

Stormwater Storage Tank Report

SHD at Holybanks, Swords

March 2022

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Client: Cairn Homes Properties Ltd
Document Reference: 17-088r.007
Project Number: 17-088

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)

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1. Introduction

1.1 Background of Report

This report has been prepared by Waterman Moylan as part of the planning documentation in support of a Strategic Housing Development planning application to An Bord Pleanála on the development of the lands at Holybanks, Swords. Following consultation with Irish Water it is proposed to provide a Stormwater Storage Tank on the Irish Water foul water network, which serves the subject site and drains to the Swords Wastewater Treatment Plant also serving the Oldtown / Mooretown and Holybanks catchment in Swords, Co. Dublin. The proposed tank will alleviate constraints within the Irish Water foul water system, that occur during times of heavy or prolonged rainfall, resulting from surface water.

The existing foul water network currently surcharges during heavy rainfall events and arising from this it frequently overflows into the Ward River, immediately upstream of Swords Wastewater Treatment Plant. The Ward River connects to the Broadmeadow River c. 1km upstream of the Broadmeadow Estuary west of the R132.

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.

In order to accommodate foul flows from the proposed development and from other third-party lands within the catchment, into the public foul drainage network, Irish Water have identified that these works are required for the delivery of critical wastewater infrastructure to support proposed developments within the northwest catchment in Swords. This stormwater storage tank will ensure housing developments within this catchment can continue, including on-going housing developments in the Oldtown / Mooretown LAP lands and the Strategic Housing Development at Holybanks, part of the Estuary West Masterplan 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 units substantially through the Strategic Housing Development planning process and awaiting final submission to An Bord Pleanála. The Oldtown / Mooretown lands and Estuary west Masterplan lands will provide for up to 3,300 residential units in addition to those already under construction. The construction of this stormwater storage tank will allow these housing and residential developments to proceed and continue, hence it's inclusion as part of this planning application.

These critical wastewater infrastructure works have been designed, in consultation with Irish Water utilising the data and modelling input received from Irish Water which form the basis of this planning documentation.

This report should be read in conjunction with JBA Flood Risk Assessment, Waterman Moylan's Preliminary Construction Environmental Management Plan (CEMP), Openfield's Appropriate Assessment Screening and Natura Impact Statement reports, along with AWN's Stormwater Overflow and Receiving Stream Assimilation Report of the overflow's receiving water body, the Broadmeadow River.

1.2 Irish Water

Incorporated under the Water Services Act 2013, Irish Water brings the water and wastewater services of the 31 local authorities together under one national service provider.

Irish Water is responsible for the operation of all public wastewater services including:

- Management of national wastewater assets;
- Maintenance of the water and wastewater system

- Investment and planning;
- Managing capital projects; and
- Customer care and billing.

Irish Water is also responsible for all of the capital investment decisions and implementation of the capital programme delivery across Ireland.

The applicant has liaised with Irish Water to ensure the necessary foul sewer infrastructure upgrades required to facilitate the subject planning application from part of the application, and will be delivered as part of the proposed development.

1.3 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 Gannon Homes and is locally referred to as the Celestica site. A letter of consent from the adjoining landowner is included with this application under a separate cover.



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, located 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.

1.4 Proposed Development and Application Context

Following consultation with Irish Water 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 (Estuary West Masterplan) lands catchments. While it is not desirable from an environmental perspective to have an overflow to water courses, it is preferable to surcharging of the tank and network to adjacent roads, footpaths and nearby residential units. As will be discussed in detail in further sections, that while this proposed storage tank will have an overflow outfall to the Broadmeadow River, the construction of the storage tank itself will ultimately reduce the quantum of current overflows into the Ward River (400m upstream of the Broadmeadow river) experienced on the existing network which will have a positive net impact on the environment.

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 the following Section 2. 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.

As part of the consultation with Irish Water they assessed various locations for the stormwater storage tank. 3 No locations were identified and following a detailed appraisal by Irish Water, it was confirmed 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 location was it 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.

Other possible solutions to the constraints in the foul water network were considered by Irish Water which are set out below together with the reason why the solutions were rejected:

- Remove the ground water and surface water infiltration from the foul water network that is the cause of the surcharging of the foul water network: *This was ruled out as the catchment is very large and would require the full network to be surveyed and then all sewers and manholes to be repaired and made watertight. There are several sub-catchments of the network that are not taken in charge and are under ownership of third parties. Removal of infiltration into Foul Water network is generally only successful if the catchment is relatively small, accessible and where there are some known areas of cross connections / infiltration of surface water into the foul water network.*
- Upgrading of the existing 600mm outfall sewer from Balheary Road to the Swords Wastewater Treatment Plant (WwTP): *This option was ruled out as the required upgrade of the sewer crossing various land uses and ownerships, including under the Ward River and under the R132. This option would also contribute to larger flows discharging into Swords WwTP at times of heavy rainfall when the treatment plant would be under most pressure. The proposed storage tank solution will hold back surcharged volume until the heavy rainfall has passed.*

The proposed storage tank will also provide sufficient capacity to serve the catchment of Oldtown / Mooretown / Holybanks (Estuary West Masterplan), facilitating continued future development in the catchment. The existing constraints within the foul network are currently inhibiting future development.

These 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 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 area, until such time that the capacity constraints are either fixed or have an agreed solution and programme in place. They have confirmed that the stormwater storage tank will remove the constraint in respect of the above mentioned sites including the Holybanks development which is the subject of this application.

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.
- 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.

2. Foul Water Network

2.1 Existing Foul Water Network

The Oldtown / Mooretown / Holybanks (Estuary West Masterplan) 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 heavy 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 near the outfall sewer on the Balheary Road in order to facilitate further development in the Oldtown/Mooretown/Holybanks land catchment. Data received from Irish Water with respect to their modelled output is set out below.

2.2 Irish Water Modelling Output Data/Correspondence (1, 5 in 30-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, when the proposed stormwater storage tank is installed.

The following information/data has been supplied by Irish Water during and following their modelling exercise, of the existing and future network with/without the (a) tank and (b) future residential development in place.

Determined Existing Flows in the gravity foul outfall sewer

1. Dry Weather Flow (DWF) 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 stormwater storage tank, included with this planning submission, was submitted as a separate planning application by the adjoining landowner to deliver the required stormwater storage tank. This application was submitted to Fingal County Council on September 2021, Planning Request Reference No F21A/0476 which received a request for further information (FI) from Fingal County Council (FCC). The response to the FI Request was submitted to FCC in February 2022 and a response is awaited.

The following is the Irish Water response to a query received from Fingal Council in discussions held in advance of the submission of this planning package. 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)

1.2 External Flooding from Wastewater sewers

Designs shall prevent external flooding from an event with a 1 in 20 year return period. This is subject to (a) the 1 in 20 year return period event requirement being applied to surface water or other flooding modes so that foul/combined sewers designed to the appropriate performance level are not inundated at more frequent return periods, and (b) the 1 in 20 year event period level of service is a long term objective and a higher level of service for the new design may have to be provided to achieve the long term objective.

On a project by project basis flood protection shall be evaluated for a 1 in 30 year return period event. If there is only a marginal difference between the 20 year return period event and 30 year return period event solution, the higher return period solution shall be offered as the preferred solution.

A definition of External Sewer Flooding is provided in Section 1.8.2 below.

For new or upgraded sewer networks the design shall incorporate a target freeboard between the predicted design top water level and the cover level of 500mm. Where target freeboard cannot be achieved Wastewater Asset Planning shall be consulted.

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 submission of this planning package. This response relates to stormwater overflow 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

Table 2 – Results of M5 Design Storm Model Run

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)

During discussions with FCC representatives in respect of the proposed storage tank and overflow, 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 discussed with Irish Water. On 16 August 2021, Irish Water supplied the following tables, which when extrapolated indicate that firstly, there will be no overflow from the rainfall events with a frequency of M5CC (5 years return period plus climate change) & M10 CC (10 years return period plus climate change). There will however be surcharge and overflow from the storage tank for the M20 CC (20 years plus climate change) & M30 CC events (30 years plus climate change).

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 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 accounted for.

2880 min duration with Date																
	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	
Location	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 poroposed new tank of volume 2250 m3	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 Drainage Area Plan (DAP) for 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 and 234m³ from the WwTP 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. This results in an overall reduction of 1001m³ of water into the Broadmeadow River.**

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 the “do nothing approach”.**

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. In 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, with the higher percent reduction accruing in the lower storm return events where assimilate flows in the receiving water are lower.

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.

2.4 Foul Water Network Upgrades and Alternatives Considered

As a result of the capacity constraints identified and to alleviate the existing SWOs at the Ward River and Swords WwTP as indicated in the Irish Water supplied modelling outputs provided in section 2.3, it has been agreed with the applicant (adjoining landowner) and Irish Water that the most practical solution is to install a new offline 2,250m³ surface water storage tank, and it therefore forms part of the subject application.

As briefly noted in Section 1.4, alternative resolutions have been considered by Irish Water, namely:

- The removal of upstream surface water cross connections / infiltration from the network to avoid the need for a tank. Historic investigations have been undertaken on this network which indicates infiltration throughout the network and not in isolated locations. The catchment is very large and would require the full network to be surveyed and then all sewers and manholes to be repaired and made watertight. There are several sub-catchments of the network that are not taken in charge and are under ownership of third parties. Removal of infiltration into Foul Water network is generally only successful if the catchment is relatively small, accessible and where there are some known areas of cross connections / infiltration of surface water into the foul water network.
- The installation of additional / upsized drainage lines in parallel to the existing infrastructure leading to the Swords WWTP. This has been reviewed however it has been determined that this would result in more surface water reaching Swords WwTP and the cost/construction viability under the Ward River and Motorway has meant that this option was not considered practical. The fact that the above tank proposal, on the Applicant's lands, will be developer led is of course a driving factor for Irish Water.

Following a review of three different locations in the area, Irish Water have suggested that the most suitable location for the proposed tank would be at the Celestica site, on the junction of the Balheary Road and Glen Ellen Road (refer *Figure 1*). This area is the lowest point along the foul water network that can be accessed by an adjacent road and facilitates an overflow to the Broadmeadow River via gravity. A letter of consent from the owner of the Celestica site at this junction has been received and is included with the application. It has also been agreed with Irish Water to apply for and construct the storage tank at this location.

The upgrade of the foul network via the introduction of the proposed storage tank, is seen as a developer-led, long-term solution to relieve capacity constraints within the network thus will facilitate the continued development of the Oldtown / Mooretown / Holybanks (Estuary West Masterplan) catchment subject to submission of a full planning application and the standard planning review processes taking place

The proposed tank solution has been discussed at length with Irish Water and Fingal County Council Water Services department from early 2021 and its inclusion in this subject application (engineering reports and drawings) has been agreed in principle with both in August 2021. As noted earlier in section 2.2, a further information request was received from Fingal County Council to the standalone tank and outfall planning package, a response to which is under finalisation.

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 drawings 17-088-P001, 17-088-P202 and 17-088-P203. The proposed gravity overflow pipe will be laid from the proposed tank and discharges northwards to the Broadmeadow River, on east of the Balheary Road.

It is noted that the tank will only ever fill with mainly surface water at times of extreme heavy rainfall events when the foul water network surcharges as a result of surface water infiltration. As such, odours will be minimal, however, to mitigate fully, an air vent will be supplied for the tank will be located over 35m from any building, the minimum Fingal County Council 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 to facilitate Irish Water to clean the tank as required.

The storage tank is designed to simply 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 storage tank has been sized by Irish Water to require 2,250m³ of volume and will be designed in accordance with Irish Water requirements. Refer to drawing numbers: 17-088-P202, 17-088-P203 & 17-088-P210.

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 the Broadmeadow River will have a flow rate of in excess of 36m³/second 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 River and in turn Broadmeadow Rivers. In this regard, we refer you to the Stormwater Overflow Assessment prepared by AWN which is included under separate cover as part of this application. As is standard practice, once planning has been granted for the stormwater storage tank, a discharge license 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. This has been agreed by Irish Water as part of the pre-planning process.

The outfall will be provided 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 back up into the proposed pipe and tank during extreme events. For construction methods at the outfall, please refer to the accompanying Preliminary Construction and Environmental Management Plan (CEMP) and to drawing number: 17-088-P210 & 17-088-P241.

2.6 Foul Water Drainage – General

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

3. Surface Water Network

The proposed Stormwater Storage tank location 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 overflow outfall pipe from the proposed storage tank will only come into effect for rainfall events in excess of 1 in 5 years storm events. Such overflow (from the sewer) will be limited during flood events and this will minimise the impact on the river, a vast improvement from existing situation, where uncontrolled flooding of the foul network to the Broadmeadow occurs frequently. Please refer to the accompanying document "Stormwater Overflow and Receiving Stream Assimilation Report" by AWN included under a separate cover which assess the impact of the outfall on the river.

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 located along the Balheary Road to the east of the development.

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 17-088-P042 and 17-088-P043. 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 and landscaping layout drawing, number: 17-088-P262.

Suitable sightlines for entry/exit shall be supplied and are demonstrated on road layout drawing 17-088-P262.

5.2 Proposed Road Layout and Landscaping

The plan layout at ground level for the proposed overflow tank is proposed as per Irish Water 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 Glen Ellan/ Balheary Road junction upgrades also included as part of this application, ensuring that the tank will remain in a location that will not require future adjustment/alteration.

The position of the tank will not affect the junction upgrade works required as part of this development. In addition, 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 (refer to landscape and surfacing layout drawing 17-088-P262). The site fencing and access gate will be designed in line with standard Irish Water details and CoP requirements section 5.6, as required for site security purposes. In order to screen the fencing surrounding the site, native hedge planting has been proposed along the outside of the security fence.

UK and Ireland Office Locations

