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CONSULTING ENGINEERS

DOCUMENT TITLE

INFRASTRUCTURE SERVICES REPORT FOR SDCC TRAVELLERS ACCOMODATION

CLIENT
South Dublin County Council

PROJECT NO. 5823

REVISION	DATE
1.2	16/01/2026

REAR 6B ARBOURFIELD
TERRACE, DUNDRUM
BUSINESS PARK,
DUBLIN 14,
D14 F5C6

TEL. 01 2962596

INFO@MCEENG.IE
WWW.MCEENG.IE

Revision History					
Rev	Date	By	Chk	App	Description
1.1	21-11-2025	ASM	RMc	RMc	Issued for Information
1.2	16-01-2026	ASM	RMc	RMc	Introduction-Updated

Disclaimer:
This report has been prepared by McCrae Consulting Engineers, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

1 Contents

2 INTRODUCTION

Our Client South Dublin County Council proposes to develop an existing green field site as permanent residential accommodation for members of the Traveller community.

The development site is located parallel to the R120 Adamstown Road and comprises a total area of approximately 2.37 hectares.

The site consists of two distinct areas:

1. The demolition of the existing Traveller Accommodation Site (Area 0.81 hectares) known as 'Rock Road Mansions', Lucan, Co. Dublin
2. The development of a new Traveller Accommodation group housing scheme (Area 1.56 hectares) to be know as 'Lock Road', Grange Castle West, Lucan, Co. Dublin.

The proposed new development will include;

- New single story detached house with 2 No. car parking spaces.
- No. new halting site bays, each with a single story day unit, an adjacent mobile unit and 2 No. car parking spaces.
- New single story homework club.
- New play area and hard standing.
- New enterprise area.
- 2 no. storage sheds.
- New external bin store.
- New Irish Water pumping station.
- Installation of new external site lighting.
- Reconfiguring of the existing entrance to the site to provide pedestrian & vehicle access.
- All associated roadways, paths and boundary fencing.
- All hard and soft landscaping to include a Berm to the West and South of the proposed development.
- All associated ancillary site works as may be required in adjacent lands but not limited to foul and surface water drainage and utility supplies.

3 SCOPE

This Report outlines the proposals for foul and surface water drainage of the new development and the proposed watermain supply. The proposals are illustrated on the following enclosed drawings :

5823-MCE-00-00-DR-C-1200- P2	Proposed Watermain & Foul Drainage Layout
5823-MCE-00-00-DR-C-1100- P1	Proposed Surface water Drainage Layout
5823-MCE-00-XX-DR-C-1210- P1	Surface Drainage-Details 1
5823-MCE-00-XX-DR-C-1211- P1	Surface Drainage-Details 2
5823-MCE-00-XX-DR-C-1212- P1	Surface Drainage-Details 3
5823-MCE-00-XX-DR-C-1213- P1	Surface Watermain-Details 1
5823-MCE-00-XX-DR-C-1214- P1	Surface Watermain-Details 2
5823-MCE-00-XX-DR-C-1400- P1	Paving Layout
5823-MCE-00-XX-DR-C-1405- P1	Sight Lines
5823-MCE-00-XX-DR-C-1410- P1	Paving Details

4 FOUL DRAINAGE

Irish Water drainage records were requested for any foul drainage located in the R120. These indicated that there should be a foul manhole located at the boundary of the site. Following a number of site inspections, no trace was found of the head manhole or any of the down stream manholes and it is suspected that this foul line was diverted during the re-alignment of the R120.

Additional information provided to us by SDCC included a CCTV drainage survey from early 2025 which confirmed the presence of a foul drainage line near the boundary of our site. Unfortunately, although the survey was able to continue along the full length of pipe, the final two manholes could not be located. Further investigation work is required to accurately locate these manholes, however the direction of the pipe is generally known as is the distance between manholes.

The proposed development will incorporate a fully separated foul and surface water drainage system. Foul drainage within the site is collected by a gravity system and will be piped to a new Type 1 Irish Water pumping station within the site boundary. Two constraints prevent connecting the gravity system to the foul sewer in the R120, the presence of a large number of buried ESB cables between the site and the R120 and once cover and falls are applied to the gravity system, the outfall from the site is extremely low.

The pumping station will be detailed in accordance with Irish Water details and will be equipped with both duty and standby pumps to ensure continuous operation and system resilience. In case of failure for an unforeseen reason, the system will include a 24 hour emergency holding tank.

A preliminary application to Irish water connection has been submitted for this development and we are currently awaiting a response.

The layout of the proposed foul drainage system is detailed on drawing No. 5823-MCE-00-00-DR-C-1200-P1.

5 WATERMAIN

Irish Water watermain records were requested at the commencement of the project along with as built records for the re-alignment of the R120. There are a number of discrepancies between the Irish Water records and the as built drawings. The Irish Water records show a 4inch cast iron pipe from 1954 on the site but this is not recorded on the as built drawings. We believe this pipe was removed during the re-alignment works. Both sources indicate the presence of a 400mm diameter ductile iron pipe running in the pavement of the R120 adjacent to our site.

A submission has been made to Irish Water for a 100mm diameter connection to this existing 400mm pipe. The new connection will terminate in a loop which will serve all four residential units on the site, the enterprise unit and the after-school club. Two fire hydrants will be provided on the loop so that no portion of a building will be more than 46m from a hydrant.

It is proposed that the mains connection to each of the day units will include a T so that mains water can be provided to each of the mobile units. Water storage will be provided each of the units (excluding the mobile homes).

The layout of the proposed watermain is detailed on drawing No. 5823-MCE-00-00-DR-C-1200-P1.

6 SURFACE WATER DRAINAGE

As previously noted, we requested and received as built drainage records for the surface water drainage system in the re-aligned R120. The site is located close to the head of a surface water line in the R120, however the invert of this line is approximately 1m below the existing ground level. This unfortunately makes it impossible for this development to connect to the existing surface water system and as a result all surface water must be dealt with through infiltration.

Site Investigations Ltd (SIL) were engaged to undertake a comprehensive site investigation, which included a soakaway test. The findings of the soakaway test are summarised as follows:

"The soakaway test passed the specification with a calculated f-value of 5.01×10^{-5} m/s. A granular gravel layer was identified at the test location, which is expected to exhibit significantly higher permeability compared to the surrounding clay-dominant soils. Any soakaway system should be targeted at this gravel stratum."

Based on the test results, the grey-black sandy, silty, clayey gravel layer with low cobble content was encountered between 0.9 metres and 1.4 metres below ground level (BGL). Accordingly, the base of any proposed soakaway or attenuation tank would need to be positioned at approximately 1.4 metres BGL to ensure effective infiltration. However, this depth is considered shallow and presents practical challenges for connecting drainage pipes via gravity, particularly when attempting to achieve an invert level of 1.4 metres BGL.

To overcome this constraint, the surface water runoff from various areas of the site will be collected through gullies and conveyed directly to soakaway strips proposed along both sides of the development. These strips have been designed to accommodate storm events with a return period of up to 1 in 100 years, including a 20% uplift for climate change, ensuring robust performance under extreme weather conditions.

Strip 1 is located along the right-hand side of the site and is designed to receive surface water runoff from the pavements and footpaths. This strip will facilitate infiltration from pedestrian circulation areas and associated hard surfaces.

Strip 2 is situated along the left-hand side of the site and is intended to accommodate runoff generated from the day units, the paved areas surrounding these units, the bungalow, and the shed. This strip has been sized to manage the cumulative surface water discharge from these residential and ancillary structures.

In addition to the soakaway strips, individual standalone soakaway pits will be provided to manage surface water runoff from paved areas and other low drained areas.

6.1 Surface Water Drainage Hierarchy

A surface water drainage discharge hierarchy for dealing with runoff considered the following:

Disposal method	Site specific comments
Re-use	There are limited opportunities for the re-use of surface water on this site in the form of rain water harvesting as there is only a single WC in each of the day units and as a result this has been discounted. Although of limited use, water butts should be included where practical.
Infiltration	An infiltration assessment has been carried out and it is practical to infiltrate surface water on the site, this should be used to its maximum extent.
Discharge to surface waters	Not applicable in this instance as there are no surface water courses in close proximity to the site.
Discharge to surface water sewer	Not applicable in this instance as it is not possible to connect to the existing surface water sewer due to its high invert.
Discharge to combined sewer	Not applicable.

6.2 SUDs system selection

The table below outlines the rational behind the selection of the proposed SUDs systems that are suitable for this site.

SUDs measure	Applicable to this site	Rational
Rainwater harvesting	No	Not suitable due to limited opportunity in day units, each unit has only one WC.
Green roofs	No	Pitched roofs proposed for development.
Blue roofs	No	Pitched roofs proposed for development.
Swales	No	Although the site has significant green areas, these will be used by horses who are likely to damage the swale profile over a short period of time resulting in the swales being ineffective and requiring significant maintenance time.

Soakaways	Yes	A BRE365 test has been carried out on the site and it is suitable for infiltration.
Infiltration trenches	Yes	A BRE365 test has been carried out on the site and it is suitable for infiltration.
Filter strips	No	Not practical due to presence of hoses on the site which will damage the filter strip. Pollutant levels on the access roads are likely to be low due to low levels of traffic.
Filter drains	No	No practical due to the possible presence of horses on the site, vegetative filter strip pre-treatment not possible.
Tree pits	Yes	Where trees have been located, tree pits will provide a suitable means of pre-treating runoff from road gullies prior to over flowing the to soakaways if necessary.
Rain gardens	No	Not practical due to the possible presence of hoses on the site and possible lack of maintenance access.
Rainwater butts	Yes	Of limited benefit but require limited maintenance.
Permeable pavement (grasscrete, block paving or porous asphalt)	Yes	Porous asphalt or similar is potentially suitable in the paved areas around the bungalow and day units. Maintenance may be an issue however the inclusion of a number of gullies linking to remote soakaways will prevent flooding if the pavement becomes blocked.
Detention basin	No	Not practical due to the possible presence of hoses on the site and possible lack of maintenance access.
Retention basin	No	Not practical due to the possible presence of hoses on the site and possible lack of maintenance access.
Ponds	No	Not practical due to the possible presence of hoses on the site and possible lack of maintenance access.
Wetlands	No	Not practical due to the possible presence of hoses on the site and possible lack of maintenance access.
Petrol interceptor	No	Due to levels identified in the ground investigation report of a suitable

		infiltration layer, a fully pipes drainage system has not been installed, i.e. individual gullies are connected directly to soakaways, a petrol interceptor is not practical. Permeable paving in the parking areas will be suitable to catch and treat small petrol or oil leaks.
Attenuation tank or structure	No	No connection available to main drainage system.

6.3 Soakaways

Soakaways are excavations that are filled with a void forming material that allows the temporary storage of water before it soaks into the ground by infiltration. Infiltration contributes to reducing runoff rates and volumes while supporting baseflow and ground water recharge processes.

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Inspection for sedimentation and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional maintenance	Inspection for sedimentation and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	As required, based on inspections
Remedial actions	Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failure occurs	As required
	Replacement of clogged geotextile (will require reconstruction of soakaway)	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year and then annually
	Check soakaway to ensure emptying is occurring	Annually

6.4 Infiltration Trenches

Infiltration trenches are simple linear soakaways. The advantage of trenches over cuboid soakaways is that they can often be kept shallower and in variable soils can help distribute the infiltration area so that the impact of less permeable areas of soil is less pronounced.

Maintenance for infiltration trenches is the same as detailed for a soakaway.

6.5 Tree Pits

Tree pits can be planted within a range of infiltration SUDs components to improve their performance or can be used as standalone features. They collect and attenuate runoff by providing additional storage within the underlying structure. The soils can filter out pollutants from runoff directly.

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Remove Litter and debris	Monthly (or as required)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets and outlets	Inspect monthly
Occasional maintenance	Check tree health and manage tree appropriately	Annually
	Remove site build up from inlets and surface and replace much as necessary	Annually, or as required
	Water	As required (in periods of drought)
Monitoring	Inspect silt accumulation rates and establish appropriate removal frequencies	Half yearly

6.6 Permeable Pavements

Permeable pavements are formed of an impermeable material with joints which allow surface water to infiltrate through the surface to the sub-base. They are an efficient means of managing surface water runoff close to its source, intercepting runoff, reducing the volume of runoff and providing a treatment medium. Treatment processes that occur within the surface structure, the subsurface matrix and the geotextile layers include filtration, absorption, biodegradation and sedimentation.

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Brushing and Vacuuming (Standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations-pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As Required
	Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying.	As Required-once per year on less frequently used pavements
Remedial actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of level of the paving.	As Required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging.
Monitoring	Initial Inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and /or weed growth-if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

7 Road Layout

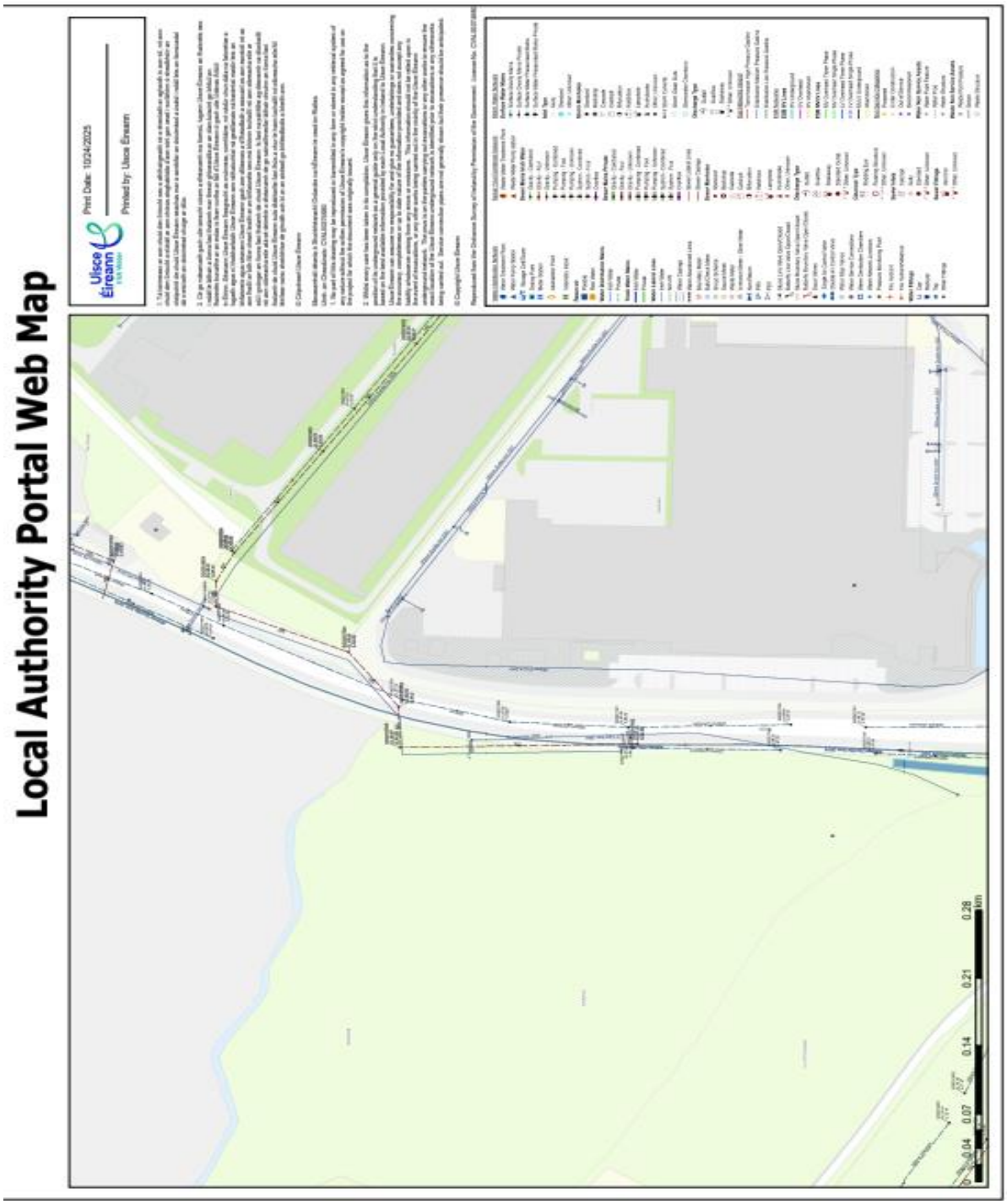
A short internal road has been provided to the development. The carraway width will be 5.5m which is in line with the Recommendation for Site Development Works for Housing Areas. A pedestrian path, 2m wide will be provided from the site boundary all the way into the development. Dropped kerbs have been provided at crossing points.

The existing site entrance and dropped kerb at the R120 will be used for this development. Site lines have been checked and are in accordance with the requirements of the TII document Geometric Design of Junctions. The sight lines drawing demonstrates there is a 90m visibility distance available in both directions.

Two car parking spaces have been provided within the cartilage of each residential unit.

Typical road and pavement details have been provided to demonstrate how compliance with relevant standards can be achieved.

8 APPENDIX A-Irish water Map
(Existing Drainage and Watermain Layouts)



9 APPENDIX-B – STORM WATER CALCULATIONS

Total Site Area = 1.41 Ha
Area draining into soakway trench = 3560m2
Total area draining into soakway pit and Trench = 4492m2

Met Eiran Rainfall Data

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 300605, Northing: 231572,

DURATION	Interval (months, years)	2	3	4	5	10	20	30	50	75	100	150	200	250	500
		Mean													
5 mins	2.3, 3.4,	4.1,	5.0,	5.6,	6.1,	7.8,	9.8,	11.1,	13.0,	14.7,	16.0,	18.1,	19.7,	21.1,	N/A ,
10 mins	3.3, 4.8,	5.6,	6.9,	7.8,	8.5,	10.8,	13.6,	15.4,	18.1,	20.4,	22.3,	25.2,	27.4,	29.3,	N/A ,
15 mins	3.8, 5.6,	6.6,	8.2,	9.2,	10.1,	12.8,	16.0,	18.2,	21.2,	24.0,	26.2,	29.6,	32.3,	34.5,	N/A ,
30 mins	5.0, 7.4,	8.6,	10.5,	11.8,	12.8,	16.4,	20.3,	23.0,	26.8,	30.2,	32.8,	37.1,	40.4,	43.1,	N/A ,
1 hours	6.6, 9.6,	11.2,	13.6,	15.3,	16.6,	20.9,	25.8,	29.1,	33.8,	38.1,	41.3,	46.5,	50.4,	53.8,	N/A ,
2 hours	8.7, 12.5,	14.5,	17.6,	19.7,	21.3,	26.7,	32.8,	36.9,	42.7,	47.9,	51.9,	58.2,	63.1,	67.1,	N/A ,
3 hours	10.2, 14.5,	16.8,	20.4,	22.8,	24.7,	30.8,	37.8,	42.4,	49.0,	54.8,	59.4,	66.4,	71.9,	76.4,	N/A ,
4 hours	11.4, 16.2,	18.8,	22.7,	25.3,	27.4,	34.1,	41.7,	46.8,	53.6,	60.2,	65.2,	72.8,	78.8,	83.8,	N/A ,
6 hours	13.4, 18.9,	21.8,	26.3,	29.3,	31.7,	39.3,	48.0,	53.7,	61.8,	69.0,	74.6,	83.2,	89.8,	95.4,	N/A ,
9 hours	15.7, 22.1,	25.5,	30.6,	34.0,	36.7,	45.4,	55.2,	61.7,	70.8,	78.9,	85.2,	94.6,	102.4,	108.6,	N/A ,
12 hours	17.6, 24.6,	28.4,	34.0,	37.7,	40.7,	50.2,	61.0,	68.1,	78.0,	86.8,	93.7,	104.2,	112.3,	119.0,	N/A ,
18 hours	20.7, 28.7,	33.0,	39.4,	43.8,	47.1,	58.0,	70.2,	78.2,	89.4,	99.4,	107.0,	118.8,	128.0,	135.5,	N/A ,
24 hours	23.1, 32.1,	36.8,	43.8,	48.6,	52.3,	64.1,	77.5,	86.2,	98.5,	109.3,	117.7,	130.5,	140.4,	148.6,	177.1,
2 days	29.1, 39.1,	44.4,	52.1,	57.2,	61.4,	73.7,	87.6,	96.5,	109.0,	119.8,	128.2,	140.8,	150.6,	158.6,	186.2,
3 days	33.8, 44.8,	50.5,	58.7,	64.1,	68.3,	81.5,	95.9,	105.2,	117.6,	129.0,	137.4,	150.2,	160.0,	168.0,	195.5,
4 days	38.1, 49.0,	55.6,	64.5,	70.2,	74.5,	88.3,	103.2,	112.7,	125.8,	137.1,	145.7,	158.6,	168.5,	176.6,	204.2,
6 days	45.4, 58.5,	65.1,	74.5,	80.7,	85.4,	100.1,	115.8,	125.9,	139.5,	151.2,	160.1,	173.4,	183.5,	191.8,	219.8,
8 days	52.0, 66.1,	73.2,	83.3,	89.9,	94.8,	110.3,	126.9,	137.3,	151.4,	163.5,	173.2,	186.4,	196.7,	205.1,	233.6,
10 days	58.0, 73.1,	80.6,	91.3,	98.2,	103.4,	119.6,	136.8,	147.6,	162.2,	174.7,	184.0,	198.1,	208.6,	217.2,	246.1,
12 days	63.6, 79.6,	87.5,	98.7,	105.9,	111.3,	128.2,	146.0,	157.1,	172.1,	184.9,	194.5,	208.8,	219.6,	228.4,	257.7,
16 days	74.1, 91.6,	100.2,	112.3,	120.1,	125.8,	143.8,	162.7,	174.4,	190.2,	203.6,	213.5,	228.4,	239.6,	248.6,	278.7,
20 days	83.8, 102.6,	111.8,	124.7,	133.0,	139.4,	158.4,	177.8,	190.1,	206.5,	220.4,	230.7,	246.1,	257.6,	266.8,	297.7,
25 days	95.2, 115.5,	125.4,	139.2,	147.8,	154.5,	174.5,	195.3,	208.1,	225.2,	239.7,	250.4,	266.3,	278.1,	287.7,	319.4,

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

M5-60 = 16.6
M5-2 Day = 61.1

Ratio ,R = 16.6/61.1 =0.271

SOAKAWAY RESULT

SOAKAWAY TEST

Project Reference:	6560
Contract name:	Residential Development
Location:	Adamstown Avenue, 12th Lock Road, Co. Dublin
Test No:	SA01
Date:	25/09/2025

Ground Conditions

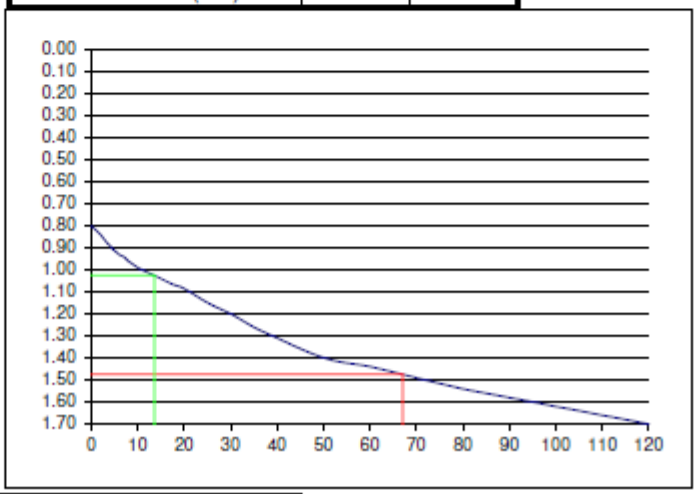
From	To	
0.00	0.20	TOPSOIL.
0.20	0.60	Firm brown slightly sandy slightly gravelly silty CLAY with low cobble content.
0.60	0.90	Firm light brown slightly sandy slightly gravelly silty CLAY.
0.90	1.40	Grey black sandy silty clayey GRAVEL with low cobble content.
1.40	1.70	Stiff brown grey slightly sandy slightly gravelly silty CLAY.

Remarks:

Obstruction at 1.70mbgl - pit terminated and test completed.

Elapsed Time (mins)	Fall of Water (m)
0	0.80
0.5	0.81
1	0.82
1.5	0.83
2	0.84
2.5	0.86
3	0.87
3.5	0.88
4	0.89
4.5	0.91
5	0.92
6	0.93
7	0.94
8	0.96
9	0.98
10	0.99
12	1.01
14	1.03
16	1.05
18	1.07
20	1.09
25	1.15
30	1.20
35	1.26
40	1.31
50	1.40
60	1.44
70	1.49
80	1.54
90	1.58
100	1.62
110	1.66
120	1.70

Pit Dimensions (m)		
Length (m)	3.00	m
Width (m)	0.60	m
Depth	1.70	m
Water		
Start Depth of Water	0.80	m
Depth of Water	0.90	m
75% Full	1.03	m
25% Full	1.48	m
75%-25%	0.45	m
Volume of water (75%-25%)	**0.81**	m3
Area of Drainage	**12.24**	m2
Area of Drainage (75%-25%)	**5.04**	m2
Time		
75% Full	13.5	min
25% Full	67	min
Time 75% to 25%	**53.5**	min
Time 75% to 25% (sec)	**3210**	sec



f = **0.00300** m/min or **5.01E-05** m/s

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	20	Minimum Velocity (m/s)	1.00
FSR Region	Scotland and Ireland	Connection Type	Level Soffits
M5-60 (mm)	16.600	Minimum Backdrop Height (m)	0.200
Ratio-R	0.271	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	2.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Soakaway 1	0.202	2.00	67.310	-0.093	82.335	1.400
Soakaway 2	0.154	2.00	67.300	50.849	82.945	1.390

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
Rainfall Events	Singular	Skip Steady State	x
FSR Region	Scotland and Ireland	Drain Down Time (mins)	240
M5-60 (mm)	16.600	Additional Storage (m³/ha)	20.0
Ratio-R	0.271	Starting Level (m)	
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	20	0	0
100	20	0	0

Node Soakaway 1 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.18000	Invert Level (m)	65.910	Depth (m)	1.000
Side Inf Coefficient (m/hr)	0.18000	Time to half empty (mins)	66	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	2.000	Number Required	1
Porosity	0.30	Pit Length (m)	78.000		

Node Soakaway 2 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.18000	Invert Level (m)	65.910	Depth (m)	1.000
Side Inf Coefficient (m/hr)	0.18000	Time to half empty (mins)	60	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	1.500	Number Required	1
Porosity	0.30	Pit Length (m)	80.000		

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	Soakaway 1	44	66.102	0.192	13.6	9.5192	0.0000	OK
60 minute winter	Soakaway 2	43	66.094	0.184	10.4	7.0441	0.0000	OK

Link Event (Outflow)	US Node	Link	Outflow (l/s)
60 minute winter	Soakaway 1	Infiltration	4.7
60 minute winter	Soakaway 2	Infiltration	3.8

Results for 30 year +20% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	Soakaway 1	88	66.611	0.701	22.8	34.8083	0.0000	OK
120 minute winter	Soakaway 2	86	66.573	0.663	17.4	25.3192	0.0000	OK

Link Event (Outflow)	US Node	Link	Outflow (l/s)
120 minute winter	Soakaway 1	Infiltration	6.7
120 minute winter	Soakaway 2	Infiltration	5.7

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	Soakaway 1	90	66.885	0.975	29.3	48.4661	0.0000	OK
120 minute winter	Soakaway 2	88	66.832	0.922	22.4	35.2410	0.0000	OK

Link Event (Outflow)	US Node	Link	Outflow (l/s)
120 minute winter	Soakaway 1	Infiltration	7.8
120 minute winter	Soakaway 2	Infiltration	6.8

10 Appendix C- Foul Wastewater calculations

Residential Units- 4 Dwellings

Design discharge based on 150 l/person/day with average occupancy of 3.2 persons per dwelling and 10% allowance for infiltration.

Dry weather flow:
4*3.2*150*1.1 = 2112 l/day (0.024 l/s)

Waste water volume:
2112 * 6 = 12672 l/day (0.146 l/s)

A TYPE 1 pumping station will be required as it is not possible to fall by gravity to reach existing manhole. It should be noted that there are a number of buried ESB cable in the path of foul drainage.

24 hr Storage Tank for Foul water Calculation

Residential Units- 4 Dwellings

Design discharge based on 150 l/person/day with average occupancy of 3.2 persons per dwelling and 10% allowance for infiltration.

Storage Required for 24 Hours
4*3.2*150*1.1 = 2112 l

Provide a storage tank with a capacity of 2200 litres.

11 APPENDIX D-Water Demand

Residential dwelling-4 Houses

Design consumption based on 150 l/person/day with average occupancy of 3.2 persons per dwelling.

Average domestic daily demand:
4*3.2*150 = 1920 l/day (0.022 l/s)

Average peak week demand:
1920 * 1.25 = 2400 l/day (0.0277 l/s)

Peak demand:
2400 * 5 = 12000 l/day (0.138 l/s)

ON SITE STORAGE CALCULATION

Residential Units = 4 Dwellings +1 After School club

All units are up to 3 Bed without power shower,
Storage Required = 227 litres per unit