

**Clifton Scannell Emerson**  
Associates

**Engineering Services Report Drainage and Water  
Services  
Unit 1, M50 Business Park**

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Client: Creighton Properties LLC

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Date: 13<sup>th</sup> December 2022

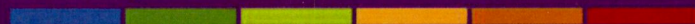
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Job Number: 22\_112

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CONSULTING ENGINEERS

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## Document Control Sheet

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**Project Number:** 22\_112  
**Report Title:** Engineering Services Report Drainage and Water Services  
**Filename:** 22\_112-CSE-00-XX-RP-C-0001

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## 1 Introduction

### 1.1 Background

The following report is being submitted as part of the planning application at Unit 1, M50 Business Park, Ballymount, Dublin 12 on behalf of Creighton Properties LLC. The site is bound to the north by Calmount Road, to the west by Ballymount Road Upper, to the east by an existing warehouse unit, and to the south by an internal estate road within the M50 Business Park. The proposed development of a brownfield site with a total area of approximately 0.86 Hectares. The report outlines the proposals for drainage services and water supply for the development.

### 1.2 Development Description

The proposed development will consist of the change of use from warehouse to data repository facility, alterations to external facades, provision of a new 1100 mm parapet, reclad roof, internal alterations, refurbishment of the existing office space, solar panels at roof level, external plant at ground and roof levels and equipment to include 12 no. condenser modules, an emergency back-up generator and associated fuel storage tank, transformer, extension to the existing sub-station (c. 13 m<sup>2</sup>), 2 no. sprinkler tanks and pumphouse, bin store, 22 parking spaces including 2 electrical vehicle charging points, bicycle parking shelter, landscaping, planting, new security fence, external lighting, CCTV, altered vehicular gates, permeable hard surfaces, alterations to internal foul sewerage and water supply networks, provision of SuDS compliant surface water drainage system and all associated site works.

The application site area measures 0.86 ha. The extent of the site layout is highlighted in Figure 1.1 below:-



Figure 1 – Proposed Site Location Plan



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### **1.3 Existing Land Use**

The existing site is a brownfield site, which is currently being developed and is in use as a warehouse facility. The site is located within M50 Business Park as a serviced site.



## 2 Surface Water Drainage

### 2.1 General

The proposed development will provide attenuation in compliance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS). The following section outlines the surface water drainage proposals for the development. All SUDS elements have been designed as per the recommendation of the SuDS Manual 2015. The design also takes account of the draft South Dublin County Council (SDCC) Sustainable Drainage Explanatory Design & Evaluation Guide (2022). Furthermore, liaisons with South Dublin County Council are maintained throughout the design process.

All surface water works including connections will be carried out in accordance with the Greater Dublin Regional Code of Practice for Development Works – Drainage.

The documentation provided in support of that application addressed pre-development greenfield run-off rates for 0.86 ha catchment area.

### 2.2 Drawings

The following drawings provided in support of this planning application are applicable to surface water drainage:

- 22\_112-CSE-00-XX-DR-C-2100 Existing Surface Water Drainage Layout Plan
- 22\_112-CSE-00-XX-DR-C-2110 Proposed Surface Water Drainage Layout Plan
- 22\_112-CSE-00-XX-DR-C-2111 Proposed Permeable and Impermeable Areas
- 22\_112-CSE-00-XX-DR-C-2112 Proposed Surface Water Attenuation System General Arrangement (Sheet 1 of 3)
- 22\_112-CSE-00-XX-DR-C-2113 Proposed Surface Water Attenuation System General Arrangement (Sheet 2 of 3)
- 22\_112-CSE-00-XX-DR-C-2114 Proposed Surface Water Attenuation System General Arrangement (Sheet 3 of 3)
- 22\_112-CSE-00-XX-DR-C-2910 Proposed Standard Trench Details
- 22\_112-CSE-00-XX-DR-C-2911 Proposed Services Details Sheet 1
- 22\_112-CSE-00-XX-DR-C-2912 Proposed Services Details Sheet 2

### 2.3 Existing Surface Water Drainage Network

Surface water runoff from hardstanding areas with the existing site are collected in a sealed system of pipes and gullies; drain towards the southeast corner of the site. In the southeast corner of the site, there is an existing 400mmØ pipe which flows in the easterly direction within the existing M50 Business Park drainage network before out falling into the Robinhood Stream which is located approximately circa 1.2km northeast of the site. The invert level of the existing manhole in the southeast corner of the site is 64.72m OD, which is 3.64m deep.

The existing site's internal network has no provision for surface water attenuation. However, the site's internal network does include a bypass petrol inceptor on the outfall to the existing M50 Business Park drainage network.

The existing surface water drainage network within M50 Business Park is private and is therefore the responsibility of the M50 Business Park.

## **2.4 Humidification / Cooling Water Discharge**

The facility is designed to use humidifiers and air conditioning systems to maintain the relative humidity and temperature in the internal building space. However, when weather conditions are acceptable for the internal building, fresh air will be directly supplied to reduce both energy and water consumption.

If the relative humidity in the building drops below the minimum required for the electrical equipment, humidifiers will provide moisture to the makeup air. Potable water will be used to supply the humidifiers and is recycled at least 3 times. Any water remaining within the humidifiers will drain to an attenuation tray and then to the surface water system. The humidification process is non-contact and chemical-free, thus the water discharged is free of contamination and organics.

When ambient temperature exceeds the allowable internal space temperature, air conditioning systems in the admin area will mechanically reject heat from the space. During this process, condensed water can collect in the air conditioning systems and will drain to the surface network. There are no significant contaminants in the air conditioning condensate, as this is purely condensed moisture. The cooling system process does not use any water and will not produce condensation discharge during normal operation.

It is expected that less than 4000 hours of humidification will be provided annually a makeup air handling unit. The annual water use is estimated at less than 100 m<sup>3</sup>/annum and will result in a discharge of less than 50 m<sup>3</sup>/annum.

It should be noted that peak water usage and discharge only occur during periods of hot dry weather and therefore the discharge to the surface water network will not coincide with any rainfall events.

## **2.5 Proposed Surface Water Drainage Network**

### **2.5.1 Overview**

The proposed surface water network for the development collects runoff from roofs, roads and other hard standing areas in a sealed system of pipes and gullies. In addition to this, discharge from humidifiers and air conditioning units are collected by pop-ups which connect to 150mmØ internal surface water pipework which discharge into a 225mmØ surface water pipe external to the building. The surface water drainage pipe network follows the proposed site topography and falls southeast at an average gradient of approximately 0.3 – 1.5%.

The pipe network outfalls to 3 no. surface water attenuation systems located to southwest, south and east of the main building. The proposed attenuation systems outfall via carrier drains which discharge attenuated flows to the existing M50 Business Park surface water drainage system as described in Section 2.3 of this report.



## 2.5.2 Surface Water Network Design

The pipe network is designed in accordance with the requirement of Table 6.4 of the Greater Dublin Strategic Drainage Study (GDSDS) – See Fig 2.1 below.

Parameter	Surface Water Sewers
Minimum depth	1.2m cover under highways 0.9m elsewhere
Maximum depth	Normally 5m
Minimum sewer size	225mm
Runoff factors for pipe sizing	100% paved and roof surfaces 0% off pervious surfaces
Rainfall for initial pipe sizing	50mm/hr rainfall intensity
Minimum velocity (pipe full)	1.0m/s
Flooding	Checks made for adequate protection * No flooding for return period less than 30 years except where explicitly planned Simulation modelling is required for sites greater than 24ha**
Roughness – ks	0.6mm

Fig 2.1 – GDSDS Pipe Design Criteria

Manholes shall be provided at junctions in the network, at changes of direction and gradient and at no more than 90m centres.

The surface water pipe network has been designed using Wallingford Tables for the Hydraulic Design of Pipes and the results are contained in **Appendix A**.

## 2.5.3 Pollution Control Measures

Two different types of pollution control elements will be implemented as part of surface water infrastructure in the development as following:

- A. It is proposed to provide a Class 1 full retention separators (Klargestor Model No. NSFA015 or equivalent) downstream of any used in high-risk spillage areas in accordance with Section 20 of the Greater Dublin Regional Code of Practice. The full retention separator is designed to treat the full design flow that can be delivered in the drainage system, which is normally equivalent to the flow generated by a rainfall intensity of 50mm/hour. This is provided in the vicinity of the existing loading dock area.
- B. An existing bypass petrol interceptor is located upstream of the outfall from the site, and it is proposed to retain this interceptor. Furthermore, it is a requirement for car parking areas with 10 spaces or more as outlined in Section 20.1 of the Greater Dublin Regional Code of Practice.

Details of the proposed full retention interceptor is provided in **Appendix F** to this report.

## 2.5.4 SuDS Implementation

A number of measures are proposed in order to ensure the proposed scheme is compliant with Sustainable Urban Drainage System (SuDS) the measures outlined in Table 2.1 are proposed in accordance with Table 6.3 of the GSDS:

Criterion	Return Period (Years)	Design Objective	Design Measures Provided
River Water Quality Protection	<1	Provision of between 5mm and 10mm interception storage where rainfall runoff to receiving water can be prevented.	Provision of permeable paving in order to reduce hardstanding areas where possible.
		Provision of treatment volume of volume (minimum pool volume equivalent to 15mm of rainfall)	
River Regime Protection	1 and 100	Discharge rate equal to greenfield runoff rate	Provision of attenuation storage with flow control device to regulate outflow from site to greenfield runoff rates during peak storm events.
Level of Service (Flooding) for the site	30 and 100	No flooding on site	Site is located outside the 1:1000-year flood zone and the proposed drainage system is designed to cater for the 1:100 year storm event.
		100	No internal property flooding
		No flooding of adjacent urban areas	The proposed surface water scheme for the development manages the 1:100 year flood event within the development.
River Flood Protection	100	'Long-term' storage with temporary flood storage drained by infiltration	Due to site constraints and underground service congestion, there is insufficient space available on site for 'Long-term' infiltration storage. Instead, 3 no. StormTech™



Criterion	Return Period (Years)	Design Objective	Design Measures Provided
			systems by Cubic M <sup>3</sup> or similar is being proposed.
		Maximum discharge rate of QBAR or 2 l/s/ha (whichever is greater) for attenuation storage where separate 'long-term' storage cannot be provided.	Discharge rates from the proposed scheme will be controlled in accordance with this requirement.

**Table 2.1 – Summary of SuDS Implementation Measures**

As noted in Chapter 16 of the Greater Dublin Regional Drainage Code of Practice SuDS are a mandatory requirement of each Local Sanitary Authority. Due to the constrained nature of the site and high level of underground services required to service the buildings limited options are available in terms of SuDS devices, namely permeable paving.

The objectives of the SDCC Sustainable Drainage Explanatory Design & Evaluation Guide are noted in relation to the selection the proposed attenuation storage device. The Design Note provided in Section 7.7.1 of the document notes the following:

*"Ideally runoff should be stored in shallow landscaped features or within permeable surfaces. Where this is not possible, deeper tanks or pipe storage must be robustly justified".*

Furthermore, the SDCC Advice Note provided in Section 10 of the document notes the following:

*"Underground storage systems should only be considered as a last resort.".*

Several options were assessed in relation to the Surface Water Attenuation System to be used. Due to site constraints and underground service congestion, 3 no. StormTech™ systems by Cubic M<sup>3</sup> or similar is being proposed. These systems have capacity to store the 1 in 100 year storm event as described in Section 2.5.5.

Section 8.4.5.1 of the SDCC Sustainable Drainage Explanatory Design & Evaluation Guide states that SDCC requires that SuDS attenuate runoff from all sites to equivalent greenfield runoff rates. This restricted rate applies to both green and brownfield (re)development.

### 2.5.5 Surface Water Attenuation

The surface water network has been designed to provide sufficient capacity to contain and convey all surface water runoff associated with the 1 in 100 year event to the attenuation basins

without any overland flooding. This is in compliance with Criterion 3 of Table 6.3 of Volume 2 the GSDSDS.

In order to comply with Criterion 4 of Table 6.3 of Volume 2, the required attenuation storage needs to accommodate the surface water runoff associated with the 1 in 100 year event conveyed by the surface water network.

In this section, the allowable discharge rate from the site and coefficients of runoff for the contributing impermeable areas are defined. Surface water attenuation volumes required for the 1 in 30 and 1 in 100 year storm events are evaluated and surface water network flooding is checked.

### Allowable Discharge

The allowable discharge rate,  $Q_{BAR}$ , is given by the following equation in accordance with the Institute of Hydrology Report No. 124 (IH 124 method):

$$Q_{BAR} = 0.00108AREA^{0.89}SAAR^{1.17}SOIL^{2.17}$$

However, the total site area is less than 50 hectares. Therefore,  $Q_{BAR}$  is calculated for 50 hectares and linearly interpolated to 0.86 hectares. See calculations below.

IH 124 method for 50 hectare site area:

$$\begin{aligned} AREA &= 0.5 \text{ km}^2 \text{ (i.e. 50 ha)} \\ SAAR &= 700 \text{ mm (Met Eireann SAAR, see Appendix D)} \\ SOIL &= 0.3 \text{ (SOIL TYPE 2, see Table D1 of Appendix D of Volume 2 of GSDSDS)} \\ \\ Q_{BAR} &= 0.00108(0.5)^{0.89}(700)^{1.17}(0.3)^{2.17} \\ &= 0.09 \text{ m}^3/\text{s for 50 ha site area} \end{aligned}$$

Interpolation for 0.86 hectares:

$$\begin{aligned} Q_{BAR} &= (0.09 \text{ m}^3/\text{s} / 50 \text{ ha}) \times 0.86 \text{ ha} \\ &= 0.002 \text{ m}^3/\text{s} \end{aligned}$$

Therefore,  $Q_{BAR} = 1.57 \text{ l/s}$ .

Check whichever is greater for the maximum discharge rate of  $Q_{bar}$  or 2 l/s/ha in accordance with Criterion 4.3 of Table 6.3 of Volume 2 the GSDSDS.

$$\begin{aligned} Q_{BAR} &= 1.57 \text{ l/s} \\ 2 \text{ l/s/ha} &= 1.73 \text{ l/s for 0.86 ha site} \end{aligned}$$

Therefore, the maximum allowable discharge for the site is 1.73 l/s at a design head of 2.0m. Discharge from the site will be controlled by means of an online hydrobrake vortex control (Unit Reference SHE-0053-1730-2000-1730). Details of the hydrobrake proposed are provided in **Appendix E**.



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### Coefficients of Runoff for Contributing Impermeable Areas

The site contains the following impermeable areas:

Roof Area ( $A_{RF}$ )	= 0.223 ha
Concrete Area ( $A_{CONC}$ )	= 0.234 ha
Grasscrete Area ( $A_{GCRETE}$ )	= 0.172 ha

The coefficients of runoff in accordance with Section 8.4.4.1 of the SDCC Sustainable Drainage Explanatory Design & Evaluation Guide are defined as follows for the contributing impermeable areas:

Roof Coefficients of Runoff ( $C_{RF}$ )	= 0.95
Concrete Coefficients of Runoff ( $C_{CONC}$ )	= 0.90
Grasscrete Coefficients of Runoff ( $C_{GCRETE}$ )	= 0.30

Therefore, total impermeable area for the site is calculated as follows:

$$\begin{aligned} \text{Total Impermeable Area} &= A_{RF} \times C_{RF} + A_{CONC} \times C_{CONC} + A_{GCRETE} \times C_{GCRETE} \\ &= 0.223 \times 0.95 + 0.234 \times 0.90 + 0.172 \times 0.30 \\ &= 0.474 \text{ ha} \end{aligned}$$

### Required Surface Water Attenuation Storage

In order to account for climate change, an additional allowance of 20% in rainfall intensities have been allowed as per Section 8.4.6.4 of SDDCC Sustainable Drainage Explanatory Design & Evaluation Guide which exceeds the requirements of Table 6.1 of Volume 2 of the GSDS (10%).

Analysis of the 1 in 30 year storm event yields a critical required storage volume of 346.699 m<sup>3</sup> during the 1440 minute of the 1 in 30 year storm event. Similarly, analysis of the 1 in 100 year storm event yields a critical required storage volume of 517.909 m<sup>3</sup> during the 1440 minute of the 1 in 100 year storm event. See **Appendix B** for analysis the 1 in 30 and 1 in 100 year storm event.

As a result, the required surface water storage is 517.909 m<sup>3</sup> during the 1440 minute of the 1 in 100 year storm event.

Considering the site constraints and underground service congestion, 3 no. StormTech™ systems by Cubic M<sup>3</sup> or similar is being proposed. See **Appendix C** for further details.

### Surface Water Network Flooding Check for Critical Storm Event

The critical storm event occurs during the 1440 minute of the 1 in 100 year storm event for which 517.909 m<sup>3</sup> of surface water attenuation storage is required. It is assumed that during this storm the Top Water Level (TWL) = 66.48 m in the surface water network.

As a result, the surface water volume of 517.909 m<sup>3</sup> is stored in the network as follows:

- Attenuation A1
  - Cover Level (CL) = 67.47 m
  - Invert Level (IL) = 64.88 m
  - Plan Area = 96.55 m<sup>2</sup>
  - Top of Attenuation System level = 66.56 m
  - Top Water Level (TWL) during Critical Storm = 66.48 m
  - Storage Volume Contribution during Critical Storm = 71.25 m<sup>3</sup> (95 % of Capacity)
  
- Attenuation A2 (Inclusive of additional 127 m<sup>3</sup> Porous Stone)
  - Cover Level (CL) = 67.52 m
  - Invert Level (IL) = 64.68 m
  - Plan Area = 357.77 m<sup>2</sup>
  - Top of Attenuation System level = 66.48 m
  - Top Water Level (TWL) during Critical Storm = 66.48 m
  - Storage Volume Contribution during Critical Storm = 300 m<sup>3</sup> (100 % of Capacity)
  
- Attenuation A3
  - Cover Level (CL) = 66.61 m
  - Invert Level (IL) = 65.03 m
  - Attenuation System Plan Area = 169.85 m<sup>2</sup>
  - Top of Attenuation System level = 66.09 m
  - Top Water Level (TWL) during Critical Storm = 66.48 m
  - Storage Volume Contribution during Critical Storm = 105 m<sup>3</sup> (100 % of Capacity)
  
- Manhole Storage
  - Top Water Level (TWL) during Critical Storm = 66.48 m
  - Storage Volume Contribution during Critical Storm = 31.67 m<sup>3</sup> (48 % of Capacity)
  
- Pipes Storage
  - Top Water Level (TWL) during Critical Storm = 66.48 m
  - Storage Volume Contribution during Critical Storm = 18.57 m<sup>3</sup> (97 % of Capacity)
  
- Total Provided Storage (during Critical Storm) = Attenuation A1 + Attenuation A2 +  
Attenuation A3 + Manhole Storage + Pipe Storage  
= 71.25 + 300 + 105 + 31.67 + 18.57  
= 526.49 m<sup>3</sup>

Therefore, during the critical storm event with an assumed TWL = 66.48 m a total storage of 526.49 m<sup>3</sup> is provided which is greater than the critical required storage volume of 517.909 m<sup>3</sup>. Therefore, the TWL is lower than 66.48m and no flooding occurs within the surface water network during the 1440 minute during the 1 in 100 year critical storm event.

Details of the proposed Attenuation System are indicated on 22\_112-CSE-00-XX-DR-C-2112 Proposed Surface Water Attenuation System General Arrangement.



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## 3 Foul Wastewater Drainage

### 3.1 General

A pre-connection enquiry (PCE) form was submitted to Irish Water on 14<sup>th</sup> of April 2022, which addressed fire water demand only. There is no increase the existing wastewater demand and as a result the scheme and the proposed development discharge is within the currently permitted limits. Refer to Section 4 of this report for further details in relation to permitted water demand.

### 3.2 Drawings

The following drawings provided in support of this planning application are applicable to wastewater drainage:

- 22\_112-CSE-00-XX-DR-C-2200 Existing Foul Wastewater Drainage Layout Plan
- 22\_112-CSE-00-XX-DR-C-2210 Proposed Foul Wastewater Drainage Layout Plan
- 22\_112-CSE-00-XX-DR-C-2910 Proposed Standard Trench Details
- 22\_112-CSE-00-XX-DR-C-2911 Proposed Services Details Sheet 1
- 22\_112-CSE-00-XX-DR-C-2912 Proposed Services Details Sheet 2

### 3.3 Existing Infrastructure

There is an existing 225mmØ foul sewer pipe within the northern boundary of the site which flows in an easterly direction to the northeast corner of the site. At the northeast corner of the site, the 225mmØ pipe connects to an existing 225mmØ pipe which flows in an easterly direction along Calmount Road.

There is an existing pumping station located south of the main building, which is to be retained.

### 3.4 Proposed Foul Wastewater Drainage Network

#### 3.4.1 Overview

The proposed wastewater drainage network collects domestic foul wastewater flows from the main building and the security hut, which are collected by pop-ups which connect to 100mmØ internal pipework which discharge into a 150mmØ foul sewer located externally to the main building and security hut. Foul wastewater accumulated in the southern proposed wastewater drainage network is pumped via the existing pumping station manhole to the foul sewer manhole located north of the main building before out falling in a north-easterly direction to the existing 225mmØ foul sewer network in Calmount Road as described in Section 3.3.

In addition to domestic foul wastewater flows, rainwater which collects in the exhaust stacks of the generator will discharge to the foul sewer. External gullies will be provided at the generator exhaust stacks which will serve the above ground drain points. The foul sewer will flow west from generator compound and a full retention hydrocarbon separator will be provided on the sewer to prevent hydrocarbons entering the Irish Water Network.

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### 3.4.2 Domestic Wastewater Demand

There is no increase the existing wastewater demand. The existing average permitted water demand is 1,200 l/day. The estimated proposed average demand is 1,100 l/day which is calculated as follows:-

- Domestic Demand (22 staff) =  $22 \times 50$  litres (as per Appendix C of Irish Water Code of Practice for Wastewater Infrastructure) = 1,100 l/ day

As noted in Section 2.4 of this report discharges associated with the humification process discharges to the surface water network.

### 3.4.3 Wastewater Pipe Design

The network has been designed to ensure that the foul discharge maintains a self-cleansing velocity. The proposed network adheres to the minimum pipe gradients set out in Table 6 of the "Building Regulations Technical Guidance Document H". It is proposed to take all foul drainage from the buildings by means of 100mmØ pipes with minimum gradients of 1:60 which connect to 150mmØ pipes laid at minimum gradients of 1:80.

### 3.4.4 Pollution Control Measures on Wastewater Network

The drainage from the external gullies at the exhaust stacks and sprinkler pumphouse are to pass into a Class 1 full retention separator (Klargestor Model No. NSFP0003 or equivalent) located upstream of the proposed manhole.

Details of the full retention separator are provided in **Appendix F**.



## 4 Water Supply

### 4.1 General

A pre-connection enquiry (PCE) form was submitted to Irish Water on 14<sup>th</sup> of April 2022 which addressed water demand with respect to fire flow requirements for the development (IW Reference Number: CDS22003008). The PCE Application form is included in **Appendix G**. Irish Water provided a confirmation of feasibility (CoF) for the development on 30<sup>th</sup> of May 2022 (IW Reference Number: CDS22003008), which is included in **Appendix H**. This indicated that the Proposed Option 1 for a 100mmØ metered pipe to connect existing fire flow mains to the fire flow tank was feasible without the requirement for upgrades to the Irish Water network.

### 4.2 Existing Infrastructure

The site is served by a 100mmØ uPVC watermain that is located in the sidewalk along the southern site boundary. As noted in Section 4.1, Irish Water have indicated that there is no requirement for upgrades with the Irish Water network.

### 4.3 Drawings

The following drawings provided in support of this planning application are applicable to water supply:

- 22\_112-CSE-00-XX-DR-C-2300 Existing Water Supply Layout Plan
- 22\_112-CSE-00-XX-DR-C-2310 Proposed Water Supply Layout Plan
- 22\_112-CSE-00-XX-DR-C-2910 Proposed Standard Trench Details
- 22\_112-CSE-00-XX-DR-C-2911 Proposed Services Details Sheet 1

### 4.4 Proposed Water Supply

#### 4.4.1 Overview

It is proposed that the existing water supply be retained. A new 100mmØ connection is proposed to connect the existing fire flow mains on site to the fire flow tanks. Furthermore, a bulk meter is to be installed on the connection to the 100mmØ uPVC watermain as described in Section 4.2.

#### 4.4.2 Domestic and Building Humidification Water Supply Demand

There is no increase the existing domestic water supply demand associated with the development. The existing daily permitted water demand is 1200 l/day based on the original water connection application (**See Appendix I**).

The estimated average water demand for the development is estimated at 1,167 litres per day. This demand is a combination of domestic and building humidification demand. This is calculated as follows:-

- Daily Domestic Demand (22 staff) = 22 x 45 litres (as per Section 3.28 of Irish water Code of Practice for Water Infrastructure) = 990 l/ day
- Building Humidification Demand = 177 l/day
- Total Demand = 990 l/day + 177 l/day = 1,167 l/day

#### 4.4.3 Fire Flow Requirements

The fire flow rate is required such that the tank can be refilled every 36 hours – see calculations below.

$$\begin{aligned} \text{“ Sprinkler Replenishment Criteria} &= 24 \text{ hrs to fill} \\ \text{Sprinkler Tank Volume} &= 250.72 \text{ m}^3 \end{aligned}$$

$$\begin{aligned} \text{Sprinkler Replenishment Rate} &= 250,720 / 36\text{hrs} = 6,964.4 \text{ l/hr} \\ &= 6,964.4 / 60 \times 60 = 1.9 \text{ l/s} \text{”} \end{aligned}$$

The required fire flow rate is calculated are below the flow rates permitted by Irish Water in the PCE provided in **Appendix G** and the Confirmation of Feasibility provided in **Appendix H**.

#### 4.4.4 Fire Hydrant Main

The existing fire hydrants are to be retained. However, the existing fire hydrant on the northwest corner of the main building is to be removed and replaced by a new proposed fire hydrant in the loading bay area alongside the retaining wall of adjacent to the generator.

Required fire hydrant flow rates will be 25 l/s in accordance with IS 391:2000. The fire hydrants will be provided at appropriate locations in accordance with the specialist fire protection contractors design and South Dublin County Council requirements.



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## Appendices

Project Number: 22\_112

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***Appendix A – Surface Network Design***



Calculations		Sheet: 1	Of: 1	Rev. No.: 1
Client:		25/08/2022		
Project: Unit 1, M50 Business Park		Date:		
Project No.: 22_112		Orig: KB		
Client Project No.:		Aut. Chk.: CD		

Part Of Document No. / Description: **Surface Water Drainage Network Design**  
 Calculation No. / Description: **Only for Preliminary Stage**

**Surface Water Pipe Design using Wallford Tables for the Hydraulic Design of Pipes**

Pipe Number	I (mm/hr)	A (m <sup>2</sup> ) Roof	A (ha) Roof	C (Roof)	A (m <sup>2</sup> ) Concrete	A (ha) Concrete	C (Concrete)	A (m <sup>2</sup> ) Grasscrete	A (ha) Grasscrete	C (Grasscrete)	Q (pipe) (l/s)	Q (total) (l/s)	Diameter (m)	Gradient 1:	Piezo Gradient S	ks (m)	Full Bore Disch (l/s)	Full Bore Velocity (m/s)	θ-Medial	Prop. Discharge	CRITERIA	Prop. Velocity (m/s)	Velocity (m/s)
1.000	50	117.87	0.012	0.95	940.08	0.09	0.90	0.30	14.070	0.30	14.070	14.070	0.225	200	0.005	0.0006	36.56	0.92	101	0.385	YES	0.901	0.828
1.001	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	14.070	0.300	200	0.005	0.0006	78.23	1.11	135	0.000	YES		
1.002	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	14.070	0.300	200	0.005	0.0006	78.23	1.11	135	0.000	YES		
1.003	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	14.070	0.300	200	0.005	0.0006	78.23	1.11	135	0.000	YES		
1.004	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	14.070	0.300	200	0.005	0.0006	78.23	1.11	135	0.000	YES		
2.000	50	0.00	0.000	0.95	243.03	0.02	0.90	0.30	3.421	0.30	3.421	3.421	0.150	58	0.017	0.0006	23.36	1.32	90	0.146	YES	0.680	0.898
2.001	50	24.78	0.002	0.95	125.39	0.01	0.90	0.30	1.896	0.30	1.896	5.317	0.225	67	0.015	0.0006	63.73	1.60	130	0.030	YES	0.387	0.620
3.000	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	19.387	0.300	200	0.005	0.0006	78.23	1.11	135	0.000	YES		
3.001	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	0.000	0.225	200	0.005	0.0006	36.56	0.92	101	0.000	YES		
3.002	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	0.000	0.225	200	0.005	0.0006	36.56	0.92	101	0.000	YES		
3.003	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	0.000	0.225	200	0.005	0.0006	36.56	0.92	101	0.000	YES		
4.000	50	957.43	0.096	0.95	0.00	0.00	0.90	0.30	13.233	0.30	13.233	13.233	0.225	110	0.009	0.0006	49.46	1.24	116	0.268	YES	0.841	1.045
5.000	50	353.60	0.035	0.95	314.28	0.03	0.90	0.30	9.190	0.30	9.190	9.190	0.150	200	0.005	0.0006	12.47	0.71	67	0.737	YES	1.073	0.757
5.001	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	9.190	0.150	200	0.005	0.0006	12.47	0.71	67	0.000	YES		
5.002	50	0.00	0.000	0.95	0.00	0.00	0.90	0.30	0.261	0.30	0.261	9.451	0.150	200	0.005	0.0006	12.47	0.71	67	0.021	YES	0.387	0.273
5.003	50	200.62	0.020	0.95	0.00	0.00	0.90	0.30	2.905	0.30	2.905	12.356	0.150	200	0.005	0.0006	12.47	0.71	67	0.233	YES	0.773	0.545
5.004	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	12.356	0.225	200	0.005	0.0006	36.56	0.92	101	0.000	YES		
5.005	50	100.36	0.010	0.95	244.38	0.02	0.90	0.30	4.783	0.30	4.783	17.138	0.225	300	0.003	0.0006	29.75	0.75	91	0.161	YES	0.712	0.533
5.006	50	0.00	0.000	0.95	0.00	0.00	0.90	0.30	0.188	0.30	0.188	17.327	0.300	300	0.003	0.0006	63.70	0.90	122	0.003	YES	0.198	0.178
5.007	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	17.327	0.300	300	0.003	0.0006	63.70	0.90	122	0.000	YES		
5.008	50	0.00	0.000	0.95	0.00	0.00	0.90	0.30	0.979	0.30	0.979	18.306	0.300	300	0.003	0.0006	63.70	0.90	122	0.015	YES	0.330	0.297
5.009	50	234.74	0.023	0.95	0.00	0.00	0.90	0.30	3.441	0.30	3.441	21.747	0.300	300	0.003	0.0006	63.70	0.90	122	0.054	YES	0.487	0.438
5.010	50	0.00	0.000	0.95	0.00	0.00	0.90	0.30	2.346	0.30	2.346	24.093	0.300	300	0.003	0.0006	63.70	0.90	122	0.037	YES	0.439	0.395
5.011	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	24.093	0.300	300	0.003	0.0006	63.70	0.90	122	0.000	YES		
6.000	50	0.00	0.000	0.95	0.00	0.00	0.90	0.30	0.103	0.30	0.103	0.103	0.225	376	0.003	0.0006	26.52	0.67	86	0.004	YES	0.198	0.132
6.001	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	0.103	0.225	110	0.009	0.0006	49.54	1.25	117	0.000	YES		
6.002	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	0.103	0.300	719	0.011	0.0006	40.80	0.58	97	0.000	YES		
6.003	50	237.73	0.024	0.95	0.00	0.00	0.90	0.30	3.139	0.30	3.139	3.242	0.300	22	0.046	0.0006	239.08	3.38	218	0.013	YES	0.330	1.116
3.004	50	0.00	0.000	0.95	463.37	0.05	0.90	0.30	5.797	0.30	5.797	40.568	0.300	131	0.008	0.0006	96.94	1.37	149	0.060	YES	0.531	0.727
1.006	50		0.000	0.95			0.90	0.30	0.000	0.30	0.000	40.568	0.300	131	0.008	0.0006	96.94	1.37	149	0.000	YES		
1.007	50	0.00	0.000	0.95	6.57	0.00	0.90	0.30	0.082	0.30	0.082	40.650	0.375	25	0.040	0.0006	400.21	3.62	265	0.000	YES		

1. This spreadsheet provide facility to design the individual pipes for preliminary design stage.
2. Design discharge is calculated using Modified rational method based on contributing area.
3. Standard rainfall intensity of 50mm/hr is used.
4. Proportional depth should be read from the following chart.
5. Proportional velocity should be read from the following chart.

Calculations

Client:	Sheet	1	Of	1	Rev. No.:	1
Project: DUB602	Date:	25/08/2022				
PM Project No.: 22-112	Orig.:	KB				
Client Project No.:	Aut. Chk.:					

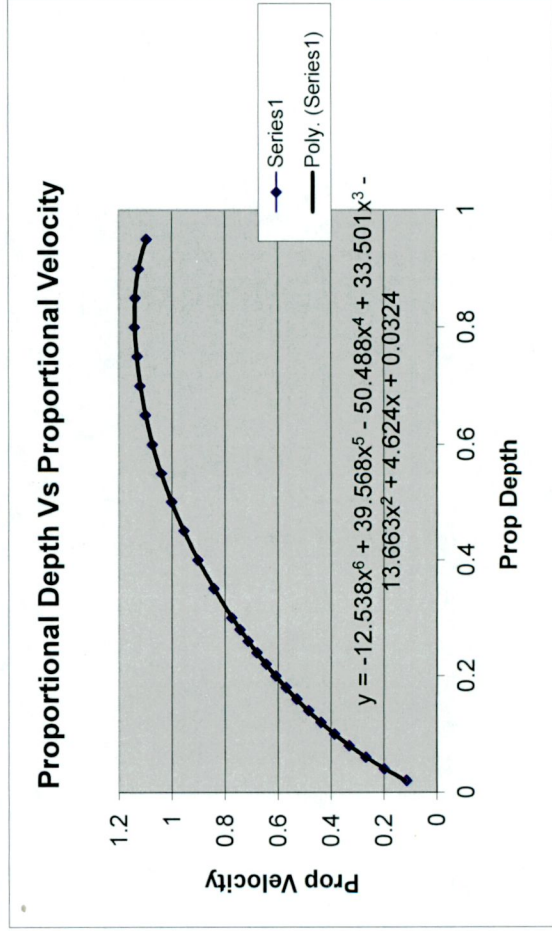
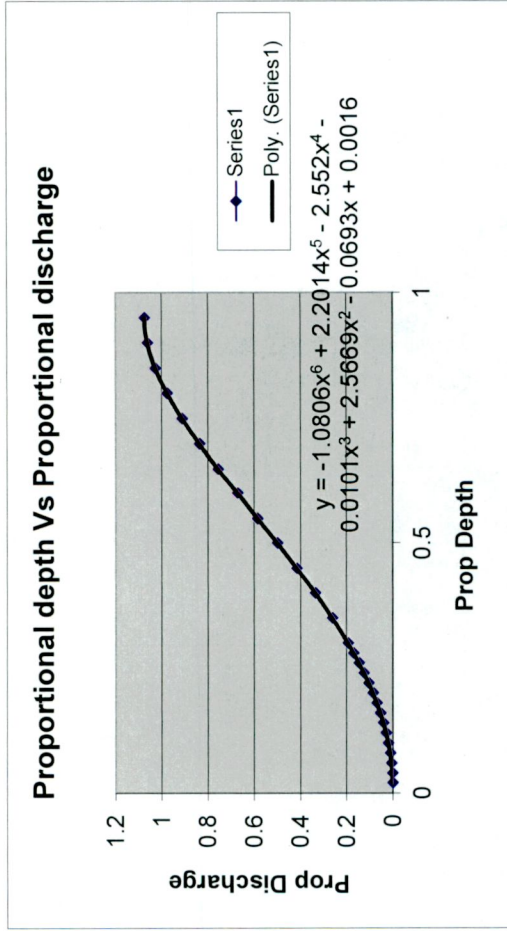
Part Of Document No. / Description:  
Calculation No. / Description:

**Chart A1. Relative Velocity and Discharge in a Circular Pipe for any Depth of Flow.**





Prop Depth	Prop Full	Prop Vel	Graph Vel
0.02	0.001240278	0.116	0.119674856
0.04	0.002928081	0.2	0.197518015
0.06	0.006649246	0.27	0.267265275
0.08	0.012381389	0.332	0.330087693
0.1	0.020094633	0.387	0.387005342
0.12	0.029752276	0.438	0.438900477
0.14	0.041311409	0.485	0.486530131
0.16	0.054723496	0.529	0.530538133
0.18	0.069934885	0.57	0.571466547
0.2	0.08688729	0.609	0.609766528
0.22	0.105518204	0.645	0.645808613
0.24	0.12576128	0.68	0.679892419
0.26	0.147546647	0.713	0.712255776
0.28	0.170801183	0.744	0.743083274
0.3	0.195448745	0.774	0.772514238
0.35	0.262636998	0.842	0.840572706
0.4	0.336722598	0.902	0.901311872
0.45	0.41629291	0.954	0.954925847
0.5	0.499821875	1	1.00136875
0.55	0.585649235	1.039	1.040639568
0.6	0.67194759	1.073	1.072925952
0.65	0.756677312	1.099	1.098606969
0.7	0.837529289	1.12	1.118114798
0.75	0.911855518	1.13	1.131655371
0.8	0.976587546	1.14	1.138787968
0.85	1.028142746	1.137	1.137863753
0.9	1.062318441	1.124	1.125323262
0.95	1.074173871	1.095	1.094852835
1	1.0579	1.0364	



Project Number: 22\_112

Project: Unit 1, M50 Business Park

Title: Engineering Services Report Drainage and Water Services



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***Appendix B – SW Attenuation Storage Calculations***



**Surface Water Attenuation Requirement for 1 in 30 Year Storm Event**

Total Site Area = 0.86 hectares (ha)  
 Total Impermeable Area = 0.47 hectares (ha)  
 PIMP = 54.82 %

(See section 2.5.5 of the Engineering Services Report Drainage and Water Services)

Duration, (min)	Rainfall		Total Impermeable Area (ha)	Inflow Rate (l/s)	Inflow Rate $Q = 2.78 * C * I * A^2$ (l/s)	Inflow Volume, I (m <sup>3</sup> )	Inflow Rate (l/s)	Outflow Volume, O (m <sup>3</sup> )	Required Storage, S (m <sup>3</sup> )	Comments
	30 Year Event <sup>1</sup> (mm)	+20% CC Allowance								
5	12.1	1.2	0.474	174.24	229.42	68.825	1.728	0.518	68.307	
10	16.9	1.2	0.474	121.68	160.21	96.128	1.728	1.037	95.091	
15	19.8	1.2	0.474	95.04	125.14	112.623	1.728	1.555	111.068	
30	24.8	1.2	0.474	59.52	78.37	141.064	1.728	3.110	137.953	
60	31.1	1.2	0.474	37.32	49.14	176.898	1.728	6.221	170.678	
120	38.9	1.2	0.474	23.34	30.73	221.265	1.728	12.442	208.824	
180	44.4	1.2	0.474	17.76	23.38	252.550	1.728	18.662	233.887	
240	48.8	1.2	0.474	14.64	19.28	277.577	1.728	24.883	252.694	
360	55.6	1.2	0.474	11.12	14.64	316.256	1.728	37.325	278.931	
540	63.5	1.2	0.474	8.47	11.15	361.191	1.728	55.987	305.204	
720	69.7	1.2	0.474	6.97	9.18	396.457	1.728	74.650	321.808	
1080	79.5	1.2	0.474	5.30	6.98	452.200	1.728	111.974	340.226	
<b>1440</b>	<b>87.2</b>	<b>1.2</b>	<b>0.474</b>	<b>4.36</b>	<b>5.74</b>	<b>495.998</b>	<b>1.728</b>	<b>149.299</b>	<b>346.699</b>	<b>Critical Volume</b>
2880	98.9	1.2	0.474	2.47	3.26	562.548	1.728	298.598	263.950	

**Notes:**

1. See Appendix D for Met Eireann rainfall data during a 1 in 30 year storm event
2.  $Q = 2.78 * C * I * A = 2.78 * I * (C_{RF} * A_{RF} + C_{CONC} * A_{CONC} + C_{GRAS} * A_{GRAS})$

**Surface Water Attenuation Required for 1 in 100 Year Storm Event**

Total Site Area = 0.86 hectares (ha)

Total Impermeable Area = 0.47 hectares (ha)

PIMP = 54.82%

(See section 2.5.5 of the Engineering Services Report Drainage and Water Services)

Duration, (min)	Rainfall			Intensity (mm/hr)	Total Impermeable Area (ha)	Inflow Rate $Q = 2.78 * C * I * A^2$ (l/s)	Inflow Volume, l (m <sup>3</sup> )	Inflow Rate $Q_{BAR}$ (l/s)	Outflow Volume, O (m <sup>3</sup> )	Required Storage, S (m <sup>3</sup> )	Comments
	100 Year Event <sup>1</sup> (mm)	+20% CC Allowance	Rainfall (mm)								
5	17.7	1.2	21.24	254.88	0.474	335.60	100.679	1.728	0.518	100.160	
10	24.6	1.2	29.52	177.12	0.474	233.21	139.926	1.728	1.037	138.889	
15	29.0	1.2	34.8	139.20	0.474	183.28	164.954	1.728	1.555	163.398	
30	35.8	1.2	42.96	85.92	0.474	113.13	203.632	1.728	3.110	200.522	
60	44.3	1.2	53.16	53.16	0.474	69.99	251.981	1.728	6.221	245.760	
120	54.8	1.2	65.76	32.88	0.474	43.29	311.705	1.728	12.442	299.264	
180	62.0	1.2	74.4	24.80	0.474	32.65	352.659	1.728	18.662	333.997	
240	67.8	1.2	81.36	20.34	0.474	26.78	385.650	1.728	24.883	360.767	
360	76.7	1.2	92.04	15.34	0.474	20.20	436.274	1.728	37.325	398.949	
540	86.9	1.2	104.28	11.59	0.474	15.26	494.292	1.728	55.987	438.305	
720	94.9	1.2	113.88	9.49	0.474	12.50	539.796	1.728	74.650	465.147	
1080	107.4	1.2	128.88	7.16	0.474	9.43	610.897	1.728	111.974	498.923	
<b>1440</b>	<b>117.3</b>	<b>1.2</b>	<b>140.76</b>	<b>5.87</b>	<b>0.474</b>	<b>7.72</b>	<b>667.209</b>	<b>1.728</b>	<b>149.299</b>	<b>517.909</b>	<b>Critical Volume</b>
2880	129.9	1.2	155.88	3.25	0.474	4.28	738.878	1.728	298.598	440.280	

**Notes:**

1. See Appendix D for Met Eireann rainfall data during a 1 in 100 year storm event

2.  $Q = 2.78 * C * I * A = 2.78 * I * (C_{REF} * A_{REF} + C_{CONC} * A_{CONC} + C_{GRAS} * A_{GRAS})$



Project Number: 22\_112

Project: Unit 1, M50 Business Park

Title: Engineering Services Report Drainage and Water Services



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***Appendix C – Attenuation Sizing Calculations***

# STORMTECH Stormwater Management System Design Tool

ver. Jun14

<b>PROJECT REF:</b> 22_112
<b>LOCATION:</b> Calmount Road - A1
<b>DATE:</b> 22/08/2022
<b>CREATED BY:</b> Kyle Brill

Instructions: Fill in blue highlighted cells  
 Set width to maximum allowance  
 Adjust site parameters and system dimension until volume achieved  
 For Rectangular systems only, for irregular shape dig contact Microstrain

## SYSTEM PARAMETERS

Required Total Storage	75 m <sup>3</sup>
Stormtech chamber model	MC3500
Number of Isolator Rows for TSS Removal	1

## SITE PARAMETERS

Maximum Width at Excavation Base	5 m
Stone Porosity	43%
Excavation Batter Angle (degrees)	60°
Stone Below Chambers	0.23 m
Stone Above Chambers	0.305 m
Additional Storage. E.g manholes, pipe	0 m <sup>3</sup>

Minimum Requirement

0.23

0.30

## STORMTECH SYSTEM DETAIL

StormTech Chamber Model	MC3500
Unit Width	1.955 m
Unit Length	2.18 m
Unit Height	1.145 m
Min Cover Over System	0.3 m
Max Cover Over Chamber	2.4 m
Internal Storage Vol. (Chamber only)	3.11 m <sup>3</sup>

## STONE AND EXCAVATION DETAIL

Volume of Dig for System	132
Area of Dig at Base of System	60 m <sup>2</sup>
Area of Dig at Top of System	97 m <sup>2</sup>
Void Ratio	57%
Stone Requirement - tonne	159 tonne

## CALCULATED CHAMBER SYSTEM DIMENSIONS

	Calculated	Adopted
Number of Rows	2	ea
Number of units per Row	5	ea
Number of MC3500 Chambers	10	ea
Number of MC3500 Endcaps	4	ea
System Installed Storage Depth (effective storage depth)	1.680	m
Tank overall installed Width at base	4.74	5 m
Tank overall installed Length at Base	12.64	12 m
<b>Total Effective System Storage</b>	<b>75.6</b>	<b>75.4</b> m <sup>3</sup>





# STORMTECH Stormwater Management System Design Tool

ver. Jun14

<b>PROJECT REF:</b>	22_112
<b>LOCATION:</b>	Calmount Road - A2
<b>DATE:</b>	22/08/2022
<b>CREATED BY:</b>	Kyle Brill

Instructions: Fill in blue highlighted cells  
 Set width to maximum allowance  
 Adjust site parameters and system dimension until volume achieved  
 For Rectangular systems only, for irregular shape dig contact Microstrain

## SYSTEM PARAMETERS

Required Total Storage	276 m <sup>3</sup>
Stormtech chamber model	MC3500
Number of Isolator Rows for TSS Removal	1

## SITE PARAMETERS

Maximum Width at Excavation Base	3.2 m
Stone Porosity	43%
Excavation Batter Angle (degrees)	60 °
Stone Below Chambers	0.23 m
Stone Above Chambers	0.425 m
Additional Storage. E.g manholes, pipe	126.7812 m <sup>3</sup>

Minimum Requirement  
 0.23  
 0.30

## STORMTECH SYSTEM DETAIL

StormTech Chamber Model	MC3500
Unit Width	1.955 m
Unit Length	2.18 m
Unit Height	1.145 m
Min Cover Over System	0.3 m
Max Cover Over Chamber	2.4 m
Internal Storage Vol. (Chamber only)	3.11 m <sup>3</sup>

## STONE AND EXCAVATION DETAIL

Volume of Dig for System	330
Area of Dig at Base of System	134 m <sup>2</sup>
Area of Dig at Top of System	233 m <sup>2</sup>
Void Ratio	91%
Stone Requirement - tonne	445 tonne

## CALCULATED CHAMBER SYSTEM DIMENSIONS

	Calculated	Adopted
Number of Rows	1	ea
Number of units per Row	18	ea
Number of MC3500 Chambers	18	ea
Number of MC3500 Endcaps	2	ea
System Installed Storage Depth (effective storage depth)	1.800	m
Tank overall installed Width at base	2.56	3.2 m
Tank overall installed Length at Base	40.98	42 m
<b>Total Effective System Storage</b>	<b>276.5</b>	<b>300.8</b> m <sup>3</sup>

# STORMTECH Stormwater Management System Design Tool

ver. Jun14

<b>PROJECT REF:</b> 22_112
<b>LOCATION:</b> Calmount Road - A3
<b>DATE:</b> 22/08/2022
<b>CREATED BY:</b> Kyle Brill

Instructions: Fill in blue highlighted cells  
 Set width to maximum allowance  
 Adjust site parameters and system dimension until volume achieved  
 For Rectangular systems only, for irregular shape dig contact Microstrain

## SYSTEM PARAMETERS

Required Total Storage	105 m <sup>3</sup>
Stormtech chamber model	SC740
Number of Isolator Rows for TSS Removal	1

## SITE PARAMETERS

Maximum Width at Excavation Base	9.5 m
Stone Porosity	43%
Excavation Batter Angle (degrees)	60 °
Stone Below Chambers	0.15 m
Stone Above Chambers	0.15 m
Additional Storage. E.g manholes, pipe	0 m <sup>3</sup>

Minimum Requirement

0.15  
0.15

## STORMTECH SYSTEM DETAIL

StormTech Chamber Model	SC740
Unit Width	1.295 m
Unit Length	2.17 m
Unit Height	0.76 m
Min Cover Over System	0.3 m
Max Cover Over Chamber	2.4 m
Internal Storage Vol. (Chamber only)	1.3 m <sup>3</sup>

## STONE AND EXCAVATION DETAIL

Volume of Dig for System	172
Area of Dig at Base of System	146 m <sup>2</sup>
Area of Dig at Top of System	178 m <sup>2</sup>
Void Ratio	61%
Stone Requirement - tonne	191 tonne

## CALCULATED CHAMBER SYSTEM DIMENSIONS

	Calculated	Adopted
Number of Rows	6	ea
Number of units per Row	7	ea
Number of SC740 Chambers	42	ea
Number of SC740 Endcaps	12	ea
System Installed Storage Depth (effective storage depth)	1.060	m
Tank overall installed Width at base	9.12	9.5 m
Tank overall installed Length at Base	15.89	15.4 m
<b>Total Effective System Storage</b>	<b>105.2</b>	<b>105.8</b> m <sup>3</sup>





Project Number: 22\_112

Project: Unit 1, M50 Business Park

Title: Engineering Services Report Drainage and Water Services



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***Appendix D – Met Eireann Rainfall Data***

**MET ÉIREANN RAINFALL DATA**

**1981-2010 Annual Average Rainfall Grid:**

East 310000	North 227000	Irish Grid Co-ordinates Annual Average Rainfall(mm)
310000	227000	824
310000	228000	763
310000	229000	721
310000	230000	700
310000	231000	702
310000	232000	718
310000	233000	733
310000	234000	746

**Return Period Rainfall depths for Sliding Durations:**

Met Eireann  
Return Period Rainfall Depths for sliding Durations  
Irish Grid: Easting: 302884, Northing: 243109,

DURATION	Interval 6months, 1year,	Years													
		2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.6, 3.6,	4.1,	4.9,	5.4,	5.8,	7.1,	8.6,	9.5,	10.9,	12.1,	13.0,	14.4,	15.5,	16.4,	N/A,
10 mins	3.6, 5.0,	5.7,	6.8,	7.5,	8.1,	9.9,	12.0,	13.3,	15.2,	16.8,	18.1,	20.1,	21.6,	22.9,	N/A,
15 mins	4.2, 5.8,	6.7,	8.0,	8.8,	9.5,	11.7,	14.1,	15.7,	17.9,	19.8,	21.3,	23.6,	25.4,	26.9,	N/A,
30 mins	5.6, 7.6,	8.7,	10.3,	11.3,	12.1,	14.8,	17.7,	19.6,	22.2,	24.6,	26.4,	29.1,	31.2,	33.0,	N/A,
1 hour	7.4, 9.9,	11.3,	13.2,	14.5,	15.5,	18.7,	22.3,	24.5,	27.7,	30.5,	32.6,	35.8,	38.3,	40.4,	N/A,
2 hours	9.7, 12.9,	14.6,	17.0,	18.6,	19.8,	23.7,	28.0,	30.7,	34.5,	37.8,	40.3,	44.1,	47.0,	49.4,	N/A,
3 hours	11.5, 15.1,	17.0,	19.7,	21.5,	22.9,	27.3,	32.0,	35.1,	39.2,	42.9,	45.6,	49.8,	53.0,	55.6,	N/A,
4 hours	12.9, 16.9,	18.9,	21.9,	23.9,	25.4,	30.1,	35.2,	38.5,	43.0,	46.9,	49.8,	54.3,	57.7,	60.5,	N/A,
6 hours	15.2, 19.7,	22.0,	25.4,	27.6,	29.3,	34.6,	40.3,	43.9,	48.9,	53.2,	56.4,	61.3,	65.1,	68.1,	N/A,
9 hours	17.8, 23.0,	25.7,	29.5,	31.9,	33.8,	39.7,	46.0,	50.1,	55.6,	60.3,	63.9,	69.3,	73.4,	76.7,	N/A,
12 hours	20.0, 25.7,	28.6,	32.7,	35.4,	37.4,	43.8,	50.6,	55.0,	60.9,	65.9,	69.8,	75.5,	79.9,	83.4,	N/A,
18 hours	23.6, 30.0,	33.3,	37.9,	40.9,	43.2,	50.3,	57.9,	62.7,	69.2,	74.8,	79.0,	85.3,	90.1,	93.9,	N/A,
24 hours	26.5, 33.5,	37.1,	42.1,	45.4,	47.8,	55.5,	63.7,	68.8,	75.8,	81.8,	86.2,	93.0,	98.0,	102.2,	116.1,
2 days	33.1, 41.1,	45.1,	50.7,	54.3,	57.1,	65.5,	74.3,	79.8,	87.2,	93.6,	98.3,	105.3,	110.6,	114.9,	129.3,
3 days	38.4, 47.3,	51.7,	57.8,	61.7,	64.6,	73.6,	83.1,	88.9,	96.8,	103.4,	108.4,	115.8,	121.3,	125.8,	140.7,
4 days	43.2, 52.8,	57.4,	64.0,	68.1,	71.2,	80.8,	90.7,	96.9,	105.1,	112.1,	117.3,	125.0,	130.7,	135.3,	150.8,
6 days	51.6, 62.4,	67.6,	74.8,	79.4,	82.8,	93.3,	104.2,	110.9,	119.8,	127.2,	132.8,	141.0,	147.2,	152.1,	168.5,
8 days	59.1, 70.9,	76.5,	84.4,	89.4,	93.1,	104.4,	116.0,	123.1,	132.6,	140.6,	146.5,	155.2,	161.6,	166.8,	184.0,
10 days	66.0, 78.7,	84.8,	93.2,	98.5,	102.5,	114.5,	126.8,	134.3,	144.3,	152.7,	158.9,	168.0,	174.8,	180.2,	198.1,
12 days	72.5, 86.0,	92.5,	101.4,	107.0,	111.2,	123.9,	136.8,	144.7,	155.2,	163.9,	170.4,	179.9,	186.9,	192.6,	211.2,
16 days	84.6, 99.7,	106.8,	116.6,	122.8,	127.4,	141.2,	155.2,	163.8,	175.1,	184.5,	191.5,	201.7,	209.2,	215.3,	235.1,
20 days	95.9, 112.3,	120.1,	130.7,	137.4,	142.3,	157.1,	172.2,	181.3,	193.4,	203.4,	210.8,	221.6,	229.6,	236.0,	256.9,
25 days	109.3, 127.2,	135.6,	147.1,	154.4,	159.7,	175.7,	191.9,	201.7,	214.6,	225.2,	233.1,	244.6,	253.1,	259.9,	282.1,



Project Number: 22\_112

Project: Unit 1, M50 Business Park

Title: Engineering Services Report Drainage and Water Services



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***Appendix E – Flow Control Device Details***

## Technical Specification

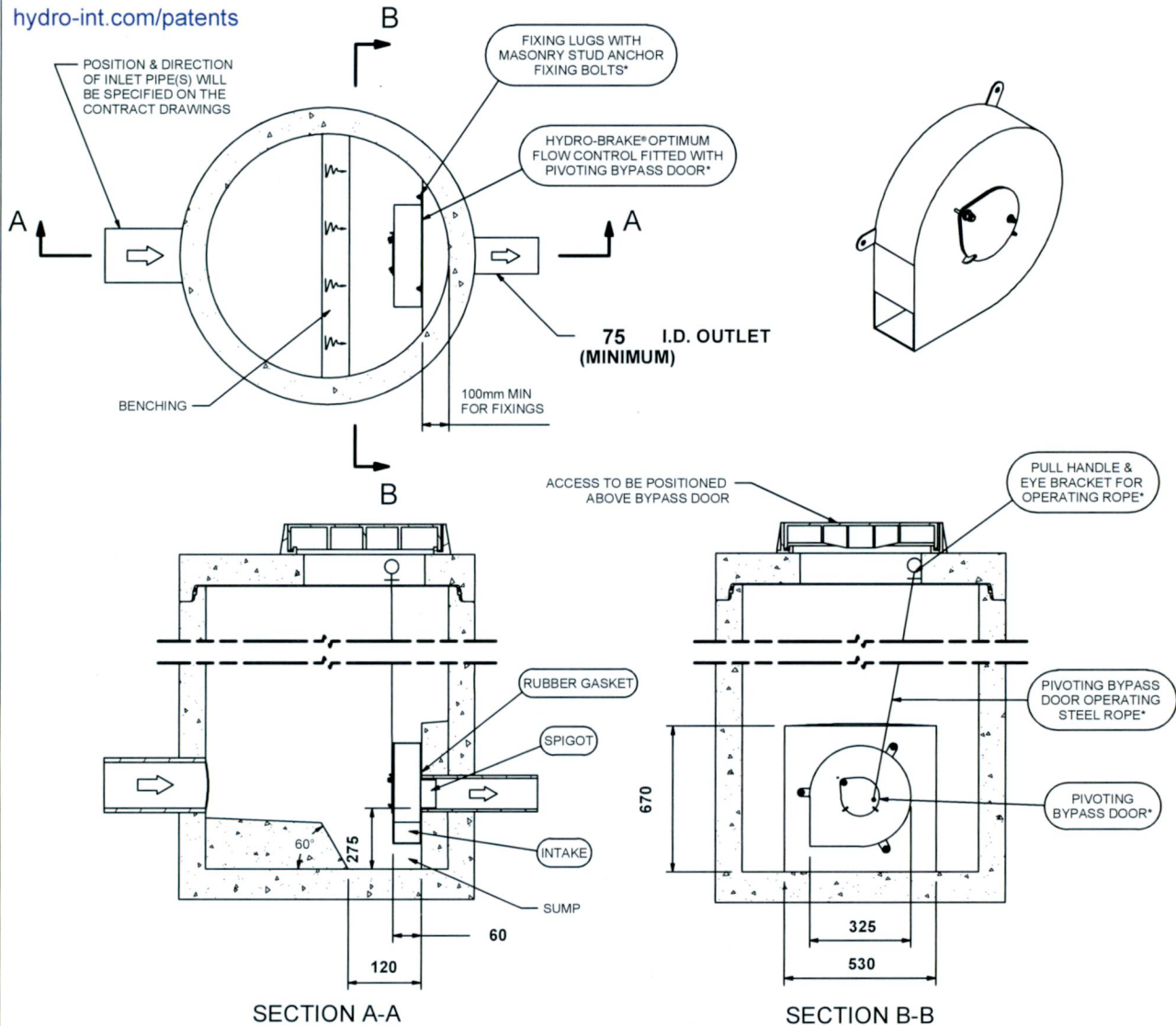
Control Point	Head (m)	Flow (l/s)
Primary Design	2.000	1.730
Flush-Flo™	0.233	1.105
Kick-Flo®	0.473	0.907
Mean Flow		1.271

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Indicative Weight: 49 kg



[hydro-int.com/patents](http://hydro-int.com/patents)



**THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.**

**DESIGN ADVICE** ! The head/flow characteristics of this SHE-0053-1730-2000-1730 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve. **The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**

**Hydro International**

DATE	30/08/2022 09:26
SITE	Unit 1, M50 Business Park
DESIGNER	Kyle Brill
REF	22_112

SHE-0053-1730-2000-1730  
Hydro-Brake® Optimum



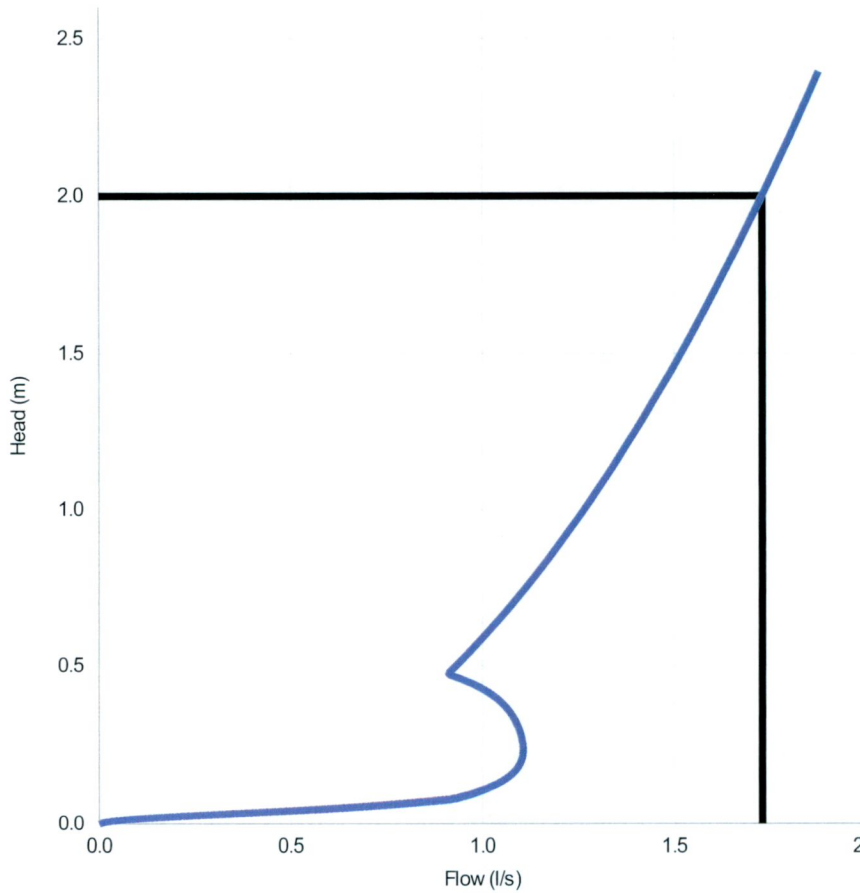
## Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	2.000	1.730
Flush-Flo	0.233	1.105
Kick-Flo®	0.473	0.907
Mean Flow		1.271



PT/329/0412

[hydro-int.com/patents](http://hydro-int.com/patents)



Head (m)	Flow (l/s)
0.000	0.000
0.069	0.839
0.138	1.057
0.207	1.103
0.276	1.100
0.345	1.075
0.414	1.016
0.483	0.915
0.552	0.970
0.621	1.022
0.690	1.071
0.759	1.117
0.828	1.161
0.897	1.204
0.966	1.244
1.034	1.283
1.103	1.321
1.172	1.358
1.241	1.393
1.310	1.427
1.379	1.461
1.448	1.493
1.517	1.525
1.586	1.556
1.655	1.586
1.724	1.616
1.793	1.645
1.862	1.674
1.931	1.702
2.000	1.729

### DESIGN ADVICE

The head/flow characteristics of this SHE-0053-1730-2000-1730 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.



**The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**



DATE	30/08/2022 09:26	SHE-0053-1730-2000-1730 Hydro-Brake Optimum®
Site	Unit 1, M50 Business Park	
DESIGNER	Kyle Brill	
Ref	22_112	

Project Number: 22\_112

Project: Unit 1, M50 Business Park

Title: Engineering Services Report Drainage and Water Services



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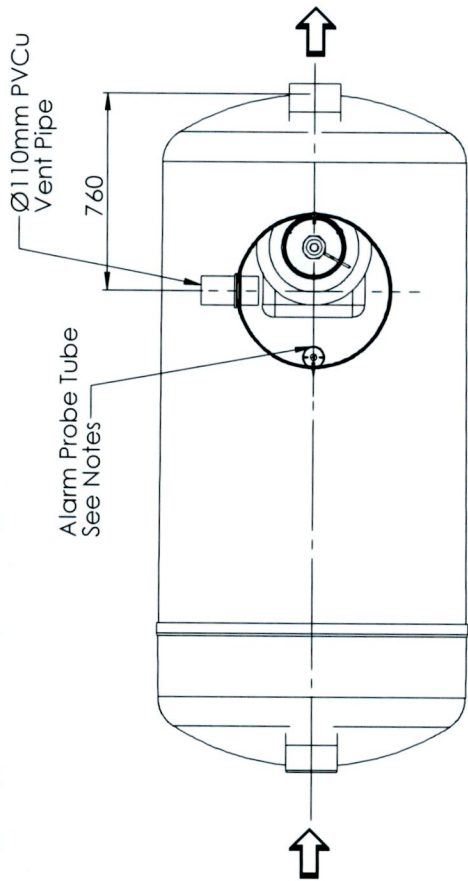
***Appendix F – Petrol Interceptor Details***



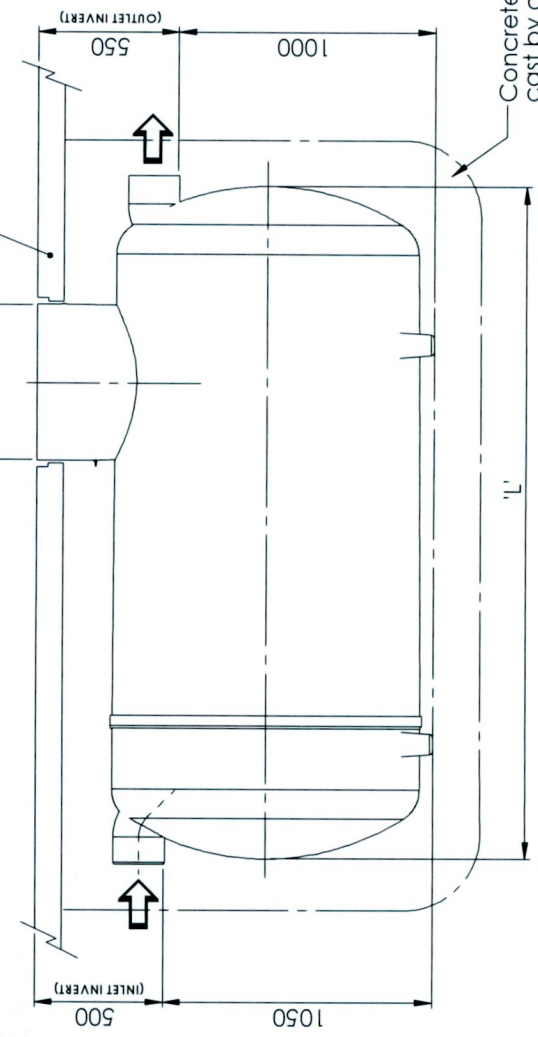
UNIT REF. No.	NOMINAL FLOW	DIM 'L' (mm)	APPROX EMPTY WEIGHT (kg)	FALL ACROSS UNIT
NSFA010	10 L/s	2610	130	50
NSFA015	15 L/s	3910	167	50

**Notes:-**

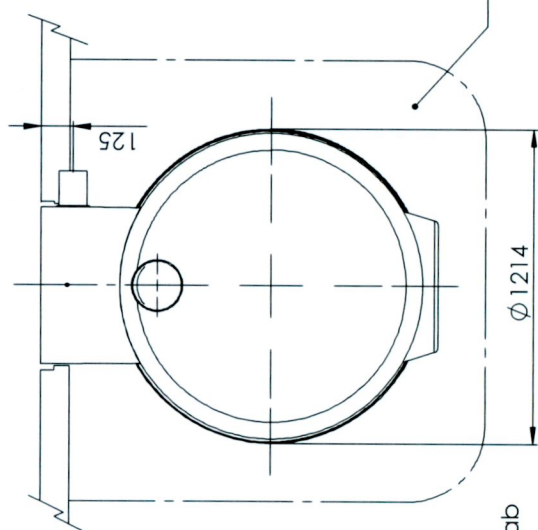
- Inlet/outlet pipes are plain pipe  $\varnothing 200\text{mm}$  PVCu. The standard EN858 states minimum connection sizes, units ordered with different sized connections are not fully compliant with the standard.
- Extension necks for deeper inverts can be provided in 0.5m increments for on site assembly. Max 2.0m invert recommended. Please ask our sales department for further details.
- All units require appropriate cover and frame to suit applied loadings.
- This drawing should be used for dimensional information only. It is essential that this drawing is read in conjunction with installation guidelines supplied with the unit. (Copies are available from our sales dept.); Reducers are available at extra cost to suit alternate pipework requirements.
- This drawing is also available on our website [www.kingspanenv.com](http://www.kingspanenv.com)



Concrete cover slab cast by client (To suit site conditions)



225mm (Min.) Concrete surround around tank body for units up to 1.0m inlet invert.



Concrete base slab cast by client (To suit site conditions)

Issue	Date	Drawn by	Description	Material : n/a	Tolerance (unless stated) : n/a
04	03.04.18	T.Kelly	CC1425 - Class 2 Reference Deleted	Finish : n/a	Thickness : n/a
03	10.03.14	T.Kelly	CC1054 - Cases Changed	Weight : 146.80	Surface Area : n/a
02	18.08.09	P.T.C	CC712		

**Drawing : DS0848P**

NSFA010-NSFA015 Full Retention Separators

Page 1 of 1

Scale: Not to scale

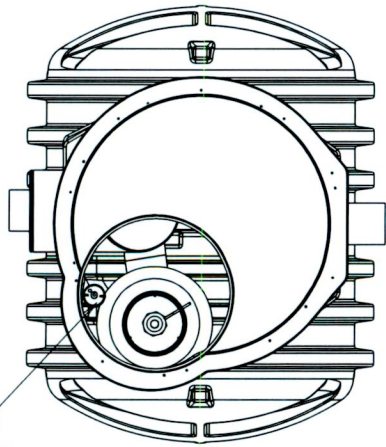
All dimensions in mm

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**Kingspan**  
ENVIRONMENTAL

P:\Drawing Data\02 - Sales Drawings\03\05 - 09\DS0848P

Alarm Probe Tube  
(see note 7)



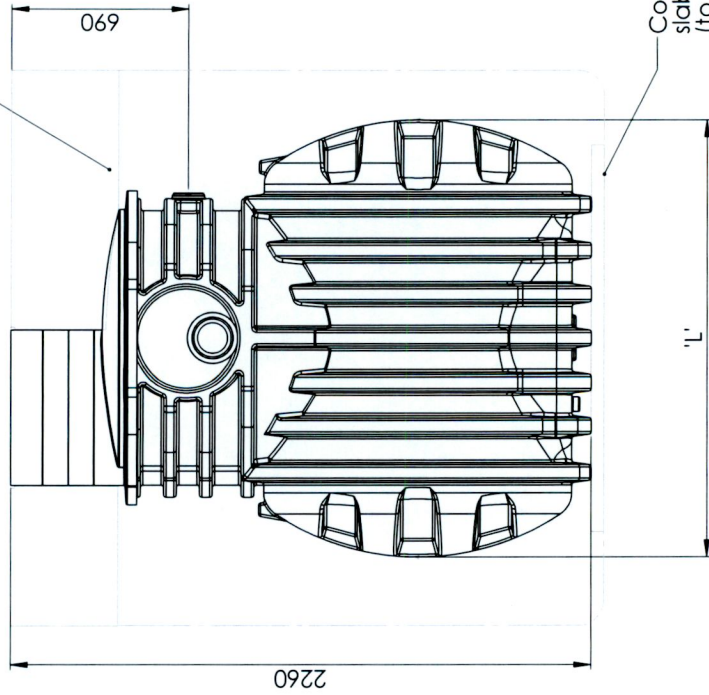
Unit Ref No	Nominal Flow	Dim L (mm)	Approx Empty Weight (kgs)	Fall across unit
NSFP003	3 L/s	1700	180	75
NSFP006	6 L/s	1700	180	75

Notes:-

- Inlet/Outlet pipes are plain pipe  $\varnothing$  160 mm PVCu. The standard EN 858 states minimum connection sizes, units ordered with different sized connections are not fully compliant with the standard.
- Extension necks for deeper inverts can be provided. These can be cut in 200 mm sections. Max 2.0m invert recommended. Please ask our sales department for further details.
- All units require appropriate cover and frame to suit applied loadings.
- This drawing should be used for dimensional information only, it is essential that this drawing is read in conjunction with the installation guidelines supplied with the unit. (Copies are available from our sales dept.).
- This drawing is also available on our website [www.kingspanenv.com](http://www.kingspanenv.com).

Concrete cover slab cast by client  
(to suit wet site conditions)

Neck can be trimmed  
down to required invert



Concrete base  
slab cast by client  
(to suit site conditions)



$\varnothing$  160 mm inlet/outlet plain pipe

Backfill (see note 8)

1350

- A  $\varnothing$  76 mm tube (internal) is supplied to house an oil alarm probe.
  - Wet site conditions - Concrete Backfill  
Dry site conditions - Pea Shingle Backfill
- Please refer to installation manual for details of correct backfilling.

Please check with Kingspan Environmental that this drawing is the latest issue	
Issue	Date Drawn by / Approved by
04	15/12/10 S.Gill
03	24/02/10 S. Gill
02	23/09/09 S.Gill
01	19/03/09 S.Gill

Material : n/a	Tolerance : n/a
Finish : n/a	Thickness : n/a
Weight : kgs n/a	Surface Area : n/a

All dimensions in mm

Scale: Not to scale

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Project Number: 22\_112

Project: Unit 1, M50 Business Park

Title: Engineering Services Report Drainage and Water Services



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***Appendix G – Irish Water Pre-Connection Enquiry (PCE)***

# Pre-connection enquiry form

## Business developments, mixed use developments, housing developments



This form is to be filled out by applicants enquiring about the feasibility of a water and/or wastewater connection to Irish Water infrastructure. If completing this form by hand, please use BLOCK CAPITALS and black ink.

Please refer to the **Guide to completing the pre-connection enquiry form** on page 13 of this document when completing the form.

\* Denotes mandatory/ required field. Please note, if mandatory fields are not completed the application will be returned.

### Section A | Applicant details

#### 1 \*Applicant details:

Registered company name (if applicable):

Trading name (if applicable):

Company registration number (if applicable):

If you are not a registered company/business, please provide the applicant's name:

\*Contact name:

\*Postal address:

\*Eircode:

\*Telephone:

Mobile:

\*Email:

#### 2 Agent details (if applicable):

Contact name:

Company name (if applicable):

Postal address:

Eircode:

Telephone:

Email:



3 \*Please indicate whether it is the applicant or agent who should receive future correspondence in relation to the enquiry:

Applicant

Agent

### Section B | Site details

4 \*Site address: M 5 0 B u s i n e s s P a r k , S o u t h  
D u b l i n , D 2 4 C K P 2 .

5 \*Irish Grid co-ordinates of site: Eastings (X) 7 0 9 8 2 1 Northings (Y) 7 3 0 1 2 4  
Eg. co-ordinates of GPO, O'Connell St., Dublin: E(X) 315,878 N(Y) 234,619

6 \*Local Authority:  
Local Authority that granted planning permission (if applicable):  
D u b l i n C o u n t y C o u n c i l

7 \*Has full planning permission been granted? Yes  No   
If 'Yes', please provide the current or previous planning reference number:

## Section C | Development details

8 Please outline the domestic and/or industry/business use proposed:

Property type	Number of units	Property type	Number of units	Property type	Number of units
House		Apartments		Agricultural	
Office		School		Retail unit	
Residential care home		Institution		Industrial unit	1
Hotel		Factory		Other	
Other (please specify type)	Data Centre Building				

9 \*Approximate start date of proposed development:

0 1 / 0 6 / 2 0 2 3

10 \*Is the development multi-phased?

Yes  No

If 'Yes', application must include a master-plan identifying the development phases and the current phase number.

If 'Yes', please provide details of variations in water demand volumes and wastewater discharge loads due to phasing requirements.

11 \*Please indicate the type of connection required by ticking the appropriate box below:

Water  Please go to Section D

Wastewater  Please go to Section E

Both  Please complete both Sections D and E



## Section D | Water connection and demand details

- 12 **\*Is there an existing connection to public water mains at the site?** Yes  No
- 12.1 If yes, is this enquiry for an additional connection to one already installed? Yes  No
- 12.2 If yes, is this enquiry to increase the size of an existing connection? Yes  No

13 **Approximate date water connection is required:**   /   /

14 **\*What diameter of water connection is required to service the development?**    mm

- 15 **\*Is more than one connection required to the public infrastructure to service this development?** Yes  No
- If 'Yes', how many?

16 **Please indicate the business water demand (shops, offices, schools, hotels, restaurants, etc.):**

Post-development peak hour water demand	N/A	l/s
Post-development average hour water demand	N/A	l/s

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

17 **Please indicate the industrial water demand (industry-specific water requirements):**

Post-development peak hour water demand	N/A	l/s
Post-development average hour water demand	N/A	l/s

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

18 **What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?**   .   m

19 **What is the highest finished floor level of the proposed development above Malin Head Ordnance Datum?**   .   m

- 20 **Is on-site water storage being provided?** Yes  No
- Please include calculations on the attached sheet provided.











Please note that if you are sending us your application form and any associated documentation by email, the maximum file size that we can receive in any one email is 35MB.

**Please note, if mandatory fields are not completed the application will be returned.**

Irish Water is subject to the provisions of the Freedom of Information Act 2014 ("FOIA") and the codes of practice issued under FOIA as may be amended, updated or replaced from time to time. The FOIA enables members of the public to obtain access to records held by public bodies subject to certain exemptions such as where the requested records may not be released, for example to protect another individual's privacy rights or to protect commercially sensitive information. Please clearly label any document or part thereof which contains commercially sensitive information. Irish Water accepts no responsibility for any loss or damage arising as a result of its processing of freedom of information requests.

## Calculations

Water demand

N/A. See fire flow requirements



On-site storage

N/A

Fire flow requirements

No Industrial cooling required. The Existing Domestic Water Supply will be retained. A new connection will be required to serve a sprinkler tank. The flow rate will need to ensure the tank can be refilled every 24 hours.

FIRE FLOW RATE:

Sprinkler Replenishment Criteria = 24 hrs to fill  
Sprinkler Tank Volume = 656,000L

Sprinkler Replenishment Rate =  $656,000/24\text{hrs} = 27333.33 \text{ L/hrs}$   
 $27333.33/ 60 \times 60 = 7.59 \text{ L/s.}$

Foul wastewater discharge

N/A



N/A

## Guide to completing the pre-connection enquiry form

This form should be completed by applicants enquiring about the feasibility of a water and/or wastewater connection to Irish Water infrastructure.

The Irish Water Codes of Practice are available at [www.water.ie](http://www.water.ie) for reference.

### Section A | Applicant Details

- Question 1:** This question requires the applicant or company enquiring about the feasibility of a connection to identify themselves, their postal address, and to provide their contact details.
- Question 2:** If the applicant has employed a consulting engineer or an agent to manage the enquiry on their behalf, the agent's address and contact details should be recorded here.
- Question 3:** Please indicate whether it is the applicant or the agent who should receive future correspondence in relation to the enquiry.

### Section B | Site details

- Question 4:** This is the address of the site requiring the water/wastewater service connection and for which this enquiry is being made.
- Question 5:** Please provide the Irish Grid co-ordinates of the proposed site. Irish grid positions on maps are expressed in two dimensions as Eastings (E or X) and Northings (N or Y) relative to an origin. You will find these coordinates on your Ordnance Survey map which is required to be submitted with an application.
- Question 6:** Please identify the Local Authority that is or will be dealing with your planning application, for example Cork City Council.
- Question 7:** Please indicate if planning permission has been granted for this application, and if so, please provide the planning permission reference number.

### Section C | Development details

- Question 8:** Please specify the number of different property/premises types by filling in the tables provided.
- Question 9:** Please indicate the approximate commencement date of works on the development.
- Question 10:** Please indicate if a phased building approach is to be adopted when developing the site. If so, please provide details of the phase master-plan and the proposed variation in water demand/wastewater discharge as a result of the phasing of the development.
- Question 11:** Please indicate the type of connection required by ticking the appropriate box and proceed to complete the appropriate section or sections.

### Section D | Water connection and demand details

- Question 12:** Please indicate if a water connection already exists for this site.
- Question 12.1:** Please indicate if this enquiry concerns an additional connection to one already installed on the site.
- Question 12.2:** Please indicate if you are proposing to upgrade the water connection to facilitate an increase in water demand. Irish Water will determine what impact this will have on our infrastructure.
- Question 13:** Please indicate the approximate date that the proposed connection to the water infrastructure will be required.
- Question 14:** Please indicate what diameter of water connection is required to service this development.
- Question 15:** Please indicate if more than one connection is required to service this development. Please note that the connection size provided may be used to determine the connection charge.
- Question 16:** If this connection enquiry concerns a business premises, please provide calculations for the water demand and include your calculations on the calculation sheet provided. Business premises include shops, offices, hotels, schools, etc. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.



- Question 17:** If this connection enquiry is for an industrial premises, please calculate the water demand and include your calculations on the calculation sheet provided. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak demand for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.
- Question 18:** Please specify the ground level at the location where connection to the public water mains will be made. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 19:** Please specify the highest finished floor level on site. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 20:** If storage is required, water storage capacity of 24-hour water demand must usually be provided at the proposed site. In some cases, 24-hour storage capacity may not be required, for example 24-hour storage for a domestic house would be provided in an attic storage tank. Please calculate the 24-hour water storage requirements and include your calculations on the attached sheet provided. Please also confirm that on-site storage is being provided by ticking the appropriate box.
- Question 21:** The water supply system shall be designed and constructed to reliably convey the water flows that are required of the development including fire flow requirements by the Fire Authority. The Fire Authority will provide the requirement for fire flow rates that the water supply system will have to carry. Please note that while flows in excess of your required demand may be achieved in the Irish Water network and could be utilised in the event of a fire, Irish Water cannot guarantee a flow rate to meet your fire flow requirement. To guarantee a flow to meet the Fire Authority requirements, you should provide adequate fire storage capacity within your development. Please include your calculations on the attached sheet provided, and further provide confirmation of the Fire Authority requirements.
- Question 22:** Please identify proposed additional water supply sources, that is, do you intend to connect to the public water mains or the public mains and supplement from other sources? If supplementing public water supply with a supply from another source, please provide details as to how the potable water supply is to be protected from cross contamination at the premises.

## **Section E | Wastewater connection and discharge details**

- Question 23:** Please indicate if a wastewater connection to a public sewer already exists for this site.
- Question 23.1:** Please indicate if this enquiry relates to an additional wastewater connection to one already installed.
- Question 23.2:** Please indicate if you are proposing to upgrade the wastewater connection to facilitate an increased discharge. Irish Water will determine what impact this will have on our infrastructure.
- Question 24:** Please specify the approximate date that the proposed connection to the wastewater infrastructure will be required.
- Question 25:** Please indicate what diameter of wastewater connection is required to service this development.
- Question 26:** Please indicate if more than one connection is required to service this development. Please indicate number required.
- Question 27:** If this enquiry relates to a business premises, please provide calculations for the wastewater discharge and include your calculations on the attached sheet provided. Business premises include shops, offices, hotels, schools, etc. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.
- Question 28:** If this enquiry relates to an industrial premises, please provide calculations for the wastewater discharge and include your calculations on the calculation sheet provided. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak discharge for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.



**Question 29:** Please specify the maximum and average concentrations and the maximum daily load of each of the wastewater characteristics listed in the wastewater organic load table (if not domestic effluent), and also specify if any other significant concentrations are expected in the effluent. Please complete the table and provide additional supporting documentation if relevant. Note that the concentration shall be in mg/l and the load shall be in kg/day. Note that for business premises (shops, offices, schools, hotels, etc.) for which only domestic effluent will be discharged (excluding discharge from canteens/restaurants which would require a Trade Effluent Discharge licence), there is no need to complete this question.

**Question 30:** In exceptional circumstances, such as brownfield sites, where the only practical outlet for storm/surface water is to a combined sewer, Irish Water will consider permitting a restricted attenuated flow to the combined sewer. Storm/surface water will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer and the applicant must demonstrate how the storm/surface water flow from the proposed site is minimised using sustainable urban drainage system (SUDS). This type of connection will only be considered on a case by case basis. Please advise if the proposed development intends discharging surface water to the combined wastewater collection system.

**Question 31:** Please specify if the development needs to pump its wastewater discharge to gain access to Irish Water infrastructure.

**Question 32:** Please specify the ground level at the location where connection to the public sewer will be made. This is required to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

**Question 33:** Please specify the lowest floor level of the proposed development. This is required in order to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

**Question 34:** Please specify the proposed invert level of the pipe exiting the property to the public road.

## **Section F | Supporting documentation**

Please provide additional information as listed.

## **Section G | Declaration**

Please review the declaration, sign, and return the completed application form to Irish Water by email or by post using the contact details provided in Section G.



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A large, empty rectangular box with a thin black border, occupying most of the page. It is intended for handwritten notes.



Project Number: 22\_112

Project: Unit 1, M50 Business Park

Title: Engineering Services Report Drainage and Water Services

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## ***Appendix H – Irish Water Confirmation of Feasibility (CoF)***

Julia Wai

ARUP  
One Albert Quay  
Cork City  
Cork  
T12X8N6

Uisce Éireann  
Bosca OP448  
Oifig Sheachadta na  
Cathrach Theas  
Cathair Chorcaí

Irish Water  
PO Box448,  
South City  
Delivery Office  
Cork City

[www.water.ie](http://www.water.ie)

30 May 2022

**Re: CDS22003008 pre-connection enquiry - Subject to contract | Contract denied**

**Connection for Business Connection of 1 unit at M50 Business Park, South Dublin, Dublin**

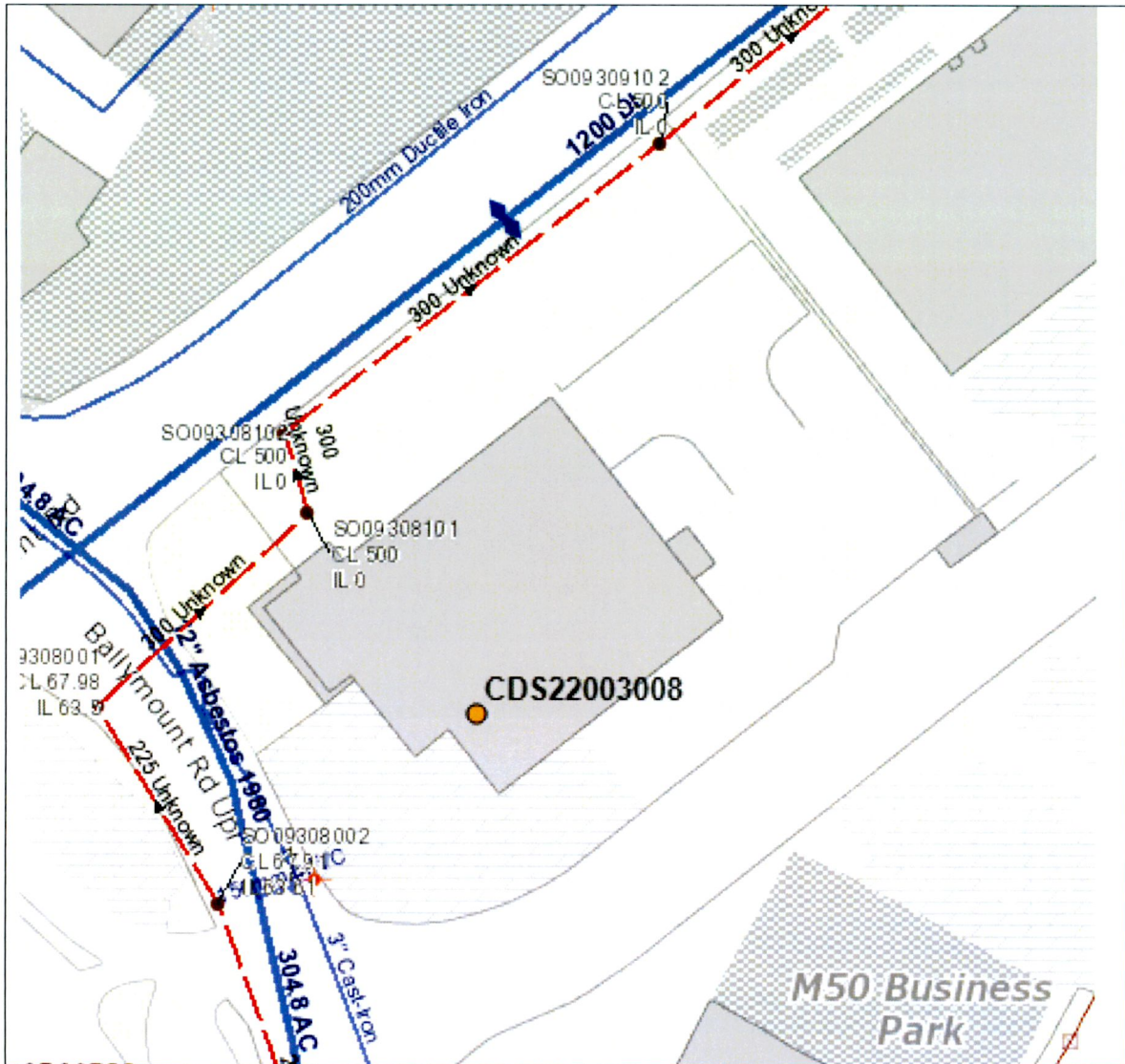
Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water connection at M50 Business Park, South Dublin, Dublin (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	<p align="center"><b>OUTCOME OF PRE-CONNECTION ENQUIRY</b></p> <p align="center"><b><u>THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.</u></b></p>
Water Connection	Feasible without infrastructure upgrade by Irish Water
<b>SITE SPECIFIC COMMENTS</b>	
Water Connection	Proposed Option 1 is a preferable option: approximately 50m of a new 100mm ID pipe to be laid to connect the existing fire flow mains on site to the fire flow tank. A bulk meter should be installed on the connection main on footpath outside site boundaries.
<p>The design and construction of the Water pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.</p>	



The map included below outlines the current Irish Water infrastructure adjacent to your site:



Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

**General Notes:**

- 1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**

- 2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
- 3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
- 4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at <https://www.water.ie/connections/get-connected/>
- 5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
- 6) Irish Water Connection Policy/ Charges can be found at <https://www.water.ie/connections/information/connection-charges/>
- 7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
- 8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
- 9) To access Irish Water Maps email [datarequests@water.ie](mailto:datarequests@water.ie)
- 10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Marina Byrne from the design team via email [mzbyrne@water.ie](mailto:mzbyrne@water.ie) For further information, visit [www.water.ie/connections](http://www.water.ie/connections).

Yours sincerely,



**Yvonne Harris**

**Head of Customer Operations**



Project Number: 22\_112

Project: Unit 1, M50 Business Park

Title: Engineering Services Report Drainage and Water Services

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**Clifton Scannell Emerson**  
Associates

***Appendix I – Permitted Water Connection Application Form***

to a domestic dwelling, or a building supply. please give full particular of the purpose for which the supply is required

The following information must be provided:

- (a) Drinking water and sanitary purposes
  - (Number of persons to be supplied) 30
  - (Number of wash basins) 9
  - (Number of baths) NIL
  - (Number of showers) 2
  - (Number of w.c. cisterns) 8
  - (Number of urinals (units)) 5
  - (Number of automatic flushing) 5
  - (Number of cisterns) ~~1~~
  - (Number of hot water geysers) ONE
  - (Number of other fittings) 2 SINKS
- (b) Manufacturing or other non-sanitary purposes
  - (... NONE ...)
  - (... SHOWROOM AREA WILL BE USED TO DISPLAY SANITARY FITTINGS. THERE WILL BE A NEED TO SUPPLY WATER TO THESE FITTINGS ...)
- (c) Details of equipment to which water connections will be made e.g. firehose reels, firemains etc.
  - (... FIREMANS... BOLGER... L.P.H.W. SYSTEM ...)
  - (... AIR HANDLING UNIT ...)

For Non-Domestic Only

Estimated daily consumption of water for manufacturing/other purposes: NIL litres.

Estimated daily consumption for drinking and sanitary purposes: 1200 litres.

For Non-Domestic Only

Capacity of storage cistern or cisterns to be installed 1800 litres.

NOTE: At least one day's storage capacity must be provided.

Floor area of premises 2600 sq. metres.

Please state the size and number of proposed connections to mains.

ONE NO 35mm Ø METERED CONNECTION



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