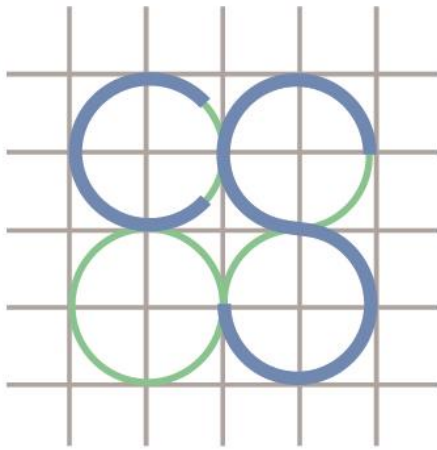


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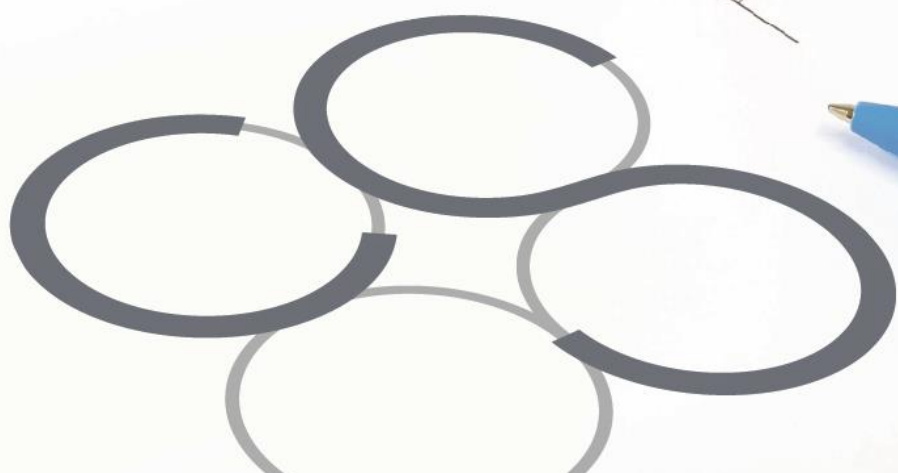
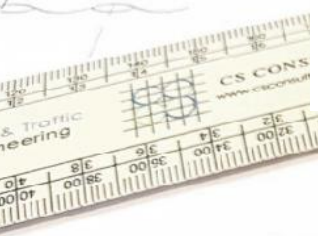
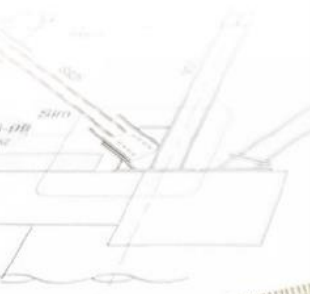
# Construction Surface Water Management Plan

## Proposed Residential Development Tinakilly, Rathnew, Co. Wicklow

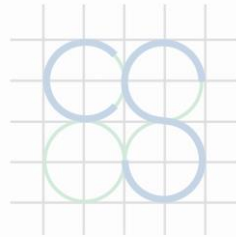
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August 2023



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## CONSTRUCTION SURFACE WATER MANAGEMENT PLAN

### PROPOSED RESIDENTIAL DEVELOPMENT, TINAKILLY, RATHNEW, CO. WICKLOW

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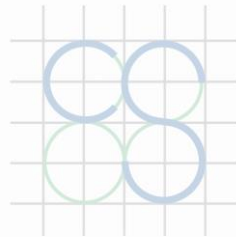
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**BS 1192 FIELD**      **A034-CSC-ZZ-XX-RP-C-0007-P2**

| Job Ref. | Author | Reviewed By | Authorised By | Issue Date | Rev. No. |
|----------|--------|-------------|---------------|------------|----------|
| A034     | GF     | GL          | OS            | 09.08.2023 | P2       |
| A034     | GF     | GL          | OS            | 06.07.2023 | P1       |
| A034     | LJ     | GL          | OS            | 26.06.2023 | P0       |

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## 1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by Keldrum Limited to prepare a Construction Surface Water Management Plan (CSWMP) for a proposed 352-unit Large-scale Residential Development (LRD) at Tinakilly, Rathnew, Co. Wicklow.

This report should be read in conjunction with all other engineering drawings and documents submitted by CS Consulting as part of this planning submission, as well as relevant other documentation submitted by the other members of the project design team. In particular, reference should be made to the Resource and Waste Management Plan (**A034-CSC-ZZ-XX-RP-C-0004**) and the Outline Construction and Environmental Management Plan (**A034-CSC-ZZ-XX-RP-C-0005**) prepared by CS Consulting, and to ecological assessments prepared by Scott Cawley Limited.

## 2.0 SITE LOCATION AND PROPOSED DEVELOPMENT

### 2.1 Site Location

The site of the proposed development is located at Tinakilly, Rathnew, Co. Wicklow, in the operational area of Wicklow County Council. The area enclosed by the planning application boundary extends to approximately 16.8ha.

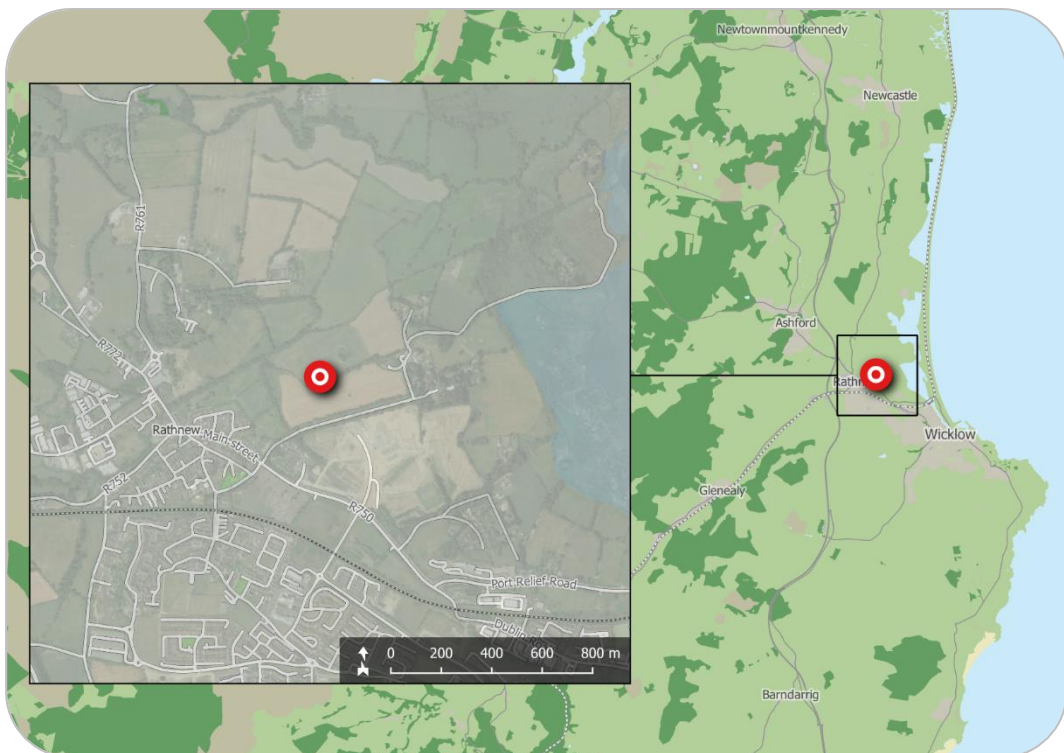


Figure 1 – Location of proposed development site  
(map data and imagery: EPA, NTA, OSM Contributors, Google)

The location of the proposed development site is shown in **Figure 1** above; the indicative extents of the development site and the area subject to this application, as well as relevant elements of the surrounding road network, are shown in more detail in **Figure 2**.

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Figure 2 – Site extents and environs  
(map data and imagery: NTA, OSM Contributors, Google)

The development is bounded to the south by Tinakilly Avenue, to the east by the grounds of the Tinakilly Country House hotel, and on all other sides by agricultural lands.

## 2.2 Existing Land Use

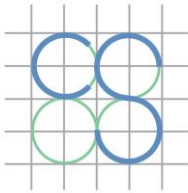
The subject site is greenfield.

## 2.3 Proposed Development

Briefly described, the proposed development will consist of the following:

- I. Construction of 352 no. residential units comprising 220 no. 2-4 bedroom houses and 132 no. 1-3 bedroom apartments.
- II. Provision of private, communal and public open space. Provision of a new park to the north and west of the site (c.4.34ha).





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- III. All internal residential access roads and cyclist/pedestrian paths serving the proposed development.
- IV. Provision of car and bicycle parking.
- V. Proposed pedestrian connections and landscape revisions to a section of Tinakilly Avenue included in permitted application WCC Ref. 22/837.
- VI. All vehicular and pedestrian connections between Tinakilly Park and Rathnew Village via a new section of the Rathnew Inner Relief Road.
- VII. All associated site development works, services provision, infrastructural and drainage works, provision of ESB substations, bin stores, bicycle stores, car parking, public lighting, landscaping, open space, and boundary treatment works.
- VIII. No further changes to development permitted under WCC Refs. 17/219 (ABP Ref. PL27.301261), 20/1000, 21/411, 22/837, or 21/1333.

The proposed development includes the completion of the Rathnew Inner Relief Road (RIRR), connecting the R750 and R761 regional roads, and the provision of 3no. new junctions on this road. It is also proposed under this application to restrict vehicular access along Tinakilly Avenue between the R750 and the RIRR, with vehicular access to the Tinakilly Country House hotel instead provided from the RIRR.



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### **3.0 ROLES AND RESPONSIBILITIES**

The following are the key personnel who shall be involved in the implementation of the CSWMP, including the Fisheries Protection Method Statement (FPMS):

- Project Co-Ordinator (PC)
- Site Manager (SM)
- Project Ecologist (PE)
- Main Contractor (MC)

The Site Manager (SM) shall inform the Project Co-ordinator (PC) of any conflicts between the recommendations of the CSWMP and FPMS, and other site management issues. The PC shall be responsible for resolving any conflict, in consultation with the relevant specialists.

#### **3.1 Project Co-Ordinator**

The primary responsibility of the PC is to ensure that the SM and contractor comply with the environmental recommendations in this report.

In addition, the PC shall:

- Ensure the CSWMP and FPMS are included in contractors' contracts.
- Ensure that the CSWMP and FPMS are given to contractors and SM.
- Ensure that contractors are trained in accordance with the CSWMP and FPMS requirements.
- Inform the Project Ecologist (PE) of the date of construction 2 weeks prior to commencing works.

#### **3.2 Site Manager**

The primary responsibility of the SM is to ensure that the CSWMP and FPMS are implemented by contractors. This includes implementation of any on-



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site mitigation measures and any revisions, additions, or amendments that may be made to the CSWMP or FPMS during the course of the development's construction.

The SM shall also:

- Ensure compliance with the recommendations of the CSWMP and FPMS during site inspections.
- Schedule meetings with the PC to discuss progress towards completing the CSWMP and FPMS actions, and involve the PE as necessary.
- Report and record any incidents resulting in damage to or destruction of habitats, and injury or death to fauna.

### **3.3 Project Ecologist**

The primary responsibilities of the PE shall be to:

- Act as the primary on-site ecological contact for the PC and SM regarding implementation of the CSWMP and FPMS.
- Ensure compliance with all recommendations of the CSWMP and FPMS during regular site inspections.
- Request relevant records and documentation from the SM where necessary.
- Attend routine meetings with the SM.
- Keep detailed records of any ecological incidents and report these to the PC.
- Keep records of any variations to construction methods or design brief and modify CSWMP and FPMS recommendations accordingly, in consultation with the PC.
- Produce staged monitoring reports on flora and fauna, in accordance with a schedule to be agreed with the Planning Authority, and submit

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these to the PC. The PE shall also act as overall technical advisor to the PC and PE regarding implementation of the CSWMP and FPMS actions.

### **3.4 Main Contractor**

The Main Contractor shall have overall responsibility for the implementation of the CSWMP and FPMS during the construction phase. The appointed person from the Main Contractor's team shall be appropriately trained and assigned the authority to instruct all site personnel to comply with the specific provisions of the CSWMP and FPMS. 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 and FPMS are performed on an ongoing basis.

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

The responsibilities of the appointed person shall be as follows;

- Updating the CSWMP and FPMS as necessary to reflect activities on site.
- Advising site management (including, but not limited to, the site Construction Manager) on environmental matters.
- Ensuring pre-construction checks for protected species, if any undertaken.
- Reviewing sub-contractors' method statements to ensure that these incorporate all relevant provisions of the CSWMP and FPMS.
- Providing toolbox talks and other training, and ensuring understanding of all mitigation measures by all involved.
- Assessing the effectiveness of mitigation measures.



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- Monitoring weather and site conditions in respect of specific trigger levels for actions under the CSWMP and FPMS.
- Ensuring adherence to relevant specific planning conditions imposed by the Planning Authority.
- Advising on the production of written method statements and site environmental rules, and on the arrangements to bring these to the attention of the workforce.
- Investigating incidents of significant, potential, or actual environmental damage, ensuring corrective actions are taken, and implementing measures to prevent recurrence.
- Being responsible for maintaining all environmental-related documentation.
- Ensuring that construction plant employed is environmentally suited to the task.
- Co-ordinating environmental planning of the construction activities to comply with environmental authorities' requirements and to ensure minimal risk to the environment.
- Giving contractors precise instructions as to their responsibilities, to ensure correct working methods where risk of environmental damage exists.

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## 4.0 RECEIVING ENVIRONMENT

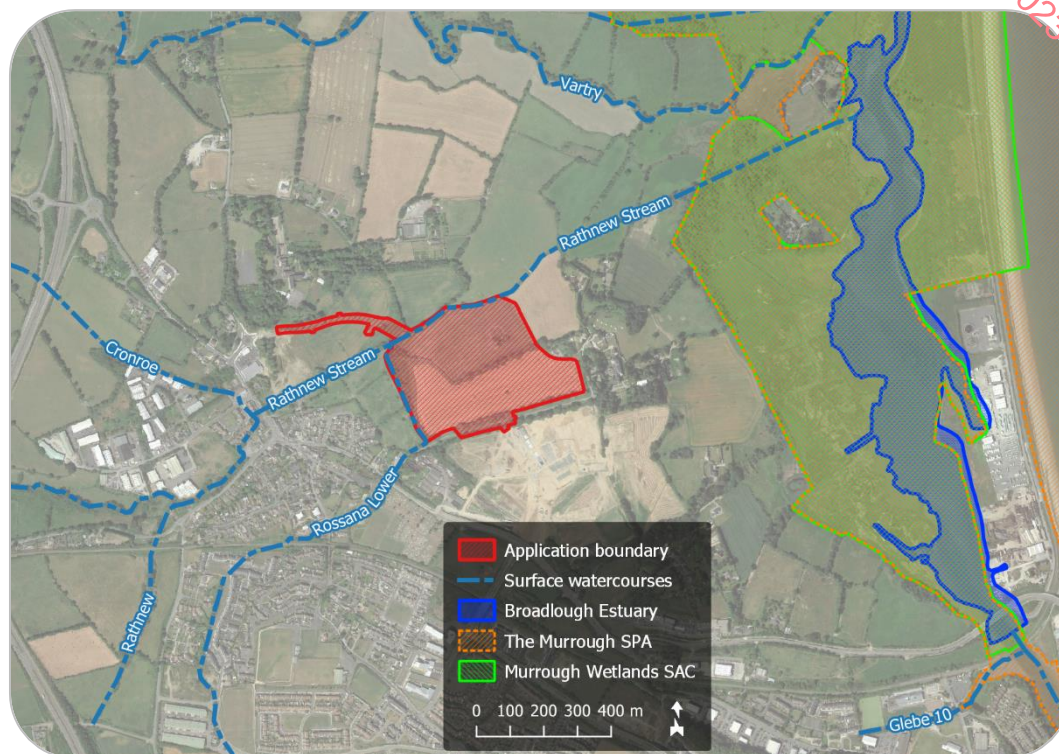


Figure 3 – Surface water features and protected sites  
(map data and imagery: EPA, Google)

### 4.1 Surface Watercourses and Waterbodies

The development site topography is generally characterised by a consistent fall to the north and to the west. All stormwater runoff from the main body of the site currently drains to the following 2no. existing watercourses that run along the northern boundary and the western boundary of the proposed development site (see **Figure 3**):

- The Rathnew Stream, which forms the northern boundary of the development site proper.
- The Rossana Lower stream, which forms the western boundary of the development site.



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The Rossana Lower stream is a tributary of the Rathnew Stream, their confluence being located at the north-west corner of the development site proper. The Rathnew Stream in turn flows into the Broadlough Estuary approximately 1.2km east-north-east of the development site; this transitional waterbody (TWB) joins the Irish Sea at Wicklow Harbour, approximately 2.6km south-east of the development site.

The latest Environmental Protection Agency (EPA) Water Quality Q-value from 2020 for the Rathnew Stream is 'Good'. There is no Q-value data for the Rossana Lower stream. Both have however been listed as 'At Risk' waterbodies by the EPA and have a 'Poor' Water Framework Directive (WFD) status. The Broadlough TWB has a 'Moderate' WFD status, with 'Intermediate' water quality, and has been listed as an 'At Risk' TWB by the EPA.

#### **4.2 Groundwater Bodies**

The Groundwater Body (GWB) underlying the site is the Wicklow GWB, which is currently classified by the EPA as having an overall 'Good' status but has a risk status of 'At Risk' under the WFD. The Wicklow GWB overlaps with four European sites that are designated in part for groundwater dependent terrestrial habitats: The Murrough Wetlands SAC (Special Area of Conservation), Magherabeg Dunes SAC, Buckcroney-Brittis Dunes and Fen SAC, and Knocksink Wood SAC. All are located more than 7km from the development site, except for The Murrough Wetlands SAC, which begins approximately 450m to the east.

The Geological Survey of Ireland (GSI) characterisation of the Wicklow GWB states that "the groundwater discharges directly to the sea along the coast" and that "the GWB will also discharge to the overlying streams and rivers as baseflow".

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### 4.3 Recorded Habitats

The Murrrough Special Protection Area (SPA) and Murrrough Wetlands SAC both include the Broadlough Estuary; these European sites are therefore in relative proximity to the development site and are hydrologically connected to it via surface water pathways. The Murrrough SPA is designated for wintering special conservation interest (SCI) species that are known to forage and/or roost at inland sites in Ireland. In addition, sightings of both otters and grey seals have been recorded in Broadlough Estuary.

National Biodiversity Data Centre (NBDC) and National Parks and Wildlife Service (NPWS) databases include records for only one protected and/or rare fish species within circa 2km of the proposed development: the European eel. This was recorded in 2009 in the Rathnew Stream, close to the northern boundary of the development site proper. During surveys in 2010, Inland Fisheries Ireland (IFI) recorded one protected fish species in Broadlough Estuary: the river lamprey (Annex II and V species of the EU Habitats Directive).



## 5.0 CONSTRUCTION PHASE DRAINAGE ARRANGEMENTS

### 5.1 Proposed Final Stormwater Drainage Arrangements

As described more fully in the accompanying Engineering Services Report (**A034-CSC-ZZ-XX-RP-C-0001**), the proposed development comprises 5no. catchment areas for the collection and disposal of stormwater runoff from impermeable areas:

- Catchment A of 5.93ha, representing the majority of the site to the east of the proposed Rathnew Inner Relief Road.
- Catchment B of 3.16ha, including the southernmost section of the Rathnew Inner Relief Road proposed under this application, as well as areas to the west and east of this.
- Catchment C of 1.30ha, comprising the north-east corner of the development site.
- Catchment D of 0.44ha, representing the central section of the Rathnew Inner Relief Road proposed under this application.
- Catchment E of 0.62ha, representing the northern section of the Rathnew Inner Relief Road proposed under this application.

Areas outside these defined catchments shall not be significantly developed and shall maintain their current natural drainage patterns.

Refer to the following CS Consulting drawings for full details of the development's proposed stormwater drainage arrangements:

- **A034-CSC-ZZ-XX-DR-C-0005 / 0006** (Drainage Layout)
- **A034-CSC-ZZ-XX-DR-C-0036** (Catchment Surface Water)
- **A034-CSC-ZZ-XX-DR-C-0037 / 0038** (SuDS Layout)

Post-development run-off is to be restricted to greenfield discharge rates through the provision of onsite attenuation storage, in the form of ponds

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and detention basins. These shall retain excess runoff during extreme rainfall events and allow this to be discharged at a controlled rate. Each catchment area shall drain to one or more of these attenuation facilities, which in turn discharge to either the Rossana Lower stream (Catchment B only) or to the Rathnew Stream (all other catchments).



Figure 4 – Proposed final stormwater drainage arrangements  
(map data and imagery: EPA, OSM Contributors, Google)

## 5.2 Development Infrastructure Phasing

As described more fully in the accompanying Engineering Services Report (**A034-CSC-ZZ-XX-RP-C-0001**), it is proposed to proceed with construction of the development's road, water supply, and drainage infrastructure in accordance with the following phasing sequence (see **Figure 5**):

- Phase R1 – south-east section of Rathnew Inner Relief Road within application boundary.

- Phase R2 – final north-western section of Rathnew Inner Relief Road within application boundary.
- Phase 1 – Infrastructure to serve 217no. residential units.
- Phase 2 – Infrastructure to serve 76no. residential units.
- Phase 3 – Infrastructure to serve 59no. residential units.



Figure 5 – Proposed infrastructure phasing sequence  
(background map imagery: Google)

Refer to CS Consulting drawing **A034-CSC-ZZ-XX-DR-C-0046** for a more detailed illustration of the proposed infrastructure phasing areas.

Phase R1 shall be constructed as part of the development's initial enabling works, prior to the construction of any residential units. Phases 1 to 3 shall commence in numerical order, each in advance of the residential units to be constructed in that area, and may overlap. Phase R2 represents final completion of the Rathnew Inner Relief Road (RIRR); this phase shall be

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timed such that the RIRR is fully operational prior to the occupation of the 107<sup>th</sup> residential unit within the subject development.

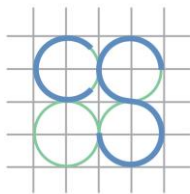
### **5.3 Provisions for Construction Phase Drainage**

The proposed infrastructure phasing sequence for construction has been arranged such that the area encompassed by each phase includes the stormwater attenuation and discharge facilities to serve all infrastructure in that area. Each phase area is ultimately served by one or more ponds or detention basins; for each phase, this stormwater attenuation infrastructure (including outfall) is to be constructed in the initial stages of development, to ensure that it may be used for stormwater collection and disposal during construction.

These ponds and detention basins have been sized to cater for runoff from all impermeable areas post completion, and to restrict outflow to greenfield rates. They therefore provide sufficient volumes to cater for runoff during the construction phase, when a lesser impermeable area will be present. They have been designed to encourage settlement of solids, which can be removed from the base of the retention facilities. Throughout the development's construction phase, inspections shall be carried out to ensure that these systems are operating as designed and have not been contaminated or suffered excessive sedimentation.

During construction, the development's internal stormwater collection network shall not yet be in place. Temporary surface water collection and sediment control measures will therefore be required to collect runoff and direct it to the permanent ponds and detention basins; these will be implemented and reconfigured as required during construction. Run-off from the working site or any areas of exposed soil should be channelled and intercepted at regular intervals for discharge to temporary silt traps or lagoons, thence to the permanent stormwater attenuation facilities. Any





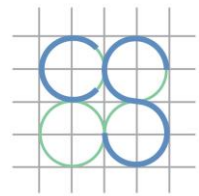
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overflows should be directed to land rather than to a watercourse. The necessary temporary surface water drainage and sediment control measures shall be in place before earthworks commence.

As construction progresses, elements of the development's internal stormwater collection network may be incorporated into the construction phase surface water disposal arrangements. The Main Contractor shall be responsible for ensuring that all elements of the development's permanent stormwater drainage network and attenuation facilities are free from waste materials generated during construction, including the initial site clearance and excavation. Routine visual inspections by the MC shall reduce any risk of excess construction materials causing blockages in the surface water network and any potential flooding occurring. A maintenance schedule and operational schedule should be established by the contractor for silt and pollution control measures during the construction period. This should be undertaken in consultation with the relevant statutory authorities.

During the construction phase, data relating to the volume discharged to the Rathnew Stream and the Rossana Lower stream, the quality thereof, and the water quality present in the ponds and detention basins shall be logged in the Site Manager's office and reviewed to identify any detrimental changes. Records from the construction works and testing shall be retained in the site files. A note shall be provided by the Main Contractor to the Client and the design team on the current status of the pond, and updates shall form part of the minutes of weekly/fortnightly site meetings.

Routine monitoring of the ponds and detention basins shall be undertaken to assess the performance of the surface water management system. Monitoring staff shall carry out checks of the pond infrastructure and observations shall be recorded. Any recorded evidence of contamination, such as excessive sedimentation or any other factors that may compromise the efficiency of the system, shall be reported to the Site Manager, who

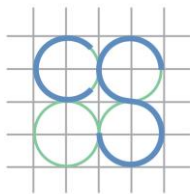


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shall take appropriate remedial measures in response to agreed trigger levels being exceeded.



## 6.0 CONSTRUCTION SURFACE WATER IMPACTS AND MITIGATION

The below information sets out how to demonstrate how pollution of watercourses during and after construction of the proposed development shall be prevented and/or mitigated.

### 6.1 Potential 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 - may arise if there is inadequate containment and treatment of onsite toilet and washing facilities.
- Concrete/cementitious products 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.

- The stripping of the existing ground surface and related construction activities could potentially lead to increased sedimentation within nearby surface waters.
- Operation of machinery and use of chemicals and concrete during the construction phase has the potential to pollute the nearby public surface water network and receiving watercourse.
- Surface water runoff during the construction phase may contain increased silt levels (e.g. runoff across areas stripped of topsoil) or become polluted by construction activities. This has the potential to result in increased silt and pollutant levels into existing nearby watercourses.



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- Heavy rainfall or a high level of ground water could produce ponding in open trenches. Discharge of this rainfall pumped from excavations to existing streams could compromise the capacity of the stream and thereby cause flooding.
- Uncontrolled discharge of wash water from concrete trucks and the discharge of vehicle wheel wash water may contaminate surface water features or groundwater.

There is also potential for the proposed construction works to impact upon water quality within the Rossana Lower stream, the Rathnew Stream, and the downstream receiving aquatic environment through the following:

- Entry of construction personnel and/or vehicles into the Rossana Lower stream or the Rathnew Stream.
- Clearance of vegetation and exposure of topsoil in the vicinity of the Rossana Lower stream and the Rathnew Stream.
- Storage of unbanded construction materials in the vicinity of the Rossana Lower stream and the Rathnew Stream.
- Refuelling of vehicles in the vicinity of the Rossana Lower stream and the Rathnew Stream.
- Washing of equipment in the Rossana Lower stream or the Rathnew Stream.

## 6.2 Proposed Construction Works

Construction of the proposed development shall involve the following key stages:

- Site preparation.
- Erection of security fencing/hoarding around site perimeter.
- Setting up secure site compound(s) including wash down area(s).
- Site clearance, including topsoil stripping.



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- Site reprofiling.
- Construction of infrastructure including roads, drainage, services, and pedestrian links.
- Construction of residential units.

### 6.3 Primary Mitigation Measures

The mitigation measures described herein are intended to address potential impacts on surface water quality and are required to protect the Rathnew Stream and the Rossana Lower stream. All works shall 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., 2010)
- 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., 2006)
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Site Guide (Murnane et al., 2006)
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016)
- Guidelines for Planning and Authorities – Architectural Heritage Protection
- Guidance on Part IV of the Planning and Development Act 2000 (Part 2, Chapter 7) and ICOMOS Principles.

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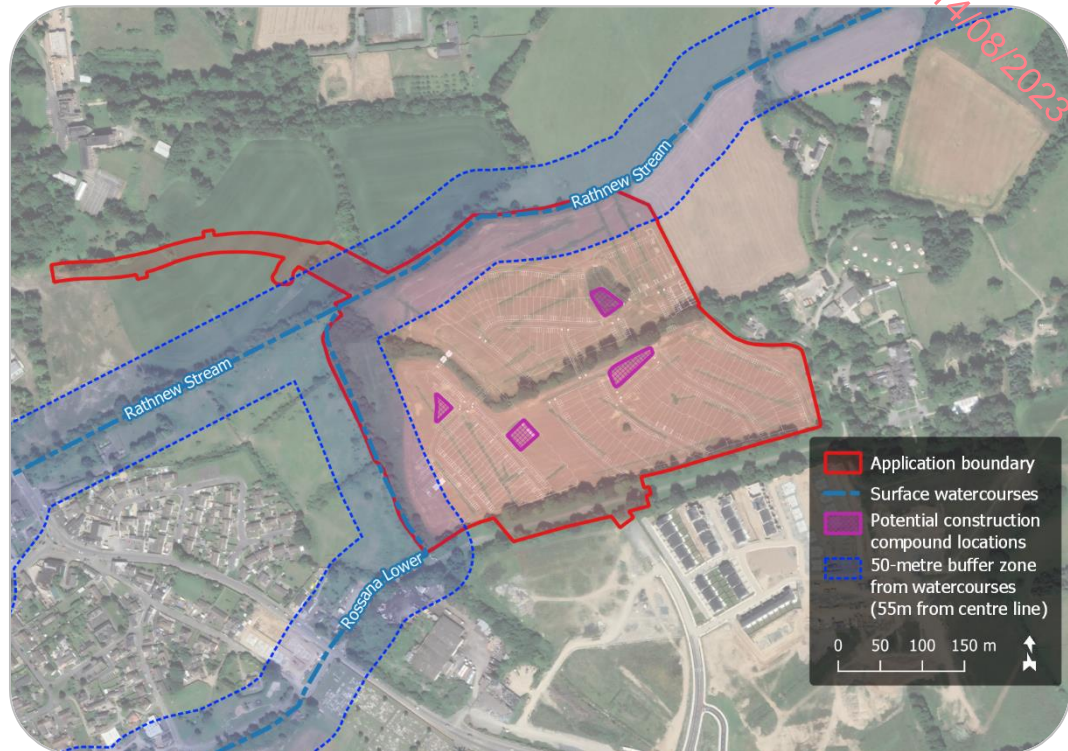


Figure 6 – Watercourse buffer zones and potential compound locations  
(map data and imagery: EPA, Google)

The schedule of mitigation measures presented below summarises measures that shall be undertaken in order to reduce impacts on ecological receptors within the zone of influence of the proposed development.

#### 6.3.1 Item 1 – Hydrocarbons from car parking areas entering watercourses

- Possible Impact: Water quality impacts, reduction in habitat quality.
- Mitigation: Designated parking at least 50m from any watercourse.
- Result of Mitigation: Ensures no soil disturbance or hydrocarbons leak near aquatic zone.



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6.3.2 Item 2 – Pollutants from site compound entering watercourses

- Possible Impact: Water quality impacts, reduction in habitat quality.
- Mitigation: The site compound shall be located at least 50m from any watercourse.
- Result of Mitigation: Prevents pollution of the aquatic zone from toxic pollutants.

6.3.3 Item 3 – Pollutants from material storage areas entering watercourses

- Possible Impact: Water quality impacts, reduction in habitat quality.
- Mitigation: Fuels, oils, greases, and other potentially polluting chemicals shall be stored in bunded compounds 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 shall be kept on site at all times and all staff trained in their appropriate use.
- Result of Mitigation: Prevents pollution of the aquatic zone from toxic pollutants.

6.3.4 Item 4 – Concrete/cementitious materials entering watercourses from washdown and pours

- Possible Impact: Water quality impacts, reduction in habitat quality.
- Mitigation: A designated wash down area within the Contractor's compound shall be used for cleaning of any equipment or plant, with the

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safe disposal of any contaminated water. Pouring of cementitious materials shall be carried out in the dry.

- Result of Mitigation: Prevents pollution of the aquatic zone from toxic pollutants, ensures invasive species material is transported off site.

Further specific mitigation measures are stipulated as part of the Fisheries Protection Method Statement (FPMS) in the following section of this document.

#### 6.4 On-Site Surface Water Control

As described in **sub-section 5.3**, temporary surface water collection and sediment control measures will be required during construction to collect runoff and direct it to the permanent ponds and detention basins; these will be implemented and reconfigured as required during construction. Run-off from the working site or any areas of exposed soil should be channelled and intercepted at regular intervals for discharge to temporary silt traps or lagoons, thence to the permanent stormwater attenuation facilities. Any overflows should be directed to land rather than to a watercourse. The necessary temporary surface water drainage and sediment control measures shall be in place before earthworks commence.

As construction progresses, elements of the development's internal stormwater collection network may be incorporated into the construction phase surface water disposal arrangements. The Main Contractor shall be responsible for ensuring that all elements of the development's permanent stormwater drainage network and attenuation facilities are free from waste materials generated during construction, including the initial site clearance and excavation.



## 7.0 FISHERIES PROTECTION METHOD STATEMENT

This section of the CSWMP comprises a Fisheries Protection Method Statement (FPMS), the aim of which is to ensure the protection of watercourses downstream of the proposed development.

### 7.1 Baseline Ecological Conditions

**Section 4** of this report describes the ecological characteristics of the development's receiving environment.

### 7.2 Specific Mitigation Measures

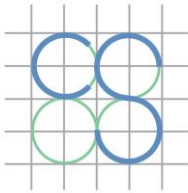
The following measures are consistent with *IFI Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters* and form the main approach toward mitigation of impacts:

- There is to be no direct (untreated) discharge of site runoff to surface water features.
- Passage for fish upstream and downstream must not be impeded by the proposed works.
- Prior to any machinery working on site for any purpose, the working area is to be marked out with wooden stakes and, where deemed necessary, hazard tape shall be erected to identify the working limits.
- Working limits are to be checked at the end of every day by the Site Manager.
- Measures are to be implemented to prevent the release of sediment during the construction work; these shall be installed prior to any site clearance. In respect to works adjacent to the Rathnew Stream and the Rossana Lower stream, these measures may include but not be limited to the use of silt fences, sedimentation mats, etc.

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- Exclusion zones and barriers (sediment fences) are to be provided between earthworks, stockpiles, and temporary surfaces to prevent sediment washing into the receiving water environment.
- Temporary construction surface drainage and sediment control measures are to be in place before earthworks commence.
- If pouring of cementitious materials is required for the works adjacent to a pond, surface water drainage feature, or drainage features connected to same, this is to be carried out in the dry.
- Discharge water generated during placement of concrete is to be removed off site for treatment and disposal.
- Where stockpiling is required, temporary stockpiles are to be located >50 metres from any surface water feature. Three sides shall be surrounded with silt fences, with access from the fourth (uphill) side. Sides shall be smoothed and collection of run-off considered (i.e. discharging to a settlement pond, etc.).
- Concrete pumping is to be monitored to ensure no accidental discharge. Mixer washings and excess concrete shall not be discharged to surface water features. Concrete washout areas shall be located remote from any surface water drainage features, to avoid accidental discharge to watercourses.
- No hydrocarbons or any polluting chemicals are to be stored within 50m of the surface water network. Fuel storage tanks shall be bunded to a capacity at least 110% of the volume of the storage tank (plus an allowance of 30mm for rainwater ingress). Refuelling of construction plant shall not occur within 50m of the surface water network and shall be carried out only in bunded refuelling areas.
- Emergency procedures and spillage kits are to be available and construction staff are to be familiar with emergency procedures.
- Measures are to be implemented to minimise waste and to ensure the correct handling, storage, and disposal of waste.





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- If any heavily contaminated land is encountered during construction, it is to be removed off-site and be disposed of at a licenced waste facility.
- Contaminated groundwater, if encountered on site, could result in contaminated waters being discharged from the construction site. Any such contaminated waters is to be treated using best practice and appropriate measures/controls, dependent on the nature of the contamination, prior to discharge.
- If dewatering is required, water is to be treated prior to discharge to any sewer or watercourse. This shall include treatment via petrol interceptor and treatment for silt removal, either via silt trap, settlement tanks, or ponds.
- There is to be no direct pumping of contaminated water from the works to the surface water drainage/stream network at any time.
- Foul drainage from site offices and compounds, where not directed to the existing wastewater network, is to be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations, to prevent the pollution of watercourses.
- An Emergency Response Plan is to be prepared, detailing the procedures to be undertaken in the event of flooding, a spill of chemical, fuel or other hazardous wastes, a fire, or non-compliance incident.
- It is to be ensured that site staff are trained in the implementation of the Emergency Response Plan and the use of any spill control equipment as necessary.

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## 8.0 MANAGEMENT OF ENVIRONMENTAL IMPACTS

Construction is envisaged to commence once final planning permission has been obtained. It is anticipated that the development shall be constructed over a period of approximately 48 months.

The proposed potential pollution mitigation measures outlined below shall be implemented in accordance with CIRIA document C532: *Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors*.

### 8.1 Designated Storage Area and Site Compound

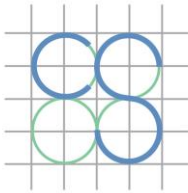
One or more site compound(s), including offices and welfare facilities, shall be set up by the Main Contractor in location(s) to be decided within the subject site.

The Main Contractor shall be required to schedule delivery of materials daily. The Main Contractor shall be required to provide facilities on the site for the secure storage of materials.

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

### 8.2 Vehicle Washdown

A self-contained vehicle washdown system shall be provided within the site, avoiding the need to discharge washdown runoff to foul or surface water drainage networks. Self-contained vehicle washdown systems (see **Figure 7**



for an example) are equipped with automated high-pressure hoses directed onto vehicle wheels, chassis and undersides. Side baffles prevent the dispersal of washed dirt, and an inbuilt reservoir collects all runoff from the wheel wash system. Water is filtered and recirculated within the system, reducing water usage. All washed solids are segregated by settlement and are either reused on site or removed and disposed of in the same manner as other spoil material.

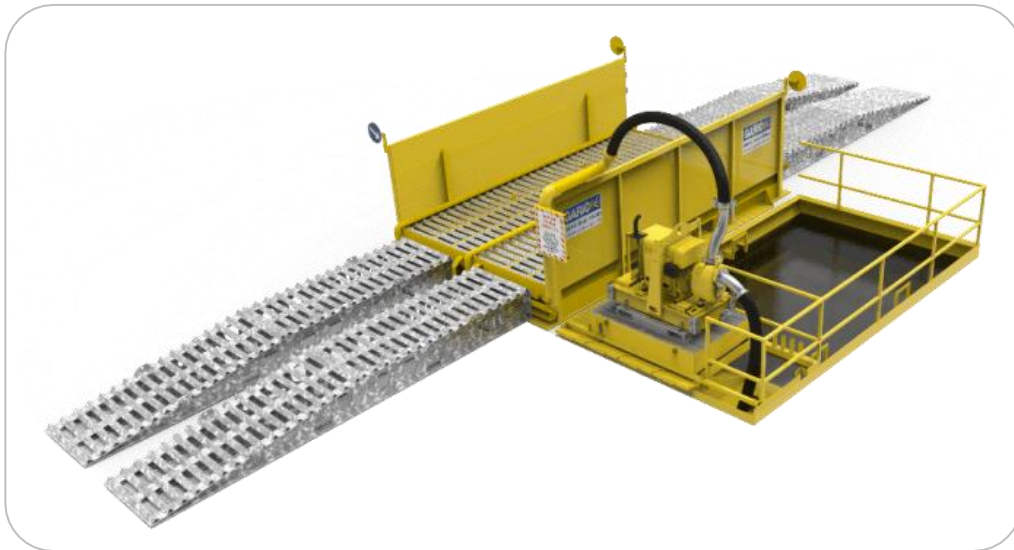


Figure 7 – Example of a self-contained vehicle washdown system  
(source: garic.co.uk)

### 8.3 Surface Water Runoff

On-site treatment measures shall be installed to treat surface water runoff from the site prior to its discharge to the development's attenuation facilities and subsequent outfall to the receiving surface watercourses. This treatment shall be achieved by the construction of cut off trenches along the lowest parts of the site, incorporating straw bales to reduce sediment loading. Interim settlement tanks/ponds, proprietary surface water treatment systems (including petrol interceptors where appropriate), and spill protection control measures shall also be employed. Interim settlement tanks/ponds shall be sized to deal with surface run-off and any

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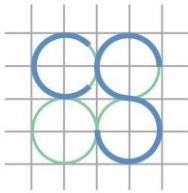
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groundwater encountered. All measures shall be approved by Wicklow County Council prior to commencement.

#### **8.4 Surface Water Monitoring**

To ensure that CSWMP actions are achieving the required objectives, supervision and monitoring is required. As part of their role, the PE shall agree a schedule of monitoring and reporting with the local authority. The schedule of monitoring shall depend on the programme of works, which in turn shall depend on the programme of the construction contractor.

In addition to regular and frequent visual inspections of surface water management provisions, a surface water monitoring programme 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 2006/44EEC) should act as a trigger values for the monitoring of surface water quality.



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## 9.0 OUTFALL MONITORING

Monitoring of the Rathnew Stream and Rossana Lower stream shall be undertaken periodically throughout construction. Trigger concentrations should be agreed at commencement and based on the baseline established prior to works commencing. Note: Additional measures shall be implemented in the event that threshold concentrations are surpassed.

The Main Contractor shall employ an environmental specialist who shall monitor water quality upstream and downstream of the area of works. Data on pH, conductivity, and suspended solids shall be collected as follows:

- Twice weekly visits during general site works.
- Daily site visits during key construction activities (to be agreed between the environmental specialist and Wicklow County Council), e.g. during and immediately after clearance of on-site vegetation.
- Event inspection, e.g. following heavy rainfall events or during concreting works.

All monitoring data should be collated to show trends for indicator parameters pH, conductivity, suspended solids, and hydrocarbons, and shall be shared at regular intervals with Wicklow County Council.

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## 10.0 REPORTING

Records shall be kept of all monitoring data obtained on site. The records on the monitoring shall be forwarded to the local authority for their review and any remediation required agreed between them and the applicant. This action shall take place on a fortnightly basis, unless agreed otherwise with Wicklow County Council.