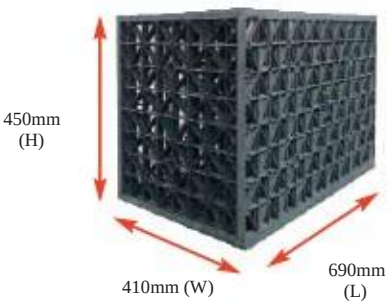
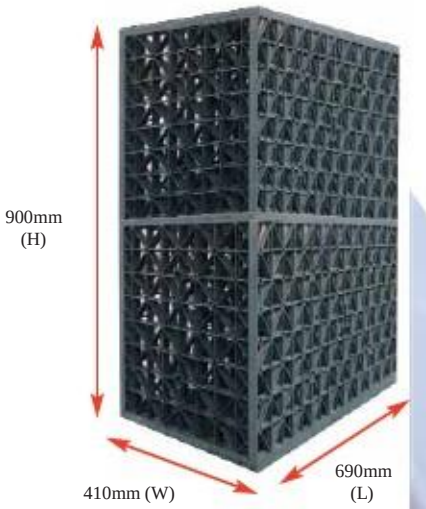
Protecting the Environment

Stormwater Storage Tank

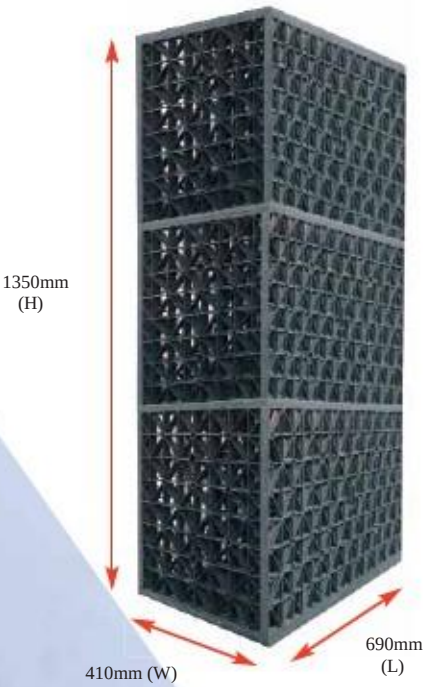
SUITABLE FOR USE UNDER:
- Roadways
- Car parks
- Green areas



Single
8 Modules/m3
Flowrate - 2300 I/min



Double
4 Modules/m3
Flowrate - 4600 I/min



Triple
2.6 Modules/m3
Flowrate - 6900 I/min

Notes:
Blocks must be positioned in the correct orientation.
See opposite above

SPECIFICATION (SINGLE)

Weight (maximum)	9.17kg
Crush Strength (up to)	400kN/m2
Lateral Strength	80kN/m2
Minimum Cover (green areas)	500mm
(trafficked areas)	650mm
Maximum Cover	3m
Material	Polypropylene
Void Ratio (Internal)	>95%

Design Requirements:

Tank storage capacity (m3)
Depth restrictions
Location (Road, Car Park, Green Area)
Design constraints on site

A set of loading calculations specific to the site requirement will be done by ESS and submitted on all tanks

DESIGN CRITERIA

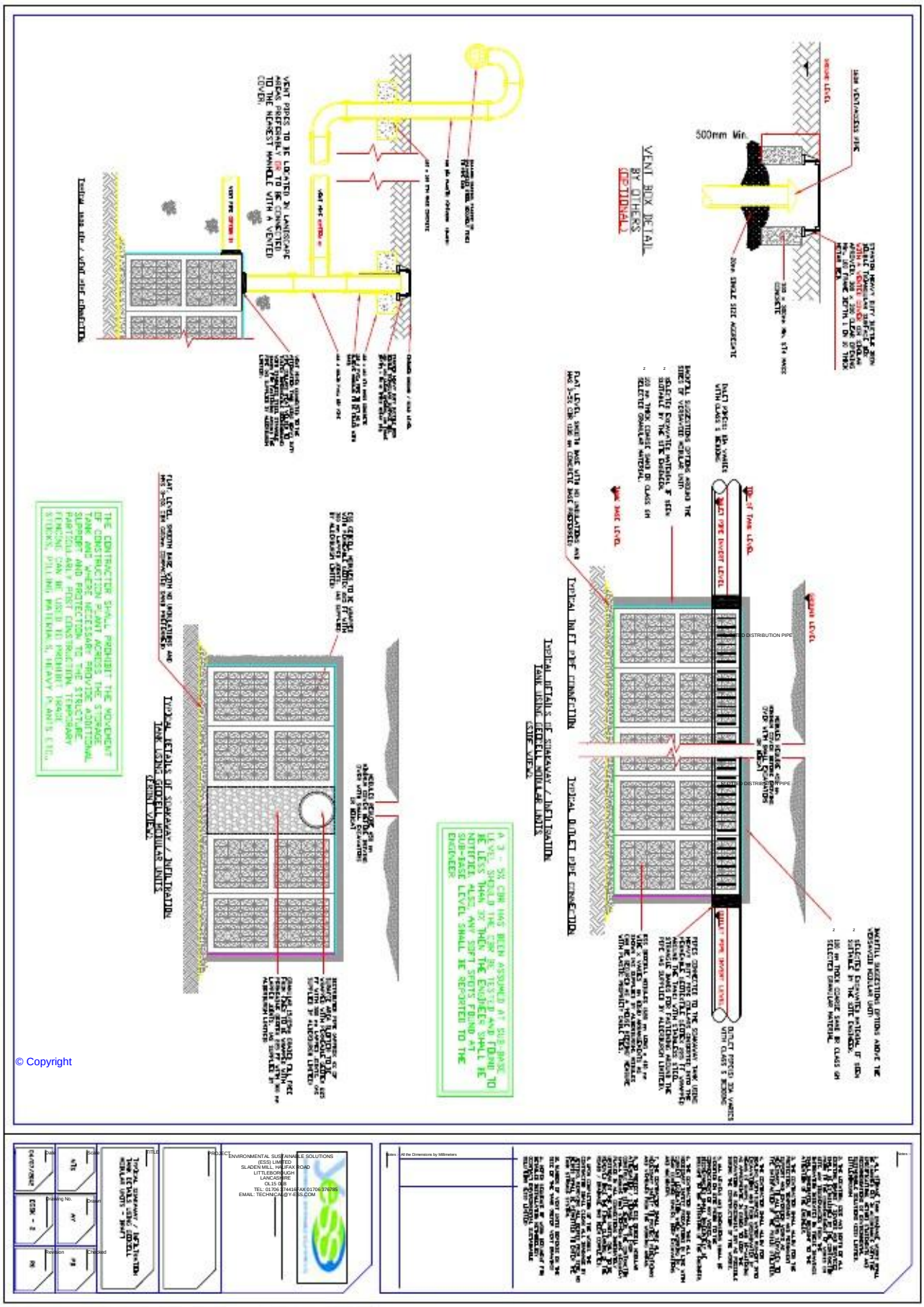
The attenuation tank is constructed using matrix module blocks. These blocks can take passing loads of up to 40 tonnes/m2. The void ratio of each block is 95%. The blocks are made from polypropylene.

The tank is sealed with a layer of Tuflex membrane, which is fully welded together to form a 100% seal. All pipe penetrations are fully sealed to the membrane. The Tuflex membrane is protected by a layer of heavy duty protection geotextile, to prevent damage from construction or backfilling. A number of air extraction vents/flushing points are placed in the roof of the tank.

Note:
It is vital that the underground tanks are fully sealed, otherwise ground water and silt particles may enter the void space and use up capacity. Preferably, the base of the tank should be 500mm above the ground water level. Otherwise ground water relief measures should be implemented.

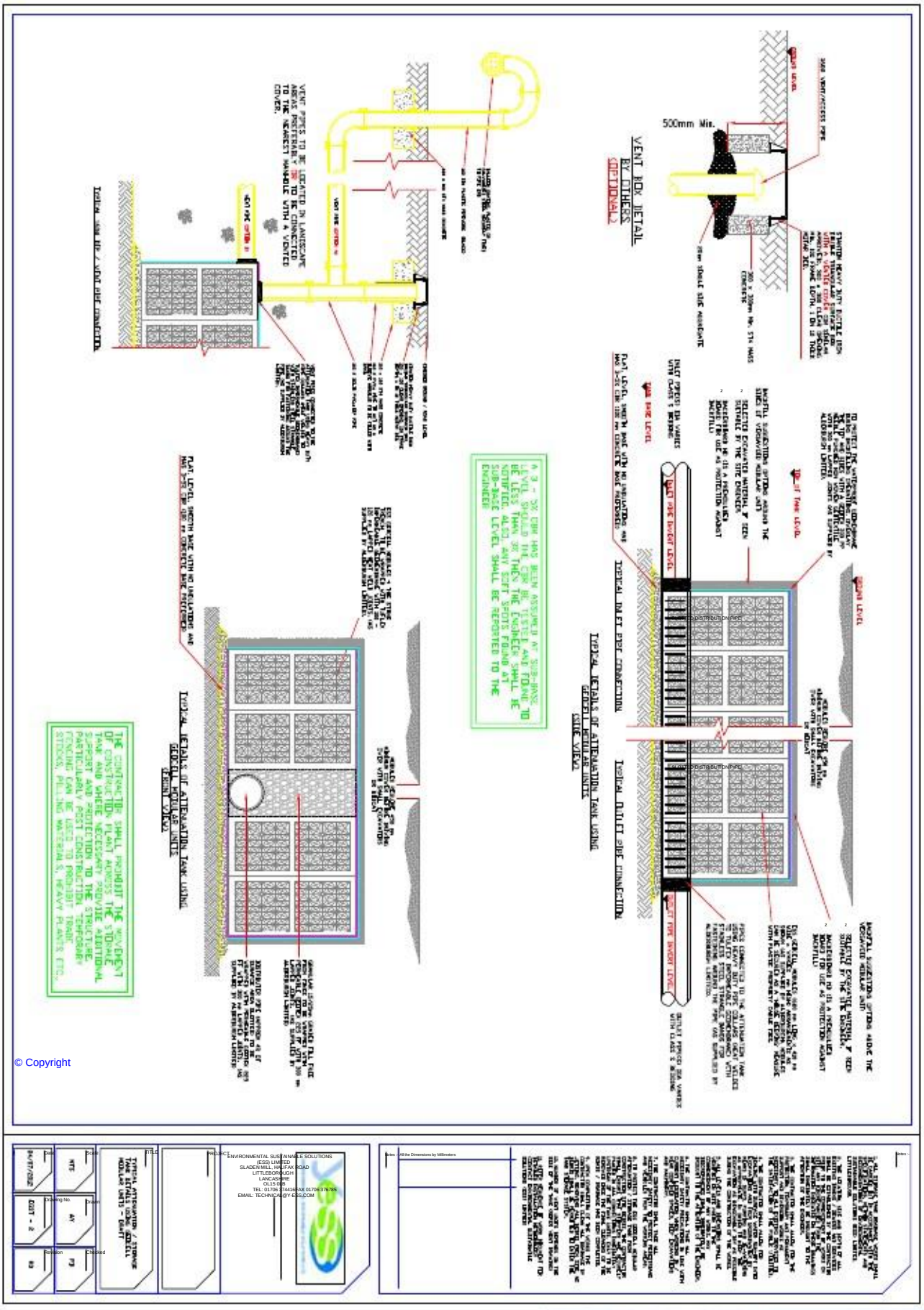
Infiltration System

Typical arrangement using ESS Ecological Tank System for water quality



Retention System

Typical on site collection and recycling arrangement using ESS Ecological Tank System



Infiltration Swales & Underground Channels

Please refer to separate data sheets for the following products

Modular VersaVoid System



Benefits

G **Quick**
Reduce site access delays

G **Lightweight**
No cranes required

G **Strong**
Designed for maximum anticipated loads

G **Maintenance Free Tank**
All debris and sediment is pre-filtered

G **Determinate Volume**
One cubic metre of Tank modules contain 950 litres of water

G **Cost Effective**
Reduces excavation and disposal by up to 5 x compared with conventional soak wells

G **High Infiltration**
98% void surface area

G **Totally Modular**
For greatest flexibility designed to cope. Units start at 300mm deep for shallow inverts to 3050mm+ deep in 250mm increments.

G **Designed by Engineers for Engineers** – to specify with confidence.

G **Designing out Problems**
with such systems (access, maintenance, loading etc.)

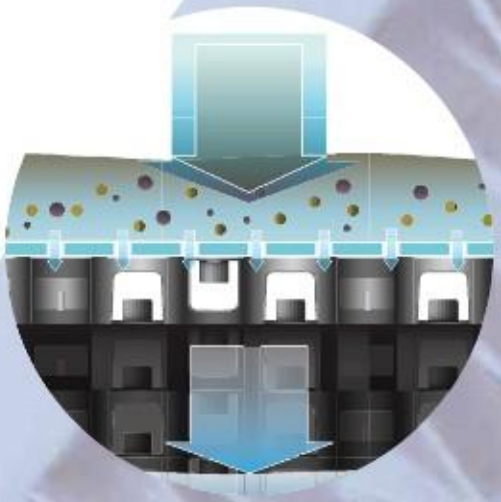
G **Designing in Answers**
to design requirements.

G **Total 3D Access**
For total maintenance with total confidence.

G **Structurally Designed**
with built in safety factor to carry all loads with complete confidence.
16 clear vertical access chambers per m2.

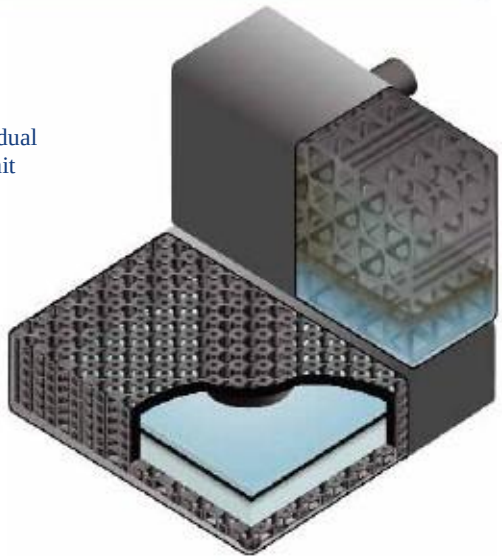
G **Total Void Creation**
With the greatest strength from any modular systems.

Oil Filtration

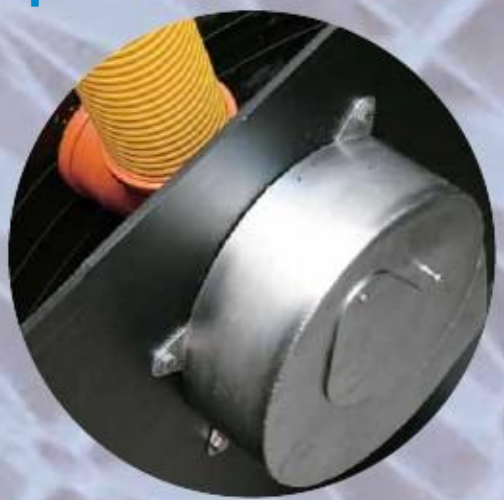


Benefits

G Source control designed to handle catastrophic spillages
G Capture, filter and break down residual hydrocarbons - all in one compact unit
G Self-maintaining ecosystems decompose hydrocarbon compounds and clean filters
G Load bearing, modular components provide up to 200t/m² loading capacity



Aquabrake



Benefits

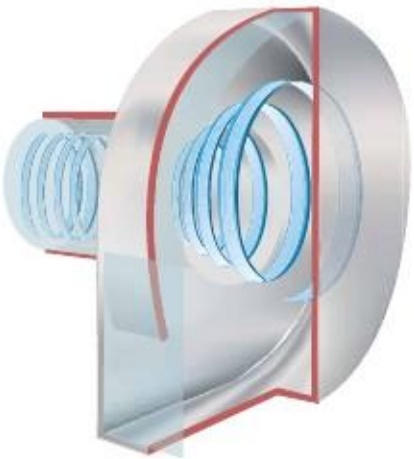
G Cost Savings
Can reduce upstream storage requirements by up to 30%.

G Durability
Corrosion resistant stainless steel.

G No energy requirements
Self-activating solution with no moving parts.

G Clog Resistant
AquaBrake design prevents blockages likely to occur in traditional orifices.

G Flexible Design
Several options for attachment available.



The ESS CombiSwale

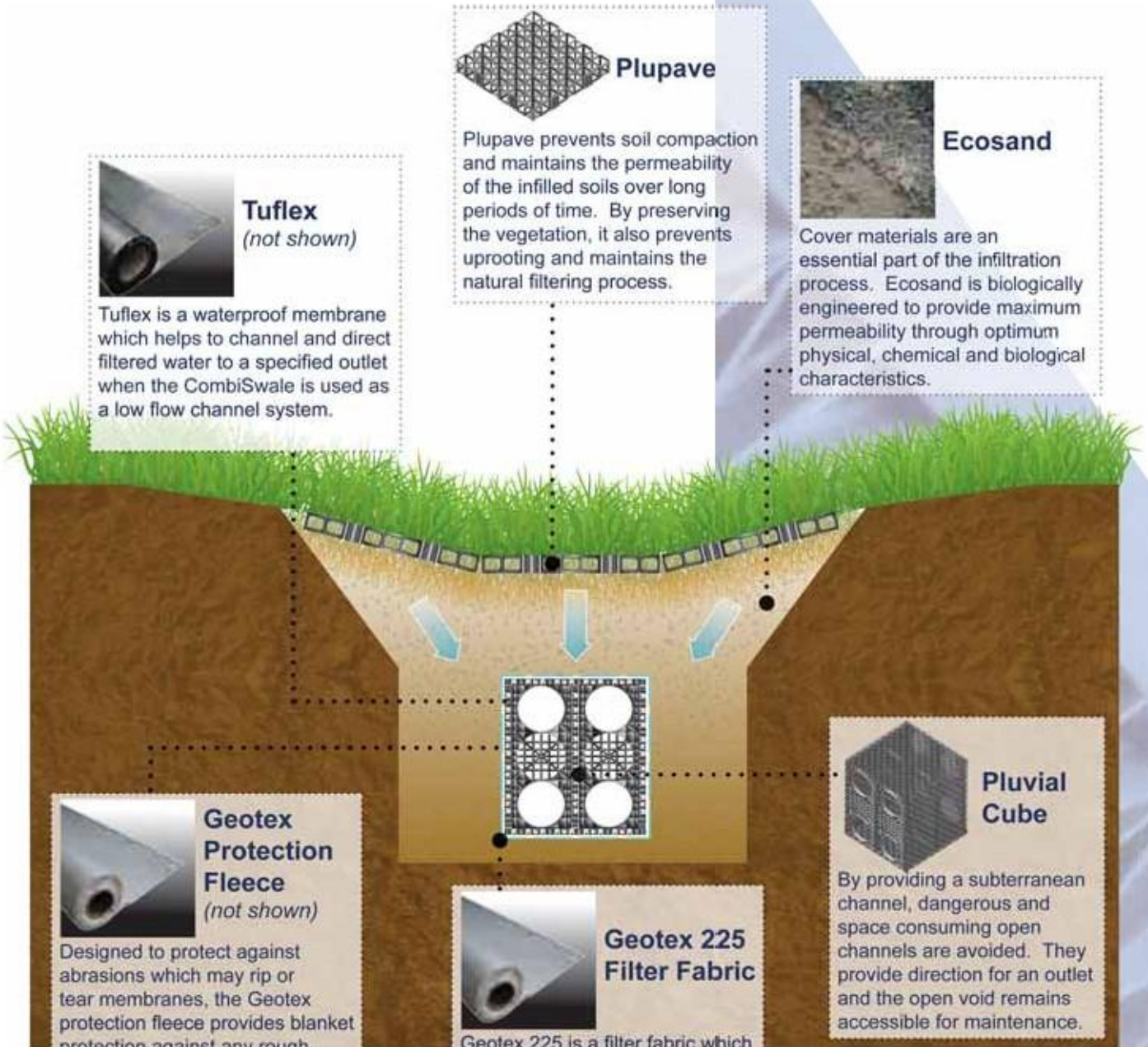
Please refer to separate data sheets for the following products

Water Sensitive Urban Channels

Surface and Sub-Surface Water Treatment

By combining surface and sub-surface channeling and treatment solutions, ESS has created the ideal in bioswale water management.

The CombiSwale system includes the addition of permeable sub-surface waterways that further restore water quality and recharge the natural environment. The sub-surface ESS channel system provides a unique way of working with nature to solve the enormous problems currently associated with open concrete channels and swales.



All products are manufactured to the highest quality, being subject to rigid quality control. However, the company cannot control conditions of application and use of its products, thus any warranty, written or implied, is given in good faith for materials only. ESS Ltd will not accept any responsibility for damage or injury arising from storage handling, misapplication or misuse of its products All transactions are subject to our standard condition of sale, copies of which are available on request.





Appendix J SUDS OPERATION AND MAINTENANCE MANUAL

Project Details

- **Project Title:** Sustainable Drainage Systems (SuDS) - Operation and Maintenance Requirements
- **Project Location:** Blackglen Road LRD, County Dublin
- **Date:** 16th December 2024

Introduction

This document outlines the operation and maintenance requirements for the Sustainable Drainage Systems (SuDS) designed as part of the development at Blackglen Road, County Dublin. The report is prepared for submission as part of the planning requirements.

For precise locations and dimensions of the SuDS features, refer to **Drawing C-0501** and **Drawing C-0502**.

The SuDS features incorporated have been designed to align with best practice principles and guidance outlined in the CIRIA SuDS Manual (C753).

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Class 1 Bypass Fuel Separator		
Regular Maintenance	Remove Litter and debris, and inspect for sediment, oil and grease accumulation	Six-monthly
	Check coalescing material and clean or replace as needed	Six-monthly
	Check function of automatic warning devices	Six-monthly
Occasional Maintenance	Remove accumulated oil, grease and sediment	Based on inspections or after significant spills
Remedial maintenance	Replace malfunctioning parts or repair damaged structures	As required
	General integrity inspection, including watertightness	Every 5 Years
Green Roof / Blue Roof		
Regular Maintenance	Inspect all components, including soil substrate, vegetation, drains, membranes and roof structure for proper operation, integrity of waterproofing and structural stability	Annually and after severe storms
	Inspect soil substrate for evidence of erosion channels and identify any sediment sources	Annually and after severe storms
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system	Annually and after severe storms
	Inspect underside of roof for evidence of leakage	Annually and after severe storms
Occasional Maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Six monthly, or as required
	During establishment (i.e. first year), replace dead plants as required	Monthly (Typical)
	Post establishment, replace dead plants as required	Six monthly, or as required

	Remove fallen leaves and debris from deciduous plant foliage	Annually (in Autumn)
	Remove nuisance and invasive vegetation, including weeds	Six monthly, or as required
	Mow grasses, prune shrubs and manage other planting as required - clippings should be removed and not allowed accumulate	Six monthly, or as required
Remedial maintenance	If erosion channels are evident, these should be stabilised with extra soil substrate similar to original material and sources of erosion damage identified and controlled	As required
	If drain inlet has settled, cracked or moved; investigate and repair as appropriate	As required
Tree Pits		
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	Monthly
Occasional Maintenance	Check tree health and replace mulch or silt as necessary	Annually
	Water during dry periods	As required
Remedial maintenance	Address silt accumulation and establish appropriate removal frequencies	As needed
	Repair any erosion around inlets	As needed
Bio Retention Areas		
Regular Maintenance	Remove Litter and Debris	Monthly
	Inspect inlets, outlets, and pond edges for blockages or damage	Monthly
	Cut grass in surrounding areas	Monthly during growing season
Occasional Maintenance	Inspect sediment accumulation and remove if necessary	Half-Yearly
	Manage plant health, removing invasive or nuisance vegetation	As required
Remedial Maintenance	Remove accumulated silt and restore design levels	Every 5 years or as needed
	Repair erosion along pond edges	as required
Surface Water Soakaways		
Regular Maintenance	Remove debris and inspect for blockages in inlets and outlets	Quarterly
Occasional Maintenance	Inspect soakaway performance during heavy rainfall events	Annually
Remedial maintenance	Excavate and replace material in the case of failure	As required
Grasscrete Paving		
Regular Maintenance	Remove debris and maintain grass health (cut as needed)	Monthly during growing season
	Inspect for surface damage	Quarterly

Occasional Maintenance	Reseed grass areas or patch repairs to paving	Annually
Remedial maintenance	Replace damaged paving blocks and stabilise subsurface if erosion occurs	As required
Pervious Paving		
Regular Maintenance	Sweep surface to remove sediment and debris	Quarterly
	Inspect for water ponding or blockages	Annually
Occasional Maintenance	Power wash surface to maintain permeability	Every 1-2 Years
Remedial maintenance	Replace paving units or restore aggregate layers if clogging persists	As required

Appendix K FLOW CONTROL TECHNICAL SPECIFICATIONS

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.700	7.100
Flush-Flo™	0.500	7.042
Kick-Flo®	1.022	5.595
Mean Flow		6.198

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: 20 kg

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

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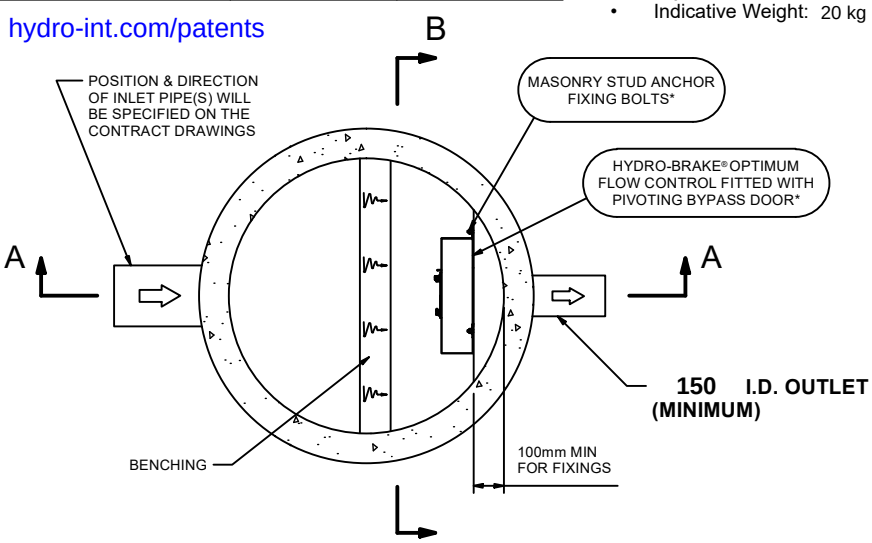

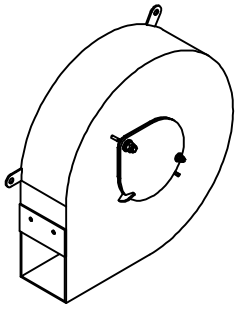

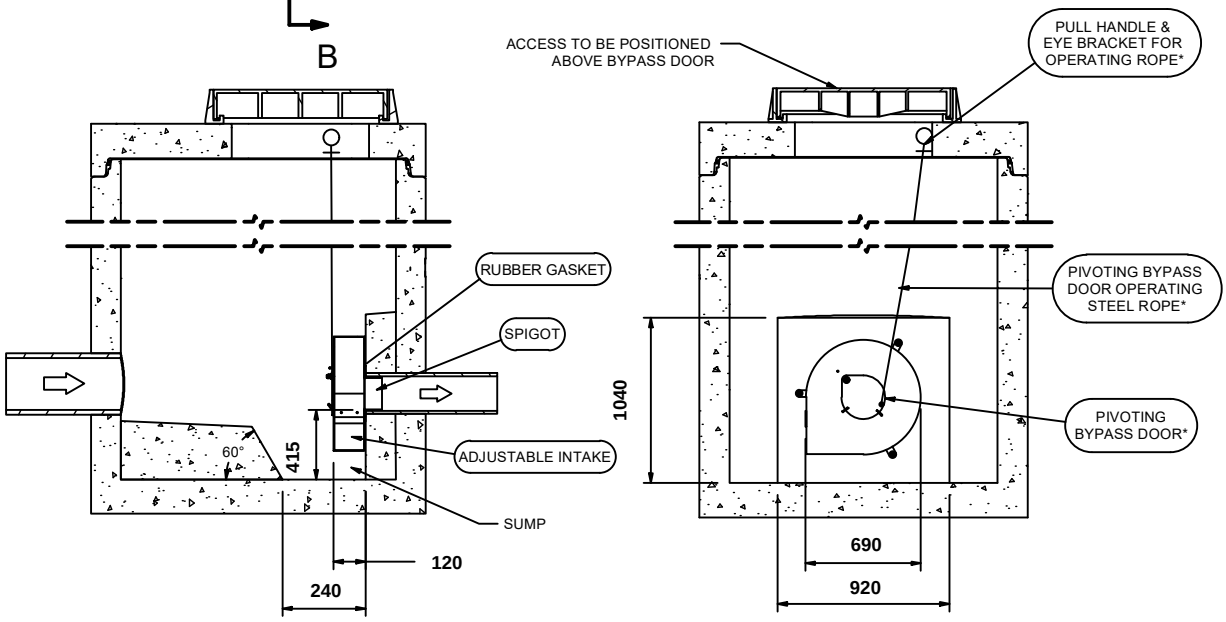

SECTION A-A

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-0114-7100-1700-7100 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	13/12/2024 11:21
SITE	
DESIGNER	Ryan MacNeaney
REF	

SHE-0114-7100-1700-7100
Hydro-Brake® Optimum

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ryan.macneaney@ocsc.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	1.700	7.100	1.700	6.395	1.700	7.693
Flush-Flo™	0.500	7.042	0.665	5.646	0.453	8.137
Kick-Flo®	1.022	5.595	1.018	5.027	1.017	6.063
Mean Flow		6.198		5.252		6.922

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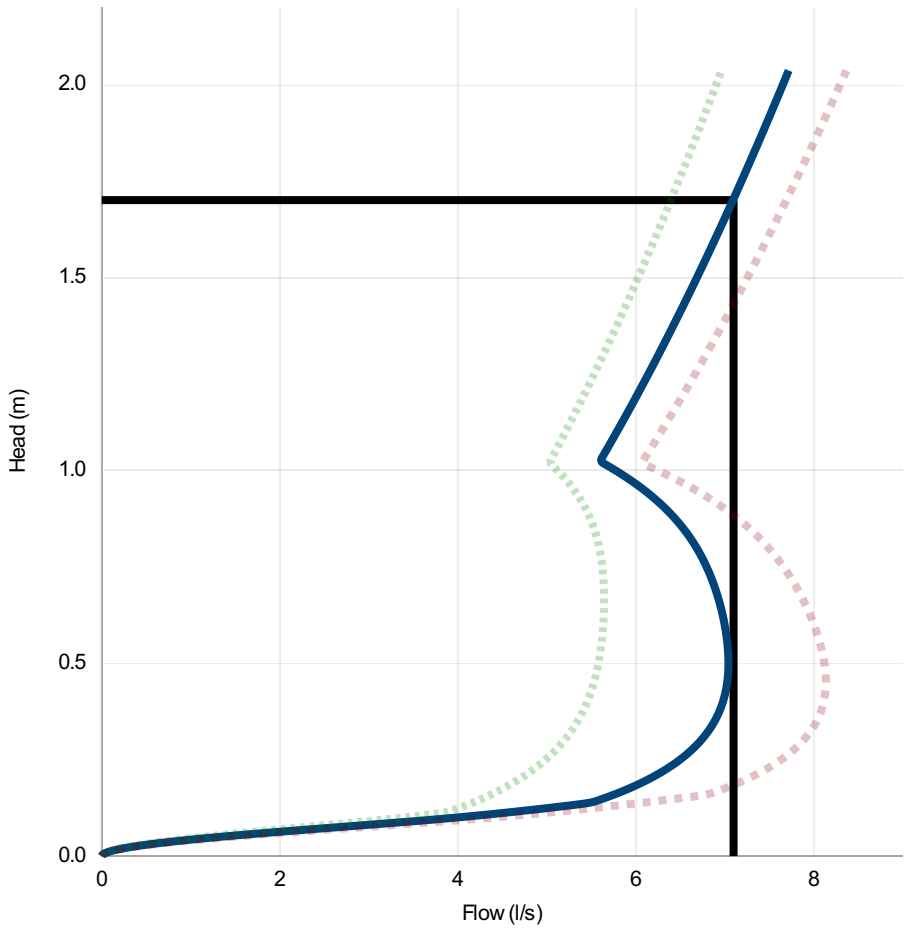

Head (m)	Flow (l/s)
0.000	0.000
0.059	1.761
0.117	4.729
0.176	5.931
0.234	6.405
0.293	6.707
0.352	6.892
0.410	6.994
0.469	7.037
0.528	7.039
0.586	7.010
0.645	6.956
0.703	6.878
0.762	6.771
0.821	6.625
0.879	6.424
0.938	6.154
0.997	5.794
1.055	5.679
1.114	5.823
1.172	5.964
1.231	6.101
1.290	6.234
1.348	6.365
1.407	6.493
1.466	6.618
1.524	6.740
1.583	6.860
1.641	6.978
1.700	7.093

DESIGN ADVICE

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! **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	13/12/2024 11:21
Site	
DESIGNER	Ryan MacNeaney
Ref	

SHE-0114-7100-1700-7100

Hydro-Brake® Optimum

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Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.385	1.300
Flush-Flo™	0.218	0.948
Kick-Flo®	0.442	0.783
Mean Flow		0.988

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Indicative Weight: 0 kg

BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE 08/4596

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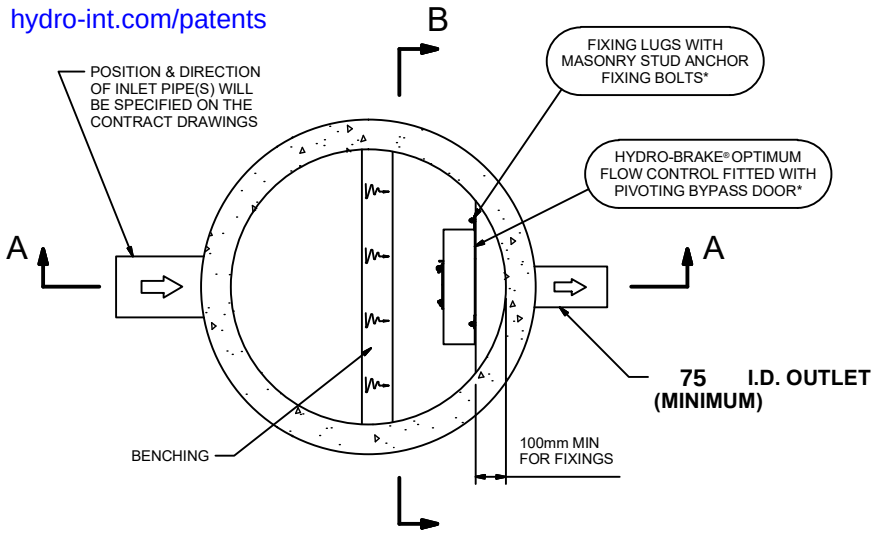
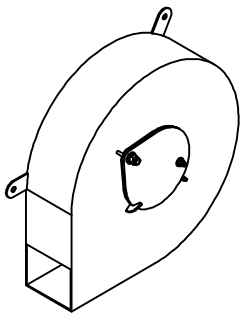
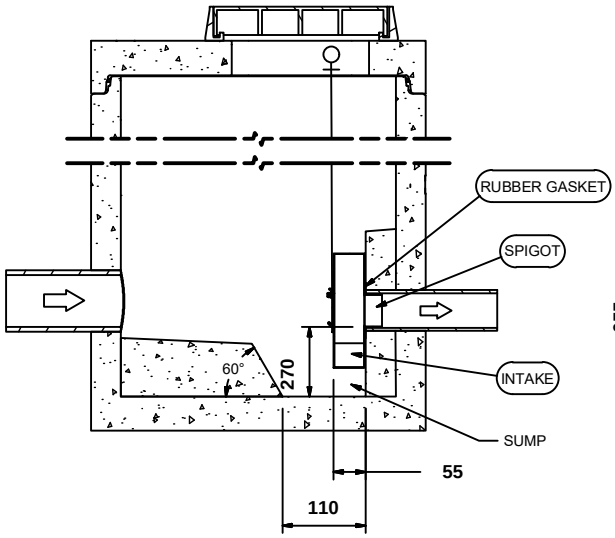
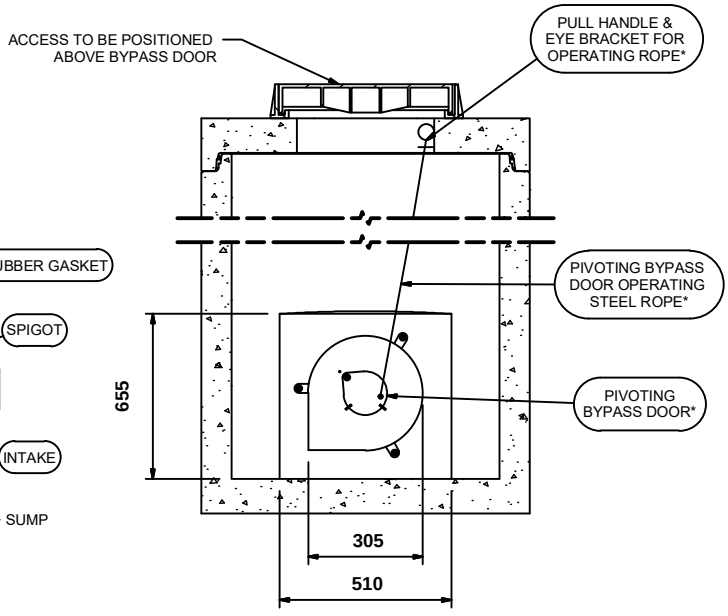






SECTION A-A



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DESIGN ADVICE

The head/flow characteristics of this SHE-0050-1300-1385-1300 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.

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A CRH COMPANY

DATE	21/11/2024 09:37
SITE	Blackglen Road LRD
DESIGNER	Kyle Gray
REF	Z040

SHE-0050-1300-1385-1300
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kyle.gray@ocsc.ie

Technical Specification		
Control Point	Head (m)	Flow (l/s)
Primary Design	1.385	1.300
Flush-Flo™	0.218	0.948
Kick-Flo®	0.442	0.783
Mean Flow		0.988

BBA APPROVAL INSPECTION TESTING CERTIFICATION
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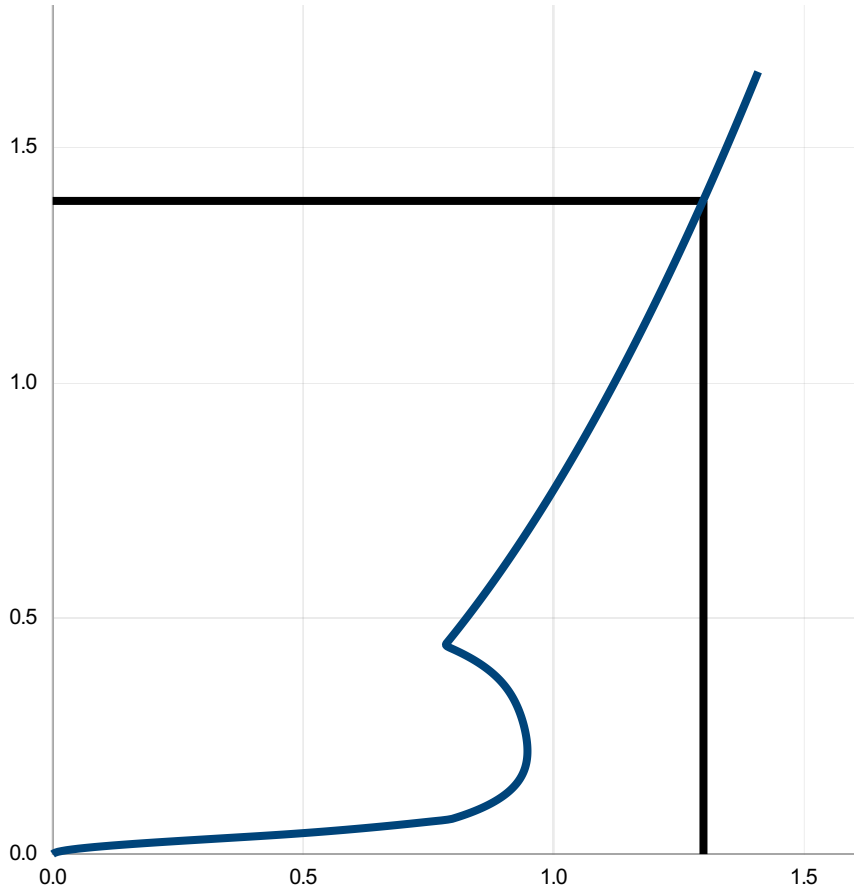

Head (m)	Flow (l/s)
0.000	0.000
0.048	0.541
0.096	0.852
0.143	0.921
0.191	0.946
0.239	0.947
0.287	0.937
0.334	0.918
0.382	0.880
0.430	0.809
0.478	0.810
0.525	0.844
0.573	0.877
0.621	0.909
0.669	0.939
0.716	0.968
0.764	0.996
0.812	1.023
0.860	1.049
0.907	1.075
0.955	1.100
1.003	1.124
1.051	1.148
1.098	1.171
1.146	1.193
1.194	1.215
1.242	1.237
1.289	1.258
1.337	1.279
1.385	1.299

DESIGN ADVICE

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DATE	21/11/2024 09:37
Site	Blackglen Road LRD
DESIGNER	Kyle Gray
Ref	Z040

SHE-0050-1300-1385-1300

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Appendix L STORM WATER INTERCEPTION OF RUNOFF CALCULATIONS

Storm Water Interception Calculations

(Volumes Required for Interception of 5mm of Rainfall & Volumes Provided)

CATCHMENT 1

Please refer to drawing C-0505 for Storm Water Catchment Zone Plan	Subcatchment 1A			Subcatchment 1B			Subcatchment 1C			Subcatchment 1D			Subcatchment 1E			Subcatchment 1F			Subcatchment 1G		
	Area (m^2)	Vol. Req. (m^3)	Vol. Prov. (m^3)	Area (m^2)	Vol. Req. (m^3)	Vol. Prov. (m^3)	Area (m^2)	Vol. Req. (m^3)	Vol. Prov. (m^3)	Area (m^2)	Vol. Req. (m^3)	Vol. Prov. (m^3)	Area (m^2)	Vol. Req. (m^3)	Vol. Prov. (m^3)	Area (m^2)	Vol. Req. (m^3)	Vol. Prov. (m^3)	Area (m^2)	Vol. Req. (m^3)	Vol. Prov. (m^3)
Subcatchment Net Area	3715.0	18.58	9.61	2380.0	11.90	8.15	2635.0	13.18	9.76	1036.0	5.18	3.84	2060.0	10.30	10.30	595.0	2.98	0.04	4490.0	22.45	11.90

See comments below for outline of additional interception volume provided for impermeable areas

SuDS MEASURE																					
Green Roofs	0.0	0.00	0.00	832.1	4.16	4.16	1253.4	6.27	6.27	0.0	0.00	0.00	2060.0	10.30	10.30	0.0	0.00	0.00	0.0	0.00	0.00
Permeable Pavement	1130.5	5.65	5.65	472.7	2.36	2.36	406.0	2.03	2.03	141.5	0.71	0.71	0.0	0.00	0.00	0.0	0.00	0.00	0.0	0.00	0.00
Tree Pits	192.0	0.96	0.96	48.0	0.24	0.24	64.0	0.32	0.32	176.0	0.88	0.88	0.0	0.00	0.00	0.0	0.00	0.00	224.0	1.12	1.12
Rain Gardens	0.0	0.00	0.00	0.0	0.00	0.00	0.0	0.00	0.00	360.9	1.80	1.80	0.0	0.00	0.00	0.0	0.00	0.00	238.9	1.19	1.19
Bio Retention	122.3	0.61	0.61	52.3	0.26	0.26	104.2	0.52	0.52	90.2	0.45	0.45	0.0	0.00	0.00	0.0	0.00	0.00	39.7	0.20	0.20
Grasscrete Parking / Pavement	403.3	2.02	2.02	203.6	1.02	1.02	125.3	0.63	0.63	0.0	0.00	0.00	0.0	0.00	0.00	0.0	0.00	0.00	561.8	2.81	2.81
Other Permeable (Planting, Grass, etc.)	73.1	0.37	0.37	22.0	0.11	0.11	0.0	0.00	0.00	0.0	0.00	0.00	0.0	0.00	0.00	8.7	0.04	0.04	1315.3	6.58	6.58
IMPERMEABLE																					
Impermeable (Road)	701.5	3.51	0.00	563.0	2.82	0.00	553.2	2.77	0.00	508.3	2.54	0.00	0.0	0.00	0.00	0.0	0.00	0.00	1074.9	5.37	0.00
Impermeable (Paths)	376.4	1.88	0.00	234.3	1.17	0.00	280.0	1.40	0.00	213.1	1.07	0.00	0.0	0.00	0.00	0.0	0.00	0.00	1259.4	6.30	0.00
Impermeable (Roofs)	907.9	4.54	0.00	0.0	0.00	0.00	0.0	0.00	0.00	0.0	0.00	0.00	0.0	0.00	0.00	586.3	2.93	0.00	0.0	0.00	0.00

Subcatchments 1A - 1D

These function as one unit, leading to a two-stage attenuation setting in the centre of the site.

From table above…

48.83 m^3	**Combined Volume Required:**
31.37 m^3	**Combined Volume Provided:**

The above deficiency can be met by the following…

6.43 m^3	Volume provided by 150mm stone bed in **filter drain** (SW-MN-5 to SW-MN-16)
2.20 m^3	Volume provided by 150mm stone bed in **filter drain** (SW-MN-23 to SW-MN-25)
13.11 m^3	Volume provided by 150mm stone bed under **Attenuation Structure 1** (south-west of Block B1/B2)
16.08 m^3	Volume provided by 150mm stone bed under **Attenuation Structure 2** (south of Block B1/B2)

Therefore, Total Combined Volume Provided:

69.18 m^3

Subcatchment 1E

This subcatchment is a green roof and will, by nature, deal with interception of 5mm rainfall

From table above…

10.30 m^3	**Volume Required:**
10.30 m^3	**Volume Provided:**

Subcatchment 1F

This subcatchment is almost entirely impermeable and contains a large pitched roof

From table above…

2.98 m^3	**Volume Required:**
0.04 m^3	**Volume Provided:**

The above deficiency can be met by the following…

0.72 m^3	Volume provided by 150mm stone bed in **filter drain** (SW-MN-44 to SW-MN-45)
4.62 m^3	Volume provided by 150mm stone bed under **Attenuation Structure 5** (south of Block A1)

Therefore, Total Volume Provided:

5.39 m^3

Subcatchment 1G

This subcatchment contains a large section of impermeable road and a large pitched roof

From table above…

22.45 m^3	**Volume Required:**
11.90 m^3	**Volume Provided:**

The above deficiency can be met by the following…

6.22 m^3	Volume provided by 150mm stone bed under **Attenuation Structure 3** (east of Block B1/B2)
8.70 m^3	Volume provided by 150mm stone bed under **Attenuation Structure 4** (south of Block A2)

Therefore, Total Volume Provided:

26.81 m^3

CATCHMENT 2

Please refer to drawing C-0505 for Storm Water Catchment Zone Plan	Subcatchment 2A			Subcatchment 2B		
	Area (m^2)	**Vol. Req. (m^3)**	**Vol. Prov. (m^3)**	**Area (m^2)**	**Vol. Req. (m^3)**	**Vol. Prov. (m^3)**
Subcatchment Net Area	2055.0	10.28	10.28	1120.0	5.60	2.37

See comments below for outline of interception volume provided for impermeable areas

SuDS MEASURE							
	Green Roofs	2055.0	10.28	10.28	0.0	0.00	0.00
	Permeable Pavement	0.0	0.00	0.00	170.0	0.85	0.85
	Tree Pits	0.0	0.00	0.00	0.0	0.00	0.00
	Rain Gardens	0.0	0.00	0.00	52.2	0.26	0.26
	Bio Retention	0.0	0.00	0.00	0.0	0.00	0.00
	Grasscrete Parking / Pavement	0.0	0.00	0.00	52.1	0.26	0.26
	Other Permeable (Planting, Grass, etc.)	0.0	0.00	0.00	199.4	1.00	1.00

IMPERMEABLE							
	Impermeable (Road)	0.0	0.00	0.00	341.7	1.71	0.00
	Impermeable (Paths)	0.0	0.00	0.00	304.6	1.52	0.00
	Impermeable (Roofs)	0.0	0.00	0.00	0.0	0.00	0.00

Subcatchment 2A

This subcatchment is a green roof and will, by nature, deal with interception of 5mm rainfall

From table above…

10.28 m^3 **Volume Required:**

10.28 m^3 **Volume Provided:**

Subcatchment 2B

This subcatchment is primarily impermeable

From table above…

5.60 m^3 **Volume Required:**

2.37 m^3 **Volume Provided:**

The above deficiency can be met by the following…

2.32 m^3 Volume provided by 150mm stone bed in **filter drain** (SW-SE-1 to SW-SE-5)

4.62 m^3 Volume provided by 150mm stone bed in **stone soakaway** (east of Block B3/B4)

Therefore, Total Volume Provided:

9.30 m^3

IN SUMMARY, DEVELOPMENT DRAINAGE SYSTEM PROVIDES FOR INTERCEPTION OF 5mm RAINFALL RUNOFF FOR ALL SUBCATCHMENTS

Blackglen Road LRD

Table 7.1.5 *(From Dún Laoghaire - Rathdown County Development Plan, 2020-2028 - Appendix 7.1, p. 245f.)*

To be completed by scheme designers and included in Storm Water Audit

Surface Cover Type	Area (m^2)
Wetland or open water (semi-natural; not chlorinated) maintained or established on site.	0
Semi-natural vegetation (e.g. hedgerows, trees, woodland, species-rich grassland) maintained or established on site.	15,892
Reuse of existing soils and seed source to develop vegetation cover	0
Standard trees planted in connected tree pits with a minimum soil volume equivalent to at least two thirds of the projected canopy area of the mature tree.	350
Standard trees planted in pits with soil volumes less than two thirds of the projected canopy area of the mature tree.	0
Intensive green roof or vegetation over structure. Substrate minimum settled depth of 150mm.	2125
Non intensive Brown Roof (Biodiversity Roof). Substrate minimum settled depth of 150mm. Design will be site specific and developed by a suitably qualified ecologist.	0
Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket)	2085
Extensive green roof of sedum mat or other lightweight systems.	
Green wall –modular system or climbers rooted in soil.	230
Rain gardens and other vegetated sustainable drainage elements.	814
Flower-rich perennial planting.	1097
Hedges (line of mature shrubs one or two shrubs wide).	822
Hedgerows or double hedgerow of native species (may have an associated ditch and bank).	1195
Groundcover planting.	7911
Amenity grassland entire area or sections managed for lesser mowing frequencies for pollinators e.g. six week meadow).	4778
Amenity grassland (species-poor, regularly mown lawn).	1292
Water features (chlorinated) or unplanted detention basins.	0
Permeable paving. (incl. gravel paths)	3512
Sealed surfaces (e.g. concrete, asphalt, waterproofing, stone).	6410
Sealed surfaces (pitched roofs).	1494

Appendix M GROUND INVESTIGATION REPORT

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Ground Investigations Ireland

Blackglen Road

OCSC

Ground Investigation Report

July 2021

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Ground Investigations Ireland Ltd. present the results of the fieldworks and laboratory testing in accordance with the specification and related documents provided by or on behalf of the client The possibility of variation in the ground and/or groundwater conditions between or below exploratory locations or due to the investigation techniques employed must be taken into account when this report and the appendices inform designs or decisions where such variation may be considered relevant. Ground and/or groundwater conditions may vary due to seasonal, man-made or other activities not apparent during the fieldworks and no responsibility can be taken for such variation. The data presented and the recommendations included in this report and associated appendices are intended for the use of the client and the client's geotechnical representative only and any duty of care to others is excluded unless approved in writing.

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Appendix 2 **Trial Pit Records**
Appendix 3 **Soakaway Test Records**
Appendix 4 **Dynamic Probe Records**
Appendix 5 **Plate Test Records**
Appendix 6 **Rotary Core Records**
Appendix 7 **Laboratory Testing**
Appendix 8 **Groundwater Monitoring**

1.0 Preamble

On the instructions of OCSC Consulting Engineers, a site investigation was carried out by Ground Investigations Ireland Ltd. between April and May 2021 at the site of the proposed residential development on Blackglen road, South County Dublin. A second visit to site was undertaken in June 2021 to complete additional trial pits and testing.

2.0 Overview

2.1. Background

It is proposed to construct a new residential development with associated services, access roads and car parking at the proposed site. The site is currently greenfield however there is a quarry shown on the northern portion of the site in the historic mapping available on the OSI website. In the Aerial photograph from c. 2000 there looks to be archaeological trenching or earthworks being completed over the majority of the site. A portion of the site has a sewer passing through, parallel with the northern boundary of the site along the Grange Road and there are some Made Ground deposits associated with this service. The proposed construction is envisaged to consist of conventional foundations and pavement make up with some local excavations for services and plant. Rock excavation may be required in parts of the site due to the shallow bedrock which is visible over a portion of the site.

2.2. Purpose and Scope

The purpose of the site investigation was to investigate subsurface conditions utilising a variety of investigative methods in accordance with the project specification. The scope of the work undertaken for this project included the following:

- Visit project site to observe existing conditions
- Carry out 14 No. Trial Pits & 2 No Trenches to a maximum depth of 2.3m BGL
- Carry out 6 No. In-situ Plate Bearing Tests within each trial pit
- Carry out 3 No. Soakaways to determine a soil infiltration value to BRE digest 365
- Carry out 2 Days of. Dynamic Probes to determine soil strength/density characteristics
- Carry out 8 No additional trial pits to verify bedrock/shallow DPH refusal
- Carry out 4 No. Rotary Core Boreholes to a maximum depth of 8.50m BGL
- Installation of 4 No. Groundwater monitoring wells
- Groundwater monitoring with continuous data loggers
- Chemical & Environmental Laboratory testing
- Report with recommendations

3.0 Subsurface Exploration

3.1. General

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.
The procedures used in this site investigation are in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007) and B.S. 5930:2015.

3.2. Trial Pits

The trial pits were excavated using an 8T & a 3T tracked excavator at the locations shown in the exploratory hole location plan in Appendix 1. The locations were checked using a CAT scan to minimise the potential for encountering services during the excavation. The trial pits were sampled, logged and photographed by a Geotechnical Engineer/Engineering Geologist prior to backfilling with arisings. Notes were made of any services, inclusions, pit stability, groundwater encountered, and the characteristics of the strata encountered and are presented on the trial pit logs which are provided in Appendix 2 of this Report. Some additional trial pits were completed demonstrate the shallow refusal on many of the probes over the southern portion of the site were due to shallow bedrock, and not boulders or stiff glacial till.

3.3. Slit Trenching

The slit trenches were excavated using an 8T tracked excavator at the locations shown in the exploratory hole location plan in Appendix 1. The locations were checked using a CAT scan to minimise the potential for encountering services during the excavation. The soil was slowly stripped using a spotter on the trench to alert the driver if any services were seen, to avoid damage to any underlying services. The slit trenches were sampled, logged and photographed by a Geotechnical Engineer/Engineering Geologist prior to backfilling with arisings. Notes were made of any services, inclusions, pit stability, groundwater encountered and the characteristics of the strata encountered and are presented on the slit trench records which are provided in Appendix 2 of this Report.

3.4. Soakaway Testing

The soakaway testing was carried out in selected trial pits at the locations shown in the exploratory hole location plan in Appendix 1. These pits were carefully excavated and filled with water to assess the infiltration characteristics of the proposed site. The pits were allowed to drain and the drop in water level was recorded over time as required by BRE Digest 365. The pits were logged prior to completing the soakaway test and were backfilled with arising's upon completion. The soakaway test results are provided in Appendix 3 of this Report.

3.5. Dynamic Probing

The dynamic probe tests (DPH) were carried out at the locations shown in the location plan in Appendix 1 in accordance with B.S. 1377: Part 9 1990. The test consists of mechanically driving a cone with a 50kg weight in 100mm intervals and monitoring the number of blows required. An equivalent Standard Penetration Test (SPT) 'N' value may be calculated by dividing the total number of blows over a 300mm drive length by 1.5. The dynamic probe logs are provided in Appendix 4 of this Report. Where shallow rock was expected to lead to a shallow refusal on the dynamic probe, a trial pit was excavated to prove the depth to shallow bedrock and to increase the confidence in the dynamic probing results.

3.6. Insitu Plate Bearing Test

The plate bearing tests were carried out using a 450mm diameter plate at the locations shown on the site plan in Appendix 1. The plate was loaded in increments using a hydraulic jack and an excavator to provide a reaction and the

displacement was monitored in accordance with BS1377 Part 9 using independently mounted digital strain gauges. The constrained modulus and equivalent CBR are calculated in accordance with HD29/75 and are provided on the test reports in Appendix 5 of this Report.

3.7. Rotary Boreholes

The rotary coring was carried out by a track mounted T41 Beretta rig at the locations shown on the location plan in Appendix 1.

The T41 Beretta is equipped with rubber tracks which allow for short travel on pavement surfaces avoiding any damage to the surface. The T41 Beretta utilises a triple tube core barrel system operated using a wireline drilling process. The outer barrel is rotated by the drill rods and at its lower end, carries the coring bit. The inner barrel is mounted on a swivel so that it does not rotate during the process. The third barrel or liner is placed within the second one to retain the core intact and to preserve as much as possible the fabric of the drilling stratum. The core is cut by the coring bit and passes to the inner liner. The core is brought up to the surface within the inner barrel on a small diameter wire rope or line attached to the “overshoot” recovery tool which is then placed into a core box in order of recovery. A drilling fluid, typically air mist or water flush is passed from the surface through hollow drill rods to the drill bit, and is used to cool the drill bit. Temporary casing is used in some situations to support unstable ground or to seal off fissures or voids. It should be noted that the rotary coring can only achieve limited recovery in overburden, particularly granular or weakly cemented strata due to the flushing medium washing away the cohesive fraction during coring. The recovery achieved, where required is noted on the borehole logs and core photographs are provided to allow assessment of the core recovered. The rotary borehole logs are provided in Appendix 6 of this Report.

3.8. Laboratory Testing

Samples were selected from the exploratory holes for a range of geotechnical and environmental testing to assist in the classification of soils and to provide information for the proposed design.

Environmental & Chemical testing as required by the specification, including the Rilta Suite, pH and sulphate testing was carried out by Element Materials Technology Laboratory in the UK. The Rilta suite testing includes both Solid Waste and Leachate Waste Acceptance Criteria.

The results of the laboratory testing are included in Appendix 7 of this Report.

3.9. Surveying

The exploratory hole locations have been recorded using a Trimble R10 GNSS System which records the coordinates and elevation of the locations to ITM or Irish National Grid as required by the project specification. The coordinates and elevations are provided on the exploratory hole logs in the appendices of this Report.

3.10. Groundwater Monitoring Installations

Groundwater Monitoring Installations were installed upon the completion of the boreholes to enable sampling and the determination of the equilibrium groundwater level. The typical groundwater monitoring installation consists of a 50mm uPVC/HDPE slotted pipe with a pea gravel response zone and bentonite seal installed to the Engineers specification. Where required the standpipe is sealed with a gas tap and finished with a durable steel cover fixed in place with a concrete surround. The installation details are provided on the exploratory hole logs in the appendices of this Report. The groundwater monitoring is included in Appendix 8 of this Report.

4.0 Ground Conditions

4.1. General

The ground conditions encountered during the investigation are summarised below with reference to insitu and laboratory test results. The full details of the strata encountered during the ground investigation are provided in the exploratory hole logs included in the appendices of this report.

The sequence of strata encountered were variable across the site and are generally comprised;

- Topsoil
- Made Ground
- Cohesive Deposits
- Weathered Bedrock
- Bedrock

TOPSOIL: Topsoil was encountered in all the exploratory holes and was present to a maximum depth of 0.30m BGL.

MADE GROUND: Made Ground deposits were encountered beneath the Topsoil at the locations of TP01 and TP03 and were present to a depth of between 1.30m and 2.30m BGL. These deposits were described generally as *brown sandy gravelly Clay with occasional angular to subangular cobbles, some boulders and contained occasional fragments of concrete, wire and glass.* The presence of a historic quarry over a portion of the site may explain the presence of this material in TP01.

COHESIVE DEPOSITS: Cohesive deposits were encountered beneath the Topsoil and Made Ground where present and were described typically as *soft or soft to firm reddish brown/brown sandy gravelly CLAY with occasional angular to subangular cobbles and some boulders*. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the cohesive matrix. These deposits had some, occasional or frequent cobble and boulder content where noted on the exploratory hole logs.

WEATHERED BEDROCK: In some of the exploratory holes weathered rock was encountered which was diggable with the large excavator to a depth of up to 1.0m below the top of the stratum. The trial pits were terminated upon encountering the more competent bedrock, in which further excavation became more difficult. This material was recovered typically as fine to coarse angular to subangular gravel and cobbles of Granite, however there was some variability in the fracture spacing and the ease at which the excavator could progress. Some clay and sand were also present with the rock mass either from weathering or as infilling to fractures which were opened upon excavation.

BEDROCK: The rotary core boreholes recovered Medium strong to strong massive grey coarsely crystalline GRANITE, partially to distinctly weathered.
The depth to rock varies from 1.10m BGL in RC03 in the western portion of the site, to a maximum of 4.20m BGL in RC04, located in the southern portion of the site. RC01 & RC02 in the northern portion of the site show rock level to be between 2.30m and 2.60m BGL. The total core recovery is good, typically 100% with some of the uppermost runs dropping to 80 or 90%. The SCR and RQD both are relatively poor in the upper weathered zone, often recovered as non-intact, however both indices show an increase with depth in each of the boreholes. In RC02 between 6.0m and 8.0m BGL the rock is weathered to such an extent that Total Core Recovery (44% and 52%) and the associated indices reduced, with the driller noting the material partially recovered as a sand.

4.2. Insitu Strength Testing

The correlated DPH blow counts indicate that the overburden deposits are soft or soft to firm to depths of 1.0m to 3.6m BGL and become firm or firm to stiff with depth. Many probes refused at shallow depths indicating the presence of bedrock or large boulders. DP01 & DP3 had low blow counts in the presumed Made Ground deposits to a depth of 2.3 to 3.2m BGL while DP9, PD16, DP20 and DP38 all had deep overburden deposits with soft or soft to firm strengths indicated by the blow counts.

4.3. Groundwater

Groundwater strikes are noted on the exploratory hole logs where they occurred and where possible drilling was suspended for twenty minutes to allow the subsequent rise in groundwater to be recorded. We would point out that these exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the tide, time of year, rainfall, nearby construction and other factors. For this reason, standpipes were installed in RC01, RC02 RC03 and RC04 to allow the equilibrium groundwater level to be determined. The groundwater monitoring is included in Appendix 8 of this Report.

4.4. Laboratory Testing

4.4.1. Chemical Laboratory Testing

The pH and sulphate testing carried out indicate that pH results are near neutral and that the water soluble sulphate results is low when compared to the guideline values from BRE Special Digest 1:2005. The samples tested classify the soil as a Design Sulphate Level DS-1.

4.4.1. Environmental Laboratory Testing

A number of samples was analysed for a suite of parameters which allows for the assessment of the sampled material in terms of total pollutant content for classification of materials as *hazardous* or *non-hazardous*. The suite also allows for the assessment of the sampled material in terms of suitability for placement at licenced landfills (inert, stable non-reactive, hazardous etc.). The parameter list for the suite includes analysis of the solid samples for arsenic, barium, cadmium, chromium, copper, cyanide, lead, nickel, mercury, zinc, speciated aliphatic and aromatic petroleum hydrocarbons, pH, sulphate, sulphide, moisture content, soil organic matter and an asbestos screen.
The suite also includes those parameters specified in the EU Council Decision establishing criteria for the acceptance of waste at Landfills (Council Decision 2003/33/EC), which for the solid samples are total organic carbon (TOC), speciated aliphatic and aromatic petroleum hydrocarbons, BTEX, phenol, polychlorinated biphenyls (PCB) and PAH.
As part of the suite a leachate is generated from the solid sample which is analysed for antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, chloride, fluoride, soluble sulphate, sulphide, phenols, dissolved organic carbon (DOC) and total dissolved solids (TDS).
While the laboratory report provides a comparison with the waste acceptance criteria limits it does not provide a waste classification of the material sampled nor does it comment on any potentially hazardous properties of the materials tested. The possibility for contamination, not revealed by the testing undertaken should be borne in mind particularly where Made Ground deposits are present or the previous site use or location indicate a risk of environmental variation. A waste classification report is recommended to be carried out on material which will be disposed of off site.

5.0 Recommendations & Conclusions

5.1. General

The recommendations given and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between exploratory hole locations, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for conditions which have not been revealed by the exploratory holes. Limited information has been provided at the ground investigation stage and any designs based on the recommendations or conclusions should be completed in accordance with the current design codes, taking into account the variation and the specific details contained within the exploratory hole logs.

5.2. Foundations

An allowable bearing capacity of 125 kN/m^2 is recommended for conventional strip or pad foundations on the firm to stiff cohesive deposits at the depths indicated in the table below. Where the soft cohesive/made ground deposits are deeper, such as at the location of DP1, DP3, DP7, DP8, DP9, DP16, DP20, DP21, DP22, DP38 & DP39 lean mix trench fill to the depths indicated in the table below are proposed to achieve a presumed allowable bearing capacity of 200 kN/m^2 on the weathered/intact rock. Generally these are where the soft deposits / Made Ground were noted and the weathered rock is assumed to be present where the probing indicated refusal, however boulders or inclusions sin the Made Ground may be responsible for these terminations. A higher allowable bearing capacity is available on the intact rock where present.

In any part of the site, should part of the foundation be on rock we would recommend that all the foundations of the unit in question be lowered to the competent rock stratum to avoid differential settlement.

The possibility for variation in the depth of the made ground in the vicinity of these foundations should be considered and foundation inspections should be carried out. Any soft spots encountered at the proposed foundation depths should be excavated and replaced with lean mix concrete.

A ground bearing floor slab is recommended to be based on the firm to stiff cohesive deposits or weathered bedrock with an appropriate depth of compacted hardcore specified by the consulting engineer and in accordance with the limits and guidelines in SR21:2014 +A1:2016 and/or NRA SRW CL808 Type E granular stone fill. Where the depth of Made Ground/Soft deposits exceeds 0.9m then suspended floor slabs should be considered.

	Allowable Bearing Capacities (ABC) kN/m2						
Trial Pit	**ABC**	**Depth**	**Comment**	**Trial Pit**	**ABC**	**Depth**	**Comment**
No.	**kN/m2**	**m BGL**		**No.**	**kN/m2**	**m BGL**	
DP01	200	2.3	**Refusal**	**DP020**	125	1.9	**Cohesive**
DP02	200	0.5	**Refusal**	**DP021**	200	1.7	**Refusal**
DP03	125	3.2	**Cohesive**	**DP022**	200	1.8	**Refusal**
DP04	125	0.7	**Cohesive**	**DP023**	200	0.7	**Refusal**
DP05	200	1.2	**Refusal**	**DP024**	200	0.7	**Refusal**
DP06	200	0.7	**Refusal**	**DP025**	200	0.7	**Refusal**
DP07	200	1.7	**Refusal**	**DP026**	200	0.7	**Refusal**

DP08	80	2.0	**Cohesive**	**DP027**	200	0.7	**Refusal**
DP08	200	2.6	**Refusal**	**DP28**	200	0.7	**Refusal**
DP09	200	3.2	**Refusal**	**DP29**	200	0.7	**Refusal**
DP010	200	1.2	**Refusal**	**DP030**	200	0.7	**Refusal**
DP011	200	0.7	**Refusal**	**DP031**	200	0.7	**Refusal**
DP012	200	1.4	**Refusal**	**DP033**	200	0.7	**Refusal**
DP013	200	0.7	**Refusal**	**DP034**	200	0.7	**Refusal**
DP014	200	0.7	**Refusal**	**DP035**	200	0.7	**Refusal**
DP015	200	0.7	**Refusal**	**DP036**	200	0.7	**Refusal**
DP016	200	3.2	**Refusal**	**DP037**	200	0.7	**Refusal**
DP017	200	0.7	**Refusal**	**DP038**	200	3.8	**Cohesive**
DP018	200	0.7	**Refusal**	**DP039**	1.25	1.5	**Cohesive**
DP019	200	0.7	**Refusal**	**DP040**	200	0.9	**Refusal**

The pH and sulphate testing completed on samples recovered from the exploratory holes indicates the pH results are near neutral and the sulphate results are low, when compared to the guideline values from BRE Special Digest 1:2005. No special precautions are required for concrete foundations to prevent sulphate attack. The samples tested were below the limits of DS1 in the BRE Special Digest 1:2005.

5.3. External Pavements

The proposed pavements are recommended to be designed in accordance with the CBR test results included in the Appendices of this Report. The low CBR test results indicate that a capping layer or a sufficient depth of crushed stone fill may be required. Plate bearing tests are recommended at the time of construction to verify the design assumptions for the proposed pavement make up and to verify adequate compaction has been achieved.

The use of a geogrid and separation membrane may improve the performance of the proposed pavement and enable a more economical pavement design to be achieved, a specialist supplier is recommended to advise of the required strength, depth and type of geotextile for the proposed design.

5.4. Excavations

Excavations in the Made Ground, Peat or soft Cohesive Deposits will require to be appropriately battered or the sides supported due to the low strength of these deposits.

Short term temporary excavations in the cohesive deposits will remain stable for a limited time only and will require to be appropriately battered or the sides supported if the excavation is below 1.25m BGL or is required to permit man entry.

Any excavations which penetrate the granular weathered rock deposits will require to be appropriately battered or the sides supported and are likely to require dewatering due to the groundwater seepages noted in the exploratory hole logs in the Appendices of this Report.

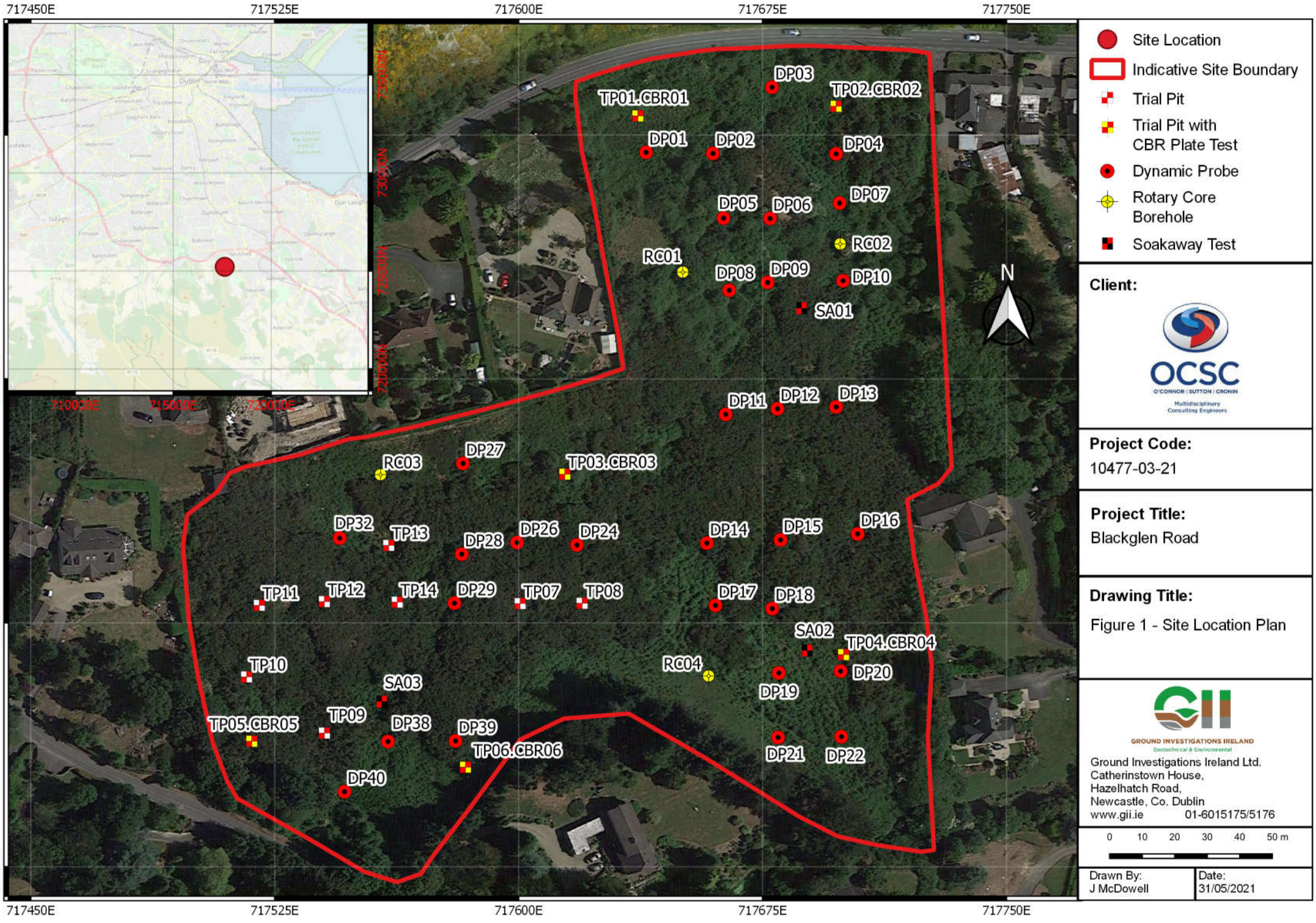
The groundwater and stability noted on the trial pit logs should be consulted when determining the most appropriate construction methods for excavations.

Excavations in the upper cohesive and weathered rock deposits are expected to be excavatable with conventional excavation equipment, with zones of more intact bedrock below this depth requiring rock breaking techniques. Based

on the fracture spacing, the rock strength descriptions (estimated) and Pettifer & Fookes (1994) Revised Excavatability Graph, the Granite ranges from hard digging to extremely hard ripping. The 8T excavator was generally able to excavate to depths of 0.3m to 1.0m below the top of the weathered rock, and became difficult to excavate within the confines of the trial pit on encountering the more competent rock.
Any waste material to be removed off site should be disposed of to a suitably licenced landfill.

The recommendations provided in this report should be verified in the design of the proposed buildings, using the full details of the loading conditions and taking into consideration the allowable tolerable settlements/movements that the building can accommodate. The founding strata should be inspected and verified by a suitably qualified engineer prior to construction of the building foundations.

APPENDIX 1 - Site Location Plan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717600E
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717750E
725325N
725250N
725175N
725100N
725000N
730000N
725000N
720000N
710000E
715000E
720000E
TP01.CBR01
DP03
TP02.CBR02
DP01
DP02
DP04
DP05
DP06
DP07
RC02
RC01
DP08
DP09
DP10
SA01
DP11
DP12
DP13
RC03
DP27
TP03.CBR03
DP32
TP13
DP28
DP26
DP24
DP14
DP15
DP16
TP11
TP12
TP14
DP29
TP07
TP08
DP17
DP18
SA02
TP04.CBR04
RC04
DP20
DP19
TP10
SA03
TP09
TP05.CBR05
DP38
DP39
TP06.CBR06
DP21
DP22
DP40
N
Site Location
Indicative Site Boundary
Trial Pit
Trial Pit with CBR Plate Test
Dynamic Probe
Rotary Core Borehole
Soakaway Test
Client:
OCSC
O'CONNOR | SUTTON | CRONIN
Multidisciplinary Consulting Engineers
Project Code:
10477-03-21
Project Title:
Blackglen Road
Drawing Title:
Figure 1 - Site Location Plan
GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental
Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176
0 10 20 30 40 50 m
Drawn By:
J McDowell
Date:
31/05/2021



Legend

- Trial Pit
- Slit Trenches

Client:

OCSC
O'CONNOR | SUTTON | CRONIN
Multidisciplinary Consulting Engineers

Project Code:

10477-03-21

Project Title:

Blackglen Road Environmental Pits

Drawing Title:

Figure 1 Site Location

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental
Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

0 10 20 30 40 m

Drawn By:	Date:
EB	18/06/2021

APPENDIX 2 – Trial Pit Records

www.gii.ie

Ground Investigations Ireland Ltd
www.gii.ie

Site Blackglen Road			**Trial Pit Number** TP01
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.50m x 0.85m x 2.30m (L x W x D)	**Ground Level (mOD)** 142.36	**Client** OCSC	**Job Number** 10477-03-21
	Location 717636.5 E 725330.6 N	**Dates** 01/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL: Brown sandy gravelly Clay with rootlets. Gravel is subangular to subrounded fine to coarse.		
				142.06	0.30			
0.50	B				(0.70)	MADE GROUND: Brown sandy gravelly Clay with old pipe and wire fragments and occasional angular to subangular cobbles and some subangular boulders. Gravel is angular to subrounded fine to coarse. (Soft).		
1.00	B			141.36	1.00			
					(1.30)	MADE GROUND: Brown sandy gravelly Clay with plastic, old fencing and wire fragments and occasional angular to subangular cobbles and some subangular boulders. Gravel is angular to subrounded fine to coarse. (Firm). OBSTRUCTION at 2.30m BGL due to presumed bedrock or boulder.		
				140.06	2.30	Complete at 2.30m		

Plan

Remarks

No groundwater encountered.
Side walls stable.
Trial pit terminated at 2.30m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP01

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Site Blackglen Road			**Trial Pit Number** TP02
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20m x 0.85m x 2.20m (L x W x D)	**Ground Level (mOD)** 139.19	**Client** OCSC	**Job Number** 10477-03-21
	Location 717697.4 E 725333.6 N	**Dates** 01/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL: Dark brown sandy gravelly Clay with rootlets. Gravel is subangular to subrounded fine to coarse.		
				138.89	0.30	Soft to firm light grey mottled brown slightly sandy gravelly CLAY. Gravel is angular to subangular fine to coarse.		
0.50	B				(0.60)			
				138.29	0.90	Firm light brown mottled grey slightly sandy gravelly CLAY with occasional angular to subangular cobbles. Gravel is angular to subrounded fine to coarse.		
1.20	B				(1.00)			
				137.29	1.90	WEATHERED ROCK: Brownish grey clayey sandy angular to subangular fine to coarse Gravel with occasional angular to subangular cobbles.		
2.00	B				(0.30)	OBSTRUCTION at 2.20m BGL due to presumed bedrock or boulder.		
			slow seepage(1) at 2.20m.	136.99	2.20	Complete at 2.20m		▽1

Plan

Remarks

Groundwater encountered at 2.20m (slow seepage).
Side walls stable.
Trial pit terminated at 2.20m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP02

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Site Blackglen Road			**Trial Pit Number** TP03
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 2.90m x 0.85m x 1.30m (L x W x D)	**Ground Level (mOD)** 150.93	**Client** OCSC	**Job Number** 10477-03-21
	Location 717614.1 E 725220.4 N	**Dates** 01/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL: Dark brown sandy gravelly Clay with rootlets. Gravel is subangular to subrounded fine to coarse.		
				150.73	0.20			
					(0.25)	MADE GROUND: Greyish brown slightly sandy gravelly Clay with some subangular cobbles. Gravel is angular to subrounded fine to coarse.		
				150.48	0.45			
0.50	B				(0.25)	MADE GROUND: Brownish black very sandy slightly gravelly Clay with concrete blocks and glass fragments. Gravel is angular to subrounded fine to coarse.		
				150.23	0.70			
1.00	B				(0.60)	POSSIBLE MADE GROUND: Reddish brown very sandy gravelly Clay with occasional angular to subangular cobbles and some subangular boulders. Gravel is angular to subrounded fine to coarse. (Soft to firm). OBSTRUCTION at 1.30m BGL due to presumed bedrock or boulder.		
				149.63	1.30	Complete at 1.30m		

Plan

Remarks

No groundwater encountered.
Side walls stable.
Trial pit terminated at 1.30m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP03

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Site Blackglen Road			**Trial Pit Number** TP04
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.50m x 0.85m x 1.60m (L x W x D)	**Ground Level (mOD)** 140.31	**Client** OCSC	**Job Number** 10477-03-21
	Location 717699.8 E 725164.9 N	**Dates** 01/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL: Dark brown sandy gravelly Clay with organic matter and rootlets. Gravel is angular to subrounded fine to coarse.		
				140.11	0.20			
0.50	B				(0.70)	Soft Reddish brown mottled grey sandy gravelly CLAY with some angular to subangular cobbles and rare subangular boulders. Gravel is angular to subangular fine to coarse.		
				139.41	0.90			
1.10	B				(0.70)	Greyish brown/yellow slightly clayey sandy angular to subangular fine to coarse Gravel with occasional angular to subangular cobbles and rare subangular boulders. OBSTRUCTION at 1.60m BGL due to presumed bedrock or boulder.		
				138.71	1.60	Complete at 1.60m		

Plan

Remarks

Groundwater encountered at 0.90m BGL (medium seepage).
Side walls spalling at 0.40m BGL.
Trial pit terminated at 1.60m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP04

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Site Blackglen Road			**Trial Pit Number** TP05
Machine : 8 Tonne Track Excavator **Method :** Trial Pit	**Dimensions** 1.70m x 0.85m x 0.70m (L x W x D)	**Ground Level (mOD)** 157.49	**Client** OCSC	**Job Number** 10477-03-21
	Location 717517.8 E 725138.3 N	**Dates** 01/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				157.39	(0.10) 0.10	TOPSOIL: Brown sandy gravelly Clay. Gravel is angular to subangular fine to medium.		
0.50	B				(0.60)	Soft brown sandy gravelly CLAY with angular to subangular cobbles and rootlets. Gravel is angular to subangular fine to coarse.		
				156.79	0.70	OBSTRUCTION at 0.70m BGL due to presumed bedrock or boulder.		
						Complete at 0.70m		

Plan

Remarks

No groundwater encountered.
Side walls stable.
Trial pit terminated at 0.70m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP05

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Site Blackglen Road			**Trial Pit Number** TP06
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 2.30m x 1.10m x 1.10m (L x W x D)	**Ground Level (mOD)** 154.12	**Client** OCSC	**Job Number** 10477-03-21
	Location 717583.5 E 725130.3 N	**Dates** 01/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				154.02	(0.10) 0.10	TOPSOIL: Brown sandy gravelly Clay. Gravel is angular to subangular fine to medium.		
0.50	B				(1.00)	Soft light brown sandy very gravelly Clay with occasional angular to subangular cobbles and some angular to subangular boulders. Gravel is angular to subangular fine to coarse.		
				153.02	1.10	OBSTRUCTION at 1.10m BGL presumed bedrock or boulder. Complete at 1.10m		

Plan

Remarks

No groundwater encountered.
Side walls stable.
Trial pit terminated at 1.10m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP06

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Site Blackglen Road			**Trial Pit Number** TP07
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 1.30m x 1.00m x 0.60m (L x W x D)	**Ground Level (mOD)** 153.61	**Client** OCSC	**Job Number** 10477-03-21
	Location DP25	**Dates** 09/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				153.51	(0.10) 0.10	TOPSOIL: Dark brown sandy gravelly Clay with rootlets. Gravel is angular to subrounded fine to coarse.		
					(0.50)	Soft light brown sandy gravelly CLAY with occasional angular to subrounded cobbles. Gravel is subangular to subrounded fine to coarse. OBSTRUCTION at 0.60m BGL due to presumed bedrock or boulder.		
				153.01	0.60	Complete at 0.60m		

Plan

Remarks

No groundwater encountered.
Side walls stable.
Trial pit terminated at 0.60m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP07

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Site Blackglen Road			**Trial Pit Number** TP08
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 1.40m x 1.00m x 0.15m (L x W x D)	**Ground Level (mOD)** 151.37	**Client** OCSC	**Job Number** 10477-03-21
	Location (dGPS) DP23	**Dates** 09/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				151.22	(0.15) 0.15	TOPSOIL: Dark brown sandy gravelly Clay with rootlets. Gravel is angular to subrounded fine to coarse. OBSTRUCTION at 0.15m BGL due to presumed bedrock or boulder. Complete at 0.15m		

Plan

Remarks

No groundwater encountered.
Side walls stable.
Trial pit terminated at 0.15m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP08

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Site Blackglen Road			**Trial Pit Number** TP09
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 1.70m x 1.00m x 0.50m (L x W x D)	**Ground Level (mOD)** 155.19	**Client** OCSC	**Job Number** 10477-03-21
	Location (dGPS) DP37	**Dates** 09/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				155.09	(0.10) 0.10	TOPSOIL: Dark brown sandy gravelly Clay with rootlets. Gravel is angular to subrounded fine to coarse.		
					(0.40)	Soft brown sandy gravelly CLAY with occasional angular to subangular cobbles. Gravel is angular to subangular fine to coarse. OBSTRUCTION at 0.50m BGL due to presumed bedrock or boulder.		
				154.69	0.50	Complete at 0.50m		

Plan

Remarks

No groundwater encountered.
Side walls stable.
Trial pit terminated at 0.50m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP09

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Site Blackglen Road			**Trial Pit Number** TP10
Machine : 155.187 **Method :** Trial Pit	**Dimensions** 1.60m x 1.00m x 0.60m (L x W x D)	**Ground Level (mOD)** 153.61	**Client** OCSC	**Job Number** 10477-03-21
	Location (dGPS) DP35	**Dates** 09/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	TOPSOIL: Dark brown sandy gravelly Clay with some angular cobbles.		
				153.21	0.40			
					(0.20)	Soft light brown sandy gravelly CLAY with frequent angular to subangular cobbles. Gravel is angular to subrounded fine to coarse.		
				153.01	0.60	Complete at 0.60m		

Plan

Remarks

No groundwater encountered.
Side walls stable.
Trial pit terminated at 0.60m BGL due to presumed bedrock or boulder.
Trail pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP10

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Site Blackglen Road			**Trial Pit Number** TP11
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 1.40m x 1.00m x 0.45m (L x W x D)	**Ground Level (mOD)** 158.90	**Client** OCSC	**Job Number** 10477-03-21
	Location (dGPS) DP34	**Dates** 09/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL: Dark brown sandy gravelly Clay with some angular cobbles.		
				158.70	0.20	Soft grey slightly sandy gravelly CLAY with occasional angular to subangular cobbles. Gravel is angular to subrounded fine to coarse.		
					(0.25)			
				158.45	0.45	Complete at 0.45m		

Plan

Remarks

No groundwater encountered.
Side walls stable.
Trial pit terminated at 0.45m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP11

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Site Blackglen Road			**Trial Pit Number** TP12
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 1.60m x 1.00m x 0.20m (L x W x D)	**Ground Level (mOD)** 157.56	**Client** OCSC	**Job Number** 10477-03-21
	Location (dGPS) DP33	**Dates** 09/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				157.46	(0.10) 0.10	TOPSOIL: Dark brown sandy gravelly Clay with some angular cobbles.		
				157.36	(0.10) 0.20	Soft greyish brown sandy gravelly CLAY. Gravel is angular to subangular fine to coarse. OBSTRUCTION at 0.20m BGL due to presumed bedrock or boulder.		
						Complete at 0.20m		

Plan

Remarks

No groundwater encountered.
Side walls stable.
Trial pit terminated at 0.20m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP12

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Site Blackglen Road			**Trial Pit Number** TP13
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 1.50m x 1.00m x 1.10m (L x W x D)	**Ground Level (mOD)** 153.14	**Client** OCSC	**Job Number** 10477-03-21
	Location (dGPS) DP30	**Dates** 09/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				153.04	(0.10) 0.10	TOPSOIL: Dark brown sandy gravelly Clay with some angular cobbles.		
						WEATHERED ROCK: Brown/yellow sandy slightly clayey angular to subangular fine to coarse Gravel with frequent angular to subangular cobbles.		
					(1.00)			
						OBSTRUCTION at 1.10m BGL due to presumed bedrock or boulder.		
				152.04	1.10	Complete at 1.10m		

Plan

Remarks

No groundwater encountered.
Side walls stable.
Trial pit terminated at 1.10m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP13

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Site Blackglen Road			**Trial Pit Number** TP14
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 1.50m x 1.00m x 1.00m (L x W x D)	**Ground Level (mOD)** 153.76	**Client** OCSC	**Job Number** 10477-03-21
	Location (dGPS) DP31	**Dates** 09/04/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL: Brown sandy gravelly Clay with rootlets. Gravel is angular to subangular fine to coarse.		
				153.46	0.30	Soft brown mottled grey sandy gravelly CLAY with occasional angular to subangular cobbles. Gravel is angular to subangular fine to coarse.		
					(0.70)	OBSTRUCTION at 1.00m BGL due to presumed bedrock or boulder.		
				152.76	1.00	Complete at 1.00m		

Plan

Remarks

No groundwater encountered.
Side walls stable.
Trial pit terminated at 1.00m BGL due to presumed bedrock or boulder.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10477-03-21.TP14

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Site Blackglen Road			**Trial Pit Number** ENV TP01
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 138.73	**Client** OCSC	**Job Number** 10477-03-21
	Location 717709.9 E 725341.2 N	**Dates** 17/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.30)	Dark brown slightly sandy slightly gravelly TOPSOIL		
				138.43	0.30	MADE GROUND: Grey/brown slightly sandy gravelly Clay		
					(0.65)			
1.00-1.70	EN			137.78	0.95	MADE GROUND: Grey/brown slightly sandy gravelly Clay with some angular cobbles and boulders		
					(0.45)			
				137.33	1.40	Grey/white angular fine to coarse GRAVEL with some cobbles and boulders of Granite		▽1
			Slow seepage(1) at 1.50m.		(0.30)			
				137.03	1.70	Terminated due to rock		
						Complete at 1.70m		

Plan

Remarks

Trial Pit stable
Groundwater encountered at 1.50m BGL as slow seepage
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	10477-03-21.ENV TP01

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Site Blackglen Road			**Trial Pit Number** ENV TP02
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 139.21	**Client** OCSC	**Job Number** 10477-03-21
	Location 717699.1 E 725346.7 N	**Dates** 17/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.80)	MADE GROUND: Reddish brown slightly sandy gravelly Clay		
				138.41	0.80			
1.00-2.00	EN				(1.20)	MADE GROUND: Grey mottled brown slightly sandy gravelly Clay with occasional subangular to subrounded cobbles and boulders		
2.00-3.00	EN			137.21	2.00	Grey slightly clayey very sandy fine to coarse rounded GRAVEL with many cobbles and boulders		
3.00-3.60	EN		Fast ingress(1) at 3.00m.		(1.60)			▽1
				135.61	3.60	Terminated due to ingress Complete at 3.60m		

Plan

Remarks

Trial Pit collapsing from surface
Groundwater encountered at 3.00m BGL as fast ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	10477-03-21.ENV TP02

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Site Blackglen Road			**Trial Pit Number** ENV TP03
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 139.44	**Client** OCSC	**Job Number** 10477-03-21
	Location 717676 E 725342.2 N	**Dates** 17/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.20)	Brown slightly sandy slightly gravelly TOPSOIL		
				139.24	0.20	MADE GROUND: Grey mottled brown slightly sandy gravelly Clay with occasional subangular to subrounded cobbles and boulders		
					(1.00)			
1.00-2.00	EN			138.24	1.20	Grey slightly clayey very sandy fine to coarse subrounded to rounded GRAVEL with some cobbles and boulders		
					(2.10)			
			Fast ingress(1) at 3.20m.					▽1
				136.14	3.30	Grey slightly clayey very sandy fine to coarse subangular to subrounded GRAVEL with many cobbles and boulders		
					(0.50)			
				135.64	3.80	Terminated due to ingress		
						Complete at 3.80m		

Plan

Remarks

Trial Pit collapsing from surface
Groundwater encountered at 3.20m BGL as fast ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	10477-03-21.ENV TP03

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Site Blackglen Road			**Trial Pit Number** ENV TP04
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 139.65	**Client** OCSC	**Job Number** 10477-03-21
	Location 717693.6 E 725311.6 N	**Dates** 17/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN			139.45	(0.20) 0.20	Brown slightly sandy slightly gravelly TOPSOIL		
					(0.70)	MADE GROUND: Reddish brown slightly sandy slightly gravelly Clay with occasional granite cobbles		
				138.75	0.90	Grey fine to coarse angular GRAVEL of Granite		
			Slow seepage(1) at 1.50m.	138.15	(0.60) 1.50			▽1
				138.05	(0.10) 1.60	GRANITE Terminated due to rock		
						Complete at 1.60m		

Plan

Remarks

Trial Pit stable
Groundwater encountered at 1.50m BGL as slow seepage
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	10477-03-21.ENV TP04

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Site Blackglen Road			**Trial Pit Number** ENV TP05
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 139.67	**Client** OCSC	**Job Number** 10477-03-21
	Location 717710.5 E 725271.7 N	**Dates** 17/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.30)	Brown slightly sandy slightly gravelly TOPSOIL		
				139.37	0.30	MADE GROUND: Reddish brown slightly sandy slightly gravelly Clay		
					(0.70)			
1.00-2.00	EN			138.67	1.00	Soft greyish brown slightly sandy gravelly CLAY with occasional cobbles		
					(0.80)			
				137.87	1.80	Soft greyish brown slightly sandy gravelly CLAY with some cobbles and boulders of Granite		
					(0.70)			
			Moderate ingress(1) at 2.50m.	137.17	2.50	Complete at 2.50m		▽1

Plan

Remarks

Trial Pit spalling from 1.80m BGL
Groundwater encountered at 2.50m BGL as moderate ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	10477-03-21.ENV TP05

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Site Blackglen Road			**Trial Pit Number** ENV TP06
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 142.39	**Client** OCSC	**Job Number** 10477-03-21
	Location 717686.1 E 725294.6 N	**Dates** 17/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				142.34	0.05	Dark brown TOPSOIL		
				142.33	0.06	GRANITE Terminated due to rock		
						Complete at 0.06m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	10477-03-21.ENV TP06

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Site Blackglen Road			**Trial Pit Number** ENV TP07
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 147.93	**Client** OCSC	**Job Number** 10477-03-21
	Location 717631.3 E 725205.6 N	**Dates** 17/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.90)	MADE GROUND: Reddish brown slightly slightly gravelly Clay with occasional cobbles and boulders of Granite		
				147.03	0.90	Brown very clayey slightly sandy fine to coarse angular to subrounded GRAVEL with occasional cobbles and boulders		
					(0.40)			
				146.63	1.30	Competent GRANITE		
					(0.10)			
				146.53	1.40	Terminated due to rock		
						Complete at 1.40m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	10477-03-21.ENV TP07

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Site Blackglen Road			**Trial Pit Number** ENV TP08
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 148.65	**Client** OCSC	**Job Number** 10477-03-21
	Location 717636.8 E 725236 N	**Dates** 17/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				(0.50)	MADE GROUND: Brown slightly sandy slightly gravelly Clay with rootlets		
				148.15	0.50			
					(0.50)	Firm reddish brown slightly sandy slightly gravelly CLAY with occasional cobbles of Granite		
				147.65	1.00			
				147.55	(0.10) 1.10	Competent GRANITE Terminated due to rock		
						Complete at 1.10m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	10477-03-21.ENV TP08

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E 717709.926
N 725343.030
Z 138.704

ENV ST02

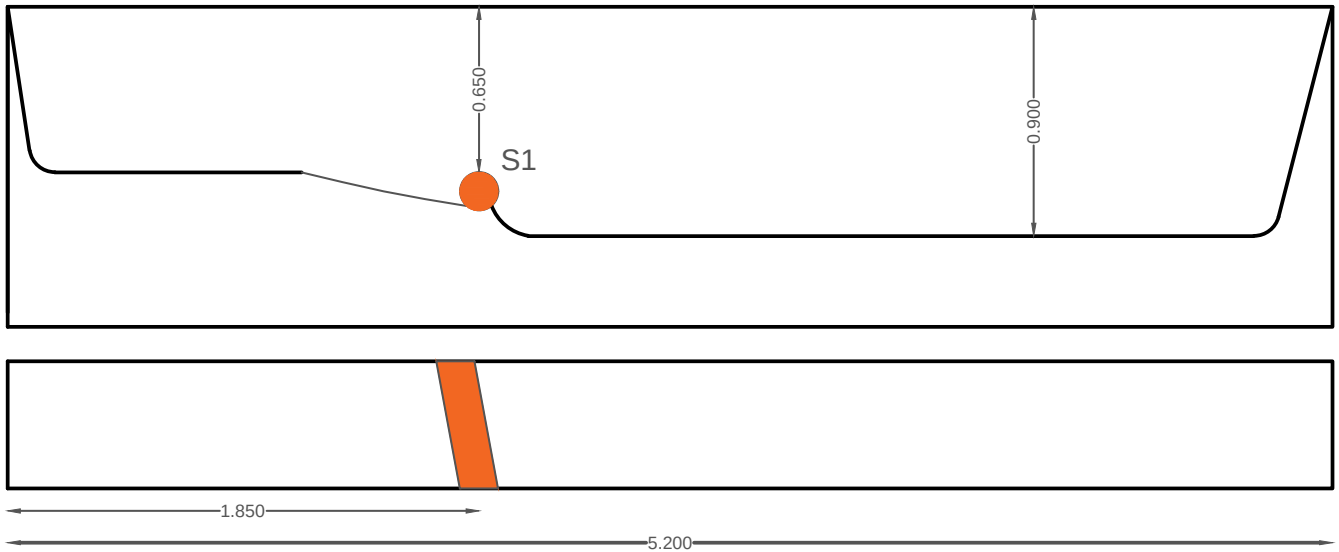
E 717710.239
N 725348.276
Z 138.551

A

B

S

N



From (m)	To (m)	Description
0.00	0.30	Dark brown slightly sandy slightly gravelly TOPSOIL
0.30	0.50	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay
0.50	0.90	MADE GROUND: Grey slightly sandy gravelly Clay with occasional cobbles and boulders

Service No	ø (mm)	Colour-Material	Utility	Angle to trench
S1	0.15	Orange Wavin	Foul	100

Sample depth	Sample type

Surface from/to		Surface type
0.00	5.20	Topsoil

Groundwater	Y/N	Depth
Slow	Y	0.8

DATE OF EXCAVATION : 17/06/2021

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

PROJECT:	Blackglen Road
DRAWING No.:	10477-03-21 ENV ST02
DATE:	JUNE 2021
CLIENT:	OCSC
SCALE:	NTS @ A4

Version:	Date:	Drawn By:	Checked:
No.	Initials	Initials	Initials
A	18/06/2021	EB	CF

E 717628.011
N 725334.259
Z 142.120

ENV ST01

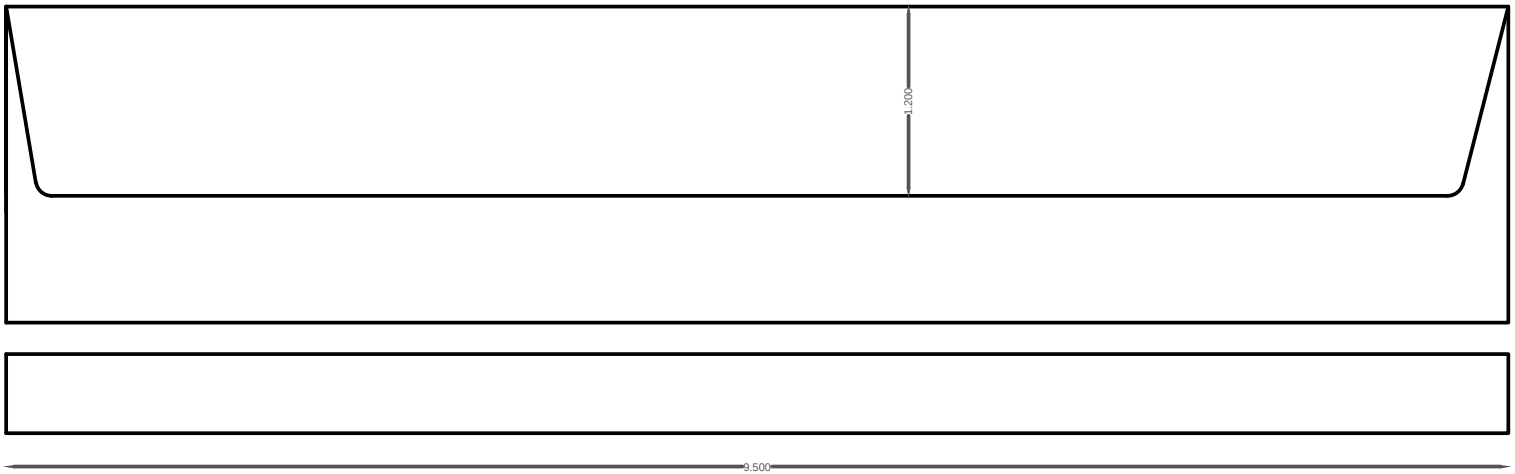
E 717629.547
N 725324.878
Z 142.940

A

B

S

N



From (m)	To (m)	Description
0.00	0.20	Brown slightly sandy slightly gravelly TOPSOIL
0.20	2.00	MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional cobbles and boulders and concrete fragments

Service No	ø (mm)	Colour-Material	Utility	Angle to trench

Surface from/to		Surface type
0.00	9.50	Topsoil

Groundwater	Y/N	Depth
	N	

Sample type	Sample depth
EN	0.00-1.00
EN	1.00-2.00

DATE OF EXCAVATION : 17/06/2021

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

PROJECT:	Blackglen Road
DRAWING No.:	10477-03-21 ENV ST01
DATE:	JUNE 2021
CLIENT:	OCSC
SCALE:	NTS @ A4

Version:	Date:	Drawn By:	Checked:
No.	Initials	Initials	Initials
A	18/06/2021	EB	CF

Blackglen Road Trial Pit Photographs.



TP01



TP01



TP01



TP02



TP02



TP02



TP03



TP03



TP03



TP04



TP04



TP04



TP05



TP05



TP05



TP06



TP06



TP06

Blackglen Road Photographs
17.06.21



ENV
TP01



ENV
TP01



ENV
TP01



ENV
TP02



ENV TP02



ENV TP03



ENV
TP03



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