



Construction Surface Water Management Plan

Residential Development at Clonburriss, Adamstown, Co. Dublin

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Comments

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1. Introduction

1.1 Context

This report has been prepared by Waterman Moylan Consulting Engineers, on behalf of Clear Real Estate Holdings Limited for a proposed residential development at Clonburris, Adamstown, Co Dublin.

The report sets out to demonstrate how pollution of watercourses during and after the construction period will be prevented and/or mitigated in line with Section 4.0.2 of the South Dublin County Council Development Plan 2022-2028, and in specific; National Polity Objective (NPO) 58.

1.2 Site Location and Description

The subject site is located at Adamstown, Lucan, Co. Dublin, and is bound to the north by the Dublin-Kildare rail line, to the west by the R120, to the south by Lucan pitch & putt club, and to the east by Hayden's Lane, as per *Figure 1* below. It is approximately 2.4km south of Lucan town centre.

The subject site is approximately 13.37ha in area and is bisected by Haden's Lane. Hayden's Lane as it exits the site on the eastern boundary continues to run southwards as a vehicular carriageway, however, it also runs to the north as a pedestrian/cyclist route forming an overpass of the rail line and Adamstown Avenue Road. The site is greenfield in nature, with a single structure; a cattle-shed and yard on the east. The northern part of the site is traversed east-west by overhead cable on HV electrical pylons.



Figure 1 | Site Location (Google Earth)

A topographic survey of the subject site indicates it generally slopes southwest to northeast from a high of 64.52m OD on the southwest to a low of 55.81m OD on the northeast. The survey has also shown that the hedgerow running from north to south contains a local ditch system, which is culverted under Hayden's Lane, and outfalls to the Griffeen River which forms the south-eastern boundary of the site.

The Griffeen River generally flows in a northerly direction, it is culverted under the rail lines and Adamstown Avenue which run in parallel at this location as per *Figure 2* below, which has been extracted from the Clonburris SDZ Planning Scheme 2019. It exits the culvert at Griffeen Valley Park, flowing northwards to Vesey park, before ultimately outfalling to the River Liffey at Lucan.



Figure 2 | Image extracted from the Clonburris SDZ 2017

1.3 Proposed Development

The proposed development consists of a total of 385 residential units, comprising 139 houses and 154 apartments, and 92 duplex type units as set out in the Schedule of accommodation in *Table 1* below.

Description	1-bed	2-bed	3-bed	4-bed	Total
House	-	-	98	41	139
Duplex	-	21	71	-	92
Apartment	48	106	-	-	154
Total	48	127	169	41	385

Table 1 | Schedule of Accommodation

The proposed development will consist of 385 No. units (139 No. houses, 70 No. 'Build-to-Rent' duplex/apartments, 72 No. duplex/apartments, and 104 No. apartments), ranging between 2 – 6 storeys and all associated and ancillary site development, infrastructural, hard and soft landscaping and boundary

treatment works, including: - a single storey tenant amenity building; areas of public open space; car parking spaces; bicycle parking spaces; bin and bicycle stores; plant provided at undercroft level and additional plant provided at roof level of the proposed apartment blocks; 2 No. ESB Sub-stations and demolition of remaining walls and hardstanding associated with a former agricultural building. Permission is also sought for minor revisions to attenuation pond permitted under SDCC Reg. Ref. SDZ20A/0021 as well as connections to water services (wastewater, surface water, and water supply) and connections to permitted cycle / pedestrian paths. All on a site of c. 9.08 Ha in the townland of Adamstown, within the Clonburris Strategic Development Zone (Adamstown Extension – Development Areas AE-51 and AE-52).

1.4 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.

1.5 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;
- Construction of infrastructure including roads, drainage, and services;
- Provision of road upgrades and pedestrian links;
- Construction of 385 No. residential units comprising 154 No. Apartments, 139 No. Houses and 92 No. Duplexes.

2. Mitigation Measures

The following Mitigation Measures are to address potential impacts to water quality and are required to protect the Griffeen River and the Grand Canal. 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 2* 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

No.	Risk	Possible Impact	Mitigation	Result of Mitigation
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
5	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
6	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
7	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
8	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. Mitigation Measures

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 3 years, expected to commence in Q3 2023.

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.

3.1 Roles and Responsibilities

3.1.1 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;

3.2 Pre-Construction Plan

3.2.1 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.

3.3 Construction Plan

3.3.1 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.

3.3.2 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 South Dublin County Council.

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 and subsequently to the nearby watercourse.

The proposed surface water management measures for the site are shown in *Figure 3* overleaf.



Figure 3 | Proposed Cut-off Trench Locations

3.3.3 Surface Water Monitoring Parameters.

In addition to daily visual inspections, a surface water monitoring programme, as outlined in Table 3 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	Limit		Frequency and Manner of Samplings
	Limit Value	Guide/Mandatory	
Temperature	1.5°C	Mandatory Limit	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)	Guide Limit	Weekly, minimum one sample representative of flow oxygen conditions of the day of sampling
pH	6 to 9	Mandatory Limit	Weekly
Nitrites	\leq 0.01 (mg/l NO ₂)	Guide Limit	Monthly
Suspended Solids	\leq 25 (mg/l)	Guide Limit	Monthly
BOD5	\leq 3 (mg/l)	Guide Limit	Monthly
Phenolic Compounds	-	-	Monthly where the presence of phenolic compounds is presumed (An examination by test)
Petroleum Hydrocarbons	5 (mg/l)	Guide Limit	Monthly (visual)
Non-Ionized Ammonia	\leq 0.005 (mg/l NH ₃)	Guide Limit	Monthly
Total Ammonium	\leq 0.004 (mg/l NH ₄)	Guide Limit	Monthly
Total Residual Chlorine	\leq 0.005 (mg/l HOCl)	Mandatory Limit	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 3 | Monitoring Guidelines (Fresh Water Quality Regulations)

UK and Ireland Office Locations

