LEGEND

Street furniture & Services

Over Head Wires (LUAS)	Pylon ESB	Road Sign	Phone Box
Flowerbed	Bus Stop	Bench Seat	Duct
Pipe	Bollard	Kerak	Gas Cover
Lift	Beacon	Gully	C P Box
Barrier	Coathole Cover		Car Park Vent
Pump	Bore Hole	Waste Bin	
Trial Pit	Electricity Pole	Hydrant	
Bus/Tram Shelter	Telegraph pole	Fire Hydrant	
Postbox	OCS Pole	ESB Box	
Valve - General	CCTV Camera Pole	ESB Inspection Cover	
Water Valve	Lamp Post	Traffic Control Box	
Gas Valve	Foul Manhole	LUAS Technical Cabicle	
Stance Valve	Surface Water MH	Ticket Vending Machine	
Air Valve	Manholes	Water Meter Cover	
Stop Cock	Air Conditioning Vents	Telecom inspection Cover	
C P Post	Services Inspection Cover	Monument / Toilets	
Marker Post	Traffic Inspection Cover	Tank Storage	
Traffic light	Cable TV inspection Cover	Basement MH. Cover & Pipe	
Parking Meter	ESAT Inspection Cover	Dashed Aerial Mark	
Phase Aerial Mark	NTL Inspection Cover	Stay for pole	
Smart Card Validator	Eircom inspection Cover	Pipe Protection	
Unknown Valve	Rodding Eye	Washout	

Natural Features

Surface Change	Water Level	
Land Drain	Crown Level	
Bottom of Slope	Invert level	
Top of Slope	Bed Level	
Ditch	Spotheight	
Water Edge / Lake / Pond		
Hedge / Trees Drip Line / Vegetation		
Tree Coniferous	Tree Deciduous	Top of Tree

Golf

Fair Way	
Green	
Tee Box	

Other

Survey Station	
Photo point	

Built Features
Roads & Road Markings

Building	Fence	Floor Level
Edge of Road	Gate	Apex Height
Kerb Bottom	Road Centreline	Eaves Height
Kerb Top	Top of Wall	Parapet Height
Bridge Abutment	Hoarding	Soffit Elevation
Bridge Deck	Property Line	Step Level
Bridge Parapet	Road Scar	Concrete Pad
Building Façade	Top of Fence	Track
Footpath / Platform Train & Tram		Wall / Retaining Wall
Damp Proof Course / Verge		Railway / Tram Rail / Grating / Ramp
Bridge Pier / Wall & Gate/ Pillar / LUAS Trackbed		Building Canopy / Roof / Overhang
Cycleway / Private Landing Area		

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The user or recipient of this survey data understands and acknowledges this data may be inaccurate or contain errors or omissions and the user or recipient assumes full responsibility for any risks or damages resulting from, arising from, or in connection with any use of or reliance upon data displayed herein. Although significant care has been exercised to produce surveys that satisfy survey accuracy standards, these surveys are only as accurate as the source data from which they were compiled. Although all reasonable steps have been taken to locate all features visible at the time of the survey, there is no guarantee that all will be shown on the drawing, as some above ground features may have obstructed the survey. Wherever possible, areas unable to be surveyed will be labelled as 'U/S'.

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North

Site Location

Map Sheet Layout

Map Sheet: 0000

Surveyed by	MSL	Date: MARCH 2020	Datum: Malin Head
Drawn by	CE	Date: MARCH 2020	Grid System:
Checked by	BK	Date: 09.03.2020	Irish National Grid ☐ ITM ■

Revisions

No.	Date	Description
0	09.03.2020	First Drawing
1	20.03.2020	Added in Chamber

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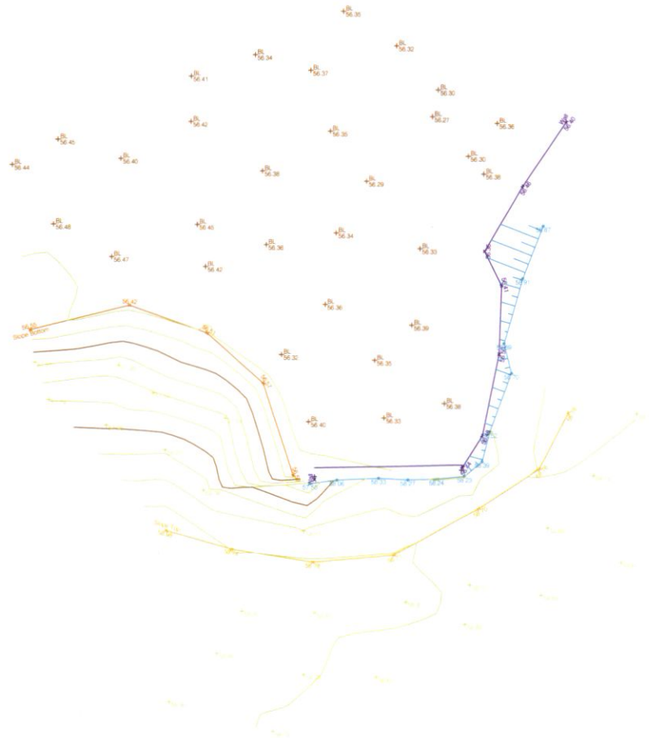
Email: info@murphysurveys.ie

Client :	IE Consulting Engineers
Project :	35588 Old Nangor Road, Clondalkin, Dublin 22
Date : 09.03.2020	Scale : 1:50@A1
Description :	Topographical Survey
Drawing Number :	**MSL35588_clondalkin_PLAN_01**



LEGEND

Street furniture & Services

Over Head Wires (LUAS) | Pylon ESB | Road Sign | Phone Box
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Barrier | Coalhole Cover | CC Car Park Text
Pump | Bore Hole | Waste Bin
Total Pit | Electricity Pole | Hydrant
Bus/Tram Shelter | Telegraph pole | Fire Hydrant
Postbox | OCS Pole | ESB Box
Valve - General | CCTV Camera Pole | ESB Inspection Cover
Water Valve | Lamp Post | Traffic Control Box
Gas Valve | Foul Manhole | LUAS Technical Cubicle
Sluice Valve | Surface Water MH | Ticket Vending Machine
Air Valve | Manholes | Water Meter Cover
Stop Cock | Air Conditioning Vents | Telecom Inspection Cover
C P Post | Services Inspection Cover | Monument / Toilets
Marker Post | Traffic Inspection Cover | Tank Storage
Traffic light | Cable TV Inspection Cover | Basement MH, Cover & Pipe
Parking Meter | ESAT Inspection Cover | Dished Aerial Mark
Plane Aerial Mark | NTL Inspection Cover | Stay for pole
Smart Card Validator | Eircom Inspection Cover | Pipe Protection
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Natural Features

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Golf

Fair Way | Green | Tee Box

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Survey Station | Photo point

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Bridge Abutment | Hoarding | Soffit Elevation
Bridge Deck | Property Line | Step Level
Bridge Parapet | Road Scar | Concrete Pad
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Cycleway / Private Landing Area

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North

Site Location

Map Sheet Layout

Map Sheet 0000

Surveyed by:	MSL	Date:	MARCH 2020	Datum:	Malin Head
Drawn by:	CE	Date:	MARCH 2020	Grid System:	
Checked by:	BR	Date:	09.03.2020	Irish National Grid	ITM

Revisions

No:	Date:	Description:
0	09.03.2020	First Drawing.
1	20.03.2020	Added in Chamber

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Client : IE Consulting Engineers

Project : 35588 Old Nangor Road, Clondalkin, Dublin 22

Date : 09.03.2020 | Scale : 1:50@A1

Description : Topographical Survey

Drawing Number : **MSL35588_clondalkin_PLAN_02**

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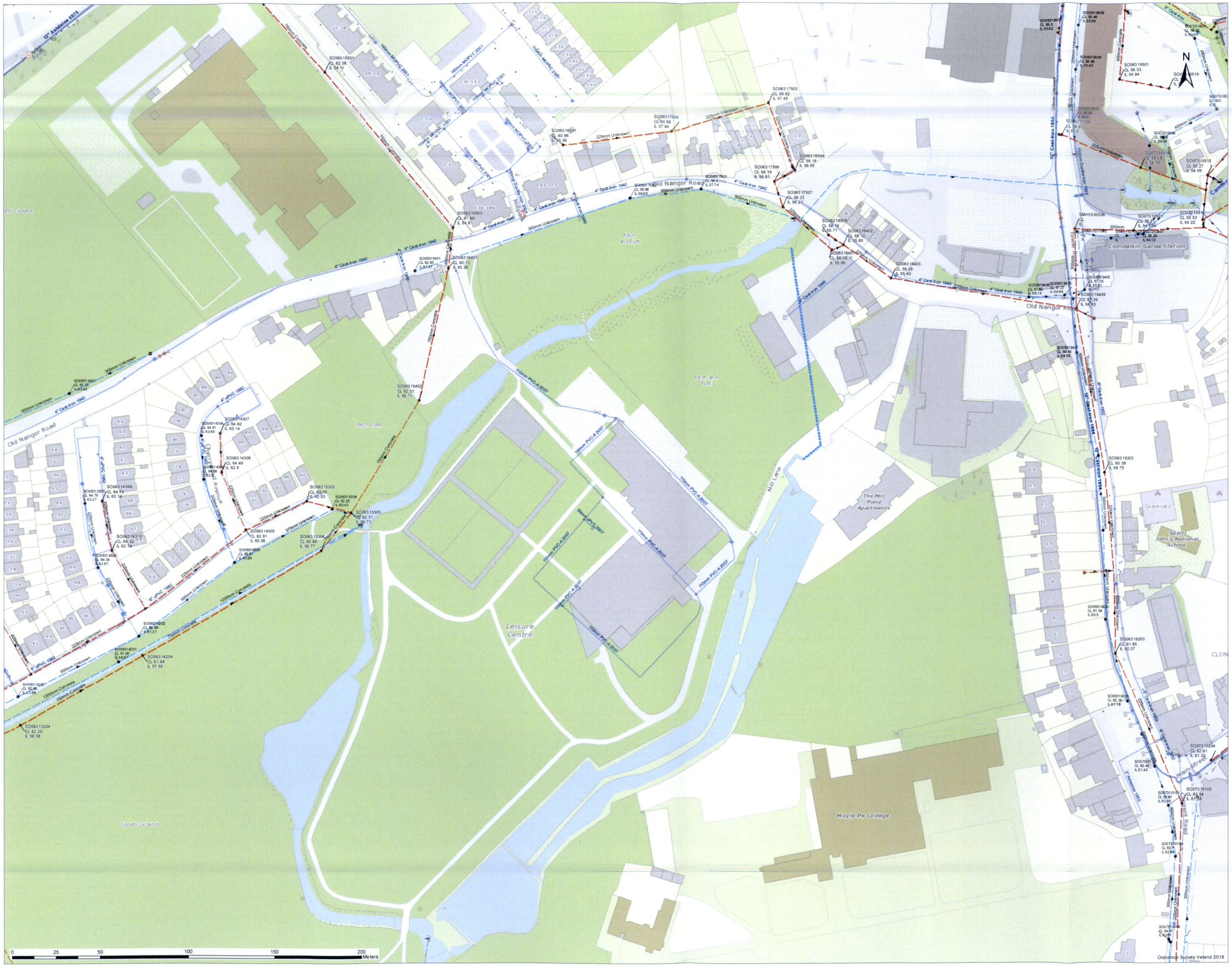
WATER-ENVIRONMENTAL-CIVIL

APPENDIX C

Drainage Records



UISCE ÉIREANN : IRISH WATER

Legend

- Pump Stations
- Irish Water
- Private
- Irish Water
- Non IW
- Gravity - Combined
- Gravity - Foul
- Gravity - Overflow
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Overflow
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Syphon - Overflow
- Overflow
- Gravity - Combined
- Gravity - Foul
- Gravity - Overflow
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Overflow
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Syphon - Overflow
- Overflow
- Surface Gravity Mains
- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

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APPENDIX D

Micro Drainage Output

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
S1.000	13.199	0.030	440.0	0.000	1.00	695.0	0.600	[]	-1	Pipe/Conduit
S1.001	54.036	0.122	442.9	0.198	3.00	0.0	0.600	[]	-1	Pipe/Conduit
S1.002	30.320	0.068	445.9	0.189	3.00	0.0	0.600	[]	-1	Pipe/Conduit
S1.003	27.047	0.063	429.3	0.000	0.00	0.0	0.600	[]	-1	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
S1.000	56.699	0.000	695.0	2.31	7608.0
S1.001	56.669	0.198	695.0	2.30	7582.5
S1.002	56.547	0.387	695.0	2.29	7557.1
S1.003	56.479	0.387	695.0	2.34	7702.3

Conduit Sections for Storm

NOTE: Diameters less than 66 refer to section numbers of hydraulic conduits. These conduits are marked by the symbols:- [] box culvert, \/ open channel, oo dual pipe, ooo triple pipe, O egg.

Section numbers < 0 are taken from user conduit table

Section Number	Conduit Type	Major Dimn. (mm)	Minor Dimn. (mm)	Side Slope (Deg)	Corner Splay (mm)	4*Hyd Radius (m)	XSect Area (m^2)
-1	[]	2500	1500	90.0		1.839	3.295

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.000	0.000	0.000
1.001	-	-	100	0.198	0.198	0.198
1.002	-	-	100	0.189	0.189	0.189
1.003	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.387	0.387	0.387

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	20.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	Scotland and Ireland	Cv (Winter)	0.840
M5-60 (mm)	16.400	Storm Duration (mins)	30
Ratio R	0.277		

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	20.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.277
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	16.400	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 5, 30, 100
Climate Change (%) 20, 20, 20

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	S1	15 Summer	100	+20%					57.128
S1.001	S2	15 Summer	100	+20%					57.090
S1.002	S3	15 Summer	100	+20%					56.976
S1.003	S4	15 Summer	100	+20%					56.888

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	-1.071	0.000	0.31		834.9	OK	
S1.001	S2	-1.079	0.000	0.18		936.4	OK	
S1.002	S3	-1.071	0.000	0.23		1019.7	OK	
S1.003	S4	-1.091	0.000	0.24		1015.9	OK	