

Manhole Number	Cover Level	Coordinates	Depth To Soffit	Connections	Pipe Code	Inverts	Diams	Manhole Size	Types
F2	183.637	E. 419807.342 N. 409976.219	2.311	0	1.000	181.176	150	1200	B D400
F3	182.429	E. 419811.051 N. 409995.948	3.159	1	1.001	180.120	150	1200	B D400
F4	181.268	E. 419824.055 N. 410005.434	2.340	1	1.001	178.778	150	1200	B D400
F5	179.117	E. 419838.341 N. 410034.862	2.086	1	1.002	176.961	150	1200	B D400
F6	177.388	E. 419858.056 N. 410056.186	2.151	1	1.003	175.087	150	1200	B D400
F7	176.896	E. 419868.500 N. 410070.028	1.876	1	1.004	174.869	150	1200	B D400

Manhole Number	Cover Level	Coordinates	Depth To Soffit	Connections	Pipe Code	Inverts	Diams	Manhole Size	Types
F8	177.291	E. 419841.389 N. 410088.839	2.500	1	1.006	174.641	150	20	B D400
S1	185.876	E. 419786.102 N. 409645.738	1.851	0	1.000	183.900	225	1200	B D400
S2	183.094	E. 419805.303 N. 409678.804	1.274	0	1.001	181.586	225	1200	E D400
S3	182.000	E. 419812.391 N. 409923.912	1.231	2	2.000 1.001	180.544 180.544	225	1200	E D400
S4	181.090	E. 419827.305 N. 410068.741	1.877	1	1.002	179.188	225	1200	B D400
S5	179.180	E. 419839.042 N. 410033.389	1.426	1	1.003	177.454	300	1200	E D400

Manhole Number	Cover Level	Coordinates	Depth To Soffit	Connections	Pipe Code	Inverts	Diams	Manhole Size	Types
S6	177.405	E. 419858.414 N. 410053.517	1.337	1	1.004	175.768	300	1500	E D400
S7	176.827	E. 419871.193 N. 410070.299	1.285	2	3.000 1.000	175.317 175.242	225 300	1800	E D400
S8	176.028	E. 419887.219 N. 410061.828	2.296	1	1.006	174.012	300	1500	B D400
S9	175.710	E. 419890.035 N. 410068.430	1.854	1	1.007	174.481	375	1500	B D400
S10	174.806	E. 419915.459 N. 410083.110	1.592	2	1.008	172.840	375	1500	B D400
S12	173.029	E. 419926.569 N. 410102.911	2.136	2	5.000 1.000	170.967 170.917	225 375	1500	B D400

Manhole Number	Cover Level	Coordinates	Depth To Soffit	Connections	Pipe Code	Inverts	Diams	Manhole Size	Types
S13	172.218	E. 419936.976 N. 410177.583	1.896	1	1.010	169.947	375	1500	B D400
S14 Flow Control	170.500	E. 419955.044 N. 410152.131	2.875	2	1.011 1.012	168.947 167.400	375 225	1500	B D400
S15	168.391	E. 419958.751 N. 410159.020	0.940	1	1.012	167.228	225	1200	D D400
S16	176.982	E. 419961.012 N. 410077.316	1.207	1	1.013	167.015	225	1200	E D400
S17	168.200	E. 419967.243 N. 410078.894	0.960	1	1.013	167.015	225	1500	D D400
S18	162.359	E. 419977.596 N. 410003.976	1.259	1	2.000	160.775	225	1200	E D400

Manhole Number	Cover Level	Coordinates	Depth To Soffit	Connections	Pipe Code	Inverts	Diams	Manhole Size	Types
S19	177.431	E. 419933.973 N. 410049.096	1.406	1	4.000	178.800	225	1200	E D400
S20	175.489	E. 419930.935 N. 410074.427	1.333	1	4.001	173.935	225	1200	E D400
S21	173.828	E. 419889.482 N. 410121.732	2.066	1	5.000	171.517	225	1200	B D400
S22	176.526	E. 419979.880 N. 410062.253	1.301	1	6.000	175.000	225	1200	E D400
S23	175.244	E. 419984.894 N. 410147.524	1.300	1	6.001	173.719	225	1200	E D400
S24	171.579	E. 419971.096 N. 410139.508	1.204	1	6.002	169.750	225	1200	E D400

Watercourse Diversion

Manhole Number	Cover Level	Coordinates	Depth To Soffit	Connections	Pipe Code	Inverts	Diams	Manhole Size	Types
S25	172.761	E. 419975.131 N. 410116.356	1.225	1	6.001	171.311	225	1200	E D400
S28	176.467	E. 419943.238 N. 410065.255	1.368	1	4.000	174.874	225	1200	E D400
S14A Attenuation Tank	170.500	E. 419974.088 N. 410138.248	0.780	0	TANK	167.500	900	Refer to HHA drawing number E1774655012_01 for manhole details.	
S14B Attenuation Tank	170.500	E. 419960.172 N. 410142.816	0.849	0	TANK	167.501	2100	Refer to HHA drawing number E1774655012_02 for manhole details.	
S14C Attenuation Tank	170.500	E. 419648.858 N. 410138.182	0.849	0	TANK	167.501	2100	Refer to HHA drawing number E1774655012_02 for manhole details.	
S14D Attenuation Tank	170.500	E. 419900.375 N. 410173.556	0.780	0	TANK	167.620	2100	Refer to HHA drawing number E1774655012_02 for manhole details.	
S14E Attenuation Tank	170.500	E. 419946.181 N. 410065.728	0.780	0	TANK	167.620	2100	Refer to HHA drawing number E1774655012_02 for manhole details.	

Manhole Number	Cover Level	Coordinates	Depth To Soffit	Connections	Pipe Code	Inverts	Diams	Manhole Size	Types
F50	176.276	E. 419962.799 N. 410095.134	1.628	0	1.000	174.500	150	1200	B D400
F51	175.395	E. 419968.673 N. 410078.170	1.822	1	1.001	173.423	150	1200	B D400
F52	171.405	E. 419974.088 N. 410138.248	1.763	1	1.002	169.471	150	1200	B D400
F53	170.567	E. 419960.172 N. 410142.816	1.846	1	1.004	168.571	150	1200	B D400
F54	170.822	E. 419648.858 N. 410138.182	1.972	2	2.004 1.004	169.480 168.480	150	1200	B D400
F55	170.800	E. 419900.375 N. 410173.556	2.872	1	1.005	168.480	150	1200	B D400
F56	176.585	E. 419946.181 N. 410065.728	2.005	1	2.000	174.430	150	1200	B D400

Manhole Number	Cover Level	Coordinates	Depth To Soffit	Connections	Pipe Code	Inverts	Diams	Manhole Size	Types
F56A	179.000	E. 419902.821 N. 410033.218	2.442	1	3.000	176.498	150	1200	B D400
F57	175.075	E. 419934.219 N. 410079.076	1.944	1	2.001	173.481	150	1200	B D400
F58	174.758	E. 419918.409 N. 410083.943	2.186	1	2.003	172.422	150	1200	B D400
F59	173.481	E. 419927.790 N. 410100.668	2.782	2	3.000 2.003	170.529 170.529	150	1200	B D400
F60	172.164	E. 419930.761 N. 410117.913	2.475	1	2.004	170.529	150	1200	B D400
F61	173.823	E. 419901.065 N. 410119.238	2.602	1	3.000	171.071	150	1200	B D400
F62	172.430	E. 419976.344 N. 410120.883	1.807	1	1.001	170.872	150	1200	B D400

Watercourse Overflow

Manhole Number	Cover Level	Coordinates	Depth To Soffit	Connections	Pipe Code	Inverts	Diams	Manhole Size	Types
S200	175.381	E. 419902.471 N. 410072.402	0.428	1	174.503	450	1500	C D400	
S201	174.000	E. 419917.453 N. 410097.823	1.717	1	171.883	450	1500	B D400	
S202	172.849	E. 419926.726 N. 410111.211	0.684	1	171.705	450	1500	C D400	
S203	170.940	E. 419940.550 N. 410138.418	1.390	1	169.100	450	1500	C D400	

Section 185 Sewer Diversion - PHASE 1

Manhole Number	Cover Level	Coordinates	Depth To Soffit	Connections	Pipe Code	Inverts	Diams	Manhole Size	Types
C1 Existing MH	165.830	E. 419975.131 N. 410116.356	1.725	1	1.000 1.000	163.880 163.880	225	1200	B1E D400
C2 Diversion MH	165.531	E. 419971.876 N. 409955.970	1.641	1	1.000 1.001	163.880 163.866	225	1200	B1E D400
C3 Diversion MH	165.483	E. 419791.450 N. 409954.991	1.620	2	1.001 1.002	163.866 163.818	225	1200	B1E D400

Section 185 Sewer Diversion - PHASE 2

Manhole Number	Cover Level	Coordinates	Depth To Soffit	Connections	Pipe Code	Inverts	Diams	Manhole Size	Types
C5 Diversion MH	164.867	E. 419798.009 N. 409963.840	0.899	1	1.003	163.543	225	1200	B1E D400
C6 Diversion MH	164.614	E. 419791.321 N. 409970.508	0.987	1	1.004	163.402	225	1200	B1E D400
C7 Diversion MH	165.000	E. 419774.407 N. 409971.001	1.429	1	1.000	163.346	225	1200	B D400

RISK ASSESSMENT:	LEVEL OF RISK	SUGGESTED ACTION
SIGNIFICANT RISKS THAT CANNOT BE DESIGNED OUT	HIGH	
DEEP EXCAVATIONS ASSOCIATED WITH NEW DRAINAGE WORKS	HIGH	ENSURE ALL EXCAVATIONS HAVE ADEQUATE TRENCH SUPPORTS
HANDLING LARGE DIAMETER MANHOLE RINGS AND CIRCULAR PIPES	HIGH	USE CORRECT LIFTING EQUIPMENT AND ENSURE OPERATIVES WEAR APPROPRIATE PROTECTIVE CLOTHING AND HARDWARE CORRECT PPE
CONTACT WITH SEWAGE	MED	OPERATIVES TO USE CORRECT BREATHING EQUIPMENT/CORRECT PIPE
NOISE	MED	OPERATIVES TO USE CORRECT EAR PROTECTION/CORRECT PPE
DRAINAGE EXCAVATIONS ADJACENT EXISTING BOUNDARY STRUCTURES	HIGH	ENSURE CORRECT SUPPORTS ARE PROVIDED TO TRENCHES AND BOUNDARIES WHERE REQUIRED
DRAINAGE EXCAVATION IN PUBLIC HIGHWAY	HIGH	ENSURE CORRECT USE OF TRENCH SUPPORTS IN EXCAVATION AND SCREEN BARRIERS TO PROTECT MEMBERS OF THE PUBLIC
MAINTAIN ACCESS TO ADJACENT PROPERTIES AND OCCUPIERS	HIGH	ENSURE WORKS ARE PROTECTED WITH BARRIERS AND SIGNS TO GUIDE THE PUBLIC AWAY FROM THE WORKS
DRAINAGE EXCAVATIONS NEAR TO EXISTING SERVICES	HIGH	ENSURE WORKS ARE PROTECTED WITH BARRIERS AND SIGNS TO GUIDE MEMBERS OF THE PUBLIC AWAY FROM THE AREAS
WORKING IN CONFINED SPACES: WORKING IN DRAINS AND MANHOLES	HIGH	CONFINED SPACES WORKING TRAINED PERSONNEL ONLY TO CARRY OUT WORKS UNDER A PERMIT TO WORK SCHEME IMPLEMENTED BY CONTRACTOR. GAS TESTING TO TAKE PLACE BEFORE ALL ENTRIES TO CONFINED SPACES
WORKING IN HIGHWAYS / RISKS FROM VEHICLE AND PLANT	HIGH	ALL WORKERS TO BE SIGNED AND FENCED FROM NORMAL VEHICULAR TRAFFIC. ALL WORKERS TO WEAR HIGH VISIBILITY CLOTHING. ALL PLANT TO HAVE VISUAL AND AUDIBLE WARNING SYSTEMS
ROAD AND DRAINAGE CONSTRUCTION	HIGH	ALL EXCAVATIONS TO BE ADEQUATELY FENCED OFF AND SUPPORTED DURING CONSTRUCTION. ALL OPERATIVES TO BE TRAINED IN CORRECT METHODS OF LIFTING AND WORK IN ACCORDANCE WITH L1 CLERK REGS

- ALL ADOPTABLE SEWER WORKS AND MATERIAL TO BE IN ACCORDANCE WITH "CODES FOR ADOPTION". THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARDS/REQUIREMENTS/ADDENDUM TO THE MECHANICAL AND ELECTRICAL SPECIFICATION AND KITEMARKED.
- MANHOLE COVERS SHALL 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 RUNOFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE DRAINAGE SYSTEM (DIRECTLY OR INDIRECTLY), AN ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUNOFF 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 RUNOFF.
- 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 600x600mm 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 MARGINS.
- SEWERS MUST HAVE 5m CLEARANCE FROM TREES AND HEDGES (PLEASE ALSO REFER TO FIGURE 2.3 ON PAGE 33 IN "CODES FOR ADOPTION" FOR RESTRICTION 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 NON VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB OVER SEWER SHALL 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 SIGHTED 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 WOULD PREFER CLAYWARE CHANNELS IN MANHOLES. WE HAVE FOUND THAT PLASTIC CHANNELS ARE DIFFICULT TO SET IN CONCRETE BECAUSE THEY FLOAT AND A SATISFACTORY FINISHED CANNOT BE OBTAINED ON THE BENCHING.
- 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 EN 13476.
- WHERE A B125 COVER AND FRAME HAS BEEN APPROVED, THIS MUST NOT BE CASTED IN PLASTIC AND MUST HAVE LIFTING EYES SUITABLY SIZED TO ACCOMMODATE STANDARD LIFTING KEYS. SCREW DOWN COVERS ARE NOT ACCEPTABLE.
- ALL HIGHWAY WORKS AND MATERIAL TO CONFORM WITH KIRKLEES MDC SPECIFICATION.
- GULLY COVER AND FRAMES SHALL BE D400 DUCTILE IRON AND COMPLY WITH EUROPEAN STANDARD BS EN 124. THOSE SIGHTED IN ACCESSWAYS AND MEWS COURTS MUST BE SUITABLE FOR USE IN PEDESTRIAN AREAS.