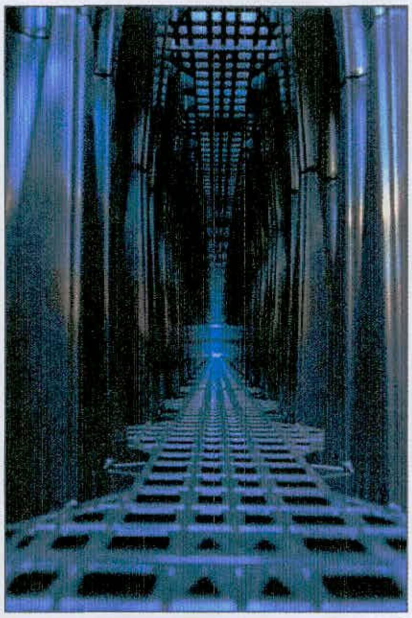
Technical information

	Stormbloc® Optimum Full Block	Stormbloc® Optimum Half Block
Material	Polypropylene	Polypropylene
Length / Width / Height	800 / 800 / 660 mm	800 / 800 / 360 mm
Nominal Block Volume	0.422 m^3	0.230 m^3
Nominal Storage Capacity per Unit	0.405 m^3	0.221 m^3
Constructed Block Weight	18.6 kg	13.7 kg
Porosity	96%	96%
Vertical Ultimate Compressive Strength	≥ 420 kN/m^2	≥ 420 kN/m^2
Horizontal Ultimate Compressive Strength	≥ 165 kN/m^2	≥ 225 kN/m^2



Stormbloc® Optimum inspection and maintenance channel.

Stormbloc® Optimum installation.

Learn more

To learn more about how Stormbloc® Optimum can help you to make better water management decisions, visit **hydro-int.com**, search **Stormbloc Optimum** online or contact us:

+44 (0)1275 878371
enquiries@hydro-int.com

Stormbloc® Optimum

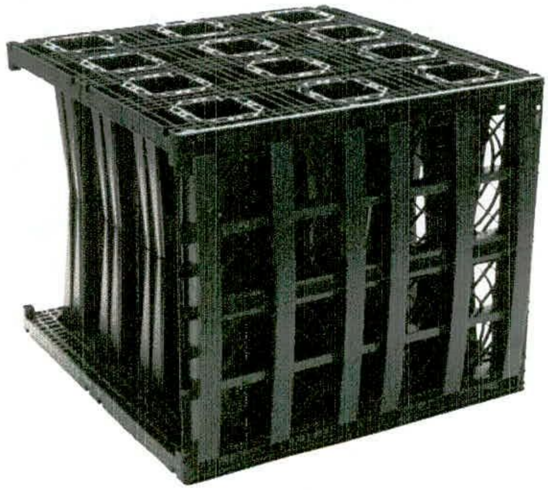
Hydro International®

Attenuate surface water and stormwater effectively even in challenging high-traffic urban environments.

Stormbloc® Optimum is a resilient geocellular storage system that provides underground storage and infiltration of urban runoff.

Lightweight materials combined with robust design make it easy to transport, quick to install and extremely durable, even beneath high-traffic areas such as roads, car parks and warehouse yards.

Stormbloc® Optimum is modular and easily customisable, giving you the freedom to configure storage for even the most challenging SuDS project.



Applications

- New and retrofit Sustainable Drainage (SuDS) schemes.
- Infiltration / soakaway schemes.
- Attenuation schemes.
- Highways and infrastructure projects.
- To increase swale / pond capacity.
- Car parks and Park & Ride schemes.
- Housing Developments.
- Schools and Public / Civil schemes.
- Aquifer re-charge.
- Storage for rainwater harvesting and re-use.

Inspection and Maintenance Access

Access shafts can be easily constructed during installation of the Stormbloc® Optimum system to enable inspection and maintenance.

The channels between the vertical struts allow access for CCTV inspection, maintenance and cleaning and ensures that the storage volume of the system isn't compromised by the build up of silts.

Benefits

Customise Your Storage

Length, width and depth of storage can be customised in order to meet even the most demanding of drainage environments. Two inspection channels enable easy inspection and maintenance.

Save Space On Site

Stormbloc® Optimum stacks into compact nests for transportation and storage, saving valuable space during transport and on site. The nested units can also enable more storage volume to be lifted into excavations at any one time, saving time and cost of lifting machinery. The units unstack simply for installation. With up to 75% space reduction, a double pallet of stacked, nested boxes delivers more than 14 m^3 of stormwater storage, and a single lorry delivery can provide 345 m^3.

Lightweight and Strong

Combining strength with a storage coefficient of 96%, Stormbloc® Optimum allows you to plan and design effective SuDS systems even in challenging urban environments with high traffic levels. The Stormbloc® Optimum can withstand heavy goods vehicle traffic with an overall load of up to 60 tons, and can be installed at base depths of up to 4 metres.

APPENDIX C

STORMBLOC OPTIMUM

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 313778, Northing: 227138,

	Interval		Years													
DURATION	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.7,	3.9,	4.6,	5.6,	6.4,	6.9,	8.8,	11.0,	12.5,	14.6,	16.6,	18.1,	20.4,	22.2,	23.8,	N/A ,
10 mins	3.7,	5.4,	6.4,	7.9,	8.9,	9.7,	12.3,	15.4,	17.4,	20.4,	23.1,	25.2,	28.4,	31.0,	33.1,	N/A ,
15 mins	4.4,	6.4,	7.5,	9.2,	10.4,	11.4,	14.5,	18.1,	20.5,	24.0,	27.1,	29.6,	33.4,	36.5,	39.0,	N/A ,
30 mins	5.8,	8.4,	9.8,	12.0,	13.5,	14.6,	18.5,	23.0,	26.0,	30.2,	34.0,	37.0,	41.7,	45.4,	48.4,	N/A ,
1 hours	7.6,	10.9,	12.7,	15.5,	17.3,	18.8,	23.6,	29.1,	32.8,	38.0,	42.7,	46.4,	52.0,	56.4,	60.1,	N/A ,
2 hours	10.0,	14.3,	16.6,	20.0,	22.4,	24.2,	30.2,	37.0,	41.5,	47.9,	53.6,	58.0,	64.9,	70.2,	74.7,	N/A ,
3 hours	11.8,	16.7,	19.3,	23.3,	25.9,	28.0,	34.8,	42.5,	47.6,	54.8,	61.2,	66.2,	73.9,	79.8,	84.8,	N/A ,
4 hours	13.3,	18.7,	21.6,	25.9,	28.8,	31.1,	38.5,	47.0,	52.5,	60.3,	67.3,	72.7,	81.0,	87.4,	92.7,	N/A ,
6 hours	15.6,	21.8,	25.1,	30.1,	33.4,	36.0,	44.5,	54.0,	60.3,	69.0,	76.8,	82.9,	92.1,	99.3,	105.3,	N/A ,
9 hours	18.4,	25.5,	29.3,	35.0,	38.8,	41.7,	51.3,	62.1,	69.1,	79.0,	87.8,	94.5,	104.9,	112.9,	119.5,	N/A ,
12 hours	20.7,	28.5,	32.7,	38.9,	43.1,	46.4,	56.8,	68.6,	76.2,	87.0,	96.5,	103.8,	115.0,	123.7,	130.8,	N/A ,
18 hours	24.3,	33.4,	38.2,	45.3,	50.0,	53.7,	65.6,	78.8,	87.5,	99.5,	110.2,	118.4,	130.9,	140.6,	148.5,	N/A ,
24 hours	27.3,	37.3,	42.6,	50.4,	55.6,	59.6,	72.6,	87.0,	96.5,	109.6,	121.1,	129.9,	143.5,	153.9,	162.6,	192.4,
2 days	34.2,	45.7,	51.6,	60.3,	66.1,	70.5,	84.6,	100.1,	110.0,	123.8,	135.8,	145.0,	159.0,	169.6,	178.4,	208.6,
3 days	39.8,	52.4,	58.9,	68.4,	74.6,	79.3,	94.3,	110.7,	121.2,	135.6,	148.1,	157.7,	172.1,	183.1,	192.1,	223.0,
4 days	44.7,	58.3,	65.3,	75.3,	81.9,	86.9,	102.8,	120.0,	131.0,	146.0,	158.9,	168.8,	183.7,	195.0,	204.3,	235.8,
6 days	53.3,	68.6,	76.4,	87.5,	94.7,	100.2,	117.5,	136.1,	147.8,	163.9,	177.7,	188.1,	203.8,	215.7,	225.4,	258.4,
8 days	60.9,	77.7,	86.1,	98.1,	105.9,	111.8,	130.3,	150.1,	162.6,	179.5,	194.0,	205.0,	221.4,	233.8,	243.9,	278.1,
10 days	67.9,	85.9,	95.0,	107.8,	116.1,	122.4,	141.9,	162.7,	175.8,	193.5,	208.7,	220.1,	237.2,	250.1,	260.6,	296.0,
12 days	74.4,	93.7,	103.2,	116.8,	125.5,	132.1,	152.7,	174.4,	188.1,	206.5,	222.3,	234.1,	251.8,	265.2,	276.0,	312.4,
16 days	86.6,	107.9,	118.4,	133.3,	142.9,	150.1,	172.3,	195.8,	210.5,	230.2,	247.0,	259.6,	278.3,	292.4,	303.9,	342.2,
20 days	97.9,	121.0,	132.4,	148.4,	158.7,	166.4,	190.3,	215.2,	230.8,	251.6,	269.4,	282.6,	302.3,	317.1,	329.1,	369.1,
25 days	111.1,	136.3,	148.7,	166.0,	177.1,	185.4,	211.0,	237.6,	254.2,	276.3,	295.1,	309.0,	329.8,	345.4,	357.9,	399.8,

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 B

MET EIREANN RAINFALL DATA

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 14.30%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m^3)	Flood (m^3)	Status
960 minute winter	s.aj1	645	73.143	0.643	0.3	0.1472	0.0000	FLOOD RISK
960 minute winter	s.ic1	645	73.143	0.751	0.3	0.0000	0.0000	FLOOD RISK
960 minute winter	s.ic2	645	73.143	0.784	0.3	2.5328	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m^3)
960 minute winter	s.aj1	1.000	s.ic1	0.3	0.258	0.047	0.0841
960 minute winter	s.ic1	1.001	s.ic2	0.3	0.127	0.063	0.0522
960 minute winter	s.ic2	Infiltration		0.1			

Results for 30 year +20% CC Critical Storm Duration. Lowest mass balance: 14.30%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	s.aj1	555	73.075	0.575	0.3	0.1317	0.0000	FLOOD RISK
600 minute winter	s.ic1	555	73.075	0.683	0.3	0.0000	0.0000	FLOOD RISK
600 minute winter	s.ic2	555	73.075	0.716	0.3	1.8287	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
600 minute winter	s.aj1	1.000	s.ic1	0.3	0.258	0.046	0.0841
600 minute winter	s.ic1	1.001	s.ic2	0.3	0.127	0.061	0.0522
600 minute winter	s.ic2	Infiltration		0.1			

Results for 5 year +20% CC Critical Storm Duration. Lowest mass balance: 14.30%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	s.aj1	1020	72.996	0.496	0.1	0.1135	0.0000	FLOOD RISK
1440 minute winter	s.ic1	1020	72.996	0.604	0.1	0.0000	0.0000	FLOOD RISK
1440 minute winter	s.ic2	1020	72.996	0.637	0.1	1.0006	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
1440 minute winter	s.aj1	1.000	s.ic1	0.1	0.194	0.017	0.0841
1440 minute winter	s.ic1	1.001	s.ic2	0.1	0.012	0.021	0.0522
1440 minute winter	s.ic2	Infiltration		0.0			

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +20% CC 180 minute summer	78.435	20.184	100 year +20% CC 600 minute summer	31.273	8.554
100 year +20% CC 180 minute winter	50.985	20.184	100 year +20% CC 600 minute winter	21.368	8.554
100 year +20% CC 240 minute summer	62.514	16.521	100 year +20% CC 720 minute summer	27.963	7.494
100 year +20% CC 240 minute winter	41.533	16.521	100 year +20% CC 720 minute winter	18.793	7.494
100 year +20% CC 360 minute summer	47.993	12.350	100 year +20% CC 960 minute summer	23.072	6.075
100 year +20% CC 360 minute winter	31.197	12.350	100 year +20% CC 960 minute winter	15.283	6.075
100 year +20% CC 480 minute summer	38.024	10.049	100 year +20% CC 1440 minute summer	16.821	4.508
100 year +20% CC 480 minute winter	25.262	10.049	100 year +20% CC 1440 minute winter	11.305	4.508

Node s.ic2 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	72.900	Depth (m)	0.350
Side Inf Coefficient (m/hr)	0.13600	Time to half empty (mins)		Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	3.500	Number Required	1
Porosity	0.35	Pit Length (m)	8.500		

Approval Settings

Node Size	✓	Minimum Full Bore Velocity (m/s)	0.750
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	5
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	5
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)	0.500	Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	✓
Backdrops	✓	Return Period (years)	24
Minimum Backdrop Height (m)	0.200	Discharge Rates	✓
Maximum Backdrop Height (m)	1.500	Discharge Volume	✓
Full Bore Velocity	✓	100 year 360 minute (m^3)	3

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
5 year +20% CC 15 minute summer	168.506	47.681	30 year +20% CC 60 minute summer	118.338	31.273
5 year +20% CC 15 minute winter	118.249	47.681	30 year +20% CC 60 minute winter	78.621	31.273
5 year +20% CC 30 minute summer	113.826	32.209	30 year +20% CC 120 minute summer	76.139	20.121
5 year +20% CC 30 minute winter	79.878	32.209	30 year +20% CC 120 minute winter	50.585	20.121
5 year +20% CC 60 minute summer	79.509	21.012	30 year +20% CC 180 minute summer	59.733	15.371
5 year +20% CC 60 minute winter	52.824	21.012	30 year +20% CC 180 minute winter	38.828	15.371
5 year +20% CC 120 minute summer	50.868	13.443	30 year +20% CC 240 minute summer	47.787	12.629
5 year +20% CC 120 minute winter	33.795	13.443	30 year +20% CC 240 minute winter	31.749	12.629
5 year +20% CC 180 minute summer	40.017	10.298	30 year +20% CC 360 minute summer	36.984	9.517
5 year +20% CC 180 minute winter	26.012	10.298	30 year +20% CC 360 minute winter	24.041	9.517
5 year +20% CC 240 minute summer	32.205	8.511	30 year +20% CC 480 minute summer	29.459	7.785
5 year +20% CC 240 minute winter	21.396	8.511	30 year +20% CC 480 minute winter	19.572	7.785
5 year +20% CC 360 minute summer	25.226	6.491	30 year +20% CC 600 minute summer	24.337	6.657
5 year +20% CC 360 minute winter	16.397	6.491	30 year +20% CC 600 minute winter	16.629	6.657
5 year +20% CC 480 minute summer	20.233	5.347	30 year +20% CC 720 minute summer	21.845	5.855
5 year +20% CC 480 minute winter	13.442	5.347	30 year +20% CC 720 minute winter	14.681	5.855
5 year +20% CC 600 minute summer	16.811	4.598	30 year +20% CC 960 minute summer	18.140	4.777
5 year +20% CC 600 minute winter	11.486	4.598	30 year +20% CC 960 minute winter	12.016	4.777
5 year +20% CC 720 minute summer	15.164	4.064	30 year +20% CC 1440 minute summer	13.357	3.580
5 year +20% CC 720 minute winter	10.191	4.064	30 year +20% CC 1440 minute winter	8.977	3.580
5 year +20% CC 960 minute summer	12.656	3.333	100 year +20% CC 15 minute summer	311.854	88.244
5 year +20% CC 960 minute winter	8.384	3.333	100 year +20% CC 15 minute winter	218.845	88.244
5 year +20% CC 1440 minute summer	9.465	2.537	100 year +20% CC 30 minute summer	217.179	61.454
5 year +20% CC 1440 minute winter	6.361	2.537	100 year +20% CC 30 minute winter	152.406	61.454
30 year +20% CC 15 minute summer	242.903	68.733	100 year +20% CC 60 minute summer	155.104	40.989
30 year +20% CC 15 minute winter	170.458	68.733	100 year +20% CC 60 minute winter	103.047	40.989
30 year +20% CC 30 minute summer	167.129	47.292	100 year +20% CC 120 minute summer	100.152	26.467
30 year +20% CC 30 minute winter	117.283	47.292	100 year +20% CC 120 minute winter	66.539	26.467

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	5	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	20	Minimum Velocity (m/s)	0.75
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.800	Minimum Backdrop Height (m)	0.200
Ratio-R	0.266	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	8.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
s.aj1	0.008	3.00	73.200	1	25.926	39.009	0.700
s.ic1			73.150	1	36.680	38.926	0.758
s.ic2			73.150	1	43.241	37.716	0.791

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	240
FSR Region	England and Wales	Additional Storage (m^3/ha)	20.0
M5-60 (mm)	17.000	Check Discharge Rate(s)	✓
Ratio-R	0.289	5 year (l/s)	0.1
Summer CV	0.750	30 year (l/s)	0.1
Winter CV	0.840	100 year (l/s)	0.1
Analysis Speed	Normal	Check Discharge Volume	✓
Skip Steady State	x	100 year 360 minute (m^3)	3

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
5	20	0	0
30	20	0	0
100	20	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	SPR	0.47	Betterment (%)	0
Greenfield Method	IH124	Region	11	QBar	0.0
Positively Drained Area (ha)	0.008	Growth Factor 5 year	1.20	Q 5 year (l/s)	0.1
SAAR (mm)	841	Growth Factor 30 year	1.65	Q 30 year (l/s)	0.1
Soil Index	4	Growth Factor 100 year	1.96	Q 100 year (l/s)	0.1

Pre-development Discharge Volume

Site Makeup	Greenfield	SPR	0.47	Storm Duration (mins)	360
Greenfield Method	FSR/FEH	CWI	124.603	Betterment (%)	0
Positively Drained Area (ha)	0.008	Return Period (years)	100	PR	0.508
Soil Index	4	Climate Change (%)	0	Runoff Volume (m^3)	3

APPENDIX A

STORM EVENT AND FOUL SEWER CALCULATIONS

3.0 FOUL SEWER DESIGN

3.1 Foul Drainage Proposal

Pipe Type: 100mm diameter Unplasticized P.V.C. Connection pipes

A complete and separate foul water system is proposed for the development. Please refer to attached Drawing No. "S2-001" for details of proposed connection point to the existing foul in Moyville lawn.

All wastewater is to be connected by gravity flow to proposed wastewater sewer connection point and is subject to Irish Water final approval.

Signed ____________________

Date 20 October 2022

Print Name RORY O'HARE

Qualifications Chartered Engineer, B.E. (Structural), Tech Cert. Eng. (Civil), M.I.E.I.

FUREY CONSULTING ENGINEERS

2.8 Surface Water Sewer Capacity Design

The capacity of a surface water sewer network has been designed using Causeway Flow+ v9.1 and has been assessed using the 5 year return period with 20% climate change. Details of input values can be seen in Appendix A, however, see figure 2.6 for extract of design data for network design.

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	5	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	20	Minimum Velocity (m/s)	0.75
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.800	Minimum Backdrop Height (m)	0.200
Ratio-R	0.266	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	8.00	Enforce best practice design rules	✓

Fig 2.3 – Extract from Design Calculations (Appendix A)

The external, underground surface water network shall be a gravity system designed in accordance with the requirements of "BS EN 752-4: 1997 Drain and Sewer Systems Outside Building - Hydraulic Design and Environmental Considerations", "Technical Guidance Document Part H", "Greater Dublin Sustainable Drainage Systems" and "Greater Dublin Regional Code of Practice V6.0".

2.5 Rainfall Data

Rainfall return period data associated with the subject site has been sourced from Met Éireann and is based on a depth duration frequency (DDF) model generated from rainfall station data which was analysed, interpolated and mapped on a 2km grid. Please see Appendix B for the tabulated Met Éireann rainfall results.

2.6 Climate Change

All surface water hydraulic calculations have been assessed with an additional allowance included for 20% increase for climate change as set out in the GDSDS Technical Document, Climate Change and requirements of Kildare County Council Water Services Department. See below in figure 2.2 extract from Table 6.2 of GDSDS Volume 2 showing the climate change factor required for rainfall data.

Climate Change Category	Characteristics
River flows	20% increase in flows for all return periods up to 100 years
Sea level	400+mm rise (see Climate Change policy document for sea levels as a function of return period)
Rainfall	10% increase in depth (factor all intensities by 1.1)
	Modify time series rainfall in accordance with the GDSDS climate change policy document

Fig 2.2 – Climate Change Factors to be Applied to Drainage Design

2.7 Storm Return Period

Storm return periods have been chosen in accordance with Criterion 3 of Section 16.3 of "Greater Dublin Regional Code of Practice v.6.0". The surface water network has been designed for each of the 5, 30 and 100 year storm events using Causeway Flow+ v10.0 software. It is proposed to attenuate for the 100 year storm flows within the development site which will result in no flooding on the site.

Driveway interception deigns for the dwelling can be seen in Appendix D
The driveway interception deigns subject to the following storm events:

- Storm Duration 15 winter to 24hr winter and 15 summer to 24hr summer.

The Critical Storm Durations were found to be as follows:

- 5 Year 8hr storm + 20% CC
- 30 Year 8hr storm + 20% CC
- 100 Year 6hr storm + 20% CC

Moyville lawn in accordance with SUDS and Greater Dublin Strategic Drainage Study as published March 2005.

All surface water discharge from the development will be attenuated the estimated outflow for the Results for 100 year +20% CC Critical Storm Duration is 0.1l/s.

2.3 SuDS Proposals expanded.

- Rain water harvesting.
  Rain water harvesting can collect run-off from the roofs for use in non-potable situations, we propose to use water butts which are a simple and cost effective solution. The over flow is directed to the main system.

- Permeable paving to rear terrace area.
  Permeable paving will discharge all rain water generated from the area to the ground.

- Pervious Pavements
  Pervious pavements will be utilised throughout the development in the front driveways of each dwelling. This will generally consist of a modular permeable paving system throughout. Ground water runoff generated from the front roofs and paths of the dwellings will be drained into the sub stone basin of the driveways and will be allowed to infiltrate direct to ground before entering the surface water drainage network. The permeable paving basins will be connected to the main surface water pipe network via a series of distribution boxes. See drawing no. "S2-001" for details of the proposed driveway interception detail.

- On site Attenuation.
  The foregoing storm water source control management will principally involve the following small scale SUDS measures to attenuate roof water runoff flows:
  Attenuation will be provided in the voids of the driveway interception storage and within the drainage system. Pipes AJ's and inspection chambers.

  The above measures will ensure that no adverse negative impact will be generated by the development in terms of the existing public sewer.

2.4 Pollution Control Measures.

The majority of the surface water from the proposed development will be generated from roof areas which do not require pollution control measures. Paved areas will pass through a high level geotextile which is effective in intercepting and breaking down hydrocarbons. Please refer to drawing no. S1-002 SuDS Compliance Drawing.

2.0 SuDS SURFACE WATER DESIGN

2.1 Overview of Surface Water Design

The purpose of this report is to assess and propose the potential for disposing of surface water through a sustainable drainage system (SuDS) to satisfy the conditional planning permission granted for four new dwellings at the above site address.

It is our objective and responsibility to comply with the following principles of SuDS:

- Achieving adequate water quality treatment.
- Runoff volumes to be minimised.
- Runoff rates to be minimised.
- The storm water effluent to be treated appropriately before discharge from the site bearing in mind the requirements of the receiving watercourse
- Groundwater to be protected.

In addition, it is desirable to maximise the amenity potential and ecological benefits where there is an opportunity to provide this.

The various suds components must be treated as individual options but should be seen as providing a set of drainage features which are appropriate at various scales. It is always desirable to have a mix of suds components across the site to take opportunity of their respective benefits.

However many of the various suds components are very site specific and can be problematic when located in areas where Infiltration options are not possible.

It is of our opinion that only the following as suitable for this particular site:

- Rain water harvesting.
- Permeable paving to driveway.
- On site interception storage and infiltration.

Surface water calculations are based on drainage from impervious areas relating to the proposed development

2.2 Storm water Management Proposals

All surface water generated from the roof will be collected and directed to the driveway interception storage at the front of the development, all paved areas will be permeable. A high level emergency overflow will be connected to the existing surface water sewer in

1.0 INTRODUCTION

1.1 Introduction

1.1.1 Furey consulting engineers have been appointed by Laura Harrington. To prepare a SuDS Report to be submitted as part of the compliance submission for a development at Moyville lawn, Ballboden, Dublin 16.

1.1.2 The development consists of the construction of Construction of a single storey, 2 bedroom dwelling, new entrance gate, and all associated site works

1.2 Site Description

1.2.1 The site is located in the rear garden of, 19, Ballyboden Crescent, Ballyboden, Dublin 16. The entrance to the development entrance is off the Moyville lawn road.

1.2.2 See below figure 1.1 identifying the position of the site.

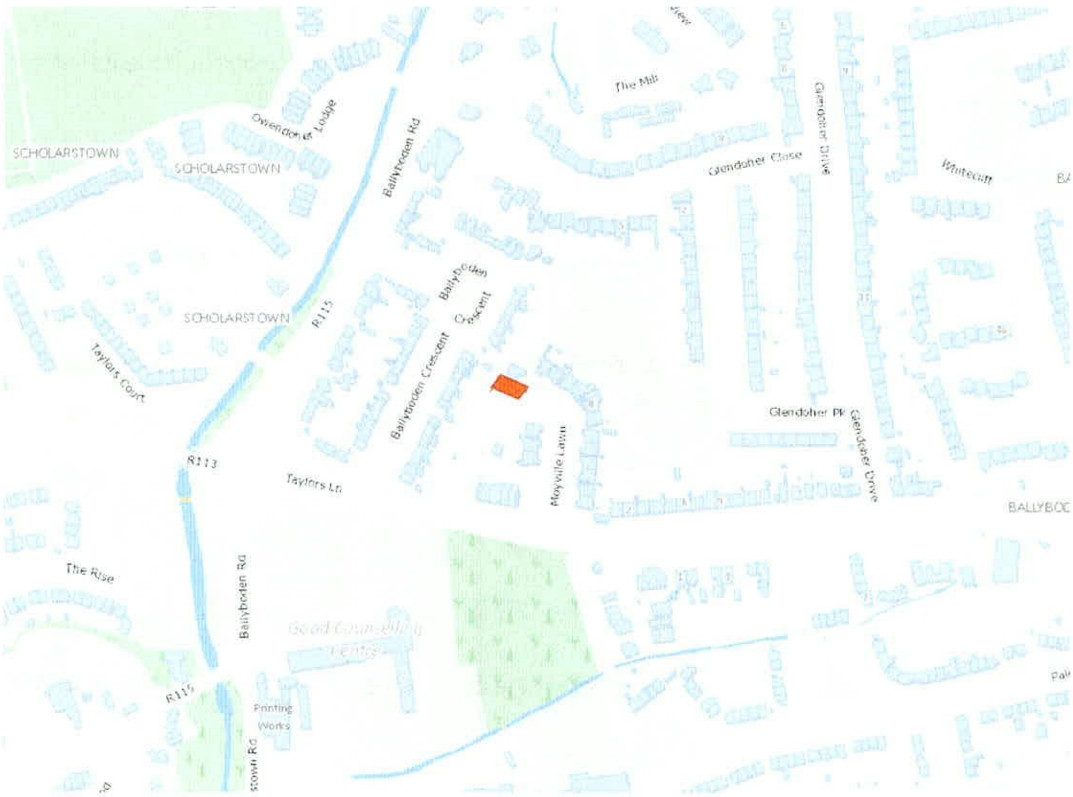


Fig 1.1 – Site Location

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SuDS
COMPLIACE REPORT

PROJECT	**DEVELOPMENT AT MOYVILLE LAWN, BALLBODEN, DUBLIN 16**
CLIENT	**LAURA HARRINGTON.**
DATE	**20 OCTOBER 2022**
REFERENCE	**22-D7**
REPORT BY	**ROH**

FUREY
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architectural design - planning - work inspections.
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087- 252,38 e - mail. edav37@gmail.com

Our Ref.	Your Ref.	Date.
ed/W07/03		24 October 2022.

South Dublin County Council.
Planning Department.
County Hall,
Town Centre,
Tallaght,
Dublin 24
D24 A3XC.

Re – Laura Harrington ,
Development in rear garden of 19, Ballyboden Crescent, Ballyboden, Dublin 16.
Planning Ref; SD22A/0054 – Grant Date 26/July 2022.

Dear sirs,

Further to the decision to grant the above Permission, we now herewith submit Compliance with Condition 4A (i), (ii), (iii), & (iv) as requested, for your written approval, which we trust is to your requirements.

An early response would be appreciated.

Yours faithfully,

Eamon Davenport. AMASI, ICIOB.