Foul Water Manhole Schedule:

MH Ref:	CL	IL	MH Depth	MH Mat'l	MH Size
F1	3.150	2.650	0.500	Plastic	Ø250
F2	3.150	2.410	0.740	Plastic	Ø450
F3	3.150	2.650	0.500	Plastic	Ø250
F4	3.150	2.650	0.500	Plastic	Ø250
F5	3.150	1.830	1.320	Plastic	Ø450
F6	3.150	1.720	1.430	Plastic	Ø450
F7	3.150	1.600	1.550	Plastic	Ø450

Foul Water Pipe Schedule:

Pipe Ref:	U/S IL	D/S IL	Pipe Dia	Length (m)	Grad. 1:X	Pipe Mat'l
F1.000	2.650	2.410	100	9.30	38.8	Plastic
F1.001	2.410	1.830	100	22.68	39.1	Plastic
F3-F1.000	2.650	2.140	100	0.50	1.0	Plastic
F4-F1.001	2.650	1.950	100	0.50	0.7	Plastic
F1.002	1.830	1.720	100	4.06	36.9	Plastic
F1.003	1.720	1.650	100	2.17	31.0	Plastic
F1.004	1.600	-0.020	150	4.00	2.5	Plastic

NOTE: All chambers greater than 1m depth to invert to have access opening restricted to 350mm diameter or 300 x 300mm.

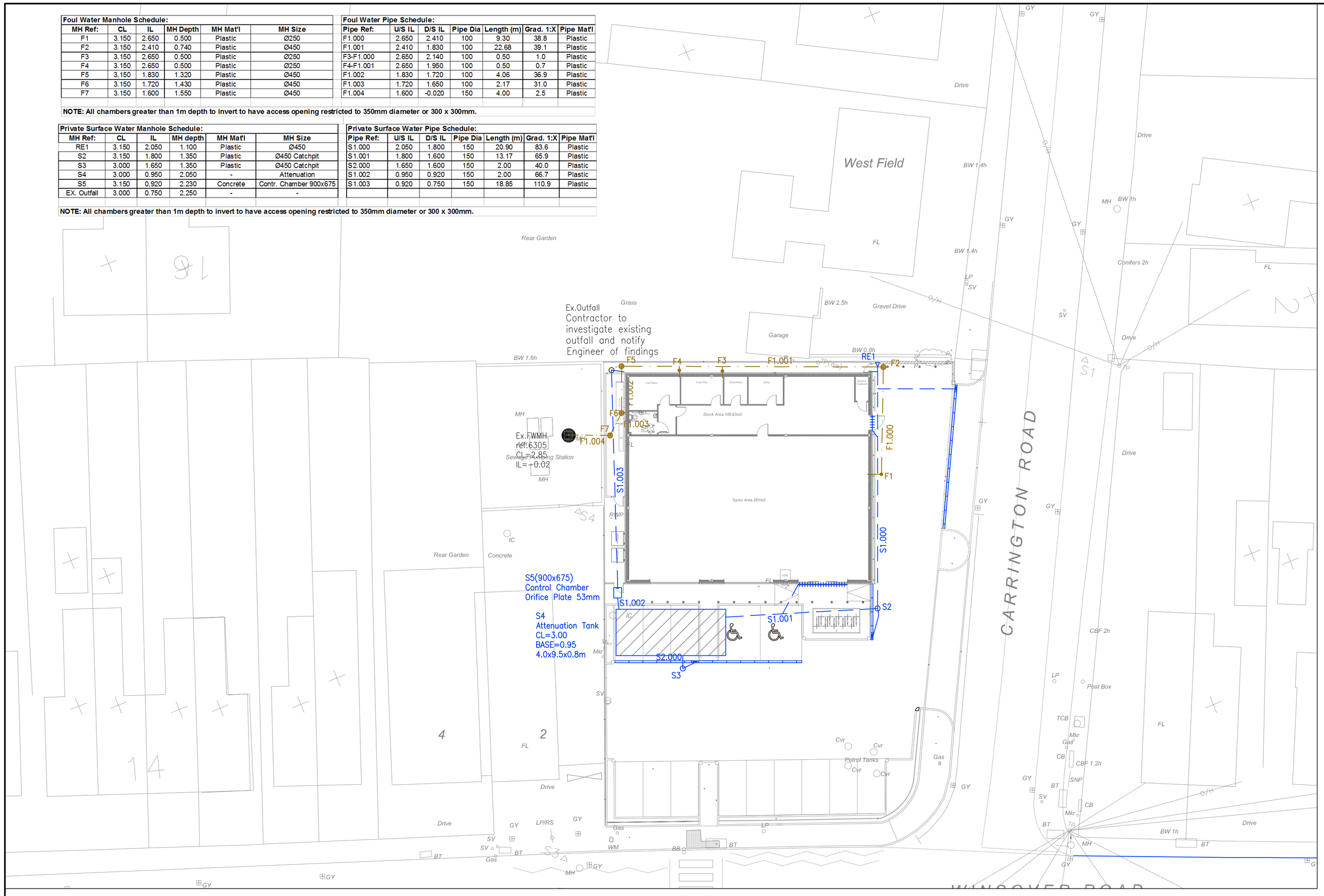
Private Surface Water Manhole Schedule:

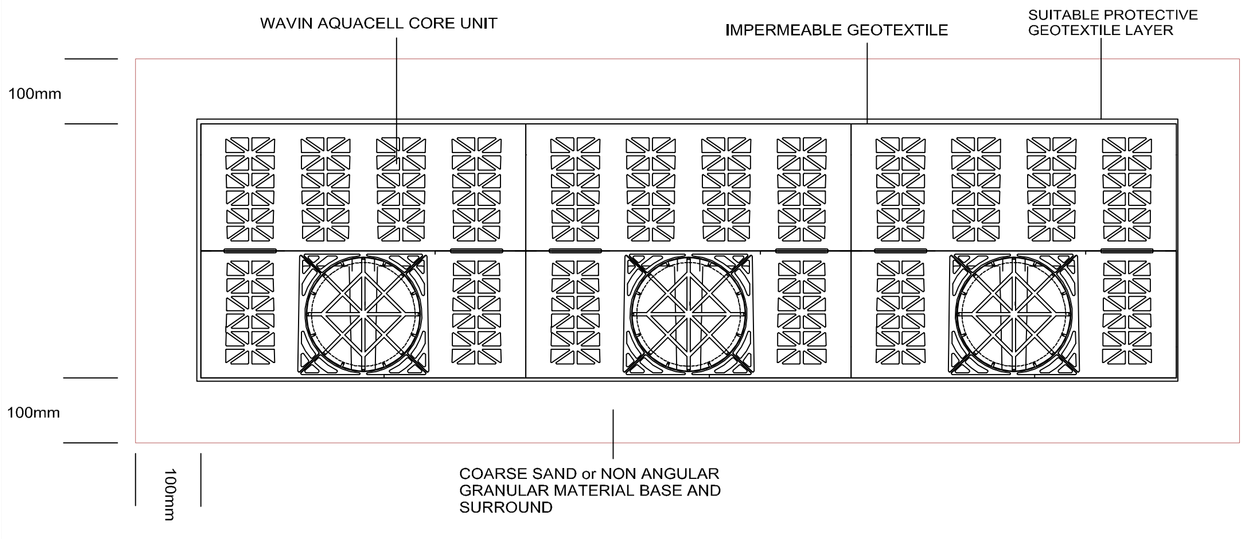
MH Ref:	CL	IL	MH depth	MH Mat'l	MH Size
RE1	3.150	2.050	1.100	Plastic	Ø450
S2	3.150	1.800	1.350	Plastic	Ø450 Catchpit
S3	3.000	1.650	1.350	Plastic	Ø450 Catchpit
S4	3.000	0.950	2.050	-	Attenuation
S5	3.150	0.920	2.230	Concrete	Contr. Chamber 900x675
EX. Outfall	3.000	0.750	2.250	-	-

Private Surface Water Pipe Schedule:

Pipe Ref:	U/S IL	D/S IL	Pipe Dia	Length (m)	Grad. 1:X	Pipe Mat'l
S1.000	2.050	1.800	150	20.90	83.6	Plastic
S1.001	1.800	1.600	150	13.17	65.9	Plastic
S2.000	1.650	1.600	150	2.00	40.0	Plastic
S1.002	0.950	0.920	150	2.00	66.7	Plastic
S1.003	0.920	0.750	150	18.85	110.9	Plastic

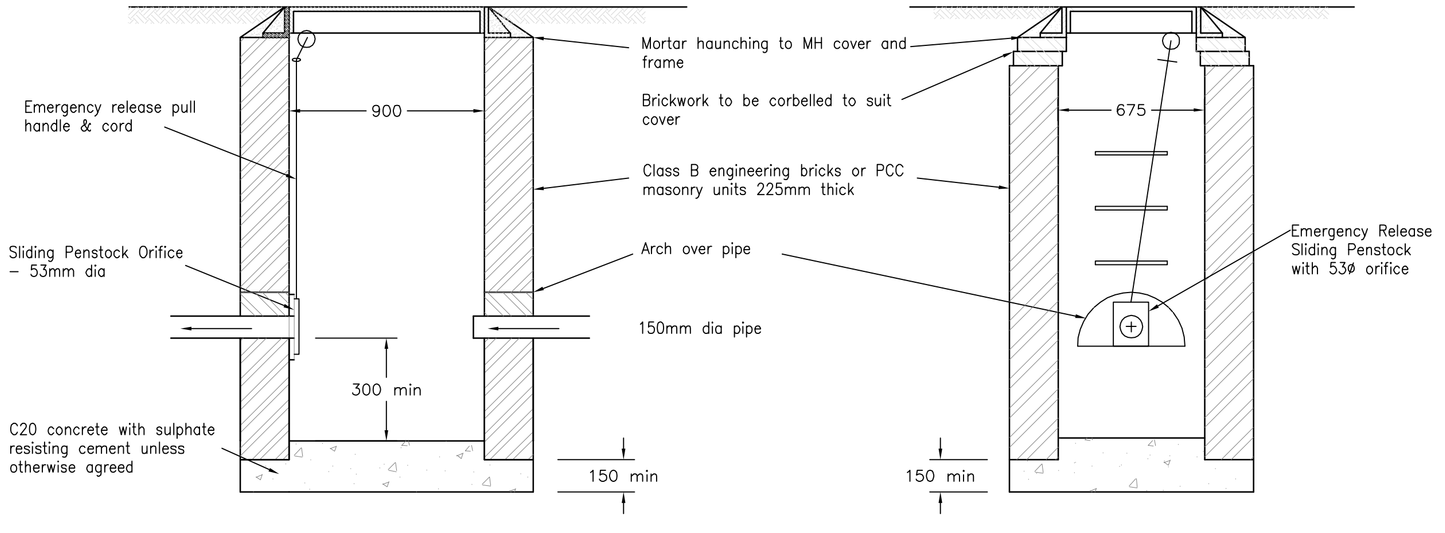
NOTE: All chambers greater than 1m depth to invert to have access opening restricted to 350mm diameter or 300 x 300mm.





ATENUATION TANK DETAIL

1. Excavate the trench to the required depth ensuring that the plan area is slightly greater than that of the AquaCell Core units.
2. Lay 100mm bed of coarse sand, level and compact.
3. Lay the geotextile over the base and up the sides of the trench.
4. Lay the geomembrane on top of the geotextile over the base and up the sides of the trench.
5. Lay the AquaCell Core units parallel with each other.
6. Wrap the geomembrane around the AquaCell Core structure and seal to manufacturers recommendations.
7. Place the Flange Adaptor into position (at a point other than the pre-formed socket) and fix using self tapping screws. Drill a hole through the Flange Adaptor and connect pipework.
8. Wrap and overlap the geotextile covering the entire AquaCell structure, to protect the geomembrane.
9. Lay 100mm of coarse sand between the trench walls and the AquaCell Core units and compact.
10. Lay 100mm bed of coarse sand over the geotextile and compact. Backfill with suitable material.



FLOW CONTROL CHAMBER

KEY TO LINETYPES

- PROPOSED PRIVATE SURFACE WATER DRAIN
- PROPOSED PRIVATE FOUL WATER DRAIN
- PROPOSED PRIVATE FOUL WATER IC (250ø/450ø)
- RE PROPOSED SURFACE WATER RODDING EYE
- PROPOSED SURFACE WATER IC/MH (450ø)
- CONTROL CHAMBER 600X450; ORIFICE PLATE ø85mm
- LINEAR DRAIN WITH SUMP UNIT/SLOT DRAIN
- THRESHOLD DRAIN
- PROPOSED SURFACE WATER ATTENUATION TANK

NOTE:
Impermeable area of the existing layout –approx. 0.12ha
Impermeable area of the proposed layout –approx. 0.12ha
Surface water runoff from existing brownfield site:
Q=2.78x50x0.12= 16.68 l/s.

Geotechnical Investigation Report states that there was made ground encountered on site together with soft to very soft clay which makes the use of soakaways not a viable solution.
Surface water is attenuated on site within attenuation tank.
Surface Water outfall from the site for 30 years +30% climate change return period is restricted to 4.9 l/s by a control chamber utilizing orifice plate.

NOTE:
Contractor to trace and investigate existing surface water outfall located in the north–west corner of the site, serving demolished building. Engineer to be notified of outcomes before any drainage works are undertaken on site.

Drainage Layout
Scale 1:200

DO NOT SCALE

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NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL DWS DRAWINGS & ALL OTHER RELEVANT ENGINEERS, ARCHITECTS & SPECIALIST DESIGN DETAILS.
2. THE POSITION, LINE, LEVEL AND DIAMETER OF ALL EXISTING DRAINAGE APPARATUS SHOULD BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY.
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
4. THE CONNECTION OF FOUL AND SURFACE WATER DRAINAGE TO THE EXISTING SEWER SYSTEM SHALL BE SUBJECT TO THE APPROVAL OF THE CONTROLLING BODY.
5. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT BRITISH STANDARDS, BS CODES OF PRACTICE AND BUILDING REGULATIONS.
6. ALL DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH WSA 'SEWERS FOR ADOPTION (7TH EDITION)' AND 'CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY (7TH EDITION)'
7. UPVC PIPES AND FITTINGS TO COMPLY WITH BS EN 1401-1 1998
8. CLAYWARE PIPES AND FITTINGS SHALL COMPLY WITH BS EN 295:1991 PART 1
9. RUBBER JOINT RINGS SHALL BE TYPE D TO BS 2494 AND SHALL BE OBTAINED FROM THE PIPE MANUFACTURER.
10. DRAINAGE TO BS 8301 WITH PIPES OF APPROVED TYPE ON GRANULAR BED AND SURROUND AND ALL LAID IN STRICT ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
11. PIPES UNDER BUILDINGS AND WITH COVER LESS THAN:- 600 UNDER LANDSCAPED AND NON-TRAFFICKED AREAS 900 UNDER CAR PARKING AREAS TO HAVE CONCRETE PIPE PROTECTION APPLIED.
12. ALL PIPES ENTERING EXISTING MANHOLES ARE TO BE CONNECTED WITH PREFORMED BRANCH CHANNEL SECTIONS.
13. FIRST FLEXIBLE JOINT IN PIPES ADJACENT TO A MANHOLE SHALL BE A MAX. 600MM FROM THE INSIDE FACE OF THE MANHOLE, CONNECTING TO A ROCKER PIPE.
14. CHAMBER COVERS AND FRAMES TO BE DUCTILE IRON HEAVY DUTY GRADE D400 DOUBLE TRIANGULAR TO BS EN 124 IN CARRIAGEWAYS AND HEAVY VEHICULAR TRAFFICKED AREAS (150MM THICK). MANHOLE COVERS AND FRAMES TO BE DUCTILE IRON MEDIUM DUTY GRADE B125 CIRCULAR OR RECTANGULAR TO EN 124 IN NON TRAFFICKED AREAS.
15. ALL CEMENT USED IN THE CONSTRUCTION OF MANHOLES SHALL BE ORDINARY PORTLAND CEMENT (OPC) TO THE RELEVANT PROVISIONS OF BS 4027 CESWI SPEC CL 2.15.
16. REFER TO CESWI SPECIFICATION CL2.20 FOR SAND/CEMENT MORTAR GRADES.
17. HIGH STRENGTH GRANOLITHIC CONCRETE TOPPING TO BENCHING TO BE STEEL TROWELLED TO A DENSE SMOOTH FACE NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS IN ACCORDANCE WITH CESWI SPECIFICATION CL.4.30.
18. PIPES SHALL BE LAID TO THEIR TRUE LINE AND LEVEL BY LASER OR BY BONING EACH END AND MIDDLE.
19. ALL SOFT SPOTS WITHIN PIPE TRENCHES SHALL BE REMOVED AND FILLED WITH TYPE 1 MATERIAL.
20. NO WATER SHALL BE ALLOWED TO ACCUMULATE IN PIPE TRENCHES DURING CONSTRUCTION.
21. ALL FILL MATERIAL SHALL BE CONSOLIDATED IN LAYERS NOT EXCEEDING 225MM.
22. ALL IN SITU CONCRETE USED IN PIPE PROTECTION TO BE MIN. GEN3
23. COMPRESSIBLE FILLER FOR INTERRUPTION OF CONCRETE PIPE PROTECTION SHALL CONSIST OF BITUMEN IMPREGNATED INSULATING BOARD TO BS1142 PT3 AT EACH PIPE JOINT; THICKNESS IN ACCORDANCE WITH CESWI CLAUSE 2.52.
24. ANY REDUNDANT DRAINS SHALL BE REMOVED OR CONCRETE SEALED.
25. ALL EXISTING SERVICES IN AREA OF DRAINAGE WORKS TO BE IDENTIFIED, LOCATED BY HAND-DUG TRIAL HOLE METHODS AND DISCONNECTED OR DIVERTED AS REQUIRED, IN ACCORDANCE WITH ALL SERVICE PROVIDER APPROVAL AND METHODOLOGY PROCEDURES.
26. CONSTRUCTION PLANT SHOULD BE PREVENTED FROM TRAFFICKING OVER AQUACELL CORE SYSTEM UNTILL IT IS INSTALLED AND SURFACING COMPLETED.
27. TRUCKS OR TRACKED EXCAVATORS USED IN CRATE INSTALLATION & BACKFILLING WORKS (NOT EXCEEDING 21 TONNES WEIGHT) MAY PASS OVER THE INSTALLED AQUACELL UNITS ONCE AT LEAST 300mm OF FILL HAS BEEN INSTALLED ON TOP.

Ref.	Revision	Date	By
A	Treshold drains and drainage points added	10.03.16	KK

Issue: PRELIMINARY

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Project Title	210 Winsover Road, Spalding
Drawn	KK
Engineer	KK
Checked	
Scale	1:200@A1
Date	JAN 2016
Drawing Title	DRAINAGE LAYOUT
Project No.	15-13398
Drawing No.	100
Revision	A