

**SURFACE WATER MANHOLE SCHEDULE**

MANHOLE REFERENCE	COVER LEVEL	INVERT LEVEL	DEPTH TO INVERT (m)	DEPTH TO SOFFIT (m)	PIPE SIZE (Ø)	MANHOLE RING SIZE (Ø)	MANHOLE TYPE	COVER CLASS
S1	170.340	169.500	1.840	1.940	300	1200	B	D400
S2	170.800	168.500	2.300	2.400	300	1200	B	D400
S3	170.520	168.638	1.882	1.982	300	1200	B	D400
S4	170.400	168.498	1.902	2.002	300	1200	B	D400
S5	174.000	172.200	1.800	1.900	300	1200	B	D400
S6	170.150	168.700	1.450	1.550	225	1200	A	D400
S7	170.990	168.498	2.492	2.592	300	1200	A	D400
S8	170.840	168.445	2.395	2.495	300	1200	A	D400
S9	169.920	166.267	3.653	3.753	375	1500	A	D400
S10	170.250	168.126	2.124	2.224	375	1500	A	D400
S11	169.600	166.093	3.507	3.607	375	1500	A	D400
S12	169.000	165.844	3.156	3.256	450	1500	A	D400
S13	168.200	164.951	3.249	3.349	375/300	3600	Refer to D-010 4733-C-04-03	D400

**FOUL WATER MANHOLE SCHEDULE**

MANHOLE REFERENCE	COVER LEVEL	INVERT LEVEL	DEPTH TO INVERT (m)	DEPTH TO SOFFIT (m)	PIPE SIZE	MANHOLE RING SIZE	MANHOLE TYPE	COVER CLASS
F1	171.45	170.00	1.45	1.25	1500	1200	8/8	D400
F2	170.87	169.43	1.44	1.29	1500	1200	8/8	D400
F3	170.78	169.33	1.45	1.28	1500	1200	8/8	D400
F4	168.20	165.56	2.64	2.49	1500	1200	B	D400
F5	170.80	169.15	1.65	1.50	1500	1200	B	D400
F6	168.80	167.15	1.65	1.50	1500	1200	B	D400
F7	168.80	167.00	1.80	1.65	1500	1200	B	D400

**COMBINED WATER MANHOLE SCHEDULE**

MANHOLE REFERENCE	COVER LEVEL	INVERT LEVEL	DEPTH TO INVERT (m)	DEPTH TO SOFFIT (m)	PIPE SIZE	MANHOLE RING SIZE	MANHOLE TYPE	COVER CLASS
C1	167.150	164.643	2.507	2.207	3000	3000	B	D400
C2	166.200	164.399	1.801	1.501	3000	3000	B	D400
C3	165.800	163.933	1.868	1.568	3000	3000	B	D400
C4	165.600	163.654	1.946	1.646	3750	3750	B	D400

**DEMARICATION CHAMBER SCHEDULE**

DEMARICATION CHAMBER REFERENCE	SYSTEM	COVER LEVEL	INVERT LEVEL	DEPTH TO INVERT (m)	TYPE/DIA.	LATERAL DOWNHILL	COVER CLASS	DEPTH TO SOFFIT (m)	PIPE GRADE
D1	SW	171.55	170.33	1.22	N.E.I.C.	1500	B125	3.66	1:36.0
D2	SW	170.80	169.38	1.42	N.E.I.C.	1500	D400	2.30	1:13.5
D3	SW	170.72	169.33	1.39	N.E.I.C.	1500	D400	15.30	1:80.0
D4	SW	170.50	169.43	1.07	U.I.C.	1500	D400	6.00	1:80.0
D5	SW	174.90	173.90	1.00	U.I.C.	1500	B125	4.20	1:80.0
D6	SW	171.55	169.38	2.17	U.I.C.	1500	B125	6.00	1:60.0
D7	SW	170.34	169.34	1.00	N.E.I.C.	1500	B125	14.40	1:80.0
D8	SW	170.00	167.33	2.67	U.I.C.	1500	B125	17.70	1:13.4
D9	FW	171.43	170.49	0.94	U.I.C.	1500	B125	8.60	1:23.8
D10	FW	170.60	169.53	1.07	U.I.C.	1500	B125	7.70	1:13.4
D11	FW	170.85	169.43	1.42	N.E.I.C.	1500	B125	8.60	1:23.8
D12	FW	171.51	169.70	1.81	N.E.I.C.	1500	B125	7.70	1:13.4
D13	FW	169.90	168.72	1.18	U.I.C.	1500	B125	8.60	1:23.8

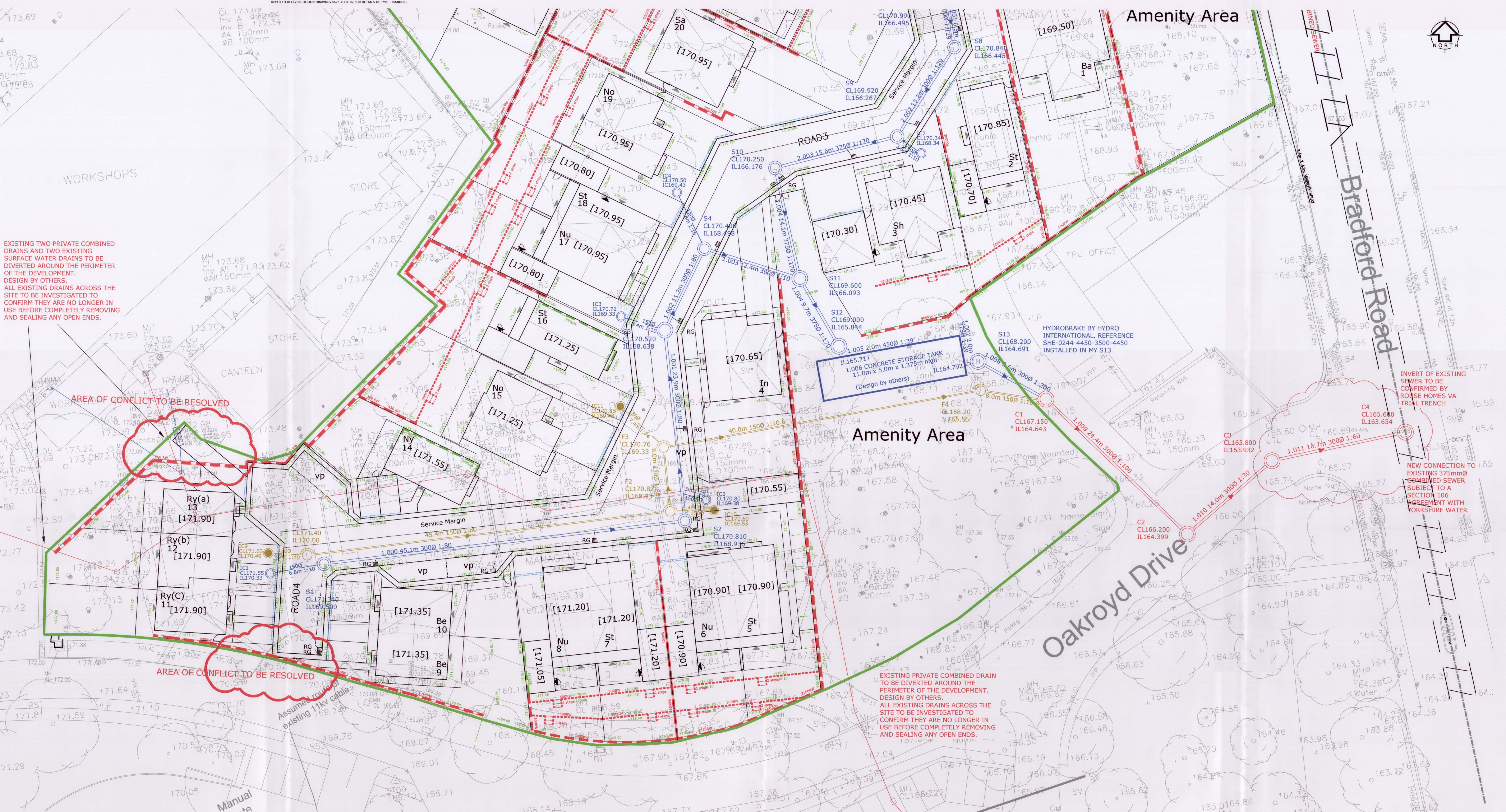
**HIGHWAY DRAIN MANHOLE SCHEDULE**

MANHOLE REFERENCE	COVER LEVEL	INVERT LEVEL	DEPTH TO INVERT (m)	DEPTH TO SOFFIT (m)	PIPE SIZE	MANHOLE RING SIZE	MANHOLE TYPE	COVER CLASS
H1	168.800	166.900	1.900	1.875	2250	1200	B	D400

**CONSTRUCTION RISKS**

CONSTRUCTION RISKS	MAINTENANCE RISKS	DEMOLITION RISKS
<p>Working close to existing services, both above and below ground.</p> <p>Working with existing services and undergrounds, risk of Lymington and Water Damage.</p>		

- ACCEPTABLE DRAINAGE (YORKSHIRE WATER) NOTES**
- No work should commence on site until written approval is received from the relevant authority.
  - All drainage works should be in accordance with the relevant Authority's specifications and standards.
  - Manhole covers shall have a clear opening of 600 x 600mm and shall be Class D400 or B125 with 1500mm deep frames in highways.
  - Bedding and Backfill material to conform to the requirement of Water Industry Specification 4-08-02 (Table A2).
  - The acceptable sewer should be a minimum of 1.0m and manholes 0.5m from kerbs and service margins.
  - Sewers must have 5 metres clearance from trees and hedges. (Refer to Figure 2.2 Page 23 'Sewers for Adoption' for details for restrictions on tree planting adjacent to sewers).
  - Where a drain is laid in a trench (150mm granular bed and surround) Where depth of cover to top of sewer is less than 1.2m in highways and verges (or 500mm in non-highway areas) there shall be a reinforced concrete slab to be provided as protection - see drawing to 4623-C-04-03 for details.
  - Prior to the commencement of on-site works the contractor to check the location, level, depth, and condition of manholes, pipes, and any drains or watercourses in which it is intended to install. Any discrepancy is to be reported immediately to ID Civils Design.
  - Prior to construction the actual position and depth of services likely to be affected by the work should be established by means of a hand dig and confirmed with the statutory service authorities. The contractor shall confirm the results of any hand dig to ID Civils Design of any services affected that do not affect the design.
  - The Local Authority and statutory service providers are to be notified prior to the commencement of work on site.
  - Filled ground must be filled and consolidated under the supervision and control of the relevant authority before any sewer works are carried out.
  - Land drainage and other drains cannot be connected into the acceptable sewers, either directly or indirectly. An alternative method of disposal of the land drainage will therefore be required. You will have to refer to the Local Authority Land Drainage Section with regard to the disposal of filter drylands drainage runoff.
  - Manhole cover slabs must carry the BS 6858 mark or be replaced by the 'Traffic' BS 6858 (1:75). Acceptable plastic cover pipes to be laid in a trench shall be 150mm diameter with a specific structural strength in accordance with the relevant Authority's specifications and standards. They have found that plastic cover pipes are difficult to lay in concrete because they float and a satisfactory finish cannot be achieved on the bedding.
  - Lightweight concrete cover (C20/C25) to be used unless otherwise specified. The minimum crushing strength for clay pipes should be as follows: 1000mm Ø - 4000kN/m², 1500mm Ø - 4000kN/m², 2250mm Ø - 4000kN/m², 3000mm Ø - 7200kN/m².
  - The minimum crushing strength for concrete pipes shall be Class C20 to C25 (BS EN 12450-1:2002). Plastic pipes to conform to BS 4743-01 and BS 4743-02.
  - Acceptable plastic sewer pipes to be BS 6858 (marked with W8) or BS 6858 (1:75). Acceptable plastic cover pipes to be laid in a trench shall be 150mm diameter with a specific structural strength in accordance with the relevant Authority's specifications and standards. They have found that plastic cover pipes are difficult to lay in concrete because they float and a satisfactory finish cannot be achieved on the bedding.
  - All new connections to adopted sewers to be covered by a Section 106 Agreement with the relevant Authority. The application form to be completed by the contractor in accordance with the relevant Authority's specifications and standards.
  - Prior to commencement, the Main Contractor is to provide Yorkshire Water with documentary evidence from the manufacturer that any plastic pipes used are suitable for the ground conditions.
  - The chamber size of manholes with more than one connection may need to be increased to accommodate the connection and bedding.
  - Yorkshire Water policy is not to accept Type 'C' manholes and 1500mm diameter pipes. Instead it is preferred that you use a Type 'B' manhole with 1200mm or 1500mm diameter with increasing cover over the chamber where depth of cover to pipe soffit is 1.0m - 1.5m.
  - Where BS 6858 and other standards have been approved, they shall be used in plastic and must have fitting ends suitably used to accommodate standard fitting ends. Where cover is not acceptable.
  - Refer to Formers drawings and details for all information relating to the boxes.



EXISTING TWO PRIVATE COMBINED DRAINS AND TWO EXISTING SURFACE WATER DRAINS TO BE DIVERTED AROUND THE PERIMETER OF THE DEVELOPMENT. DESIGN BY OTHERS. ALL EXISTING DRAINS ACROSS THE SITE TO BE INVESTIGATED TO CONFIRM THEY ARE NO LONGER IN USE BEFORE COMPLETELY REMOVING AND SEALING ANY OPEN ENDS.

EXISTING PRIVATE COMBINED DRAIN TO BE DIVERTED AROUND THE PERIMETER OF THE DEVELOPMENT. DESIGN BY OTHERS. ALL EXISTING DRAINS ACROSS THE SITE TO BE INVESTIGATED TO CONFIRM THEY ARE NO LONGER IN USE BEFORE COMPLETELY REMOVING AND SEALING ANY OPEN ENDS.

- REQUIRED DRAINAGE NOTES**
- Manholes, sewers etc. and any other part of the works intended for adoption under a Section 106 Agreement or similar etc. intended for adoption as highway drains shall be constructed in accordance with the relevant Authority's specifications and standards, and to any requirements of the relevant Authority and the Local Council.
  - Underside of FW and SW drainage is to be constructed in accordance with the relevant Authority's BS 6858 and relevant Agreement Certificates.
  - All private drainage to be 1500mm unless indicated otherwise. All connections from private to adopted manholes/sewers to be 1500mm diameter.
  - Private drainage with less than 0.3m of cover in drives and car parking areas to have minimum 150mm concrete bed and surround.
  - Private drains are to be constructed using freshly formed vitrified clay pipes to BS 6858 'Super Strength' specification and BS 84 295 (i.e. 'Super Strength' or similar) or PVC/HDPE drainage system (see work to BS 1461), bedded and back filled in accordance with the manufacturers' instructions and the specifications listed in Table 2.
  - Bedding of drain trenches adjacent to dwellings or other structures to be in accordance with BS 6858:1:75.
  - Access fittings and inspection chambers less than 5m deep are to be clayware or pre-formed polypropylene or appropriate to the depth and number of connections. Chambers greater than 2.0m deep are to be of polypropylene reinforced access system. Inspection chamber sizes are to be in accordance with Table 1 of BS 6858:1:75.
  - Cover levels indicated on the drawing are nominal and may be adjusted to suit finished ground levels as necessary. Private inspection chamber covers should be Class C in areas accessible to wheelchairs and Class B elsewhere.
  - Manhole cover pipes to be connected direct to drain using an appropriate adaptor and removable section of down pipe to permit rodding access.
  - Where drains pass through foundations or other rigid structures, a liner or sleeve is to be used and provision for flexibility is to be made with 'rocker' joints.
  - The positions of DCPs, sub-drains, U.I.C. etc. and rainwater down pipes are to be accurately located from the house-type working drawings.
  - Gravel inverts are to be installed unless otherwise indicated and to be of suitable construction. Typically 150mm granular bed and surround. For commercial parking refer to the notes on the Civils Design drawing number 4623-C-03-01.
  - Drains within areas of 'made ground' to be constructed by first making up the area to approved ground level and then connecting through the first material into undisturbed ground. The drain trench is then to be back filled to formation level using suitable granular fill material and compacted in layers not exceeding 225mm.
  - Drains to be constructed under driveways with suspended floor slabs shall either be installed using a proprietary longer system where 'tees and ports' or similar construction is used, or should be laid with the drain trenching where reinforced concrete ground slabs are to be poured in-situ.
  - Proposed ground levels have been prepared assuming that the level required to be installed is in accordance with the relevant Authority's specifications and standards.
  - For all details of manholes and enclosures refer to Formers details.
  - Channel drainage, labeled ACO should be a minimum of 8125 in front of verges and C20 in other areas where vehicular traffic is present. All manholes to have a preformed concrete slab to be provided in accordance with the relevant Authority's specifications and standards.
  - All inspection chamber covers to provide a minimum of 100mm or rectangular in appropriate and inset where in paving and aligned with the paving material.

Rev	Description	By	Date
	Client		
	Project Title:		
	Birkenshaw		
	Drawing Title:		
	1:200 Engineering Layout		
	Sheet 2 of 2		
	Scale	Date	
	1:200 @ A0	March 2018	
	Drawing No	Revision	Status
	4733-C-D1-03		Approval