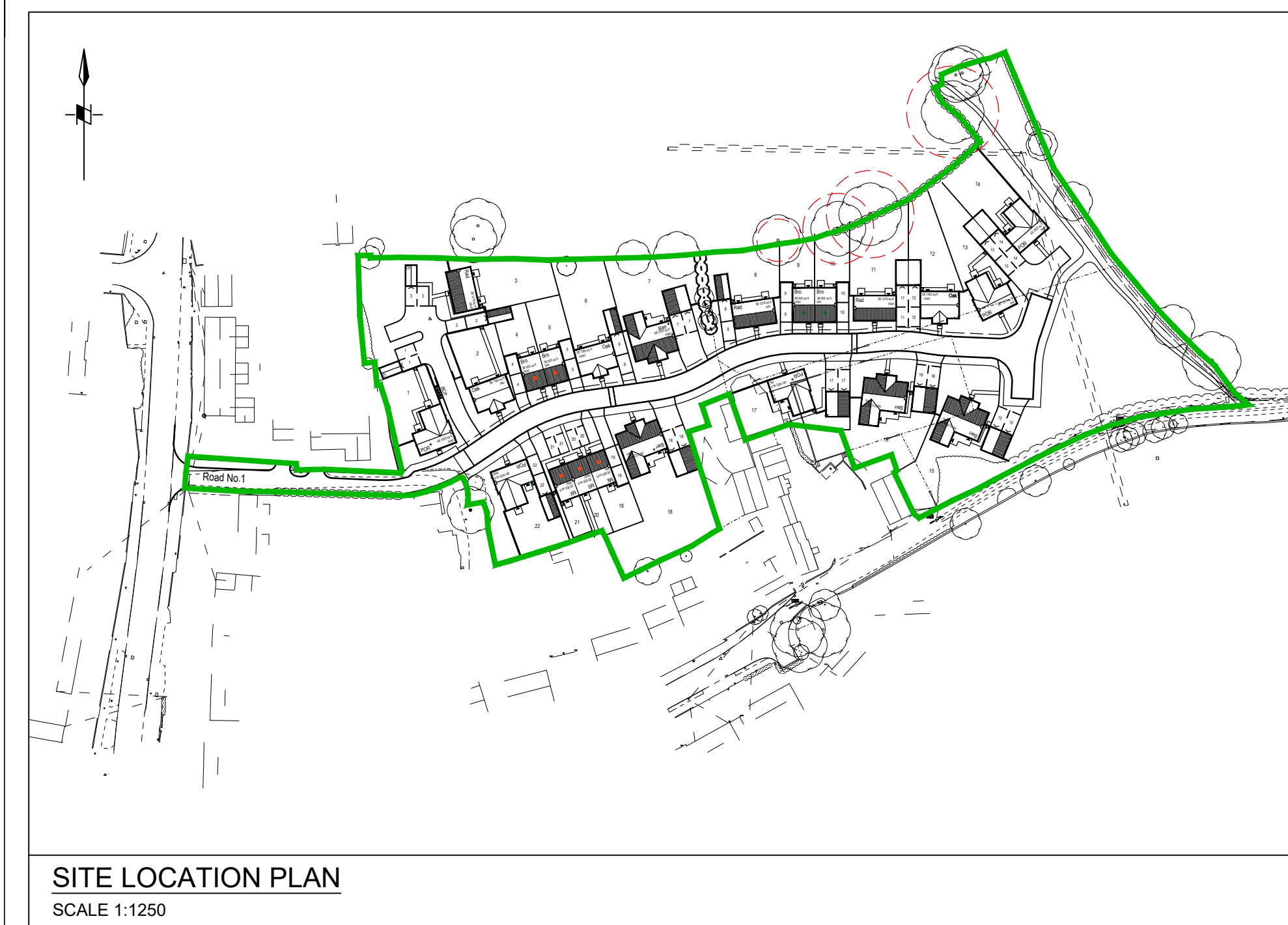


**SURFACE WATER FLOW SUMMARY**

Existing Site Area :
Total Site Area = 1,381 ha (Greenfield)

Impermeable Areas :
Residential Development Area = **0.342 ha**
Private Access Road Area = **0.188 ha**
Total Proposed Impermeable Area = **0.530 ha**

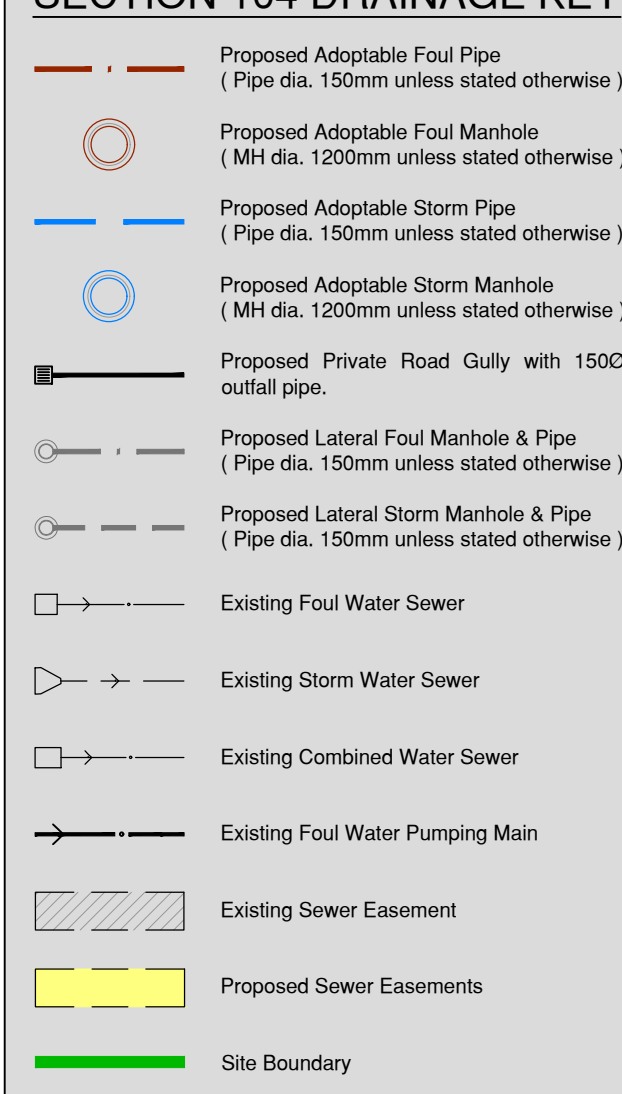
Discharge Rate :
Flow rate restricted to 7.2 L/s based on 5.0 L/s/ha, as the site stated in the FRA produced by Aspin Consulting Ltd.

Surface Water Storage requirements :
100yr + 40% CC in SUDS Attenuation Basin = 285.0 m³

A site investigation will be required to determine whether soakways are viable on site. A Developer Enquiry from STW shows the location and depth of foul water sewer under Salfersford Lane - Brindal Way. Storm water drainage is to discharge into the existing ditch which outfalls into existing watercourse.

The existing utilities information indicated on this drawing, has been produced from information supplied by other parties. No warranty as to the correctness of the information is given or implied.

All utility apparatus must be verified inoperative before carrying out work or excavations in the vicinity. All drainage connections should be inspected by CCTV to ensure that they are redundant before being removed.

SECTION 104 DRAINAGE KEY**GENERAL NOTES**

A. The Contractor shall check all tie-ins for line and level with existing before commencing any works. The Engineer shall be notified immediately, in writing, should any errors be found.

B. Any discrepancies, of whatever nature, must be reported to the Engineer prior to the commencement or continuance of any further works. It is the responsibility of the contractor to locate any service apparatus in the vicinity of the works. Engineer will accept no claims whatsoever in respect of any losses or damage caused in respect of such apparatus, however caused.

C. It is the responsibility of the Contractor to execute the works at all times in strict accordance with the requirements of the Health and Safety At Work Act 1974, and CDM regulations 2015. The contractor will be deemed to have allowed for full compliance, including full liaison with the planning supervisor, within his rates.

D. All private drainage works to be in accordance with the requirements of Building Regulations 2010, Part H, "Drainage and waste disposal".

E. Should any departure from the slab level be considered, agreement shall be sought from the Engineer immediately and prior to commencement or continuance of any works, and should take full account of all restrictions to the slab level.

1. This drawing is to be read in conjunction with all other relevant Engineering and Architects details

2. All work is to be carried out in accordance with the current British Standards, Building Regulations and Design and Construction Guidance (DCG).

Highway construction materials and workmanship shall be in accordance with the Highway Authority's current general specification for roadworks. The Principal Contractor shall be responsible for checking the existing line and invert levels of any connection points for both the foul and surface water systems, prior to undertaking installation of any new drainage works. Any deviation to the levels and positions indicated on the drawing should be brought to the immediate attention of the Project Engineer.

3. For details of ground conditions refer to the Ground Investigation Report.

4. The following pipe strengths shall be adopted unless noted otherwise:

Clay Class 120 or 28kN/m crushing strength to BS EN 295-1 (1500)

Clay Class 160 or 36kN/m crushing strength to BS EN 295-1 (2250)

Clay Class 180 or 48kN/m crushing strength to BS EN 295-1 (3000)

Class 120 (W) concrete to BS EN 1916 / BS 5911 (3750 -)

Alternatively PVCu to BS EN 1401-1 may be used. Polypropylene (PP) or similar pipes may be used up to 300mm dia. Polypropylene (PP) or similar pipes 400mm dia - 900mm dia, subject to approval by the engineer / adopting authority.

5. All pipe runs to be laid with flexible joints.

6. All pipes entering and exiting manholes are to be connected with pipe soffits level unless noted otherwise. All connections to be turned in direction of flow using pipe bends.

8. All inverts specified are outgoing based on largest pipe size (except backdrop).

9. All connections to be made by purpose made junctions as far as practicable.

10. Bedding and surround to be Class "S" unless noted otherwise.

11. First flexible joint in pipes adjacent to a manhole shall be a maximum of 600mm from inside face of manhole, connecting to a rocker pipe.

12. All drains to be tested prior to backfilling, after backfilling and upon completion of hard landscaping. In addition all drains to be inspected by CCTV methods prior to hard landscaping.

13. The concrete mixes are to be class C10 GEN1 / C 20 GEN2 (all in accordance with BS5328).

The above concrete mixes have been selected for BS 5328 Class 2 Sulphates. All precast concrete products (ie pipes, manholes (rings etc)) shall be of suitable concrete mix to cater for Class 2 sulphates.

14. Manhole covers and frames to be as follows:-

Service yards/Sen's BS Reference
Access Roads BS EN 124 Class D400
Kerbside drainage BS EN 124 Class C250
Footways, pedestrian BS EN 124 Class B125
& car parking BS EN 124 Class A15

15. Pre-formed channels are to be used in manholes where applicable.

16. Granolithic concrete benching to be steel trowelled to a dense smooth face neatly shaped and finished to all branch connections.

17. Manholes with outgoing pipes greater than 600mm diameter shall be fitted with guard bars, safety chains of other safety devices.

18. Internal inspection chambers & access fittings are to be constructed in accordance with the HWBC Standards and tree preservation officers requirements.

19. Road gully connections to be 150mm dia. laid at a minimum gradient of 1:150 unless noted otherwise.

20. All petrol interceptors are to be installed strictly in accordance with the manufacturers recommendations.

21. All drainage works within the zone of influence of trees are to be completed in accordance with the HWBC Standards and tree preservation officers requirements.

22. All SVP's & RWP's to have a vertical rod/ring access positioned above ground level. Exact position of all SVP's & RWP's and setting out of these items to be confirmed by Architect.

Size and position of Syphonic Rainwater pipes and connections to be confirmed by specialists prior to construction.

All new branch connections to be :-
Storm- 100mm Ø (min 1:60) Foul - 100mm Ø (min 1:40)

Storm Design - 2YR Return Period
Hardstandings etc RFI=75mm/hr
(Road Drainage RFI=75mm/hr)

Foul Design - BS EN 752 - 1998

23. All pipes to be 100mm internal diameter, unless stated otherwise on the layout.

C3 POND DETAILS AMENDED TO SUIT LATEST CALCS. QJB 01.06.23

C2 PRIVATE GULLY ADDED TO KEY TO SUIT DRAINAGE COMMENTS FROM AMET. MS 07.04.22

C1 F9 MOVED NEARER TO BOUNDARY AS REQUESTED BY STW. MS 21.12.21

C0 DRAWING ISSUED FOR CONSTRUCTION. QJB 27.09.21

D8 FOUL AND STORM TYPE C MANHOLES AMENDED TO 1000 AS REQUESTED BY STW. QJB 23.09.21

D7 FOUL MANHOLE SCHEDULE AMENDED AS REQUESTED BY STW. QJB 23.09.21

D6 STORM AND FOUL MANHOLE SCHEDULES ADDED. POND AND HEADWALLS COLOURED BLUE AS REQUESTED BY STW. QJB 06.08.21

D5 EXACT LOCATION OF RISING MAIN FOUND. DRAWING UPDATED WITH RISING MAIN POSITION. QJB 02.08.21

D4 DRAWING SCALE AMENDED AS REQUESTED BY STW. LOCATION OF EXPIRATORY DIGS ADDED TO PLAN AS REQUESTED BY STW. QJB 24.06.21

D3 EXISTING COMBINED RISING MAIN REPOSITIONED AFTER ON SITE INVESTIGATION. QJB 27.06.21

D2 STORM OUTFALL AMENDED. QJB 13.04.21

D1 STORM AND FOUL SEWERS AMENDED TO SUIT THE LATEST ROAD ALIGNMENT. QJB 18.02.21

REV INITIAL ISSUE. QJB 12.08.19

REV AMENDMENT. REV DATE

PROJECT EXECUTION CLASS: N/A

CONSTRUCTION

COUCH Consulting Engineers

Civil & Structural

London Road, Popham, 14-16 St. Nicholas, Gorsea Centre, 18 Innovation Way, Walton Common, C254 4DD, Walton, Surrey, GU24 0AA, UK. Tel: 01753 648 767 Tel: 01753 648 768 www.couch.co.uk

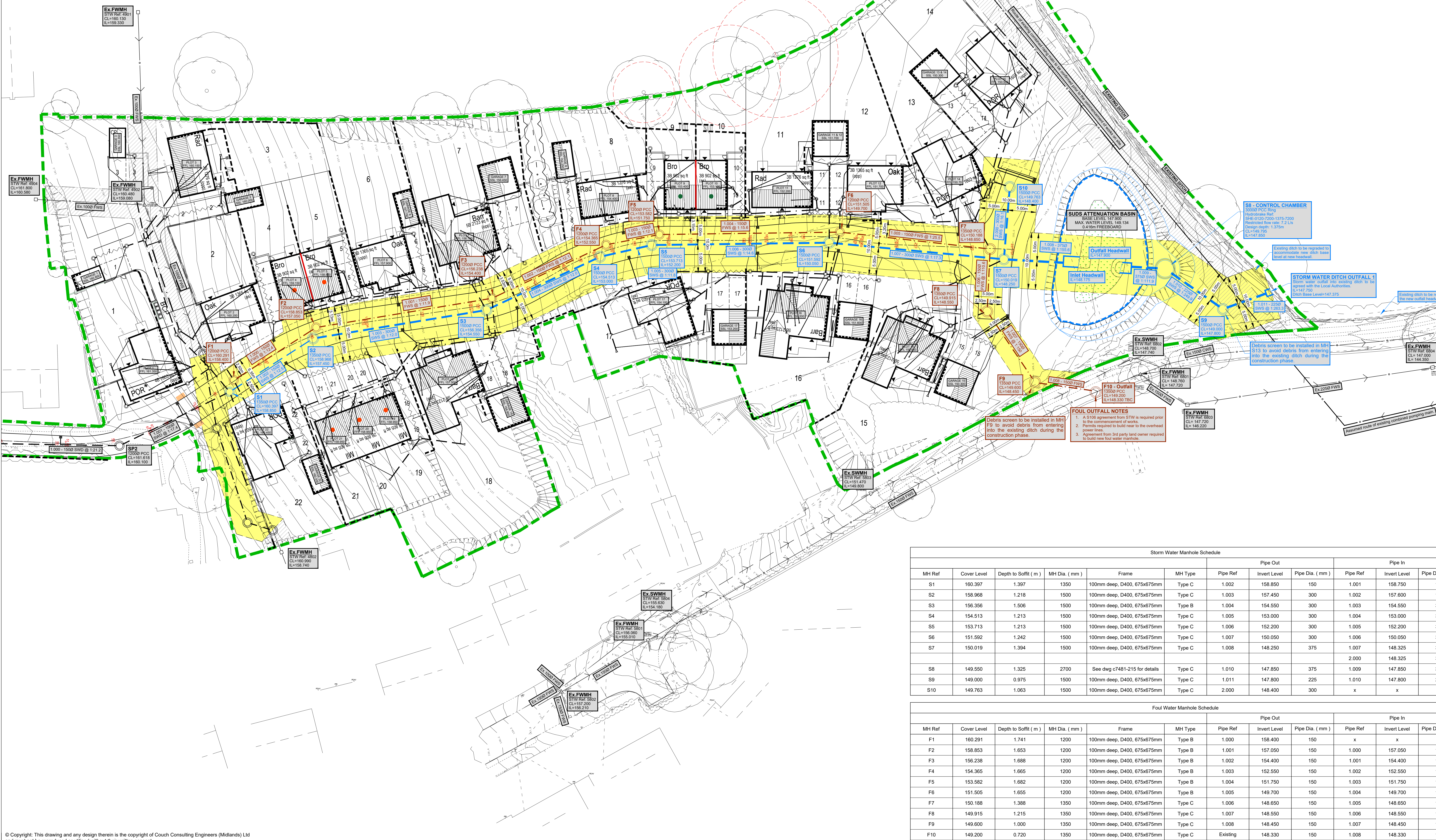
CLIENT: RESIDENTIAL DEVELOPMENT @ SALTERSFORD LANE, ALTON

PROJECT: SECTION 104 WORKS DRAINAGE LAYOUT

DRAWING TITLE: SECTION 104 WORKS DRAINAGE LAYOUT

SHEET NO: A0 SCALE: 1:250 DATE: AUG 2019 DRAWN: OJB CHECKED: MS STATUS: -

C/PROJECT NO: 67481 DRAWING NO: 210 REV: C3



MH Ref	Cover Level	Depth to Soffit (m)	MH Dia. (mm)	Frame	MH Type	Pipe Ref	Invert Level	Pipe Dia. (mm)	Pipe Ref	Invert Level	Pipe Dia. (mm)
S1	160.397	1.397	1350	100mm deep, D400, 675x675mm	Type C	1.002	158.850	150	1.001	158.750	150
S2	158.968	1.218	1500	100mm deep, D400, 675x675mm	Type C	1.003	157.450	300	1.002	157.600	150
S3	156.356	1.506	1500	100mm deep, D400, 675x675mm	Type B	1.004	154.550	300	1.003	154.550	300
S4	154.513	1.213	1500	100mm deep, D400, 675x675mm	Type C	1.005	153.000	300	1.004	153.000	300
S5	153.713	1.213	1500	100mm deep, D400, 675x675mm	Type C	1.006	152.200	300	1.005	152.200	300
S6	151.592	1.242	1500	100mm deep, D400, 675x675mm	Type C	1.007	150.050	300	1.006	150.050	300
S7	150.019	1.394	1500	100mm deep, D400, 675x675mm	Type C	1.008	148.250	375	1.007	148.325	300
S8	149.550	1.325	2700	See dwg c7481-215 for details	Type C	1.010	147.850	375	1.009	147.850	375
S9	149.000	0.975	1500	100mm deep, D400, 675x675mm	Type C	1.011	147.800	225	1.010	147.800	225
S10	148.763	1.063	1500	100mm deep, D400, 675x675mm	Type C	2.000	148.400	300	x	x	x

MH Ref	Cover Level	Depth to Soffit (m)	MH Dia. (mm)	Frame	MH Type	Pipe Ref	Invert Level	Pipe Dia. (mm)	Pipe Ref	Invert Level	Pipe Dia. (mm)
F1	160.291	1.741	1200	100mm deep, D400, 675x675mm	Type B	1.000	158.400	150	x	x	x
F2	158.853	1.653	1200	100mm deep, D400, 675x675mm	Type B	1.001	157.050	150	1.000	157.050	150
F3	156.238	1.688	1200	100mm deep, D400, 675x675mm	Type B	1.002	154.400	150	1.001	154.400	150
F4	154.365	1.665	1200	100mm deep, D400, 675x675mm	Type B	1.003	152.550	150	1.002	152.550	150
F5	153.582	1.682	1200	100mm deep, D400, 675x675mm	Type B	1.004	151.750	150	1.003	151.750	150
F6	151.505	1.655	1200	100mm deep, D400, 675x675mm	Type B	1.005	149.700	150	1.004	149.700	150
F7	150.188	1.388	1350	100mm deep, D400, 675x675mm	Type C	1.006	148.650	150	1.005	148.650	150
F8	149.915	1.215	1350	100mm deep, D400, 675x675mm	Type C	1.007	148.550	150	1.006	148.550	150
F9	149.600	1.000	1350	100mm deep, D400, 675x675mm	Type C	1.008	148.450	150	1.007	148.450	150
F10	149.200	0.720	1350	100mm deep, D400, 675x675mm	Type C	Existing	148.330	150	1.008	148.330	150