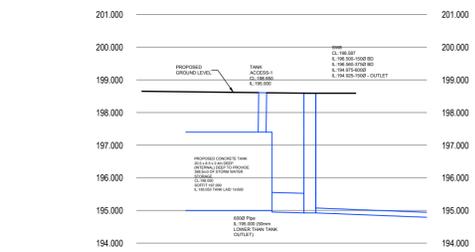


Road 2

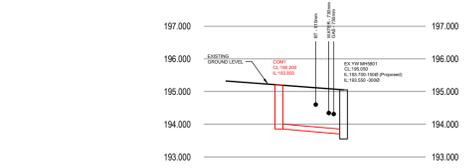
COMBINED WATER SEWER INVERT LEVELS (m)											1500 Plastic 1/123 3.00m 1.009 >> 150mm Plastic Pipe to be BSI Kitemarked (Certified to WIS 4-35-01 and BS/EN13476)													
MANHOLE COVER LEVELS APPROX (m)											1500 Plastic 1/123 3.00m 1.009 >> 150mm Plastic Pipe to be BSI Kitemarked (Certified to WIS 4-35-01 and BS/EN13476)													
FOUL WATER SEWER INVERT LEVELS (m)											1500 Plastic 1/123 3.00m 1.009 >> 150mm Plastic Pipe to be BSI Kitemarked (Certified to WIS 4-35-01 and BS/EN13476)													
SURFACE WATER SEWER INVERT LEVELS (m)											1500 Plastic 1/123 3.00m 1.009 >> 150mm Plastic Pipe to be BSI Kitemarked (Certified to WIS 4-35-01 and BS/EN13476)													
CHAINAGE ON CENTRELINE (m)	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	216.888	
LEVELS ON CENTRELINE OF CARRIAGEWAY (m)	202.892	202.891	202.889	202.887	202.884	202.880	202.875	202.869	202.862	202.854	202.844	202.832	202.818	202.803	202.787	202.770	202.751	202.730	202.707	202.682	202.655	202.626	202.594	202.559
LEVELS ON LEFT HAND CHANNEL (m)	202.719	202.592	202.459	202.327	202.194	202.061	201.928	201.795	201.662	201.529	201.396	201.263	201.130	200.997	200.864	200.731	200.598	200.465	200.332	200.199	200.066	199.933	199.800	199.667
LEVELS ON RIGHT HAND CHANNEL (m)	202.719	202.592	202.459	202.327	202.194	202.061	201.928	201.795	201.662	201.529	201.396	201.263	201.130	200.997	200.864	200.731	200.598	200.465	200.332	200.199	200.066	199.933	199.800	199.667
VERTICAL DESIGN ON CARRIAGEWAY CENTRELINE	GRADIENT -2.1% (1 in 47) LENGTH = 87.744m										GRADIENT -1.6% (1 in 61) LENGTH = 88.760m													
HORIZONTAL DESIGN ON CARRIAGEWAY CENTRELINE	STRAIGHT LENGTH = 49.835m										STRAIGHT LENGTH = 54.855m													
EXISTING LEVELS (m)	203.000	202.950	202.900	202.850	202.800	202.750	202.700	202.650	202.600	202.550	202.500	202.450	202.400	202.350	202.300	202.250	202.200	202.150	202.100	202.050	202.000	201.950	201.900	201.850

**Yorkshire Water Notes**

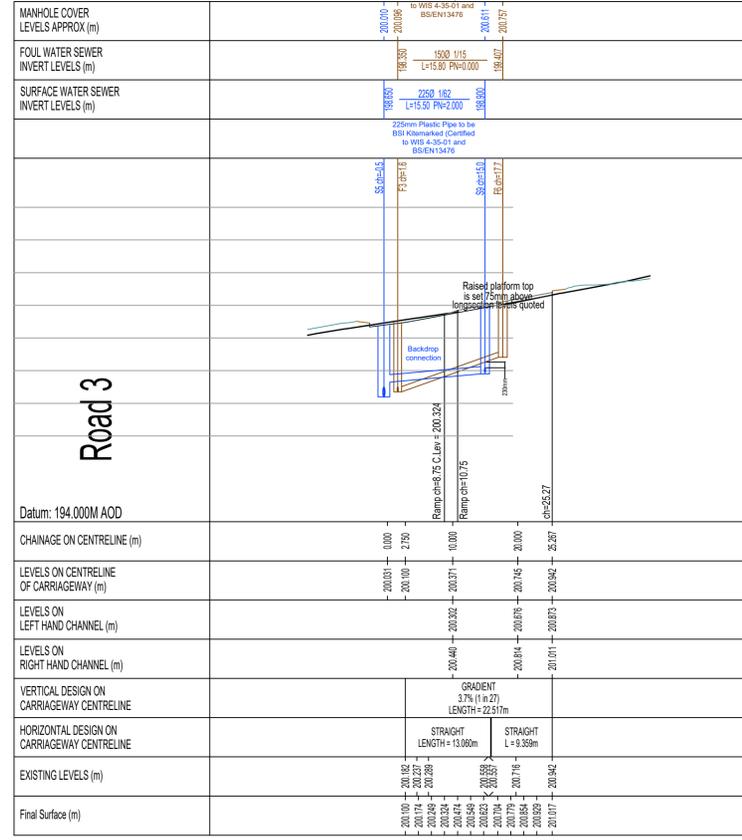
- All adoptable sewer works and material to be in accordance with Design and Construction Guidance. The Relevant British/European and Yorkshire Water's Standards/Requirements/Addendum to the Mechanical and Electrical Specification and Kitemarked.
- Manhole covers shall/must have a clear opening of 600mm and shall be Class D400 to BS EN 124 with 150mm deep frames in highways.
- Filled ground must be filled and consolidated under the supervision and to the satisfaction of Yorkshire Water before any sewer works are carried out.
- Yorkshire Water is not obliged to accept filter drain/land drainage run-off into the public sewer network or adoptable drainage system (directly or indirectly). An alternative method of disposal of the land drainage run-off will therefore be required and you will have to liaise with the Local Authority, Land Drainage Section with regard to the disposal of the filter drain/land drainage run-off.
- Cover slabs must carry the BSI Kitemark or will be rejected by Yorkshire Water Inspector. Where the clear opening of the Kitemarked product is different to that of the cover and frame, a loading bearing slab should be fitted above the cover slab to bring the size down to 600mm x 600mm for the Yorkshire Water specified cover size. Please refer to Concrete Pipe Systems Association (CPSA), 'Technical Bulletin' issued Autumn 2004 for Kitemarked cover slab opening sizes.
- Sulphate resistant cement (C20-DC2) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.
- The adoptable sewers should be a minimum of 1m and manholes 0.5m from kerb faces and service margins.
- "Sewers must have 5 metres clearance from trees and hedges (please also refer to the Design and Construction Guidance for restrictions on tree planting adjacent to sewers)".
- Sewers to be laid in Class "S" Bedding (150mm granular bed and surround). Where depth of cover to top of the sewer is less than 1.2m in highways and verges (or less than 900mm in none vehicular access areas) then a concrete slab should be provided above granular bed and surround.
- Bedding and backfill material to conform to the requirement of Water Industry Specification 4-08-02 (Table A2).
- The chamber size of manholes with more than one connection in them may need to be increased an increment to accommodate the connections and bends.
- Yorkshire Water policy is not to accept Type "C" brick manholes and 1050mm dia manhole rings. Instead it is preferred that you use a Type "B" manhole with 1200mm dia or 1500mm dia rings, with the opening sited over the channel where depth of cover to pipe soffit is 1 - 1.5m.
- Adoptable plastic sewer pipes to be BSI Kitemarked (certified to WIS 4-35-01 and BS/EN13476). Adoptable plastic sewer pipes to be laid in maximum 3 metre lengths unless there is a specific operational need to lay longer lengths. Plastic channel sections in manholes are not acceptable and Yorkshire Water would prefer clayware channel in manholes. We have found that plastic channels are difficult to set in concrete because they float and a satisfactory finish cannot be obtained on the benching.
- Where a B125 cover and frame has been approved, this must not be coated in plastic and must have lifting eyes suitably sized to accommodate standard lifting keys. Screw down covers are not acceptable.
- Sewers must have 5 metres clearance from trees and hedges or the width of the canopy at mature height (please also refer to the Design and Construction Guidance for restrictions on tree planting adjacent to sewers).
- There must be enough clearance at crossovers to accommodate bedding to both pipes, approx. 300mm"; if crossover is near the rocker then the clearance needed may be increased".
- The minimum crushing strength for clay pipes should be as follows : 100mm dia. 40kN/m, 150mm dia. 40kN/m, 225mm dia. 45kN/m and 300mm dia. 72kN/m. The minimum crushing strength for concrete pipes should be - (Class 120 to EN 1916/BS5911-1 2002). Plastic pipes should conform to WIS 4-35-01 and BS EN13476.



CHAINAGE	-15.000	-10.000	-5.000	0.000	5.000	10.000	15.000	20.000
PROPOSED GROUND LEVELS	196.650	196.650	196.650	196.650	196.650	196.650	196.650	196.650
SURFACE WATER	6000 Concrete 1196 4.90m 3.00m Class 120 to EN 1916 BS 5911-1 2002 Concrete							



CHAINAGE	0.000	5.000	10.000	15.000	20.000
EXISTING GROUND LEVELS	196.200	196.200	196.200	196.200	196.200



Road 3

MANHOLE COVER LEVELS APPROX (m)											1500 Plastic 1/123 3.00m 1.009 >> 150mm Plastic Pipe to be BSI Kitemarked (Certified to WIS 4-35-01 and BS/EN13476)
FOUL WATER SEWER INVERT LEVELS (m)											1500 Plastic 1/123 3.00m 1.009 >> 150mm Plastic Pipe to be BSI Kitemarked (Certified to WIS 4-35-01 and BS/EN13476)
SURFACE WATER SEWER INVERT LEVELS (m)											1500 Plastic 1/123 3.00m 1.009 >> 150mm Plastic Pipe to be BSI Kitemarked (Certified to WIS 4-35-01 and BS/EN13476)
CHAINAGE ON CENTRELINE (m)	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	95.327
LEVELS ON CENTRELINE OF CARRIAGEWAY (m)	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000
LEVELS ON LEFT HAND CHANNEL (m)	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000
LEVELS ON RIGHT HAND CHANNEL (m)	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000
VERTICAL DESIGN ON CARRIAGEWAY CENTRELINE	GRADIENT 3.7% (1 in 27) LENGTH = 22.517m										
HORIZONTAL DESIGN ON CARRIAGEWAY CENTRELINE	STRAIGHT LENGTH = 13.000m										
EXISTING LEVELS (m)	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000
Final Surface (m)	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000	200.000

Project: Residential Development off Wentworth Drive, Emley

Client: Barratt Homes

Drawing: Section 104 Drainage Long Sections

Drawn By: TM Date: 05/01/2022

Checked: GS Scale: - A1

Drawing No: AMA/21311/D/503 Rev: P3