Self-Lay Design and Construction Standards For (Insert Adopting Utility name)

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1. SCOPE

The purpose of this document is to assist practitioners with the planning, design, construction, and commissioning of water networks; it covers mains and services to supply domestic and industrial / commercial properties.

Water companies will publish their Design and Construction Standards in accordance with the Sector Guidance using this template.

2. RESPONSIBILITIES

It is the responsibility of the adopting utility to ensure that the relevant sections of the document confirm to its design standards.

3. TERMINOLOGY

In this document the following terms have the stated meanings:

Shall: Indicates a mandatory requirement

Should: Indicates a strong preference or best practice

May: Indicates an option which is not mandatory

4. DEFINITIONS

Adopting Utility – the Company which will be adopting the constructed asset. For assets not to be adopted this is the utility company to whose system the asset being worked on is either already connected or is to be connected.

Contestable Work – Is work that can be undertaken by a WIRS Provider as defined by the Code of Practice for Self-Laying of Water Mains and Services for England and Wales or Water for Scotland (A design and construction guide for developers in Scotland).

Non-Contestable work – Is work otherwise not classified as contestable and must be completed by the adopting utility, see each water companies ACS for more detail of the work it allows SLPs to carryout out

WIRS Provider - a company meeting the requirements for accreditation and which has been assessed as competent in accordance with the scheme requirements.

5. ABBREVIATIONS

PE/AL/PE	Polyethylene Aluminium Composite Barrier Pipe
AC	Asbestos Cement
CDM	Construction, Design and Management Regulations
CESWI	Civil engineering Specification for the Water Industry
CI	Cast Iron
COSHH	Control of Substances Hazardous to Health
DEFRA	Department for Environment, Food and Rural Affairs

DI	Ductile Iron
DMA	District Metered Area
DWI	Drinking Water Inspectorate
EA	Environment Agency
EUSR	Energy and Utility Skills Register
HAUC	Highway Authorities and Utilities Committee
HPPE	(PE100) High Performance Polyethylene
HSE	Health and Safety Executive
HSWA	Health and Safety at Work Act
ICE	Institution of Civil Engineers
IGN	Information & Guidance Notes
IWater	Institute of Water
LR	Lloyd's Register EMEA
MDPE	(PE80) medium Density Polyethylene
NCO(W)	Water Network Construction Operations
NRSWA	New Roads and Street Works Act
NVQ	National Vocational Qualification
OFWAT	the Water Services Regulatory Authority
PE	Polyethylene
PE80	Medium Density Polyethylene
PE100	High Density Polyethylene
PPE	Personal Protective Equipment
PPM	Parts Per Million
PVC	Poly Vinyl Chloride
SDR	Standard Dimension Ration - Outside diameter / Wall Thickness
COMPETENCY	Safety and Technical Competency
TA	Technical Advisor
SDR	Standard Dimension Ratio
WIA	Water Industry Act
WIRS	Water Industry Regulation Scheme
WIS	Water Industry Specifications
WRAS	Water Regulation Advisory Service

6. NOMLACTURE

v	-	Volume, Litres
A	-	Area, meters squared
V	-	Velocity, meters per seccond
Q	-	Flow, litres per second
t	-	Time, in seconds
P	-	Pressure, in Bar
H	-	Static Head in meters
hL	-	Head loss due to Friction, m
L	-	Length in meters
G	-	Gravitational acceleration, ms-2
D	-	Diameter in meters
i	-	Hydraulic Gradient, m/m
θ	-	Kinematic viscosity of fluid, m^2/s
Ks	-	Effective roughness value, mm
Qt	-	Design Flow, l/s
LU	-	Loading Units

E - Equivalent Length , meters
Ω - Soil Resistivity, Ohm -cm

7 Reference Documents

The full list of contents in the Companies water technical library and links to those documents are available in the WIRS Manual.

Legislation

Title
The Water Act 2014
The Water services etc. (Scotland) act 2005
Water Industry Act 1991
The Public Water Supplies (Scotland) Regulations 2014
Water Supply (Water Quality) Regulations 2010
Water Supply (Water Fittings) Regulations 1999

WIS & IGN's

Number	Title
IGN 4-37-02**.**	Design against surge and fatigue conditions for thermoplastic pipes
R128	CIRIA Report "Guide to the Design of Thrust Blocks for Buried Pressure Pipelines".

BS & BS EN Standards

Number	Title
BS EN 805	Water Supply – Requirements for systems and components outside buildings
BS EN 806	Specifications for installations inside buildings conveying water for human consumption

Other

Number	Title
10/WM/03/21	Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites
R128	CIRIA Report "Guide to the Design of Thrust Blocks for Buried Pressure Pipelines".

9. CONSTRUCTION (DESIGN & MANAGEMENT) REGULATIONS 2015 (CDM)

General

The relevant sections of the CDM Regulations apply to all design works carried out by or on behalf of the adopting utility – both the adopting utility's representative and the SLP's representative could be classed as Designers under CDM Regulations.

To comply with CDM the SLP's Designer is required to: –

- Ensure that the design avoids or addresses at source foreseeable risks to health and safety.

- Give priority in the design to measures, which will protect all people associated/ or affected by the project.
- Ensure that the design includes adequate information about any aspect of the project, structure or materials, which may affect the health and safety of persons during construction. Residual risks, which cannot be designed out, shall be recorded in the project file and a copy passed to the planning supervisor.
- Co-operate with all parties concerned with planning and design for the project.
- Ensure that the Client is aware of his duties

The company responsible for the proposed construction must be made aware of the risks identified by the Designer and the control measures required to reduce the risks to an acceptable level. CDM regulations also require the HSE be notified (where we are not already working on a developers site under their notification) of works which last longer than 30 days AND has more than 20 workers, working simultaneously at any one point OR exceeds 500 person days.

The HSE will be notified by the SLP Designer who will complete an F10 form. Generally this will only apply to off-site works which meet the aforementioned criteria.
Where the CDM Regulations apply, a Pre-construction Phase Plan shall be created at the design stage. This plan should include the following: –

- Description of works.
- Proposed time scales of works within the project.
- Details of risk and required control measures.
- Information required by principal contractor to demonstrate competence of resources.
- Information for preparing the health and safety plan for the construction phase

The Pre-construction Phase Plan shall be passed to the Principal Contractor for inclusion and development of their Construction Phase Plan before work commences on site.

11. DESIGN VARIATIONS

Changes to the design/construction of a network (possibly due to site conditions, amendments to the site made by the developer, etc.) shall be notified to the adopting utility in accordance with the Sector Guidance

All variations shall be formally documented (by application/letter/email) and a record kept showing the agreed changes.

The SLP will classify the variations to the accepted design/method of construction and action as required; these variations can be classified as minor or major.

Minor Variations

Minor Changes shall be formally agreed in writing with the Water Company's site representative;

Minor variations shall be classed as; XXXX

Major Variations

11.2.1 Major Changes shall be re-submitted with a new design to be approved by the adopting utility prior to any works taking place.

Examples of Major Variations are, but not limited to; XXXX

12. DESIGN PROCESS

Information Required from Developers

An application form shall be completed which is used to identify the minimum inflow of information to begin the design process.

Minimum Information Shall be:

a) Domestic Supply Requirements i.e Property Type Schedule
b) Multi Occupancy Building Supply Requirements, pumps, storage internal manifolds
c) Commercial Supply Requirements, internal fitments, flow rates, details of storage tanks, process water requirements.
d) Details of any existing water for firefighting requirements
e) Details of previous land usage, copies of Geo-Environmental Reports, Site Investigation
f) Details of land/site ownership
g) Details of any phasing
h) Site layout plan (approved planning layout) to include topography
i) Preferred type of water metering / box and building entry positions
j) Details of watercourses on site or along the site boundary.
k) Details of Engineering Difficulties e.g bridges or culverts the new water pipes must cross
l) Section 38 drawing detailing the roads and footpaths to be adopted by the Local Authority,
m) Details of service strips/service corridors where applicable.
n) Details of any known future developments adjoining the site.

Minimum standards for a completed mains / service connection designs

When preparing a water network design the designer shall:

a) Select an appropriate material for the mains and services
b) Scale the drawing to an approved scale to allow a drawing to be produced
c) Highlight the legal land ownership boundary of the developers site on the drawing
d) Highlight the water service building entry points
e) Calculate demands and size all service connections in line with this manual
f) Specify all metering arrangements for supplied properties
g) Size the mains across the site and if required calculate min/max pressure and velocity
h) Route all the mains in accordance with this manual
i) Label all road crossing ducts on the design drawing or specify in the technical report
j) Specify the Point of Connection and show what work is non-contestable
k) Label any service connections to existing mains as contestable / non-contestable
l) Design the appropriate number of mains fittings to control the network
m) Label all the sizes and specifications of connections / pipes and fittings on the drawing
n) Label and sections of mains that require easements or wayleaves
o) Clearly mark adoptable hydrants that must be retained for the FRS
p) Identify any engineering difficulties as appropriate

q) Show site topography on the drawing
r) Clearly show any points of connection for future development on the drawing

Design Submissions to Adopting Utility

Submit to the adopting utility along with any supporting information, such information may include, but not be limited to:

a) Application to Self-Lay Water Mains and Services
b) Full Ground Investigation Report
c) Section 38 Plan
d) Materials Schedules
e) Land Registry Ownership
f) Fire and Rescue Service Liaison Documentation
g) Payment of Fee's
h) Letter of Appointment

13. DEMAND CALCULATIONS

Domestic Demand Calculations

Demand per capita per day shall be taken as XX Litres

Calculation for household occupancy shall be taken as XX persons per household

Average daily demand per household is therefore XX l/day or XX l/s

To account for diversity in the network Peak Flow Factors for domestic scenarios shall be taken to be:

- INSERT PEAKING FACTORS FOR VARIOUS SITE SIZES

Peak Demand may be calculated then by multiplying the average day demand per household by the peaking factor.

A site of XX Domestic units has a daily demand of XX x XX = XX l/s, this must be multiplied by the peaking factor shown as 8. Therefore peak demand in litres per second can be estimated at XX x XX = XX l/s

Calculations for Multi-Occupancy Building and Industrial and Commercial Domestic Use

Process Water

It is expected that the client should provide peak demands given their individual knowledge of their own process. The connection and mains that are to be installed should then be selected based on this demand.

14. PRESSURE AND FLOW

Source Pressure

13.1.2 The adopting utility may for the purposes of designing the network wish to assume reference level pressure at source of 20 meters head (2 Bar) any source pressures below this or above 40 meters (4 Bar) shall be confirmed as acceptable by the Approving Design Engineer.

Pressure and Flow

Reference levels of service shall again be used to ensure that networks can supply all properties with a minimum pressure and flow at the customer's communication pipe.

Minimum Pressure in communication pipe at boundary of Property to be serviced;

- X Bar and X Litres per minuet

In normal operational circumstances Minimum Pressure at a Hydrant or nodal point on the system shall be 15mH or 1.5 Bar

Maximum Design Pressure (MDP) which is equal to Design Pressure plus allowance for surge, shall not exceed Pressure Nominal (PN) which is the pressure rating of the lowest rated component in the system.

Designers shall clearly state where a component has been used below the company's standard pressure rating of 10 Bar to allow standard System Test Pressure's (STP) to be adjusted on site.

Velocity

Minimum peak time velocities in all in all Pipes shall reach XX ms^{-1}

Maximum velocity in mains shall not exceed XX ms^{-1}

Maximum velocity in services shall not exceed XX ms^{-1}

Velocities where calculated shall be done so with the XX Equation.

Calculating Headloss through the Network

For local distribution mains headloss per XXm shall not exceed XXmH, target values shall be between Xm/XXXXm and Xm/XXXXm

When required headloss through Cement Mortar Lined Ductile Iron pipes shall be calculated using the below reference table;

Topography

13.6.1 Above Ordnance Datum (AOD) shall be the preferred scale when highlighting level changes on the design drawing.

13.6.2 The effect of increased altitudes on a site shall be taken in to consideration by the designer when low source pressures have been identified.

13.6.3 The finished floor level (ffL) of the highest connection shall for the purposes of the design serve as the additional loss of head when ensuring the reference level of service.

15 MATERIAL SELECTION

15.0.1 Unless specified by the adopting utility approved materials for use in the design shall be:

- PE80 Pipe
- PE100 Pipe
- Multi-Layer Skinned PE100 Pipe
- PE/AL/PE PE80 Type A Barrier Pipe
- PE/AL/PE PE100 Type A Barrier Pipe
- Class 40 or K9 Cement Lined Ductile Iron

Accepted Sizes and Pressure Ratings

The below table specifies the companies accepted size and pressure ratings for water pipes, requests to use materials other than those listed below must be approved by the adopting utility.

Size	Material	SDR	Pressure Rating
25mm - 63mm	PE80 Pipe	SDR11	12.5 Bar
90mm - 1200mm	PE100 Pipe	SDR17	10 Bar
90mm - 630mm	PE100 Multi-Layer Skinned Pipe	SDR17	10 Bar
25mm - 63mm	PE80 PE/AL/PE Type A Barrier Pipe	SDR11	12.5
90mm - 630mm	PE100 PE/AL/PE Type A Barrier Pipe	SDR17	10 Bar
80mm - 400mm	Class 40 Cement Lined Ductile Iron	NA	16 Bar(Push Fit Gasket)
450mm -2000mm	Class K9 Cement Lined Ductile Iron	NA	16 Bar(Push Fit Gasket)

Preferred mains sizes:

110MM OR 125MM
160MM OR 180MM
225MM OR 250MM

15.2 Selection of Materials for Contaminated Ground

16. MAINS DESIGN

16.0.1 General Principles in designing mains shall be that they;

- Minimise whole lifecycle costs and Impact on the environment
- Deliver minimum standards of service to customers
- Ensure security of supply so far as reasonably practicable
- Ensure continuing water quality
- Allow for safe and flexible operation of control points and surface assets

16.1 Routing & Positing

Wherever possible water mains shall be laid within the adopted highway, a street or a dedicated service strip.

Mains shall be laid in shared drives when categorised as a street (See Section 16.6 for conditions) where there are more than XX plots being serviced from that street that shall require service connections and the furthest property is more / not more than XXm from the adopted highway.

Mains design shall be such that the minimum depth and separation requirements of NJUG 2 can be met. See Appendix D for this layout.

Mains are to be laid on the side of the road where the housing density is higher to minimise the number of service pipe crossings.

Duel mains shall be used in the design as a last resort, usually where road construction prohibits utility apparatus at normal depths. E.g. Shallow drains, permeable paving systems.

Security of supply may be increased by linking in mains when there is a significant number of properties being serviced through a single pipe, provision for flushing in these cases must be made by designing washouts located within 3 way valve arrangements or between in line valves.

To reduce the likelihood of water quality issues from lack of turnover mains that are to an end hydrant (dead leg) shall not extended more than 2m past the last service connection.

Mains routes shall minimise road crossings and reduce short radius bends.

Mains shall maintain minimum proximity to buildings and structures as specified by the adopting utility, should the adopting utility not specify the minimum proximity the following measurements shall be adhered to;

Nominal Pipe Size mm	Min Proximity required (m) from centre line of main
< 149	XX
150-449	XX
450-749	XX
> 750	XX

Designers shall refer to Volume 4: NJUG Guidelines for the Planning, Installation & Maintenance of Utility Apparatus in Proximity to Trees when selecting route in proximity to existing trees and if necessary shall highlight any Tree Protection Orders on the design drawing.

Depth of mains

16.2.1 In the absence of adopting utility requirements the design shall show depths in verges, footpaths and carriageways at minimum cover of 750mm as per NJUG Volume 2

In all open fields a minimum depth of 1100mm shall be shown on the design.

For all PE Mains maximum wall deflection when buried shall not exceed 12%, for this a maximum depth of 2000mm shall be observed in the design.

Water Quality Considerations

Mains in the design shall ensure turnover of water in 5 Days to prevent stagnation and minimise deterioration of water quality in the distribution mains.

Wherever possible main spine roads of larger developments shall be serviced with ring mains to keep pressures across the site more uniform

Wherever possible designs shall make provision for additional feeds into new developments to increase security of supply however particular care and attention shall be taken to ensure mains' cleaning is undertaken should flow reversal cause discolouration.

Site where infrastructure is laid in advance of turnover shall either have artificial load by way of cross connection into the live system or shall have a flushing programme denoted on the design.

Sizing of Mains

Mains shall be sized to meet peak demands and shall be not oversized such that they no longer meet the conditions for water quality.

Mains shall be sized such that all known future developments are taken into consideration to avoid unnecessary upsizing at a later date.

The sizing of pipes should be based upon a hydraulic calculation using the XXXX method.

The following pipe sizes are acceptable to the water company:

- XXmm
- XXmm
- XXXmm
- XXXmm
- XXXmm
- XXXmm

For designing networks larger than those specified in the above table the principles in section 14.1 shall be followed to size principle spine mains and calculations shall be saved in the project file.

Mains Fittings

Valves, washouts, hydrants, etc. should, as far as is practicable be located in the footpath or verge for both access and safety reasons and to mitigate the effect of traffic, surface water and silting in chambers.

Where no other option is available and mains fittings must be sited in trafficked area's the design shall in no circumstances shall them in parking bays or behind any locked access gates.

Controlling Valves

Valve Closing Directions are XX

Washout Hydrants

Permanent Washouts shall be fitted with Sandwich Valves and are to be Fixed Jumper / Full Bore / Loose Jumper

Air Valves

Air valves should be installed at high points along the network where there is a risk of air locking. The location is to be agreed at design stage.

Pressure Reducing Valves

Where mains pressure exceeds 50mH the water company may request a PMV is installed either within the development or on the source of water connection. This would be designed and installed to the water company's standards.

District Metered Areas (DMA) and Boundary Valves

District metered areas shall be agreed with the adopting utility, if no information is available new DMAs in the design shall not exceed XXXX domestic properties in size.

Keep Shut Valves (KSV's) to be installed where.. XX

Rights of Access

Mains shall wherever possible be routed in publicly adopted highways and maintained highways or streets as defined in NRSWA Section 48 (1) and amended under the Traffic Management Act (TMA) 2004, these shall not normally require rights of access. Examples of situations where mains are to be laid in a street are:

- An adopted street on land which is owned by a Local Authority.
- A street on land which is owned by the developer and which may or may not be adopted in the future but serves more than one property.
- A street on land which is in joint third party ownership.

The section 38 Drawing shall be used to highlight any main installed in third party land, which is not a street and that may require land rights to be obtained, in these instances the adopting utility legal team shall establish the right of access and shall normally require an easement from the land owner. Examples of situations where mains are not to be laid in a street are:

- Industrial and commercial development where land is wholly one by a singular 3rd Party
- Site access is through a third parties land that does not form part of the development.

In cases requiring mains to be laid in land not defined as a street all such permissions and rights of access shall be identified before the design is approved.

In the process of designing it may be necessary to obtain other consents for works, these consents include, but are not limited to:

- Local Highways by way of Section 50 Agreements
- Other Adopting Utilities where we are laying within an existing easement
- Environmental Agencies and Waterways Authorities
- Rail and Transport Network Operators
- Historical Societies and National Heritage Agencies

All such Servitudes, easements, wayleaves, planning permission required for water mains and land for the siting of equipment shall be obtained prior to commencement of works.

17. SERVICE PIPE DESIGN

The Service Pipe is that part of the water supply system which conveys water from the distribution main to the customer's property.

It consists of 2 elements;

- **Communication Pipe** - From the water main to the property boundary, referred to as the point of delivery (the boundary of the premises with the part of the street where the main is laid)

- **Supply pipe** – is in some much of a service pipe which is not a communication pipe, from the property boundary (as above) to the mandatory internal stop tap

Both parts of the service pipe shall be designed however the responsibility for installation and future maintenance of the supply pipe shall rest with the owner of the property or properties, as such Service pies shall not normally require Easements or Rights of Access.

Shared Service Pipes are those pipes that service multiple customers at point of delivery, usually in multiple occupancy buildings. The design of these service pipes shall likewise be the responsibility of the adopting utility and the installation and future maintenance of the shared supply pipe shall be the responsibility of the customers supplied or a management company appointed on their behalf.

Pipework past the boundary shall be the client's responsibility and shall conform to all byelaws, regulations and requirements of the adopting utility.

Routing positioning and location

Service pipes shall only be laid through land which either form part of a street or to which the property being served has permanent rights of access.

Service pipe routes in so far as reasonable practicable shall follow a straight route perpendicular to the main and the property to which it services.

Service pipes shall generally be designed to connect to the nearest main to the property.

Separate service pipes shall be provided to each house or building on the premises, or to those different parts of a building on the premises which are separately occupied by way of multiple supply pies.

Joint communication pipes may / may not be used to reduce road crossings however each property must receive an individual supply pipe and meters (If applicable)

Service pipes shall be designed such that the requirements of NJUG Vol 2 are maintained with respect to separation from other plant and utilities.

Designers shall refer to Volume 4: NJUG Guidelines for the Planning, Installation & Maintenance of Utility Apparatus in Proximity to Trees when selecting routes in proximity to existing trees and if necessary shall highlight any Tree Protection Orders on the design drawing.

Depth of Services

Service pipes shall be designed at a depth of ≥ XXXmm and ≤ XXXXmm from the finished ground level (FGL)

Service pipes being designed outside this range to have special protective measures vetted by the complex design approving engineer.

Sizing of Services

17.3.1 While service connections can only be designed to meet minimum standards at the point of delivery every effort shall be made to ensure that all parts of the service pipe are sized in accordance with industry standards.

Service pipes shall be sized to ensure velocity is ≤ X ms^{-1} and that total headloss is ≤ XmH

Services to standard domestic properties shall be minimum XXmm internal diameter and capable of supplying the flow and pressure in 13.2.4

Location of Boundary Boxes

All service shall have means of isolation via an external valve either incorporated as part of a meter box or as a standalone fitting, this may range from 3/4inch to 2 inch and will be sized to suit the service pipe, preferred locations for ground boundary boxes to be in the Footpath / Just in Private / As Close to the Property but not closer than 1m / XXXXXX

Supplies to Multi Occupancy Buildings

Services to Multi Story Buildings

Water Industry Act 1991 - Section 66 states that where the top most storeys in building is greater than 10.5 below the draw off point the statutory undertaker may require the developer to fit storage equal to twenty-four hours usage and adequate pumping to reach the highest point.

Additional Requirements for Supplies to buildings other than domestic dwellings

When the developers flow rates are in question the designer shall check that demand was calculated in accordance with BS EN 806.

The design shall include for back flow prevention; at least single check non return valves.

Demand for process water shall be treated separately when designing the service.

The designer shall investigate any seasonal demand patterns when designing the service.

18. CIVIL ENGINEERING CONSIDERATIONS

General

Where no references are available from the adopting utility the general specification for civil engineering components and material shall be that of the document “Civil Engineering Specification for The Water Industry (CESWI) 7th Edition which is available in the water technical library.

Tree Planting

Proposed Landscaping and trees or any other planting by the developer shall be selected such that apparatus is not prejudiced or put at any risk by future growth.

The below figure shows the acceptable distance for various type of planting;

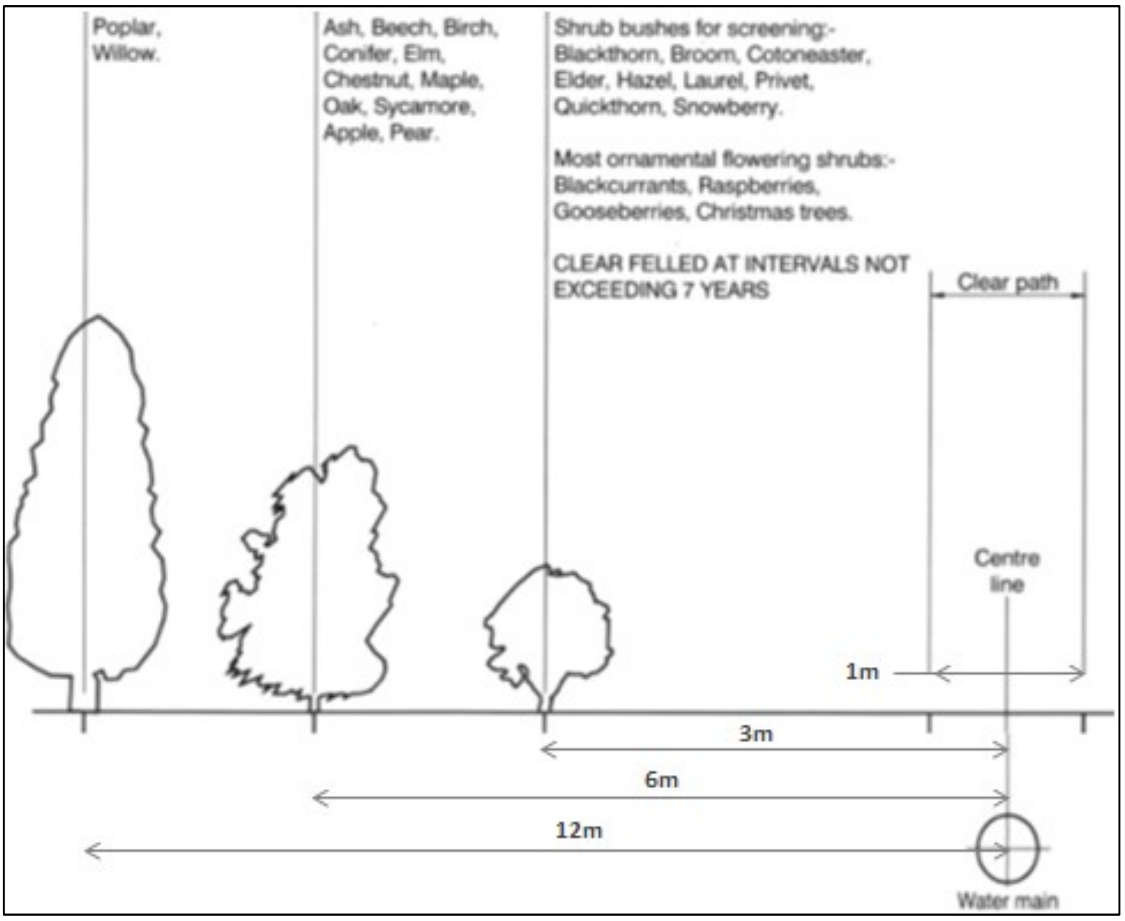


Figure 18.2.2 – Minimum Proximities for Tree Planting near Water Mains

Marker Tape and Tracer Tape

The design shall show all water mains as having traceable mesh / standard marker tape place over the main

The design shall show plain marker tap / tracer tape/ tracer wire placed over all service pipes

Indicator Posts and Marker Plates

Chambers and Covers

Chambers shall be designed of appropriate size to allow operation of the mains or service fittings, see general arrangement drawings.

Covers shall be designed to be capable of withstanding all potential loads placed upon them and shall comply with BS EN 124 (carriageway) or BS EN 125 (other locations)

Bedding and Backfill

Materials used for bedding shall conform to WIS 4-08-02 "Specification for bedding and side fill materials for buried pipelines" and material for Backfill shall be to HAUC standards.

Special Crossings

Ducts

All ducting shall be blue, twin-wall rigid duct with smooth internal bore, corrugated external bore and compliant to BS EN 14741:2006.

Where ducts are designed to be laid under major roads or obstructions they shall be shown to extend beyond the road to ease installation of mains and future and inspection.

Ducts shall be sized (unless specified by the adopting utility) in accordance with to the below table:

Pipe Size OD (mm)	Road Crossing Duct Size ID (mm)

Service pipe ducting* where extending into building to form part of the service entry must facilitate the installation of insulation to asset adopter standards and may need to be XXmm

19. METERING REQUIREMENTS

Standard Domestic Metering for Individual Dwellings

In England and Wales all domestic connections shall be designs to be cable of incorporating a 15mm or 20mm water meter

Concentric meter for installation in boundary / wall boxes or inline meters for installation may be used in the design but shall be specified for each property in the design documents or on the design drawing

Where a meter is to be installed inside the premises it shall be capable of Automated Meter Reading (AMR) the meter shall be located immediately after the controlling stop tap and immediately before the drain valve, at this point the SLO's responsibility with respect designing the water network ends.

Where meters are to be installed as part of the boundary / wall box they shall be located to facilities future maintenance and replacement and shall normally be site at or on the front elevation of the property nearest the water main, these boxes shall be capable of accepting a 15mm or 20mm concentric 1.5in BSP threaded water meter

Layout for standard external meter boxes for individual dwellings are shown in the general arrangement drawing on the shared drive and in the WIRS folders.

Multi Occupancy Buildings

District Meters

Where a site exceeds XX properties, the water company may request a district meter to be installed as part of the non-contestable works (branch connection). In this case, the water company shall be expected to assume Designer responsibility under CDM Regulations for this port

20. WATER FOR FIREFIGHTING

Fire and Rescue Service (FRS) Consultation

Pursuit to Section 43 (1) of the Fire and Rescue Services Act 2004 a plan showing adoptable washouts shall be sent to the FRS for consultation purposes, along with this plan shall be a location plan and a covering letter.

The FRS contacts for the water company area are listed

FRS	Tel Number	Water Office Contact	Email

The FRS shall have the statutory period, 42 calendar days, to respond with their requirements in respect of adopting hydrants for firefighting.

Hydrant to be adopted shall be then marked on the drawing in accordance with the drawing legend of the adopting utility or the legend in the Code of Practice.

Location and Flow from Hydrants

The

Dedicated Fire Mains

Fire Sprinkler Systems

In the absence of any information from the adopting utility designers shall refer developers to the polices within the building regulation when requests for sprinklers are being made, these documents, “Document B (Fire Safety) –Volume 1: Dwellings and Volume 2: Buildings other than Dwelling houses”, can be found at http://www.planningportal.gov.uk/buildingregulations/

Wet Pipe System and Dry Pipe Systems

Domestic Fire Sprinklers

Fire Sprinklers for Multi Occupancy, Industrial and Commercial Buildings

21. DRAWING STANDARDS

General

The designer shall check with the adopting utility whether they have templates available for design drawings or if minimum drawings standards are available for SLO's to use in design activities.

Design drawings shall show all assets location size and specification in a clear and unambiguous format. Should enlargements, blow ups or schematics be required these shall be incorporated within the design submission.

Design drawings or supplementary information shall clearly show, but not be limited to showing;

- Location and depth of water mains and fittings
- Material and Fittings size and full specification
- Any non-contestable works
- Service entry points, pipework routes, sizes and metering requirements
- Point of connection on upstream network
- Site boundary and location plan
- Section 38 adoptable highways
- AOD at POC and highest point of the site including contours if requested
- Site phases
- Adoptable hydrants by the FRS
- Label and sections of mains that require easements or wayleaves
- Special Crossing or Engineering Difficulties
- Areas of contamination where protective pipework is required.
- Future Demand or developments
- Significant environmental and H&S hazards
- A Drawing title block with scheme deals
- O/S Coordinates and industry recognised scale for the drawing

Drawing Legend

The adopting utility will provide a design template in dwg format, should this not be applicable the legend in the code of practice shall be used to prepare an initial design submission.

21.3 Approval Status

Approval Status to be clearly shown

22. COMMISSIONING

To enable the commissioning of new assets to take place the water company must provide the following:

- Flushing requirements including super-chlorination levels, sampling
- Should the flushing be discharging to a water course, the SLP should inform the local EA officer and have a de-chlorination plan on site.