

**Operation & Maintenance Plan
For Surface Water Drainage System
Smithy Bridge, Rochdale**

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1.0 INTRODUCTION

The housing development at Smithy Bridge, Rochdale is served mainly by a conventional adopted surface water drainage system but does include a combination of conventional underground pipes and elements of Sustainable Drainage Systems (SuDS).

The development of the site by Taylor Wimpey (Manchester), is for a total of 199 no. residential units, comprising a mixture of detached and semi-detached dwellings as shown on the Highways and Drainage Layout, drawing nos. 30329/1/1P & 2O.

The surface water drainage design for the site restricts flows to no greater than 62.44l/s, the equivalent Qbar greenfield flow from the undeveloped site and uses various components to achieve this; the system is described below and this plan addresses only the operation and maintenance of the unadopted portion of the system.

2.0 SURFACE WATER DRAINAGE COMPONENTS

- Underground Oversized Pipes: a system of linked, oversized attenuation pipes are provided within the development with flows restricted using vortex flow controllers. The pipes and associated manholes are located under the adopted estate roads and will be operated and maintained by United Utilities under a S104 Agreement.
- Open On-Line SuDS Basin: the adopted surface water system has been designed to accommodate the 1 in 30-year return period event; in higher return period rainfall events, excess volumes will be temporarily stored in an on-line, open SuDS basin to which the piped sewers run. The basins do not have any other inlets and are not designed to accept flows from sources other than the adopted drainage network.
- Underground Off-Line Cellular Storage: the site has significant falls and it is not possible, therefore to include open basins at certain locations within the site. In such circumstances, the excess volumes in higher return period rainfall

events (greater than 1 in 30-year return period) will be temporarily stored in off-line, underground cellular storage that will return flows to the wider drainage system when levels fall. The cellular storage does not have any other inlets and are not designed to accept flows from sources other than the adopted drainage network.

3.0 SUDS OWNERSHIP RESPONSIBILITY

- As detailed above, all of the underground, oversized pipes, manholes and flow controls will be adopted under a S104 Agreement with United Utilities or another appropriate water authority.
- There are no unadopted surface water drainage components located in the curtilage of individual dwellings and the homeowners will **NOT** be responsible for the operation and maintenance of any SUDS component.
- The On-line SuDS basin is located in Public Open Space and will be maintained by the Management Company; the possibility of adoption under a S104 Agreement with United Utilities or another appropriate water authority will be considered.
- Off-line underground Cellular Storage is located in Shared Space and will be maintained by the Management Company.

4.0 OPERATION AND MAINTENANCE REQUIREMENTS

As with all traditional drainage systems, SuDS need to be inspected and maintained regularly to ensure that they operate correctly and efficiently. If SuDS are not properly maintained then there is a risk that the components become overloaded during periods of prolonged heavy rainfall potentially resulting in localised flooding within the development. Recommendations for the maintenance of the SuDS components are detailed in the following section.

As part of this process it is recommended that inspection and maintenance records are retained by the appointed Management Company to track the progressive performance of the SuDS over time. The inspection records should include the following:

- Sediment condition and depth
- Water observations (sheen, smell, etc.)
- Unscheduled maintenance needs
- Components that do not meet performance criteria and require immediate maintenance
- Common problem areas, solutions and general observations
- Aesthetic conditions

For Health and Safety reasons as well as practicality, SuDS systems should be maintained during periods of dry weather wherever possible. Adhering to the recommended maintenance regimes outlined below will minimise the risk of maintenance activities being required when a fault becomes apparent, usually during a rainfall event.

On-Line SuDS Attenuation Basin

As detailed above, flows will enter and leave the SuDS Attenuation Basin **ONLY** from the adopted surface water drainage system; there will be no private drainage connections direct to the basin. The SuDS Attenuation Basin will be located in Public Open Spaces and maintenance of the system will therefore be undertaken in conjunction with the regular maintenance of the area.

The following operation and maintenance requirements refer to the recommendations in The SUDS Manual (CIRIA C753) and from the manufacturer. Regular inspection and maintenance is required to ensure the effective long-term operation of SuDS Attenuation basins.

SuDS Attenuation Basin maintenance activities and schedule

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass in and around basin	Half yearly (spring - before nesting season and autumn)
	Manage other vegetation and remove nuisance plants	Monthly for first 3 months, then as required
	Visual inspection of inlets, outlets and catch-pit manhole for blockages and silt, clear if required	Monthly for first 3 months, then 6 monthly thereafter (and after large storm events)
	Inspect banksides and inlet/outlet structure for evidence of damage	Monthly, when grass cutting and after large storm events
	Tidy all dead growth before start of growing season	Annually
Occasional Maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any overhanging/adjacent trees and remove cuttings	As required or every 2 years
	Remove sediment from main basin as required	Every 5 years
Remedial Actions	Inspect/check upstream drainage inlet/outlet and headwalls to ensure that they are in good condition and operating effectively, repair if necessary.	As required
	Repair erosion or other damage by reseedling or re-turfing; relevel uneven surfaces and reinstate design levels	As required

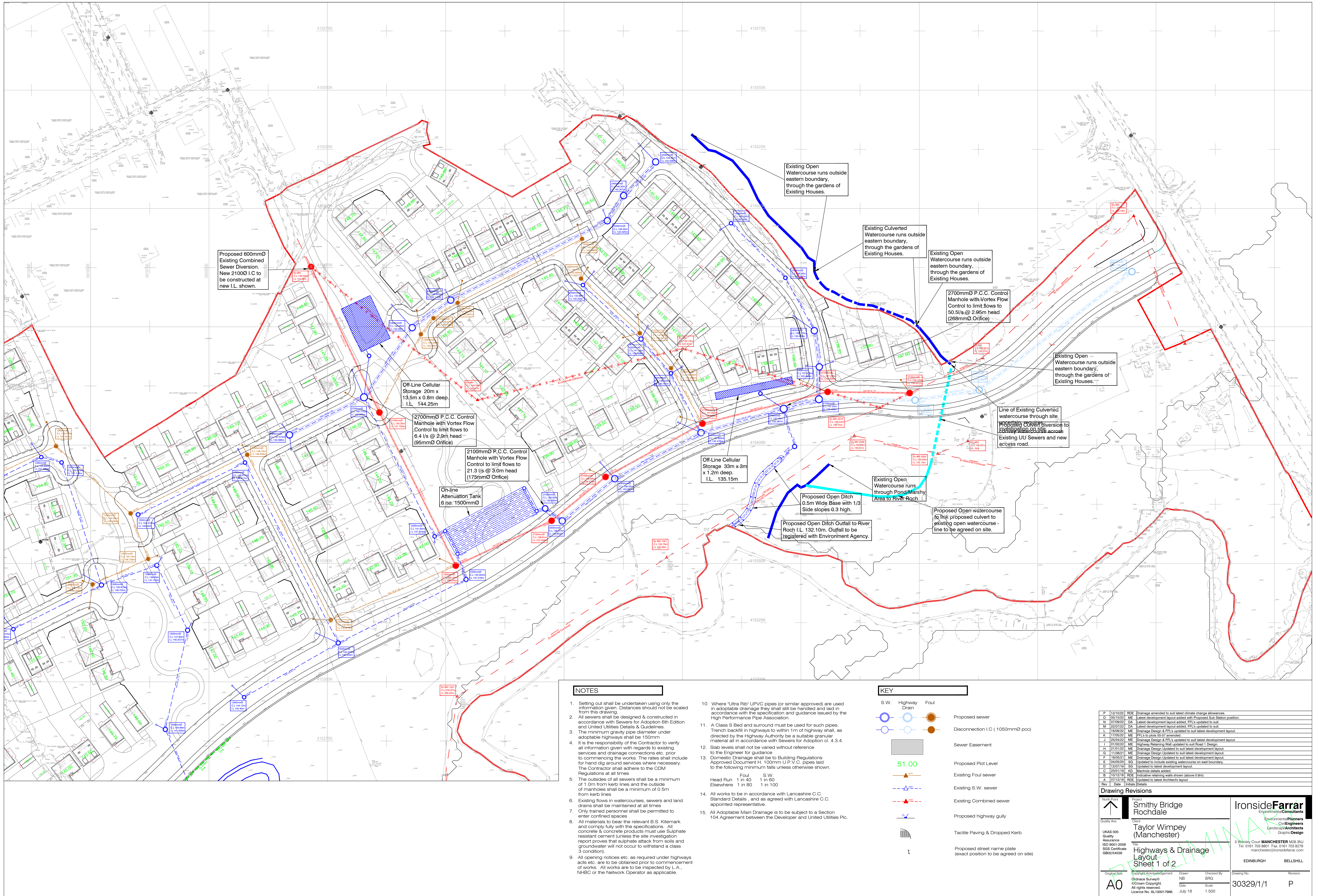
Off-Line Underground Cellular Systems

As detailed above, flows will enter and leave the Cellular system **ONLY** from the adopted surface water drainage system via a catch-pit manhole; there will be no private drainage connections direct to the system. The cellular units will be wrapped in an impermeable geotextile to ensure water from the surrounding ground cannot enter the system. The cellular storage units will be located in Shared Space and maintenance of the system will therefore be undertaken in conjunction with the regular maintenance of the area.

The following operation and maintenance requirements refer to the recommendations in The SUDS Manual (CIRIA C753) and from the manufacturer. Regular inspection and maintenance is required to ensure the effective long-term operation of underground storage systems.

Underground Cellular System maintenance activities & schedule

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any areas upstream of the system that are not operating correctly (i.e. rainwater pipe gullies, silt traps, inspection chambers). If required, take remedial action	Monthly for first 3 months, then six monthly thereafter
	Visual inspection of silt traps to ensure no obvious build-up of silt or other blockages. Check to ensure there is no standing water in the chambers	Monthly for first 3 months, then six monthly thereafter (and after large storm events)
	Visual inspection of surface cover to tank for signs of damage that may expose tank.	Monthly for first 3 months, then six monthly thereafter
Remedial Actions	Repair/rehabilitation of inlets, outlets and vents. De-silt tank and inlet catch-pit as required.	As required, de-silting six monthly.
Monitoring	Inspect/check all upstream drainage inlets and outlets to ensure that they are in good condition and operating effectively	Annually and after large storm events
	Survey interior of tank for sediment build-up	5 yearly



NOTES

- Setting out shall be undertaken using only the information given. Distances should not be scaled from this drawing.
- All sewers shall be designed & constructed in accordance with Sewers for Adoption 6th Edition and United Utilities Details & Guidelines.
- The minimum gravity pipe diameter under adoptable highways shall be 150mm.
- It is the responsibility of the Contractor to verify all information given with regards to existing services and drainage connections etc. prior to commencing the works. The rates shall include for hand dig around services where necessary. The Contractor shall adhere to the CDM Regulations at all times.
- The outfalls of all sewers shall be a minimum of 1.0m from kerb lines and the outside of manholes shall be a minimum of 0.5m from kerb lines.
- Existing flows in watercourses, sewers and land drains shall be maintained at all times.
- Only trained personnel shall be permitted to enter confined spaces.
- All materials to bear the relevant B.S. Kitemark and comply fully with the specifications. All concrete & concrete products must use Sulphate resistant cement (unless the site investigation report proves that sulphate attack from soils and groundwater will not occur to withstand a class 3 condition).
- All opening notices etc. as required under highways acts etc. are to be obtained prior to commencement of works. All works are to be inspected by L.A., NHBC or the Network Operator as applicable.
- Where 'Ultra Rib' UPVC pipes (or similar approved) are used in adoptable drainage they shall still be handled and laid in accordance with the specification and guidance issued by the High Performance Pipe Association.
- A Class S Bed and surround must be used for such pipes. Trench backfill in highways to within 1m of highway shall, as directed by the Highway Authority be a suitable granular material all in accordance with Sewers for Adoption cl. 4.3.4.
- Slab levels shall not be varied without reference to the Engineer for guidance.
- Domestic Drainage shall be to Building Regulations Approved Document H. 100mm U.P.V.C. pipes laid to the following minimum falls unless otherwise shown.

	Foul	S.W.
Head Run	1 in 40	1 in 60
Elsewhere	1 in 80	1 in 100
- All works to be in accordance with Lancashire C.C. Standard Details, and as agreed with Lancashire C.C. appointed representative.
- All Adoptable Main Drainage is to be subject to a Section 104 Agreement between the Developer and United Utilities Plc.

KEY

- | | |
|--|--|
| | S.W. |
| | Highway Drain |
| | Foul |
| | Proposed sewer |
| | Disconnection I.C. (1050mmØ pcc) |
| | Sewer Easement |
| | Proposed Plot Level |
| | Existing Foul sewer |
| | Existing S.W. sewer |
| | Existing Combined sewer |
| | Proposed highway gully |
| | Tactile Paving & Dropped Kerb |
| | Proposed street name plate (exact position to be agreed on site) |

P	12/10/22	RDE	Drainage amended to suit latest climate change allowances.
O	05/10/22	ME	Latest development layout added with Proposed Sub Station position.
N	07/06/22	DA	Latest development layout added, PFLs updated to suit.
M	22/07/22	DA	Latest development layout added, PFLs updated to suit.
L	15/06/22	ME	Drainage Design & PFLs updated to suit latest development layout.
J	17/05/22	ME	PFLs to plot 35.5 amended.
J	25/04/22	ME	Drainage Design & PFLs updated to suit latest development layout.
L	01/02/22	ME	Highway Retaining Wall updated to suit Road 1 Design.
M	01/01/22	ME	Drainage Design Updated to suit latest development layout.
G	11/06/21	ME	Drainage Design Updated to suit latest development layout.
F	18/05/21	ME	Drainage Design Updated to suit latest development layout.
E	04/05/20	SG	Updated to include existing watercourse on east boundary.
D	02/01/19	SG	Updated to latest development layout.
C	25/01/18	RD	Manhole details added.
B	10/12/18	RDE	Indicative retaining walls shown (above 0.6m).
A	07/12/18	RDE	Updated to latest Architect's layout.
Rev	Date	Initials	Details

Drawing Revisions

Rev	Date	Initials	Details
1	07/12/18	RDE	Updated to latest Architect's layout

North Arrow

Project
Smithy Bridge
Rochdale

Client
Taylor Wimpey
(Manchester)

Quality Ass.
UKAS 005
Quality Assurance
ISO 9001:2008
SGS Certificate
GB52545399

Drawn
SRG

Checked By
NBE

Date
July 18

Scale
1:500

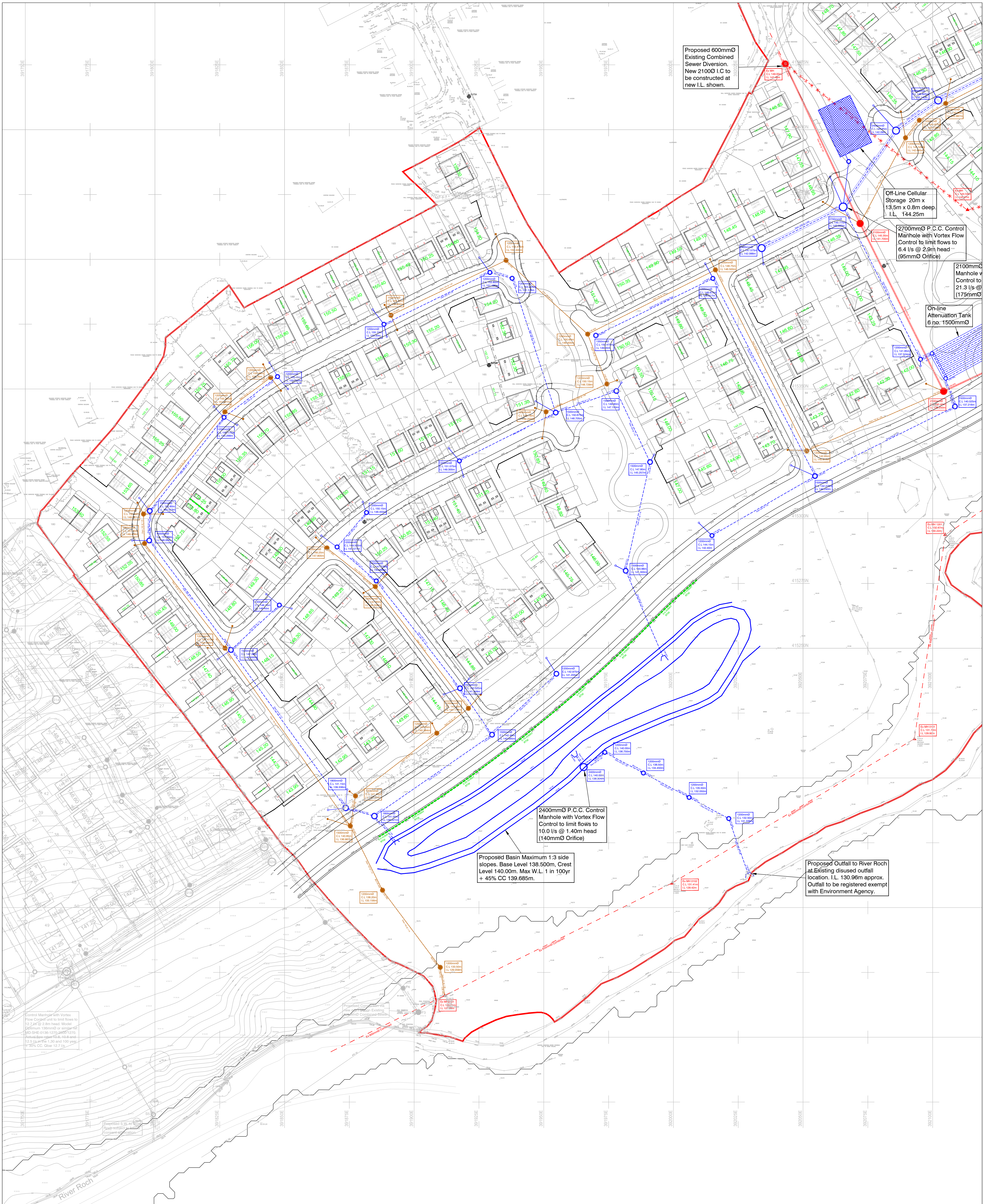
Drawing No.
30329/1/1

Revision
P

Ironsides Farrar
Environmental Planners
Civil Engineers
Landscapes Architects
Ground Design

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EDINBURGH BELLSHILL



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| | Proposed street name plate (exact position to be agreed on site) |

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M 20/07/21 DA Latest development layout added. FFLs updated to suit.	
L 16/06/22 ME Drainage Design & FFLs updated to suit latest development layout.	
K 25/04/22 ME Drainage Design & FFLs updated to suit latest development layout.	
J 09/03/22 ME Drainage FFLs corrected on plans 166-171 as requested by Client.	
I 01/03/22 ME Highway Retaining Wall updated to suit Road 1 Design.	
H 21/01/22 ME Drainage Design Updated to suit latest development layout.	
G 11/06/21 ME Drainage Design Updated to suit latest development layout.	
F 18/03/21 ME Drainage Design Updated to suit latest development layout.	
E 04/05/20 SG Updated to include watercourse on eastern boundary.	
D 12/07/19 SG Updated to latest development layout.	
C 28/01/19 KD Manhole details added.	
B 10/12/18 RDE Indicative retaining walls shown (above 0.8m).	
A 07/12/18 RDE Updated to latest Architects layout.	
Rev Date Initials	
Drawing Revisions	
North Point	
Project	
Smithy Bridge Rochdale	
Client	
Taylor Wimpey (Manchester)	
Quality Ass.	
UKAS 005	
Quality Assurance	
ISO 9001:2008	
900 Certificate	
GBR204630	
Title	
Highways & Drainage Layout	
Sheet 2 of 2	
Drawing Set	
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Drawing Set	
Engraved & Signed	
Ordnance Survey	
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Checked By	
SRG	
Date	
July 18	
Scale	
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Drawing No.	
30329/1/2	
Revision	
O	
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Environmental Planners	
Civil Engineers	
Landscape Architects	
Graphic Design	
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