Client:	Clockstrike Ltd.
Project Title:	Proposed Residential Development (Phase 02)
Project Location:	Ringwood, Blarney, Cork
Document Title:	Surface Water Drainage Technical Note-Phase 2 RFI Response –
Document No.:	BLR-2-02-SW-ZZZ-TECH-CE-001 Rev B_Surface Water Drainage Technical Note-
Author/s:	Mr. David Murphy, MHL & Associates Ltd.
Job No.:	Surface Water Drainage Technical Note-Phase 2 RFI Response –
Date:	17/07/2026

1 INTRODUCTION

1.1 Overview

MHL & Associates Ltd (MHL) have been appointed by the Clockstrike Ltd. to prepare a **Surface Water Drainage Technical Note-Phase 2 RFI Response** for an LRD Application in Ringwood, Blarney, Cork. This technical note sets out our responses to Cork City Council's request for further information on Drainage queries at the Proposed Residential Development (Phase 02) at the Ringwood site, in particular the following:

- Proposed attenuation tank design rationale.
- Proposed attenuation tank details.
- Proposed attenuation tank access.
- Proposed detention basins.

1.2 Scope of Technical Note

This technical note is supplementary to the design reports previously submitted for the LRD application.

Please refer to the:

- BLR-2-02-SW-ZZZ-RP-MHL-CE-001 EDR
- BLR-2-02-SW-ZZZ-RP-MHL-CE-009 DIA

The LRD application area is within Blarney, located east of Station Road. See Figure 1.1 below.



Figure 1.1 – Wider Context

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1.3 Project Development Description

The proposed development will consist of a large-scale residential development (LRD), representing Phase 2 of development in the Blarney East/Ringwood Expansion Area. The development will comprise the construction of 319 residential dwellings, including 157 terraced, end-of-terrace and semi-detached houses (129 three-bedroom and 28 four-bedroom units), 48 back-to-back duplexes in four blocks (32 two-bedroom and 16 three-bedroom units), and 114 apartments within two five-storey buildings (54 one-bedroom and 60 two-bedroom units). The proposal also includes the construction of a two-storey Primary Care Centre with a gross floor area of 1,724 sq m incorporating GP services, together with the refurbishment and redevelopment of existing farm outbuildings to provide an 80 sq m retail/pharmacy unit and a 380 sq m café/restaurant. Access to the site will be provided via a new roadway from the R617, including associated pedestrian and cyclist infrastructure, forming the first phase of the proposed Stoneview Access Link Road. The development also includes a new signalised junction on the R617, providing a single-lane approach from the west and a two-lane approach from the east, comprising one through-traffic lane on the R617 and a right-turn lane into the site, together with associated footpath improvements and cycle lane provision. Additional road infrastructure works include a new signalised junction at the R617/Killard Road junction, providing a two-lane approach from the west with one eastbound through lane and a right-turn lane onto Killard Road, associated pedestrian and cyclist infrastructure, a new junction arrangement at Castle Close Lawn with associated footpath and active travel improvements, and a new signalised junction on Station Road consistent with that permitted under the Phase 1 LRD scheme (Reg. Ref. 2443031). The proposal further includes private, communal and public open spaces, hard and soft landscaping, boundary treatments and amenity areas, including a new wetland public amenity area; drainage works and nature-based Sustainable Drainage Systems (SuDS); foul sewer infrastructure including a new combined pump station serving Phases 1 and 2, a secondary pump station for the Primary Care Centre, the diversion of existing foul and water sewers and associated network works; car parking including electric vehicle charging points, bicycle parking and motorcycle bays; two substations; and all associated ancillary site, drainage and development works. An Environmental Impact Assessment Report (EIAR) accompanies the planning application and will be available for inspection or purchase, at a fee not exceeding the reasonable cost of making a copy, during office hours at the offices of the Local Authority

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Figure 1.2 - Site Location Map

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2 FI QUERIES -PHASE 1

a. ***The proposed drainage strategy includes SNr. attenuation tanks. Of these, 3Nr. tanks were included in the Phase 1 development. However, the plan shape and size of tanks included in this application appear to differ from the permitted scheme. Please clarify.***

The proposed Phase 2 development includes five (5) independent surface water attenuation tanks. These attenuation tanks are separate from, and do not form part of, the attenuation infrastructure permitted under the Phase 1 planning permission. While attenuation tanks were included as part of the permitted Phase 1 development, the attenuation tanks proposed under this application have been designed specifically to serve the Phase 2 drainage network and are therefore distinct in both layout and function. Consequently, the plan shape, size and configuration of the Phase 2 attenuation tanks differ from those previously permitted for Phase 1.

Please refer to the submitted Surface Water Drainage Layout drawings and associated engineering documentation, which clearly identify the location, extent and function of the proposed Phase 2 attenuation infrastructure.

b. ***General arrangement and layout drawings were not provided for the SNr. attenuation tanks. Where a development is intended to be taken in charge, attenuation tanks must be concrete and have sufficient access to facilitate jetting and vacuuming the tanks from the surface, without entry. Access covers must be large enough to facilitate this work and located at regular intervals to access all areas of the tanks. Internal wall arrangements should be avoided. Access covers should be suitably rated for load, lockable, flush, and have a minimum clear opening of 600mx600m square with an internal fall arrest system. Where attenuation tanks are exceptionally large or rely on internal wall arrangements, tanks must have a minimum internal clearance height of 2m from the base of the tank to the roof slab. Please provide general arrangement and cross section drawings for each tank.***

The proposed attenuation tanks have been designed in accordance with the requirements for infrastructure intended to be taken in charge. The tanks are of reinforced concrete construction and have been designed to facilitate future inspection and maintenance. Access has been provided to enable jetting and vacuuming operations to be undertaken from ground level without the need for confined space entry. Access covers are suitably sized and located to provide access to all areas of the tanks and are specified as heavy-duty, lockable, flush-finished covers with a minimum clear opening of 600 mm × 600 mm and integral fall arrest systems, as required.The tank layouts have been designed to minimise internal obstructions where practicable. Where internal wall arrangements are required, the tanks provide the necessary internal clearance to facilitate safe inspection and maintenance in accordance with Uisce Éireann requirements.

c. ***Please provide full details of how each tank can be accessed and maintained. This shall include autotrack drawings showing how a large 10-tonne JetVac truck can access each tank, where it can be parked and positioned safely during the works. Details of any traffic management required to facilitate the work must also be detailed.***

The proposed surface water attenuation tanks have been designed to facilitate safe and efficient inspection and maintenance throughout the operational life of the development. Each tank is accessible via the proposed internal road network, with maintenance access provided directly from roads designed to accommodate heavy goods

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vehicles.AutoTRACK drawings have been prepared and are submitted in response to this request. These drawings demonstrate that a 10-tonne JetVac vehicle can safely access each attenuation tank, manoeuvre within the development, and be positioned adjacent to the maintenance access points to facilitate jetting and vacuuming operations from ground level without the need for confined space entry.The maintenance access covers have been located to enable all areas of each tank to be serviced from the vehicle's operating position. The proposed internal roads are designed to accommodate the anticipated maintenance vehicle loading and provide sufficient carriageway width and turning geometry for routine maintenance operations.

As the attenuation tanks are located within the proposed development and are accessed from the internal road network, any maintenance activities can be undertaken using standard temporary traffic management measures. It is anticipated that these activities would be infrequent and of short duration, with localised traffic management, where required, implemented in accordance with the relevant Traffic Signs Manual and applicable health and safety requirements to maintain safe access for residents and maintenance personnel.

Please refer to the enclosed AutoTRACK drawings and maintenance access layouts submitted with this response, which demonstrate vehicle access, parking positions and maintenance arrangements for each attenuation tank.

d. ***It should be noted that the attenuation tank located to the north of the Cafe & Retail Building is located in an area shown as not to be taken in charge. All drainage connected to and associated with this tank will also not be taken in charge. This includes any proposed storm pipes along the access road. This infrastructure will have to be managed by a private management company.***

The proposed layout has been revised in response to this comment. The surface water attenuation tank previously located to the north of the Café and Retail Building has been relocated to a proposed public open space area within the development. The tank is no longer located within an area identified as not being taken in charge and is not situated within any third-party lands.

Accordingly, the associated surface water infrastructure is located within the proposed public realm and forms part of the infrastructure intended to be taken in charge, subject to the agreement of the Planning Authority. Please refer to the revised engineering drawings submitted with this response, which illustrate the updated tank location and associated drainage network.

e. ***A number of the attenuation tanks show "Proposed SuDS locations" above the tanks. Please note that there shall be no infiltration measures above, below or adjacent to attenuation tanks. Please provide cross sections showing the tanks and proposed SuDs locations. Please clarify how storm water will flow between the SuDS locations and attenuation tanks.***

The proposed SuDS features associated with the attenuation tanks do not incorporate infiltration measures. The reference to "Proposed SuDS locations" relates to above-ground source control measures designed to provide water quality treatment and flow attenuation only.

There are no infiltration features proposed above, below or adjacent to the attenuation tanks. Surface water runoff from the proposed SuDS features will be collected via the conventional piped drainage network and conveyed to the attenuation tanks, with no infiltration to ground occurring in the vicinity of the tanks.

Cross-sections illustrating the relationship between the proposed attenuation tanks and the adjacent SuDS features are included with this response. These drawings demonstrate the separation between the structures and confirm

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the hydraulic arrangement by which surface water flows from the SuDS features to the attenuation tanks via the proposed storm drainage network.

f. ***There are also a number of SuDS areas indicated across the development. In particular, the east of the development. No details or cross sections were provided. Please provide full details and cross sections with all side slopes and maximum depth of water for each feature. Clearly highlight the full extent of the above ground storage areas.***

The submitted drawings identify the full extent of each above-ground SuDS feature, including plan dimensions, side slopes, base levels, crest levels and the maximum design water depth. The SuDS features have been designed as shallow attenuation and water quality treatment measures with gently graded side slopes to ensure safe operation, ease of maintenance and integration with the proposed landscape design.

The SuDS features provide temporary storage of surface water during storm events before discharging at a controlled rate to the downstream drainage network. The maximum design water depths and associated storage extents are illustrated on the submitted cross-sections and have been incorporated into the hydraulic design of the overall surface water management system.

Please refer to the enclosed SuDS layout drawings, cross-sections and hydraulic modelling outputs, which identify the predicted water levels within each SuDS feature for the relevant design storm events and demonstrate the performance of the proposed drainage system

.***The Flood Risk Assessment provided is inadequate as it does not assess the potential impact of the development on flood risk elsewhere. In particular, it does not assess the impact of discharging storm water from the development at the proposed discharge rates in the Engineering Report. The FRA states "The Phase 2 drainage design will be required to comply with". The flood risk assessment does not consider the finalised design. Please provide a revised FRA which assessed the finalised drainage design, discharge rates and its potential impact on flood risk elsewhere.***

A revised Flood Risk Assessment (FRA) has been prepared by JBA Consulting and is submitted as part of this Response to Further Information.

The revised FRA has been updated to reflect the finalised Phase 2 drainage design and assesses the proposed surface water management strategy, including the discharge rates from the development and the potential effects on flood risk elsewhere. The assessment confirms that the proposed drainage strategy has been designed to attenuate runoff and restrict discharge in accordance with the approved drainage strategy, thereby ensuring that the development does not give rise to an increased risk of flooding on adjoining lands or within the receiving watercourses.

Please refer to the revised Flood Risk Assessment prepared by JBA Consulting, submitted with this Response to Further Information, for full details of the assessment and conclusions.

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3 FI QUERIES- RESPONSES

3.1 Proposed attenuation tank access

In response to the request for clarification on how the four proposed attenuation tanks will be accessed and maintained safely, each of the 4 attenuation tanks are designed with practical access points to facilitate routine inspection and maintenance activities. The design incorporates safety measures to ensure that maintenance personnel can perform their tasks without risk to their health and safety.

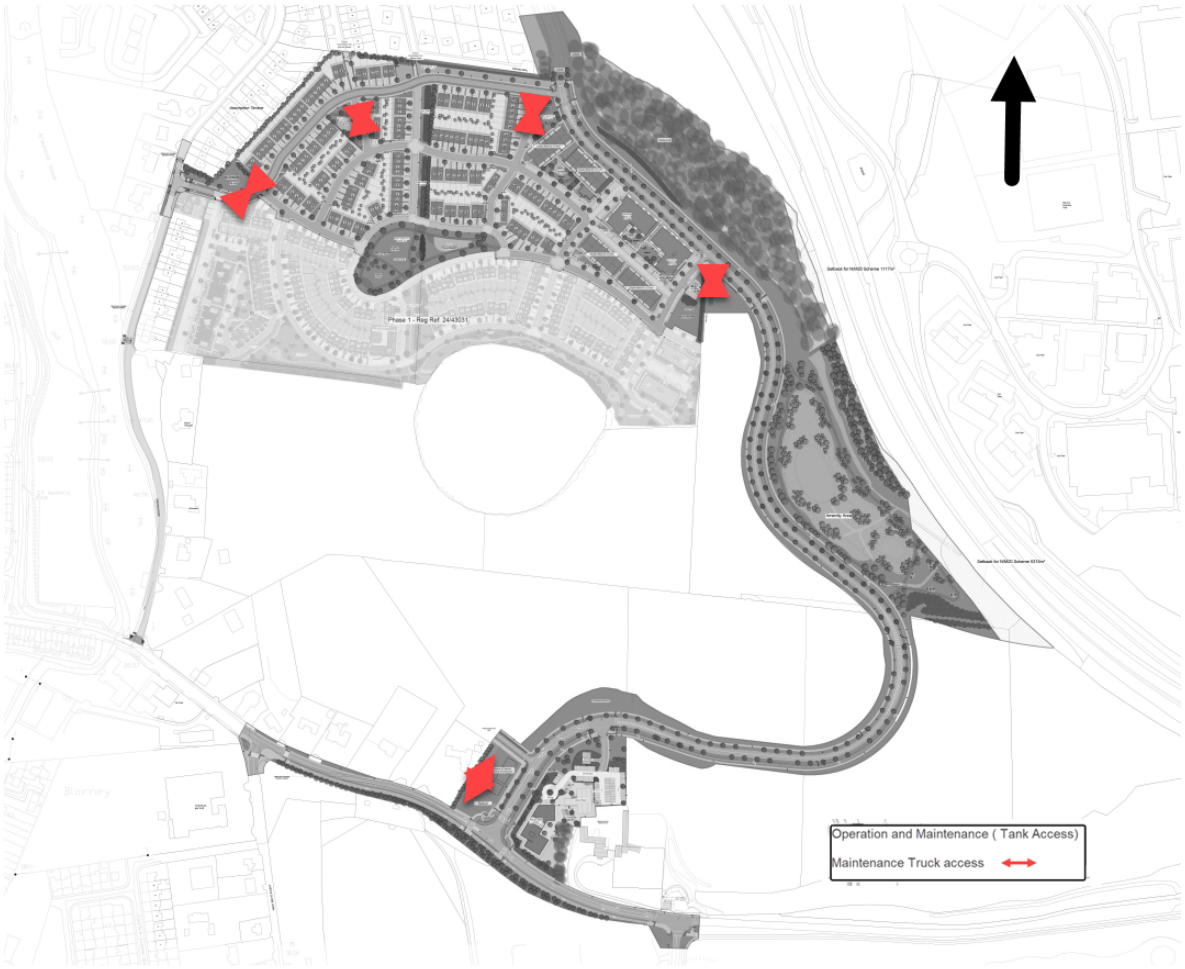


Figure 3.1 Proposed maintenance vehicle / tank access.

Specifically:

Access Points:
Each tank will be equipped with dedicated access hatches, compliant with safety regulations, allowing for easy and safe entry during maintenance operations. The access points will be marked, and their locations are to ensure minimal disruption to surrounding areas during maintenance.

Parking and Machinery Placement:
The machinery parking areas will be designed to accommodate all necessary maintenance equipment while maintaining a safe distance from the tanks and minimizing risk to both workers

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and machinery. In accordance with safety best practices, machinery will be parked on stable ground with appropriate safety measures such as wheel stops and warning signage.

Risk Mitigation:
The design ensures that all maintenance activities can be performed without the need for personnel to enter confined spaces, unless absolutely necessary. If confined space entry is required, all relevant safety measures will be implemented in line with industry standards and regulations.

Whilst efforts to ensure access to the tanks and corresponding infrastructure applicable to the design are a priority, particular attention must be paid to traffic and pedestrian management during maintenance operations. Given the proximity of the tanks to key public pathways—such as pedestrian footpaths, cycle lanes, and nearby roadways—there will be inevitable temporary disruptions. However, these would need to be carefully managed through a well-structured traffic management plan that minimizes risk and inconvenience while ensuring compliance with safety standards.

The maintenance traffic management is required for ensuring the safety and smooth operation of maintenance activities when working on the reinforced concrete tanks, Hydrobrake manhole, and petrol interceptor located in an area surrounded by pedestrian footpaths, cycle lanes, and nearby roadways. Given the proximity of these critical infrastructure components to public spaces, such as residential footpaths in a green park area, temporary disruptions are inevitable during maintenance works. However, with proper traffic management, these disruptions can be minimized, and risks to the public and workers can be adequately controlled.
Temporary Road and Cycle Lane Closures:

To carry out the necessary operation and maintenance activities on the tanks and associated infrastructure, it will be necessary to temporarily block certain areas, including adjacent roadways, cycle lanes, and pedestrian footpaths.

Traffic management plan during maintenance would include for:

- Temporary road closures or lane reductions on nearby roadways, ensuring that vehicular traffic can be rerouted effectively.
- Temporary detours for cyclists, with clear signage guiding them to safe alternate routes that bypass the work area.
- Pedestrian management, ensuring that walkways are temporarily closed or redirected without causing major inconvenience to residents or park visitors.

Managing Pedestrian Footpaths in Residential Areas:
The tanks are located near residential footpaths in a green park area, and access to these paths will also need to be managed carefully. For safety reasons, certain footpaths will be temporarily closed to the public during maintenance activities. The following steps will be taken:

Clear warning signs will be installed well in advance to inform pedestrians of upcoming closures and provide alternate walking routes.
Barriers or fencing will be used to clearly demarcate work zones, ensuring that residents do not accidentally enter hazardous areas.
Access to residential properties and park amenities will be maintained wherever possible, with alternate pathways or temporary crossings provided to minimize inconvenience.

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Safe Plant and Machinery Operation:
During maintenance, heavy machinery and plant equipment, necessary for tasks such as accessing the tanks, manholes, and petrol interceptors, will be in use. To ensure the safe placement and operation of this equipment:

- Dedicated areas for machinery will be established, safely positioned to avoid interference with pedestrian or vehicular movement.
- Traffic controllers will be on-site to manage the movement of machinery and ensure that it does not pose a danger to cyclists, pedestrians, or vehicles.
- Temporary traffic lights or signage may be used where necessary to control vehicle and pedestrian flow near the work zone.

Cyclist and Pedestrian Safety:
Given the presence of nearby cycle lanes and footpaths, special consideration will be given to the safety of cyclists and pedestrians during maintenance operations. In addition to road detours and temporary closures:

Temporary barriers or bollards will separate pedestrians and cyclists from the work area, reducing the risk of accidents.
Warning signals such as flashing lights, cones, and temporary speed limits will be put in place to ensure that traffic slows down near the maintenance site.
Cyclists and pedestrians will be given clear instructions via temporary signage about alternate routes and the duration of closures to minimize confusion and inconvenience.

Coordination:
All temporary road, cycle lane, and footpath closures should be carefully coordinated with relevant stakeholders to ensure that the public is adequately informed, and that emergency access is maintained. Communication will also be extended to residents, ensuring that they are aware of the planned works and the measures in place to minimize disruption.

Since the maintenance works will occur in a green park area near residential footpaths, special care should be taken to minimize the environmental impact of the operations. Measures such as noise control, dust suppression, and waste management will be implemented to ensure that the park remains an enjoyable space for residents, even during maintenance. Additionally, by maintaining clear communication with residents and park users, we aim to reduce any social impact from temporary closures or restricted access.

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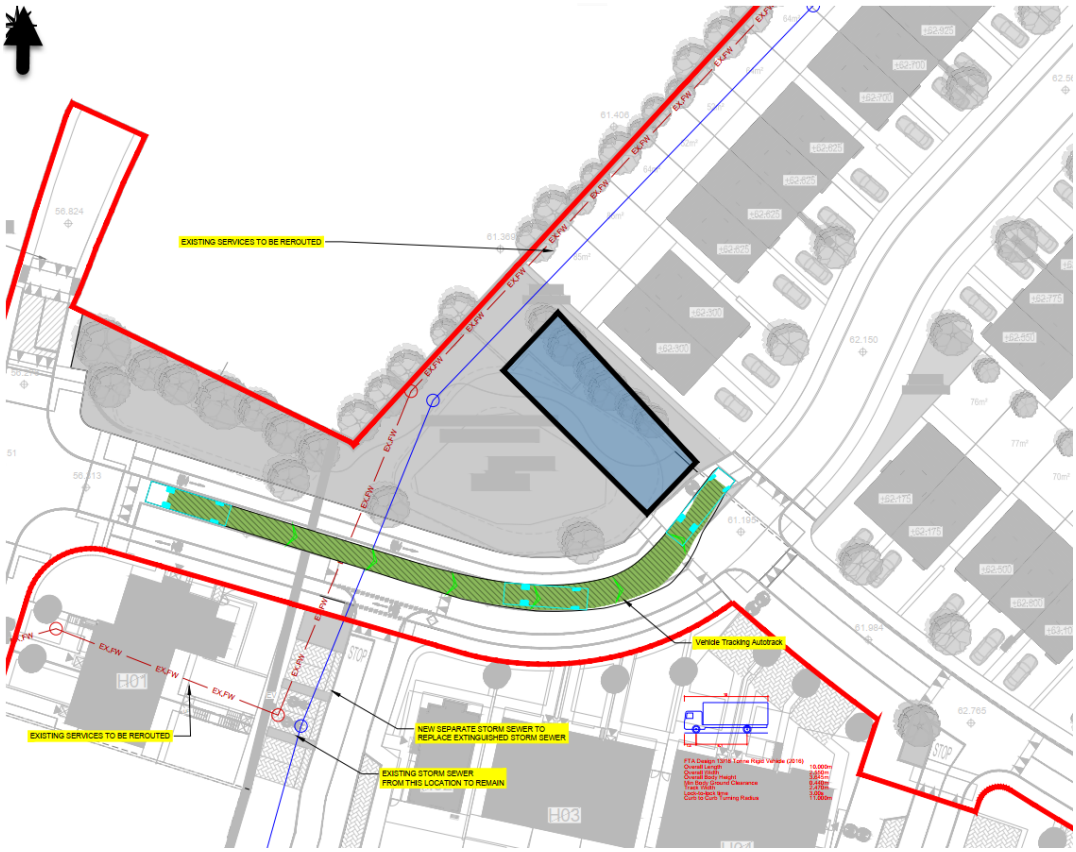


Figure 3.2 Proposed maintenance vehicle / tank access- Tank A.

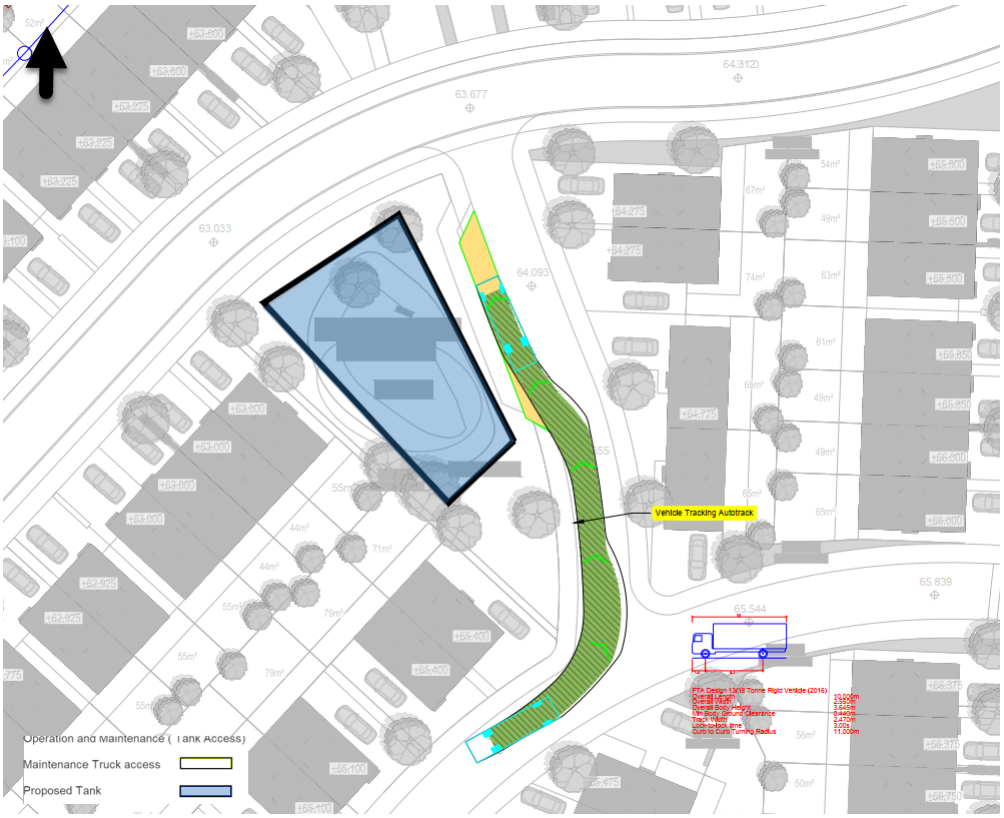


Figure 3.3 Proposed maintenance vehicle / tank access- Tank B.

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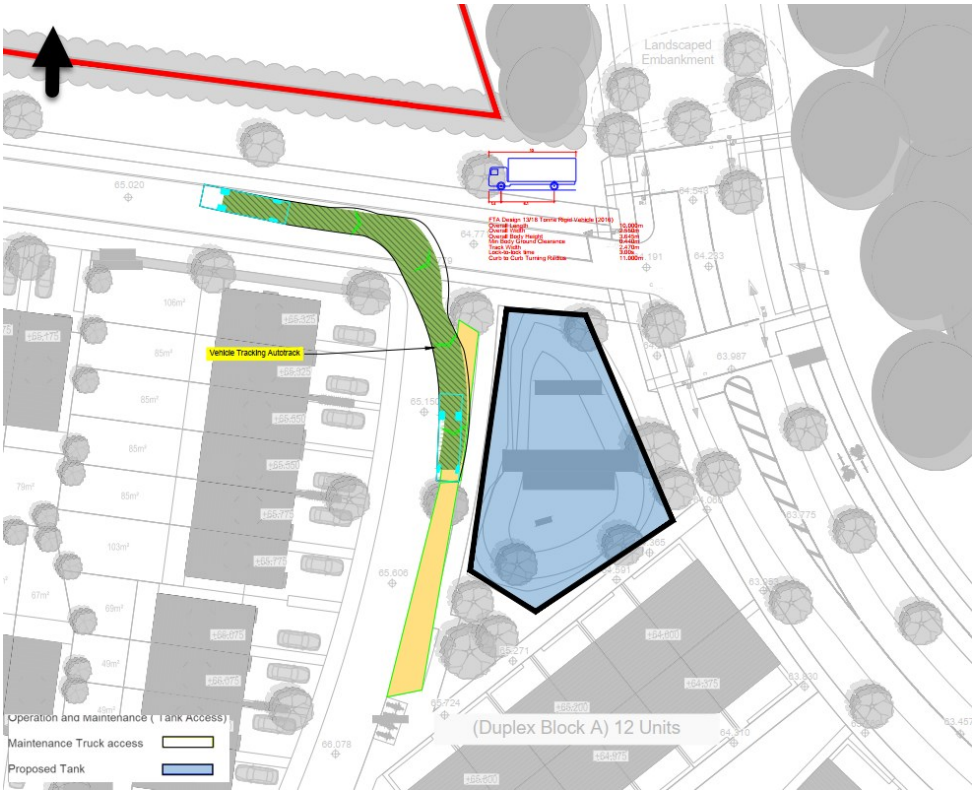


Figure 3.4 Proposed maintenance vehicle / tank access- Tank C.

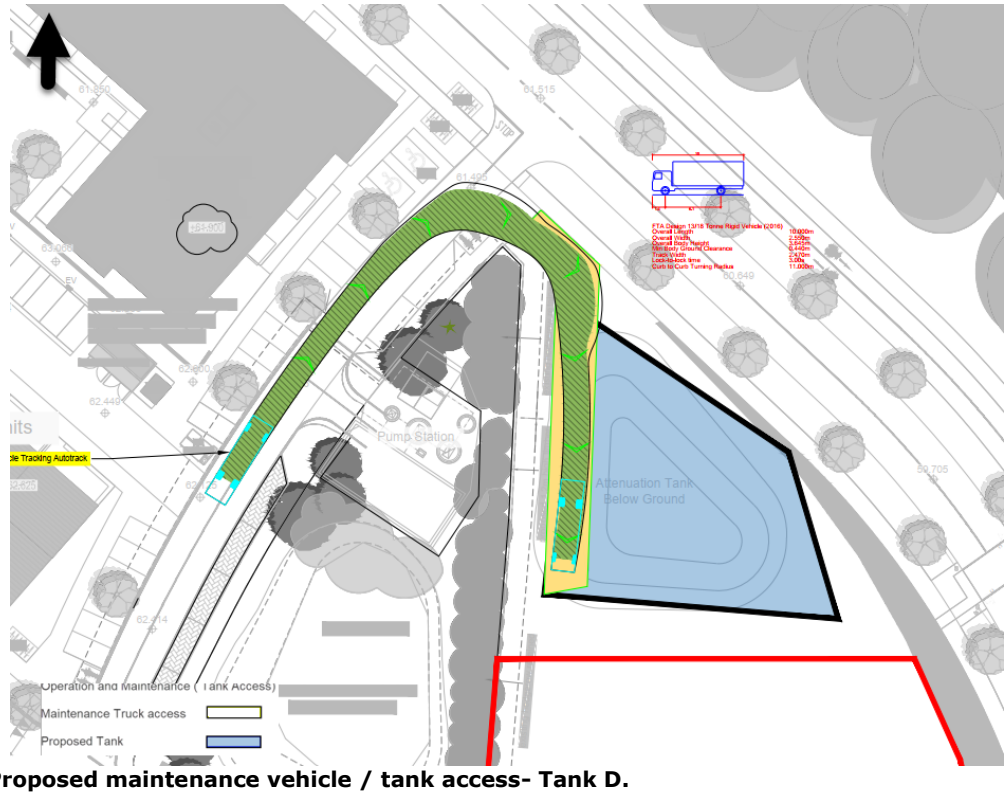


Figure 3.5 Proposed maintenance vehicle / tank access- Tank D.

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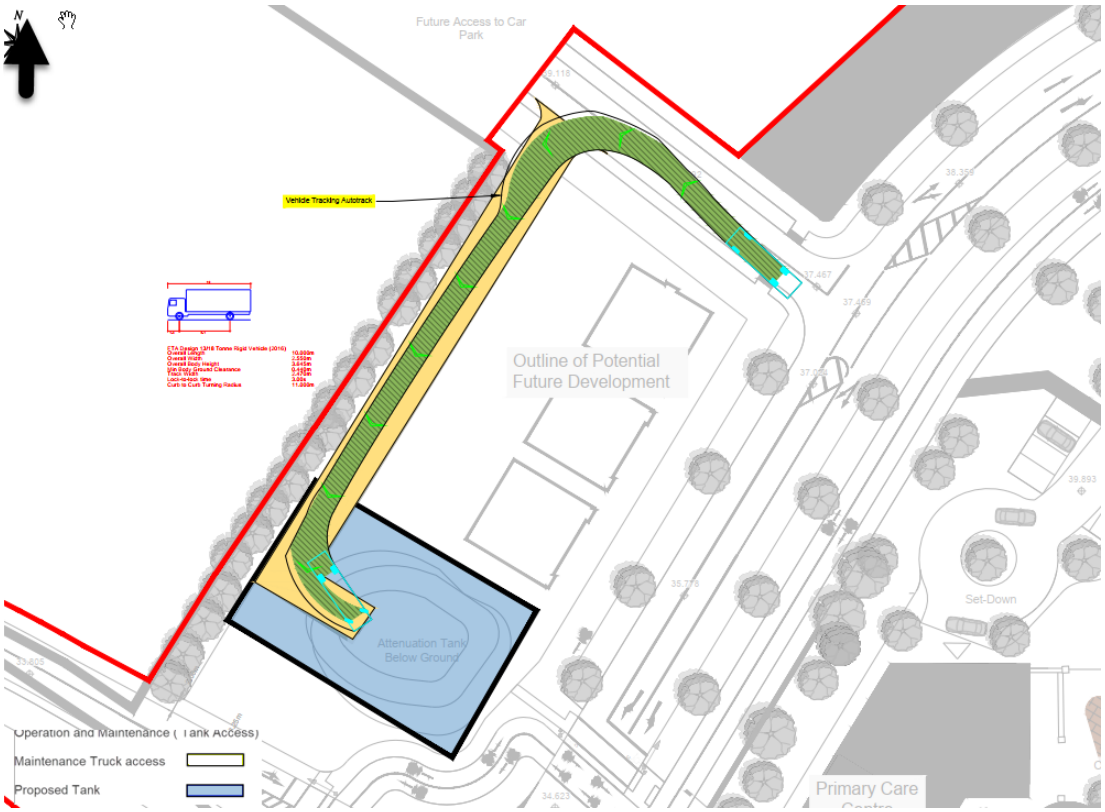


Figure 3.6 Proposed maintenance vehicle / tank access- Tank E.

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4 PROPOSED DETENTION BASINS

RFI ITEM 1D.

4.1 Detention basins

On the recommendations for the LRD opinion stage, the pre planning design was adjusted to incorporate SUDs measures were noted in the formal LRD application. This application includes 4No. detention basins, with 3No. of the proposed detention basins located on top of the proposed attenuation tanks (i.e. 1a, 1c, 1d)

The design of the reinforced concrete (RC) tanks and Sustainable Urban Drainage System (SUDS) basins manage stormwater runoff from the new residential development. The RC tank provides underground attenuation storage, collecting stormwater during peak rainfall events and controlling the discharge rates to prevent overwhelming the local drainage network. The SUDS basin complements this by providing additional surface-level storage and promoting the natural infiltration of water into the ground. Both systems are connected by inspection chambers, ensuring a regulated discharge that aligns with the site's drainage strategy, reducing the risk of flooding, and accommodating the increased storm flow rates generated by the development.

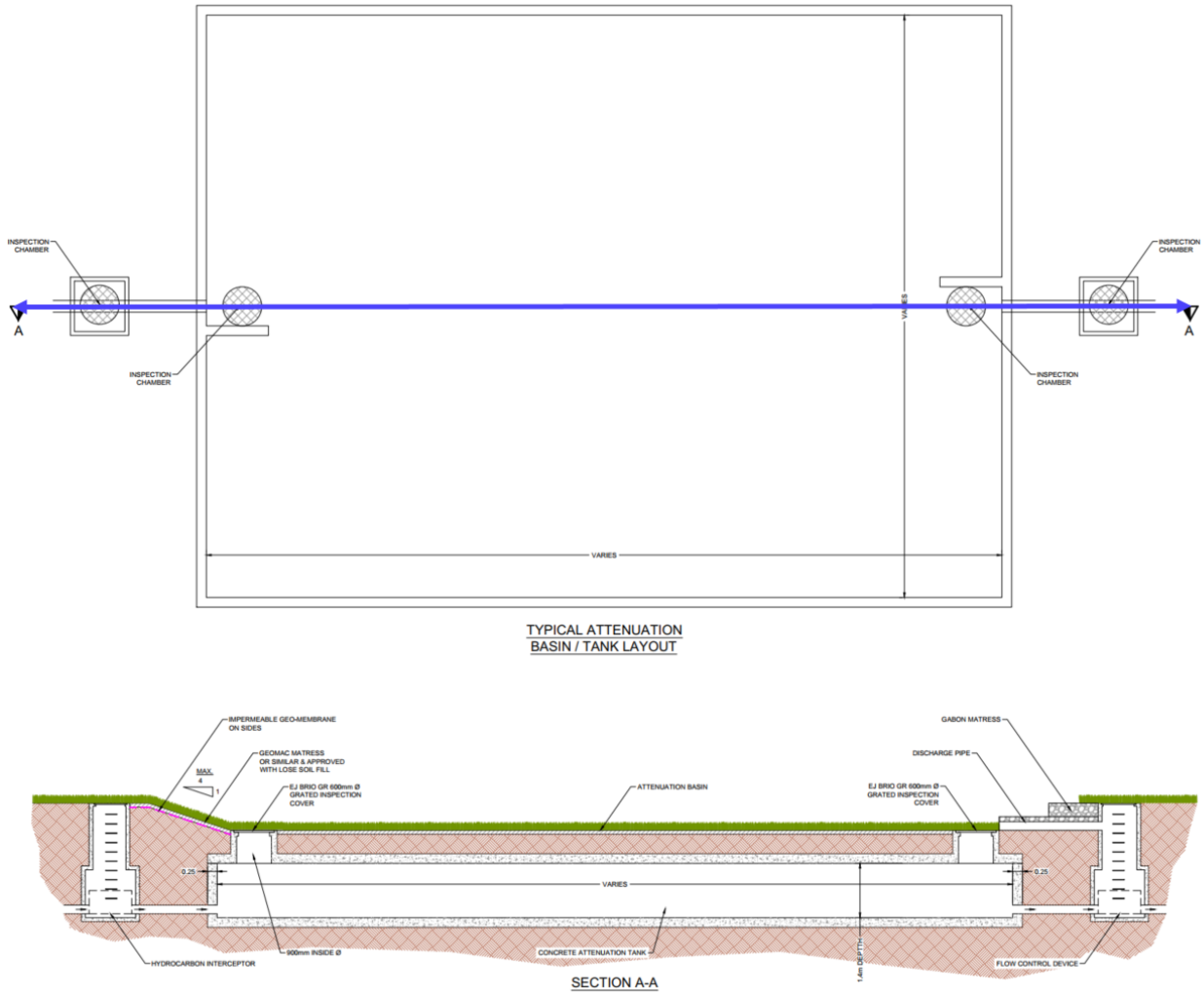


Figure 4.1 Phase 01- Suds basin/ attenuation tank design

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4.1.1 Interconnection

The proposed detention basins are to provide additional storage duration peak storm events and also act as a conduit for storm surface flows running of hardstanding areas and within the green park areas. The basins are to be interconnected with the attenuation tanks, as referenced the submitted RFI drawing pack and Figure 4.1 below.

4.1.2 Basin Side Slopes

The basins have been designed in 3d, with reference to associated levels of the proposed road levels and proposed property finished floor levels. This ensures the proposed suds features tie into the surrounding proposed ground levels and the feature can maintain a maximum side slopes of 1/4.

The detention basins are designed to temporarily hold surface runoff from the adjoining road and hardstanding areas during storm events, allowing for initial water retention and settlement. The basins gradually transferred this volume to the reinforced concrete (RC) tanks located beneath the basins. This two-tier system ensures that the basins temporarily manage peak runoff, reducing the risk of immediate flooding, while the RC tanks provide additional long-term storage. By holding water in the SuDS basins before storing, it in the tanks, the system effectively manages stormwater, controlling flow rates and improving water quality before final discharge. The basins have been designed as dry basins, with the depth of water in each of the detention basins to be reflective of the hardstanding flows during storm events and will primarily feature as part of the retention volumes for Phase 02 flows.

4.1.3 Overflow

Overflow controls between the suds basin/ and storm network are as shown in Figure 4.2, where a 225mm diameter overflow pipe is located downstream (within the suds basin) and directly connects into the adjacent downstream manhole. Labels 2 and 3 show the EJ BRIO GR 600mm diameter grated inspection cover. In compliance with the Safety, Health, and Welfare at Work Act and related confined space codes of practice for access guideline, all covers on the attenuation tanks will be lockable, are to include a fall arrest system (opening in the same direction as the cover), and are to be large enough for entry with full Breathing Apparatus (BA) equipment, details to be agreed with Cork City Council Drainage Department preconstruction stage.

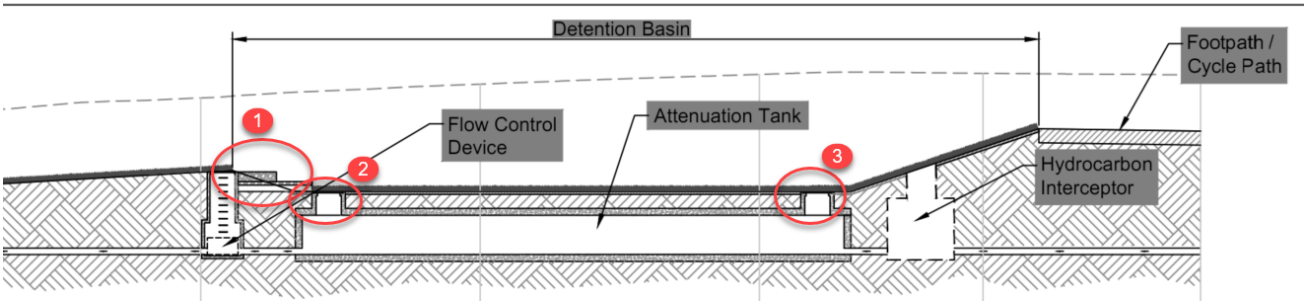


Figure 4.2 Phase 01 Suds/ tank overflow (extract)

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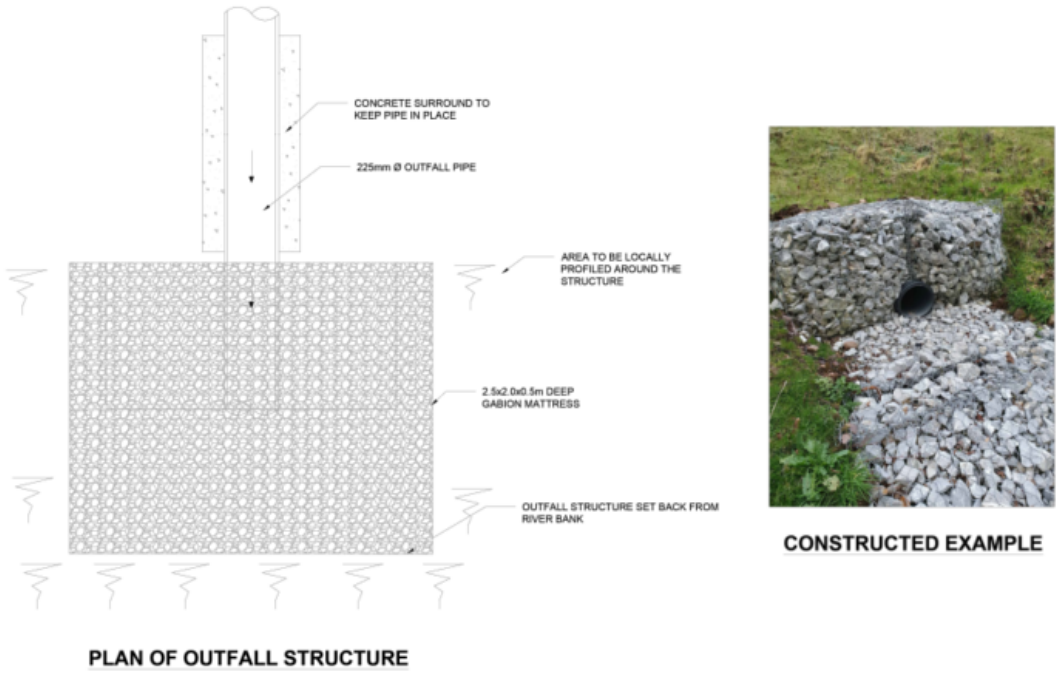


Figure 4.3 Phase 01 Proposed Suds – overflow detail

4.1.4 Water Table / attenuation tank floatation

In September 2023, Priority Geotechnical Ltd. (PGL) undertook a preliminary site investigation on site. The scope of the preliminary site investigation determined by M.H.L. comprised of:

- Visit project site to observe existing conditions.
- 7 No. Trial Pit excavations TP01 – TP07.
- In site testing: 4Nr. BRE365 soakaway; tests: TP01, TP02, TP05 and TP07.
- All associated sampling; Laboratory testing with Environmental testing, Suite E: TP02, TP03, TP04 and TP06.

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Figure 4.4 Phase 1- Site investigation locations

The trial pit locations relevant to Phase 01, include TP001 (location of Tank A), TP005 (location of Tank C) and TP007 (location of Tank D).
The site investigation noted no groundwater strikes at depths of 3.7m, 4.2m and 3.25m. Groundwater was detected at TP007 below 3.25m BGL.

From these preliminary SI findings, the tank bases are estimated not be impacted by floatation due to the in-situ water table on site. This will be further confirmed preconstruction stage, during enabling works which will verify the site investigation findings undertaken at planning stage. There may be low risk of floatation a location (tank D) but is seen as unlikely due to the existing and proposed topography /gradient at this side of the site. Tank floatation can be mitigated against through employing methods such as increasing the weight of the tank by making it thicker or adding ballast to counteract the buoyant force. Another method is anchoring the tank to the ground using piles or ground anchors to secure it in place. Each of these approaches helps ensure the tank remains stable, even in challenging conditions where groundwater levels are high, safeguarding both the structure and its long-term functionality.

Location	Final depth, m bgl	Remarks	
		Stability	Groundwater
TP01	3.70	Good	None encountered.
TP02	4.20	Good	None encountered.
TP03	3.60	Moderate	None encountered.
TP04	3.25	Good	None encountered.
TP05	4.20	Good	None encountered.
TP06	2.65	Good.	None encountered.
TP07	4.60	Good	Steady rate of flow 3.25m.

Figure 4.5 Phase 01- Trail pit findings

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4.1.5 Supplementary

Material

Proposed storm sewers are designed and specified to comply with Uisce Éireann's requirements for gravity sewers as outlined in their Code of Practice for Wastewater Infrastructure.

Depth of cover

As per Cork City Council's Minimum Engineering Requirements for Residential Site Development Works, "all sewers shall be laid with a minimum cover of 1.2m in roads and footpaths immediately adjacent to roads and 0.9m in all other areas." This requirement is adhered to across the proposed Ringwood LRD stormwater and wastewater network. Please refer to the drainage layouts as submitted for details.

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