



Water Mains Design Considerations

Introduction

In January 2021 Water UK published Water Sector Guidance in relation to the adoption of self-laid assets by Water Companies in England.

Using the sector guidance we have created the Southern Water Design and Construction Specifications Document (DCS), which sets out the standards for design and construction that are to be met before we adopt a water main.

To support the above we have created this document, which provides guidance on things to consider when designing your water main. These considerations are informed by our experience in designing water mains and the associated maintenance requirements for the asset.

We have also included features that should be considered on the Computer Aided Design (CAD). We hope that you find what we have set out below informative and that it will assist you in producing a suitable design.

Considerations:

- Are the mains proposed for adoption designed using our published DCS?
 - *The Mains will need to be designed against our Design & Construction Specification to ensure that it meets our standards for adoption*
- Has the correct pipe material been used?
 - *Incorrect pipe material selection will affect water quality.*
- Will the mains be constructed using the permissible materials as set out in our published DCS?
 - *The Mains will need to be constructed using materials permissible in our Design & Construction Specification to ensure that it meets our standards for adoption*
- Are spine mains sized for all phases of the development?
 - *To ensure the network provides sufficient water to all customers.*



- Are the mains sized to feed both ways off the central spurs?
 - *To ensure the network provides sufficient water to all customers during maintenance.*
- Are all Fire Hydrants supplied by mains 90mm or greater?
 - *The Fire Service will not adopt any FH served by a main less than 90mm.*
- Are the mains located on the side of the highway with the most properties?
 - *This minimises the length of communication pipe.*
- Are there any dual mains or rails?
 - *A single main on each road demonstrates value engineering and reduces the amounts of assets to be maintained.*
- Does the site drainage clash with the Potable Water mains?
 - *To help with future maintenance and keep customer disruption to a minimum.*
- Are the mains located within the footpath or service strip where possible?
 - *To help with future operation of assets.*
- Are mains laid in parking bays?
 - *Mains should avoid parking bays to help with future maintenance of asset.*
- Are the mains located a minimum 3.0 metres away from either existing or proposed buildings?
 - *To provide adequate room for future excavations on the main*
- Has an appropriate number of valves been used?
 - *There should be a balance between reducing the amounts of assets to be maintained and limit loss of supply up to 50 properties.*
- Are chambers located in suitable locations?
 - *Assets should be maintainable without traffic management.*
- Are strategic locations served by ducts?
 - *Using additional ducting will help planning of future maintenance at major roads, bridges, overhead structures, culverts, and other structures.*
- Are washout hydrants provided at terminal points?
 - *To help with future maintenance and flushing for water quality purposes.*

- Are there any air valves?
 - *Venting should be considered in light density developments and undulating terrain.*
- Are long communication pipes (services) in ducts?
 - *To help with future maintenance of assets.*
- Are service ducts to be installed across parking bays?
 - *To help with future maintenance of asset.*
- Is the connection to the SWS network on a suitable main?
 - *Trunk mains should not have connections for small developments.*
- Is a leakage meter required?
 - *Meters will be needed for larger developments.*
- Does the development need a Pressure Reducing Valve (PRV)?
 - *A PRV will be needed if the incoming mains pressure is too great.*
- Are bypasses and cross connections to the required specifications?
 - *To ensure correct operation in emergency situations.*

CAD features

The following are features we would expect to see captured within a CAD.

- . Version 2010 or later
- . No external references
- . Property/Building boundaries and plot numbers
- . All proposed roads, buildings, pathways
- . Proposed mains layout including labels for sizing, valves, washouts and fire hydrants
- . Proposed service/supply pipes and boundary box locations
- . Existing mains layout including labels for sizing, valves, washouts and fire hydrants
- . Proposed trees and landscaping
- . Existing structures and landscaping that are to remain.
- . Service strips if different to footpaths
- . Proposed Drainage and SUDS
- . Topography/elevation details including details of retaining walls
- . Private driveways or shared drives