

	<p style="text-align: center;">Asset Policy Standard Water Mains Protection Distances</p>	Version: 1.5
		Approval Date: 29-02-2016

Asset Policy Standard

Water Mains Protection Distances

Approved Version 1.5

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Approvals	Position	Directorate	Date
Simon Parsons	Director	Strategic Customer Service Planning	29/2/16
Alan Scott	General Manager Water	Strategic Customer Service Planning	29/2/16
Andrew Dunbar	Water Service Strategy Manager	Strategic Customer Service Planning	29/2/16

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1. Introduction

Scottish Water (SW) has a legal requirement to maintain a supply of wholesome water to customers. We do this using our network of water mains, some of which may be located within land proposed for development. This document outlines SW Policy for all developers' contractors and infrastructure providers when designing developments around existing water pipelines.

To ensure SW can maintain, repair, refurbish and replace water mains, it requires access to them. The majority of mains have a level of statutory protection which ensures access is maintained and restricts development above and in close proximity to them. This policy document sets out SW's minimum level of access required to deliver its statutory duties.

SW's water network operates at significant internal pressure and has the potential to damage properties in close proximity to mains should they fail. SW aims to manage this risk by ensuring adequate distance is maintained between SW's assets and proposed buildings and structures that may be erected. This policy document sets out SW's recommended minimum stand-off distances to minimise the risk of damage to property.

2. Definitions

2.1 Access Distance

The Access Distance is the legally supported distance, required to facilitate future SW access to allow repair, maintenance or renewal of the water main in every direction (e.g. at the end of a water main or at changes of direction). The Access Distance will be measured from the outside of the pipe.

No buildings, structures or other developments that will restrict our access or put at risk the integrity of our assets is permitted within the Access Distance.

Our minimum access requirements are set out in Table 1 below. SW reserves the right to adjust the required Access Distance from that stated in Table 1, according to local circumstances and operational considerations. Reasons the Access Distance may be increased at the discretion of SW, include:

- a) The topography makes access for maintenance and repairs more difficult and / or requires larger items of plant and equipment.
- b) Site specific SW operational considerations.
- c) The water main is deeper than 2 metres to invert level.

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Table 1 – Access Distances

Notes

- a) Distances are **minimum** based on a pipe invert level up to 2 metres deep.
- b) Increases in depth within the main may result in an increase of the Access Distance.
- c) Final Access Distance will depend on site specific topography.

Internal Pipe Diameter Range	Minimum Access Distance ⁽¹⁾ Distance from edge of pipe (no existing physical site restraints)	Access Distance Distance from edge of pipe (Existing Physical restraint – e.g. Urban Roads)
Up to 180mm	3m	NJUG Guidelines in pavement ⁽²⁾
>180mm up to 14"/350mm	4.5m	NJUG Guidelines in pavement ⁽²⁾
>14"/350mm up to 18"/450mm	6m	See below ⁽³⁾
>18"/450mm up to 24"/600mm	8m	See below ⁽³⁾
>24"/600mm	Minimum 10m ⁽⁴⁾ dependent on specific site conditions	

⁽¹⁾ Scottish Water will apply the minimum Access Distance at all times.

⁽²⁾ National Joint Utilities Group.(NJUG) guidelines are to be followed for small diameter distribution mains in footpaths in urban situations.

⁽³⁾ For larger diameter mains in constrained urban roads a detailed risk assessment and method statement (RAMS) will be required to protect adjacent and new properties.

⁽⁴⁾ For major strategic mains >600mm – a detailed design, Risk Assessment and Method Statement and consideration of the “Washington Suburban Sanitary Commission - Pipeline Design Manual” WSSC2012 will be required, dependant on the criticality of the infrastructure and technical considerations including flood/damage risk and repair method statements.

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2.2 Stand-off Distance

The Stand-off Distance is the minimum distance, that SW recommend habited properties and structures, should be located away from the water main to prevent them being damaged due to a water mains burst. The distance is based on the operating pressure of the main, and the crater size calculations derived by the “Washington Suburban Sanitary Commission - Pipeline Design Manual” (WSSC).

The Stand-off Distance will **vary according to the pressure** within the pipe and should be checked with SW prior to assigning a Stand-off Distance. The Stand-off Distance stated in Table 2 is for guidance only and specific final Stand-off Distance shall be agreed with SW for each individual development. These recommended distances may be adjusted, according to local circumstances and operational considerations.

Reasons for stand-off distances to be increased at the discretion of SW include:

- a) The water main operates at a high pressure or is at a deeper than 2 meters to invert level.
- b) Properties are deemed to be at an increased risk of flooding or damage in the event of a mains failure.

Table 2 – Stand-off Distances

Notes

- a) Stand-off Distances are **minimum** based on a pipe invert level up to 2 metres deep.
- b) Increases in depth or high pressure may result in an increase of the Stand-off Distance.
- c) Final Stand-off Distances will depend on site specific assessment.
- d) Recommended indicative Stand-off Distances, are based on the WSSC Pipeline Design Manual

Crater size based on WSSC 2012 calculations	
Pressure within the Pipe	Recommended Stand-Off Distance (Max Crater Size from side of pipe)
2 bar	2.5m
4 bar	5.0m
6 bar	7.5m
8 bar	10m
10 bar	12m
12 bar	14.5m
14 bar	17m
16 bar	19.5m
18 bar	22m

3.0 Infringements

It is SW’s policy not to allow the building over of water mains or building within the Access Distance. Any such building may compromise SW’s legal obligation to maintain a constant water supply, and in particular would restrict SW’s ability to respond in the event of a failure of the pipeline.

Building within the Stand-off Distance has potential risks to the health and safety of persons who might be affected by the failure of a water main; not least the occupants of any buildings. As such SW recommends that no habited buildings or structures be constructed within the Stand-off Distance

As SW has a statutory duty to ensure its operations do not pose a risk to others, it is SW policy to legally contest any proposed infringements of the Stand-off Distance agreed in advance with SW, which do not include full protection of buildings against damage and flooding due to a mains burst.

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SW acknowledges that there may be locations where structures have previously been erected within an Access Distance and / or Stand-off Distance, however these encroachments should be assessed and recorded but do not form the basis of any approval or relaxation of the Access Distance or Stand-off Distance when considering a new or re-development.

4.0 Buildings Adjacent to Access Distance

No temporary or permanent buildings or structures are to be erected within the Access Distance. No materials, including excavated or imported spoil, to be stored temporarily or permanently within the Access Distance.

The foundations of any new buildings adjacent to the Access Distance should extend to such a depth and be designed in such a way that they do not place additional loading, settlement or vibration onto the water main and/or water main surrounding structure. Where construction is adjacent to the Access Distance, foundations shall be designed to ensure SW has full access to the lowest point of the bedding of the existing/diverted pipeline for maintenance or construction purposes without undermining the adjacent structure or reducing the load bearing capacity of the foundations.

Before any proposed use of pile foundations in the vicinity of water mains SW must be consulted at the earliest opportunity. Details of RAMS (risk Assessment and method statement) in relation to any piling works in the vicinity of SW's assets must be submitted for technical review and written acceptance. Vibration levels in the vicinity of SW assets must be managed to levels below British Standard (BS5228) levels and will be appropriate for the SW asset affected

5.0 Ground Cover & Works Above Water Mains

Scottish Water accepts that development of sites will involve ground works of various types to form the development, and some of these will be required above our mains. **All** proposed ground works within the Access Distance will be agreed in advance with Scottish Water.

The location of water mains should be marked out on site and suitable arrangements put in place to prevent construction plant traversing the main to prevent damage. It should be noted that pipes previously in fields have been designed for occasional crossing by low ground pressure agricultural machinery at variable locations, and not construction plant. Should mains require to be crossed, suitable protection measures should be agreed in advance with Scottish Water.

Any proposed change in ground levels on top of the water main or the Access Distance should be notified to SW. The cover will not be increased to such an extent that the imposed load on the pipe poses a risk of failure by overloading, unacceptable pipe settlement, or significant increases in repair time. SW will formally review proposals to change existing ground levels and will provide a response in writing in terms of acceptance or rejection of the proposals.

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No work of any description shall take place within the Access Distance, before full written agreement has been reached with SW regarding the construction methods and manner in which the work shall be carried out. This may involve the developer paying for the installation, maintenance and removal of monitoring equipment during the work activities.

Access to and along the Access Distance shall be kept clear and unrestricted at all times.

A minimum of 28 days' notice must be given in writing of any intention to commence agreed works within the Access Distance. In an emergency, contact must be made immediately with SW Contact Centre Tel 0800 077 8778.

6.0 Development Areas

Where a development is to be planned in the vicinity of existing mains, the developer may consider locating the existing water main within the new road verge or, if this is not possible, within the road. This will be subject to buildability considerations being addressed to the satisfaction of SW

Where the main is to be located within the road, additional measures may be required to protect it. Such proposals must be submitted in writing and approved by SW in advance of work commencing. Early application to SW is encouraged in order that additional measures are agreed in a timely manner.

Scottish Water reserves the right to restrict or prevent any development proposal which may present an unacceptable risk to existing water main infrastructure. Early dialogue with SW is recommended to determine and agree site specific measures in a timely manner.

7.0 Diversion Works

Where a developer plans to erect a building that encroaches upon the Access Distance or Stand-off Distance and is prepared to meet all costs involved in diverting the main, SW will not unreasonably refuse this proposal.

All diversionary works must comply with SWs standards, technical specifications and policies and must be designed and carried out by a competent Water Industry Registration Scheme (WIRS) accredited organisation. Any inconvenience and any material loss caused to landowners, customers and others by any diversion should be taken into account when considering the benefits of the proposed diversion and will be the responsibility of the developer.

Where a developer submits a request for a diversion, this will be the subject to a separate formal agreement with SW following due process and procedural requirements.

8.0 Notification of Future Owners of Restrictions Associated with Water Mains

SW requires developers to notify future property owners of the land-use restrictions above and around the water mains. It should be noted that where development sites are sold off in

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plots restrictions may span across plot boundaries, and all owners should be notified. This should be done by including the restrictions within the Deed of Conditions such that they remain visible to all future land owners and are in the public domain

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9.0 Supplementary Information

Scottish Water recommends that issues identified in complying with these requirements from proposed and on-going developments are addressed as early in the life of the project as possible. Early dialogue is essential and can be facilitated by contacting the relevant SW Team set out in Table 3.

Table 3 - Contact Details

SW Team	E-mail	Reason for Contact
Development Planning & Liaison	EIA@scottishwater.co.uk	Early planning engagement
Service Relocation Team	service.relocation@scottishwater.co.uk	Early start proposals and information regarding application of Asset Policy Standard – Water Mains Protection Distances
Customer Connections	www.scottishwater.co.uk/connections customerconnections@scottishwater.co.uk	Development specific applications and Queries
Asset Management Standards	standardsinfo@scottishwater.co.uk	Technical Specification Queries and information