



Additional Engineering Assessment Report (Accompanying Oldtown Phase 5 Planning Package)

Stormwater Storage Tank on Foul Water Network at
Balheary Road, Swords, Co. Dublin

March 2022

Waterman Moylan Consulting Engineers Limited

Block S, East Point Business Park, Alfie Byrne Road, Dublin D03 H3F4
www.waterman-moylan.ie



Client: Gerard Gannon Properties
Document Reference: 17-144r.017 Additional Engineering Assessment Report
Project Number: 17-144

Quality Assurance – Approval Status

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015 and BS EN ISO 14001: 2015)

Issue	Date	Prepared by	Checked by	Approved by
1	March 2022	Richard Miles	Mark Duignan	<i>Mark Duignan</i>

Comments

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1. Introduction

1.1 Background of Report

This additional Engineering Assessment Report has been prepared by Waterman Moylan as part of the planning documentation for Oldtown Phase 5, in support of the proposed Stormwater Storage Tank required on the Irish Water foul water network, draining to the Swords Wastewater Treatment Plant and serving the Oldtown / Mooretown and Holybanks catchment in Swords, Co. Dublin. The proposed tank will alleviate constraints within the Irish Water foul water system (including the subject application site, Oldtown Phase 5), that occur during times of heavy or prolonged rainfall, resulting from surface water and foul water infiltration.

The proposed tank shall be vested to Irish Water for taking in charge and maintenance as soon as it has been constructed and meets Irish Water requirements. Connection agreements for the subject Phase 5 site will be subject to a connection agreement that will stipulate the delivery of the proposed tank in advance of connections being made.

The surcharging of this foul water network results in frequent overflow into the Ward River (400m upstream of the Broadmeadow River), immediately upstream of Swords Wastewater Treatment Plan. The Ward River Connects to the Broadmeadow River c. 1km upstream of the Broadmeadow Estuary.

Irish Water have undertaken modelling of the catchment and have concluded that a 2,250m³ off-line tank will supply the requisite storage for over and beyond a 1 in 5-year storm as further discussed in Section 2 of this report.

These works are required for the delivery of critical wastewater infrastructure within the northwest catchment in Swords. This will ensure that the quantum of housing within this catchment can continue, including on-going housing developments in the Oldtown / Mooretown LAP lands and Strategic Housing Development in Holybanks LAP lands. Within Oldtown / Mooretown and Holybanks lands there are currently c. 400 units with planning permission awaiting Connection agreements with Irish Water and a further c.1,500 substantially through the Strategic Housing Development planning process and awaiting final submission to An Bord Pleanála. The total build-out of the Oldtown / Mooretown lands and Holybanks lands will provide for another 3,300 on top of what is already under construction. The approval of this subject storage tank will allow these housing and residential developments to proceed and continue.

These critical wastewater infrastructure works will be developer led through the planning process, utilising the data and modelling input received from Irish Water to form the basis of the planning documentation.

The storage tank has been designed in conjunction with Irish Water input on volumetric storage capacity and was lodged as a planning application to Fingal County Council by the subject applicant. The application was registered under planning Reg. Ref. F21A/0476 and is currently a live application at Additional Information stage which is due for decision in mid-April 2022 (current status at the time of writing this report). Thus, it was deemed appropriate to propose the tank and the associated works as part of this SHD application.

This report should be read in conjunction with Waterman Moylan's Storage Tank Flood Risk Assessment (FRA) and Preliminary Construction Environmental Management Plan (PCEMP).

This report should also be ready with the following reports/packages:

- Screening Report for AA and NIS, as well as the Ecological Impact Assessment, all prepared by Openfield,
- Stormwater Overflow & Receiving Stream (Broadmeadow) Assimilation Simulation Evaluation Reports, prepared by AWN Consulting and Hydro-G.
- Assessment of Likely Arboricultural Impacts, prepared by The Tree File Ltd.
- CGI Verified View of Outfall prepared by Digital Dimensions
- Landscape Plan prepared by Doyle O'Troithigh

1.2 Site Location and Description

The proposed site for the Stormwater storage tank is located on the junction of the Glen Ellan Road and the Balheary Road, Swords, Co. Dublin, as indicated in *Figure 1* below. The site is 1.4km north of Swords, 1.1km west of the M1 motorway and 300m south of the Broadmeadow River. The site is owned by The Applicant and is locally referred to as the Celestica/Motorola site.



Figure 1 | Site Location (Source: Google Earth)

The existing ground topography of the proposed storage tank location ranges from 6.30m-6.90m, with gentle gradients falling from west to east and from north to south. Access to the site will be from a newly

proposed entrance to the east of the site, a safe distance north of the junction between the Glen Ellan Road / Balheary Road junction. The site for the proposed tank is brownfield, with some existing below ground infrastructure that will require removal and/or relocation.

1.3 Proposed Development & Application Context

It is proposed to provide a Stormwater storage tank and outfall utilising lands on the Celestica site to alleviate known constraints in the foul water network that services the Oldtown / Mooretown / Holybanks lands catchments.

The constraints in this foul water network have been noted in all Oldtown and Mooretown planning permissions since the commencement of this development. Until now Fingal County Council and more recently Irish Water have allowed construction to continue in this catchment whilst they have been preparing their hydraulic model (DAP) of this catchment in its current and future scenario.

In December 2020, Irish Water confirmed that following recent modelling of the foul water network, that they will not be issuing further Connection Agreements in this catchment (including Oldtown Phase 5), until such time that the capacity constraints are either fixed or have an agreed solution and programme in place.

Irish Water have undertaken a model review of the constraints within the network and determined that a tank of 2,250m³ volume is required, as further explained in Section 2 of this report. It is proposed to also provide a new outfall sewer along the Balheary Road to the Broadmeadow River, for overflow of the excess stormwater within the foul network during the more extreme rainfall events.

The details of this tank have been discussed in detail with the applicant in advance of this planning application. As standard, a Confirmation of Feasibility letter will be issued for future residential development in the catchment. In this regard, a confirmation of feasibility has been received from Irish Water for Oldtown Phase 5 (CDS21001700), outlining the requirement for this downstream tank.

The proposed tank application is required to provide peak flow storage, to alleviate capacity constraints in the foul sewer network and Swords WWTP during heavy rainfall. The implementation of this tank will facilitate further future housing development connection agreements for developers in the catchment, as has been stipulated by Irish Water in planning applications within the catchment.

1.4 Irish Water Input/Clarifications

We refer you to the following Irish Water text with respect to the wider Swords Wastewater Treatment Plant catchment, and specific to the subject proposed storage tank application.

“If this project receives planning permission and proceeds to delivery it will be Vested as an Irish Water asset under a Connection Agreement. It is envisaged that Irish Water will operate and maintain the proposed infrastructure.

Irish Water will be responsible for identifying this CSO (combined sewer overflow) within the listed outfalls associated with the Swords Wastewater Discharge License.

Irish Water is undertaking a Drainage Area Plan (DAP) for the wider catchment. The provision of storage on the developer’s land is proposed to accommodate residential development in the Oldtown, Mooretown and Hollybanks area. The proposal was deemed a feasible option to facilitate development while wider catchment solutions are being developed under the DAP.

Irish Water have developed a catchment tank volume which is at the early stages of development/concept design and site selection. Irish Water intend to progress the catchment tank considering the volume of the developers proposed tank. This will allow development in this area of Swords to progress ahead of the delivery of the strategic infrastructure (Irish Water tank/infrastructure).

The Drainage Area Plan (DAP) has shown the high level of storm water inflow into the foul sewer requires storage in the network to manage storm water and flooding. Irish Water, under the DAP, are optioneering the strategic volume required to cater for the entire catchment. This is in the early stages of site selection. By dividing the storage volume into smaller tanks and locating them closer to the source of the storm water inflow this will achieve the same outcome as one large tank. It will also allow development progression in this area of Swords while Irish Water continue the optioneering / location assessment of the wider catchment tank under the DAP process. The outcomes are expected Q4 2022 followed by stakeholder engagement and the full statutory, planning and design process.

The volume of this Oldtown Mooretown tank is a result of flow from the development area and is located on a favourable site for the network and the developer. The proposed storm tank size caters for future potential misconnection allowance and to protect against flooding in the Balheary area. It is proposed that the storm tank on the developer's land would become part of the overall solution to mitigate the impact of stormwater ingress."

The following text also prepared by Irish Water further clarifies that the siting of the proposed holding tank does not affect the capacity of Swords WWTP, and that it takes cognisance of other proposed sources of discharge, including but not limited to, existing capacity constraints in the Oldtown WWTP, additional developments permitted for development which discharge to the Rowlestown pumping station, and recent proposals for a rising main to the Swords agglomeration.

"Rowlestown Pumping station has a storage volume sized to cater for its catchment therefore does not require duplication of storage downstream. Storm water management will be catered for under the proposals for the decommissioning of Oldtown WWTP. It would be expected that only 3 Dry Weather Flow (DWF) would be forwarded from the Oldtown WWTP catchment and utilise existing or new structures to manage storm water for the contributing catchment.

Irish Water have determined that there is capacity for the development in the existing Swords WwTP.

The Annual Environmental Report for the Swords WWTP for 2020 indicated that the plant is operating to a high standard and that capacity will not be exceeded within the next three years (from 2020). Any development applications in this catchment will have to apply to the local authority on their own merit and will require a connection agreement with Irish Water prior to approval"

Following a review of different locations in the area, Irish Water have suggested that the most suitable location for the tank would be at the junction of the Balheary Road and Glen Ellen Road (refer *Figure 1*) This area is the lowest point along the network that can be accessed by an adjacent road and facilitates an overflow to the Broadmeadow River via gravity. It is also located on a site that has the required minimum distance from residential or other buildings. In this regard, Irish Water also note the following:

"The location of the storm tank has been assessed under the DAP. Due to future plans for the area regarding public transport and future changes in the catchment the most feasible long term solution to manage stormwater is closer to the source. The provision of storage on the developer's land is proposed to accommodate residential development in the Oldtown, Mooretown and Hollybanks area. The proposal is deemed a feasible option to facilitate development while wider catchment solutions are being developed under the DAP. Irish Water intend to progress the catchment wide tank solution taking into account the volume of the developers proposed tank and ensure that the design aligns with the future strategy."

Other possible solutions to the constraints in the foul water network have been considered by Irish Water, namely stormwater removal, however Irish water note the following in this regard:

“Irish Water currently have a Drainage Area Plan (DAP) underway for the entire catchment. The DAP model assessment by Irish Water has identified that there is no specific large area which could be remedied or separated to remove stormwater from the network. The upstream network is already separated and misconnected surface water from individual dwellings are a contributory factor. The cost and disruption of resolving misconnected individual dwelling is considered prohibitive and the overall strategic storage solution has been determined as most suitable solution from optioneering workshops.

The additional capacity provided by the proposed tank reduces predicted spills from the network to a 1 in 5-year return period storm event.”

1.5 Fingal County Council Development Plan Policies & Objectives

The Fingal Development Plan 2017-2023 sets out the Council's planning policies and objectives for the development of the County. It seeks to develop and improve, in a sustainable manner, the social, economic, environmental, and cultural assets of the County.

The Development Plan states that Fingal County Council will work closely with Irish Water to inform and influence the timely provision of infrastructure in line with Fingal's Settlement Strategy. It also acknowledges the importance of Irish Water's Capital Investment Plan and the need to provide the necessary wastewater infrastructure to service new settlements.

The most relevant planning policies in the context of the new off-line storage tank are as follows:

- Objective WT01: Liaise and work in conjunction with Irish Water during the lifetime of the plan for the provision, extension and upgrading wastewater collection and treatment systems in all towns and villages of the County to serve existing populations and facilitate sustainable development of the County.
- Objective WT08: Prohibit the discharge of additional surface water to combined (foul and surface water) sewers in order to maximise the capacity of existing collection systems.
 - In this regard, the proposed infrastructure does not propose to discharge additional surface water to combined sewers, rather, it is a means of reducing flooding and overflow risk and permitting the existing foul pipe network to perform during heavy rainfall.
- Objective WT12: Establish an appropriate buffer zone around all pumping stations suitable to the size and operation of each station. The buffer zone should be minimum 35 metres – 50 metres from the noise/odour producing part of the pumping station to avoid nuisance from odour and noise.
 - In this regard, we refer you to Section 2.6 below.

2. Foul Water Network

2.1 Existing Foul Water Network

The Oldtown / Mooretown / Holybanks land catchment discharges eastwards via gravity sewer to the Swords Wastewater Treatment Plant (WwTP) located at Spittal Hill, east of the M1 Motorway. This treatment plant caters for 90,000 PE.

Known constraints within the existing Irish Water gravity foul network, as a result of groundwater / stormwater ingress, result in the foul water system regularly surcharging, during heavy rainfall events, resulting in Stormwater overflow (SWO) at a low point in the system at the Ward River, and also at the WwTP itself. As noted, this is due to groundwater and stormwater ingress; this situation is exacerbated during times of prolonged or extreme rainfall with manhole lids known to lift as a result, and excess water (largely surface water) discharging directly to the adjacent Ward River, a tributary of the Broadmeadow River.

Irish Water (IW) have modelled the constraints in the network and have indicated that they require a storage tank of 2,250m³ volume to be located, ideally near the outfall sewer on the Balheary Road. Data received from Irish Water with respect to their modelled output is supplied in section 2.2 below.

2.2 Irish Water Modelling Output Data/Correspondence (1 in 5-year event)

Irish Water have recently completed Time Series Rainfall (TSR) modelling of the existing Irish Water foul network in the catchment area to ascertain the spill frequency for the Stormwater overflows (SWO), and to demonstrate foul network compliance with current IW gravity sewer standards, for when the proposed storage tank is installed.

The following information/data has been supplied by Irish Water (*refer text in italics*) during and following their modelling exercise, to facilitate a planning submission package to be made to Fingal County Council.

Determined Existing Flows in the gravity foul sewer

- 1. Dry Weather Flow in sewer is 80 l/s*
- 2. 5-year rainfall event increases flow in sewer to 330 l/s*
- 3. 30-year rainfall event increases flow in sewer to 460 l/s*

The following is the Irish Water response (*refer text in italics*) to a query received from Fingal Council in discussions held in advance of submission of the planning package for the subject tank, This response relates to how often the tank will overflow (once the 2,250m³ storage tank is full) and what flows/volumes will be overflowing through the outfall pipe to the Broadmeadow River.

“SWO run for pre and post full development scenario (sic.) worked on to compare need for the tank and showing its benefit. This will be required for planning purposes. The primary objective is to prevent flooding and balance a tank volume with a compliant overflow. It’s not practical to install a tank volume over 1/20 year event if no property is at risk and a 1/30 year event if property is at risk.

Given that the primary objective is to retain the flood volume we are providing a volume to contain the 1/5 year fully. 1/20 to clarify no public area flooding.

Irish Water only assess retention in line with gravity sewer standards and do not assess for larger return events.” (Refer IW std excerpt below)

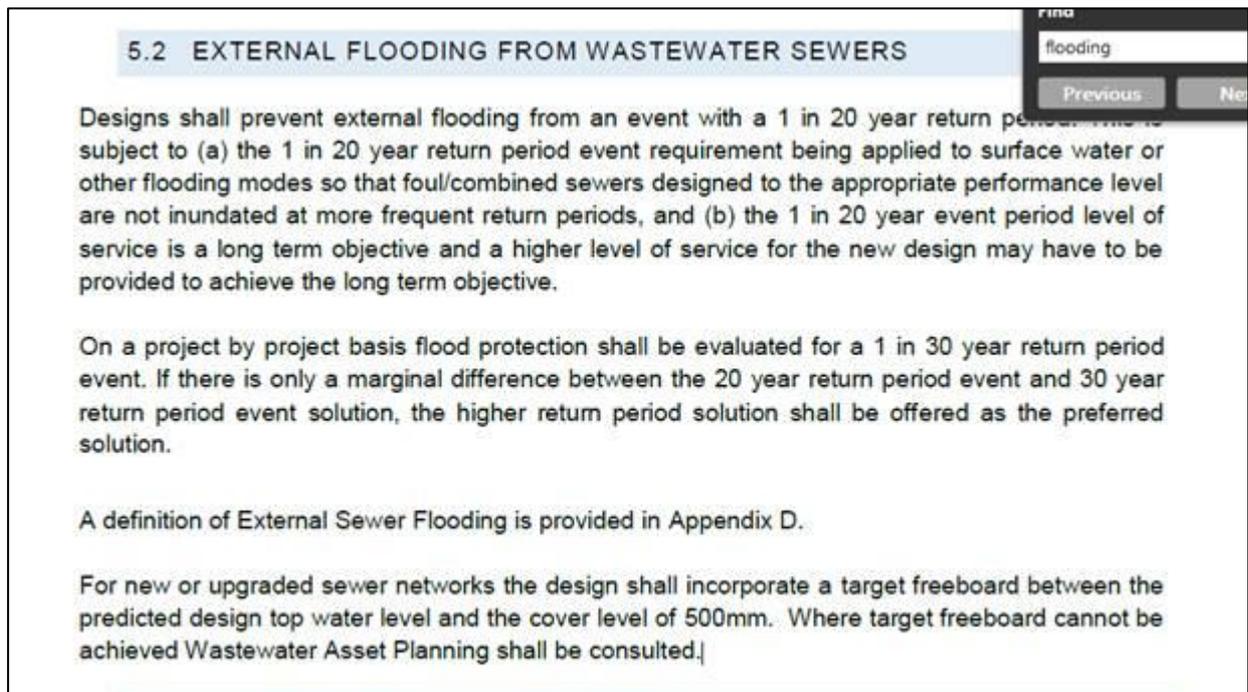


Figure 2 | IW Gravity Sewer Standard Excerpt

The following is the Irish Water response to a query received from Fingal Council in discussions held in advance of the planning submission for the subject tank. This response relates to stormwater overflow (SWO) compliance.

“Irish Water have a high-level overflow to allow release if we receive greater rainfall above the design standard. This allows discharge to the receiving water and not to public areas. Irish Water then need to demonstrate this is a compliant overflow. TSR runs are required to ascertain the volume is adequate and in line with the required outfall and receiving water standard. We are assuming that the area is not impacting on a bathing water or shellfish water and that the area is not impacting in terms of a nutrient sensitive location. These runs take a number of days to run for each scenario.

Irish Water need to treat the SWO as per compliance requirements under the WWDL and ensuring that Formula A flows are retained in the system for the full catchment build out. This flow will need to be stored for a minimum of 2 hours before being released to the environment. The model runs show the formula A flow for full occupancy can be retained before discharge for 2 hours. This will then show compliance with the proposal and will also show the benefit in terms of reduction of overflow from existing SWO’s downstream. Irish Water can show the number of activations for a rainfall event, we have chosen a 1/ 5 and 1/ 30-year event. Please familiarise yourselves with the SWO guidance document. Procedures and criteria document for SWO’S are on the Department and EPA website. Note: Formula A is for combined systems. Given the level of storm response in this sub catchment, we are treating this as a combined network for assessment not for connection.”

The following Model Results/Data were received from Irish Water, following the completion of the modelling exercise:

“The TSR results are summarised in Table 1 below. We input a typical rainfall year (2017) from the Phoenix Park Met Eireann station into model runs for the Drainage Area Plan (DAP) long-term strategic model and the same model with the Scenario 3 solution (storage tank and network orifice) added. There is no spill predicted in either model run for the SWOs at the WWTP, and there is no spill predicted at the proposed storage tank overflow.

It is critical to note that **the driver for this scheme is the reduction of flooding risk**;- the reduction of pollution risk is an added benefit. Reduction in pollution risk is not apparent from the typical year TSR analysis, instead it is apparent from the results of the previously completed 5 year return period design rainfall analysis as demonstrated by Table 2 below.”

		DAP Strategic Long-term(+25 years) model	DAP Strategic Long-term(+25 years) model with Solution (Scenario 3 - 300mm orifice Model)
Location	Model Pipe Reference	Total number of spills in year 2017	Total number of spills in year 2017
WwTP Inlet SWO	SO18478602.1	0	0
WwTP Stormwater Tank 2 SWO	SO18478703_WEIR.2	0	0
Spill from proposed new tank of volume 2,250m ³	CDS_Outfall_Option1.3	N/A	0

Location	DAP Strategic Long-term(+25 years) model		DAP Strategic Long-term(+25 years) model with Solution (Scenario 3 - 300mm orifice Model)	
	M5 event	M5 event with Climate Change	M5 event	M5 event with Climate Change
WwTP Inlet SWO	533	897	0	11
WwTP Stormwater Tank 2 SWO	0	0	0	0
Spill from proposed new tank of volume 2,250m ³	0	0	0	0

2.3 Irish Water Modelling Output Data (1 in 5 to 1 in 30-year events plus Climate Change)

As discussions with FCC representatives on the proposed storage tank and overflow progressed, it was queried as to whether any modelling information was available for events greater than the 1 in 5-year scenario, and in specific the 1 in 30-year event. This query was raised with Irish Water by Waterman Moylan. On 16 August 2021, Irish Water supplied the following tables overleaf, which when extrapolated indicate that firstly, there will be no overflow from the rainfall events with a frequency of M5 CC & M10 CC. There will however be surcharge and overflow from the storage tank for the M20 CC & M30 CC events.

Frequency	Scenario 3: 300mm dia orifice		
	Spill from proposed new tank of volume 2,250 m ³	WwTP Stormwater Tank 2 SWO	WwTP Inlet SWO
M5 CC	No	No	No
M10 CC	No	No	Yes
M20 CC	Yes	No	Yes
M30CC	Yes	Potentially	Yes

Secondly, as per the table below, the bottom row indicates the calculated volumes of overflow (in m³) from the proposed storage tank. The columns denote the frequency of flood event (5, 10, 20 & 30 years), which have been subdivided and illustrate the differences between the modelling data with and without the construction of the proposed tank, and these are further sub-divided to show the calculation results with and without the effects of climate change.

2880 min duration with Date																
Location	Model Taken from DAP		DAP Long term model updated with the developer proposed tank, bifurcation removal and below scenarios		Model Taken from DAP		DAP Long term model updated with the developer proposed tank, bifurcation removal and below scenarios		Model Taken from DAP		DAP Long term model updated with the developer proposed tank, bifurcation removal and below scenarios		Model Taken from DAP		DAP Long term model updated with the developer proposed tank, bifurcation removal and below scenarios	
	Long Term Strategic Model		Scenario 3: 300 mm dia orifice		Long Term Strategic Model		Scenario 3: 300 mm dia orifice		Long Term Strategic Model		Scenario 3: 300 mm dia orifice		Long Term Strategic Model		Scenario 3: 300 mm dia orifice	
	Max in M5 event	Max in M5 event with Climate Change	Max in M5 event	Max in M5 event with Climate Change	Max in M10 event	Max in M10 event with Climate Change	Max in M10 event	Max in M10 event with Climate Change	Max in M20 event	Max in M20 event with Climate Change	Max in M20 event	Max in M20 event with Climate Change	Max in M30 event	Max in M30 event with Climate Change	Max in M30 event	Max in M30 event with Climate Change
WwTP Inlet SWO	533	897	0	11	875	1,242	27	234	1,215	1,606	220	451	1,395	1,900	332	614
WwTP Stormwater Tank 2 SWO	0	0	0	0	0	0	0	0	0	0	0	0	0	330	0	0
Spill from proposed new tank of volume 2250 m ³	0	0	0	0	0	0	0	7	0	0	0	606	0	0	260	938

For the results to be compared between scenarios with and without the tank, the Model taken from DAP (the scenario with no tank constructed) will need to be compared to the DAP long-term model with the tank

constructed. Care should be taken to ensure that the correct comparison of figures is being made so that both scenarios have the same storm frequency return period and are either both inclusive, or non-inclusive, of climate change.

A simple example of this is the comparison of the storage tank overflow volume of 7m³ that will occur for the M10 event inclusive of climate change. The corresponding figure for the scenario if no tank is built and for the 10-year event, inclusive of climate change, is an overflow volume from the WwTP inlet of 1,242m³.

Upon comparison of all figures given above for the different scenarios, rainfall event frequencies, and whether inclusive or non-inclusive of climate change factors, it is demonstrated that the construction of the proposed storage tank will prevent or significantly reduce the frequency and/or volume of overflow, compared to if a “do nothing approach” were to be taken to the situation. The potential outcomes of the construction of the proposed tank as opposed to the “do nothing approach” for the various 8 No. scenarios are as follows:

- There is no overflow from the WwTP inlet, WwTP Tank, or proposed storage tank (occurs once).
- There is no overflow from the WwTP tank or proposed storage tank, but overflow does occur for the WwTP inlet (the volume of overflow from the WwTP is significantly reduced compared to the “do nothing approach”) (occurs 3 times).
- There is no overflow from the WwTP tank, but overflow does occur from both the proposed storage tank and WwTP inlet (the combined volume of overflow is less than the volume of overflow from the “do nothing” approach) (occurs 4 times)

2.4 Assessment of IW results/data

The above supplied model data received from Irish Water indicates very positive results which shows that with the proposed 2,250m³ tank in place there is no spill predicted in either model run for the SWOs at the WwTP, and there is no spill predicted at the proposed storage tank overflow. These results are for a 1 in 5-year storm event.

As discussed in the previous section, for storm events with a greater return period (up to 1 in 30-year event), there will be a significant reduction of the outfall volume compared to a “do nothing” approach.

The provision of the proposed off-line stormwater storage tank will ensure that there will be significantly less surcharge events, or at worst significantly reduced surcharge overflow volumes occurring to the Broadmeadow River / Ward River.

2.5 Proposed Tank and Outfall Gravity Sewer

The proposed offline 2,250m³ surface water storage tank, and high-level overflow gravity sewer to the Broadmeadow is detailed on accompanying planning drawing 17-144-P2003. The proposed gravity overflow pipe will be laid from the proposed tank and discharges northwards to the Broadmeadow River, on the eastern side of the Balheary Road.

It is noted that the tank will only every fill with mainly surface water at times of extreme heavy rainfall events when the foul water network surcharges with surface water infiltration. As such, odours will be minimal, however, to mitigate fully, an air vent will be supplied and located over 35m from any building, the minimum FCC buffer distance required for a pumping station, as outlined in Section 1. For comparative purposes, it is noted that Irish Water Codes of Practice require a maximum 15m buffer offset from a foul pumping station site boundary to the nearest habitable property boundary. The nearest building is over 40m from the edge

of the proposed tank. A washout facility shall also be supplied as detailed in Section 4, to facilitate Irish Water to clean the tank as required.

The storage tank is designed to surcharge by gravity at times of extreme heavy rainfall events, and discharge back to the foul water sewer by gravity once the rainfall passes and the levels of surface water in the foul network drops.

The overflow outfall pipe to the Broadmeadow will only function when the storage tank surcharges beyond the proposed 2,250m³ capacity of the tank. Flood mapping undertaken by the OPW indicate that during a 1 in 10-year event at a node point circa 200m upstream of the proposed outfall location will have a flow rate of in excess of 36m³/second (Refer accompanying FRA Report, Section 3), ensuring that any overflow outfall from the tank beyond a 1 in 5-year event will be discharging to a fast moving heavily diluted/surcharged river. The outfall waters (largely surface water) from the tank will result in a vast betterment when compared with the existing arrangement of uncontrolled discharge to the Ward and in turn Broadmeadow Rivers. In this regard, we refer you to the assimilative capacity technical note by Hydro-G and AWN, supplied under separate cover.

The outfall will be supplied via a c. 350m long, 300m diameter pipe & headwall outfalling to the Broadmeadow River. The outfall headwall to the Broadmeadow shall be fitted with a tide-flex (or similar approved) non-return valve to ensure surcharge from the Broadmeadow will not backfill into the proposed pipe and tank during extreme events. The outfall shall be metered to record the frequency and duration/volume of overflows, as indicated on drawing 17-144-P2003. For construction methods at the outfall, please refer to the accompanying PCEWMP Report, Section 9.0

We also refer you to the CGI verified view ("21-258 Swords Culvert") of the proposed NRA headwall detail and non-climb guardrail at the outfall on both the riverbank and the protected structure, prepared by Digital Dimensions, supplied under separate cover.

As is standard practice, once planning has been granted for the stormwater tank, a discharge licence will be sought by the developer, prior to any works commencing and once built, the system will be vested to Irish Water, who will then be responsible for the operation and maintenance of the tank.

2.6 Foul Water Drainage – General

Foul water sewers will be constructed strictly in accordance with Irish Water requirements.

3. Surface Water Network

3.1 Existing Surface Water Network

The subject lands are in the catchment of the Broadmeadow River which is a tributary to the Broadmeadow (Malahide) estuary.

This Broadmeadow River flows in a southeasterly direction towards the Irish Sea. It is joined by the Ward River prior to discharging to the Broadmeadow (Malahide) Estuary. The estuary is designated a Special Protection Area (SPA), a candidate Special Area of Conservation (cSAC), a proposed Natural Heritage Area (pNHA) and a Ramsar site.

The proposed development site is located in Swords, c. 300 m south of the Broadmeadow River, which runs in a west-east orientation towards the Irish Sea. The proposed overflow discharge location is projected directly in this river directly to the north of the site, just downstream of the Balheary Road bridge.

The Broadmeadow River (EPA Code: 08B02) receives discharge from the Ward River approximately 700m to the east of the projected discharge point and ultimately outfalls into the Malahide Estuary c. 1.5 Km downstream of it. The development site is located with EPA Hydrometric Area No. 08 (Nanny-Delvin) and the Broadmeadow_SC_010 WFD Sub-catchment.

The Water Framework Directive (WFD) Directive 2000/60/EC was adopted in 2000 as a single piece of legislation covering rivers, lakes, groundwater and transitional (estuarine) and coastal waters. In addition to protecting said waters, its objectives include the attainment of 'Good Status' in water bodies that are of lesser status at present and retaining 'Good Status' or better where such status exists at present.

The WFD requires 'Good Water Status' for all European waters to be achieved through a system of river basin management planning and extensive monitoring. 'Good status' means both 'good ecological status' and 'good chemical status'.

The section of the Broadmeadow River related to the proposed discharge point is associated with the surface WFD waterbody Broadmeadows_040. The most recent published status (www.epa.ie - River Waterbody WFD Status 2013-2018) of this waterbody is 'Poor' and its environmental risk is qualified by the WFD as 'At Risk of not achieving good status'.

The above status relates to data from 2 no. EPA water quality stations on the Broadmeadow River located upstream and downstream of its confluence with the Ward River ('Br nr Waterworks' and 'Br W of Lissen Hall', respectively). The nearest station is located under Balheary Road bridge (i.e., upstream and adjacent to the discharge location).

The subject lands are not part of the SPA or SAC site, however, any development immediately upstream is required to maintain or improve the quality of surface water to status objectives as set out in the Water Framework Directive (WFD), to protect and enhance the status of the aquatic ecosystems.

In this regard, the overflow outfall pipe from the proposed storage tank will only come into effect during extreme rainfall events and as such will limit overflows (from the sewer) during flood events and this will minimise the impact on the river. This is a vast improvement from existing situation, where uncontrolled flooding of the foul network to the Broadmeadow occurs frequently. We refer you to Section 2.5 of this report and the accompanying Hydro-G and AWN Assimilation Simulation Evaluation Reports supplied under separate cover.

4. Water Supply

4.1 Existing Water Supply

Irish Water records for the surrounding area have been provided by Fingal County Council.

There is an existing 150mmØ PVC watermain located along Glen Ellan Road adjacent to the proposed tank location, and a 200mmØ PVC watermain along the Balheary Road located east of the proposed tank location.

4.2 Proposed Water Supply

A 25mm connection to the public watermain is proposed to service washdown facilities, in line with the Irish Water Code of Practice section 5.31, as indicated on drawing 17-144-P2006. The supply will be fitted with a usage meter and non-return valve to prevent backflow contamination of the public water supply.

5. Roads and Transport Network

5.1 Site Access Point

The storage tank will be served by a site entrance and permeable road surface from the Balheary Road as indicated on the site access layout drawing, number: 17-144-P2007.

Suitable sightlines for entry/exit shall be supplied and are demonstrated on road layout drawing 17-144-P2007.

5.2 Proposed Road Layout and Landscaping

The plan layout at ground level for the proposed overflow tank is proposed as per Irish Water Pumping Station requirements for access and maintenance vehicles, section 5 of Irish Water's Code of Practice (CoP). The hard standing road surface shall be permeable in accordance with Section 5.7 of the CoP.

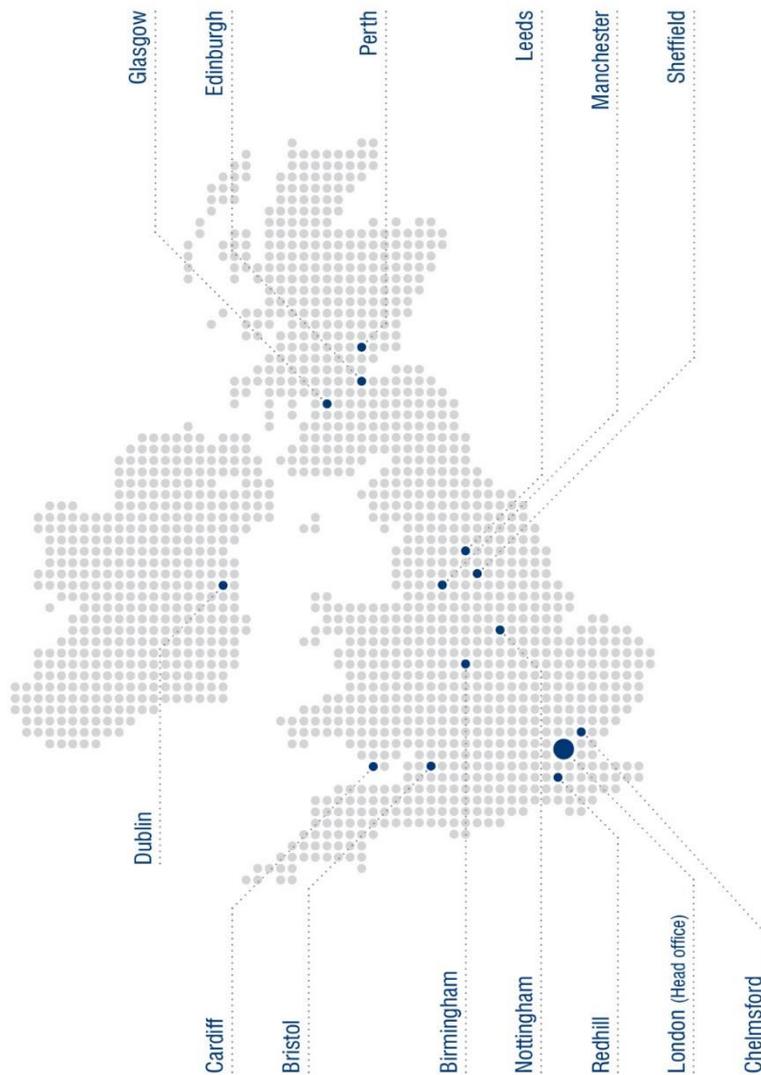
The tank has been sited such that it takes cognisance of the adjacent proposed future Glen Ellan/ Balheary Road junction upgrades, ensuring that the tank will remain in a location that will not require future adjustment/alteration.

Discussions and meetings with respect to this junction are ongoing with Fingal County Council. The junction will ultimately facilitate bus priority together with improved cycle and pedestrian connections, requiring land take from the adjacent lands in the process. Previous Bus Rapid Transit (BRT) proposals for this junction have been cross referenced to assess the extent to which a full upgrade of this junction would extend to within the proposed tank site. The tank has been sited in a position outside of the area deemed necessary to facilitate a full junction upgrade, ensuring that future relocation/repositioning is avoided.

The majority of the proposed infrastructure will be underground, but some elements will be above, namely the vent stack and the security fence around the site. The site fencing and access gate has been designed as a black 20mm vertical solid bar railing with appropriate snit-climb security, in accordance with the requirements of the FCC landscape department.

In order to screen the fencing surrounding the site, native hedge planting has been proposed along the outside of the security fence. In this regard, we refer you to the landscape drawing prepared by Doyle O'Troithigh, supplied under separate cover.

UK and Ireland Office Locations



(Accompanying Oldtown Phase 5 Planning Package)

Project Number: 17-144

Document Reference: 17-144r.017 Additional Engineering Assessment Report