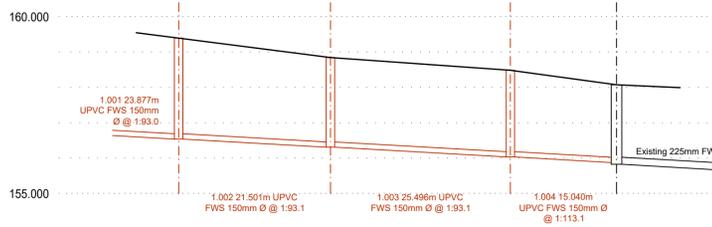


FW03  
Cov - 159.400  
Inv in - 156.543(150)  
Inv out - 156.543(150)

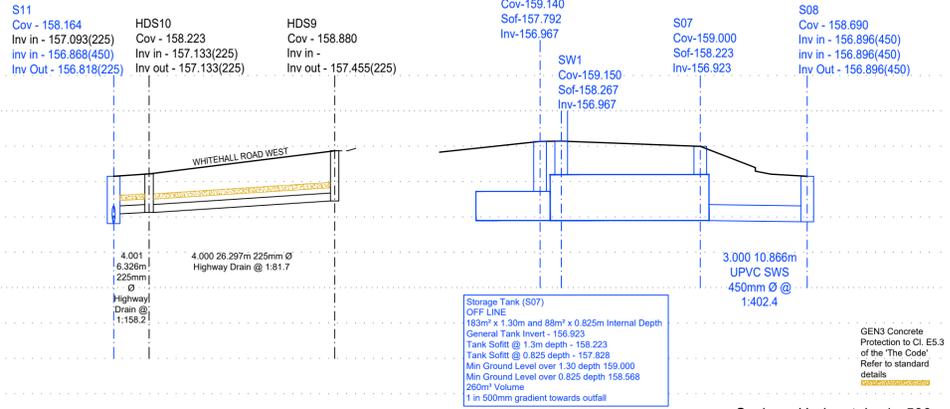
FW04  
Cov - 159.400  
Inv in - 156.312(150)  
Inv out - 156.312(150)

FW05  
Cov - 158.490  
Inv in - 156.038(150)  
Inv out - 156.038(150)

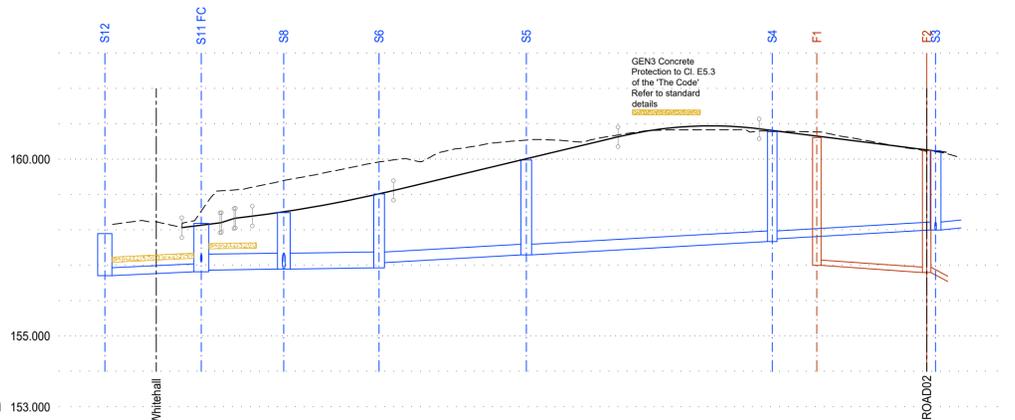
Connection to Existing Chamber (F06)  
Cover - 158.080  
Inv in - 155.905 (150)  
Inv in - 155.830 (225)  
Inv Out - 155.830 (225)



Scales - Horizontal - 1 : 500  
Vertical - 1 : 100



Scales - Horizontal - 1 : 500  
Vertical - 1 : 100



CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	108.154
EXISTING GROUND LEVEL	158.235	159.117	159.473	159.870	160.185	160.595	160.491	160.818	160.837	160.789	160.555	160.223
ALIGNMENT LEVEL	159.096	158.260	158.076	158.056	159.424	159.800	160.377	160.815	160.844	160.748	160.498	160.338
VERTICAL ALIGNMENT	<p>G = 2.500% 1: 40.0</p> <p>G = 500% 1: 40.0</p> <p>KF = 8.83304 L = 20.000</p> <p>G = 4.764% 1: 21.0</p> <p>L = 20.000 KF = -2.75322</p> <p>G = -2.500% 1: -40.0</p>											
HORIZONTAL ALIGNMENT	<p>R = 35.350</p> <p>R = 33.350</p> <p>R = 33.350</p>											
STORMWATER COVER LEVEL	CL 157.900 IL 156.710	CL 158.185 IL 156.818	CL 158.460 IL 156.886	CL 158.609 IL 156.896	CL 158.829 IL 157.079	CL 160.860 IL 157.299	CL 160.790 IL 157.299	CL 160.815 IL 157.299	CL 160.844 IL 157.299	CL 160.748 IL 157.299	CL 160.498 IL 157.299	CL 160.244 IL 157.999
STORMWATER DETAILS	Pipe 1.006 Dia 225 Circular CLAY 1 in 169 18.276	Pipe 1.005 Dia 450 Circular CONC 1 in 404 11.300	Pipe 1.004 Dia 450 Circular CONC 1 in 396 13.167	Pipe 1.003 Dia 300 Circular CLAY 1 in 95 21.026	Pipe 1.002 Dia 300 Circular CLAY 1 in 94 35.351	Pipe 1.001 Dia 225 Circular CLAY 1 in 141 14.204						
FOULWATER COVER LEVEL	CL 159.400 IL 156.543	CL 159.400 IL 156.312	CL 158.490 IL 156.038	CL 158.080 IL 155.830								
FOULWATER DETAILS	Pipe 1.000 Dia 150 Circular CLAY 1 in 78 15.656											

ROAD01

Scales - Horizontal - 1 : 500  
Vertical - 1 : 100

YORKSHIRE WATER NOTES:

- All dimensions in millimeters unless stated otherwise.
- All adoptable sewer works and material to be in accordance with The Water Services Association 'Code for Adoption Design and Construction Guidance', The Relevant British/European and Yorkshire Water's Standards/Requirements/Addendum to the Mechanical and Electrical Specification and Kitemarked.
- All oversized manhole products (circular vertical units, cover slabs, adjusting and corbel units) and all ancillary concrete products are to be built in full compliance with BS EN1917 and BS 2911-3+A1.
- All precast concrete units in oversized manholes must have a design working life of 100 year minimum in accordance with BS5500-1:2015+A2:2019 - Table A.5.
- DC-4 design chemical class for concrete in precast concrete manholes (circular vertical units, cover slabs, adjusting and corbel units) including all ancillary concrete products should be constructed for an intended design life of 100 year minimum.
- Manhole covers shall have a clear opening of 600mm and shall be Class D400 to BS EN 124 with 150mm deep frames in highways.
- Filed ground must be filled and consolidated under the supervision and to the satisfaction of the Yorkshire Water before any sewer works are carried out.
- Yorkshire Water is not obliged to accept filter drainland 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 drainland drainage run-off.
- Cover slabs must carry the BSI Kitemark or will be rejected by the 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.
- 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 or the width of the canopy at mature height.
- 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 non-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's policy is that brick manholes and 1050mm diameter manhole rings are not preferred. Instead, it is preferred that you use a type 'B' manhole with 1200mm diameter, 1300mm diameter or 1500mm diameter rings, with the opening sized 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 EN 13476). 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 will 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 bedding.
- 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.
- 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.
- There should 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.

Extract from Table A2 WIS 4-08-02

Processed granular bedding and sidefill material for flexible pipes

Pipe nominal bore (mm) see note (d)	Nominal maximum particle size (mm)	Material specified in British Standards see note (a)
100	10	10mm nominal single size
Over 100 to 150	14	10 or 14mm nominal single size or 14mm to 5mm graded
Over 150 to 300	20	10-14 or 20mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded
Over 300 to 500	20	14 or 20mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded
Over 550	40	14-20 or 40mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded or 40mm to 5mm graded

- Notes:
- Proposed granular material to include aggregates to BS 882, air-cooled blast furnace slag to BS1047 and lightweight aggregates BS3797
  - For the purpose of this table, PE pipe of 630mm O.D. can be regarded as having a nominal bore of over 550mm irrespective of wall thickness
  - Nominal bore is used in preference to DN because of the different nominal size classifications for flexible pipes

**Minimum recommended trench widths for structural wall pipes in poor ground conditions**

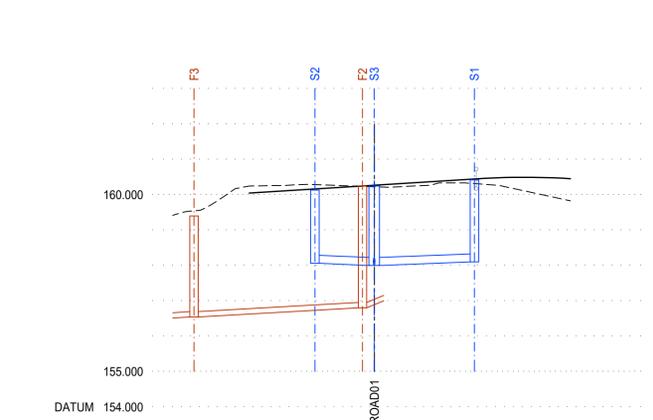
Native Soil Modulus between 3 and 4 Mpa  
Typical Soil Classifications: Very loose gravel, loose sand, medium dense clayey silty sand, firm clay

Nominal Pipe Diameter (mm)	150	225	300	375	450	525	600	750	900
Minimum Trench Width (mm)*	450	525	600	750	900	1050	1200	1500	1800

\* A vertical trench face has been assumed to allow a modulus of 7 Mpa to be achieved for the pipe bedding and sidefill material

Other Assumed Values: Depth of cover = 6.00 meter max.  
Traffic Loading = Main Road  
Pipe Stiffness = SNB

Note: Where the native soil modulus is below 3Mpa or the depth of cover exceeds 6.0m guidance should be sought from the pipe manufacturer regarding structural design and installation details



CHAINAGE	0.000	10.000	20.000	30.000	40.000	45.504
EXISTING GROUND LEVEL	160.247	160.280	160.214	160.333	160.094	159.808
ALIGNMENT LEVEL	160.007	160.172	160.297	160.422	160.451	160.454
VERTICAL ALIGNMENT	<p>G = 1.250% 1: 80.0</p> <p>L = 13.343 KF = -5.49451</p>					
HORIZONTAL ALIGNMENT						
STORMWATER COVER LEVEL	CL 160.130 IL 158.059	CL 160.244 IL 157.999	CL 160.477 IL 158.100			
STORMWATER DETAILS	Pipe 2.000 Dia 225 Circular CLAY 1 in 140 8.360	Pipe 1.000 Dia 150 Circular CLAY 1 in 141 14.204				
FOULWATER COVER LEVEL	CL 159.400 IL 156.543	CL 160.248 IL 156.800				
FOULWATER DETAILS	Pipe 1.001 Dia 150 Circular CLAY 1 in 93 23.877					

ROAD02

Scales - Horizontal - 1 : 500  
Vertical - 1 : 100

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Rev.	Date:	Amendment:	DRN	CHK	APR
I	29.04.25	Surface water attenuation tank and levels updated	IE		
H	20.02.25	Revised to YW comment from email 20 Feb 2025	IE		
G	12.02.25	Updates made due to new site layout and adopted foul sewers	IE		
F	13.08.24	Surface water pipe material changed to UPVC	IE		
E	26.07.24	FP McCann tank added to layout	IE		
D	05.07.24	Road 2 extended, YW comments 26 June 2024	IE		
C	12.06.24	Private foul crossing added to longsection near S4	IE		
B	10.06.24	Amendments made due to site layout update	IE		
A	16.05.24	Site layout and associated updates made	IE		

Nominal Bore of Pipe (mm)	Alternative Aggregate Sizes Single Sized	(mm) Graded (Where directed)
100 - 125	10	-
150 - 200	10 or 14	14 - 5
225 - 300	10, 14 or 20	14-5 or 20-5
375 - 500	14 or 20	14-5 or 20-5
Exceed 500	14, 20 or 40	14-5 or 20-5 or 40-5

Pipe Diameter (mm)	Minimum Crushing Strength Clay Pipes
150	40KN/m
225	45KN/m
300	72KN/m
375 Concrete	45KN/m
1200 Concrete	144KN/m
1500 Concrete	180KN/m

Concrete, minimum crushing strength should conform to class 120 EN1916/BS5911-1:2002

ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE DESIGN AND CONSTRUCTION GUIDANCE [CODE FOR ADOPTION], THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARDS/REQUIREMENTS/LOCAL PRACTICE FOR THE ADOPTION OF SMALL SUBMERSIBLE FOUL AND SURFACE WATER PUMPING STATIONS AND KITEMARKED.

THE CLEARANCE OF THE CROSSOVER POINTS (MIN 300MM) BETWEEN THE SURFACE WATER, FOUL SEWERS, RISING MAIN AND OTHER SERVICES SHOULD BE SUFFICIENT CLEARANCE TO PROVIDE 150MM GRANULAR BED AND SURROUND AROUND BOTH PIPES

SEWERS TO BE LAID IN CLASS 'S' BEDDING 150mm GRANULAR BED AND SURROUND

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Client: Orion Homes

Scale: As Shown | Drawn: IE | Chkd: NB | Appvd:

Project: Residential Development, Whitehall Road West, Birkenshaw

Title: Longsections

Drawing No: 23/341/500/002 | Revision: |  
Job No: 23-341 | Date: 22.02.24

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