

- ## Notes

Manhole Covers And Frames.

2. Manhole covers shall/must have a clear opening of 600mm and be Class D400 to BS EN 124 with 150mm deep frames in highways.
3. Filled ground must be filled and consolidated under the supervision and to the satisfaction of United Utilities before any sewer works are carried out.
4. United Utilities 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 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.
5. Cover slabs must carry the BSI Kitemark or will be rejected by United Utilities Inspector. Where the clear opening of the Kitemarked product is different to that of the cover and frame, a load bearing slab should be fitted above the cover slab to bring the size down to 600mm x 600mm for the United Utilities specified cover sizes. Please refer to Concrete Pipe Systems Association (CPSA, "Technical Bulletin" issued Autumn 2004 for Kitemarked cover slab opening sizes).
6. Sulphate resistant cement (**C20-D0C2**) and precast concrete products must be used or a laboratory report providing that such precautions are not necessary.
7. The adoptable sewers should be a minimum of 1m and manholes 0.5m from kerb faces and service margins.
8. Sewers must have 5 meters clearance from trees and hedges (**please also refer to Figure 2.3 on page 33 in "Sewers for Adoption"** ^{6th} Edition for restrictions

Pipes And Joints Adjacent To Structures.

7. A flexible joint shall be provided as close as is feasible to the outside face of any structure into which it is built, compatible with the satisfactory completion and subsequent movement of the joint.
8. The length of the rocker pipe away from the structure shall not exceed 0.750m for pipes up to 450mm nominal bore and 1000mm for pipes up to 750mm nominal bore.

9. The pipeline may be laid through the manhole and the crown broken out to half dia., provided flexible joints are situated on each side no further than 600mm from the inner face of the manhole wall, adjacent pipes complying to note 7.

19. Sewers to be laid in Class "S" Bedding (**150mm granular bed and surround**). Where depth of cover to the top of the sewer is less than 1.2m in highways and verges (**or less than 900mm in non vehicular access areas**), then a

Manholes.

Dia. Of Largest Pipe In M.H.	Chamber Section Diameter
Less Than 375mm	1.200m
375 - 700mm	1.500m
750 - 900mm	1.800m
>900mm	Consult Undertaker

Precast Concrete Manholes.

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| <p>10. Precast concrete manhole units shall comply with the relevant provisions of B.S. 5911, Part 2. Units which bed onto bases, or onto which cover slabs or reducing slabs, shall be manufactured so that imposed vertical loads are transmitted directly to the full wall thickness of the unit. For joints between units and the underside of slab, spigot-ended sections shall only be used where the soffit of the slab can receive them.</p> | <p>22. United Utilities 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 sized over the channel where depth of cover to pipe soffit is 1-1.5m.</p> |
| <p>Sewers For Adoption 6th Edition.</p> | <p>23. All adoptable sewers to be BSI Kitemark (certified to WIS 4-35-01).</p> |
| <p>11. All adoptable sewer works and material to be in accordance with "Sewers For Adoption 6th Edition. The relevant British/European and United Utilities' Standards/Requirements/Addendum to the Mechanical and Electrical Specification and Kitemarked".</p> | <p>24. Adoptable sewer pipes to be laid in maximum 3 metre lengths unless there is a specific operational need to lay longer lengths.</p> <p>25. Plastic chain sections in manholes are not acceptable, United Utilities prefer clayware channels.</p> |

General information regarding lateral drains and sewerage systems for adoption

1. A lateral drain is the length of pipe serving one property only and having its own demarcation chamber. If the length has two or more properties connecting then this is classed as a sewer which should, as at present, be in accordance with Sewers for Adoption and the Protocol on Design, Construction & Adoption to Sewers in England and Wales.
2. The depth of a lateral drain chamber should be a minimum of 0.9m deep, in accordance with Sewers for Adoption.
3. The type of protection should be in accordance with Sewers for Adoption.
4. Demarcation chambers should be located <1m away from the highway boundary, preferably within the drive on the frontage of the property.
5. The pipe size from a lateral drain chamber should be 150mm laid at a minimum gradient of 1:80.
6. The maximum gradient for a sewer should be 1:10.
7. Plastic pipes are acceptable as long as the proposals are detailed on the full submission.
8. A protected strip at the front of the property is not required as long as the proposed system is far enough away from the proposed building(s).
9. The demarcation chamber for a lateral drain can be 450mm in diameter where the chamber is up to 1.2m in depth.

Adoptable Connections (Laterals) - Demarcation Chambers

Precast Concrete to BS 5911:part 2 and BS 8301 kitemarked up to 1.0m deep.

Polypropylene Inspection Chambers to BS 7158:2001 kitemarked minimum 450mm diameter up to 2.0m deep.

DEMARICATION CHAMBER				
Manufacturer	Product Name	Material	Max Depth	Cover Type
Naylor	Plastic Inspection Chamber	Polypropylene	Up to 1200mm	Class B125
Heppworth	PPIC	Polypropylene	Up to 1200mm	Class B125
Uponor	Inspection Chamber (450mm Ø)	Polypropylene	Up to 1200mm	Class B125
Marshalls	Inspection Chamber To BS5911 pt 2	Precast concrete	Up to 1200mm	Class B125
Wavin	Osmo Ultraflex Inspection Chamber	Polypropylene	Up to 1200mm	Class B125
Wavin	OsmoDrain Universal Inspection Chamber	Polypropylene	Up to 1200mm	Class B125
Wavin	Non Entry Inspection Chamber	Polypropylene	Up to 2000mm	Class B125
Marley	Inspection Chamber (450mm Ø)	Polypropylene	Up to 1200mm	Class B125
Polypipe	110mm Inspection Chamber (460mm Ø)	Polypropylene	Up to 1200mm	Class B125
Polypipe	Non Man Entry Deep Inspection Chamber System	Polypropylene	Up to 1200mm	Class B125

Currently Approved Manufacturers are as follows:

PIPES			
Product Name	Diameter (mm)	Manufacturer	Material
SuperSleeve	100 & 150 (I.D.)	Hepworth	Vitrified Clay
Superseal	150 (I.D.)	Hepworth	Vitrified Clay
Densleeve	100, 150 (I.D.)	Naylor	Vitrified Clay
Denseal	100, 150 (I.D.)	Naylor	Vitrified Clay
Ultra Fortis	150 to 300 (I.D.)	Uponor	uPVC
Ultra-Drain	110 & 160 (O.D.)	Uponor	uPVC
Plastidrain	110 & 160 (O.D.)	Hepworth	uPVC
Osmadrain	110 & 160 (O.D.)	Wavin	uPVC
Osmia UltraRib	150 (I.D.)	Wavin	uPVC
Solid Wall	110 & 160 (O.D.)	Marley	uPVC
Quantum	150 (I.D.)	Marley	uPVC
Underground Drain	110& 160 (O.D.)	Polypipe	uPVC
Ridgisewer	150 (I.D.)	Polypipe	uPVC

The Minimum Crushing Strength for Clay Pipes should be as follows:
100mmØ - 40KN/m, 150mmØ - 40KN/m, 225mmØ - 45KN/m, 300mmØ - 72KN/m.
The minimum Crushing Strength for Concrete pipes should be - Class 120 (54KN/m).

Adoptable Connections (Laterals) - pipes

Vitrified Clay pipes to BS EN 295 kitemarked. Unplasticised PVC pipes to BS 4660:2000. Structured Wall Unplasticised PVC (Upvc) pipes to WIS 4-35-01 kitemarked. All pipes are to be Kitemarked

Adoptable Connections (Laterals) - pipe bedding

Pipes shall be provided with a single size full granular bed and surround (class S). Pipes in highway with less than 1.2m cover shall not be plastic and shall be protected by reinforced concrete slab placed above.

Adoptable Connections (Laterals) - size and gradients

Foul: 100mm with less than 10 properties - minimum gradient 1:80.
150mm with 10 or more properties - minimum gradient 1:150.

Combined: 150mm with less than 10 properties - minimum gradient 1:100.
150mm with 10 or more properties - minimum gradient 1:150.

Surface: Minimum diameter is 150mm at minimum gradient of 1:150

For combined and surface water the minimum acceptable diameter is 150mm.

Inspection by United Utilities Inspector

All completed connections must be inspected by an United Utilities Inspector so that a Certificate of Satisfactory Inspection may be issued. To arrange this telephone 0845 8066087 quoting the "unique connection reference number" at least 2 working days before completion. The completed connection should be laid open for inspection. If the completed connection is backfilled without inspection by a United Utilities Inspector the developer may later be invoiced for United Utilities's CCTV costs and any costs for corrective works.

The inspection is to check workmanship only. The location and size of all pipes and services should be established by the developer on site prior to commencing the works. United Utilities's statutory sewer record map is indicative and may be used as a guide only. No warranty is given with regard to it's correctness.

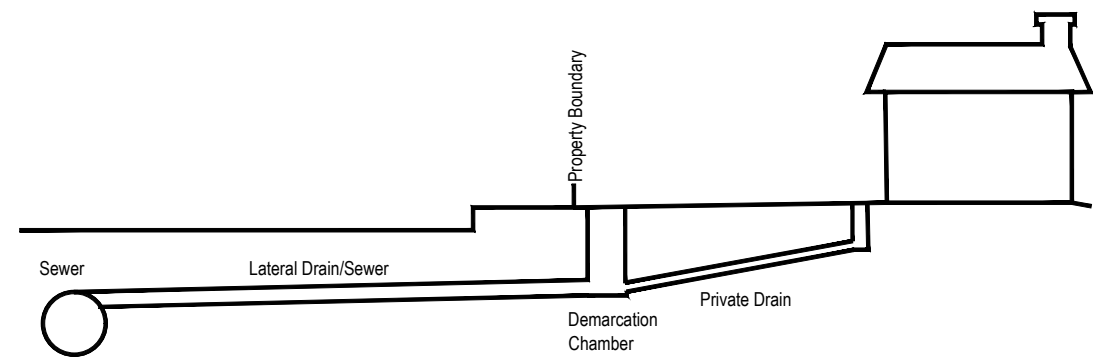
The developer may have to correct any work that has been carried out before receipt of United Utilities's comments if the 21 day notice period has not elapsed. Additional fees will be payable for return visits to inspect corrective work.

Adoptable Connections (Laterals)


An adoptable "Lateral" is an accessible single length of drain (serves 1 property) or sewer (serves more than 1 property) not greater than 150mm diameter from a property to a public sewer on adjacent land or highway. A "demarcation" chamber should be positioned at the head of the lateral at a position 1m inside the property boundary.

Concrete surround shall be provided to demarcation chambers where subject to vehicle loading (eg. driveways). For depths in excess of 1.2m a restricted access opening 350 diameter (or 300mm x 300mm) shall be used.

Alternatively, pre-cast concrete ring manhole to "Sewers for Adoption" 6th edition Specification may be used as a demarcation chamber. Chamber Covers shall be ductile iron and appropriate strength for area situated (minumum classification B125).



Rising (pumping) mains are not acceptable as adoptable laterals.
Hatch boxes are not acceptable as demarcation chambers.

Rev	Date	Drawn	Description		Chk'd
		<p>Met Engineers Ltd Southgate House Pontefracr Road Stourton, Leeds West Yorkshire LS10 1SW</p> <p>Tel 0113 200 8904 0113 270 1199</p> <p>e-mail: admin@metengineers.com www.metengineers.com</p>			
Client		Aitchison Raffety Milton Keynes.			
Project		Charlestown Road, Glossop.			
Title		Roads & Sewer Sections Sheet 4 of 4			
Drawn	DB	Checked	TC	Scale	
Date	Aug 16	Date	Aug 16		
Status				Original Size	
For Approval				A1	
Drawing No				Rev	
12732-5002-36				-	