waters.

9.3 Sediment Control Measures

Sediment entrapment facilities are necessary to reduce sediment discharges to downstream properties and receiving waters. All run-off leaving a disturbed area will pass through a sediment entrapment facility before it exits the site and flows downstream.

- Straw Bales

Straw bales can be placed at the base of a slope to act as a sediment barrier. These are not recommended for use within a swale or channel. Straw bales are temporary in nature and may perform for only a period of weeks or months. Proper installation and maintenance are necessary to ensure their performance.

- Silt Fencing

A silt fence is made of a woven synthetic material, geotextile, and acts to filter run-off. Silt fencing will be placed as a temporary barrier along the contour at the base of a disturbed area but is not recommended for use in a channel or swale. The material is durable and will last for more than one season if properly installed and maintained. Silt fencing is not intended to be used as a perimeter fence or in area of concentrated flow. If concentrated flow conditions exist, a more robust filter will be considered.

- Silt Barriers

Silt barriers can also be temporarily installed in any road gullies of partially constructed roads to prevent sediment movement into downstream drainage systems or SUDS components.

When the catchment area is greater than that allowed for straw bale barriers or silt fences, runoff will be collected in diversion drains and routed through temporary sediment basins.

- Diversion Drains

Diversion drains are simple linear ditches, often with an earth bund, for channelling water to a desired location. If the drains are being eroded, they will be lined with geotextile fabric or large stones or boulders.

10. 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 2 years.

The construction phase will include:

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

UK and Ireland Office Locations