



## **Best practice design principles for water mains on new development sites**

### **Introduction**

Water UK and the Homebuilders Federation (HBF) have agreed best practice principles for the design of on-site water mains constructed specifically for the purpose of new water connections to new build premises. The aim is to provide an agreed set of high level principles for water companies, developers and their associated constructors to follow. Nothing contained in this guidance shall relieve the designer from using their skills and experience to produce a cost-effective and sensible proposal.

### **Principles**

#### ***Point of connection***

- A proposed point of connection(s) to the existing water network should be identified and agreed by the incumbent water company before design work can commence.

#### ***Cost***

- Whole life cost of the main shall be considered including construction, operation, maintenance, repair and eventual decommissioning of the main.

#### ***Routing and positioning of the main***

The overriding principle is that where ever practical, water mains should be laid to allow each individual connection to be taken at a 90 degree angle from the main towards the premises to be connected.

- The mains system should be designed to afford minimal jointing.
- A main should be laid in any street where 3 or more premises are to be served providing best engineering practice and hydraulic optimum performance of the asset can be achieved.
- Where practical, the on-site main should follow the route of the planned footpaths and carriageways and should be installed in the footpath where possible. Where the main cannot be laid in a footpath or carriageway, designers may consider that water mains are afforded the same protections as defined in S159 Water Industry Act 1991 for any main laid in land defined as a "street" in part III of the New Roads and Street Works Act 1991. Designers may also consider laying mains in land not defined as a street in order to comply with the overriding principle and in these instances, a service strip should be provided by the developer.

*“Street” as defined in NRSWA 1991 = The whole or any part of any highway, road, lane, footway, alley, passage, square, court or land laid out as a way whether it is for the time being formed as a way or not.*

- The main should be located on the side of the street with the highest number of service connections.
- Where the layout of a street is not clear (or the layout may easily change such as retail parks and industrial areas) consideration should be given to protecting the asset with a formal easement.
- All water mains laid in a street should be laid at a minimum depth in the range 750 to 900mm<sup>1</sup> cover from the crown of the pipe to the finished ground level and at a maximum depth of 1200mm.
- Water mains should be adequately spaced from other utilities as outlined in the National Joint Utilities Guide (NJUG) current issue. No other utility service should be installed directly above the water main, although consideration can be given for crossing points.
- No erection such as building, fence or wall should be constructed where it will obstruct future access to the main. Designers must familiarise themselves with the relevant water company specifications to ensure the correct easement widths are achieved. Trees, hedges, plants and bushes should be considered on a case-by-case basis with specific consideration to growth patterns.

### **Contamination**

All should consider the Contaminated Land Assessment Guidance Protocol <sup>2</sup> agreed between Water UK and the Home Builders Federation to determine where measures are required to protect water pipes from contamination.

- Where an appropriate barrier pipe or ductile iron is to be used in land affected by contamination this must be installed as an entire system (including services) and must be *done so in accordance with manufacturers’ guidelines*.

### **Apparatus**

The overriding principle will be that street furniture will be kept to a minimum:

- All chambers shall be positioned in areas of minimal foot and road traffic where practical. Chambers should not be positioned directly outside entrances to buildings.
- The designer should have due regard to the HBF-Water UK *Meter Location Best Practice* guidelines<sup>3</sup> and the water company’s meter location policy.
- Air valves shall be installed at the appropriate highest point on a section of main.

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<sup>1</sup> Consult the water company for their specific minimum depth requirements

<sup>2</sup> See water UK website

<https://dl.dropboxusercontent.com/u/299993612/Publications/Guidance/Building%20protocols/contaminated-land-assessment-guidance-jan2014-wateruk-hbf.pdf>

<sup>3</sup> See Water UK website - <http://www.water.org.uk/home/policy/publications/archive/building-protocols/meter-locations?s1=meter&s2=location>

- Washouts will be required on all mains and must be located to suit hydraulic and operational convenience. Consideration should be given to how any main will be fully flushed and how any wash out water will be drained.
- The designer must contact the relevant local Fire Brigade to determine the location of any fire hydrants on a main.

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