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Dublin City Council
Civic Offices
Dublin 8

Attention: Planning Department - Drainage Division
Re: Proposed Residential Development at
43 – 50 Dolphins Barn Street, Dublin 8

Our ref: 2301-10-Drainage
Date: 4th February 2025

Please see attached J.J. Campbell and Associates planning / drainage drawings for the above proposed project, together with engineering service report.

Drawings to be read in conjunction with drainage report:

- C1 Proposed Site Plan. Foul and Storm Drainage
- C2 Ground Level Watermain
- C3 1st 2nd 3rd 4th Floor Plans
- C4 5th 6th 7th 8th Floor Plans
- C5 Top Most Roof Plan
- C6 Details
- C7-1 Longitudinal Sections Through Foul Water
- C7-2 Longitudinal Sections Through Storm Water

Yours faithfully

Marcus Wallace

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Proposed Residential Development
At
43 – 50 Dolphins Barn Street
Dublin 8

Engineering Services Report

Job No. 2301-07
Date: February 2025
Prepared by: Marcus Wallace

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1. Site Description. Existing Buildings and Proposed Development.

The Iveagh Trust intend to apply to Dublin City Council for permission for a Large- Scale Residential Development on a site of c.0.358 ha at 43- 50 Dolphins Barn Street, Dublin 8.

The site is bound by Dolphin's Barn Street to the east, No. 51 Dolphin's Barn Street to the northeast, No. 7 Poole Terrace to the south and boundaries of rear gardens of the residential properties located on Reuben Street and Emerald Square to the west and north of the application site respectively. The proposed development consists of the following:

- The demolition of all existing buildings on site (comprising the former factory building to the rear of the site and buildings which front onto Dolphin's Barn Street (No's 43-50)), which have a total gross floor area of c.3,243.5 sqm.

- The construction of a 1-9 storey Large Scale Residential Development (LRD) comprising 119 no. apartments (70 no. 1 bed units and 49 no. 2 bed units) and a community hub space at ground floor level totalling c.523.5 sqm.

- All apartments are provided with balconies/terraces, which are located on the eastern, western, southern and northern elevations of the building.

- The proposal includes external communal open space areas (c.707 sqm) at ground floor level, and provision of PV panels at roof level.

- The proposal provides a total of 15 no. car parking spaces (12 no. for residents, 2 no. for the community hub, including 1 no. accessible parking space, and 1 no. car sharing space). 172 no. cycle parking spaces are provided for residents, and 60 no. cycle parking spaces are provided for visitors to the residential element of the development. 2 no. long stay cycle parking spaces, and 6 no. short stay cycle parking spaces are provided associated with the community hub element of the development.

- The proposal includes for alterations and upgrade of the site boundary walls / treatment.

- The proposal includes 1 no. shared pedestrian/ vehicular entrance point from Dolphin's Barn Street, alterations to the public footpath/street along Dolphins Barn Street, the provision of 2 no. ESB sub-station's, plant and storage rooms, a comms room, a LV switch room, a life safety room, bin stores and all associated and ancillary works.

- The associated site and infrastructural works include provision for water services; foul and surface water drainage and connections; attenuation proposals; permeable paving; all landscaping works including hard and soft landscaping; blue/green roofs; boundary treatment; internal roads and footpaths; electrical services; and all associated site development works above and below ground.

- The application may be inspected online on the following website set up by the applicant: www.dolphinsbarnstreetlrd.ie



Figure 01 – Existing Site Location

2. Existing Foul Effluent.

Drainage records received from Uisce Eireann indicate that there is an existing 300Ø foul (combined) sewer East of the subject development on Dolphins Barn Street. This existing sewer discharges in a North Easterly direction towards Cork Street. There is also a 900Ø foul (combined) sewer on Dolphins Barn Street, close to the Coombe Hospital. This sewer also discharges in a North Easterly direction towards Cork Street. The existing sewage network in the vicinity of the proposed development eventually discharges to the Waste Water Treatment Plant at Ringsend.



Figure 02 – Existing Foul Water (combined)

3. Proposed Foul Effluent

Foul water from the proposed development will all drain by gravity and will be designed to take discharges from the new residential and associated community hub at ground floor.

The foul system will connect to the existing 300Ø foul (combined) sewer East of the proposed development on Dolphins Barn Street. Discharge rates shall be calculated using Irish Water Code of Practice.

A pre Pre-connection enquiry was submitted to Uisce Eireann to confirm capacity in the receiving network. A confirmation of feasibility was received from Irish Water confirming the existing Watermain and Foul network has capacity for the proposed development, CDS24004317, see Appendix 5.

3.1 Discharge

Apartments:

119 apartments x 2.7 people x 150 l/h/d:	48,195 l/day
Peak flow:	
48,195 x 6 /24 x 60 x 60:	3.34 l/s
Additional 10% Unit consumption allowance:	
3.34 l/s x 1.1:	3.67 l/s

Community Hub:

Floor area:	299.3m² + 231m²: 530.3m²
Density:	25 m² / persons
People:	21
Flow rate	50 l/d

Average discharge: 0.012l/s

Peak discharge: 0.072l/s

Total peak discharge: 3.67l/s + 0.072l/s: 3.74l/s

3.2 Self-Cleansing Velocity

See ISEN *7524 (1998) Part 4*. - *Drain and sewer systems outside buildings*

Hydraulic Design Clause 8 Self Cleansing Velocity.

For small diameter drains and sewers less than DN 300, self-cleansing can generally be achieved by ensuring that a velocity of at least 0.7 m/s occurs daily or that a gradient of 1:DN is specified. The internal drainage will have minimum fall of 1:60 and higher flows can be expected at least once daily, and the self-cleansing velocity will be achieved.

3.3 Grease Traps

N/A, residential development and community hub.

4. Existing Surface Water

Drainage records show there is a 225Ø storm sewer East of the proposed development on Dolphins Barn Street. There is also an existing 300Ø storm sewer on Dolphins Barn Street, close to the Coombe Hospital. The storm network flows North Easterly towards Cork Street.

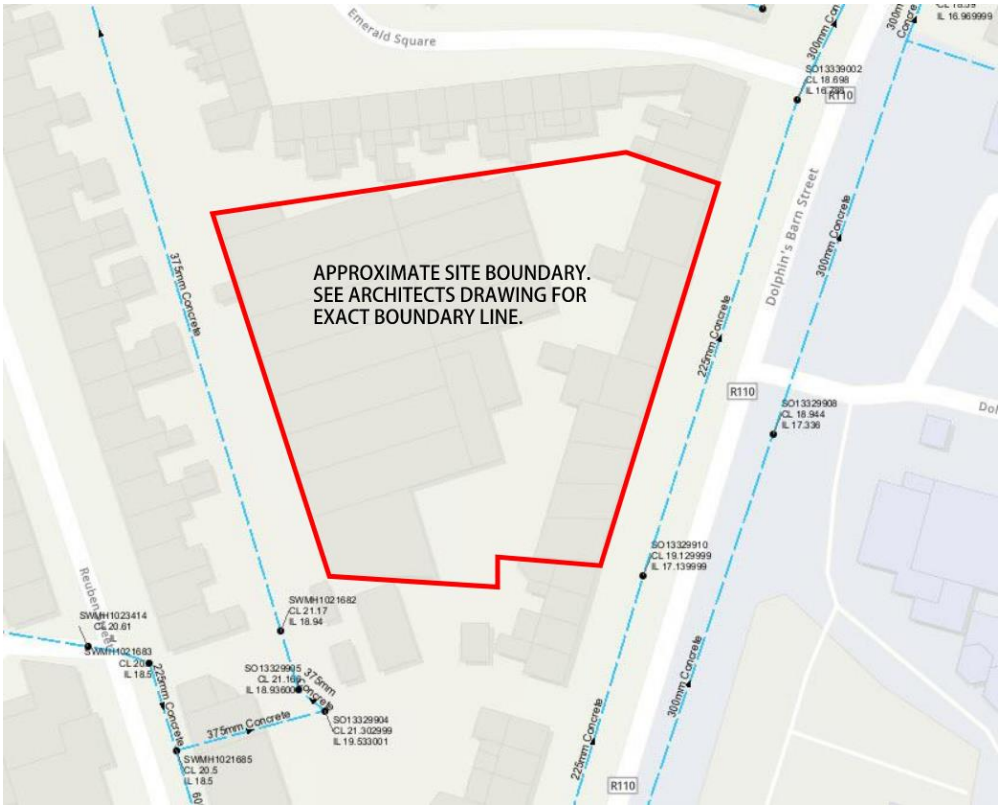


Figure 03 – Existing Surface Water Layout

5. Proposed Surface Water

Surface water runoff from the proposed development will all drain by gravity and will be attenuated prior to discharge into the existing 225Ø surface water sewer on Dolphins Barn Street. Peak surface water runoff will be restricted to 2 litres per second for the whole development.

DCC drainage construction standards will be applied to all external spaces which are to be taken in charge by DCC in accordance with the Greater Dublin Regional Code of Practice.

Attenuation for the proposed development will be via the Green and Blue Roof, Tree Pits and Wavin Aquacells or similar approved system at ground level.

5.1 SuDS Strategy

Sustainable urban drainage is a concept that incorporates long term environmental and social factors into drainage design. It takes account of both the quantity and quality of runoff as well as the amenity value of surface water in the urban environment. The overcharging principles of SuDS design is that surface water runoff should be managed for maximum benefit. The four categories that benefits can be achieved are:

- Water Quantity
- Water Quality
- Amenity
- Biodiversity

All storm drainage work within the proposed development lands shall be designed as constructed in accordance with the following:

GDSDS

CIRIA SuDS Manual (C753)

The criteria set out in the above will help confirm the surface water strategy and SuDS management train of the development.

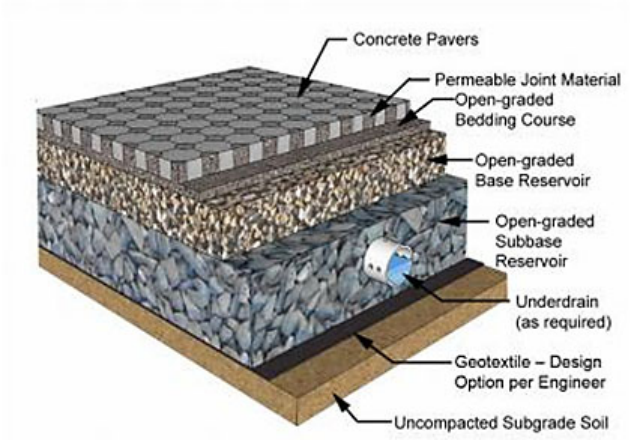


Figure 04 – Typical permeable paving at car parking bays

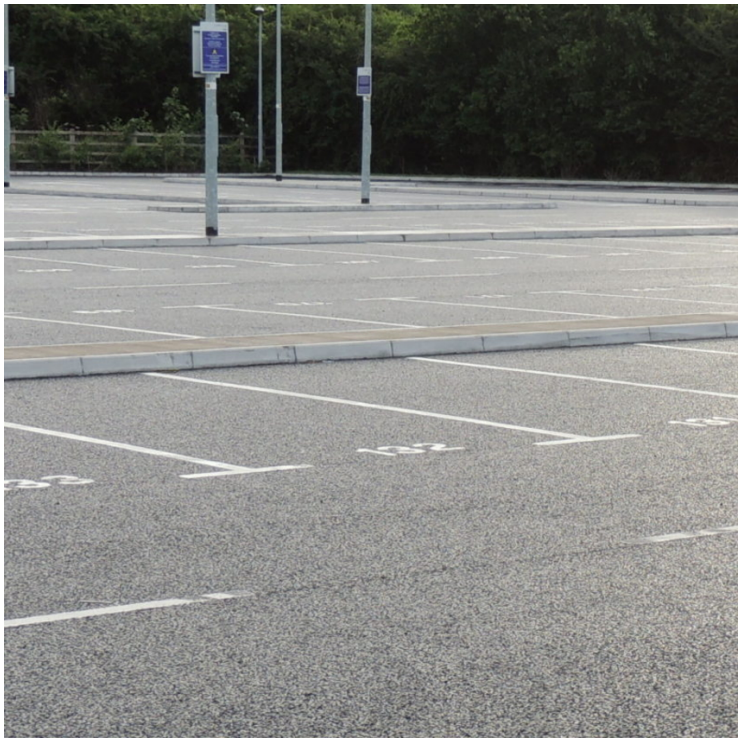


Figure 05 – Typical porous asphalt for access road, Roadstone Duraflow.

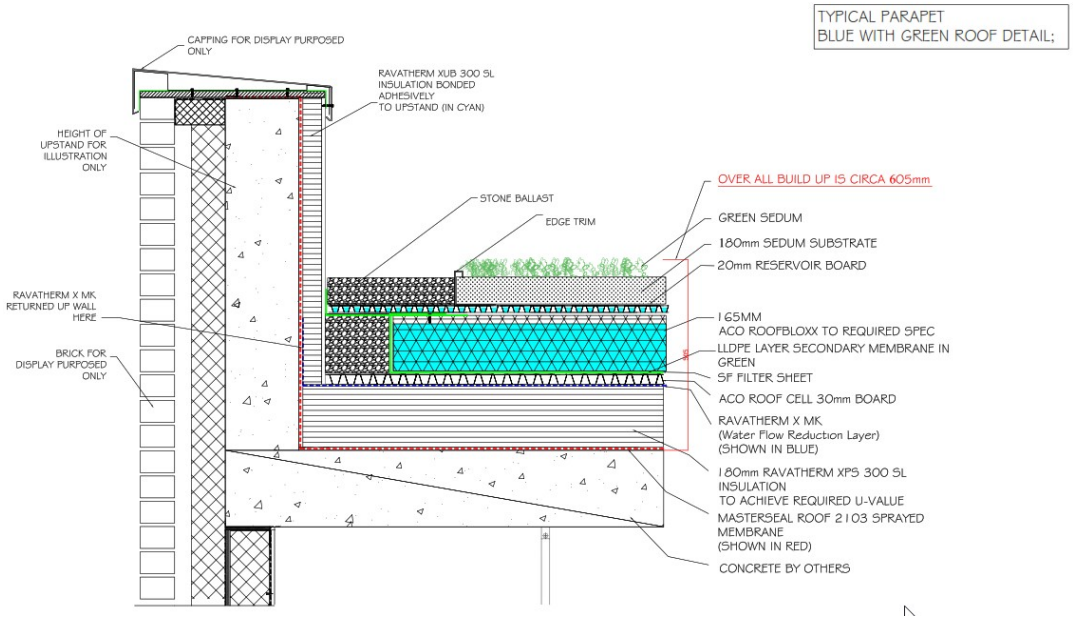


Figure 06 – Green and Blue Roof. Sedum and sedum substrate to be a minimum of 200mm (180mm substrate + 20mm sedum) to encourage biodiversity.



Figure 07 – Tree Pits

5.2 SuDS Management Train

An important concept when designing SuDS is the management train. By passing water through several stages of treatment, sediment and other pollutants will be removed and maintenance costs are reduced.

Taking into account the location of the difficult infill site, the proposed development shall incorporate a number of different SuDS components adapted to the local context ensuring that runoff is manged at source:

- The top most roof and lower terraces shall be a minimum of 70% Green and 100% Blue roofs, intercepting / treating the first 5mm of rainfall and also attenuating storm water.

- All car parking spaces shall be permeable paving, intercepting / treating the first 5mm of rainfall. Even if the soil has poor infiltration some infiltration will take place in the stone below the areas and the overflow pipe will retain flow which will slowly infiltrate or evaporate.

- The access road shall be porous / permeable asphalt, intercepting / treating the first 5mm of rainfall. Even if the soil has poor infiltration some infiltration will take place in the stone below the areas and the overflow pipe will retain flow which will slowly infiltrate or evaporate.

- Soft landscaping shall allow interception / treatment. Soft landscaping shall also incorporate tree pits which provide long term SuDS benefits such as attenuating surface water and filtering out pollutants.

- 6 No SuDS tree pits are proposed for the development.

5.3 Green and Blue Roofs Areas and Ground Level Areas

The total attenuation required is 120.17m³, see attenuation calculations in Appendix 2. Stom water discharging to the Green and Blues roofs shall be attenuation on the roofs. Storm water discharging to the ground and other surfaces shall be attenuated in Wavin Aquacells at ground level and the 6 no Tree Pits.

Description	**Area**	**% Site Coverage**
Green and Blue Roof 00:	30m²	0.9%
Green and Blue Roof 01:	97m²	2.92%
Green and Blue Roof 02:	168m²	5.06%
Green and Blue Roof 03:	71m²	2.14%
Green and Blue Roof 04:	94m²	2.83%
Green and Blue Roof 05:	234m²	7.04%
Green and Blue Roof 06:	830m²	24.98%
Roof 01	28m²	0.84%
Roof 02	41m²	1.23%
Roof 03	48m²	1.44%
Ground Level:		
Soft Landscaping:	487m²	14.66%
Permeable Gravel Path	246m²	7.41%
Permeable Parking:	211m²	6.35%
Permeable Asphalt:	310m²	9.33%
Other Hard Areas:	349m²	12.89%
Total:	3244m²	100%

5.4 Storage and discharge rates from the Green and Blue Roofs

Volume and discharge from the Green and Blue roofs are to be proportional to site coverage and overall volume required to be attenuated (121m³) and overall discharge of 2 l/s for the site:

Description	% Site Coverage	Volume	Discharge
Green and Blue Roof 00:	0.9%	1.14m³	0.018 l/s
Green and Blue Roof 01:	2.92%	3.71m³	0.058 l/s
Green and Blue Roof 02:	5.06%	6.42m³	0.101 l/s
Green and Blue Roof 03:	2.14%	2.71m³	0.043 l/s
Green and Blue Roof 04:	2.83%	3.59m³	0.057 l/s
Green and Blue Roof 05:	7.04%	8.95m³	0.141 l/s
Green and Blue Roof 06:	24.98%	31.73m³	0.50 l/s
Total:		58.25m³	0.92 l/s

The remaining (120.17m³ – 58.25m³) 61.97m³ attenuation will be provided at ground floor by tree pits and Wavin Aquacell.

5.5 Interception and treatment

Interception and treatment storage will be provided by the Green and Blue roofs, permeable parking / permeable gravel path and porous asphalt access path at ground level, additional interception storage will be provided by the soft landscaping at ground level.

5.6 SuDS Tree Pits

6 No SuDS tree pits are proposed, see also Landscape Architects drawing. It is proposed to install "GreenBlue" tree pits which have 20% voids by volume which reduces the size of the attenuation tank required. Tree pits minimum of 2m x 2m x 1.0m Dp x 20% voids: 0.8m³ Storage each.

SuDS Tree Pit 01:	0.8m³
SuDS Tree Pit 02:	0.8m³
SuDS Tree Pit 03:	0.8m³
SuDS Tree Pit 04:	0.8m³
SuDS Tree Pit 05:	0.8m³
SuDS Tree Pit 06:	0.8m³
Total:	4.8m³

5.7 GDSDS Table 6.3 Criterion

In accordance with the GDSDS the criterion requirements as set out in Table 6.3 are to be complied with in the following manner;

- **Criterion 1 – River Water Quality Protection**

  Interception Storage of 5mm of rainfall will be achieved through the use of the green & blue roofs, permeable parking, permeable gravel path and porous access road at ground level:

  Green and Blue Roofs:

Total storage:	58.25m³

  Permeable gravel path, permeable parking and porous asphalt road

Total area:		767m²
Stone (30% voids)		0.25m
Volume provided:	767m² x 0.25m x 30% voids:	57.5m³

Tree Pits:

Total storage: 4.8m³

Total interception storage provided: 57.5m³ + 58.25m³ + 4.8m³: 120.55m³

Interception volume is required to cater for 5mm rainfall on paved (impervious) surfaces. We have conservatively included the whole site, 3244m²

Interception volume required = 3244 * 0.005 = 16.22m³

Interception volume provided is 120.55m³ and interception volume required is 16.22m³.

As the interception volume is provided, no further treatment volume is necessary for this development (ref. GDSDS volume 2, chapter 6, table 6.3).

Criterion 2 – River Regime Protection

Surface water discharge from the proposed development will be restricted to an equivalent rate of 2.0l/s. This will be achieved with the provision of a flow control device at the outfall manhole and Green & Blue Roofs outlets.

Criterion 3 – Level of Service (Flooding) Site

A preliminary desk study Flood Risk Assessment has been carried in order to assess the need for a more complete study.

Flood records on www.floodmaps.ie and www.floodinfo.ie were examined for evidence of past flooding.

No flooding reported in the vicinity of the development.

See separate JBA Flood Risk Assessment.

Criterion 4 – River Flood Protection

As outlined above, the runoff from the site will be limited to a maximum of 2.0l/s for the proposed development. This in accordance with guidelines set out in the GDSDS Volume 2.

5.8 Attenuation Storage.

DCC require that attenuation storage is provided to store the storm water from the GDSDS Design Storm – 30yr, 1-hr flood. In addition, because the whole site is taken up with the development, the 100yr 6-hr flood will also be attenuated which equates to 120.17m³ total storage, see Appendix 2.

58.25m³ will be attenuated on the Green and Blue roofs,
4.8m³ will be stored in the 6 No tree pits.

Remaining (120.17m³ - 58.25m³ - 4.8m³) 57.12m³ will be attenuated at ground level in the Wavin Aquacell:

GF Attenuation 01:	46.17m³
GF Attenuation 02:	20.52m³
Total:	66.69m³ > 57.12m³

5.9 Landscaping

See Landscape Architects drawings.

5.10 Hydro-brake

A hydro-brake will be fitted to the outfall manhole SMH02.

A HDR Hydro-brake Optimum Flow Control limiting outflow to 2.0 l/s (limited to 2l/s for operational purposes) will be fitted to the outfall surface water manhole, located on the north / east side of the site which then discharges to the public storm 225Ø storm sewer in Dolphins Barn Street.

5.11 Connection to DCC 225Ø Storm Sewer

It is not possible to connect soffit to soffit from the outfall storm manhole to the DCC 225Ø storm because it clashes with the IW 300Ø foul sewer.

It is proposed to use a ramp manhole to avoid the clash with the existing 300Ø combined sewer, see detail 1 and 1A on drawing C6. The start of the ramp is 257mm above the invert of the existing storm sewer. All to be confirmed when the road is opened and the exact levels of the existing 300Ø combined sewer and existing 225Ø DCC storm are determined.

The proposed connection has been kept as deep as possible to avoid clashes with services in the path and road. A GPR survey to confirm existing services shall be carried out before the connection commences.

5.12 Construction of the Manhole / New Connection

The existing DCC 225Ø storm sewer is located on the near side of Dolphins Barn Road, on the road heading into the city centre and on the same side as the proposed development.

The existing storm manholes shown on the topographic survey confirm the existing storm sewer runs under the white line between the bus lane and cycle lane, see figure 01 below.

Dolphins Barn Street is comprised of a cycle lane (1.3m), bus lane (3m) and a car lane (3.3) heading into the city centre. Heading out of the city centre there is a cycle lane (1.3m), bus lane (3.5m) and a car lane (3.5m). The overall width of Dolphins Barn Street at the proposed location for the new manhole is 15.9m.

To construct the new storm manhole, it is proposed to temporally cordon off the cycle lane and bus lane heading into the city centre, diverting buses and cyclists around the proposed manhole and onto the car lane heading into town.

The cycle lane, bus lane and car lane heading out of town are unaffected by the works.

No temporary traffic signals or stopping of vehicle movements heading into town is required to construct the new storm manhole.

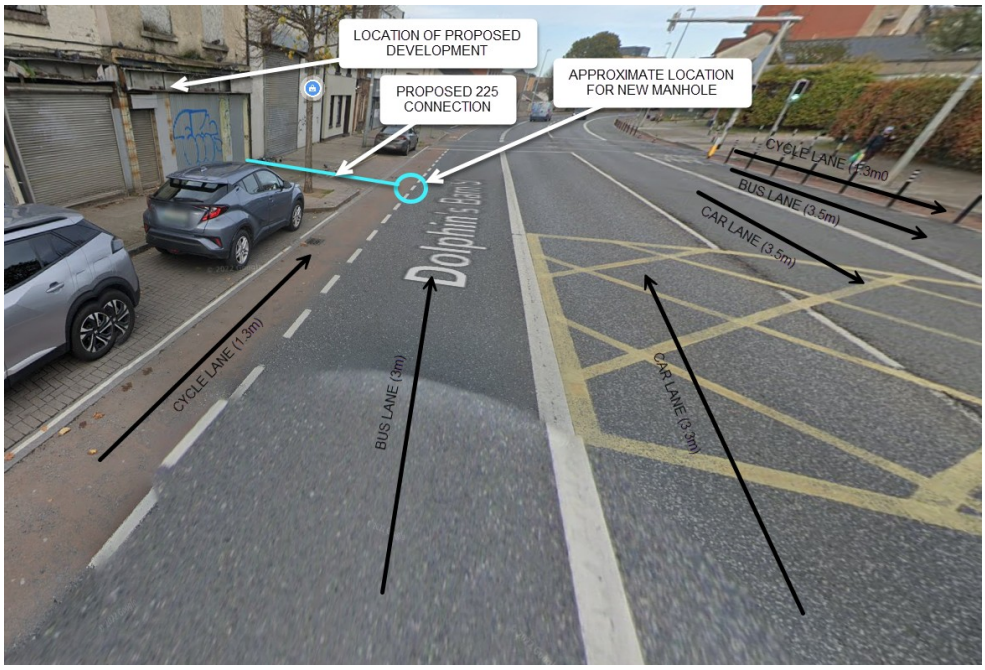


Figure 08 – Approximate location of proposed connection and storm manhole.

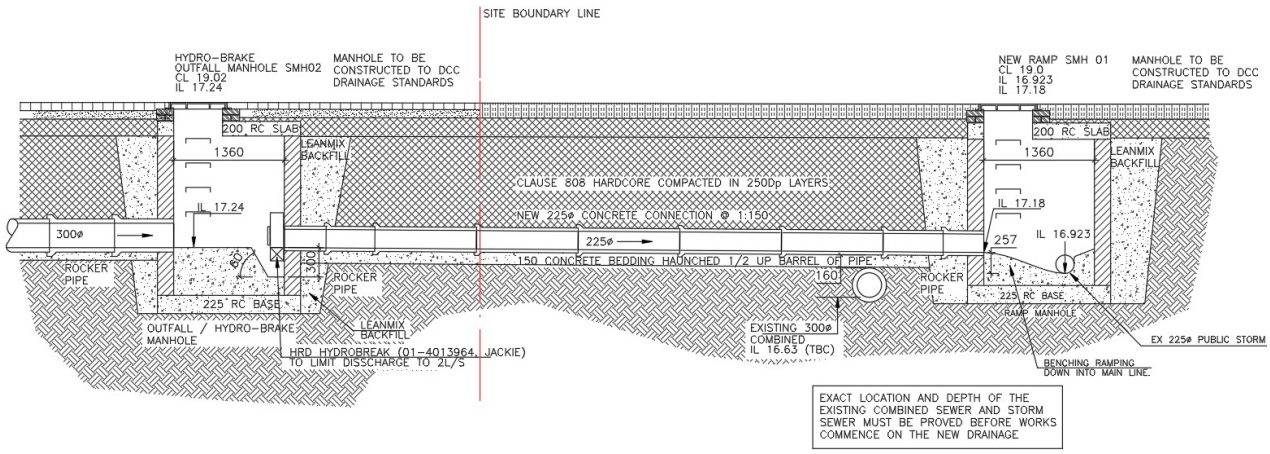


Figure 09 – Longitudinal section through connection, see detail 1 on drawing C6.

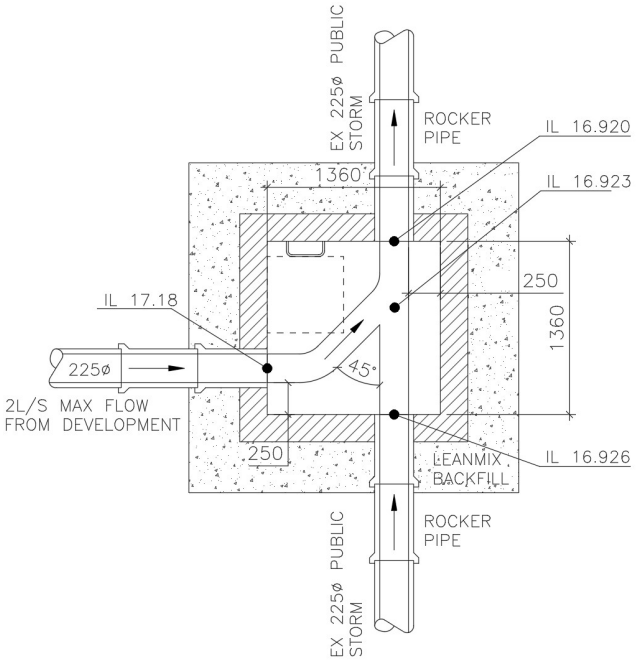


Figure 10 – Plan at new manhole SMH01 at DCC 225Ø Storm Sewer, see detail 1A on drawing C6.

5.13 Petrol Interceptor

All car parking bays shall be permeable paving which filter pollutants, no requirement for a petrol interceptor.

6. Water Supply.

6.1 Existing Water Supply

Records obtained from Uisce Eireann indicate a number of public mains in the vicinity of the proposed development:

- 150Ø and 200Ø watermains to the East of the proposed development on Dolphins Barn Street.
- 100Ø watermain on Emerald Square, North of the proposed development.
- 110Ø watermain on Rueben Street, West of the proposed development.

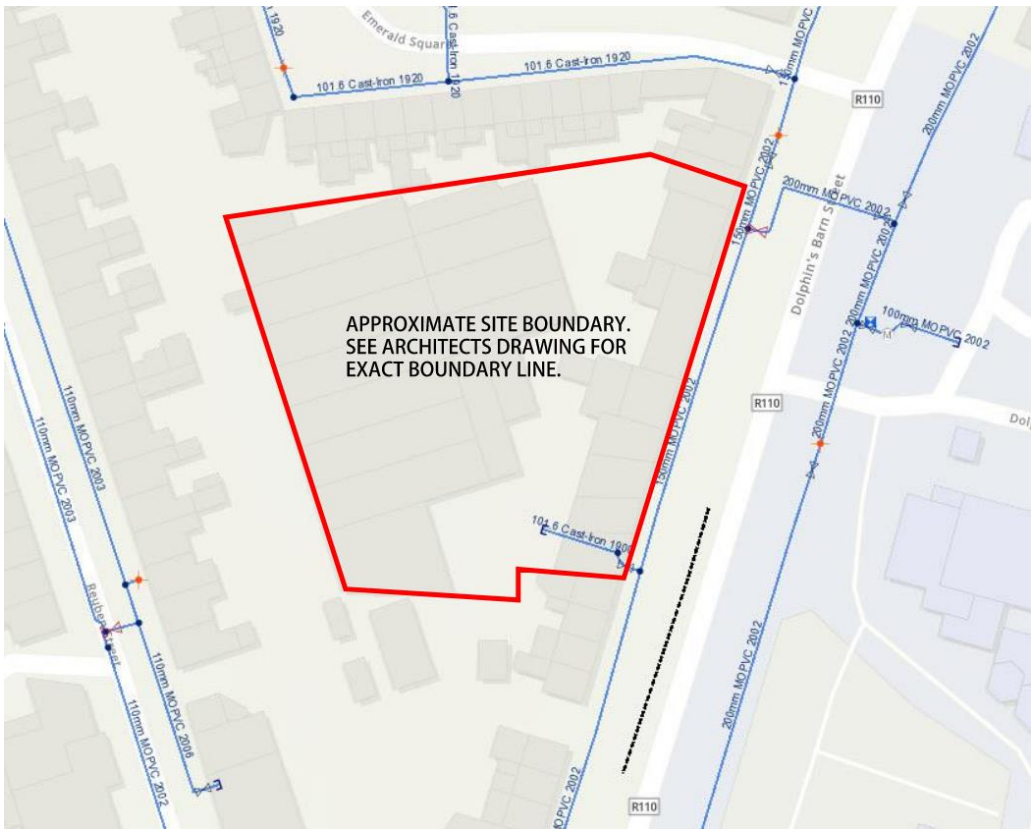


Figure 08 – Existing Watermain Layout

6.2 Proposed Water Supply

Apartments:

Average Daily Demand

150 ltr/person/day x 2.7 persons per dwelling x 119 dwellings = 48,195 ltr/ day

Average day / Peak Week

48,195 / (60x60x24) = 0.56 ltr/ sec

0.56 X 1.25 = 0.7 ltr/sec IW Factor for Peak: 1.25

Peak Demand

0.7 X 2.1 = 1.47 ltr/sec

Community Hub:

Average day week

0.009 l/s (See 3.1) x 1.25 = 0.011 ltr/sec IW Factor for Peak: 1.25

Peak Demand

0.011 X 2.1 = 0.023 ltr/sec

Total:

1.47ltr/sec + 0.023 ltr/sec: 1.49 ltr/sec

It is proposed to make a new 150Ø connection from the existing public mains.

Water metering will be in accordance with the requirements of Uisce Eireann.

Pressure boosting and storage will be to the requirements of Dublin City Council / Uisce Eireann. Design Details for pressure boosting and storage will be agreed with Dublin City Council Water Services Division/Uisce Eireann prior to development commencing on site.

7. Flood Risk Assessment

Flood Risk Assessment for the proposed development has been prepared by JBA.

Appendix 1 - Rainfall Data

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 313931, Northing: 232993,

	Interval		Years											
DURATION	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.4,	3.5,	4.1,	5.0,	5.6,	6.1,	7.7,	9.6,	10.8,	12.6,	14.2,	15.4,	17.3,	18.8,	20.1,	N/A ,
10 mins	3.4,	4.9,	5.7,	7.0,	7.9,	8.5,	10.8,	13.4,	15.1,	17.5,	19.8,	21.5,	24.2,	26.3,	28.0,	N/A ,
15 mins	4.0,	5.8,	6.7,	8.2,	9.3,	10.0,	12.7,	15.7,	17.8,	20.6,	23.2,	25.3,	28.4,	30.9,	32.9,	N/A ,
30 mins	5.3,	7.5,	8.7,	10.6,	11.9,	12.8,	16.1,	19.8,	22.2,	25.7,	28.8,	31.2,	35.0,	37.9,	40.3,	N/A ,
1 hours	7.0,	9.8,	11.3,	13.6,	15.2,	16.4,	20.4,	24.9,	27.8,	32.0,	35.7,	38.6,	43.1,	46.5,	49.4,	N/A ,
2 hours	9.2,	12.8,	14.7,	17.6,	19.5,	21.0,	25.8,	31.3,	34.9,	39.9,	44.3,	47.8,	53.0,	57.1,	60.5,	N/A ,
3 hours	10.8,	14.9,	17.1,	20.4,	22.5,	24.2,	29.7,	35.8,	39.8,	45.3,	50.3,	54.1,	59.9,	64.4,	68.1,	N/A ,
4 hours	12.2,	16.7,	19.1,	22.6,	25.0,	26.8,	32.7,	39.4,	43.7,	49.7,	55.0,	59.0,	65.3,	70.1,	74.1,	N/A ,
6 hours	14.3,	19.5,	22.2,	26.2,	28.9,	31.0,	37.6,	45.0,	49.8,	56.5,	62.3,	66.8,	73.7,	79.0,	83.4,	N/A ,
9 hours	16.9,	22.8,	25.9,	30.4,	33.4,	35.8,	43.2,	51.5,	56.8,	64.2,	70.7,	75.7,	83.3,	89.1,	93.9,	N/A ,
12 hours	18.9,	25.4,	28.8,	33.8,	37.1,	39.6,	47.7,	56.6,	62.4,	70.3,	77.3,	82.6,	90.8,	97.0,	102.1,	N/A ,
18 hours	22.3,	29.7,	33.5,	39.2,	42.9,	45.7,	54.8,	64.7,	71.1,	80.0,	87.7,	93.6,	102.5,	109.4,	115.0,	N/A ,
24 hours	25.0,	33.2,	37.4,	43.5,	47.5,	50.6,	60.4,	71.2,	78.1,	87.6,	95.9,	102.2,	111.8,	119.1,	125.1,	145.6,
2 days	30.7,	39.9,	44.6,	51.4,	55.8,	59.2,	69.9,	81.4,	88.7,	98.7,	107.4,	113.9,	123.8,	131.4,	137.5,	158.4,
3 days	35.3,	45.4,	50.5,	57.8,	62.6,	66.2,	77.6,	89.7,	97.4,	107.9,	117.0,	123.8,	134.1,	141.9,	148.2,	169.7,
4 days	39.4,	50.2,	55.6,	63.4,	68.5,	72.3,	84.2,	97.0,	105.1,	116.0,	125.4,	132.5,	143.1,	151.2,	157.7,	179.8,
6 days	46.4,	58.5,	64.5,	73.1,	78.7,	82.8,	95.9,	109.7,	118.3,	130.0,	140.1,	147.6,	158.9,	167.4,	174.2,	197.5,
8 days	52.6,	65.8,	72.3,	81.6,	87.6,	92.0,	106.0,	120.7,	129.9,	142.2,	152.8,	160.7,	172.6,	181.5,	188.7,	212.9,
10 days	58.3,	72.4,	79.4,	89.3,	95.6,	100.4,	115.1,	130.6,	140.3,	153.3,	164.3,	172.6,	184.9,	194.2,	201.7,	226.8,
12 days	63.6,	78.6,	86.0,	96.4,	103.1,	108.1,	123.6,	139.8,	149.9,	163.4,	174.9,	183.5,	196.3,	205.9,	213.7,	239.6,
16 days	73.4,	90.0,	98.1,	109.5,	116.8,	122.2,	139.0,	156.5,	167.4,	181.9,	194.2,	203.4,	217.0,	227.2,	235.4,	262.9,
20 days	82.4,	100.4,	109.2,	121.5,	129.3,	135.1,	153.1,	171.7,	183.3,	198.7,	211.7,	221.4,	235.7,	246.5,	255.1,	283.9,
25 days	92.9,	112.6,	122.1,	135.3,	143.8,	150.1,	169.3,	189.3,	201.6,	217.9,	231.7,	242.0,	257.2,	268.5,	277.7,	307.9,

NOTES:
N/A Data not available
These values are derived from a Depth Duration Frequency (DDF) Model
For details refer to:
'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',
Available for download at www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf

Appendix 2 - Attenuation Calculations

JJ Campbell & Associates
Consulting Civil & Structural Engineers
+353 (1) 298 0538
info@jjc.ie
F1 Nutgrove Office Park,
Rathfarnham, Dublin 14, Ireland,
D14A895.
www.jjc.ie

Project : **43 - 50 Dolphins Barn Street**
Job No : **2301-10**

Return Period: 100 Yrs

Site Area: 3244 m² **0.3244 Ha**

Qbar: 2.0 l/s
(Qbar minimum set to 2 l/s for operational purposes)

Surface Water Attenuation Design:

Contribution Areas	**m²**	**% imperv**	**Equivalent Area**
Green and Blue Roofs 00 01 02 03 04 05 06	**1524**	**80**	**1219 m²**
Roof 01 02 03	**117**	**95**	**111 m²**
Permeable Asphalt, Parking and Gravel	**767**	**30**	**230 m²**
Soft Landscaping	**487**	**30**	**146 m²**
Other Hard Areas	**349**	**95**	**332 m²**
Total:	**3244 m²**		**2038 m²**

Duration (minutes)	Runoff Area (m²)	Rainfall (mm)	Rainfall + 20% for climate Change	Total surface Water	Allowable Outflow (m³)	Storage required m³
10	2038	21.50	25.80	52.58	1.20	51.38
15	2038	21.60	25.30	51.56	1.80	49.76
30	2038	31.20	37.44	76.31	3.60	72.71
60	2038	38.60	46.32	94.40	7.20	87.20
120	2038	47.80	57.36	116.91	14.40	102.51
240	2038	59.00	70.80	144.30	28.80	115.50
360	2038	66.80	80.16	163.37	43.20	120.17
720	2038	82.60	99.12	202.02	86.40	115.62
1440	2038	102.20	122.64	249.95	172.80	77.15
2880	2038	113.90	136.68	278.57	345.60	-67.03
Max Storage Capacity Required incl 20% climate change						**120.17**

Appendix 3 - Storm Water Management Plan

1.1 General:

The extent of the SWMP shall be kept simple due to the relatively small nature of the infill site / development. SWMP to be read in conjunction with JJ Campbell and Associates Civil drawings and Engineering Services Report.

1.2 Flood Risk Assessment

The site is a brown field site with no history of previous flooding. Review of the available sources of flooding indicates there are no instances of historic flooding on site.

Review of the fluvial flood maps confirm that the site is located in Flood Zone C and is considered to be low risk of inundation from fluvial flooding.

JBA are carrying out a FRA for the development.

1.3 Overview of Storm Water Management

1.3.1 Existing Storm Water

Storm water from the existing site is currently not attenuated and may discharge directly to either the combined or storm sewer in Dolphins Barn Street. The proposed development and storm water management will greatly reduce storm water discharge to the public sewers.

1.3.2 Proposed Storm water

1.3.2.1 Proposed Roof

The roof design incorporates a Beton / ACO Green and Blue roof. All storm water falling on the roofs, including parapets and lift pits projections etc shall be attenuated on the Green and Blue Roof. The Green and Blue roof also allow for interception of the first 5mm of rainfall. The minimum area of Green and Blue is 70% with a discharge at an overall rate of 0.9 l/s for the roofs. A full design of the Green and Blue roof shall be carried out by the specialist designer / installer, Beton/ACO.

1.3.2.2 Ground Level

The use of permeable parking, permeable gravel path, porous asphalt and soft landscaping ensures that all storm water falling at ground level is intercepted at source.

Wavin Aquacell attenuation and 6 No Tree Pits shall attenuate storm water falling at ground level.

1.3.2.3 Discharge to the Public Storm Network

All proposed storm water shall be separate to the foul and shall discharge to the 250Ø storm sewer in Dolphins Barn Street.

1.4 SuDS

Requirement of section 7.3, SuDS of the of the Sustainable Drainage Design and Evaluation Guide (2021) have been considered. The site is a small infill site with limited scope for extensive SuDS.

At roof levels, interception of rainfall is catered for through the use of a Green and Blue Roof. Storm water is intercepted and attenuated at roof level and the discharge limited to 0.92 l/s.

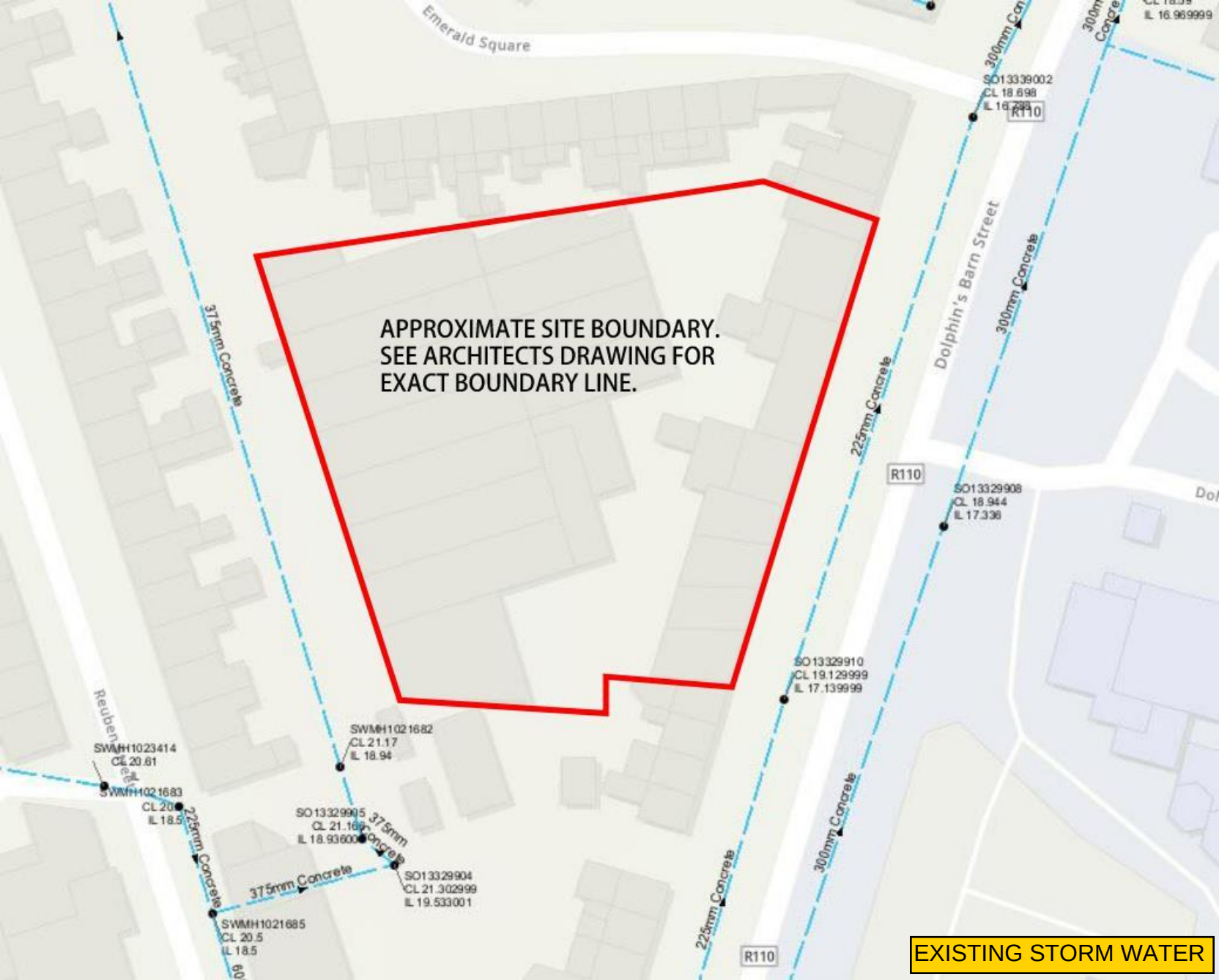
At ground level interception and treatment of rainfall is catered for through the use of permeable parking, porous paving, permeable gravel path and extensive planting / soft landscaping as shown on Landscaping drawings.

Control of runoff is through the Green and Blue roofs, 6 No Tree Pits and Wavin Aquacell attenuation, discharge for the whole site is limited to 2l/s in Hydro-Brake at manhole SMH02.

1.5 Conclusion

Having regard to GGSDS, DCC Sustainable Drainage Design and Evaluation Guide 2021 and CIRIA design guides on SuDS, a wide range of measures have been considered for the design and management of storm water for the proposed development. These measures will ensure that best practice for the management of storm water can be achieved for the proposed development.

Appendix 4 – Uisce Eireann Map


APPROXIMATE SITE BOUNDARY.
SEE ARCHITECTS DRAWING FOR
EXACT BOUNDARY LINE.
Emerald Square
Dolphin's Barn Street
375mm Concrete
225mm Concrete
300mm Concrete
R110
SO13339002
CL 18.698
SO13329908
CL 18.944
IL 17.336
SO13329910
CL 19.129999
IL 17.139999
SWMH1021682
CL 21.17
IL 18.94
SWMH1023414
CL 20.61
SWMH1021683
CL 20
IL 18.5
SO13329905
CL 21.169
IL 18.936001
SO13329904
CL 21.302999
IL 19.533001
SWMH1021685
CL 20.5
IL 18.5
EXISTING STORM WATER


APPROXIMATE SITE BOUNDARY.
SEE ARCHITECTS DRAWING FOR
EXACT BOUNDARY LINE.
Emerald Square
SO13339008
CL 19.14
IL 17
300mm Vitrified Clay
SO13339001
IL 16.32
300mm Concrete
900mm Concrete
Dolphin's Barn Street
SO13339009
CL 18.85
IL 15.79
SO13328901
CL 20.18
IL 18.97
SO13339006
CL 18.97
IL 16.86
R110
375mm Concrete
Reuben Street
SO13328902
CL 20.4
IL 19.28
225mm Concrete
300mm Concrete
900mm Concrete
R110
EXISTING FOUL WATER


APPROXIMATE SITE BOUNDARY.
SEE ARCHITECTS DRAWING FOR
EXACT BOUNDARY LINE.
101.6 Cast-Iron 1920
101.6 Cast-Iron 1920
101.6 Cast-Iron 1920
150mm MOPVC 2002
200mm MOPVC 2002
200mm MOPVC 2002
200mm MOPVC 2002
200mm MOPVC 2002
100mm MOPVC 2002
150mm MOPVC 2002
200mm MOPVC 2002
200mm MOPVC 2002
110mm MOPVC 2003
110mm MOPVC 2003
110mm MOPVC 2006
110mm MOPVC 2002
R110
R110
R110
Dolphin's Barn Street
Reuben Street
EXISTING WATERMAIN

Appendix 5 – Uisce Eireann – Confirmation of Feasibility
Statement of Design Acceptance

CONFIRMATION OF FEASIBILITY

Peter Carty

Red 63 Innovation Property Limited
20 Molesworth Street
Dublin 2
D02 T250

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

15 July 2024

Our Ref: CDS24004317 Pre-Connection Enquiry
43-50 Dolphins Barn Street, Dublin 8, Dublin

Dear Applicant/Agent,

We have completed the review of the Pre-Connection Enquiry.

Uisce Éireann has reviewed the pre-connection enquiry in relation to a Water & Wastewater connection for a Housing Development of 120 unit(s) at 43-50 Dolphins Barn Street, Dublin 8, Dublin, (the **Development)**.

Based upon the details provided we can advise the following regarding connecting to the networks;

- **Water Connection** - Feasible without infrastructure upgrade by Uisce Éireann
- **Wastewater Connection** - Feasible without infrastructure upgrade by Uisce Éireann

This letter does not constitute an offer, in whole or in part, to provide a connection to any Uisce Éireann infrastructure. Before the Development can be connected to our network(s) you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.

As the network capacity changes constantly, this review is only valid at the time of its completion. As soon as planning permission has been granted for the Development, a completed connection application should be submitted. The connection application is available at www.water.ie/connections/get-connected/

Stiúrthóirí / Directors: Tony Keohane (Cathaoirleach / Chairman), Niall Gleeson (POF / CEO), Christopher Banks, Fred Barry, Gerard Britchfield, Liz Joyce, Patricia King, Eileen Maher, Cathy Mannion, Michael Walsh.
Oifig Chláraithe / Registered Office: Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Colvill House, 24-26 Talbot Street, Dublin, Ireland D01NP86
Is cuideachta ghníomhaíochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Uisce Éireann is a design activity company, limited by shares. Cláraithe in Éirinn Uimh.: 530363 / Registered in Ireland No.: 530363.

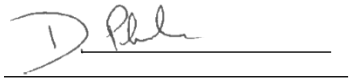
Where can you find more information?

- **Section A -** What is important to know?

This letter is issued to provide information about the current feasibility of the proposed connection(s) to Uisce Éireann's network(s). This is not a connection offer and capacity in Uisce Éireann's network(s) may only be secured by entering into a connection agreement with Uisce Éireann.

For any further information, visit **www.water.ie/connections, email newconnections@water.ie** or contact 1800 278 278**.**

Yours sincerely,



Dermot Phelan
Connections Delivery Manager

Section A - What is important to know?

What is important to know?	Why is this important?
Do you need a contract to connect?	• Yes, a contract is required to connect. This letter does not constitute a contract or an offer in whole or in part to provide a connection to Uisce Éireann's network(s). • Before the Development can connect to Uisce Éireann's network(s), you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.
When should I submit a Connection Application?	• A connection application should only be submitted after planning permission has been granted.
Where can I find information on connection charges?	• Uisce Éireann connection charges can be found at: https://www.water.ie/connections/information/charges/
Who will carry out the connection work?	• All works to Uisce Éireann's network(s), including works in the public space, must be carried out by Uisce Éireann*. *Where a Developer has been granted specific permission and has been issued a connection offer for Self-Lay in the Public Road/Area, they may complete the relevant connection works
Fire flow Requirements	• The Confirmation of Feasibility does not extend to fire flow requirements for the Development. Fire flow requirements are a matter for the Developer to determine. • **What to do?** - Contact the relevant Local Fire Authority
Plan for disposal of storm water	• The Confirmation of Feasibility does not extend to the management or disposal of storm water or ground waters. • **What to do?** - Contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges.
Where do I find details of Uisce Éireann's network(s)?	• Requests for maps showing Uisce Éireann's network(s) can be submitted to: datarequests@water.ie

What are the design requirements for the connection(s)?	• The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this Development shall comply with ***the Uisce Éireann Connections and Developer Services Standard Details and Codes of Practice,*** available at www.water.ie/connections
Trade Effluent Licensing	• Any person discharging trade effluent** to a sewer, must have a Trade Effluent Licence issued pursuant to section 16 of the Local Government (Water Pollution) Act, 1977 (as amended). • More information and an application form for a Trade Effluent License can be found at the following link: https://www.water.ie/business/trade-effluent/about/ **trade effluent is defined in the Local Government (Water Pollution) Act, 1977 (as amended)

Peter Carty
JJ Campbell & Accoc
20 Molesworth Street
Dublin 2, Dublin D02 T250

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

27 February 2025

Re: Design Submission for 43-50 Dolphins Barn Street, Dublin 8, Dublin (the "Development")
(the "Design Submission") / Connection Reference No: CDS24004317

Dear Peter Carty,

Many thanks for your recent Design Submission.

We have reviewed your proposal for the connection(s) at the Development. Based on the information provided, which included the documents outlined in Appendix A to this letter, Uisce Éireann has no objection to your proposals.

This letter does not constitute an offer, in whole or in part, to provide a connection to any Uisce Éireann infrastructure. Before you can connect to our network you must sign a connection agreement with Uisce Éireann. This can be applied for by completing the connection application form at www.water.ie/connections. Uisce Éireann's current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Regulation of Utilities (CRU)(https://www.cru.ie/document_group/irish-waters-water-charges-plan-2018/).

You the Customer (including any designers/contractors or other related parties appointed by you) is entirely responsible for the design and construction of all water and/or wastewater infrastructure within the Development which is necessary to facilitate connection(s) from the boundary of the Development to Uisce Éireann's network(s) (the "**Self-Lay Works**"), as reflected in your Design Submission. Acceptance of the Design Submission by Uisce Éireann does not, in any way, render Uisce Éireann liable for any elements of the design and/or construction of the Self-Lay Works.

If you have any further questions, please contact your Uisce Éireann representative:
Name: Alicia Ros Bernal
Email: ailciarosbernal.bernal@water.ie

Yours sincerely,

Dermot Phelan
Connections Delivery Manager

Stiúrthóirí / Directors: Niall Gleeson (POF / CEO), Jerry Grant (Cathaoirleach / Chairperson), Gerard Britchfield, Liz Joyce, Michael Nolan, Patricia King, Eileen Maher, Cathy Mannion, Paul Reid, Michael Walsh.
Oifig Chláraithe / Registered Office: Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Colvill House, 24-26 Talbot Street, Dublin, Ireland D01NP86
Is cuideachta ghníomhaíochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Uisce Éireann is a designated activity company, limited by shares.
Cláraithe in Éirinn Uimh.: 530363 / Registered in Ireland No.: 530363.

Appendix A

Document Title & Revision

- C2 - Watermain
- C1 - Ground Floor Foul and Storm
- C7-1 - Long Section

Additional Comments

The design submission will be subject to further technical review at connection application stage.

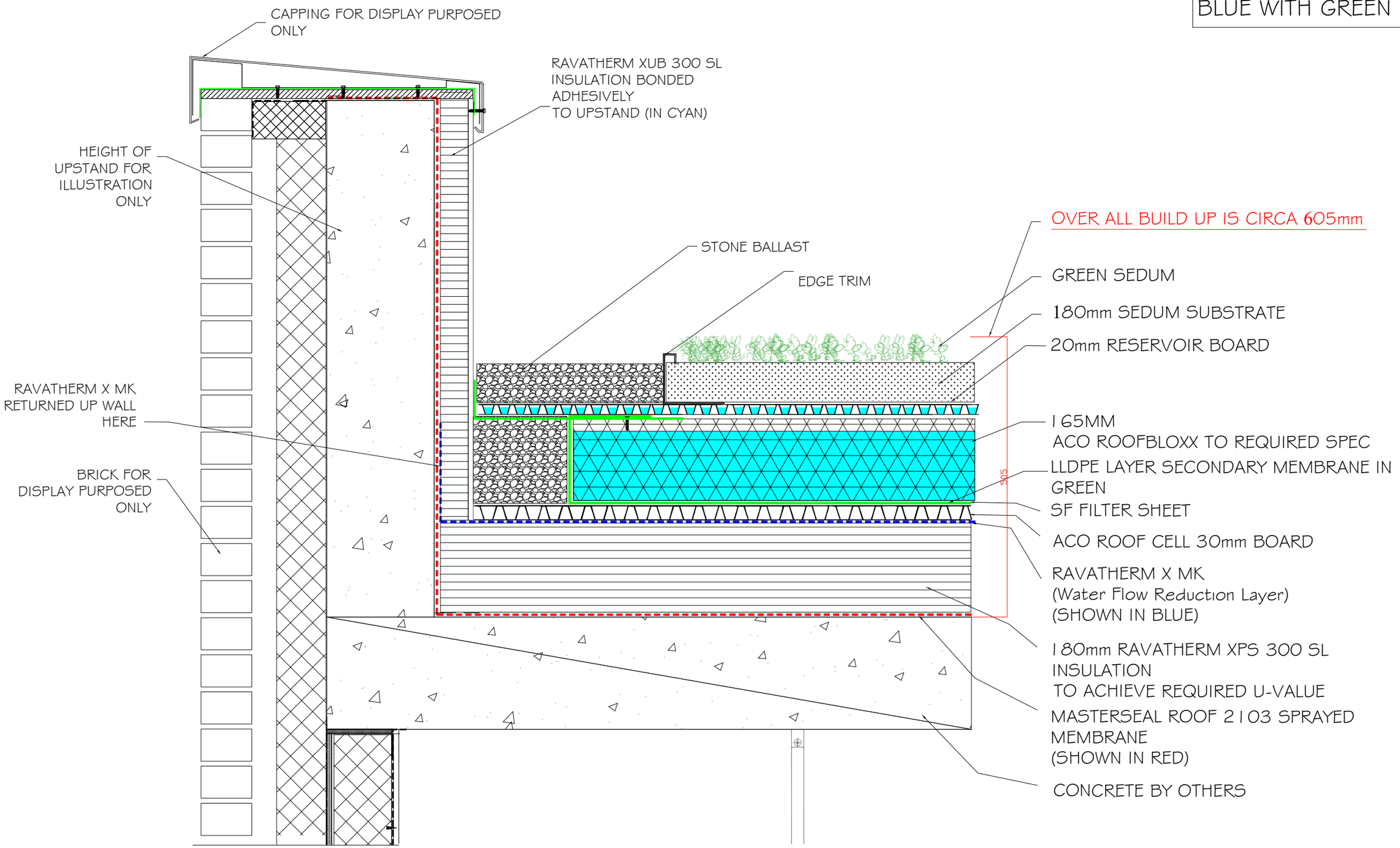
Uisce Éireann cannot guarantee that its Network in any location will have the capacity to deliver a particular flow rate and associated residual pressure to meet the requirements of the relevant Fire Authority, see Section 1.17 of Water Code of Practice

*For further information, visit **www.water.ie/connections***

Notwithstanding any matters listed above, the Customer (including any appointed designers/contractors, etc.) is entirely responsible for the design and construction of the Self-Lay Works. Acceptance of the Design Submission by Uisce Éireann will not, in any way, render Uisce Éireann liable for any elements of the design and/or construction of the Self-Lay Works.

Appendix 6 - Green and Blue Roof Details

TYPICAL PARAPET
BLUE WITH GREEN ROOF DETAIL;



TYPICAL PARAPET BLUE WITH GREEN ROOF DETAIL

Cork
Beton Construction Services Ltd
Heron Court, Market Quay,
Bandon,
Co.Cork
Phone: +353 23 88 542 31

Dublin
Beton Construction Services Ltd
Unit B14, Aerodrome Business Park
Rathcoole
D24 NW93.
Phone: +353 1 401 6402

TITLE:
TYPICAL PARAPET BLUE WITH GREEN ROOF DETAIL;

Project : Dolphins Barn

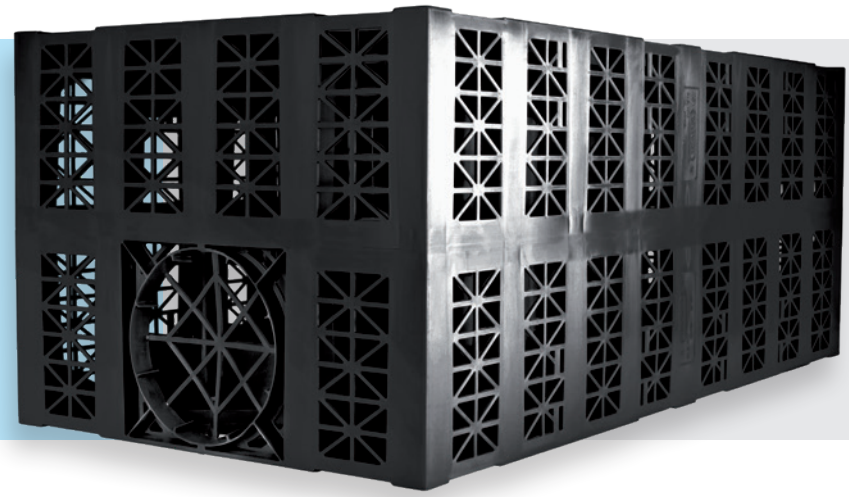
Scale: NTS	Drawn No: DB-2024-01-01	
Drawn by: AM	Date: 15-07-2024	REV: 1

Note: This Drawing is for illustration purposed only and not considered a working drawing.

Appendix 7 – Wavin Aquacell

Product Datasheet

AquaCell Core-R



Product description

AquaCell Core-R has been designed for use in deep applications, subject to regular and heavy traffic loadings, e.g. cars and HGV's. AquaCell Core-R can also be used in both landscaped and deep soakaway applications.

Technical specification

Product code / SAP code	6LB150 / 4064830	**Void ratio**	95%
Colour	Black	**Material**	Recycled PP
Dimensions	1m x 0.5m x 0.4m	**Vertical loading**	66.9 tonnes/m^2 (669 kN/m^2)
Weight	11.5kg	**Lateral loading**	12.3 tonnes/m^2 (123 kN/m^2)
Storage volume	190 litres	**BBA approval**	Certificate 03/4018

Maximum installation depths

Typical soil type	**Maximum depth of installation – to base of units (m)[1]**				
	Soil weight kN/m^3	**Angle of internal friction φ (degrees)[2, 3]**	**Landscaped areas**	**Vehicle mass <9 tonnes[4, 5]**	**Vehicle mass <44 tonnes**
Over consolidated stiff clay	20	24	3.85	3.61	3.36
Silty sandy clay	19	26	4.35	4.09	3.83
Loose sand and gravel	18	30	5.34	5.06	4.78
Medium dense sand and gravel	19	34	5.94	5.68	5.41
Dense sand and gravel	20	38	6.68	6.43	6.18

Minimum cover depths

	Landscaped areas	**Car parks with vehicle mass <3 tonnes[5]**	**Car parks with vehicle mass <9 tonnes**	**Car parks with vehicle mass <12 tonnes**	**Low speed roads with vehicle mass <60 tonnes**
Minimum cover depth (m)	0.30	0.50	0.60	0.70	1.11

1. Without groundwater present below base of units – AquaCell Core-R may be used where groundwater is present, contact Wavin for technical advice.
2. Loosening of dense sand or softening of clay by water can occur during installation. The designer should allow for any such likely effects when choosing an appropriate value of φ.
3. The design is very sensitive to small changes in the assumed value of φ, therefore, it should be confirmed by a chartered geotechnical engineer. In clay soils, it may be possible to utilise cohesion in some cases.
4. Applicable for car parks or other areas trafficked only by cars or occasional refuse collection trucks or similar vehicles (typically one per week).
5. This category should be used when considering landscaped areas that may be trafficked by ride on mowers.

Assumptions made:

- Ground surface is horizontal
- Shear planes or other weaknesses are not present within the structure of the soil

Source: BBA

Wavin Ireland Ltd | Balbriggan | Co Dublin | K32 K840
Tel 01 8020200 | **Email** info.ie@wavin.com | **Website** www.wavin.ie

June 2021

Appendix 8 – Hydro-Brake

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.100	2.000
Flush-Flo™	0.289	1.844
Kick-Flo®	0.584	1.500
Mean Flow		1.672

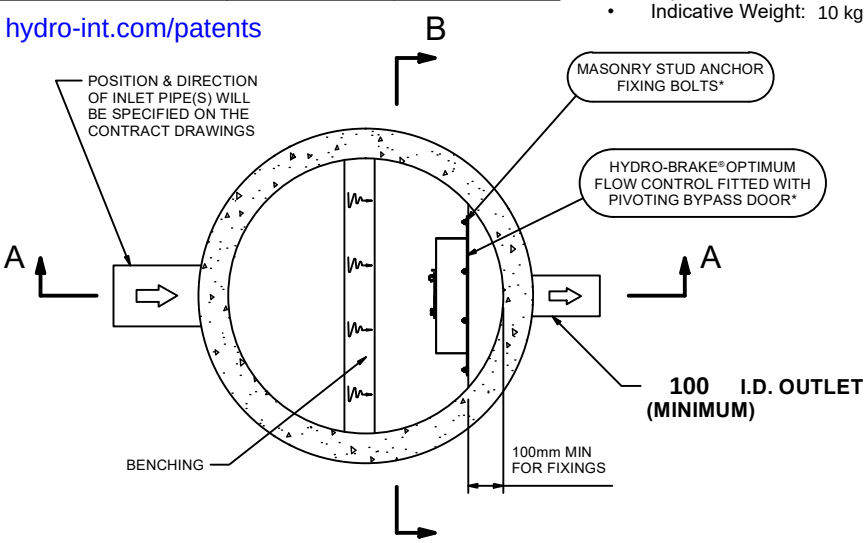
Hydro-Brake® Optimum Flow Control including:

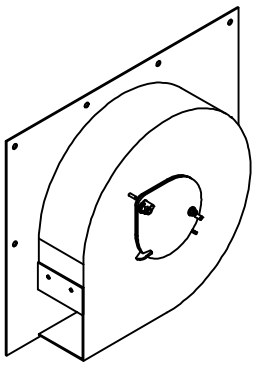
- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Variable flow rate post installation via adjustable inlet
- Indicative Weight: 10 kg

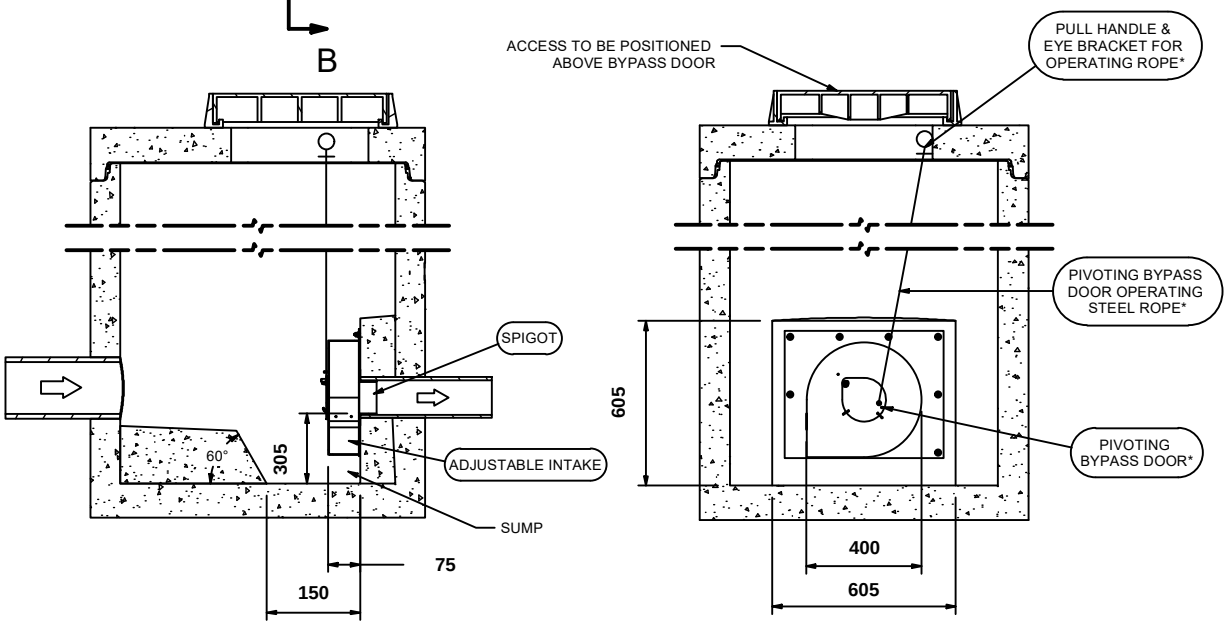
BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE 08/4596

wrc approved PT/503/0422 Valid: 01/04/2022 - 31/03/2027

hydro-int.com/patents







SECTION A-A

SECTION B-B

IMPORTANT: ⬭ LIMIT OF HYDRO INTERNATIONAL SUPPLY
THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS
* WHERE SUPPLIED
HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

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

DESIGN ADVICE

The head/flow characteristics of this SHE-0066-2000-1100-2000 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 A CRH COMPANY

DATE	17/07/2024 13:10
SITE	Dolphins Barn
DESIGNER	Marcus Wallace
REF	2301-10

SHE-0066-2000-1100-2000

Hydro-Brake® Optimum

© 2024 Hydro International Ltd • Unit 2, Rivermead Court • Kenn Business Park • Windmill Road • Kenn • Clevedon • BS21 6FT • Tel: 01275 878371 • www.hydro-int.com • Email: enquiries@hydro-int.com

marcus.wallace@jjc.ie

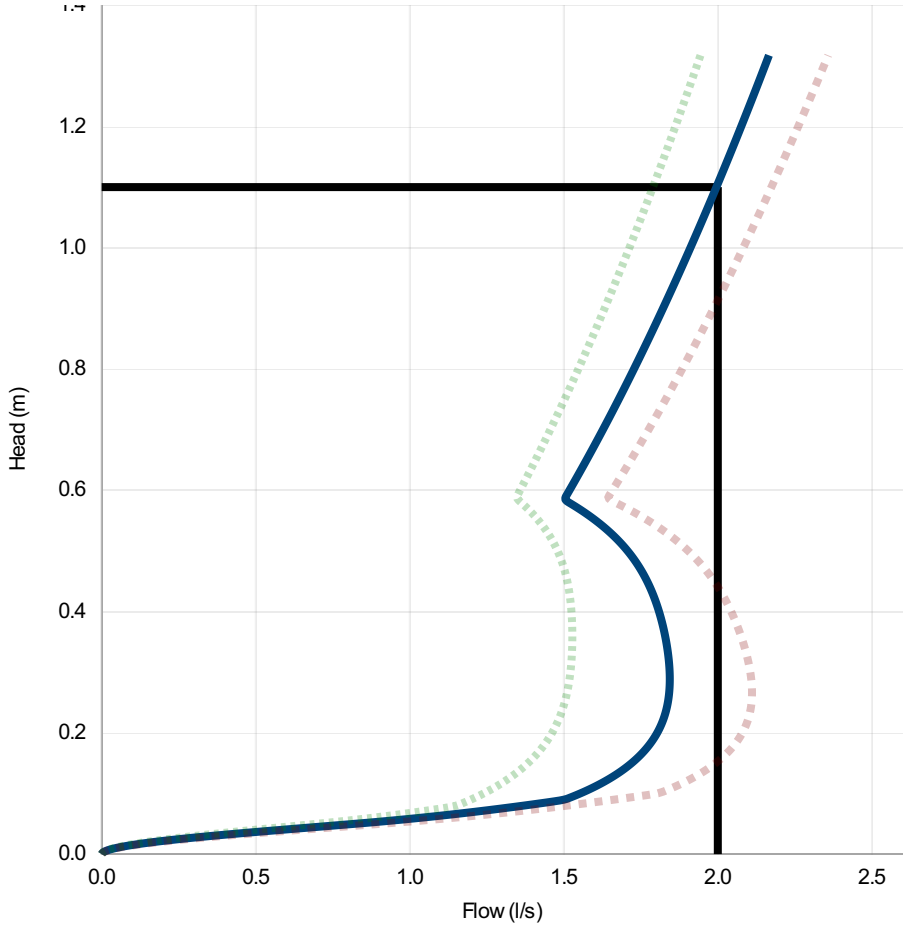
Technical Specification

	Original Setting		Minimum Setting		Maximum Setting	
Control Point	**Head (m)**	**Flow (l/s)**	**Head (m)**	**Flow (l/s)**	**Head (m)**	**Flow (l/s)**
Primary Design	1.100	2.000	1.100	1.789	1.100	2.174
Flush-Flo™	0.289	1.844	0.360	1.528	0.266	2.111
Kick-Flo®	0.584	1.500	0.586	1.344	0.586	1.640
Mean Flow		1.672		1.447		1.860

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE No 08/4596

wrc approved™
PT/503/0422
Valid: 01/04/2022 - 31/03/2027

hydro-int.com/patents



Head (m)	Flow (l/s)
0.000	0.000
0.038	0.533
0.076	1.308
0.114	1.611
0.152	1.724
0.190	1.791
0.228	1.827
0.266	1.842
0.303	1.843
0.341	1.835
0.379	1.820
0.417	1.798
0.455	1.765
0.493	1.718
0.531	1.649
0.569	1.551
0.607	1.526
0.645	1.568
0.683	1.609
0.721	1.648
0.759	1.687
0.797	1.724
0.834	1.761
0.872	1.797
0.910	1.831
0.948	1.866
0.986	1.899
1.024	1.932
1.062	1.964
1.100	1.995

DESIGN ADVICE

The head/flow characteristics of this SHE-0066-2000-1100-2000 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
A CRH COMPANY

DATE	17/07/2024 13:10
Site	Dolphins Barn
DESIGNER	Marcus Wallace
Ref	2301-10

SHE-0066-2000-1100-2000

Hydro-Brake® Optimum

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